



CITY COUNCIL WORKSHOP
MEETING TO BE HELD REMOTELY

DATE: October 26, 2020

TIME: 5:30 PM

ZOOM INFORMATION:

The Portland City Council will hold a workshop on Monday, October 26, 2020 at 5:30 PM. This meeting will take place remotely using Zoom.

Virtual meetings are allowed using emergency legislation approved by LD 2167; 1 M.R.S. §403-A, that authorizes cities and towns to conduct meetings online.

Allow your computer to install the free Zoom app to get the best meeting experience. If you are not able to attend live, a recording will be uploaded to portlandmaine.gov/livestream the next day.

For public comment, you will need to use the "raise your hand" feature. To raise your hand via the telephone, please hit *9. You will be un-muted by the host when it is time for public comment.

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AGENDA ITEMS:

1. ReCode

For backup materials for the first workshop click [here](#)

2. One Climate Future



CITY OF PORTLAND
Planning & Urban Development
Christine Grimando, AICP, Acting Director

To: Mayor Snyder and Members of the City Council
From: Christine Grimando, Director, Department of Planning & Urban Development
Nell Donaldson, Director of Special Projects
Date: October 23, 2020
RE: ReCode Phase I

I. INTRODUCTION

On October 5, 2020, the City Council held a workshop to review the final products of ReCode Phase I, a new land use code recommended for adoption by the Planning Board. At the workshop and in the time since, Councilors have raised several questions for staff. This memo addresses these questions in anticipation of the Council's second workshop on ReCode Phase I, scheduled for October 26.

II. POLICY AREA DISCUSSION

1. Treatment of unlisted uses (Section 6.2.2)

Most of the city's existing zones currently include plain language explicitly stating that uses not listed as either permitted or conditional are prohibited. While this is typical of many zoning ordinances, over time it can create challenges as uses evolve and emerge. In these instances, uses must be added to the code through a text amendment.

Several of the city's existing zones, however, including the B-2 and the I-M, recognize the challenge of anticipating all potential future uses by offering a performance-based use test for unlisted uses. (The India Street Form Based Code, in another variation, only includes a list of expressly prohibited uses, all other uses being permitted, provided they meet all applicable standards.) The B-2 zone currently includes provisions allowing the Planning Authority to determine whether an unlisted use is permitted or conditional based on a series of performance-based standards.

In ReCode, staff has extended this provision, with slight modifications to provide more clarity to the similarity test for instance, to all zones. The policy rationale is the recognition that current uses will evolve over time, and while some may merit text amendments to lists of permitted or conditional uses, many more will represent slight variations from the use lists which can reasonably be handled through an administrative procedure. If the Planning Authority was not expressly making this decision, the default would be the Zoning Administrator. Alternately, the use question could be decided by the reviewing authority (e.g. Planning Authority, Zoning Administrator, ZBA, Planning Board). As is now the case, should there be an objection to a Planning Authority decision, it may be appealed to the Planning Board.

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2. Changes to industrial zoning and the IL-b

A. Temporary events in the IL-b zone

The existing IL-b zone allows “[t]emporary events associated with a principal use, such as concerts, lectures, exhibitions of the local production of handcrafted and limited production products, fundraisers, and other similar gatherings, provided that they occur no more than a total of 16 hours a week, subject to the performance standards of this zone and any other applicable city ordinances.” While this language was originally written to allow for particular events in the IL-b, it is a largely anomalous and difficult-to-enforce standard in the code, since the land use code is not structured to address temporary events, and not structured to address them for one zone but not others. In ReCode, this language was replaced with general language in Section 6.7.1 that addresses temporary uses.

B. Food requirements for accessory tasting rooms in the IL-b zone (Section 6.6.2(I))

ReCode Phase I includes new accessory use provisions to address tasting rooms in industrial zones, with the broader goal of balancing industry’s need to evolve in place with concerns about a wholesale deindustrialization of the city’s industrially-zoned land. The new language allows some limited food service in tasting rooms, such that a brewery or distillery could generate some revenue from food if necessary to meet state licensing requirements, but stops short of full-course meals on the premise that restaurants, as currently regulated in the city’s land use code, are not appropriate for industrial zones. This language was developed in close coordination with Zoning and Business Licensing.

C. Area limitations on accessory uses (Section 6.6.1(B) and (C))

The definition of accessory use in the existing land use code (“uses which are customarily incidental and subordinate to the location, function and operation of permitted uses”) gives little guidance on how to determine the scale and proportion of an accessory use. In order to provide some clarity on this matter, and further to reinforce that accessory uses should be secondary in scale, language has been drafted in ReCode to set limits on the total building area and total unbuilt lot area that can be used for the purposes of an accessory use. In addition to generally giving more detail as to what constitutes an accessory use, the new language sets a quantitative limit to give predictability and flexibility to properties without tipping an accessory use into vying for primacy with a principal use on a lot. These standards would apply city-wide, and no focused outreach was done with breweries in particular. However, recognizing that many of the breweries (and distilleries) with tasting rooms in our industrial zones include extensive outdoor space, a clarifying change to the draft ReCode Phase I would be to exempt outdoor spaces for tasting rooms in Section 6.6.2(I).

D. Other changes to tasting room/makers’ market language, particularly in the IL-b

Recognizing that permitting a full range of mixed uses that appear in Portland’s business zones, such as residential, restaurants, offices and retail without limits would undermine the unique character and successes of our industrial zones, the limited changes to the IL-b that are contemplated in ReCode Phase I seek to allow flexibility for low-impact industrial uses, and uses with tasting rooms in particular, while retaining the industrial intent of the zone. For instance, the proposed accessory use provision around tasting rooms in industrial zones aims to balance the ability of these businesses to grow and thrive with the broader need for industrially-zoned land within the city and the need to maintain certain areas as incubator space for future small

industries. Additional policy to maintain this balance and address other needs of the IL-b will be considered as part of a larger evaluation of the City's zoning districts in under Phase II.

3. Accessory Dwelling Units (ADUs) (Section 6.6.2(A))

A. In general

Throughout Phase I, Planning staff has framed its work around ADUs as a rationalization and expansion of existing but inconsistent policy, and an incremental way of facilitating additional housing supply in the city, very much in keeping with the idea of ADUs as accessory uses. In Phase I, staff has proposed revisions in ADU policy designed to eliminate barriers to the creation of ADUs, particularly in the city's lower density residential zones, where density requirements, lot coverage requirements, permitted uses, and parking requirements often preclude additional units on single- and two-family lots that might otherwise be able to support them. As proposed, it is a much simpler and accessible framework, more widely applied, with the potential of creating new dwellings, particularly in more restrictive zones. Creation of this expanded ADU framework has not been proposed to stand in for other tools that would increase maximum residential densities or otherwise facilitate greater housing creation.

B. Restriction to single- and two-family properties

The proposed ADU policy intentionally does not permit ADUs on lots with multi-family dwellings, which are generally found in higher density and mixed-use zones where ADUs are less likely to be necessary as a policy tool. In those cases, additional units would simply be reviewed under the density provisions of the corresponding zone. For instance, a 0.1 acre (4,356 SF) lot in the R-6 zone, with a maximum density of 725 SF per dwelling unit, could have a 6 unit multi-family building (or any other combination of dwelling units with a maximum of 6). Including an ADU option in this scenario would effectively be increasing the density in a moderately dense zone. While increasing allowable density is by no means unreasonable, and in fact aligns with the city's broader housing goals, doing so with ADU policy is both an oblique way of achieving that goal and incongruous with the underlying premise of ADUs as accessory uses. If it was the Council's wish to permit greater residential density in higher density zones, there are simpler and more direct ways to do this, such as a change to the minimum square feet per dwelling unit or another form of density bonus.

In contrast, ADU policy is a clear fit in the case of single- and two-family buildings and lower density residential zones. For instance, a duplex on a nonconforming 1,450 SF lot in the R-6 zone, which would otherwise be limited to two units by density standards, could add an ADU if the building or lot offered enough space to expand. Likewise, in the R-3 zone, which requires 10,000 SF to build a duplex and 3 acres to build a multifamily project (as a Planned Residential Use Development, or PRUD), an ADU option is much more likely to diversify the housing choices. Directing ADUs to single- and two-family homes is very much in keeping with the purpose of ADUs as accessory to principal dwellings and an incremental means of adding housing to otherwise more restrictively zoned areas of the city. Property owners in higher density zones could still take advantage of ADU options, but properties in higher density zones that already allow multi-family won't be likely to require it. A city-wide discussion around residential density will be a central element of Phase II of ReCode.

C. Size, number, and ownership limitations

The proposed ADU policy allows only one ADU per qualifying property and retains the idea of unit size limits from the existing code. Similar to the consideration of multi-family ADUs, these limits are fundamentally about the role of ADUs as accessory, secondary to the principal dwelling. The owner occupancy requirement for at least one of the dwelling units in an ADU scenario has roots in the existing code as well, and in this policy not being geared at commercial developments. It is also very much in keeping with the accessory rationale.

D. Affordability requirements for ADUs on Peaks Island

In the initial draft of ReCode, Peaks Island ADU policy, including affordability restrictions, was left as-is, in light of fairly recent code changes. However, during the Planning Board's ReCode review we heard from Peaks Island residents, as well as Homestart, that the possibility of fewer barriers to ADUs on the island was of sufficient benefit to the island housing supply to outweigh the affordability restrictions. The Planning Board supported including Peaks Island in the larger ADU framework.

4. Use of 'shall' v. 'should'

Article 1 of the ReCode includes new language regarding use of terms, which is intended to help clarify future interpretations of the code. Per this new language, the term "shall" is to be interpreted as an imperative. In the applicability sections of ReCode Articles 6 and 7, the term "should" has been used in reference to future interpretation: "when in doubt this article *should* be interpreted to accommodate the goals of the Comprehensive Plan and other plans." If this "should" was changed to "shall" in the final version, it would also serve the intent of this section, and would be a simple change to make if that is the preference of the Council.

5. Historic Preservation Board Council reporting requirements (Section 2.2.8)

The draft ReCode eliminates a clause under the Historic Preservation Board's roles and responsibilities that requires the board to annually report to the City Council on work in progress or completed, the number of projects reviewed, and the number of certificates issued. This language dated to the inception of the Historic Preservation ordinance, when the program was in its infancy, the board was a "committee," and there was a desire for some period of observation to measure the program's success. Today, the well-established Historic Preservation program submits an annual report, including a summary of all applications received in every review category, to both the Maine Historic Preservation Commission and the National Park Service. This report could also be forwarded to the Council, but specifying a separate reporting requirement in the Land Use Code does not currently seem necessary.

6. Definitions (Article 3)

A. Accessory Dwelling Unit definition

"Accessory dwelling unit" is not defined in ReCode. However, the distinguishing characteristics of accessory uses are described in detail in Subsection 6.6.1(A), based on existing language in 14-47 (Definitions) and Section 14-404 (Accessory Use), which eliminates the need for a definition. This text states that accessory uses must be found in association with principal uses, be consistent with the impacts of the principal use, be secondary in nature and clearly incidental and subordinate in terms of area and function, and be located on the same lot with the principal use unless otherwise permitted. "Dwelling unit" is defined in Article 3 of ReCode.

B. Definition of “family”

Under ReCode, the “family” definition has been rewritten to provide some additional parameters around what is considered a “family” for purposes of occupying an individual dwelling unit. The existing definition in the land use code refers to up to 16 individuals living together in a dwelling unit as a single nonprofit housekeeping unit, many more people than comparable cities. The revised definition reduces the number of “unrelated individuals” in the definition to 8, but adds provisions to encompass “one or more individuals related by blood, marriage, civil union, adoption, or legal guardianship.” The ReCode definition was informed by similar definitions from land use codes across the state and country, and purposefully differentiates between groups of loosely affiliated people who may live together (i.e. who may be related by “affinity”) and more legally-established frameworks of “family.” The intent is to frame this term flexibly to allow for a wide range of household arrangements and relationships, while still giving the term parameters enough to correspond to residential use categories and housing types in the context of the land use code. It should be noted that the ReCode also explicitly refers to the Fair Housing Act and the city’s intention to make accommodations for the needs of persons with disabilities.

7. Temporary uses

A. Temporary parking provisions (Section 6.7.2(A))

The temporary parking language in Section 6.7 is from the city’s existing site plan ordinance. This provision allows temporary parking areas “in anticipation of future development” for a period of not more than one year. It has been used in the past to allow temporary parking areas to support uses on portions of Thompson’s Point that were slated for development, for instance. Construction vehicles are not currently regulated under this provision.

B. Temporary stands (Section 6.7.2(D))

The ReCode language around temporary stands is consolidated from the existing ordinance. The existing R-1 and R-2 zones have provisions that allow for temporary stands of 200 SF for the selling of agricultural products produced on the premises of a principal, permitted agricultural use. The IR-1 and IR-2 zones have a very similar provision but allow the selling of fish and shellfish caught by the occupant of the premises as well. The produce stands allowed at community gardens, non-profit organizations, and schools are currently limited to 100 SF. A lemonade stand would generally not qualify as a “business purpose” under this section, and thus would not be regulated under these provisions.

8. Height maps

Under ReCode, existing height regulations that are currently found in the land use code have been relocated to relevant height overlay maps for ease of use. Ideally, the existing maps could be consolidated with other base zoning height information into one map which shows allowable heights across the entire city. However, existing height overlays have been adopted over multiple decades, are ornate in their requirements, and don’t lend themselves to easy consolidation into a single paradigm for addressing heights in Portland.

9. Technical Manual edits

Similarly, there are various elements of the existing code that have been relocated to the *City of Portland Technical Manual* under ReCode. Some of these edits involve technical requirements more appropriate to the *Technical Manual* than the land use code (e.g. parking lot surfacing requirements, driveway requirements, parking lot drainage requirements, curbing and dimensional requirements for

parking lot islands), given that they may evolve with engineering and construction practice. Submission requirements for site plan and subdivision review have also been relocated, as these lengthy lists are similar to survey requirements already found in the *Technical Manual*. (Note that no code language has been relocated to the *Design Manual*.)

10. Inclusionary zoning applicability (Section 18.2.3(B))

On the recommendation of Housing staff, language has been added to the IZ provisions to explicitly exempt projects that are otherwise required to include affordability restrictions. This is meant to clarify that inclusionary zoning requirements do not apply to housing projects that are otherwise providing affordable housing, and represents how city staff has been interpreting the requirement since its implementation.

11. Off-street parking (Article 19)

A. 1 space per unit residential parking requirement (Table 19-A)

The current off-street parking regulations require two parking spaces/residential dwelling unit, with exceptions for certain zones (B-2/B-2b/B-2c, R-6/R-6a), changes of use, and for residential uses on the peninsula (in addition to other blanket zone-based and use-based exceptions). Over time, staff has repeatedly heard that, for off-peninsula sites in zones like the B-1 or B-1b, which can be smaller in size, this requirement can serve as a barrier to mixed-use or residential development, as developers attempt to accommodate parking on-site. In developing alternatives to the two/dwelling unit requirement, Planning considered existing exceptions already allowed in the code, including the existing one space/dwelling unit allowance in the B-2/B-2b/B-2c, the R-6, and on the peninsula, case studies of communities across the country, and recent parking-related trends in Portland. For example, Portland's *Parking Study for Downtown, the Old Port, and the Eastern Waterfront* cited Census Bureau statistics showing that Portland households had a vehicle ownership rate of 1.34 vehicles/household in 2015, and that drive-alone commute rates in the city are decreasing.

B. Commercial parking standards

At the October 5 workshop, Councilors raised several questions about commercial parking standards, and questioned why commercial parking requirements were not addressed under ReCode Phase I. For clarification, it is important to note that Phase I of ReCode includes a number of modifications to commercial parking policy, including:

1. A city-wide expansion of shared parking provisions, which allow properties with multiple principal uses to jointly use parking and thereby reduce total parking requirements. Currently, this policy applies only in the B-1, B-2, and B-3 zones.
2. A city-wide expansion of provisions that allow parking requirements for projects undergoing site plan review to be established through a parking analysis, taking into account characteristics of the site and proposed uses, including any anticipated transportation demand management programming. At present, these provisions apply only to projects with a total floor area of 50,000 SF or more and projects in the B-6, B-7, and selected overlay zones.
3. A city-wide expansion of the City's fee-in-lieu-of-parking provisions, such that any development subject to site plan review may choose to pay into the Sustainable Transportation Fund as opposed to providing parking on site. Currently, these provisions apply solely to projects within non-residential zones on the peninsula.

These changes were proposed in ReCode Phase I because they align with the intent of Phase I to streamline and rationalize the code by expanding upon existing and successful policies that are currently applied unevenly. These changes grant a considerable amount of flexibility in meeting commercial parking requirements. The aspects of non-residential parking requirements these changes do not address are the starting assumptions about off-street parking ratios for different commercial uses, which still warrant closer study in ReCode Phase II.

Though work on the above tools is a substantial change, Phase I of ReCode did not set out to include a wholesale change in parking standards, such as changes to existing parking minimums for non-residential uses or the introduction of parking maximums. Over the course of work with the Council's Ad Hoc ReCode Committee in early 2019, these topics, including the potential for charging a fee for projects that exceed parking requirements, were discussed at length. While staff reviewed these options at the request of the committee, ultimately these other policy changes were left for exploration under ReCode Phase II, in part because rewriting minimums, adding maximums, or instituting penalties for projects that exceed requirements would require significant additional technical analysis, analysis of implications with respect to other aspects of the code, as well as further public engagement. These types of policy changes were discussed amongst the Planning Board as well; in light of the complexity of a full paradigm change to non-residential parking requirements, staff recommended that this work be pursued under a future phase; the Planning Board agreed to revisit the topic in Phase II.

12. Noticing

A. Neighborhood meetings and general noticing (including Section 14.5.5)

In the course of developing Article 14, both staff and the Planning Board considered ways to modify noticing and neighborhood meeting requirements to encourage broader participation, including expanding the methods used for outreach and communication. While the language regarding the neighborhood meeting requirements remains largely as is, references to “feedback generated through neighborhood outreach” were added to reflect the broader work that developers sometimes do, above and beyond the neighborhood meeting requirements, to gain input from abutters and neighborhoods.

B. Notice of public meeting sign (Sections 14.5.7, 15.3.4, 17.3.2)

ReCode Phase I includes a new provision that requires the posting of a “notice of public meeting sign” on site for site plan and subdivision projects appearing before the Planning Board and for certificate of appropriateness reviews appearing before the Historic Preservation Board. The intent behind this concept is to cast a wider net to residents and abutters than is typically created through mailings to property owners. The specifications for this signage (e.g. size, construction, legibility, etc.) will be developed under separate cover, much like the guidance for holding a required neighborhood meeting, which is issued to developers upon application submittal.

C. Noticing requirements for Board meetings (including Section 2.1.8, 2.2.6, and 2.3.7)

Noticing requirements have generally remained as is, with some consolidation across like review types for ease of administration and with one significant change to add on-site noticing requirements. All noticing requirements for board meetings have been updated to ensure consistency with state statute, if applicable, though our noticing requirements generally exceed state requirements. For instance, though not written into the current code, notices are sent

electronically as newsflashes and posted on the city’s website. Improving upon these mechanisms or adding other channels of communication does not require corresponding text in the land use code. Per state law, subdivision, zone change, and Zoning Board of Appeals notices must occur in a newspaper.

As noted above, one significant change in noticing requirements is the addition of a requirement that a sign be posted on the property of projects subject to site plan, subdivision, or certificate of appropriateness review before the Planning Board or Historic Preservation Board. This requirement is meant to encourage broader public awareness of the public workshops and hearings at which land use decisions on these properties are being made.

13. Equity and sustainability in proposed parking and ADU policy

Near the end of the October 5 workshop, there was a request for more information on how proposed changes to ADU and parking policy address equity and sustainability goals as expressed through *Portland’s Plan*. Both sets of changes are very much in keeping with the city’s comprehensive plan vision around equity and sustainability.

The proposed parking policy, for its part, would eliminate parking requirements in some cases, reduce parking requirements in others, and allow more flexibility for property owners and developers in meeting parking requirements across the board. In so doing, the policy takes steps to reduce the effect of off-street parking requirements as a barrier to all development, but to housing production in particular. By eliminating some of the variations in parking policy by zone, and instead using frameworks such as accessibility to transit as a foundational element, the parking policy is not only rationalized, but more evenly and equitably applied. The proposed parking policy also creates opportunities to reduce the city’s reliance on single-occupancy vehicles city-wide and build a market for more sustainable modes, such as walking and transit. Should the change in policy have the effect of encouraging more residential development, particularly along nodes and corridors as depicted in *Portland’s Plan*, it could have lasting consequences in terms of the city’s transit network, walkability, and ultimately, greenhouse gas emissions.

Likewise with ADU policy, there is some progress on metrics of equity simply by virtue of rationalizing the policy city-wide. The proposed ADU policy allows for all single-family and two-family lots to have an ADU, opening up possibilities for the incremental expansion of small, by-nature affordable rental units across some of the city’s lower density residential zones, which historically have lacked some of the housing diversity necessary to support a wide cross-section of city residents. Assuming this ADU production occurs, it could potentially have the effect of opening up rental markets in some areas of the city that have long been effectively closed. With respect to sustainability, the proposed ADU policy is a means of creating housing opportunities in an incremental and resource-efficient way. Furthermore, adding units in our residential neighborhoods adds people, promotes walkability, and thereby helps to support the complete neighborhood concept central to the sustainability goals of *Portland’s Plan*.

III. PROCESS DISCUSSION

At the October 5 workshop, the Council engaged in some discussion of process, particularly around Council-initiated amendments to the final draft version of ReCode Phase I forwarded by the Planning Board. As Planning staff mentioned in the workshop, small amendments to the draft recommended by the Planning Board could theoretically be integrated without returning to the Planning Board for

additional review. However, more substantive changes to the fundamental framework of the draft or to introduce entirely new policy would likely require additional Planning Board review.

There was also some discussion about the timeline for Phase II of ReCode. As stated at the workshop, staff has developed and released an RFP for Phase II as of early October. Because Phase II will involve the work of a consultant, specific elements of the scope and timeline have not yet been finalized but will be in conjunction with the consultant team. Because ReCode Phase I will be complete, this should reduce the total time needed for Phase II significantly. A rough timeline as of now would have public engagement beginning this winter (and carrying on throughout the process), as well as the work of a code analysis, and beginning of drafting of amendments in late spring.

IV. ATTACHMENTS

1. Final Draft City of Portland Land Use Code
2. Final Draft Height Overlay Maps

CITY OF PORTLAND

LAND USE CODE



City Council DRAFT

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1 INTRODUCTORY PROVISIONS

1.1 TITLE

The title of this chapter of the City of Portland Code of Ordinances is the City of Portland Land Use Code and is referred to as the City of Portland Land Use Code or the Land Use Code.

1.2 ZONING MAP

The City of Portland zoning map is incorporated by reference.

1.3 PURPOSE

The intent of the Land Use Code is to protect the health, safety, and general welfare of the residents of Portland, consistent with the City's Comprehensive Plan, through standards that govern the orderly and compatible use of land, the form and mass of buildings, and the relationship of development to the public realm, Portland's open spaces, and the environment.

1.4 APPLICABILITY

No building or structure shall be erected, structurally altered, enlarged, repaired, moved, rebuilt, or used, and no land shall be sold, leased, conveyed, used, developed, or altered except in conformity with the provisions of this Land Use Code.

1.5 ENFORCEMENT

1.5.1 Enforcement

The Building Authority and/or a City of Portland Code Enforcement Officer is authorized to institute or cause to be instituted by the Corporation Counsel in the name of the City any and all actions, legal or equitable, that may be appropriate or

necessary for the enforcement of the Land Use Code.

1.5.2 Violations

Any person being the owner or occupant of, having control of, or having the use of any building or premises or part thereof, who violates any of the provisions of this Land Use Code, shall be guilty of an offense and subject to the penalties and remedies provided in Chapter 1, Section 1-15 of the City of Portland Code of Ordinances and 30-A M.R.S. § 4452.

1.6 RELATIONSHIP WITH OTHER LAWS

1.6.1 Federal and state law

Where conditions, standards, or requirements imposed by any provision of this Land Use Code are found to be inconsistent with a provision listed in the law or regulations of the State of Maine or federal government, the more restrictive provision shall control.

1.6.2 City of Portland Land Use Code

If any provision of this Land Use Code contains an actual, implied, or apparent conflict with another provision of this code, the more restrictive provision shall control.

1.6.3 Fair Housing accommodation

The City of Portland may make reasonable modifications to the requirements of the Land Use Code to accommodate the needs of persons with disabilities as so defined in Title VII of the Civil Rights Act of 1968, as amended by the Fair Housing Amendments Act of 1988.

1.6.4 Comprehensive Plan

The Comprehensive Plan serves as the basic policy guide for this Land Use Code. Amendments to this Land Use Code shall be generally consistent with the current Comprehensive Plan.

1.6.5 Current versions and citations

All references to other regulations or manuals in this Land Use Code refer to the most current version and citation for those regulations or manuals, unless expressly indicated otherwise. When the referenced regulations or documents have been repealed and not replaced by other regulations or manuals, Land Use Code requirements for compliance are no longer in effect.

1.6.6 Private agreement

This Land Use Code does not nullify any private agreement or covenant. However, where this code is more restrictive than a private agreement or covenant, this code controls. The City does not enforce private agreements.

1.7 DELEGATION OF AUTHORITY

Whenever a provision requires the head of a department to perform an act or duty, that provision will be interpreted as authorizing the department head or officer to delegate that responsibility to others over whom he or she has authority.

1.8 RULES OF INTERPRETATION

1.8.1 Meaning of words and terms

All words and terms shall have the meanings shown in Article 3, unless otherwise expressly stated. For words or terms not specifically defined in this Land Use Code, they are interpreted by their common

dictionary meaning or customary usage consistent with their context.

1.8.2 Graphics and illustrations

Graphics and illustrations are included to illustrate the intent of the text. In the case of a conflict between the text and any graphic or illustration, the text controls.

1.8.3 Lists and examples

Unless otherwise expressly indicated, lists of items or examples that use “including,” “such as”, or similar terms are intended to provide examples only, and shall not be construed as being limited to the items or examples listed.

1.8.4 Time

When a number of days is specified as a period from a certain day within which or after or before which an act is authorized or required to be completed, time is computed as the number of calendar days excluding the calendar day when the act is authorized or required to be completed. Business days shall be interpreted as days on which the City of Portland is open for business.

1.8.5 Obligatory terms and conjunctions

The terms in the text of the Land Use Code shall be interpreted in accordance with the following rules of construction:

- A. The terms “must”, “shall”, or “will” are mandatory terms that express a requirement or impose an obligation.
- B. The terms “must not”, “shall not”, “will not”, and “may not” express a prohibition.
- C. The term “should” expresses a recommendation or suggestion and does not express a requirement or imposition.

- D. The term “may” is permissive and does not express a requirement or imposition.
- E. The conjunction “and” indicates that all connected words or provisions apply.
- F. The conjunction “or” indicates that the connected words or provisions may apply singly or in any combination.
- G. The conjunction “either [...] or” indicates that the connected words or provisions apply singly, but not in combination.

1.8.6 Gender

Words denoting one gender apply to all genders.

1.8.7 Abbreviations

Building Authority. Either the Department of Permitting and Inspections, its director, or their designee.

Council. The Portland City Council.

Planning Authority. Either the Department of Planning and Urban Development, its director, or their designee.

Public Works Authority. Either the Department of Public Works, its director, or their designee.

1.9 SUCCESSIVE APPLICATIONS

Whenever any application, appeal, or other request filed pursuant to this Land Use Code has been finally denied on its merits, a second application, appeal or other request seeking essentially the same relief, whether or not in the same form or on the same theory, shall not be brought within one year of such denial unless, in the opinion of the authority or board before which it is brought, there has been a

substantial change in circumstance or substantial new evidence is available.

1.10 AMENDMENTS

1.10.1 Authority

The City Council may amend this Land Use Code and the zoning map incorporated herein.

1.10.2 Procedure

- A. An application for a text or zoning map amendment shall be filed with the Planning Authority. A payment of a nonrefundable application fee, as established by the City Council to cover administrative costs and costs of a hearing, shall accompany each application. The fee for text or zoning map amendment applications may be waived or reduced by the Planning Authority in the case of an application submitted by a governmental body or where an applicant can establish financial hardship. If a text or zoning map amendment application is withdrawn by an applicant prior to the submission of the advertisement copy to the newspaper to announce the public hearing, a refund of half of the amount of the application fee will be made to the applicant by the City provided that all costs incurred by the City have been paid in full by the applicant.
- B. Once it is determined that the application is complete, the Planning Authority shall give a dated receipt to the applicant and, in the case of a map amendment, shall notify, by mail, all property owners within the limits of the proposed zoning map amendment and all property owners 500 feet beyond said area, except that for map amendments to a site located within industrial zone designations the notice range shall be 1,000 feet. The notice

hereunder shall include a brief description of the application, the address or location of the property involved, and contact information where additional information may be obtained. The cost of noticing shall be charged to the applicant.

- C. A private applicant for a map amendment that would permit a development subject to major site plan review shall conduct neighborhood outreach according to the provisions for neighborhood meetings under Article 14.
- D. The Planning Authority shall review the application against the standards of this article and make a recommendation to the Planning Board.
- E. The Planning Board shall hold a public hearing in accordance with the provisions of Article 2 and make a recommendation to adopt, adopt with modifications, or not adopt the proposed map or text amendment, and forward the recommendation to the City Council.
- F. The City Council shall review the proposed amendment and determine whether and how to amend the Land Use Code or zoning map.

1.10.3 Review fees

The applicant shall pay a fee to cover the professional and administrative costs for review and analysis associated with the amendment, including but not limited to planning, legal, engineering, or other services. The fee shall be based on the hours of review and processing time and the prevailing hourly rate for reimbursement of City costs. The City shall periodically invoice the applicant for such costs incurred by the City, which invoice shall be paid promptly by the applicant.

1.10.4 Review standards

Except as otherwise required by law, amendments to the City's Land Use Code shall be pursuant to and consistent with the Comprehensive Plan.

1.11 TRANSITION RULES

A permitted use established prior to the effective date of the Land Use Code that is now classified as a conditional use shall be deemed a lawful conditional use. Any subsequent addition, enlargement, or expansion of that use shall conform to the procedural and substantive requirements for conditional uses in Article 6. A permitted or conditional use established prior to the effective date of this Code that is now classified as a prohibited use shall be deemed a nonconforming use and is controlled by the provisions of Article 4.

2 ADMINISTRATION

2.1 PLANNING BOARD

2.1.1 Composition

There shall be a Planning Board of seven members. Members of the Planning Board shall be residents of the city and shall not be officers or employees of the City. Members shall serve without compensation.

2.1.2 Appointments

- A. Terms.** The members of the Planning Board shall be appointed by the City Council for terms of three years. Such members shall serve until their successors are duly appointed and qualified. Such terms shall be staggered so that the terms of not more than three members shall expire in any calendar year; providing, however, such service shall not extend to over 120 days after expiration of their term. Members may serve for three consecutive three-year terms.
- B. Vacancies.** Permanent vacancies on the Planning Board shall be filled by the City Council, in the same manner as other appointments hereunder, for the unexpired term of the former member.

2.1.3 Removal of members

Any member of the Planning Board may be removed for cause by the City Council at any time, provided, however, that before any such removal, such member shall be given an opportunity to be heard in their own defense at a public hearing.

2.1.4 Officers

- A. Chair.** The members of the Planning Board shall annually elect one of their number as chair to preside at all meetings and hearings and to fulfill the customary functions of that office. The chair may administer oaths.
- B. Vice chair.** The members of the Planning Board shall annually elect one of their number as vice chair. In the absence of the chair, the vice chair shall act as chair and shall have all the powers of the chair. The vice chair shall have such other powers and duties as may be provided by the rules of the Planning Board.

2.1.5 Committees

The chair of the Planning Board shall assign the members of the board to such regular and special committees as may be established by the board. Such committees shall have no final authority but shall assist the board in the conduct of its business by making recommendations to it concerning such specific items as may be assigned to them for study and report. The board shall adopt such rules as it shall deem appropriate to govern the organization and operation of its committees. Committee meetings deliberative in nature shall be open to the public in accordance with Title 1 M.R.S. § 401 et seq.

2.1.6 Quorum and necessary vote

As to any matter requiring a hearing, no business shall be transacted by the Planning Board without a quorum, consisting of four members, being present. The vote of at least four members shall be necessary to authorize any action by the board. If less than a quorum is present, the hearing may be adjourned for a period not exceeding three weeks at any one time. The Planning Authority shall notify

in writing all members of the date of the adjourned hearing and shall notify such other interested parties as may be directed in the vote of adjournment.

2.1.7 Conflicts

No member of the Planning Board shall participate in the hearing or disposition of any matter in which he or she has an interest. Any question of whether a member has a conflict of interest sufficient for a member to be recused shall be decided by a majority vote of the members present, except the member whose possible conflict is being examined. Where such vote results in a tie, the subject member shall be recused from the matter.

2.1.8 Meetings and procedures

A. Meetings. Regular meetings of the Planning Board shall be held at the call of the chair or as provided by rule of the board. Special meetings may be called by the chair or any four members of the Board or at the request of the City Council.

1. *Workshops.* Workshops of the Planning Board or any of its committees may be held at the call of the board or committee chair, as the case may be, for the presentation of information by the Director of the Department of Planning & Urban Development, their staff, an applicant, or others. These meetings will be open for public comment according to the rules of the Planning Board. Such meetings, unless open to the public as provided in Title 1 M.R.S. § 401 et seq. shall

be informational only and shall not result in final decisions on any matter.

2. *Public hearings.* Public hearings shall be held as required by the various statutes, codes, and ordinances pursuant to which matters are brought before the Planning Board and shall be conducted in accordance with relevant state law, the Land Use Code, and the rules of the board.

B. Notice. The Planning Authority shall give notice of the time and place of public workshops and hearings, including a brief description of the application(s) to be considered, as follows:

1. *Site plan and subdivision.* Notice shall be given to the general public by publication in a newspaper of general circulation in the City of Portland at least two times, the date of the first publication to be at least 10 calendar days prior to the workshop or hearing. Notice shall also be sent by regular United States mail at least 10 calendar days in advance of the workshop or hearing date to the applicant, the owner(s) of the subject property, and all owners of property located within 500 feet of the subject property, except that for subdivisions within industrial zones the notice range shall be 1,000 feet.
2. *Land Use Code or zoning map amendment.* Notice of public hearing shall be publicly posted in the municipal office at least 13 days before the public hearing on such application. In addition, notice of said public hearing must be published at least two times in a newspaper of general



circulation in the City of Portland. The date of the first publication must be at least 12 days prior to any public hearing and the date of the second publication must be at least seven days prior to the public hearing. For map amendments, notice shall be sent by regular United States mail to at least 13 calendar days in advance of any workshop or hearing date to all property owners within the area proposed for rezoning and all property owners 500 feet beyond said area, except that rezoning to industrial zone designations the notice range shall be 1,000 feet.

3. *Contract or conditional zoning.* Notice of public hearing shall be posted in the City Clerk's office at least 13 days prior to the public hearing and shall be published in a newspaper of general circulation within the city at least two times, the date of the first publication to be at least seven days prior to the hearing. Notice shall also be sent to the owners of all property abutting the property to be rezoned at their last known address. This notice shall contain a copy of the proposed conditions and restrictions, with a map indicating the property to be rezoned.

The cost of noticing shall be charged to the applicant.

- C. **Procedures.** The Planning Board shall adopt its own rules for the conduct of its business not inconsistent with the statutes of the state and this article. Such rules shall be filed with the Planning Authority and with the City Clerk. Any and all rule changes shall be placed on a City Council public agenda as a communication

requiring a public hearing. Any rule may be vetoed, in whole or in part, by order of the Council within 45 days of the date of filing with the City Clerk. No rules change shall take effect until that time period has elapsed. If a part of a rule is vetoed, the remainder shall continue in effect. Any rule so adopted, which is not required by the statutes of the state or by this article, may be waived by the chair upon good cause being shown. Except as otherwise provided in Subsection 2.1.8(A)(1), all meetings, hearings, and deliberations of the Planning Board and its committees shall be open to the public in accordance with Title 1 M.R.S. § 401 et seq. Testimony at any hearing may be required by the Planning Board to be given under oath.

- D. **Keeping of records.** The Director of the Department of Planning & Urban Development shall designate a member of their staff who shall attend all Planning Board proceedings. The staff shall provide for the keeping of minutes of the proceedings of the Board, showing the vote of each member on every question, or their absence or failure to vote, and shall maintain the permanent records and decisions of all Board meetings, hearings, and proceedings and all correspondence of the Board, as required by statute. Such records shall be public records open to inspection during working hours upon reasonable notice.

2.1.9 Record and decisions

- A. **Record.** The minutes of the staff, and the transcript if one is made, and all exhibits, papers, applications, and requests filed in any proceeding before the Planning Board and the

decision of the Board shall constitute the record.

- B. **Decision.** Every final decision of the Planning Board and every recommendation of the Planning Board to the City Council shall include written findings of fact, and shall specify the reason or reasons for such decision or recommendation. The Planning Authority shall mail notice of any decision of the Planning Board to the applicant.

2.1.10 Jurisdiction and authority

In addition to the jurisdiction conferred on it by other provisions of state law and the ordinances of the City and in accordance therewith, the Planning Board shall have the following jurisdiction and authority:

- A. To prepare and recommend a Comprehensive Plan to the City Council.
- B. To prepare and recommend to the City Council changes in and amendments to the Comprehensive Plan.
- C. To aid and assist the City Council and departments and agencies of the City in implementing general plans and in planning, developing, and completing specific projects.
- D. To hear, review, and approve, conditionally approve, or deny master development plans and major site plans.
- E. To hear, review, and approve, conditionally approve, or deny applications for subdivision approval.
- F. To hear, review, and approve or deny applications for conditional uses listed in Article 6.
- G. To hear, review, and offer its recommendations to the City Council on applications for amendments to, or revisions of, this Land Use Code.
- H. To review and offer its recommendations to the City Council on certain public projects.
- I. To review and approve, conditionally approve, or disapprove site plans for regulated projects in shoreland areas.
- J. To prepare and offer its recommendations to the City Council with regard to the City's annual Capital Improvement Program.
- K. Upon reasonable request, to make its special knowledge and expertise available to any official, department, board, or agency of the city, county, state, or federal governments to aid them in the performance of their respective duties relating to the planning and development of the city and its region, including request from the City Council to review proposed developments in which the developer does not have the right, title, or interest in all the property necessary for the proposed development because some or all of that property is owned by the City.
- L. To make such investigations, maps and reports, and recommendations in connection therewith, relating to the planning and development of the city as seem desirable.
- M. To employ or contract with such experts and other assistants as may be necessary or convenient to carry out its duties hereunder and to pay for their services and for such other expenses as may be necessary and proper, provided, however, that such expenditures shall

not exceed such funds as may be appropriated for such purposes by the City Council.

- N. To hear, review, and offer its recommendations to the City Council on petitions for street vacations and discontinuances.
- O. To hear, review, and decide appeals where it is alleged there is an error in any decision, requirement, or determination made by the Planning Authority.
- P. To approve, following a public hearing and at the recommendation of the Public Works Authority and the Planning Authority, *Technical Manual* and *Design Manual* standards, provided that such standards shall be additional to and consistent with the provisions of this Land Use Code, necessary and reasonable, and in accordance with sound engineering and urban design practice.

2.1.11 Administrative appeals

- A. **Application procedures.** An appeal may be taken to the Planning Board by any person affected by a final decision of the Planning Authority except as provided elsewhere in this Land Use Code. Such appeal shall be taken within 30 days of the action complained of by filing with the Planning Authority an application for appeal specifying the grounds thereof. The application shall be in such form as specified by the Planning Authority. A payment of a nonrefundable filing fee, as established by the City Council to cover administrative costs and costs of hearing, shall accompany each application. The Planning Authority shall forthwith transmit to the Planning Board all of the papers constituting the record upon which the action appealed from was taken.

- B. **Public hearing.** A public hearing shall be set, advertised and conducted by the Planning Board in accordance with the provisions of this article.
- C. **Action.** Within 30 days following the close of the public hearing, the Planning Board shall render a decision on the appeal in the manner and form specified in the provisions of this article and the statutes of the state. The failure of the board to act within 30 days shall be deemed a denial of the appeal unless mutually extended in writing by the appellant and the board. Within five days of such decision or failure to act notice thereof shall be mailed to each party.
- D. **Conditions and limitations.** Any right granted by the reviewing board on appeal shall be subject to the same conditions and limitations as if secured without the necessity of an appeal.

2.1.12 Planning Board appeals

An appeal from any final decision of the Planning Board as to any matter over which it has final authority may be taken by any party or by any authorized officer or agent of the City to the superior court in accordance with Rule 80B of the Maine Rules of Civil Procedure. No appeal shall lie concerning any matter as to which the power of the Board is limited to the making of a recommendation.

2.2 HISTORIC PRESERVATION BOARD

2.2.1 Composition

The Historic Preservation Board shall consist of seven voting members who shall serve without compensation. Members shall not be officers or employees of the City. Members shall have demonstrated interest, knowledge, ability, experience, or expertise in restoration,

rehabilitation, or neighborhood conservation or revitalization and shall be residents of the city.

2.2.2 Appointments

- A. **Terms.** Members shall be appointed by the Council for terms of three years. Appointments shall be staggered so that the terms of not more than three members expire in any calendar year. Members may serve for three consecutive three-year terms.
- B. **Vacancies.** Vacancies on the Historic Preservation Board shall be filled within 60 days. However, every member shall continue in office after expiration of the term until a successor has been appointed. Vacancies on the Historic Preservation Board shall be filled for the unexpired term of the former member.

2.2.3 Removal of members

Members may be removed for cause by the Council. Cause shall include, but is not limited to, the failure to attend meetings without good cause. Any member proposed to be removed shall be given written notice and an opportunity to be heard prior to final action.

2.2.4 Officers

- A. **Election and terms.** Officers of the Historic Preservation Board shall consist of a chair and vice chair. Officers shall be elected by the Historic Preservation Board and shall serve a term of one year and shall be eligible for re-election.
- B. **Chair.** The chair shall preside at all meetings and hearings and fulfill the customary functions of that office.

- C. **Vice chair.** In the absence of the chair, the vice chair shall act as chair and shall have all the powers of the chair. The vice chair shall have such other powers and duties as may be provided by the rules of the Historic Preservation Board.

2.2.5 Conflicts

No member of the Historic Preservation Board shall participate in the hearing or disposition of any matter in which he or she has an interest.

2.2.6 Meetings and procedures

- A. **Meetings.** Regular meetings of the Historic Preservation Board shall be held no less frequently than monthly. Special meetings may be called by the chair or any four members or at the request of the chair of the Planning Board.
- B. **Notice.** The Planning Authority shall give notice of the time and place of Historic Preservation Board public workshops and hearings, including a brief description of the application(s) to be considered, as follows:
 1. *Landmark or district nomination.* Notice shall be given to the general public by publication in a newspaper of general circulation in the City of Portland at least two times, the date of the first publication to be at least 10 calendar days prior to the workshop or hearing. Notice shall be sent by regular United States mail at least 10 calendar days in advance of the workshop or hearing date to the applicant and to the owner(s) of the subject property or properties.



2. *Certificate of Appropriateness review.* Notice shall be given to all property owners within 100 feet of the property at least seven days prior to the date of the workshop or public hearing.
3. *Major site plan review.* For alteration or new construction that is classified as a major site plan under Article 14, notice shall be given to all property owners within 500 feet of the property at least seven days prior to the date of the workshop or hearing.

The cost of noticing shall be charged to the applicant.

- C. Procedures.** The Historic Preservation Board may adopt procedural rules for the conduct of its business not inconsistent with this article, including the creation of a subcommittee structure to enhance efficiency in consideration of Historic Preservation Board business. Such rules shall be filed with the Planning Authority and with the City Clerk. All such rules shall be subject to veto, in whole or in part, by the Council within 45 days of such filing. The initial rules shall take effect when filed, subject to veto as provided above. Amendments to the rules shall take effect upon expiration of said veto period. Any rule may be waived by the chair upon good cause being shown.

2.2.7 Record and decisions

- A.** The Director of the Department of Planning & Urban Development or their designated staff representative shall attend all Historic Preservation Board meetings. The staff shall provide for the keeping of tape recordings or

minutes of the proceedings of the Historic Preservation Board, showing the vote of each member on every question or their absence or failure to vote, and shall maintain the records and decisions of all meetings, hearings, and proceedings and all correspondence of the Historic Preservation Board. Copies of permanent records shall be filed with the City Clerk. Staff shall publish and distribute copies of the records, reports, and decisions of the Historic Preservation Board to Historic Preservation Board members and to others upon approval of the Historic Preservation Board.

- B.** No final action shall be taken by the Historic Preservation Board which could in any manner deprive or restrict the owner of a property in its use, alteration, maintenance, disposition, or demolition until such owner either has knowledge of the proceeding or is sent notice offering opportunity to be heard. This paragraph shall not affect the interim protection provisions of Section 17.6.
- C.** Every recommendation or recommended decision of the Historic Preservation Board shall include written findings of fact and shall specify the reason or reasons for such action.
- D.** Staff shall mail notice of any final determination or recommendation of the Historic Preservation Board to the applicant and property owner(s).

2.2.8 Responsibilities

The Historic Preservation Board shall have the following responsibilities:

- A.** To conduct or administer an ongoing survey to identify historically, culturally, architecturally,

and archaeologically significant areas, sites, structures, and objects.

- B. To review all areas, sites, structures, and objects listed in the National Register of Historic Places, including the boundaries of areas so listed, and make recommendations to the Planning Board and City Council for the designation of those areas, sites, structures, and objects as local landmarks or districts.
- C. To investigate and recommend to the Planning Board and City Council the designation of areas, sites, structures, and objects not listed in the National Register of Historic Places as local landmarks and districts and to make recommendations to the Planning Board concerning sites, structures, and objects that have contributing significance or are intrusions within nominated or designated districts.
- D. To keep and make available to the public a register of all areas, sites, structures, and objects that have been designated as landmarks or districts, including all information required as part of each designation.
- E. Upon request, to advise and assist owners of landmarks and property, sites, structures, or objects within districts on physical and financial aspects of preservation, renovation, rehabilitation, and reuse and for procedures for inclusion on other registers of significant areas, sites, structures, and objects, including the National Register of Historic Places.
- F. To recommend to the Planning Board the nomination of areas, sites, structures, and objects to the National Register of Historic Places or to any State of Maine Register of Historic Places that may be established.
- G. To participate in the Certified Local Government Program of the National Historic Preservation Act Amendments of 1980 and the Maine Historic Preservation Commission, and carry out any responsibilities delegated to it under that program, including review and comment on any National Register nominations submitted to the Historic Preservation Board.
- H. To seek funding for which the City of Portland is eligible through the Certified Local Government Program to assist in local preservation projects, including projects undertaken by local non-profit organizations.
- I. To, upon request by the City Council, participate in any review of federal actions or undertakings pursuant to Section 106 of the National Historic Preservation Act, attend informational and educational programs sponsored by the Maine Historic Preservation Commission, and prepare an annual report of the activities of the Historic Preservation Board.
- J. To inform and educate the citizens of Portland concerning the cultural, historic, architectural, and archeological heritage of the city by publishing appropriate maps, newsletters, brochures, and pamphlets and by sponsoring programs and seminars.
- K. To hold meetings and public hearings to review applications for Certificates of Appropriateness affecting proposed or designated landmarks and districts and to recommend approval or disapproval of Certificates of Appropriateness.
- L. To provide testimony to the Board of Appeals in connection with any application for a Certificate of Economic Hardship.

- M. To develop design guidelines affecting landmarks or districts for review and approval by the Planning Board.
- N. To advise the Planning Board as to recommendations on any preservation or conservation easements that the City of Portland may have or be offered as a gift or otherwise.
- O. To advise the Planning Board as to the administration of such gifts, grants, and money as may be appropriated for the purposes of this article upon authorization and approval by the City Council.
- P. To provide comment, as appropriate, to the Planning Board and/or City Council on matters pertaining to historic preservation in Portland.
- Q. To confer recognition upon the owners of landmarks or properties, sites, structures, or objects within districts by means of certificates, plaques, or markers.
- R. To assist the Planning Board in the development of a preservation component in the Comprehensive Plan of the City of Portland.
- S. To periodically review the Land Use Code and to make recommendations to the Planning Board concerning any amendments appropriate for the protection and continued use of landmarks or properties, sites, structures, or objects within districts.

2.2.9 Administrative appeals

- A. **Application procedures.** An appeal may be taken to the Historic Preservation Board by any person affected by a decision of the Planning Authority relative to Article 17. Such appeal shall be taken within 30 days of the action complained of by filing with the Planning Authority an application for appeal specifying

the grounds thereof. The application shall be in such form as specified by the Planning Authority. A payment of a nonrefundable filing fee, as established by the City Council to cover administrative costs and costs of hearing, shall accompany the application. The Planning Authority shall forthwith transmit to the Historic Preservation Board all of the papers constituting the record upon which the action appealed from was taken.

- B. **Public hearing.** A public hearing shall be set, advertised, and conducted by the Historic Preservation Board in accordance with the provisions of this article.
- C. **Action.** Within 30 days following the close of the public hearing, the Historic Preservation Board shall render a decision on the appeal in the manner and form specified in the provisions of this article and the statutes of the state. The failure of the board to act within 30 days shall be deemed a denial of the appeal unless mutually extended in writing by the appellant and the Board. Within five days of such decision or failure to act notice thereof shall be mailed to each party.
- D. **Conditions and limitations.** Any right granted by the board on appeal shall be subject to the same conditions and limitations as if secured without the necessity of an appeal.

2.2.10 Historic Preservation Board appeal

- A. **Historic Preservation Board decision.** An appeal from any final decision of the Historic Preservation Board as to any matter over which it has final authority may be taken by any party or by any authorized officer or agent of the City to the Planning Board, adhering to the requirements of Subsection 2.1.11 of this article.

- B. The Planning Board shall deny the appeal unless it finds that the action of the Historic Preservation board was arbitrary or capricious or was not based on substantial evidence. Review by the Planning Board under this subsection is intended to be appellate in nature. Except where the Planning Board determines that injustice would result, the Planning Board shall determine the appeal without considering any facts or arguments which were not presented to the Historic Preservation Board. Where the Planning Board finds it necessary to consider such new evidence in order to do substantial justice, it shall remand the matter to the Historic Preservation Board for further consideration, unless it determines that the resulting delay is likely to result in undue hardship to the applicant.
- C. **Planning Board decision.** The Planning Board's decision on an appeal from a decision of the Historic Preservation Board shall be final with respect to the application or matter initially presented to the Historic Preservation Board. An appeal from any final decision of the Planning Board as to any matter over which it has final authority may be taken by any party or by any authorized officer or agent of the city to the superior court in accordance with Rule 80B of the Maine Rules of Civil Procedure. No appeal shall lie concerning any matter as to which the power of the board is limited to the making of a recommendation.

2.3 ZONING BOARD OF APPEALS

2.3.1 Composition

There shall be a Board of Appeals of seven members. Members of the Board shall be residents of the city and shall not be officers or employees of the City or any of its agencies or departments. Members shall serve without compensation.

2.3.2 Appointments

- A. **Terms.** The members of the Board of Appeals shall be appointed by the City Council for terms of three years. Terms shall be staggered so that the terms of no more than three members shall expire in any calendar year. Such members shall serve until their successors are duly elected and qualified provided, however, that such service shall not extend to over 120 days after expiration of their term. Members may serve for three consecutive three-year terms.
- B. **Vacancies.** Permanent vacancies on the Board of Appeals shall be filled by the City Council, in the same manner as other appointments under this article, for the unexpired term of a former member whose place has become vacant.

2.3.3 Removal of members

Any member of the Board of Appeals may be removed for cause by the City Council at any time, provided, however, that before any such removal, such member shall be given an opportunity to be heard in their own defense at a public hearing.

2.3.4 Officers

- A. Chair.** The members of the Board of Appeals shall annually elect one of their number as chair to preside at all meetings and hearings and to fulfill the customary functions of that office. In the absence of the chair, the secretary shall act as chair and shall have all the powers of the chair.
- B. Secretary.** The members of the Board of Appeals shall annually elect one of their number as secretary. The secretary shall fulfill the duties provided by statute and this article and have such other duties as may be provided by the rules of the board.
- C. Pro tempore officers.** In the absence of both the chair and the secretary, the board shall elect a chair pro tempore from among its number and the chair pro tempore shall have all the powers of the chair during the chair's and the secretary's absence. In the absence of the secretary, or when the secretary is serving as chair, the board shall elect a secretary pro tempore from among its number and the secretary pro tempore shall have all the powers of the secretary during the secretary's absence or service as chair.

2.3.5 Quorum and necessary vote

No business shall be transacted by the Board of Appeals without a quorum, consisting of four members, being present. The concurring vote of at least four members of the board shall be necessary to grant any request or application or to sustain any appeal. Any matter that receives fewer than four votes shall be deemed to have been denied.

2.3.6 Conflicts

No member of the Board of Appeals shall participate in the hearing or disposition of any matter in which he or she has an interest. Any question of whether a member has a conflict of interest sufficient to disqualify him or her shall be decided by a majority vote of the members, except the member who is being challenged. Where such a vote results in a tie, the challenged member shall be deemed disqualified.

2.3.7 Meetings and procedures

- A. Staff.** The Building Authority or their designee shall serve as staff to the Board of Appeals.
- B. Meetings.** Regular meetings of the Board of Appeals shall be held at the call of the chair or as provided by the rules of the board. Special meetings shall be called by the chair at the request of any two members of the board or at the request of the City Council. All meetings and hearings of the board shall be open to the public. For all matters properly brought before the Board of Appeals, the board shall select a reasonable time and place for a public hearing following the submission of the subject application.
- C. Notice.** The Building Authority shall give notice of public hearings in the form and manner and to the persons herein specified. The notice shall include the time and place of such hearing, a description of the contents of the matter to be heard and the address or location of the property involved. Where notice by mail is required, it shall be mailed at least seven days in advance of the hearing date by regular United States mail. Notices shall be given to each of the following as specified:

1. In all cases, to the petitioner.
2. In all cases, to all residents of the city by publication in a newspaper of general circulation in the city at least once, not more than 30 nor less than five days before the date of the hearing, and by mail to the applicant.
3. In the case of hearings relating to zoning appeals, a variance, or a conditional use, to the Planning Board and City Council by reasonable means.
4. In the case of hearings relating to a variance request from the provisions of Article 11, the application and all supporting information supplied by the applicant shall be forwarded to the State of Maine Commission of the Department of Environmental Protection at least 20 days prior to action by the board.
5. In the case of hearings related to a variance or conditional use, by mail to the owners of all the property within 500 feet of such parcel or tract.
6. In the case of hearings related to all other appeals, by mail to the owners of property directly abutting, and directly across a street or alley from the subject property.

For purposes of this subsection, the owners of property shall be considered to be the parties listed by the Assessor's Department as those against whom taxes are assessed. Failure of any property owner to receive a notice of public hearing shall not necessitate another hearing and shall not invalidate any action of the board. The cost of noticing shall be charged to the applicant.

D. Procedures. The Board of Appeals shall adopt its own rules of procedure for the conduct of its business not inconsistent with the statutes of the state and this article. Such rules shall be filed with the City Clerk. Any rule so adopted which relates solely to the conduct of hearings, and which is not required by the statutes of the state or by this article, may be waived by the board upon good cause being shown.

1. *Conduct of hearings.*
 - a. Any person may appear and testify at a public hearing, either in person or by a duly authorized agent or attorney, and may submit documentary evidence, provided, however, that the Board shall exclude irrelevant, immaterial and unduly repetitious evidence.
 - b. The applicant and any abutter or similar person with standing shall in addition have the right to present witnesses on their own behalf and offer rebuttal evidence, to cross examine all witnesses testifying in opposition to their position through the chair, and to examine and introduce any documents produced at the hearing.
2. All other matters pertaining to the conduct of hearings shall be governed by the provisions of the relevant state statutes, this article, and the rules promulgated by the Board of Appeals.

2.3.8 Records and decisions

- A. Record.** The recording of testimony, if any, and all exhibits, papers, applications, and requests filed in any proceeding before the Board of Appeals and the decision of the board shall constitute the record.
- B. Decision.** Every decision of the Board of Appeals shall include findings of the fact, shall refer to the evidence in the record and the exhibits, plans or specifications upon which such decision is based, shall specify the reason or reasons for such decision, and shall contain a conclusion or statement separate from the findings of fact setting forth the specific relief granted or denying relief. The Building Authority shall hand deliver or mail a copy of the decision to the applicant, the Planning Board, and City Council within seven days of such decision, and shall also file the decision with the City Clerk.

2.3.9 Jurisdiction and authority

The Board of Appeals shall have the following jurisdiction and authority:

- A.** To hear and decide appeals from the granting or denial of any permit required by Chapter 6, Article II or Chapter 10 of the City of Portland Code of Ordinances.
- B.** To hear and decide appeals from any decision or order made by the Building Authority pursuant to the provisions of this chapter, except that decisions relating to enforcement of the Shoreland Zone provisions of this chapter may not be appealed to the Board of Appeals and may only be appealed directly to Superior Court in accordance with M.R. Civ. P. 80B and 30-A M.R.S. §§ 2691 & 4483.

- C.** To review interpretations of the Zoning Administrator or their designee, except that decisions on such interpretations shall be advisory only and shall not be appealable.
- D.** To hear and grant or deny applications for variances from the terms of this Land Use Code, including but not limited to terms related to use; dwelling unit conversion; space and bulk, such as lot size, density, and setbacks; parking; loading; and signs.
- E.** To hear and grant or deny applications for conditional uses, as specified in Article 6.

2.3.10 Administrative appeals

- A. Application procedures.** Application for any appeal to the board shall be submitted to the Building Authority. A payment of a nonrefundable application fee, as established by the City Council to cover administrative costs and costs of a hearing, shall accompany each application. The application shall be in such form as prescribed by the Building Authority.
- B. Public hearing.** A public hearing shall be set, advertised and conducted by the Board of Appeals in accordance with Subsection 2.3.7.
- C. Standard of review.** The standard of review for appeals pursuant to Subsections 2.3.9(A), (B), and (C) shall be de novo. The appellant shall bear the burden of proof.
- D. Conditions and limitations on rights granted by appeal.** Any right granted by the Board of Appeals on appeal shall be subject to the same conditions and limitations as if secured without the necessity of an appeal.

2.3.11 Variances

A. Application procedures

1. Application for a variance shall be submitted to the Building Authority. A payment of a nonrefundable application fee, as established from time to time by the City Council to cover administrative costs and costs of a hearing, shall accompany each application. The application shall be in such form as prescribed by the Building Authority.
2. A public hearing shall be set, advertised, and conducted by the Board of Appeals in accordance with Subsection 2.3.7.
3. All decisions by the board shall be rendered in a manner and form not inconsistent with the statutes of this state.

B. Undue hardship variance. An undue hardship variance may be granted by the board only where strict application of the ordinance, or a provision thereof, to the petitioner and his or her property would cause undue hardship. The words “undue hardship” as used in this subsection mean the following:

1. The land in question cannot yield a reasonable return unless a variance is granted.
2. The need for a variance is due to the unique circumstances of the property and not to the general conditions in the neighborhood.
3. The granting of a variance will not alter the essential character of the locality.
4. The hardship is not the result of action taken by the applicant or prior owner.

C. Disability variance

1. *By the Board of Appeals.* Notwithstanding the provisions of subsection (B) above, the board may grant a variance to an owner of a residential dwelling for the purpose of making that dwelling accessible to a person with a disability who resides in or regularly uses the dwelling. The board shall restrict any variance granted under this subsection solely to the installation of equipment or the construction of structures necessary for access to or egress from the dwelling by the person with the disability. The board may impose conditions on the variance, including limiting the variance to the duration of the disability or to the time that the person with the disability lives in the dwelling. The term “structures necessary for access to or egress from the dwelling” shall include railing, wall, or roof systems necessary for the safety or effectiveness of the structure. For the purpose of this subsection, a disability has the same meaning as a physical or mental disability under 5 M.R.S. § 4553.
2. *By the Building Authority.* Notwithstanding the provisions of subsections (B) and (C(1)) above, the Building Authority may issue a permit to the owner of a dwelling for the purpose of making a dwelling accessible to a person with a disability who resides in or regularly uses the dwelling. If the permit requires a variance, the permit is deemed to include that variance solely for the installation of equipment or the construction of

structures necessary for access to or egress from the dwelling for the person with a disability.

D. Practical difficulty variance. Notwithstanding the provisions of subsections (B) and (C) above, the Board of Appeals may grant a variance from the dimensional standards of this Land Use Code that relate to lot area, lot coverage, frontage, and setback requirements when strict application of these standards would both preclude a permitted use of the property and result in significant economic injury to the applicant. Significant economic injury shall mean that the value of the property if the variance were denied would be substantially lower than its value if the variance were granted. To satisfy this standard, the applicant need not prove that denial of the variance would mean the practical loss of all beneficial use of the land. In granting a practical difficulty variance, all of the following conditions must be found to exist:

1. The need for a variance is due to the unique circumstances of the property, and not to the general conditions in the neighborhood.
2. The granting of the variance will not produce an undesirable change in the character of the neighborhood and will not have an unreasonably detrimental effect on either the use or fair market value of abutting properties.
3. The practical difficulty is not the result of action taken by the applicant or a prior owner.
4. No other feasible alternative is available to the applicant, except a variance.

5. The granting of a variance will not have an unreasonably adverse effect on the natural environment.
6. The property is not located, in whole or in part, within a shoreland area, as defined in 38 M.R.S. § 435, nor within a Shoreland Zone or flood hazard area, as defined in this Land Use Code.

E. Specified variances prohibited

1. No use permitted in medium- and high-density residential zones shall be permitted in low-density residential zones. No use permitted in mixed-use or office zones shall be permitted in any residential zone. No use permitted in industrial and airport zones shall be permitted in any mixed-use, office, or residential zone. No use permitted in residential zones shall be permitted in any industrial or airport zone. The general use categories are listed below:
 - a. Low-density residential: IR-1, IR-2, IR-3, R-1, R-2, R-3.
 - b. Medium- and high-density residential: R-4, R-5/R-5a, R-6/R-6a.
 - c. Mixed-Use/Office: B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, B-4, B-5/B-5b, B-6, B-7, I-B, R-P, O-P.
 - d. Industrial: I-L/I-Lb, I-M/I-Ma/I-Mb, I-H/I-Hb, A-B.
2. A variance may only be granted with respect to the generally applicable space and bulk requirements of the zone in which the property is located and not from any provision that allows a deviation from those requirements.

3. No variance shall be granted which would permit the creation of a lot or parcel that cannot be developed in compliance with the zoning, subdivision, and other regulations applicable thereto.
4. No variance shall be granted which would result in a use or development of the lot or parcel in question which would not be in harmony with the general purpose and intent of this Land Use Code or the Comprehensive Plan; which would be materially detrimental to the public welfare or materially injurious to the enjoyment, use, or development of property or improvement permitted in the vicinity; or which would materially impair an adequate supply of light and air to properties and improvements in the vicinity, substantially increase congestion in the public streets, increase the danger of flood or fire, or endanger the public safety.
5. No variance shall be granted which would be greater than the minimum variance necessary to relieve the undue hardship or the hardship of the applicant.
6. No variance shall be granted from the minimum lot sizes set forth in Subsection 4.3.1 for lots in the IR-1 and IR-2 zones.
7. No variance shall be granted from the requirements in Subsection 6.4.1.

F. Conditions on variances; variances less than requested. Reasonable conditions and safeguards relating to construction, character, location, landscaping, screening, and other matters may be imposed upon the premises benefited by a variance as considered

necessary to prevent injurious effects upon other property and improvements in the vicinity or upon public facilities and services. Such conditions shall be expressly set forth in the resolution granting the variance and in the notice informing the applicant thereof. Violation of such conditions and safeguards shall be a violation of this article. A variance less than or different from that requested may be granted when the record supports the applicant's right to some relief but not to the relief requested.

- G. Limitations on variances.** No variance permitting the erection or alteration of a building shall be valid for a period longer than two years, unless a building permit for such erection or alteration is issued and construction is actually begun within that period and is thereafter diligently pursued to completion. No variance relating to the establishment or maintenance of a use not involving a building or structure shall be valid for a period longer than two years, unless an occupancy permit is issued and a use commenced within such period.
- H. Recording of variances.** No variance shall be valid unless, within 90 days of final approval of the variance, a certificate describing the variance has been recorded by the applicant for the variance in the registry of deeds as required by 30 M.R.S. § 4353(5).

2.3.12 Violations

In addition to any other remedies available, the Board of Appeals after notice and hearing may revoke any variance or other relief granted under

this section when the provisions of this chapter or the conditions under which the relief was granted have not been complied with.

2.3.13 Appeals

An appeal from any final decision of the Board of Appeals may be taken by any aggrieved party to the superior court in accordance with Rule 80B of the Maine Rules of Civil Procedure and 30-A M.R.S. §§ 2691 & 4483, except as otherwise specifically provided in this article.



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Adult business establishment. Any business, including but not limited to any bookstore, newsstand, novelty store, nightclub, bar, cabaret, amusement arcade, or theater, which:

- A. Keeps for public patronage or permits or allows the operation of any adult amusement device as defined in Chapter 4 of the City of Portland Code of Ordinances; or
- B. Customarily, meaning more often than an average of one calendar week during any calendar month of operation, exhibits motion pictures or displays any other visual representation described or advertised as being “X rated” or “for adults only,” or which customarily excludes persons from any portion of the premises by reason of immaturity of age by the use of such, or similar, phrases; or
- C. Is adjudged to be in violation of 17 M.R.S. §§ 2911, 2912.

Affordable housing. Housing for which the percentage of income a household is charged in rent and other housing expenses or must pay in monthly mortgage payments (including condominium/HOA fees, mortgage insurance, other insurance and real estate taxes), does not exceed 30% of a household’s income, or other amount established in City regulations that does not vary significantly from this amount.

After-hours entertainment license. Any of the music, dancing, and special entertainment licenses required or authorized by Chapter 4, Article III of the City of Portland Code of Ordinances.

Agriculture. The practice of farming, including the cultivation of the soil for the growing of crops and rearing of animals to provide food and other products. Agriculture may include nurseries, greenhouses, and truck gardens, provided that there is no sale of products not produced on the premises.

Airport restricted access areas. Runways, taxiways, and other areas of the Jetport accessible to aircraft, whether access is restricted by the Federal Aviation Administration or not.

Alley. Any way designed primarily for vehicular and pedestrian or utility access to the back or side of premises otherwise abutting on a street, except driveways unless officially designated otherwise.

Animal-related services. Establishments principally for the training or boarding of animals. Such uses shall not include veterinary services.

Approval. An affirmative decision on an application, including an approval with conditions.

Appurtenance. A device or structure not designed for human occupancy and attached to the exterior of a building.

Auto service station. A business selling gasoline, diesel, or propane fuel, providing services specific to electric vehicles, or providing motor vehicle repairs including, but not limited to, tune-ups, engine repair, brake work, muffler replacement, tire repair, or similar activities. Such businesses may also include car-washes and/or vacuums.

Back office use. An office-related use with minimal public visitation and minimal direct service to the general public, primarily to provide support services to larger organizations such as educational institutions, social service agencies, or business headquarters.

Bar. Any establishment required to be licensed to sell alcoholic beverages for on-premises consumption, which is not regularly used for the purpose of providing full-course meals, as defined in Title 28-A of the Maine Revised Statutes, on the premises.

Bed and breakfast. A building that contains between two and nine guest rooms; is used to provide or offer overnight accommodations for transient guests; has an owner, manager, or operator living in the building as a permanent resident; does not provide cooking facilities in any of the guest rooms; and does not provide meals other than breakfast, which shall be offered only to overnight guests.

Blasting operations. The use of explosives for purposes of breaking up and removing soil, rock, and ledge, related to construction and development of real estate within the city.

Building. A roofed and walled structure built for permanent use.

Building, accessory. A detached roofed and walled structure that is incidental and subordinate in area and extent, and/or use to the principal building(s) on the property. A lot may have more than one accessory building.

Building addition. Any increase to footprint, floor area, or volume of an existing building.

Building alteration. A change or rearrangement in the structural supports, exterior appearance, or removing from or otherwise affecting the exterior appearance of a building.

Buildings, attached. Two or more independent buildings that share at least one common party wall but have full building separation and independent principal entries; not free-standing. Attached buildings may or may not have common ownership.

Building, principal. The main roofed and walled structure on a lot having the predominant area, extent, and/or use. A lot may have more than one principal building. When a garage is attached to the principal building in a substantial manner as by an enclosed area with roof or common wall, it shall be considered as a part of the principal building.

Clinics. Any establishment where patients are examined and treated by one or more health care providers, such as, but not limited to, physicians, dentists, psychologists, or social workers. Clinics may include laboratory services and facilities for ambulatory or outpatient surgical procedures.

Coastal wetland. All tidal and subtidal lands; all lands with vegetation present that is tolerant of salt water and that occurs primarily in a salt water or estuarine habitat; and/or any swamp, marsh, bog, beach, flat, or other contiguous low land that is subject to tidal action during the highest tide level for the year in which an activity is proposed as identified in tide tables published by the National



Ocean Service. Coastal wetlands may include portions of coastal sand dunes.

Commercial vessel. Any watercraft used principally in a business or trade, including common carriers of passenger or freight, whether for governmental, nonprofit, or emergency purposes, but not including pleasure craft used principally for recreational purposes.

Common areas. Portions of a lodging house which are available for use by all residents of the lodging house. Common areas shall include, but are not limited to, one or more of the following: kitchens, living rooms, recreation rooms, improved basements, and finished porches. Bathrooms, stairways, hallways, and storage areas shall not be counted as common areas.

Communication studio. A commercial or public communication facility, including radio and television broadcasting and receiving stations and studios.

Community hall. A building or portion of a building used for social, recreational, artistic, civic, or educational community functions. Such a facility would be open to the public for such functions, which, for example, could include but not be limited to performances, dance, exhibitions, cultural exchange, training programs and workshops, neighborhood meetings, or gatherings. As part of these functions and activities, it shall be permissible to serve food, subject to other applicable codes and ordinances.

Condominium. Any interest in real estate created pursuant to the Unit Ownership Act, 33 M.R.S. § 560

et seq., or its equivalent, as it may from time to time be amended.

Congregate care facility. A residential development which provides individual living or dwelling units with support services which provide assistance to residents. Services to be provided shall include the following:

- A. Transportation for essential support activities. This service shall be included in the base rent;
- B. Provision of at least one meal per day.
- C. Programmed social activities which are facilitated by staff. This service shall be included in the base rent.
- D. Provision of personal care services including, but not limited to, housekeeping, laundry, and minimal health monitoring.
- E. Installation of emergency call buttons or systems in each congregate care living unit.

The population of a congregate care facility shall consist of persons 55 years of age or older and their spouses and/or disabled persons and their spouses.

Correctional pre-release facility. A facility housing up to 12 persons, plus staff, serving a primary clientele of persons in correctional pre-release programs.

Drive-through. A facility which provides a service directly to a motor vehicle occupant and where the customer drives a motor vehicle onto the premises and to a window or mechanical device through or by which the customer is served with or without exiting the vehicle. Drive-throughs do not include major or minor auto service stations.

Drive-through features. Features associated with drive-throughs including but not limited to



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designated travel or stacking lanes, intercom systems, menu boards, service windows, kiosks, mechanical devices, etc.

Dwelling unit. One or more rooms forming a single unit for habitation by one family, including food preparation, living, sanitary, and sleeping facilities.

Dwelling, multi-family. A building or portion thereof containing three or more dwelling units.

Dwelling, single-family. A single building containing one dwelling unit.

Dwelling, two-family. A single building containing two dwelling units.

Earth-moving activity. Any removal or placement, excavation, filling, stockpiling, or grading of soil, earth, loam, sand, gravel, rock, and other mineral deposits.

Easement. A right, privilege, or liberty which one has in land owned by another for some special and definite purpose.

Emergency operations. Operations conducted for the public health, safety, or general welfare, such as protection of resources from immediate destruction or loss, law enforcement, and operations to rescue human beings and livestock from the threat of destruction or injury.

Emergency shelter. A facility providing temporary overnight shelter to homeless individuals in a dormitory-style or per-bed arrangement.

Entrance, principal. The main point of access for pedestrians into a building. A building may have more than one principal entrance.

Esplanade. That portion of a street which is located between the curblineline and the edge of the sidewalk closest to the street.

Essential services. The construction, alteration, or maintenance of gas, electrical, or communication facilities; steam, fuel, electric power, or water transmission or distribution lines, towers and related equipment; telephone cables or lines, poles, and related equipment; gas, oil, water, slurry, or other similar pipelines; municipal sewage lines, collection, or supply systems; and associated storage tanks. Such systems may include towers, poles, wires, mains, drains, pipes, conduits, cables, fire alarms and police call boxes, traffic signals, hydrants, and similar accessories, but shall not include service drops or buildings which are necessary for the furnishing of such services.

Explosives. Any material or container containing a chemical compound or mixture that is commonly used or intended for the purpose of producing an explosion and that contains any oxidizing and combustible materials or other ingredients in such proportions, quantities, or packaging that an ignition by fire, by friction, by compound or mixture may cause such a sudden generation of highly heated gasses that the resultant gaseous pressures are capable of producing destructive effects on contiguous objects, but shall not mean the components for handloading rifle, pistol and shotgun ammunition, or fireworks.



Family. One or more individuals related by blood, marriage, civil union, adoption, or guardianship and/or up to eight unrelated individuals living together in a dwelling unit as a single nonprofit housekeeping unit.

Fill. Soil, earth, loam, sand, gravel, rock and other mineral deposits.

Filling. The placement of soil, earth, loam, sand, gravel, rock and other mineral deposits. Filling shall include stockpiling.

Fixture, fully shielded. A light fixture or luminous tube constructed and mounted such that all light emitted by the fixture or tube, either directly from the lamp, tube, or a diffusing element, or indirectly by reflection or refraction from any part of the light fixture, is projected below the horizontal. If the lamp or tube, any reflective surface, or lens cover (clear or prismatic) is visible when viewed from above or directly from the side, from any angle around the fixture or tube, the fixture or tube is not fully shielded.

Flag. A fabric sheet of square, rectangular, or triangular shape having no enclosing or supporting framework that is typically mounted on a pole.

Foundation. The supporting substructure of a building or other structure, excluding wooden sills and post supports, but including basements, slabs, frost walls, or other base consisting of concrete, block, brick, or similar material.

Freshwater wetland. Freshwater swamps, marshes, bogs, and/or similar areas which are both:

- A. Of ten or more contiguous acres or of less than ten contiguous acres and adjacent to a surface water body except for any river, stream or brook such that, in a natural state, the combined surface area is in excess of ten acres or of less than ten acres that is depicted on the Shoreland Zoning map.
- B. Inundated or saturated by surface or ground water at a frequency and for a duration sufficient to support, and which under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soils.

Freshwater wetlands may contain small stream channels or inclusions of land that do not conform to the criteria of this definition.

General office. An office for the conducting or managing of a business or the practice of a profession, including that of a licensed health care provider, so long as such office does not include laboratory services and facilities for ambulatory surgical procedures.

General services. Establishment primarily engaged in rendering services to persons or business on a fee basis, including but not limited to banks, health clubs, laundries, employment services, management services, personnel services, or maintenance services.

Handicapped family unit. A dwelling unit which provides living facilities for handicapped persons. A handicapped family unit may also provide counseling and support services. Staff members may also be included in the population.

Helistop. An area used for the landing of helicopters at any location other than an airport. Such area shall include a landing area or pad, and may include parking required for access to the landing area or pad, a loading and unloading area for emergency vehicles, and other related facilities other than maintenance and repair facilities.

Hospital. An institution providing health services, primarily on an inpatient basis, and medical or surgical care of the sick or injured, including as an integral part of the institution such related facilities as laboratories, outpatient departments, training facilities, central service facilities, and staff offices.

Hostel. An overnight lodging facility for transient guests that provides sleeping rooms and common spaces for cooking. A hostel shall not be used as an emergency shelter.

Hotel. A building used for more or less temporary occupancy of individuals who are lodged with or without meals.

Impervious surface. Area covered with low-permeability material that is highly resistant to infiltration by water, such as asphalt, concrete, or rooftop, and areas such as gravel roads and unpaved parking areas that will be compacted through design or use to reduce their permeability.

Industrial, high-impact. Industrial activity involving the manufacturing, packaging, assembly, or distribution of finished products from either raw materials or previously prepared material which are generally incompatible with residential, commercial, and lower-impact industrial uses and sensitive

natural areas due to their high generation of traffic, noise levels, emissions, lighting, and odors.

Industrial, low-impact. Industrial activity involving the manufacturing, packaging, assembly, or distribution of finished products from previously prepared material, including but not limited to the following: artist studios, bakeries; breweries; distilleries; bottling; coffee roasters; commercial kitchens; pharmaceuticals; machine shops; watchmakers; makers of precision instruments, musical instruments, toys and sporting goods, pottery and ceramics using only previously pulverized clay, wood products, jewelry; assembly of electrical components; canteen services; tool and die shops; plant and tree nurseries; and the packaging of foods. Low-impact industrial uses do not include the processing of raw materials or salvaging operations. Low-impact industrial uses are generally compatible, due to their size and nature of impact, with residential, commercial and other low impact industrial uses.

Intermediate care facility. A facility which provides, on a regular basis, health-related care and services for more than 13 individuals who do not require the degree of care and treatment which a hospital or extended care facility is designed to provide but who, because of their mental or physical condition, require such care and services above the level of room and board. Said facility must be licensed as a board care, residential care facility or equivalent pursuant to the regulations promulgated by the State of Maine Department of Health and Human Services.



Kitchen facilities. Facilities used for the preparation of meals, including refrigerators and devices used for the cooking and preparation of food.

Lodging house. A house, building or portion thereof containing two or more rooming units, as well as common areas, and providing such units to individuals on not less than a monthly basis for compensation.

Long-term or extended care facility. An institution or a distinct part of an institution that is licensed or approved to provide full-time convalescent or chronic care, or health care under medical supervision for 24 or more consecutive hours, to nine or more individuals who, by reason of advanced age, illness, or infirmity are unable to care for themselves, and who are not related to the governing authority by marriage, blood, or adoption.

Lot. A parcel or area of land that is designated as an individual unit for use, development, or ownership that is either: a) a parcel or area of land that is separately described in a deed or on a plan recorded in the Cumberland County Registry of Deeds; b) a contiguous combination of such lots under common ownership and designated as one unit for development; or c) a newly established parcel meeting all the dimensional requirements of the zone in which it is located.

Lot of record. A nonconforming parcel or area of land that: a) is separately described in a deed or on a plan recorded in the Cumberland County Registry of Deeds as of the date designated in the relevant provision of this chapter and b) conformed to the requirements of this chapter as of the date designated in the relevant provision of this chapter.

Low-income household. A household having an income not exceeding 80% of median income for area of residence as set forth in regulations promulgated from time to time by the United States Department of Housing and Urban Development pursuant to 42 U.S.C. sections 1437 et seq.

Low-income housing unit for rent. A dwelling unit for which:

- A. The rent is affordable to a household earning 80% or less of Area Median Income (AMI) as defined by the United States Department of Housing and Urban Development (HUD).
- B. The unit is rented to a household earning 80% or less of AMI.
- C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for the applicable length of time in this ordinance.

Low-income housing unit for sale. A dwelling unit for which:

- A. The sale price is affordable to a household earning 100% or less of Area Median Income (AMI).
- B. The unit is sold to a household earning 100% or less of AMI.
- C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for future sales for the applicable length of time in this ordinance.

Manufactured housing. A structural unit or units designed for residential occupancy and constructed in a manufacturing facility and then transported by the use of its own chassis or placement on an independent chassis to a building site. The term includes any type of building which is constructed at

a manufacturing facility and then transported to a building site where it is utilized for housing and may be purchased or sold by a dealer in the interim. For purposes of this article, two types of manufactured housing are included. They are:

- A. Those units constructed after June 15, 1976, which the manufacturer certifies are constructed in compliance with the standards required by the United States Government Department of Housing and Urban Development, as such standards are from time to time revised or amended, meaning structures, transportable in one or more sections, which in the traveling mode are 14 body feet or more in width and are 750 or more square feet, and which are built on a permanent chassis and designed to be used as dwellings, with or without permanent foundations, when connected to the required utilities, including the plumbing, heating, air conditioning, and electrical systems contained therein. This term also includes any structure which meets all the requirements of this subparagraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the Secretary of the United States Department of Housing and Urban Development and complies with the standards established under the National Manufactured Housing Construction and Safety Standards Act of 1974, United States Code, Title 42, Section 5401 et seq.; and
- B. Those units constructed after June 15, 1976, which the manufacturer certifies are constructed in compliance with the state's Manufactured Housing Act and regulations, meaning structures, transportable in one or more sections, which are not constructed on a

permanent chassis and are designed to be used as dwellings on foundations when connected to required utilities, including the plumbing, heating, air conditioning, or electrical systems contained therein.

Any unit which does not fall within the definitions of this section and which is legally sited within the city on December 18, 1989, may be relocated to any location in the city in which manufactured housing is allowed.

Manufactured housing park. A parcel of land under unified ownership approved by the Planning Board under 30-A M.R.S. § 4358 for the placement of single-component manufactured housing.

Marijuana cultivation facility. A cultivation facility required to be licensed pursuant to 28-B M.R.S. § 201 or any other facility engaged primarily in the business of planting, propagation, growing, harvesting, drying, curing, grading, trimming, or other processing of marijuana, including mature marijuana plants, immature marijuana plants, seedlings, and marijuana seeds, for use or sale.

Marijuana manufacturing facility. A manufacturing facility required to be licensed pursuant to 22 M.R.S. § 2423-F or 28-B M.R.S. § 201.

Marijuana product. As defined by 22 M.R.S. § 2422 or 28-B M.R.S. § 102.

Marijuana retail store. A retail establishment licensed to sell marijuana, marijuana products, immature marijuana plants, and seedlings to adult use or medical marijuana customers. A marijuana retail store is only authorized as a principal use, and is not permitted as an accessory use. A marijuana



retail store may not exceed a maximum gross floor area of 2,000 square feet. A marijuana retail store shall not include a registered dispensary.

Marijuana testing facility. A facility licensed to develop, research and test marijuana, marijuana products and other substances as defined by 22 M.R.S. § 2422 or 28-B M.R.S. § 102.

Marina. A commercial operation providing floats, slips, and piers intended primarily for berthing of noncommercial vessels and the provision of related services such as supplies, fuel, equipment and repairs, which may be provided both to tenants and non-tenants.

Military personnel berthing. A building, or portion thereof, which is primarily used as, and intended for, temporary living quarters for military personnel.

Moderate-income household. A household having an income not exceeding 120% of median income for area of residence as set forth in regulations promulgated from time to time by the United States Department of Housing and Urban Development pursuant to 42 U.S.C. sections 1437 et seq.

Multi-family development. The construction or creation of three or more dwelling units on any parcel of land or the addition of two or more dwelling units cumulatively within a three-year period.

Multiplex. A residential development consisting of three or more horizontally or vertically attached dwelling units, or a series of such attached dwelling units, and the construction of at least one building.

Neighborhood center. A building or portion of a building used for recreational, artistic, social, educational, health, culture, or similar activities and services, usually owned and operated by a public or nonprofit group or agency.

Non-commercial vessel berthing. The use of berthing space for berthing of watercraft other than commercial vessels. Berthing space used in the following manner shall not be included in the calculation of the number of linear feet under this use category:

- A. Space used principally for sale or repair of vessels.
- B. Commercial vessel tenant space used by a noncommercial vessel for a period not exceeding ten consecutive days while the primary commercial vessel tenant is conducting its business or trade.

Normal high-water line (non-tidal waters). That line which is apparent from visible markings, changes in the character of soils due to prolonged action of the water or changes in vegetation, and which distinguishes between predominantly aquatic and predominantly terrestrial land. Areas contiguous with rivers that support non-forested wetland vegetation and hydric soils and that are at the same or lower elevation as the water level of the river during the period of normal high-water are considered part of the river.

Office park. Separate office buildings planned, constructed, or managed on an integrated coordinated basis.

Off-peninsula. All land located north of I-295.

On-peninsula. All land located south of I-295.

Open space. Any park and any other area outside of a building open to the public.

Owner. Any person that has any interest, legal or beneficial, in any parcel or lot.

Piers, docks, wharves, bridges and other structures and uses extending over or beyond the normal high-water line or within a wetland, temporary. Structures which remain in or over the water for less than seven months in any period of 12 consecutive months.

Piers, docks, wharves, bridges and other structures and uses extending over or beyond the normal high-water line or within a wetland, permanent. Structures which remain in or over the water for seven months or more in any period of 12 consecutive months.

Place of assembly. A building or portion of a building used as a community hall, neighborhood center, private club, or fraternal organization, or place of religious assembly. This definition shall not include buildings or portions of buildings used as a community hall, neighborhood center, private and fraternal organization, or place of religious assembly where 15 or fewer people, not including the permanent residents of a single-family dwelling, assemble.

Place of religious assembly. A building or portion of a building used for religious worship or instruction including, but not limited to, churches, synagogues, masjids, mosques, and other places of worship.

Planned residential unit development (PRUD). A residential subdivision consisting of attached or detached dwellings intended for separate ownership and land to be owned and used in common, with open spaces, recreational areas, access ways, and buildings which are designed, built, and managed in accordance with a unified development plan.

Planned unit development (PUD). A development consisting of either detached or attached single-family dwelling units and commercial or other uses, on substantially-sized properties of greater than 20 acres and designed to be compatible with the surrounding built and natural environment.

Plant canopy. As defined by 28-B M.R.S. § 102.

Preschool facility. Facility which provides a regular program of care and protection for children generally younger than those attending elementary school, which may also encompass daycare facilities.

Private club or non-profit social and recreational facility. A private club or nonprofit social and recreational facility is open exclusively to members and to their bona fide guests accompanying them, in order to promote fellowship, social living, proper recreation, civic responsibility, neighborhood responsibility, community welfare, or other endeavors. It shall be permissible to serve food and meals on such premises provided adequate dining room space and kitchen facility are available and are provided within all regulations of this Land Use Code and other applicable codes and ordinances.

Recent flood plain soils. Recent flood plain soils include the following soil series as described and



identified by the National Cooperative Soil Survey: Alluvial, Charles, Cornish, Fryeburg, Hadley, Limerick, Lovewell, Medomak, Ondawa, Podunk, Rumney, Saco, Suncook, and Winooski.

Recreation and amusement centers. Facilities equipped for the conduct of sports or indoor leisure time recreation activities, including games of skill or games of chance licensed either by the City of Portland or by the State of Maine. Such facilities may limit admission either to members or to persons paying an entrance fee.

Registered dispensary. A registered medical marijuana dispensary as defined by 22 M.R.S. § 2422.

Registered patient. As defined by 22 M.R.S. § 2422.

Repair services. Establishments primarily engaged in rendering services related to the maintenance or repair of goods. In industrial zones only, repair services shall include motor vehicle repair services.

Restaurant. Any food service establishment with indoor seating capacity for ten or more patrons.

Retail. Any shop or store offering goods or merchandise to the general public for direct consumption and not for resale, or food service establishment with indoor seating capacity for nine or fewer patrons. Retail shall not include gasoline, diesel, or propane fuel sales.

Roadway. That portion of a street between the regularly established curblines, or that part of a street or alley devoted to vehicular traffic.

Rooming unit. One or more rooms forming a single unit used, or intended to be used, for living and sleeping purposes by an individual or a family, but not designed for food preparation. In a suite of rooms, each room that provides sleeping accommodations shall be counted as one rooming unit for the purpose of this chapter.

Self-storage facility. A fully enclosed building with individual, secured units (accessed with or without supervision) used for the exclusive purpose of storage of non-hazardous business or personal materials.

Sexually explicit. The display or depiction of sex organs during actual or simulated sexual intercourse or sexual acts as defined in 17 A M.R.S. § 251.

Sheltered care group home. A facility which, in addition to providing food and shelter to a defined population of up to 12 individuals, provides guidance or counseling services as a primary function of the facility.

Shore frontage. The length of a lot bordering on a water body or wetland measured in a straight line between the intersections of the lot lines with the shoreline.

Sidewalk. That portion of a street not included in the roadway, and devoted in whole or part to pedestrian traffic.

Site. All contiguous land under the same ownership or control, whether proposed for development or not, except where development is limited to a lot or lots within a subdivision.

Small-scale marijuana caregiver. A registered caregiver who sells or dispenses marijuana to no more than five individual registered patients in any one calendar month; does not process or manufacture marijuana using chemicals or solvents; and cultivates no more than: 1) 250 square feet of plant canopy where located in a single-family dwelling or commercial space; or 2) 125 square feet of plant canopy where located in a dwelling unit within a two-family or multi-family building.

Solar access. Space open to the sun and clear of overhangs or shade, including orientation of buildings and lots to the sun, so as to permit the use of active and/or passive solar energy systems on individual properties.

Solar energy system. A complete assembly consisting of one or more solar collectors and associated mounting hardware or equipment, intended to provide for the collection, storage, and distribution of solar energy for heating or cooling, electricity generation, or solar/thermal hot water systems. Solar energy systems shall include the following:

- A. Accessory solar energy system. A system as defined above where power generation is incidental to a principal use, which may take the form of either a building integrated or roof-mounted solar array of any size, or a ground-mounted array occupying less than 1,000 square feet of air-space over ground area.
- B. Minor solar energy system. A system as defined above where power generation is considered a principal use, which may take the form of either a building- or roof-mounted solar array of any size, or a ground-mounted system occupying

between 1,000 and 9,999 square feet of ground area.

- C. Major solar energy system. A system as defined above where power generation is considered a principal use, which may take the form of either a building or roof-mounted solar array of any size, or a ground-mounted system occupying greater than 10,000 square feet of ground area.

Solar energy system, building-integrated. A solar energy system that is an integral part of a principal or accessory building and include, but are not limited to, photovoltaic or hot water systems that are contained within roofing materials, windows, walls, skylights and awnings.

Solar energy system, ground-mounted. Also known as free-standing solar energy systems, a solar energy system that is structurally mounted to the ground. The panels may be stationary or revolving and of any size.

Solar energy system, roof-mounted. A solar energy system in which solar panels are mounted on top of the structure of a roof either as a flush-mounted system or as modules fixed to frames which can be tilted toward the south at an optimal angle.

Sounds, impulse. Sound events characterized by brief excursions of sound pressure, each with a duration of less than 1 second.

Sounds, tonal. Sound waves usually perceived as a hum or whine because their instantaneous sound pressure varies essentially as a simple sinusoidal function of time.



Special needs independent dwelling unit. A dwelling unit developed and managed by a nonprofit organization for habitation by persons with special social, physical or mental needs beyond strictly economic needs. Such persons shall be provided required levels of supervision, care and/or counseling services appropriate to their special needs, and the services shall be provided by either the sponsoring nonprofit agency or through another entity with which the agency has entered into a contractual arrangement.

Sports complex. One or more facilities located on the same parcel of land where athletic events are held and with a combined seating capacity of at least 6,000 seats.

Stockpiling. Any placement or creation of piles or loads of soil, loam, sand, gravel, rock, or other mineral deposits upon a site for the purpose of storage, warehousing, or reserving for future use.

Stormwater retention area. A pond or basin used for the permanent storage of stormwater runoff.

Stormwater detention area. A storage area for the temporary storage of stormwater runoff which does not contain water during non-storm conditions.

Stream. A free-flowing body of water from the outlet of the confluence of two perennial streams as depicted on the most recent edition of a United States Geological Survey 7.5-minute series topographic map, or if not available, a 15-minute series topographic map, to the point where the body of water becomes a river or flows to another water body or wetland within a shoreland area, or

any stream designated within a Stream Protection Zone.

Street. A public way established by or maintained under public authority, or a way dedicated to the use of the public and appearing on the official map of the city.

Street line. The line of demarcation between private property and a street.

Street, cul-de-sac or dead end. A street with only one outlet.

Structure. Anything constructed or erected of more than one member having a permanent or semi-permanent location on another structure or in or on the ground, including without limitation buildings, fences, gazebos, signs, antennas, satellite sending or receiving dishes, and swimming pools. Stockpiles shall be considered structures for the purposes of dimensional requirements.

Studios for artists and craftspeople. A facility for the production of arts and crafts products such as paintings, sculpture, or other arts, or the practice of arts such as music or dance, or the production of custom, hand-crafted, or limited production of products such as furniture, wood, clay, and metal products, publications, and similar low-impact arts and crafts activities.

Subdivider. Any individual, firm, association, syndicate, partnership, corporation, trust, or any other legal entity commencing proceedings under these regulations to effect a subdivision of land hereunder for himself, herself, or for another.

Subdivision. As defined in 30 A M.R.S. § 4401 and 4402.

Tasting room. A facility for the sampling of beer, wine, spirits, other alcoholic or non-alcoholic beverages, or food.

Telecommunication tower. Radio masts or tower structures built primarily to hold telecommunication antennas.

Tenant. Any occupant in lawful possession of a rental unit, whether by lease, sublease, or otherwise.

Theater or performance hall. Any establishment devoted to showing motion pictures, or for dramatic, musical, or live performances.

Transient guest. A person who occupies a facility offering accommodations on an overnight basis for compensation and whose actual occupancy is limited to no more than 15 days out of any 60-day period.

Tributary stream. A channel between defined banks created by the action of surface water, which is characterized by the lack of terrestrial vegetation or by the presence of a bed, devoid of topsoil, containing waterborne deposits or exposed soil, parent material or bedrock; and which is connected hydrologically with other water bodies. Tributary stream does not include rills or gullies forming because of accelerated erosion in disturbed soils where the natural vegetation cover has been removed by human activity.

Upland edge of a wetland. The boundary between upland and wetland. For purposes of a coastal

wetland, this boundary is the line formed by the landward limits of the salt tolerant vegetation and/or the highest annual tide level, including all areas affected by tidal action. For purposes of a freshwater wetland, the upland edge is formed where the soils are not saturated for a duration sufficient to support wetland vegetation, or where the soils support the growth of wetland vegetation but such vegetation is dominated by woody stems that are six meters or taller.

Use. The purpose for which land or structures thereon is designed, arranged, or intended to be occupied, or for which it is occupied, maintained, rented, or leased.

Utility substation. Any sewage or water pumping station, electric power substation, transformer station, telephone equipment enclosures, or other similar structures owned or operated by a utility.

Vegetation. All live trees, shrubs, ground cover, and other plants including, without limitation, trees both over and under four inches in diameter, measured at four and one-half feet above ground level.

Very low-income household. A household having an income not exceeding 50% of median income for area of residence as set forth in regulations promulgated from time to time by the United States Department of Housing and Urban Development pursuant to 42 U.S.C. section 1437 et seq.

Warehousing, storage, and distribution. The storage of goods, wares, and merchandise in a warehouse from which distribution occurs. May include wholesale use, but not retail or direct sales to consumers.

Watercourse. Any natural or artificial stream, river, creek, ditch, channel, swale, canal, conduit, culvert, drain, waterway, gully, ravine, or wash in which water flows in a definite direction or course, either continuously or intermittently, or which has a definite channel, bed, and banks, and includes any area adjacent thereto subject to inundation by reason of overflow or floodwater.

Water-dependent uses. Those uses that require, for their primary purpose, location on submerged lands or that require direct access to, or location in, coastal or inland waters and which cannot be located away from these waters.

Wetlands (outside of shoreland zones). Those areas which have two or more of the following:

- A. A water table at or near the surface during the growing season;
- B. Very poorly drained soils, including Sebago mucky peat; or
- C. Obligate wetland vegetation.

Very poorly drained soils and obligate wetland vegetation shall be as defined and illustrated in the United States Department of Interior, Fish and Wildlife Service publication of Wetland Plants of the State of Maine (1986).

Wind energy system. A wind energy generator and all associated facilities.

Wind energy system, useful life. The period for which the system has been designed by the manufacturer to operate in a safe manner, including the period during which new parts and refurbishment allow it to continue operating safely.

Wholesale. Sale for resale, not for direct consumption.

Workforce housing unit for rent. A dwelling unit which:

- A. The rent is affordable to a household earning 100% or less than of AMI.
- B. The unit is rented to a household earning 100% or less of AMI.
- C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for the applicable length of time in this ordinance.

Workforce housing unit for sale. A dwelling unit for which:

- A. The purchase price is affordable to a household earning 120% or less of AMI.
- B. The unit is sold to a household earning 120% or less of AMI.
- C. The requirements of (A) and (B) above are limited by deed restriction or other legally binding agreement for the applicable length of time in this ordinance.

4 NONCONFORMING USES, STRUCTURES, & LOTS

4.1 CONTINUATION

Any building, structure, lots, or use, that was legally existing at the time of its creation and made nonconforming by the provisions of this Land Use Code or any amendment thereto may be continued although such building, structure, lot, or use does not conform with the provisions of this Land Use Code.

4.2 NONCONFORMING USES

4.2.1 Increase in nonconforming use

- A. A structure whose use is wholly nonconforming shall not be altered so as to increase the cubical content or the extent of nonconformity, except as provided for in (C), below.
- B. A nonconforming use on premises outside of a building shall not be extended or allowed to occupy additional land area.
- C. No alterations, modifications, or additions shall be made so as to increase the cubical content or the degree of nonconforming use, nor shall a nonconforming use be extended to any other part of a structure, unless such extension of a nonconforming use is solely for the purpose of bringing the use into compliance with health or safety codes, or to correct a condition which is determined by the Board of Appeals to constitute a health or safety problem. In either case, the expansion shall be limited to the minimum necessary to accomplish that purpose.
- D. Except as expressly provided herein, any alteration, modification, or addition permitted under this subsection shall be in compliance with all other applicable sections of this Land

Use Code. Nothing within this subsection shall be construed to permit an increase in the number of units in a building which is nonconforming as to the number of dwelling units or will become nonconforming as a result of such alteration, modification, or addition.

4.2.2 Change of nonconforming use

When a nonconforming use has been changed to a permitted use, it shall not thereafter be changed back to any non-permitted use. For purposes of this subsection, a use shall be deemed to have been so changed when an existing nonconforming use is terminated and a permitted use is commenced and continued for a period of seven days. Any change of use in violation of this article shall be deemed to be an abandonment of the lawfully existing nonconforming use. A lawful nonconforming use shall not be changed to any use other than a use permitted in the zone in which the use is located or to any use other than a nonconforming use of a more restricted zone, as set forth in the following schedule, provided that in no such case shall any structural alterations be made in any building except those required by law, ordinance, or other regulations:

- A. In a mixed-use zone, from any use permitted in an industrial zone to any use permitted in a mixed-use zone.
- B. In a B-1/B-1b zone, from any use permitted in a B-3 zone to any use permitted in a B-2 zone.
- C. In a residential zone, from any use permitted in a B-2 zone to any use permitted in a B-1/B-1b zone.
- D. In a residential zone, from any use permitted in any other residential zone to any use permitted in a more restrictive residence zone. For the purpose of this subsection, an R-6 zone shall be

deemed the least restrictive and an R-1 zone shall be deemed the most restrictive, with the intervening zones restricted in order of zone number.

4.2.3 Discontinuance of use of land

A nonconforming use of land where no buildings or only incidental or accessory buildings are employed together with such use shall not be changed to any other nonconforming use, and if such use is discontinued for a period of 90 days, it shall not be reestablished.

4.2.4 Discontinuance of use of property

If a legally nonconforming nonresidential use is discontinued for a period of 12 months or if a legally nonconforming residential use is discontinued for a period of 24 months, such discontinuance shall constitute an abandonment of the use and the property shall not thereafter be occupied or used except in conformity with the provisions of this article. A nonconforming use of land which is incidental or accessory to such nonconforming use shall be considered as being discontinued at the same time as the nonconforming use of the structure. In cases of foreclosure or similar situations involving a legally nonconforming use, the Planning Authority shall be authorized to extend the aforementioned period up to an additional five years provided that the extension is for good cause and the minimum length considered necessary to resume the legally nonconforming use of the structure. If the Planning Authority extends the period for resuming the nonconforming use, any associated existing nonconformities of structures and land shall also be extended. For buildings in the Shoreland Zone, state regulations may also govern

and provide for a shorter period of time for nonconforming properties.

4.3 NONCONFORMING LOTS

4.3.1 Lots of record

A. A lot of record that has been held in separate and distinct ownership from adjoining lots as of the relevant date below shall be considered a buildable lot if it meets the following minimum standards:

1. A lot of record as of June 5, 1957 may be considered a buildable lot in the R-1, R-2, R-3, R-4, R-5, R-5a, or R-6 zones provided that:
a) the applicable setback dimensions can be met; b) the lot has a minimum street frontage of 40 feet or the applicable street frontage of the zone, whichever is less; and c) the lot has a minimum lot size of 5,000 square feet or the applicable minimum lot size of the zone, whichever is less.
2. A lot of record as of June 5, 1984 may be considered a buildable lot in the R-1, R-2, R-3, R-4, R-5, R-5a, or R-6 zones provided that the applicable setback dimensions can be met.
3. A lot of record as of July 15, 1985 may be considered a buildable lot in the IR-1 and IR-2 zones, provided that the applicable setback dimensions can be met and provided further that a lot in the IR-1 zone has a minimum lot area of 10,000 square feet and a lot in the IR-2 zone has a minimum lot area of 6,500 square feet unless the lot is served by both public sewer and public water, in which case the lot has a minimum area of 5,000 square feet.

B. A lot of record that has been held in common ownership with any adjoining lot(s) at any point after the relevant date below shall be considered a buildable lot only if: 1) none of the lot(s) are in the Shoreland Zone; 2) any existing structure meets, or will be modified to meet, the applicable setback dimensions; and 3) it meets the following minimum standards:

1. A lot of record as of June 5, 1957 may be considered a buildable lot in the R-1, R-2, R-3, R-4, R-5, R-5A, or R-6 zones provided that: a) the applicable setback dimensions can be met; b) the lot has a minimum street frontage of 40 feet or the applicable street frontage of the zone, whichever is less; and c) the lot has a minimum lot size of 5,000 square feet or the applicable minimum lot size of the zone, whichever is less.
2. A lot of record as of June 5, 1984 may be considered a buildable lot in the R-1, R-2, R-3, R-4, R-5, R-5A, or R-6 zones provided that the applicable setback dimensions can be met.
3. So long as the setbacks are met, any nonconformities of structures and buildings, existing prior to June 5, 1957, on developed lots of record shall be considered lawfully existing nonconformities.

4.4 NONCONFORMING BUILDINGS/STRUCTURES

4.4.1 Restoration or reconstruction

A. A lawful nonconforming nonresidential structure may be maintained, repaired, or reconstructed in kind within a one-year period or within a two-year period for a lawful

nonconforming residential structure, but no alterations, modifications, or additions shall be made to it, except as provided in Subsections 4.4.2 and 4.4.3.

B. A nonconforming structure damaged by fire, explosion, flood, riot, act of the public enemy, accident of any kind, decay, or otherwise may be maintained, repaired, reconstructed, restored or rebuilt only where:

1. The restoration or reconstruction is of a building which is lawfully nonconforming only as to lot area, setbacks, or any other dimensional requirements.
2. Where the restoration or reconstruction will occur entirely within the existing footprint and previous shell of the building and where no alterations, modifications, or additions will be made except as provided in this article and as permitted in Subsections 4.4.2 and 4.4.3.
3. Restoration or reconstruction is commenced within one year for a nonconforming nonresidential structure, or two years for a nonconforming residential structure, of the initial damage where such damage is sudden and accidental and is diligently pursued to completion without expiration of permits. For buildings in the Shoreland Zone, state regulations may also govern and provide for a shorter period for restoration or reconstruction of nonconforming structures.
4. Restoration or reconstruction necessitated by decay must be commenced within one year of the demolition of the building and diligently pursued to completion without expiration of permits.

5. Any reconstruction, under this provision, in the R-6 zone on a lot with 10,000 square feet or less, other than the exact restoration of a previously existing building on the site, shall comply with the applicable standards contained within the City of Portland *Design Manual*.

4.4.2 Alteration or modification

Alteration or modification may be made to a building which is lawfully nonconforming as to any dimensional requirement where the proposed changes in existing exterior walls and/or roofs would be within the space occupied by the existing shell of the building, and would not create any new nonconformity nor increase any existing nonconformity, except as provided elsewhere in this article and as permitted under Subsection 4.4.3. This subsection shall not apply to buildings located within the Shoreland Zone and existing on June 15, 1992, which are nonconforming only as to setbacks from wetlands, tributary streams, or other water bodies, which shall be regulated in accordance with Subsection 4.4.5.

4.4.3 Building extensions

Existing principal buildings which are lawfully nonconforming as to dimensional requirements may be enlarged subject to the following provisions:

- A. No modification to an existing nonconforming building shall increase any existing nonconformity of a lot, use, or structure, except as provided in (D) below.
- B. No modification to an existing nonconforming building shall create new noncompliance with any provision of this Land Use Code.
- C. Existing buildings that are lawfully nonconforming as to required minimum

setbacks may be vertically or horizontally expanded provided that the area of expansion meets all current dimensional requirements, except as provided in (D) below.

- D. A vertical expansion above a portion of a building that is lawfully nonconforming as to minimum setbacks may be permitted a one-time increase of one additional story provided that:
 1. No portion of the expansion horizontally extends beyond the nonconforming portion of the first story of the structure.
 2. Any portion of a vertical expansion above the permitted one additional story shall meet the required minimum setback.

4.4.4 Enclosure of porches in required setbacks

Any open porch existing with a roof over the same on June 5, 1957, and encroaching upon any setback required by this chapter may be enclosed if the major portion of the enclosure is of glass.

4.4.5 Expansions in the Shoreland Zone

A nonconforming structure may be added to or expanded if such addition or expansion does not increase the nonconformity of the structure and is in accordance with the following provisions:

- A. After January 1, 1989, if any portion of a structure is less than the required setback from the normal high water line of a water body or tributary stream or the upland edge of a wetland that portion of the structure shall not be expanded, as measured in floor area or volume, by 30% or more, during the lifetime of the structure. If a replacement structure conforms with the requirements of this subsection, and is less than the required setback from a water body, tributary stream, or

wetland, the replacement structure may not be expanded if the original structure existing on January 1, 1989 had been expanded by 30% in floor area and volume since that date.

- B. Whenever a new, enlarged, or replacement foundation is constructed under a nonconforming structure, the structure and new foundation must be placed such that the setback requirement is met to the greatest practical extent as determined by Building Authority, basing its decision the criteria specified in (C) below. If the completed foundation does not extend beyond the exterior dimensions of the structure, except for expansion in conformity with (A) above, and the foundation does not cause the structure to be elevated by more than three additional feet as measured from the uphill side of the structure (from original ground level to the bottom of the first floor sill), it shall not be considered to be an expansion of the structure.
- C. A nonconforming structure may be relocated within the boundaries of the parcel on which the structure is located, provided that the site of the relocation conforms to all setback requirements to the greatest practical extent as determined by the Building Authority, and provided that the applicant demonstrates that the present subsurface sewage disposal system meets the requirements of state law, the State of Maine Subsurface Wastewater Disposal Rules, or that a new system can be installed in compliance with state law, such rules, and all applicable chapters of the City of Portland Code of Ordinances. In no event shall a structure be relocated in a manner that causes the structure to be more nonconforming. In determining whether the building relocation

meets the setback requirements to the greatest practical extent, the Building Authority shall consider the size of the lot, the slope of the land, the potential for soil erosion, the location of other structures on the property and on adjacent properties, the location of septic system and other on site soils suitable for septic systems, and the type and amount of vegetation to be removed to accomplish the relocation. When it is necessary to remove vegetation within the water or wetland setback are in order to relocate a structure, the Building Authority shall require replanting of native vegetation to compensate for the destroyed vegetation. In addition, the area from which the relocated structure was removed must be replanted with vegetation. Replanting shall be required as follows:

1. Trees removed in order to relocate a structure must be replanted with at least one native tree, three feet in height, for every tree removed. If more than five trees are planted, no one species of tree shall make up more than 50% of the number of trees planted. Replaced trees must be planted no further from the water or wetland than the trees that were removed.
2. Other woody and herbaceous vegetation and ground cover that are removed or destroyed in order to relocate a structure must be re-established within the setback area. The vegetation and/or ground cover must consist of similar native vegetation and/or ground cover that was disturbed, destroyed or removed.
3. Where feasible, when a structure is relocated on a parcel the original location

of the structure shall be replanted with vegetation which may consist of grasses, shrubs, trees, or a combination thereof.

- D.** Buildings in existence on January 1, 1989, and located in the Shoreland Zone may be expanded once during the lifetime of the structure up to 25 feet toward a freshwater wetland or tributary stream, provided that a minimum setback of 40 feet is maintained and that the existing floor area or volume is not increased by more than 30%, and shall not create any undue environmental impact or flood-prone condition.

4.4.6 Nonconformity as to number of dwelling units

- A. Purpose.** The purpose of this provision is to establish a process whereby certain dwellings which contain more dwelling units than the number permitted by the applicable provisions of the Land Use Code may be recognized as legal, nonconforming uses.
- B. Application.** Application for validation of such nonconforming dwelling units shall be on a form provided by the Building Authority, and will be accompanied by:
1. An application fee as established by the City Council to cover administrative costs.
 2. A plan, drawn to scale, which shows the location of the building(s) on the lot, parking, easements, dumpsters, fencing, public ways, and any other significant feature.
 3. A floor plan for each unit in the dwelling, whether or not it is the subject of the application.
- C. Eligibility.** In order for a nonconforming dwelling unit to be validated by administrative

action of the Building Authority as authorized herein, the Building Authority must find, based on competent evidence, supported by public records, that:

1. The nonconforming dwelling units were either in existence April 1, 2005, or the structure in which they are located was originally designed to accommodate more than the number of such units presently in use.
2. The applicant neither constructed nor established the nonconforming dwelling units.
3. The nonconforming dwelling units comply with or can be made to comply with current standards of Chapter 10 of the City of Portland Code of Ordinances, including the National Fire Protection Association Life Safety Code and the National Fire Protection Association 1: Fire Prevention Code, as amended.
4. Each of the nonconforming dwelling units complies with, or can be made to comply with, provisions of the Chapter 6 of the City of Portland Code of Ordinances, as amended, including, but not limited to, the minimum standards for space and occupancy, the minimum plumbing standards, and the minimum ventilation standards.
5. The structure containing the nonconforming dwelling units is located in the R-3, R-4, R-5/R-5a, R-6/R-6a, R-7, B-1/B-1b, B-2/B-2b/B-2c, or IS-FBC zones.

In the absence of legally competent evidence, supported by records (such as, but not limited to, Assessor's records, purchase and sale agreements, affidavits, deeds, mortgages, as

well as reliable secondary sources), that the conditions of (C)(1), (2), (3), (4), or (5) above can be met, the Building Authority may not approve the application, but shall advise the applicant that the matter may be appealed to the Board of Appeals.

- D. Notice to abutters.** Upon receipt of a completed application, the Building Authority will provide the owners of abutting properties and the owners of property situated within 300 feet of the structure notice of the application, along with a notice that they may object to the Building Authority's acting on the application and require the applicant to appeal to the Board of Appeals. The notice shall advise the abutters and owners of property within 300 feet that any objection must be submitted in writing to the Building Authority within 10 days of the date of the notice sent to them. The failure of any property owner to receive the notice described above shall not invalidate any action by the Building Authority. The Building Authority shall promptly notify the applicant of receipt of the objection, that the Building Authority is without authority to proceed, and advise the applicant that, within 30 days from receipt of the letter, an application may be filed to have the matter reviewed by the Board of Appeals as a conditional use.
- E. Approval of application.** The Building Authority may approve the application, provided that the evidence presented satisfies all of the requirements of this subsection and provided that no abutter nor person entitled to notice has requested that the application be referred to the Board of Appeals, instead of the Building Authority. Upon approval of the application, final inspection by the Building Authority certifying the units as in compliance with all applicable codes, and receipt of an inspection fee as established by the City Council for each nonconforming dwelling unit which has been recognized as a lawful, nonconforming use, the Building Authority will issue a certificate of occupancy.
- F. Disapproval of application.** In the event the application is not approved by the Building Authority or in the event of a timely objection filed by a person qualified herein to file such an objection, the applicant, within 30 days from the decision of the Building Authority or objection, may appeal the matter to the Board of Appeals as a conditional use.
- G. Action by Board of Appeals.** The Board of Appeals shall treat applications filed under this subsection as an application for a conditional use, applying the standards applicable to conditional uses under Section 6.5 as well as the requirements of this subsection.
- H. Dimensional and parking requirements.** In making decisions under this subsection, neither the Building Authority nor the Board of Appeals shall apply the dimensional or parking requirements which would otherwise apply in the zones where the nonconforming dwelling units are situated.
- I. Exclusions.** The provisions of this subsection shall not apply to rooming units, but shall apply to efficiency apartments under Chapter 6 of the City of Portland Code of Ordinances. The Board of Appeals is without jurisdiction to grant any relief (including, but not limited to, variances) which would recognize the particular dwelling units which are the subject of this subsection as legal, nonconforming uses,

except in strict compliance with each requirement of this subsection.

J. Prior judicial and administrative action.

Decisions of any court or administrative body, including but not limited to, the Building Authority, the Planning Board, or the Board of Appeals, made prior to the effective date of this subsection and which addressed the number of nonconforming dwelling units in a particular structure, will not bar relief under this subsection.



5 ZONES

5.1 ESTABLISHMENT OF ZONES

In order to carry out the provisions of this Land Use Code, the City of Portland shall be divided into the zones in Table 5-A.

5.2 ZONING MAP

5.2.1 Zoning map adopted

The zones in Table 5-A are shown upon a map filed in the Department of Planning and Urban Development. Such zoning map, with amendments, is hereby adopted as the official zoning map of the City of Portland and as part of this Land Use Code.

5.2.2 Zone boundaries when uncertain

Where uncertainty exists with respect to the boundaries of the various zones, as shown on the zoning map, the following rules shall apply:

- A. Unless otherwise indicated, zone boundary lines are the center lines of streets, alleys, parkways, waterways, or rights-of-way of public utilities and railroads or such lines extended.
- B. Unless otherwise shown, lines within blocks less than 200 feet wide are median lines between their sides, and lines within blocks 200 feet or more wide are 100 feet distant from the less restricted side of the block.
- C. The depictions of the Shoreland Zone and Stream Protection Zone on the zoning map are illustrative of the general location of such zones. The actual boundaries of these zones shall be determined by measurement of the distance indicated on the map and in this Land Use Code from the normal high-water line of the water body or the upland edge of wetlands. Where such measurement is not the same as the location of the boundary of the zoning

TABLE 5-A: ZONES

Residential	R-1, R-2, R-3, R-4, R-5, R-5a, R-6, R-6a
Island	IR-1, IR-2, IR-3 I-B Island Business
Mixed-Use	B-1, B-1b Neighborhood Business B-2, B-2b, and B-2c Community Business B-3, B-3b, and B-3c Downtown Business B-4 Commercial Corridor B-5 and B-5b Urban Commercial B-6 Eastern Waterfront B-7 Mixed Development
Office	O-P Office Park R-P Residence Professional
Industrial & Airport	I-L and I-Lb Low-Impact I-M, I-Ma, and I-Mb Moderate Impact I-H and I-Hb High Impact A-B Airport Business
Open Space	R-OS Recreation and Open Space
Waterfront	EWPZ Eastern Waterfront Port WCZ Waterfront Central WPDZ Waterfront Port Development
Overlay Zones	Compact Urban Residential (R-7) Downtown Entertainment Overlay Fort Sumner Park Height Overlay Helistop Overlay Institutional Overlay (IOZ) Munjoy Hill Neighborhood Conservation Island Transfer Station Overlay Pedestrian Activities District Overlay Stream Protection Overlay University of Southern Maine Overlay Waynflete School Overlay
Form-Based	IS-FBC India Street Form-Based Code
Other	Shoreland Floodplain Management RPZ Resource Protection

map, the measurement shall control, unless the zoning map indicates that the zone boundary shall follow an existing property line.

5.2.3 Extension of zone lines

Where a zone boundary line divides a lot in single or joint ownership of record at the time such line is established, the provisions of this Land Use Code for the less restricted portion of such lot shall extend not more than 30 feet into the more restricted portion, provided that the lot has at least 20 feet of street frontage in the less restrictive zone when taken together with adjacent premises which are under the same or equivalent ownership or control. If such boundary line divides a business or industrial zone from a residential zone, no frontage on a street other than the principal business street in the less restrictive zone may be taken into consideration in connection with the right herein granted. This subsection shall not apply to differing dimensional requirements, including height, within a zoning district.

5.3 CONDITIONAL OR CONTRACT ZONING

5.3.1 Authority and purpose

Pursuant to 30-A M.R.S. § 4352(8), conditional or contract zoning is hereby authorized for rezoning of property where, for reasons such as the unusual nature or unique location of the development proposed, the City Council finds it necessary or appropriate to impose, by agreement with the property owner or otherwise, certain conditions or restrictions in order to ensure that the rezoning is consistent with the City's Comprehensive Plan. Conditional or contract zoning

shall be limited to where a rezoning is requested by the owner of the property to be rezoned. The conditional or contract zoning must be consistent with the Comprehensive Plan, and rezoned areas must be consistent with the existing and permitted uses within the original zone. Nothing in this section shall authorize either an agreement to change or retain a zone or a rezoning which is inconsistent with the City's Comprehensive Plan.

5.3.2 In the I-H zone

A conditional or contract rezoning shall only be approved in the I-H or I-Hb zones if, after public hearing and opportunity for public comment, the reviewing body finds that the applicant has carried the burden of proof to show that the proposed development meets the following standards:

- A. The proposed development is consistent with the Comprehensive Plan.
- B. The proposed development is consistent with the purposes of the underlying zone.
- C. The proposed development is designed and operated so that it will prevent undue adverse environmental impacts, substantial diminution of the value or utility of neighboring structures, or significant hazards to the health or safety of neighboring residents by controlling noise levels, emissions, traffic, lighting, odors, and any other potential negative impacts of the proposal.
- D. All plans must include complete information of processes, materials, or methods of storage to be used by the development and shall specify how hazardous impacts to neighboring properties will be prevented.



5.3.3 Hearing

The Planning Board shall conduct a public hearing in accordance with Section 2.1.8 prior to any property being rezoned under this section.

5.3.4 Conditions and restrictions

Conditions and restrictions imposed under the authority of this section shall relate only to the physical development and operation of the property and may include, by way of example:

- A. Limitations on the number and types of uses permitted.
- B. Restrictions on the scale and density of development.
- C. Specifications for the design and layout of buildings and other improvements.
- D. Schedules for commencement and completion of construction.
- E. Performance guarantees securing completion and maintenance of improvements, and guarantees against defects.
- F. Preservation of open space and buffers, and protection of natural areas and historic sites.
- G. Contributions toward the provision of municipal services required by the development.
- H. Provisions for enforcement and remedies for breach of any condition or restriction.

5.3.5 Amendments

Except as expressly modified in any contract or conditional rezoning agreement, the use and occupancy of any property within the City of Portland used or occupied pursuant to a contract

or conditional rezoning agreement otherwise shall be governed by and comply with the provisions of the Land Use Code of the City of Portland and any applicable amendments thereto or replacement thereof.

5.3.6 Enforcement

Notwithstanding language in any contract or conditional zoning to the contrary, any violation of a conditional or contract zone shall be enforced pursuant to 30-A M.R.S. § 4452, as may be amended from time to time, or in any other manner available by law. No alleged violation of a contract or conditional rezoning may be prosecuted until the City has delivered written notice of the alleged violation(s) to the owner or operator of the property that is subject to the contract or conditional rezoning and given the owner or operator an opportunity to cure the violation(s) within 30 days of receipt of the notice. In addition, if such an enforcement action should result in a finding that the terms of the conditional or contract zone have been violated, then the City may act to modify or rescind the conditional or contract zone and to rezone the property.

5.4 BASE ZONE PURPOSE STATEMENTS

Base zone purpose statements shall be as established in Tables 5-B to 5-G.

TABLE 5-B: RESIDENTIAL ZONE PURPOSE STATEMENTS

R-1	To provide for lower density residential development characterized by single-family homes on individual lots in outlying areas of the city and along traffic corridors with limited additional traffic capacity.
R-2	To provide for low-density residential development characterized by single-family homes on individual lots in outlying areas of the city and along traffic corridors with limited additional traffic capacity.
R-3	To provide for medium-density residential development characterized by single-family homes on individual lots and also to provide for planned residential unit developments on substantially sized parcels.
R-4	To preserve the unique character of the Western Promenade area of the city by controlling residential conversions and by allowing the continued mix of single-family, two-family, and low-rise multi-family dwellings and other compatible development at medium densities.
R-5	To provide appropriate areas of the city for medium-density residential development characterized by single-family, two-family and low-intensity multifamily dwellings on individual lots; to ensure the stability of established medium-density neighborhoods by controlling residential conversions; and to provide for planned residential unit development on substantially-sized parcels.
R-5a	To provide for moderate-density residential development in off-peninsula locations that can provide a unique residential living experience with a high degree of natural site amenities; and to provide areas of the city in the general proximity of the peninsula that have the capability for adequate municipal services, including traffic corridors with adequate traffic capacity, that can appropriately accommodate a more intensive use of land than other lower-density zoned land and be compatible with surrounding neighborhoods; and to increase affordable housing opportunities in off-peninsula locations by providing a moderate-density zone.
R-6	To set aside areas on the peninsula for housing characterized primarily by multi-family dwellings at a high density providing a wide range of housing for differing types of households; to conserve the existing housing stock and residential character of neighborhoods by controlling the scale and external impacts of professional offices and other nonresidential uses; and to encourage new housing development consistent with the compact lot development pattern typically found on the peninsula.
R-6a	To encourage neighborhood livability with higher density multi-family housing on large parcels located off the peninsula along major public transportation routes, near service areas, and in redevelopment (underutilized) or infill areas.



TABLE 5-C: ISLAND ZONE PURPOSE STATEMENTS

IR-1	To provide for low-intensity residential, recreational, and rural uses in the less developed areas of the islands in order to preserve the rustic character of the islands, to protect groundwater resources and natural and scenic areas, and to permit only appropriate low-intensity development in areas lacking adequate public facilities and services.
IR-2	To protect the character of existing developed residential neighborhoods on the islands and to allow infill where there are adequate public services. Expansion or extension of an existing IR-2 zone should be strictly limited, generally focused toward areas adjacent to existing village IR-2 areas, and restricted by such factors as adequacy of access, whether adequate water will be available for private use and for fire protection, and whether soils in the area are adequate for subsurface water disposal or whether public sewers are available. IR-2 rezoning on substantially sized parcels should not be considered for those sites that should be more appropriately zoned otherwise.
IR-3	To allow for a planned unit development in a manner compatible with both the natural and built environment, which provides for adequate circulation and waterfront access, adequate water supply for private use and fire protection, and safe and clean disposal of solid and septic wastes. The following guidelines shall be considered, among others, in establishing an IR-3 zone: A. An IR-3 zone should have a minimum land area of 20 acres. B. A site for an IR-3 zone should be able to accommodate higher density development by providing buffers from surrounding areas on a substantially-sized parcel for which natural amenities are capable of being conserved in a development plan for the site. C. IR-3 zones should not be established unless issues of municipal services, including infrastructure, education, and police and fire services and other municipal services can be appropriately and adequately addressed. D. The differences in scale and intensity of uses between existing development and the IR-3 zone, and the cumulative impact on the overall density of the island, should be mitigated by appropriate open space and buffer areas. E. The development plan should have the capability of meeting the development review standards of the zone.
I-B	To provide limited areas on the islands for retail and service establishments that primarily serve the needs of the local island market area.

TABLE 5-D: MIXED-USE ZONE PURPOSE STATEMENTS

B-1	To provide limited areas for the location of small-scale commercial establishments intended to serve a local market. Uses that are complimentary, quiet, and generally do not disturb the comfort and enjoyment of the adjoining neighborhood environment are encouraged, and should be designed for the pedestrian scale and to provide convenient access for nearby residents and workers to walk in to purchase goods and services. Buildings and uses shall be designed with attractive storefronts or similar features, with windows and doors convenient to a public sidewalk. This zone encourages mixed-use buildings, such as commercial first floor with residential uses above or combined retail/office uses in a multi-story structure. The zone also provides the opportunity for high residential density. Suitable locations for this zone may include street intersections and arterial streets with existing or proposed traditional neighborhood retail and service uses.
B-1b	To provide appropriate opportunities for the establishment of small-scale ground floor commercial uses to serve a local market, while supporting mixed-use buildings with residential uses above ground floor commercial space and on the ground floor where the principal street frontage is maintained for active commercial uses. The zone also provides the opportunity for mixed use and high residential density. Suitable locations for this zone may include street intersections, arterial streets, and sites with existing or traditional neighborhood retail and service uses.
B-2	To provide appropriate locations for the development and operation of community centers offering a mixture of commercial uses, housing, and services serving the adjoining neighborhoods and the larger community. The variety, sites, and intensity of the permitted commercial uses in the B-2 zone are intended to be greater than those permitted in the B-1/B-1b zones. The zone provides a broad range of goods and services with a mixture of large and small buildings, such as grocery stores, shops and services located in major shopping centers and along arterial streets. Such establishments should be readily accessible by automobile, by pedestrians and by bicycle. Development in the B-2 zone should relate to the surrounding neighborhoods by design, orientation, and circulation patterns. The zone should provide locations for moderate to high-density housing in urban neighborhoods along arterials.
B-2b	To provide neighborhood and community retail, business and service establishments that are oriented to and built close to the street. The B-2b zone is appropriate in areas where a more compact urban development pattern exists or where a neighborhood-compatible commercial district is established which exhibits a pedestrian scale and character. Such locations may include the peninsula and other arterials and intersections with an existing urban or neighborhood-oriented building pattern. The B-2b should provide locations for moderate to high-density housing in urban neighborhoods along arterials.
B-2c	To protect and enhance the quiet enjoyment of adjoining residential neighborhoods from the impacts of businesses that serve liquor and from other uses that are incompatible with adjoining neighborhoods due to noise.
B-3 & B-3b	To maintain and enhance the role of the downtown as the business and commercial center of the region; to enhance and promote the orderly expansion of retail and service businesses downtown, satisfying the related needs of the city's resident, working, and visitor populations; to encourage increased housing opportunity downtown for a diverse residential population; to enhance the pedestrian environment through the encouragement of intensive mixed-use activities, through the enhancement and maintenance of public and private open space, and through the enlivenment and increased attractiveness of the street environment; to encourage excellence in urban design; to preserve and capitalize on the unique character and historic fabric of the downtown through the encouragement of reuse of significant existing structures; to provide opportunity for an enhanced presence and integration of the arts and cultural activities; to reinforce the role of the downtown as a meeting place for community residents and visitors alike from all walks of life and all socio- economic groups; to provide adequate parking and transportation facilities which promote accessibility, enhance and encourage development opportunity, and enhance and protect the pedestrian environment; In the Pedestrian Activities District (PAD) Overlay Zone, to create continuity of pedestrian-oriented uses along streets where such uses predominate and along streets which, over time, will establish and maintain a strong retail and pedestrian-oriented use pattern; and to provide for the relocation of residents who are displaced by development.



TABLE 5-D (CONT.): MIXED-USE ZONE PURPOSE STATEMENTS

B-3c	In addition to the purpose of the B-3 and B-3b zone, to promote the safety, quiet enjoyment, and general welfare of citizens residing in a dense urban neighborhood by decreasing the conflicts between residential uses and loud late-night activities. The B-3c zone recognizes that the business uses appropriate in this zone are constrained by the proximity of multi-unit elderly housing.
B-4	To provide appropriate locations in the city for the development and operation of businesses catering primarily to highway-oriented trade along major arterials (uses which have market areas which are primarily dependent on the regional highway network or serve a regional or larger market), as well as to provide appropriate locations for large-scale commercial uses that require larger land areas to accommodate their operations.
B-5 & B-5b	To provide areas of the peninsula near the downtown where a mixture of uses, including marine, industrial, commercial, and residential, is encouraged. The B- 5 and B-5b zones are characterized by larger underdeveloped lots with great potential for denser, clustered, urban mixed-use development and more efficient reuse of existing land and buildings. It is anticipated that the dense, mixed-uses of the B-5 and B-5b zones will rely on a shared infrastructure system, including service alleys, parking lots, public transportation facilities, stormwater management, and driveways.
B-6	To establish a zoning district for the upland portion of the Eastern Waterfront area. The B-6 zone encourages this district to acquire a distinctly urban form through development that emphasizes a quality pedestrian experience, promotes public transit, and demonstrates exemplary urban design. The zone promotes a range of uses to achieve 24-hour urban vitality and shared use of parking infrastructure as recommended in the Eastern Waterfront Master Plan for redevelopment. The B-6 zone promotes a mixed-use development pattern envisioned for urban land on Portland’s peninsula.
B-7	To establish a zoning district for urban areas in which the City has adopted master plans for redevelopment. Certain areas, including but not limited to Bayside, lie at the perimeter of the established downtown and contain significant redevelopment opportunities. The B-7 zone encourages these districts to acquire a distinctly urban form through dense development featuring a mix of uses such as housing, retail, offices, research and development, and artisan studios and that emphasizes a quality pedestrian experience, promotes public transit, and demonstrates exemplary urban design. Use of multi-modal transportation is strongly encouraged and is advanced by the installation of bicycle amenities, such as bicycle racks and storage areas. The zone promotes a wide range of uses in high quality structures and public open spaces to achieve 24-hour urban vitality and shared parking infrastructure. The B-7 zone promotes a mixed-use development pattern envisioned on Portland’s peninsula.

TABLE 5-E: OFFICE ZONE PURPOSE STATEMENTS

O-P	To provide substantial areas for integrated development of offices in a park- or campus-like setting which are of the highest quality, are well-designed and maintained, and are compatible with their natural surroundings.
R-P	To provide appropriate location for the development and operation of low-intensity business uses, including offices on or near major arterials, that are compatible in scale, density and use with surrounding and adjacent residential neighborhoods; or to serve as a transition or buffer zone between residential and more intensive nonresidential zones.

TABLE 5-F: INDUSTRIAL AND AIRPORT ZONE PURPOSE STATEMENTS

I-L & I-Lb	To provide areas in which low-impact industrial uses, and limited other uses serving employees and residents of the surrounding neighborhood, will be compatible with adjacent residential uses, will provide a buffer between residential neighborhoods and higher impact industrial zones, or will stand alone as a smaller scale industrial district. The I-L zone is located adjacent to residential neighborhoods, business uses and other industrial uses where the low-intensity nature of the uses, as well as their strict performance standards, will ensure the compatibility of the uses with other adjacent industrial and nonindustrial uses. Performance standards for uses in the I-L zone are designed to maintain compatibility between low impact industrial uses and neighboring nonindustrial and industrial uses.
I-M, I-Ma, & I-Mb	To provide zones in areas of the city in which low- and moderate-impact industries and transportation-related uses will coexist. I-M and I-Ma zones are located on arterials or collectors. The I-Mb zone is similarly located on the peninsula. These locations provide for direct access onto arterials, thereby protecting residential neighborhoods from drive-through traffic. The purpose of the I-M, I-Ma and I-Mb industrial zones is also to provide for larger industrial buildings and for the limited or controlled use of areas outside of structures for storage of materials and machinery. These facilities often require large volumes of imported materials and products which result in large volumes of shipping and receiving. Often uses may be highway-oriented and transportation-related, thus relying on citywide and regional transportation infrastructure. Industrial uses in these moderate-impact industrial zones may require separation from higher-impact uses.
I-H & I-Hb	To provide areas suitable for higher impact industrial uses than are permitted in other industrial zones and other uses that are capable of demonstrating, through design, layout and topography, their compatibility with, or non-intrusion on, existing or future higher impact industrial uses on adjacent or neighboring I-H zoned properties. Due to the intensity of use, the I-H zones are intended for uses which may require extensive outdoor storage and usage and may utilize heavy equipment. Processes may require separation from residential or sensitive environmental areas. The I-H zones are separated from other nonindustrial uses as well as natural or constructed features. High-impact industrial uses will be of a higher intensity, with a greater lot coverage, than the other zones.
A-B	To provide an area for the development of airport-related enterprises. Appropriate uses permitted in this zone are those customarily associated with the operation of the airport terminal and individual airlines and accessory uses to provide for the comfort and convenience of the airport's patrons and employees.

TABLE 5-G: OPEN SPACE ZONE PURPOSE STATEMENT

R-OS	To preserve and protect open space as a limited and valuable resource; to permit the reasonable use of open space, while simultaneously preserving and protecting its inherent open space characteristics to assure its continued availability for public use as scenic, recreation, and conservation or natural resource area, and for the containment and structuring of urban development; to provide a suitable location for large-scale regional sports and athletic facilities; and to develop an open space system throughout the city, which provides the highest quality parks, plazas, and pedestrian environment. The R-OS zone may include parcels of public property and private property legally restricted from intensive use or development through deed, covenant, or otherwise.
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6 USE STANDARDS

6.1 APPLICABILITY

The use of buildings, structures, and land are governed by this article, except when superseded by other applicable laws or ordinances. It is the intent that, when in doubt, this article should be interpreted to accommodate the goals of the City's Comprehensive Plan and other plans.

6.2 DETERMINATION OF USE

6.2.1 Use tables

Tables 6-A to 6-F shall determine if a use is permitted (●), conditional (◐), or not permitted (◑), as a principal use within a zone. Unless otherwise noted, where a use is listed in terms of square footage, square footage figures shall correspond to the total floor area of the use.

6.2.2 Unlisted uses

- A. Uses not expressly listed as permitted or conditional in Tables 6-A to 6-F are prohibited as principal uses except that a use may be permitted subject to meeting the following performance-based standards:
 - 1. The proposed use is consistent with the purposes of the zone.
 - 2. The proposed use is closely related to a permitted use in terms of character, scale, and external impacts.
 - 3. The buildings and structures associated with the proposed use are designed and operated so that it will prevent undue adverse environmental impacts, substantial diminution of the value or utility of

neighboring structures, or significant hazards to the health or safety of neighboring residents by controlling noise levels, emissions, traffic, lighting, odor, and any other potential negative impacts.

- B. The Planning Authority shall determine whether the uses not listed as permitted or conditional uses meet the above standards. If it is determined that the use does not meet the above criteria, it shall not be permitted.
- C. The Planning Authority may impose reasonable conditions of approval on the proposed use to ensure that it is similar in character and impact to a permitted or conditional use.

6.2.3 Multiple uses

A site may contain more than one principal use, so long as each principal use is allowed within the zone.

6.3 CHANGE OF USE

A change of use from one use in these tables to another is governed by the requirements of the new use. The use of any part of any building, structure, or property shall not be changed to any other use, whether principal or accessory and whether alterations in the building, structure, or property are involved or not, until a permit and certificate of occupancy authorizing such change of use has first been secured from the Building Authority in accordance with Chapter 6 of the City of Portland Code of Ordinances.

TABLE 6-A: PERMITTED AND CONDITIONAL USES IN RESIDENTIAL ZONES

		R-1	R-2	R-3	R-4	R-5/R-5a	R-6/R-6a	Use Standards
Residential	Single-family dwellings	●	●	●	●	●	●	
	Two-family dwellings				●	●	●	
	Multi-family dwellings			○		○ ¹ /● ²	●	6.5.6(G)
	Multiplex				○	● ¹		6.4.12
	Handicapped family units	●	●	●	●	●	●	
	Planned Residential Unit Developments			● ⁴		● ⁴		
	Special needs independent dwelling units				●	● ¹	●	
	Lodging houses					○ ^{1,3}	●	6.4.9
Institutional	Sheltered care group homes	○	○	○	○	○	○	6.5.6(K)
	Congregate care facilities					● ²		6.5.6(F)
	Elementary, middle, and secondary schools	○	○	○	○	○ ¹	○	
	Governmental uses	●	●	●	●	●	●	
	Hospitals			○		○ ¹	○	
	Intermediate care facilities	○	○	○		○ ¹ /● ²	○	6.5.6(F)
	Long-term and extended care facilities	○	○	○		○ ¹ /● ²	○	
	Places of assembly (<10,000 SF)	○	○	○	○	○ ¹	○	
	Places of assembly (>10,000 SF)	○	○	○	○	○ ¹	○	
	Preschool facilities	○	○	○	○	○	○	6.5.6(I)
Comm.	Post-secondary schools		○			○ ¹	○	6.5.6(F)
	Bed and breakfasts						●/○ ⁵	6.4.4
	General offices (<5,000 SF)						○	6.5.6(C)
Other	Hostels						●/○ ⁶	6.4.8
	Agriculture	●	●					
	Cemeteries	○	○		●		●	
	Off-street parking			○	○	○ ¹	○	6.5.6(H)
	Parks and open spaces	●	●	●	●	●	●	
	Raising of domesticated animals	○						6.5.6(J)
	Solar energy system (minor)	●	●	●	●	●	●	6.4.16
	Utility substations	○	○	○	○	○	○	6.5.6(L)

¹ In the R-5 zone only.

² In the R-5a zone only.

³ Conversions of existing two-family or multiplex structures into lodging houses are permitted as a conditional use, provided that the lodging house shall not be located within 500 ft. of another as measured along street lines.

⁴ Must consist of horizontally attached dwelling units or a series of such units in the R-3 zone and horizontally or vertically attached dwelling units in the R-5/R-5a zone, or a series of such dwelling units, with all land owned and used in common. PRUDs shall be subject to review and approval by the Planning Board under Article 15.

⁵ Permitted if a conversion of a structure existing as of 3/3/97 to up to four guest rooms and conditional if a conversion of the same to five to nine rooms.

⁶ Permitted if for no more than 10 overnight transient guests and conditional if for between 11 and 20 overnight transient guests. An owner, manager, or operator shall be a permanent resident of the building.

TABLE 6-B: PERMITTED AND CONDITIONAL USES IN ISLAND ZONES

		IR-1	IR-2	IR-3 ¹	I-B	Use Standards
Residential	Single-family dwellings	●	●	● ²	●	6.5.6(G)
	Two-family dwellings				○	
	Multi-family dwellings				○	
	Handicapped family unit	●	●	●	●	
	Planned Residential Unit Developments	●	●			
	Lodging houses		○ ³	● ³	● ³	
Institutional	Elementary, middle, and secondary schools	○	○	●	○	6.5.6(F) ⁶
	Educational facilities (including seasonal camps)	○	○			
	Governmental uses	○	○	●	○	
	Places of assembly (<10,000 SF)	○	○	●	○	
	Places of assembly (>10,000 SF)	○	○		○	
	Preschool facilities	○	○	●	○	6.5.6(I)
Commercial/Service	Auto service stations				○	6.5.6(A)
	Bed and breakfasts				● ⁴	
	General services (<5,000 SF)				●	
	Hotels			● ⁵	○ ⁵	
	Restaurants			●	●	
	Retail (<10,000 SF)			●	●	
Other	Studios for artists and craftspeople				●	
	Agriculture	●				
	Boathouses and storehouses for fishing equipment	●	●	●	●	6.4.5
	Campgrounds	○		●		
	Cemeteries	○	○			
	Marinas and yacht clubs			●	●	
	Off-street parking				●	
	Parks and open spaces	●	●	●	●	
	Raising of domesticated animals	○				6.5.6(J)
	Solar energy system (minor)	●	●	●	●	6.4.16
	Utility substations	○	○	●		6.5.6(L)
	Wharves, piers, docks, and landing ramps	○	○	●	●	

¹ All uses within the IR-3 permitted only within a PUD with a minimum total area of 20 acres of contiguous land subject to the standards of Subsection 6.4.14.

² Single-family attached permitted provided that new construction shall be limited to no more than six attached dwellings per building.

³ With greater than two but no more than nine rooming units.

⁴ Permitted on Peaks Island only.

⁵ Maximum 50 rooms.

⁶ The standards of Subsection 6.5.6(F) shall not apply to institutional uses within the I-B zone. In the IR-1 and IR-2 ones, institutional uses are subject to the standards of Subsection 6.5.6(F) only if the total land area of the use is two acres or more.

TABLE 6-C: PERMITTED AND CONDITIONAL USES IN MIXED-USE ZONES

		B-1/B-1b	B-2/B-2b/B-2c	B-3/B-3b/B-3c ¹¹	B-4	B-5/B-5b	B-6	B-7	Use Standards
Residential	Single-family dwellings	●	●	●		●	●	●	
	Two-family dwellings	●	●	●		●	●	●	
	Multi-family dwellings	● ¹	●	●		●	●	●	
	Handicapped family units			●		●	●	●	
Institutional	Combined living/working spaces	●	●	●		●	●	●	
	Lodging houses	● ²	●	●	●	●		●	6.4.9
	Clinics	● ²	●	●		●		●	
	Cultural facilities			●		●	●	●	
	Elementary, middle, and secondary schools	● ²	●	●		●	●	●	
	Emergency shelters			○	○	○			6.5.6(B)
	Governmental uses	● ²	●	●	●	●		●	
	Intermediate care facilities		●						
	Long-term and extended care facilities		●						
	Places of assembly (< 10,000 SF)	● ²	●	●	●	●	●	●	
	Places of assembly (> 10,000 SF)		●	●	●	●	●	●	
	Preschool facilities	● ²	●	●	●	●	●	●	
	Post-secondary schools		●	●	●	●	●	●	
	Adult business establishments		● ³	● ³					6.4.2
	Auto, boat, and related dealerships		○		●				6.5.6(A)
	Auto service stations		○ ⁴		●	●			6.5.6(A)
Commercial/Service	Bars		● ⁵	● ⁵	●	●	●	●	6.4.3
	Bed and breakfasts	●	●	●				●	6.4.4
	Exhibition, meeting, and convention halls			●		●	○	●	
	Funeral homes		●		●				
	General offices (<5,000 SF)	● ²	●	●	●	●	●	●	6.4.6
	General offices (>5,000 SF)		●	●	●	●	●	●	
	General services (<5,000 SF)	● ²	●	●	●	●	●	●	6.4.6
	General services (>5,000 SF)		●	●	●	●	●	●	
	Hostels	●		●		●		●	6.4.6, 6.4.8
	Hotels		●	●	●	●	● ¹³	●	
	Marijuana retail store		●/○ ⁶	●	●			●	6.4.10
	Recreation and amusement centers				●	●		●	
	Registered marijuana dispensary		●/○ ⁶	●	●			●	6.4.10
	Restaurants	● ²	●	●	●	●	●	●	6.4.3, 6.4.6
	Retail (< 5,000 SF)	● ²	●	●	●	●	●	●	6.4.6, 6.4.15
	Retail (5,000 – 25,000 SF)		●	●	●	●	●	●	6.4.15
	Retail (>25,000 SF)		●	●	●	●	●	●	6.4.15

TABLE 6-C (CONT.): PERMITTED AND CONDITIONAL USES IN MIXED USE ZONES

	B-1/B-1b	B-2/B-2b/B-2c	B-3/B-3b/B-3c ¹¹	B-4	B-5/B-5b	B-6	B-7	Use Standards
Industrial	Small-scale marijuana caregiver	●	●	●			●	6.4.10
	Theaters and performance halls	●	●	●	●	●	●	
	Veterinary services	●		●			●	
	Communication studios	●	●	●	●	●	●	
	Dairies	● ⁷		●				
	High-tech manufacturing						●	6.5.6(D)
	Intermodal transportation facilities				●	●	●	
	Laboratory and research facilities	●		●		●	●	6.5.6(E)
	Low-impact industrial (<10,000 SF)	● ⁸	●	●	●	●	● ⁸	6.5.6(E)
	Low-impact industrial (>10,000 SF)	● ⁸		●	●			
	Marijuana testing facilities			●				
	Marijuana manufacturing facilities			●				6.4.10
	Marijuana cultivation facilities (<7,000 SF plant canopy)			●				
	Printing and publishing	● ⁹	●	●	●	●	●	
	Repair services	●	●	●	●	●	●	
	Studios for artists and craftspeople	● ²	●	●	●	●	●	
	Tow lots			●				6.4.17
	Warehousing, storage, and distribution	● ¹⁰		●	● ¹⁰	● ^{10, 14}	● ^{10, 14}	6.5.6(E)
	Marine uses				●	●		6.4.11
	Correctional pre-release facilities			●				6.4.7
	Off-street parking		●/● ¹²		●	●	●	6.5.6(H)
Other	Parks and open spaces	●	●	●	●	●	●	
	Solar energy system (minor)	●	●	●	●	●	●	6.4.16
	Solar energy system (major)			●				
	Utility substations	●	●	●	●	●	●	6.5.6(L)
	Wind energy system (minor)		●	●	●	●	●	6.4.18

¹ Permitted if permitted in the adjacent or nearest residential zone. In other cases, permitted if located above first floor commercial, or on first floor where a minimum depth of 25 ft. along the principal frontage is maintained for commercial use.

² Permitted on the ground floor only in the B-1b zone.

³ Permitted in the B-2 and B-3 zones only.

⁴ Permitted as a conditional use in the B-2 only. Expansion of auto service stations in existence as of 11/15/99 permitted as a conditional use in the B-2b and B-2c zones.

⁵ Not permitted in the B-2c and B-3c zones.

⁶ Permitted in the B-2 zone. Conditional in the B-2b and B-2c.

⁷ Permitted only if an expansion of an existing dairy.

⁸ Permitted with a retail component only. Low-impact industrial uses greater than 10,000 SF are permitted in the B-2 only.

⁹ Printing and publishing of 10,000 SF or less, or expansion of printing and publishing establishments greater than 10,000 SF in existence as of 4/4/88, shall be treated as a conditional use.

¹⁰ Permitted in the B-2/B-2b/B-2c as a conditional use if 10,000 SF or less. Self-storage permitted in the B-4 zone. Self-storage permitted as a conditional use in the B-5 zone (on-peninsula locations only) in buildings existing as of 12/16/15. Self-storage not permitted in the B-2/B-2b/B-2c, B-6, and B-7 zones.

¹¹ See PAD Overlay for additional use regulations.

¹² Structured parking shall be permitted. Surface parking shall be treated as a conditional use.

¹³ Hotels shall be limited to no more than 150 rooms.

¹⁴ Wholesale is allowed as conditional use, providing the wholesale operation is associated with an onsite retail establishment and occupies less than 15,000 SF.

TABLE 6-D: PERMITTED AND CONDITIONAL USES IN OFFICE PARK & RESIDENCE PROFESSIONAL ZONES

	OP ¹	RP ²	Use Standards
Any residential use permitted in the nearest residential zone		●	
Preschool facilities	●	①	6.5.6(I)
Funeral homes		●	
General offices	●	●	
High tech manufacturing	①		6.5.6(D)
Laboratory and research facilities	●		
Printing and publishing	●		
Studios for artists and craftspeople		●	
Parks and open space	●	●	
Solar energy system (minor)	●	●	6.4.16
Utility substations		●	
Wind energy system (minor)	①		6.4.18

¹ All permitted and conditional uses in the O-P zone, with the exception of parks and open spaces, solar energy systems, and wind energy systems, shall be allowed only within an office park of at least three acres of contiguous land subject to the standards of Subsection 6.4.13.

² Any conditional use that is permitted as a conditional use in the nearest residential zone shall be permitted as a conditional use in the R-P zone. All conditional use standards of the residential zone shall apply.

TABLE 6-E: PERMITTED AND CONDITIONAL USES IN INDUSTRIAL & AIRPORT ZONES

		I-L/I-Lb	I-M/I-Mb	I-H/I-Hb	A-B ⁷	Use Standards
Institutional	Airports				● ⁸	
	Preschool facilities	●	●			
	Emergency shelters	●	●	●		6.5.6(B)
	Intermediate care facilities		● ⁴			
	Places of assembly (<10,000 SF)	●				
Commercial/Services	Bars				●	
	General offices (<5,000 SF)	● ¹	●			
	General offices (>5,000 SF)	● ¹	●			
	General services (<5,000 SF)				●	
	General services (>5,000 SF)				●	
	Hotels				●	
	Recreation and amusement centers	●	●			
	Repair services	●	●	●		
	Restaurants				●	
	Animal-related services	● ²				
	Construction & engineering services	●	●	●		
	Dairies	●	●	●		
	Fish waste processing			●		
	Food & seafood processing, packing, and distribution		●	●		
	High-impact industrial uses			●		
	Intermodal transportation facilities	●	●	●		
	Laboratory and research facilities	●	●	●		
	Low-impact industrial	●	●	●		
	Lumber yards	●	●	●		
	Marijuana cultivation facility (<2,000 SF plant canopy)	●	●	●		
Industrial	Marijuana cultivation facility (2,000-7,000 SF plant canopy)		●	●		
	Marijuana cultivation facility (>7,000 SF plant canopy)			●		6.4.10
	Marijuana manufacturing facility	●	●	●		
	Marijuana testing facility	●	●	●		
	Printing and publishing	●	●	●		
	Recycling and solid waste disposal facilities		● ⁵	● ⁵		
	Studios for artists and craftspeople	●	●			
	Telecommunication towers (ground-mounted)		●	●		
	Tow lots		●	●		6.4.17
	Warehousing, storage, and distribution facilities	● ³	●	●		

TABLE 6-E (CONT.): PERMITTED AND CONDITIONAL USES IN INDUSTRIAL & AIRPORT ZONES

		I-L/I-Lb	I-M/I-Mb	I-H/I-Hb	A-B ⁷	Use Standards
	Correctional pre-release facilities		● ⁶	● ⁶		6.4.7
	Marinas	●				
	Off-street parking				●	
Other	Solar energy system (minor)	●	●	●	●	6.4.16
	Solar energy system (major)		●	●	①	
	Utility substations	●	●	●		
	Wind energy system (minor)	①	●	●	●	6.4.18
	Wind energy system (major)		●	●	①	

¹ Only back office uses permitted.

² Not including kennel or boarding facilities.

³ Must be less than 10,000 SF in floor area. No outdoor storage permitted. Self-storage not permitted in the I-L/I-Lb zone.

⁴ Permitted in existing structures not designed for industrial, amusement, warehouse or manufacturing uses as of 9/15/14 or later. Such structures may be reused or expanded to establish a facility of no more than 30 persons plus staff.

⁵ Permitted within an enclosed structure only.

⁶ Not permitted in the I-Ma, I-Mb, or I-Hb zones.

⁷ Permitted uses on lots within airport restricted access areas shall be limited to those which do not require or encourage access or visits by the public and which provide technical administrative or other support to airport operations.

⁸ Including airport administration, terminals, carrier operations, concessions, reservations and ticket sales, freight, repair and storage, fueling services, flying schools, car rental operations, and other associated uses.

TABLE 6-F: PERMITTED AND CONDITIONAL USES IN RECREATION OPEN SPACE ZONE

	R-OS ¹	Use Standards
Cemeteries	●	
Marinas	●	
Parks and open space	● ²	
Solar energy system (minor)	ⓘ	6.4.16, 6.5.7(A)
Solar energy system (major)	ⓘ	
Utility substations	●/ⓘ ³	6.5.6.L, 6.5.7(A)
Wharves, piers, docks, and landing ramps	●	
Wind energy system (minor)	ⓘ	6.4.18, 6.5.7(A)
Wind energy system (major)	ⓘ	

¹ Accessory uses within structures of 2,500 SF or more shall be treated as a conditional use under Subsection 6.5.7(A).

² Including active recreational uses, such as playgrounds, golf courses, fields, pools, courts, community gardens, marinas, and sports complexes and passive uses, such as arboretums and picnic areas.

³ Sewage pumping and treatment facilities shall be permitted. Water pumping stations shall be treated as a conditional use under Subsection 6.5.7.

6.4 SUPPLEMENTAL USE STANDARDS

The following standards shall apply to the following uses as indicated in Tables 6-A to 6-F, whether permitted or conditional.

6.4.1 In general

A. No building intended for use as a habitation shall be erected on a lot which has its only street frontage on a street less than 35 feet wide. No building shall be erected on a lot, except on the islands in Casco Bay, which does not abut a street meeting the minimum requirements for street improvements set forth in this subsection. For purposes of this subsection, street shall be as defined in Article 3, except that a dedicated street which may no longer be accepted due to lapse of time and an accepted street which may have been discontinued by abandonment shall also be deemed to be streets, provided that an applicant for a building permit respecting any

lot abutting such street shall, without compensation or claim for damages, and at his or her own cost and expense, first submit to the Building Authority:

1. A deed from the owner of such lot conveying to the City all his or her right, title, and interest in and to such street or any portion thereof.
2. An agreement by such owner forever releasing the City from any and all claims for damages for the laying out and taking of such street and indemnifying the City against any and all other such claims, both such instruments to be executed and in recordable form acceptable to the Corporation Counsel and to encumber and run with the land.

B. For a lot abutting any portion of a street which is unimproved or improved but not permanently paved, that portion which abuts the lot, and any like portion between such

portion and the nearest permanently paved street or portion which is the principal access to such lot, shall be improved, including sewers, storm drains, pavement, curbs and, if located on a designated school walking route, sidewalks, in accordance with the City of Portland *Technical Manual*. Where the nearest permanently paved street does not have granite curbing, the Public Works Authority may waive the requirement of curbing under this subsection, if it determines that an acceptable alternative drainage plan will be provided. Prior to the issuance of a building permit for erection of a building on a lot abutting any portion of a street which is unimproved or improved but not permanently paved, the following shall occur:

1. A plan of the street improvements required by this subsection shall be submitted to the Public Works Authority.
2. Upon determination by the Public Works Authority that the plan meets the street improvement requirements established by this subsection, a performance guarantee and inspection fee for said improvements shall be submitted to the City as set forth under Articles 14 and 15. Also as set forth in Articles 14 and 15, a one-year defect bond shall be tendered to the City prior to release of the performance guarantee required hereby. The provisions of this paragraph (2) shall not apply to the erection of any single-family dwelling on any lot where the owner of the lot establishes that he or she was the owner of that same lot on November 19, 1984, and at all times thereafter, and states his or her

intention under oath to make the structure his or her personal residence.

- C. The requirements of this subsection shall not apply to the following city streets upon their construction by the Public Works Authority to such standards as are determined by the authority to be the most feasible:
 1. Dingley Court.
 2. Morgan Court.

6.4.2 Adult business establishments

- A. Adult business establishments shall be located at least 1,000 feet from any other adult business establishment, and at least 500 feet from any residential zone, as measured in a straight line, without regard to intervening structures or objects.
- B. No sexually explicit materials, entertainment, or activity shall be visible from the exterior of the premises.

6.4.3 Bars and restaurants in the B-6 zone

- A. No bars located east of Waterville Street shall be permitted within 50 feet of Fore Street.
- B. Restaurants located east of Waterville Street within 50 feet of Fore Street shall be limited in hours of operation to between 5 a.m. and 11 p.m. each day and food service and consumption shall be the primary function of the restaurant.

6.4.4 Bed and breakfasts

- A. In the R-6 and R-6a zones, the minimum gross floor area for bed and breakfasts shall be 2,000 square feet for the first three guest rooms and 500 square feet for each additional guest room.
- B. In all mixed-use zones except the B-1/B-1b zones, bed and breakfasts may include a

meeting facility limited to use for private parties, business meetings, weddings, receptions, seminars, or business and educational conferences, provided that:

1. *In the B-2/B-2b/B-2c zones.* The meeting facility must be less than 4,000 square feet.
2. *In the B-3/B-3b/B-3c zones.* The building in which the bed and breakfast and meeting facility will be located must have existed on March 3, 1997 and have been greater than 4,000 square feet in floor area on that date.

6.4.5 Campgrounds

- A. Campgrounds shall not include recreational vehicles.
- B. Campgrounds shall be licensed by the State of Maine Department of Human Services.
- C. No tent shall be located within 75 feet of the perimeter of site.
- D. The land area of the campground shall not be less than the equivalent of 5,000 square feet of land area per tent site exclusive of the roadway network.

6.4.6 Commercial uses in the B-1/B-1b zones

- A. Commercial uses shall be permitted provided that such uses generate less than 100 peak hour vehicle trips per 2,000 square feet of floor area and less than 100 peak hour vehicle trips in total.
- B. Retail and restaurant uses shall not operate between the hours of 11 p.m. and 6 a.m., and shall not accept deliveries or services between the hours of 10 p.m. and 7 a.m. For restaurants, food service and consumption shall be the primary function.

- C. No beverage container redemption centers shall be permitted. Beverage dealers shall be permitted as a retail use provided that the maximum total floor area for redemptions as an accessory use, including the storage of spent containers, shall be no greater than 500 square feet or 10% of the total floor area of the facility, whichever is less.

6.4.7 Correctional pre-release facilities

- A. No correctional prerelease facility shall be located within 1,000 feet of another, as measured in a radius from the center of the lot.
- B. If a facility requires state or federal licensing, staffing of the facility shall be as required by such license. If a facility does not require state or federal licenses, there shall be a minimum of one staff person for every 10 residents or fraction thereof. The facility shall provide 24-hour supervision of program participants.

6.4.8 Hostels

An operations plan must be submitted demonstrating that:

- A. No unaccompanied minors under the age of 18 shall be permitted in the facility.
- B. The length of stay for transient guests shall not exceed 15 days within any 60-day period.
- C. In the R-6 zone, for hostels greater than 10 guests, a minimum of 250 square feet of land area shall be required per hostel guest.
- D. In the B-1/B-1b zones, no more than 20 overnight transient guests shall be permitted.

6.4.9 Lodging houses

- A. Lodging houses, except for lodging houses located in the IR-2, IR-3, and I-B zones, shall contain common areas for use by all residents,

including a kitchen. A kitchen need not be available as a part of the common areas where all meals are provided on a daily basis.

- B.** Lodging houses shall provide a minimum of 200 square feet of combined rooming unit and common area per rooming unit.
- C.** Each individual rooming unit shall be a minimum of 70 square feet.

6.4.10 Marijuana-related uses

- A.** The following standards apply to the following marijuana-related uses:
 - 1. Marijuana cultivation facilities.
 - 2. Marijuana manufacturing facilities.
 - 3. Marijuana products.
 - 4. Marijuana retail stores.
 - 5. Marijuana testing facilities.
 - 6. Small-scale marijuana caregivers.
 - 7. Registered dispensaries.
- B.** Location criteria
 - 1. No marijuana cultivation facility, marijuana manufacturing facility, marijuana testing facility, small-scale marijuana caregiver, marijuana store, or registered dispensary may be located within 500 feet of a pre-existing public school, private school, or a public preschool program, as defined by 20-A M.R.S. § 1. Distance shall be measured from nearest property line of the respective marijuana-related use and the property line of the lot containing the public school, private school, or public preschool program.
 - 2. No marijuana cultivation facility, marijuana manufacturing facility, or marijuana testing facility may be located within 300 feet of the following residential zones: R-1, R-2, R-3, R-4, R-5/R-5A, R-6/R-6A, or R-7. Distance

shall be measured from the nearest outer wall of the building housing the marijuana cultivation, manufacturing, or testing facility to the nearest applicable residential zone boundary. If the marijuana-related facility leases a room or suite of rooms within a building, including, without limitation, individual units within a shopping plaza or shopping mall, the nearest outer wall of the room or suite of rooms within which the facility is located shall constitute the nearest outer wall of the building housing that facility.

- C.** Supplemental standards
 - 1. Marijuana-related uses may only be permitted within a fully enclosed building.
 - 2. No outside storage of marijuana, marijuana products, or related supplies is permitted.
 - 3. No drive-through service is permitted for marijuana-related uses.
 - 4. No marijuana or marijuana product shall be smoked, eaten, or otherwise consumed or ingested on the premises where sold.
 - 5. An operating plan for marijuana cultivation facilities and marijuana manufacturing facilities shall be provided that, at a minimum, addresses wastewater, disposal of waste, and security at the premises.
 - 6. A ventilation plan shall be included for marijuana cultivation facilities, marijuana manufacturing facilities, and small-scale marijuana caregivers that provides for adequate ventilation so as to prevent pesticides, insecticides, or other chemicals used in the cultivation or processing of marijuana or marijuana-related products from being dispersed or released outside the premises. The plan shall further

- provide for resulting smoke, vapor, fumes, gases, and particulate matter from marijuana or its processing or cultivation to be effectively confined to the premises.
7. Marijuana-related uses shall provide odor control measures so that odor generated on site is mitigated at the property line of the lot containing the marijuana-related use. Applications must demonstrate appropriate measures, such as carbon filtration, ventilation and exhaust systems, facility plans, or other additional practices adequate to mitigate odors for the scale of operations for the uses proposed.
 - D. For purposes of this ordinance, any approval issued for a marijuana cultivation facility, marijuana manufacturing facility, or marijuana testing facility operated pursuant to 22 M.R.S. § 2421 et seq. shall be deemed to constitute approval for the same corresponding marijuana cultivating, manufacturing, or testing facility use operating under 28 M.R.S. § 101 et seq. Notwithstanding the above, no marijuana cultivation facility, marijuana manufacturing facility, or marijuana testing facility may operate without the applicable state and City license.

6.4.11 Marine uses

- A. In the B-5/B-5b and B-6 zones, marine uses shall include marine products wholesaling and retailing and harbor and marine supplies and services.
- B. In the B-5/B-5b zones, marine uses shall include marine repair services and machine shops; shipbuilding and facilities for the construction, maintenance, and repair of vessels; marine museums and aquariums; boat repair yards;

boat storage; and seafood processing, packing, and distribution for human consumption.

- C. In the B-6 zone, marine uses shall include underground marine fuel storage provided that such storage shall be used solely for the purpose of fueling vessels.

6.4.12 Multiplexes

- A. No habitable space in a dwelling unit shall be below grade, except basements that are a part of and below aboveground units.
- B. In the R-5 zone, the maximum number of units in a multiplex building shall be six.
- C. No dwelling unit shall have less than 600 square feet of floor area, exclusive of common hallways and storage in basement and attic.

6.4.13 Office parks in the O-P zone

An office park shall be approved only if the development meets the following development standards:

- A. Office parks shall have a minimum gross area of three acres of contiguous land, consisting of either an Office Park Planned Unit Development (OPPUD) on one lot with one or more buildings and with driveways and open areas to be owned and maintained in common, or an office park subdivision (OPS) on one parcel with two or more lots intended for separate ownership.
- B. Development proposals shall include a master plan of the office park. The master plan shall include the following:
 1. *For an OPPUD proposal.* The location of the building(s) on the site; infrastructure of the site; identification of common areas; traffic circulation, architectural character and treatment of the building(s); proposed

- building envelopes; phasing and timing of the development; private development restrictions; and such other information necessary and sufficient to ensure compliance with the standards in this subsection.
2. *For an OPS proposal.* Delineation of the subdivision of land; infrastructure of the site; identification of common areas, if any; traffic circulation; desired architectural character, including private development restrictions to ensure compatibility of architectural character of future buildings with each other; phasing and timing of the development; private development restrictions; and such other information as necessary and sufficient to ensure compliance with the standards in this subsection.
- C. Development proposals shall demonstrate a reasonably unified design of the site, including the architecture, the layout of the buildings, pedestrian and vehicular circulation plan, open space, drainage, and the topography, soil conditions, vegetation and other natural features of the site. Integration of open spaces and natural features shall be achieved by incorporation of outdoor amenities for the benefit of users of the site, such as jogging and walking trails, gardens, and benches.
 - D. Development proposals shall include a landscape program. All land areas not covered by structures, parking areas, or circulation facilities shall be landscaped and maintained. In order to soften the visual impact of large expanses of pavement in parking lots, vegetation shall be planted or retained in islands or planting strips where required by the site plan or subdivision ordinance.
 - E. Parking may not be located in the required front setback. If parking is provided in the area between the building and minimum setback line, the parking area must be adequately screened with landscaping materials and permanently maintained.
 - F. Development proposals shall include internal sidewalks, illustrating the manner in which the developer will provide this amenity to take advantage of the topography and natural features of the site.
 - G. Development proposals shall include buffering yard areas abutting a residential zone or residential use and to screen parking lots and driveways from public view, identifying the location, composition, and maintenance of the buffer. The buffer and screening shall be of a dense and continuous nature and shall incorporate trees, shrubs, fencing, berms, and related elements deemed necessary.
 - H. Development proposals shall identify the extent to which the developer shall preserve natural features including, but not limited to, existing vegetation, flood plains, rock outcroppings, surface water bodies, drainage swales and courses, and wetlands; provided any such program shall consider and be sensitive to the need to preserve such natural features.
 - I. Development proposals shall identify all proposed traffic controls, parking areas, interior traffic circulation, and demonstrate that additional traffic generated by the project itself can be reasonably accommodated on existing public streets.
 - J. All buildings shall be designed or approved by a registered architect in the State of Maine and

shall be in conformance with the proposed master plan. The scale, texture, color and massing of the buildings shall be coordinated. The full range of high quality, permanent, and traditional or contemporary building materials and technology may be incorporated in a manner so that the development as a whole embodies distinguishing attributes that achieve the developer's desired degree of excellence and are in conformance with the architectural guidelines provided in the private development restrictions. Particular emphasis shall be placed on the appearance of building facades from public streets, from driveway and parking areas, and from other nearby buildings. Building elevation drawings shall be submitted which indicate architectural style, exterior finishes and color, building height and scale, and location and scale of window and door openings. Samples of exterior building materials shall also be submitted.

- K. Development proposals shall identify the location and style of lighting to be used in the development. All light fixtures shall be hooded or shielded so that the light shines downward.
- L. Development proposals shall identify all proposed signage. Signs shall be designed in proportion and character with the building facades. All signs shall be constructed of permanent materials and shall be coordinated with the building and landscaping design through the use of appropriate materials and finishes.

6.4.14 Planned unit development in the IR-3 zone

In addition to other applicable reviews, no development shall occur nor shall any new use be established in the IR-3 zone unless the Planning

Board finds that the final development plan for the site is in compliance with the following standards:

- A. The development shall demonstrate a reasonably unified response to the design possibilities of the site, by virtue of such elements as the design and layout of buildings and lots, circulation plan, open space, drainage, and orientation to achieve energy conservation or solar access, to form a functionally integrated whole.
- B. The design and layout of the development and buildings shall be reasonably compatible with the surrounding neighborhood by virtue of such features as architectural style, exterior finish, scale, circulation, open space, landscaping, and preservation of natural site amenities.
- C. All open spaces on the site shall be functionally integrated into the development plan by virtue of such features as accessibility to residents, recreation, conservation of existing public rights of access to shoreland areas and scenic natural areas, orientation to achieve energy conservation or solar access, preservation of natural site amenities, and use as a buffer between the development and the surrounding neighborhood.
- D. The development shall be designed primarily with a pedestrian orientation to minimize the use of and dependency on private motor vehicles. Appropriate areas on the site shall be designated, as necessary, for parking of common service vehicles, golf carts or bicycles to serve the transportation needs of residents and visitors. The internal circulation plan shall also be coordinated with the existing island street network to ensure adequate access for emergency and service vehicles.

- E. A project construction plan shall be developed indicating the anticipated number and types of vehicles such as construction equipment, supply delivery and service vehicles needed for undertaking the construction of the project. Documentation shall be provided as to the proposed transportation route such as roads, piers, beaches, sand bars and the impact of construction related activities on the routes.
- F. The development shall not have a substantial adverse impact on the capacity of existing island docking facilities. The developer shall demonstrate that an adequate water transportation system, including docking facilities, exists or will be provided.
- G. Adequate provision for off island solid waste disposal shall be demonstrated such that the impact on municipal solid waste disposal is minimized. A development shall incorporate methods such as the following to reduce the amount of solid waste generated by the project: compaction and reduction in waste volume, recycling, incineration or baler system, and private collection and transfer to an off-island location. It shall be demonstrated that there will be no significant environmental impacts from the solid waste disposal system.
- H. All sanitary waste from the development shall be disposed of by a public sewer, private community sewer system providing at least secondary treatment, or subsurface sewerage system, in compliance with federal, state and local regulations. The developer shall demonstrate that the project will comply with all applicable federal, state and local water quality and groundwater standards.
- I. The proposed development shall have sufficient water for the reasonably foreseeable needs of the development and shall not cause an unreasonable burden on existing water supply nor adversely affect groundwater resources. Unless the development is to be served entirely by public water and secondary treatment sewer systems, the determination of compliance with this provision shall be based upon one (1) or more comprehensive groundwater analyses and reports prepared by qualified professionals and including assessment of current groundwater aquifer conditions, the impact of the proposed development on the groundwater aquifer, and recommendations for mitigation of potential impacts caused by the development.
- J. The development shall preserve the natural features of the shoreland area by minimizing the disturbance of existing vegetation and slopes, avoiding development in areas subject to erosion and sedimentation, and conserving scenic views and vistas to and from the site.
- K. The development plan shall preserve significant resources of the site by integrating open space into the development plan and by conserving such features as scenic vistas, historic man made or natural features, existing vegetation, wetland areas, shoreland areas, ground water, natural wildlife habitat, and recommended or registered State of Maine Critical Land Areas, as well as other environmentally sensitive areas.
- L. All open spaces on the site shall be functionally integrated into the development plan by virtue of such features as passive and active recreational opportunities, accessibility to residents, preservation of natural site amenities and resources, orientation to achieve energy conservation or solar access, use as a buffer

between housing clusters and to screen the development from surrounding areas.

- M. The applicant shall demonstrate sufficient financial and technical capability for undertaking the proposed project. Financial capability shall include a cost estimate of the proposed improvements, proposed construction and permanent financing, and terms of sale or lease of dwellings and commercial space. Technical capacity shall include the experience and expertise of the developer in implementing projects of similar scope.
- N. The applicant shall develop an environmental impact analysis including an inventory of existing environmental conditions at the project site and in the surrounding area with an assessment of the development's probable impact upon the environment. The inventory shall include such resources as air, water quality, water supply, surface water and shoreline, geology, soils, topography, wildlife, botanical and aquatic, including rare and endangered species, historic, archeological and aesthetic. The analysis shall include the direct and cumulative adverse impacts of the project on these resources. The analysis shall also include what steps the applicant proposes to take to identify and minimize adverse environmental impacts during construction, management and use of the property and whether there are alternatives for the project which would decrease the impact of the development.
- O. If the project is to be completed in phases, the applicant shall indicate the schedule for completing and implementing infrastructure improvements as well as other improvements,

agreements or services required for compliance with the development standards of this subsection, planned unit development standards, and site plan and subdivision review requirements.

- P. The development shall not place an unreasonable burden on the ability of the City to provide police, fire, and other emergency services.

6.4.15 Retail in the B-3/B-3b/B-3c and B-5/B-5b zones

Retail shall not include wholesale and bulk purchase lumber and construction supply sales.

6.4.16 Solar energy systems

- A. All solar energy systems shall meet the technical, safety, and maintenance standards in the City of Portland *Technical Manual*.
- B. Solar panel placement should minimize or negate any solar glare impacting nearby properties or roadways, without unduly impacting the functionality or efficiency of the solar energy system.
- C. All applicants are encouraged to ensure the maximum solar energy generation from their system by obtaining solar access easements. Solar access easements may be filed consistent with Maine state law.
- D. Solar energy systems shall be located away from and screened from public ways and nearby residential/institutional uses to the extent possible and shall be designed so as to minimize impacts on significant scenic views.
- E. Layout and fencing shall be integrated with existing landscape and minimize removal of vegetation to the extent possible.

- F. Where any part of the proposed solar energy system (including associated facilities) is within a historic district, such development shall be reviewed and approved by the Planning Authority in accordance with Article 17. Where any part of the proposed solar energy system (including support structures and associated facilities) is within 100 feet of any designated landmark, historic district, or historic landscape district, such development shall meet the standards of Article 14 regarding compatibility with the landmark or historic district.
- G. Solar energy systems shall minimize impacts resulting from construction and maintenance of the solar energy system, including lighting, security measures, traffic, and grid connections.
- H. Where permitted in residential zones, and in the B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, B-7 and waterfront zones, all solar energy systems shall be co-located with other land uses.
- I. Major solar energy systems shall be located on areas already paved or built upon, or where other development is documented to be unlikely due to local conditions.

6.4.17 Tow lots

Tow lots must be at least 300 feet from any residential zone or conforming residential use.

6.4.18 Wind energy systems

- A. All wind energy generation equipment shall be approved under a certification program approved by the U.S. Department of Energy such as the Underwriters Laboratories, Germanishcer Lloyd Wind Energies, or other similar certifying organizations. Experimental, homebuilt, and prototype models shall not be permitted.
- B. Wind energy systems and associated facilities, including foundations and support structures, electrical connections and control equipment, associated site improvements, and construction techniques, shall be designed, engineered, and installed to comply with all applicable local, state, and federal construction and electrical regulations and Federal Aviation Administration regulations. Applicable state and local approvals shall be obtained prior to installation of any wind energy system.
- C. The support structure (e.g. tower, pole) for freestanding wind generating systems shall not be climbable for a minimum height of 12 feet above the surrounding ground level or accessible surface. All ground-mounted electrical and control equipment shall be labeled and secured to prevent unauthorized access.
- D. All moving components of a wind energy system shall be a minimum of 12 feet from ground level or accessible surface.
- E. All on-site electrical wiring associated with the proposed wind energy system shall be located within the tower/pole/supporting structure and underground. Above ground on-site connections near substations or to the electric grid shall be allowed.
- F. The use of guy wires is discouraged. If required, they shall be located away from pedestrian routes/access points and marked with visible, reflective, colored objects, such as flags, reflectors, or tape, which shall be placed on the anchor points of guy wires and along the guy wires up to a height of ten feet from the ground.
- G. No wind energy system shall be located within 250 feet of any significant wildlife habitat, as

defined by Maine Department of Environmental Protection/Maine Department of Inland Fisheries and Wildlife under provisions of the Natural Resources Protection Act (38 M.R.S. § 480 et seq.) including wildlife habitat for species appearing on the official state and federal list of endangered or threatened animal species.

- H. For all wind energy systems over 45 feet in height above the ground or over 100kW, evidence shall be provided that the Environmental Coordinator of the Maine Department of Inland Fisheries and Wildlife and the Maine Natural Area Program have been notified of the location, height, and design of the proposed wind energy system at least three weeks prior to any final determination under this subsection. Any comments received therefrom shall be addressed to the satisfaction of these state authorities prior to any final determination under this provision.
- I. Wind energy systems shall be designed to avoid electromagnetic interference with the transmission or reception of radio, telephone, television, microwave, navigational, or similar signals to neighboring areas.
- J. Wind energy systems and associated facilities shall use non-reflective materials and neutral colors and textures that blend in with the surrounding environment. Ground-mounted systems and associated facilities shall be landscaped to integrate the proposed wind energy system into the existing landscape/streetscape.
- K. No part of the system may be illuminated, except as required by the Federal Aviation Administration (FAA) or other authorities for safety and security purposes. Where lighting is

required, it shall be at the lowest intensity allowable with fixtures shielded and directed to minimize glare and visibility from the ground.

- L. There shall be no signs, advertisements, flags, or decorative items on a wind energy system or any associated facilities, except for the manufacturer's/installer's/owner's identification (not exceeding one square feet in size), appropriate warning signs, or lights if required by the FAA.
- M. Wind energy systems shall be prohibited within any historic landscape district, any historic cemetery, any historic district, except the Congress Street Historic District where it coincides with the B-3 zone, or within 1,000 feet of any designated historic landmark, which shall include Portland Observatory, Cathedral of Immaculate Conception, St. Dominic's Cathedral, St. Luke's Cathedral, State Street Church, and City Hall.
- N. Wind energy systems within R-OS zones are allowed only where they are co-located within public industrial or utility facilities.
- O. Systems shall be screened with a vegetated buffer from public areas and residential buildings.

6.5 CONDITIONAL USES

6.5.1 Conditional use review procedure

- A. **Review authority.** The Zoning Board of Appeals shall review all conditional use applications, with the exception that the Planning Board shall review:
 1. All conditional use applications in the B-3/B-3b/B-3c, B-5/B-5b, B-6, and B-7 zones.
 2. All conditional use applications associated with projects that are otherwise before the Planning Board.

3. Conditional use applications for specific uses for which the Planning Board is identified as the review authority under Subsection 6.5.6.

- B. **Application.** Applications for conditional use review shall be submitted to the Building Authority for all Zoning Board of Appeals reviews and the Planning Authority for all Planning Board reviews. A nonrefundable application fee, as established from time to time by the City Council to cover administrative costs and costs of a hearing, shall accompany each application. The application shall be in such form and shall contain such information and documentation as shall be prescribed from time to time by the review authority.
- C. **Public hearing.** A public hearing shall be set, advertised, and conducted by the review authority in accordance with Article 2 of this Land Use Code.
- D. **Action.** Within 30 days following the close of the public hearing, the review authority shall render its decision, in a manner and form specified by Article 2 of this chapter, approving the conditional use, approving the conditional use subject to conditions as specified in Subsection 6.5.3, or denying it. The failure of the review authority to act within 30 days shall be deemed an approval of the conditional use, unless such time period is mutually extended in writing by the applicant and the review authority. Within five days of such decision or the expiration of such period, the Building Authority or Planning Authority shall mail notice of such decision or failure to act to the applicant and, if a conditional use is authorized, list therein any and all conditions imposed by the review authority.

6.5.2 General conditional use standards

The review authority shall, after review of the application, approve a conditional use upon a finding that the proposed conditional use, at the size and intensity contemplated at the proposed location, will not have substantially greater negative impacts than would normally occur from surrounding uses or other allowable uses in the same zone. The review authority shall find that this standard is satisfied if it finds that:

- A. The volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and the number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the same zone.
- B. The proposed use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter.
- C. The design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generation, arrangement of structures, and materials storage will not have a substantially greater effect/impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.
- D. The proposed use will meet any additional zone or use-specific standards identified in Tables 6-A to 6-F and Subsections 6.5.6 and 6.5.7.

6.5.3 Conditions on conditional use approvals

The review authority may impose such reasonable conditions upon the premises benefited by a conditional use as may be necessary to prevent or minimize adverse effects therefrom upon other

property in the neighborhood. Such conditions shall be expressly set forth in the resolution authorizing the conditional use. Violation of such conditions shall be a violation of this article.

6.5.4 Effect of issuance of a conditional use approval

The approval of a conditional use shall not authorize the establishment or extension of any use nor the development, construction, reconstruction, alteration, or moving of any building or structure, but shall merely authorize the preparation, filing, and processing of applications for any permits or approvals which may be required by the City of Portland Code of Ordinances, including but not limited to a building permit, a certificate of occupancy, subdivision approval, and site plan approval.

6.5.5 Limitations on conditional use approvals

No conditional use approval shall be valid for a period longer than six months from the date of approval, or such other time, not to exceed two years, as may be fixed at the time granted, unless the conditional use has been commenced or a building permit is issued and construction has begun within that period and is thereafter diligently pursued to completion, provided, however, that one or more extensions of said time may be granted if the facts constituting the basis of the decision have not materially changed and the two year period is not exceeded thereby. A conditional use approval shall be deemed to authorize only the particular use for which it was issued and such approval shall automatically expire and cease to be of any force or effect if such use shall for any reason be discontinued for a period of 12 consecutive months or more.

6.5.6 Supplemental use-specific conditional use standards

In addition to the general conditional use standards, the following standards shall apply to specific conditional uses:

A. Automobile, boat, and related dealerships and auto service stations

1. The Planning Board shall be the review authority.
2. Signs shall not adversely affect visibility at intersections or access drives. Such signs shall be constructed, installed, and maintained so as to ensure the safety of the public. Such signs shall advertise only services or goods available on the premises.
3. No ingress and egress driveways shall be located within 30 feet from an intersection. No entrance or exit for vehicles shall be in such proximity to a playground, school, church, other places of public assembly, or any residential zone that the nearness poses a threat or potential danger to the safety of the public.
4. A landscaped buffer, no less than five feet wide, shall be located along street frontages (excluding driveways). The buffer shall consist of a variety of plantings in accordance with the City of Portland *Technical Manual*.
5. Car washes shall be designed to avoid the tracking of residual waters into the street.

B. Emergency shelters

1. The facility shall provide adequate space for conducting security searches and other assessments.
2. The facility shall be designed with a centralized shelter operations office on each level providing sight lines to sleeping areas.
3. A management plan adequately outlining the following areas shall be provided: management responsibilities; process for resolving neighborhood concerns; staffing; access restrictions; on-site surveillance; safety measures; controls for resident behavior and noise levels; and monitoring reports.
4. Adequate access to and from METRO service shall be provided. The facility shall be within a $\frac{1}{4}$ mile of a METRO line, or shall be within $\frac{1}{2}$ mile of a METRO line and provide adequate indoor space to permit all shelter guests day shelter, as well as implement strategies to help residents utilize transit.
5. The facility shall provide on-site services to support residents, such as case management, life skills training, counseling, employment and educational services, housing assistance, or other programs.
6. Suitable laundry, kitchen, pantry, bicycle storage, and secure storage facilities for shelter stayers shall be provided on-site.
7. An outdoor area for guest use shall be provided on-site with adequate screening to protect privacy of guests.

C. General office in the R-6 & R-6a zones

1. Offices shall serve a member of a recognized profession and be maintained for the conduct of that profession. Professional office uses do not include veterinary offices.
2. For the use of any building designed or constructed for residential use, which was in use as a residence on April 18, 1984, or thereafter:
 - a. A professional office shall not be located within 500 feet of another as measured along the street line to the respective property lines.
 - b. A building with one or more professional offices shall have at least 50% of the total floor area of the building devoted to residential uses.
 - c. The total number of individuals working in a building of professional offices shall not exceed the equivalent of four full time employees.
 - d. Any additions or exterior alterations shall be compatible with the architecture of the building and maintain the residential appearance of the building. Construction of a new building shall be compatible with the architectural character of the surrounding area.
3. The scale and surface area of parking, driveways, and paved areas shall be arranged and landscaped to be compatible in size and scale with neighboring properties in the area and to properly screen vehicles from adjacent properties and streets.

D. High-tech manufacturing

1. A minimum of 1/3 of the total square footage devoted to manufacturing shall be conducted in a laboratory environment, in a controlled environment with specialized air handling systems that exceed levels for pressurization and filtration found in office environments and traditional manufacturing facilities.
2. Rooftop equipment shall be integrated into the overall building design and shall be screened as necessary.
3. In the B-7 zone, accessory warehousing is permitted. Where warehousing cannot be located on the same lot because the land area is too small to accommodate the warehousing on the same lot, one remote warehouse may be located within 600 feet of the principal use referenced above.
4. In the O-P zone, truck traffic serving a single manufacturing business or institution shall not exceed, on a regular basis, more than two tractor-trailer truck deliveries per week. No deliveries shall be accepted between 7:00 p.m. and 7:00 a.m.

E. Industrial uses

1. *In the B-2/B-2b/B-2c zones*
 - a. The Planning Board shall be the review authority.
 - b. The site shall have an adequate traffic circulation pattern designed to avoid hazards to vehicular circulation on adjoining streets. All stacking of motor vehicles shall be on site, and loading facilities shall be located to the rear of the building and shall not be visible from the street.
- c. The exterior design of the structures, including architectural style, facade materials, roof pitch, building form, established setbacks, and height shall be of a commercial rather than industrial character. The site shall contain screening and landscaping which shall meet the requirements of Article 14 for screening between land uses and the City of Portland *Technical Manual*.
2. *In the B-3/B-3b/B-3c zones*
 - a. The floor area devoted to industrial use shall not exceed 10,000 square feet. For a building in existence on March 11, 1991, the floor area shall not exceed 10,000 square feet or 50 percent of the total floor area, whichever is greater.
 - b. The associated vehicular loading, unloading, parking, circulation, and traffic volumes on the site and on adjacent public streets shall not have a more intensive impact than any use on the site within the last five years.
 - c. Any buildings located in a PAD Overlay Zone shall be subject to the requirements of Section 8.8 in addition to the requirements of this subsection.
 - d. For buildings that either were not in existence on March 11, 1991, or were in existence on that date but were either in use for any permitted use in the B-3 zone or were designed or constructed for any such use:

No tractor trailer trucks or longer vehicles shall be associated with the proposal.

The proposal shall exclude warehousing and storage as a principal use.

The use shall not generate more than six delivery or service trips per day between 7:00 a.m. and 7:00 p.m.

3. *In the B-5/B-5b zones*

- a. Truck loading and access and vehicle parking shall be located in the rear or side yard of the site where possible.
- b. Street frontage shall be designed for pedestrian scale or interest.
- c. Shared infrastructure to the extent practicable, including, but not limited to, service alleys, parking areas, stormwater treatment, public transportation facilities, and driveways, shall be utilized.

4. *In the B-6 zone.* No brew pubs or microbreweries east of Waterville Street shall be permitted within 50 feet of Fore Street.

F. Institutional uses (excluding preschools)

1. The Planning Board shall be the review authority.
2. In the case of expansion of existing institutional uses onto land other than the lot on which the principal use is located, it shall be demonstrated that the proposed use cannot reasonably be accommodated on the existing site through more efficient utilization of land or buildings, and will not cause significant physical encroachment into established residential areas.

3. The proposed use shall not cause significant displacement or conversion of residential uses existing as of June 1, 1983, or July 15, 1985 in the IR-1 and IR-2 zones, or thereafter.

4. In the case of a use or use expansion which constitutes a combination of the conditional institutional uses with capacity for concurrent operations, the applicable minimum lot sizes shall be cumulative.

5. In the case of community halls:

- a. The structure shall have been in existence as of January 4, 2010.
- b. The structure shall have been built for institutional or other non-residential uses.
- c. The structure shall be operated by, or operated subject to the control of, a not-for-profit entity in accordance with its not-for-profit purposes.
- d. A parking management plan shall be submitted for review and approval by the Planning Board.

6. In the case of private club or fraternal organizations, any such establishment serving alcoholic beverages or in possession of a license for serving alcoholic beverages shall meet the minimum lot size requirement for places of assembly greater than 10,000 square feet.

7. Post-secondary schools in the R-2 zone shall only be permitted on a collector or arterial road.

8. In the case of a post-secondary school within the R-5 zone and not including the USM Overlay Zone, such school may build principal structures to a height of 55 feet if the following standards can be met:

- a. Minimum lot size: 10 acres which may include adjacent land owned by the institution on both sides of a public street.
 - b. Minimum setback between buildings on-site: 20 feet.
 - c. Minimum setback from external property boundary: 30 feet, except that parking garages over 35 feet in height must be located 50 feet from external property boundaries when adjacent to an adjoining residential use.
 - d. The area between the structure and adjoining residential uses must be adequately screened with appropriate landscaping or other features to buffer the building and effects thereof (i.e. noise, light, etc.) from abutting properties.
- G. Multi-family**
- 1. *In the R-3 and R-5 zones.* Alteration of a structure existing and not in residential use as of January 1, 1984 to three or more dwelling units shall be permitted as a conditional use provided that:
 - a. No open outside stairways or fire escapes above the ground floor shall be constructed or have been constructed in the immediately preceding five years.
 - b. 3,000 square feet of land area per dwelling unit shall be required.
 - c. A lower level dwelling unit shall have a minimum of one-half of its floor-to-ceiling height above the average adjoining ground level.
 - d. Any addition or exterior alteration, such as change in façade materials, building form, or roof pitch, shall be designed to be compatible with the architectural style of the structure.
 - e. In the R-3 zone, any addition or exterior alteration shall be limited to a gross floor area equal to or less than 25% of the total existing floor area as of June 13, 2018.
 - f. Paved areas shall be designed to be compatible in size and scale with neighboring properties in the area and properly screened from adjacent streets.
 - 2. *In the I-B zone*
 - a. Multi-family buildings shall have a maximum of four units.
 - b. No open outside stairways or fire escapes above ground floor shall be constructed or have been constructed in the immediately preceding five years.
 - c. A below grade dwelling unit shall be permitted only if access is provided directly to the outside of the building.
 - d. Density shall be determined by the most restrictive abutting residential zone, except for those lots which are served by public water and sewer, where density shall be determined by the least restrictive abutting residential zone. If no residential zone is abutting, density shall be determined by the nearest residential zone. Residential uses shall meet the requirements of such abutting or nearest residential zone.

- e. Any additions or exterior alterations shall be compatible with the original architecture of the building. The exterior design of new construction, including the architectural style, facade materials, roof pitch, building form, and height shall be compatible with neighboring properties.
- f. No existing dwelling unit shall be decreased to less than 1,000 square feet of floor area.
- g. No additional dwelling unit shall have less than 600 square feet of floor area, exclusive of common hallways and storage in basement and attic.
- h. All sanitary waste shall be disposed of by a public sewer, subsurface sewerage system, or other method in compliance with all applicable federal, state and local regulations.
- i. There shall be sufficient water for the needs of the dwellings such that the use does not cause an unreasonable burden on an existing water supply nor adversely affect groundwater resources.
- c. The lot where the off-street parking is proposed shall be under the control of the owner of the use which requires the off-street parking. Evidence of such control by deed or lease shall be required before the certificate of occupancy is issued. If such control should be abrogated, the parking use thus allowed shall automatically revert to a nonconforming use in violation of this article and shall be terminated forthwith.
- d. Conditions may be imposed to insure development compatible with that of the immediate neighborhood notwithstanding the provisions of any other section of this Land Use Code. Such conditions may include limits on the period of such use.

H. Off-street parking

- 1. *In the R-3, R-4, and R-5 zones*
 - a. Off-street parking must be designed to satisfy the parking requirement of a use located in and conforming with the provisions of a nearby mixed-use or industrial zone.
 - b. The lot on which the parking is proposed must be located wholly within 300 feet, measured along lines of public access, from the use which requires the off-street parking.
- 2. *In the R-6 zone.* Off-street parking shall be for passenger cars for uses permitted in the R-6 zone.
- 3. *Structured parking in the B-6 and B-7 zones*
 - a. Parking garages shall incorporate first floor retail space or other non-parking and active use along all street frontages.
 - b. The Planning Board may waive the requirement for first floor mixed-use upon demonstration that the project meets one or more of the following criteria:
 - i. The applicant demonstrates that steepness of grade or the character of the adjacent street will not support retail or first-

- floor mixed use in the foreseeable future.
- ii. The first floor of the garage is set back a minimum of 35 feet from the street right-of-way and its design does not provide an impediment for development of such space for mixed-use in the future. Such space (between the garage and the street) shall, in the interim, not be used for surface parking.
 - iii. The applicant can demonstrate to the satisfaction of the Planning Board that a market for first floor mixed uses currently does not exist, provided that the structure of the garage is designed to accommodate retail and or mixed-uses in the future. In these cases, the Planning Board will need to find that, on the street-level deck of a proposed parking garage, a minimum of 20 feet horizontal distance of depth from the street and nine feet finished floor-to-finished ceiling clearance could house future retail and or mixed use. The applicant will further need to demonstrate that the garage design anticipates the future development of utilities and circulation necessary for non-parking uses. Where a parking garage fronts on more than one public street and where there is an existing change in grade elevation of over 5% across the footprint of the garage, the nine-foot floor-to-ceiling requirement only applies to the street with higher traffic volumes.
 - c. Where the Board allows a waiver of first floor mixed use, garages shall display architecture that enhances the pedestrian experience and disguises the parking use to the extent possible. Use of traditional storefront design concepts and traditional building materials is encouraged.
4. *Surface parking in the B-3, B-6, and B-7 zones*
 - a. Surface lots shall be laid out in a manner conducive to development of future buildings, and/or structured parking.
 - b. Surface parking, including parking aisles, shall be located at least 35 feet from a street. The 35-foot setback shall not apply to driveways perpendicular to the street providing access to the site.
 - c. In the B-7 zone, surface parking that does not meet the 35-foot parking setback may be permitted as a conditional use, provided that:
 - i. All or a portion of the 35-foot setback area had a gravel surface on September 29, 2015.
 - ii. The total gravel surface area on the lot and any contiguous lots did not exceed 15,000 square feet on September 29, 2015.
 - iii. The parking spaces provide parking to a principal building on a contiguous lot.

- iv. One of the buildings described in (iii) above meets the minimum height requirements of the Bayside Height Overlay Map and/or a building on the site has a floor area of 25,000 square feet or greater.
 - v. The total number of spaces within 35-foot setback in combination with other spaces on the lot does not exceed the minimum parking spaces required.
 - vi. The proposed parking spaces meet the landscape and buffer requirements of Subsection 6.8.8.
 - vii. Parking spaces within the 35-foot setback shall provide stormwater quality treatment if required by the City of Portland Stormwater Management Standards and the Maine DEP Chapter 500 Stormwater Management Standards. If not required, an alternative low impact development treatment system approved by the Planning Board shall be provided.
- I. Preschool facilities**
- 1. *In all zones*
 - a. Outdoor play areas shall be screened and buffered from surrounding residences with landscaping and/or fencing to minimize visual and noise impacts.
 - b. Solid waste shall be stored in covered containers. Such containers shall be screened on all sides.
 - 2. *In the R-P zone.* Facilities for more than 12 children shall meet the following additional standards:
 - a. The facility shall provide a minimum of 75 square feet of outdoor play area per child.
 - b. The play area shall be located in the side and rear yards only and shall not be located in front yards.
 - c. Outside play areas shall be separated from abutting properties by a fence at least 48 inches in height.
 - d. A 10-foot-wide landscaped buffer shall be required outside of the fenced play area, and shall be established in accordance with the landscaping standards of the City's *Technical Manual*.
 - 3. *In residential and island zones*
 - a. The facility shall be located in a structure in which there is one or more occupied residential units or in an existing accessory structure, unless the facility is located in a principal structure that has not been used as a residence in whole or in part within the five years immediately preceding the application for a preschool use, or in a nonresidential structure accessory to the principal nonresidential use.
 - b. There shall be no maximum limit on the number of children in a facility located in a principal structure that has not been used as a residence in whole or in part within the five years immediately preceding the application for a preschool use, or in a

nonresidential structure accessory thereto.

- c. The maximum capacity shall be 12 children for facilities located in residential or existing structures accessory thereto, unless the additional standards in paragraph (d) below are met.
- d. Preschool facilities located either in structures that have been in residential use within the past five years or in existing accessory structures and that serve between 13 and 24 children shall meet the following additional standards:
 - i. The facility shall provide a minimum of 75 square feet of outdoor play area per child.
 - ii. The play area shall be located in the side and rear yards only and shall not be located in front yards.
 - iii. Outside play areas shall be separated from abutting properties by a fence at least 48 inches in height.
 - iv. A 10-foot-wide landscaped buffer shall be required outside of the fenced play area, and shall be established in accordance with the landscaping standards of the City's *Technical Manual*.
 - v. The minimum lot size for a preschool located in a residential or existing accessory structure and serving more than 12 children shall be 20,000 square feet.
 - vi. The maximum number of children in a preschool facility located in a

residential or existing accessory structure shall be 24.

- vii. Any additions or exterior alterations such as facade materials, building form, roof pitch, and exterior doors shall be designed to be compatible with the architectural style of the building and preserve the residential appearance of the building.

J. Raising of domesticated animals for non-commercial purposes

- 1. No animals shall be kept on any lot less than three acres or closer than 100 feet to any street or lot line, except domesticated chickens as regulated in Chapter 5 of the City of Portland Code of Ordinances.
- 2. This use shall not create any odor, noise, health, or safety hazards, or other nuisance to neighboring properties.
- 3. Raising of pigs or reptiles is not permitted.

K. Sheltered care group homes

- 1. A sheltered care group home shall not be located within 500 feet of another, as measured along street lines to the respective property lines.
- 2. The facility shall make provision for adequate on-site staffing and supervision in accordance with applicable state licensing requirements. If a facility is not licensed by the state, there shall be a minimum of one staff person for every 10 residents or fraction thereof.
- 3. The Board of Appeals or Planning Board may impose conditions upon a conditional use permit concerning the creation or operation of a sheltered care group home

including but not limited to the following: site and building maintenance; lighting, fencing, and other appropriate security measures; screening and buffering of parking areas; compatibility of any additions or alterations with the existing residential structure; compatibility of new structures with the architectural character of the surrounding area; and limitation on the duration of a sheltered care group home permit.

L. Utility substations

1. Utility substations shall be as small in size as practicable.
2. Substations shall be suitably screened and landscaped so as to ensure compatibility with the surrounding neighborhood. The remainder of the lot not consumed by the utility substation and its related access shall be designed and designated for future development.
3. If greater than 100 square feet in the B-7 zone, the structure shall be set back at least 35 feet from the street right-of-way except in the case of a lot having frontage on Marginal Way and I-295, provided the minimum 35-foot setback is met along Marginal Way.
4. In the B-7 zone, the substation equipment shall be fully enclosed within a structure.

6.5.7 Supplemental zone-specific conditional use standards

In addition to the general conditional use standards and supplemental use-specific conditional use standards, the following standards shall apply to conditional uses within certain zones:

A. R-OS Zone

1. The use shall be in conformity with or satisfy a deficiency identified in a federal, state, regional, or city recreation and open space plan, including but not limited to the state *Comprehensive Outdoor Recreation Plan*, as such plans may from time to time be created or revised.
2. Buildings and structures shall not obstruct significant scenic views presently enjoyed by nearby residents, passersby, or users of the site.
3. Indoor recreation or nonrecreational uses shall serve a significant public purpose that cannot reasonably be accommodated outside of the recreation and open space zone.

6.6 ACCESSORY USES

6.6.1 In general

- A.** Accessory uses shall be permitted in conjunction with permitted or conditional principal uses. Accessory uses must be:
1. Customarily found in association with the principal uses.
 2. Generally consistent with the impacts of the primary use.
 3. Secondary in nature, clearly incidental and subordinate to the principal uses in terms of area and function.
 4. Located on the same lot as the principal use unless otherwise permitted.
 5. Consistent with the intent of the zone.
- B.** No accessory use or uses within a building shall occupy more than a combined total of 25% of the floor area of the principal building, with the exception of required off-street parking, unless otherwise provided in Subsection 6.6.2 below.

- C. No accessory use or uses not within a building shall occupy more than a combined total of 25% of the unbuilt lot area, or of the required rear yard area, with the exception of off-street parking or as otherwise provided in Subsection 6.6.2.

6.6.2 Standards for specific accessory uses

A. Accessory Dwelling Units (ADUs)

1. Accessory Dwelling Units (ADUs) shall be permitted on all lawfully conforming and nonconforming lots with legal use identified as either single- or two-family dwellings. ADUs shall comply with all dimensional standards of the underlying zone unless otherwise provided below.
2. One ADU shall be permitted per qualifying property.
3. The owner(s) of the residence in which the accessory dwelling unit is created must occupy at least one of the dwelling units, with the exception of legally nonconforming lots on Peaks Island.
4. On Peaks Island, neither the accessory unit or principal unit shall be used for short-term rentals as defined under Chapter 6, Section 150.1 of the City of Portland Code of Ordinances.
5. The appearance of the principal structure as either a single- or two-family structure shall not be significantly altered to reflect the addition of a new dwelling unit. When an ADU is significantly visible from public ways, the building design shall:
 - a. Be clearly subordinate to the principal structure(s) in scale and position in relationship with the street and principal structure(s).
 - b. Not include a separate entrance along the front façade of an existing single- or two-family structure or outside stairways or fire escapes above the ground floor.
6. Under circumstances where an existing nonconforming structure is converted to an ADU, the design of the ADU shall take into consideration to the extent practicable the privacy of adjacent properties.
7. The developer of an ADU shall record a deed restriction requiring that the ADU and at least one other unit on-site remain under common ownership.
8. ADUs shall comply with all dimensional requirements of the underlying zone except:
 - a. Lot coverage and lot area per dwelling unit requirements.
 - b. Within the IR-1 zone, the minimum lot area shall be 70,000 square feet, except on Peaks Island where this standard shall not apply.
 - c. Within the IR-2 zone, the minimum lot area shall be 30,000 square feet, except on Peaks Island where this standard shall not apply.
9. An ADU shall be limited to a gross floor area of 800 square feet or $\frac{2}{3}$ of the gross floor area of the principal unit(s), whichever is the lesser amount.

- B. **Amusement devices.** Except where the principal use consists of the sale of alcoholic beverages for consumption on premises or where the principal structure is an airline terminal, pinball machines or amusement devices shall not be considered to be accessory

uses whenever there are more than a total of two such machines or devices on the premises.

C. Antennas, discs, transmitting and receiving equipment. Building-mounted antennas, discs, and other transmitting and receiving equipment shall be:

1. No taller than 15 feet above the highest structural steel of the building roof.
2. Setback no less than 15 feet from the building perimeter.
3. Integrated into the architecture of the building in placement, form, color, and material so as to screen or camouflage such equipment from public view.

D. Drive-throughs. Drive-throughs shall be permitted as an accessory use in the B-4 zone. Drive-throughs shall be reviewed as conditional accessory uses in the B-2/B-2b/B-2c zones, B-3/B-3b/B-3c zones, B-6 zone, and B-7 zone. In all other zones, drive-throughs shall be prohibited. Where a conditional use, drive-throughs shall be subject to the provisions of Section 6.5 and the following additional review standards:

1. *In general*
 - a. The Planning Board shall be the review authority.
 - b. Features such as windows, vacuum cleaners, menu/order boards, and stacking lanes must be placed, where practicable, to the side and rear of the principal building except where such placement will be detrimental to an adjacent residential zone or use, and shall be located no nearer than 40 feet from any adjoining property located in a residential zone. This distance shall be measured from the outermost edge of the outside drive-

through feature to such property line. In addition, drive-through features shall not extend nearer than 25 feet from the right-of-way.

- c. The site must have adequate stacking capacity for vehicles waiting to use these service features without impeding vehicular circulation or creating hazards to vehicular circulation on adjoining streets.
- d. Any speakers, intercom systems, or other audible means of communication shall not play pre-recorded messages. Any speakers, intercom systems, audible signals, computer prompts, or other noises generated by the drive-through services or fixtures shall not exceed 55 dB or shall be undetectable above the ambient noise level as measured by a noise meter at the property line, whichever is greater.
- e. Site and vehicular light sources shall not unreasonably spill over or be directed onto adjacent residential properties and shall otherwise conform to the lighting standards set forth in the City of Portland *Technical Manual*.
- f. Where automobiles may queue, waiting for drive-through services, their impacts must be substantially mitigated to protect adjacent residential properties from headlight glare, exhaust fumes, and noise. As deemed necessary by the review authority, mitigation measures shall consist of installation of solid fencing

with landscaping along any residential property line which is exposed to the drive-through or the enclosure of the drive-through fixtures and lanes so as to buffer abutting residential properties and to further contain all associated impacts.

- g. Drive-through lanes shall be designed and placed to minimize crossing principal pedestrian access-ways or otherwise impeding pedestrian access.
- h. The board, as part of its review, may take into consideration the impact hours of operation may have on adjoining uses.
- 2. *In the B-2/B-2b/B-2c zones.* Drive-throughs shall only be permitted when accessory to a pharmacy or banking facility use. Drive-throughs shall not be permitted for restaurant, bakery, or other food or beverage service uses. Drive-throughs are only permitted in buildings of three or more stories where a majority of the upper stories is devoted to three or more dwelling units. The drive-through shall be screened as much as practical from the front of the building and shall be no closer than 40 feet from abutting residential zones and 25 feet from the street line.
- 3. *In the B-3/B-3b/B-3c zones.* Drive-throughs shall only be permitted when accessory to a bank. Drive-throughs shall be subject to the Downtown Urban Design Guidelines.
- 4. *In the B-6 zone.* Drive-throughs shall only be permitted when accessory to a bank and located in the interior of parking structures. Drive-through vehicle circulation shall not create an impediment

for retail or mixed-use development for the first floor of the subject garages along any adjacent public streets.

- 5. *In the B-7 zone*
 - a. The drive-through must be accessory to a bank occupying a minimum floor area of 4,000 square feet.
 - b. The drive-through must be attached to or included within a building with a minimum floor area of 20,000 square feet, except that for lots of less than 20,000 square feet and in existence as of March 9, 2005, a drive-through may be included in a building of less than 20,000 square feet.
 - c. The drive-through facility must be attached or included within a building and/or addition meeting the minimum height of four stores in the Bayside Height District A and three stories in the Bayside Height Districts B and C. For the purposes of this conditional use, the minimum height exceptions for the B-7 zone shall not apply.
 - d. The first floor of the building must include banking or other retail storefront uses with storefront windows, entries, and interior public space oriented to and visible from the street, with front entry access facing the street and directly accessible from the public sidewalk.
 - e. Drive-through vehicle circulation shall not be located between the building and any adjacent public streets.
 - f. The drive-through shall be limited to two vehicle drive-through lanes.

- g. The location of any drive-through shall be limited to the geographic area between Somerset/Kennebec Streets/I-295/Franklin Street/Forest Avenue.

E. Heliports. Heliports shall meet the following minimum specifications:

1. *Roof heliport*
 - a. Take-off area (min.): 200 feet x 250 feet
 - b. Parking area (min.): 30 feet x 90 feet
2. *Ground heliport*
 - a. Take-off area (min.): 300 feet x 700 feet
 - b. Parking area and station building shall be located out of flight area.
3. *Elevation of operational area above street (max.):* 100 feet
4. *Clearance from lateral obstruction (min.):* 100 feet
5. *Width of approach and departure path (min.):* 500 feet at landing area, tapering outward 15 degrees on each side to a width of 1,000 feet
6. *Slope with emergency landing areas:* 1:8
7. *Slope without emergency landing areas:* 1:20
8. *Curved approach:* Minimum radius to turn, 650 feet
9. *Approach zone transition area slope:* 1:2

F. Home occupations

1. The purpose of home occupations is to allow the secondary and incidental use of a residence for the conduct of appropriate occupations whose external activity levels and impacts are so limited as to be compatible with the residential character of the neighborhood.

2. Home occupations must be conducted entirely within the dwelling unit by one or more persons residing within the dwelling unit.
3. In connection with the operation of a home occupation, the following requirements shall be met:
 - a. A home occupation shall not occupy more than 500 square feet of floor area or more than 25% of the total floor area of such a dwelling unit, whichever is less, or in the case of licensed family day care homes or home babysitting services, to accommodate not more than six children plus two children after school and having no nonresidential employees.
 - b. There shall be no outside storage of goods and materials nor shall there be exterior displays, or display of goods visible from the outside.
 - c. Storage of materials related to the home occupation shall count as a part of the occupancy limitations above, but shall not constitute a dominant part of such occupancy, provided, however, storage of such materials or products in garages or other accessory structures is prohibited.
 - d. Exterior signs shall be limited to one non-illuminated sign not exceeding a total area of two square feet, affixed to the building and not projecting more than one foot beyond the building.
 - e. Any exterior alterations to the residence shall be compatible with the

- architecture of the building and maintain the residential appearance by virtue of exterior materials, lighting, and signs.
- f. The home occupation shall not produce offensive noise, vibration, smoke, dust, or other particulate matter, odorous matter, heat, humidity, glare, or other objectionable effects.
- g. There shall be no more than one nonresident employed in the home occupation, provided, however, family day care or home babysitting services shall have no nonresident employees.
- h. No traffic shall be generated by the home occupation in greater volumes than would normally be expected in a residential neighborhood.
- i. No motor vehicle exceeding a gross vehicle weight of 6,000 pounds shall be stored on the property in connection with the home occupation.
- 4. No residence shall be occupied, altered or used for any home occupation except the following:
 - a. Accountants and auditors.
 - b. Answering services (telephone).
 - c. Architects.
 - d. Artists and sculptors.
 - e. Authors and composers.
 - f. Computer programming.
 - g. Custodial services.
 - h. Custom furniture repair and upholstery.
 - i. Dentists, doctors, therapists, and health care practitioners.
 - j. Direct mail services.
 - k. Dressmakers, seamstresses and tailors.
 - l. Engineers.
 - m. Family planning services.
 - n. Hairstylists (limited to no more than two hair dryers).
 - o. Home crafts, such as model making, rug weaving, lapidary work, cabinet making, weaving, ceramics.
 - p. Interior designers.
 - q. Lawyers, justices of the peace, and notary publics.
 - r. Licensed family day care home or babysitting services.
 - s. Musicians or music teachers, including group instruction not to exceed six students at any time but not including performances or band rehearsals, which shall meet the following additional requirements:
 - i. Electronic amplification is prohibited.
 - ii. The applicant shall demonstrate that noise attenuation is provided which minimizes perception of sound at property lines at all times during the use. Noise attenuation measures may include, but are not limited to, insulation, double-pane windows, air conditioners, or any combination of these or similar noise attenuation measures.
 - iii. Hours of operation shall be limited to 8:30 a.m. to 9:30 p.m.
 - t. Office facility of a minister, rabbi, or priest.

- u. Photographic studios.
 - v. Professional counseling and consulting services.
 - w. Professional research services.
 - x. Sales persons provided that no retail or wholesale transactions are made on the premises.
 - y. Small appliance repair.
 - z. Snow plowing provided that only one snow plow vehicle is stored on or generated from the site.
 - aa. Special tutoring or instruction (not to exceed three pupils at any given time).
 - bb. Clerical services.
 - cc. Small-scale marijuana caregiver, except that no more than one small-scale caregiver may operate out of any one dwelling unit.
5. A home occupation that is not listed in (4) above but is similar to and no more objectionable than those home occupations listed, shall be permitted as a conditional use subject to the requirements of Section 6.5 of this article. This provision shall not include veterinarians, kennels, animal raising, funeral homes, retail uses including antique shops, restaurants, dancing studios, towing services, repair and painting of automobiles as home occupations.
- G. Letting of rooms.** The letting of rooms within an existing dwelling unit in any residential zone shall be permitted as an accessory use provided that:
- 1. There shall be no more than two persons occupying such room or rooms.
 - 2. There shall be not more than two rooms per dwelling unit occupied for such use.
 - 3. There shall be no increase in the bathroom and/or kitchen facilities in the dwelling, and no such facility shall have been constructed in the immediately preceding two years.
- H. Makers' markets in the IL-b zone.** Makers' markets, including periodic or seasonal sale of handcrafted and limited production products for final consumption, which may include prepared or raw foods, shall be permitted as an accessory use in the IL-b zone, provided that:
- 1. Such sales are located within a lawfully conforming principal permitted use.
 - 2. Such sales occupy an area no larger than 45% of the floor area devoted to the principal use.
 - 3. Such sales by any single vendor or group of vendors shall occur for no more than a total of 28 hours a week collectively.
 - 4. Such products are produced or permitted to be produced in the IL/IL-b zone.
 - 5. Such products are sold by the producer of the product or their designee.
- I. Tasting rooms in industrial zones.** Tasting rooms shall be permitted as accessory uses on the premises of facilities where beer, wine, spirits, other alcoholic or non-alcoholic beverages, or food are produced, provided that:
- 1. Service of food in the facility is limited to that which does not constitute a full course meal.
 - 2. No more than 10% of the beverage menu in tasting rooms accessory to beverage production or 10% of the food menu in tasting rooms accessory to food production is produced or manufactured off-site.

J. Solar energy generation. Roof-mounted, building-integrated, or small-scale ground-mounted solar energy systems shall be permitted as accessory uses within all zones except the Stream Protection Zone and within cemeteries. Accessory solar energy systems are only permitted within the Recreation and Open Space Zone where co-located with public industrial or utility infrastructure and are subject to historic preservation review when such systems are either located within or less than 100 feet from an identified historic district or historic landscape district. All accessory solar energy systems are subject to the following conditions:

1. Accessory solar energy systems shall comply with all general use standards for solar energy systems as stated under Subsection 6.4.16 of this article and with the dimensional requirements as stated under Article 7.
2. Small-scale ground-mounted solar arrays shall occupy less than 1,000 square feet of ground area.

K. Wind energy generation. Freestanding and roof-mounted wind energy systems shall be permitted as accessory uses within all zones except the Stream Protection Zone, within historic districts except where the Congress Street Historic District coincides with the B-3 zone, within historic cemeteries or historic landscape districts, or within 1,000 feet of any designated historic landmark (Portland Observatory, Cathedral of Immaculate Conception, St. Dominic's Cathedral, St. Luke's Cathedral, State Street Church, and City Hall), subject to the following conditions:

1. Accessory wind energy systems shall comply with all general use standards for wind energy systems as stated under Subsection 6.4.18 of this article.
2. Properties shall be limited to one free-standing wind energy system and/or three roof or building mounted wind energy systems.
3. Accessory wind energy systems shall either be located on the rear half of a building or structure, or within the rear yard and shall be sited to maximize existing vegetative or other screening from nearby residential buildings and public ways. The location shall minimize changes to existing topography and natural vegetation which would result from construction or maintenance of the system.

6.7 TEMPORARY USES

6.7.1 In general

Temporary uses may be permitted from time to time as determined by the Planning Authority. In addition to regulations pertaining to temporary uses contained elsewhere in the City of Portland Code of Ordinances, the following standards shall apply for specific temporary uses.

6.7.2 Standards for specific temporary uses

- A. Temporary parking.** Parking of vehicles may be permitted by a temporary certificate of occupancy for a limited period of time not to exceed one year in anticipation of future development.
- B. Temporary private tenting.** Temporary private tenting with one tent accessory to a principal residential use is permitted in the IR-1 and IR-2 zones provided that adequate water supplies

and sanitation facilities are available in connection with the principal residential use.

- C. Temporary sales.** No “garage sale,” “lawn sale,” “attic sale,” “rummage sale,” or other similar casual sale of tangible personal property which is advertised by any means whatsoever whereby the public at large is or can be made aware of such sale, shall be deemed to be accessory or temporary if such sale occurs after sales have been conducted on the same premises for six or more days previously during the calendar year.

D. Temporary stands

1. No premises shall be used for business purposes consisting of temporary stands, booths, platforms, or vehicles intended for the sale of merchandise or other mercantile purposes if any part of such stand, booth, platform, or vehicle is proposed to be located nearer than 125 feet to any residential zone, except that a single stand with no more than 200 square feet of floor area for the sale of agricultural products produced on the premises shall be permitted as accessory to a permitted agricultural use.
2. A single produce stand shall be permitted on the premises of a community garden for the sale of flowers, vegetables, herbs, or fruit produced on the premises, provided that the stand is no more than 100 square feet in floor area or open table area and is located a minimum of five feet from any property line; that sales are limited to two days per week between the hours of 9:00 a.m. and 6:30 p.m. during the growing season from May 25 through October 31; and that the stand has

received all necessary permits. The use of produce stands shall be seasonal and temporary. Any properly permitted structure may remain on the premises year-round. If the community garden is owned or operated by a non-profit organization, sales of flowers, vegetables, herbs, or fruit produced in other gardens or farms in Maine owned or operated by said organization shall be permitted within the same limitations listed above. For purposes of this subsection, community garden means a parcel of open land used for the cultivation of flowers, vegetables, herbs, or fruit by a group of city residents either jointly as a single plot or through individual garden plots or beds.

3. A single produce stand shall be permitted on the premises of a non-profit organization incorporated pursuant to the laws of the State of Maine with the permission of the owner and on the premise of public schools with the permission of the school department; provided that the stand is for the sale of local fruit, vegetables, flowers, seedlings, and plants produced by the seller; that the stand is no more than 100 square feet in floor area or open table area and is located a minimum of five feet from any property line; that sales on the premises are limited to two days per week between the hours of 9:00 a.m. and 6:30 p.m. during the growing season from May 25 through October 31; and that the stand has received all necessary permits. The use of produce stands shall be seasonal and temporary. Any properly permitted

- structure may remain on the premises year-round.
4. In the IR-1 and IR-2 zones, a single stand with no more than 200 square feet of floor area for the sale of agricultural products produced on the premises or the sale of fish or shellfish caught by the occupant of the premises shall be permitted as a temporary use.
- E. **Truck load sales.** Truck load sales shall not extend beyond three consecutive days nor occur more frequently than three times a calendar year.

6.8 PERFORMANCE STANDARDS

6.8.1 Design

- A. In the B-3 zone, all development, all building and site alterations, and all provision of landscaping or other pedestrian amenities shall be consistent with the Downtown Urban Design Guidelines.
- B. In the B-7 zone, all buildings shall have a minimum of one operable public pedestrian entrance facing the street frontage of the lot. Such building entrances shall comply with the B-7 design standards.

6.8.2 Development in the R-OS zone

All development in the Recreation and Open Space Zone shall comply with the following development standards:

- A. All ground areas not used for parking, loading, vehicular, or pedestrian areas and not left in their natural state shall be suitably landscaped and designed with quality materials that are consistent with adopted City policy or master plans, and which provide a comfortable,

durable, accessible, readily maintainable, and aesthetically pleasing environment.

- B. Natural features, such as mature trees and natural surface drainageways, shall be preserved to the greatest possible extent consistent with the uses of the property.
- C. Loading areas shall be screened and parking areas shall be screened and landscaped so as to avoid a large continuous expanse of paved area.
- D. Buildings and structures shall be sited to avoid obstructing significant scenic views presently enjoyed by nearby residents, passersby, and users of the site.
- E. Storage of commodities and equipment shall be completely enclosed within buildings or provided with screening by a fence, wall, or landscaping.
- F. The outer perimeter of playfields, play lots, and other active recreational areas shall be screened, or shall be located a reasonable distance from any residential use.

6.8.3 Discharges

No discharge shall be permitted at any point into any private sewage disposal system, or stream, or into the ground, of any materials in such a way or of such nature or temperature as to contaminate any water supply, or otherwise cause the emission of dangerous or objectionable elements, except in accordance with standards approved by the Public Health Authority or by the Public Works Authority. No discharge into harbor water areas shall be permitted, unless permitted by the Maine Department of Environmental Protection under a waste discharge license and as approved by the Department of Public Works in accordance with Chapter 24 of the City of Portland Code of Ordinances. All private sewage disposal or private

wastewater treatment facilities shall comply with the provisions of Chapter 24.

6.8.4 Electromagnetic interference

In any industrial zone, there shall be no electromagnetic interference that adversely affects the operation of any equipment other than that belonging to the creator of such interference.

6.8.5 Exterior lighting

All exterior lighting shall be designed and installed with full cut-off fixtures to direct illumination onto the site and to prevent illumination from such fixtures on neighboring properties.

6.8.6 Heat, glare, radiation

Heat, glare, or radiation shall be imperceptible without instruments at lot boundaries and shall not present a safety hazard.

6.8.7 Historic resources

The exterior design of proposed or renovated structures located within historic districts shall be subject to the historic preservation provisions of Article 17. The exterior design of proposed or renovated structures located adjacent to historic districts or historic resources shall be subject to historic preservation requirements of Article 14.

6.8.8 Landscaping and screening

A. In all mixed-use zones, the O-P zone, the R-P zone, and the A-B zone outside of restricted access areas, sites shall be landscaped to screen parking and accessory site elements, including storage and solid waste receptacles, from the right-of-way, public open space, or abutting residential zones.

B. In the I-H and I-Hb zones, where a front yard abuts an arterial or a major collector street, it shall be landscaped. Rear yards, side yards, and the perimeter of any parking area for greater than 15 vehicles shall be landscaped if visible from a right-of-way, public open space, or residential zone.

6.8.9 Noise

A. The maximum permissible sound level of any continuous, regular, or frequent source of sound produced by an activity shall be as shown in Table 6-G.

TABLE 6-G: NOISE STANDARDS

	Daytime/Evening (7 a.m.-9 p.m.)	Night (9 p.m.-7 a.m.)
Zone		
I-B	60 dBA	55 dBA
R-P	55 dBA	55 dBA
O-P	60 dBA	60 dBA
B-1/B-1b	55 dBA	55 dBA
B-2/B-2b/B-2c	60 dBA	55 dBA
B-3/B-3b/B-3c	60 dBA	55 dBA
B-4	65 dBA	60 dBA
B-5/B-5b, B-6, B-7 ¹	60 dBA	50 dBA
I-L/I-Lb ¹	60 dBA	50 dBA
I-M/I-Mb ¹	70 dBA	55 dBA
I-H/I-Hb ¹	75 dBA	55 dBA
A-B	60 dBA	60 dBA
IS-FBC	60 dBA	55 dBA

¹ Daytime/evening noise regulations shall extend until 10 pm, after which time nighttime noise regulations shall apply.

- B. For any noise generated by a use in the B-5/B-5b, B-6, B-7, I-L/I-Lb, I-M/I-Mb, and I-H zones, sound shall be measured at or within the boundaries of any residential zone. For any noise generated by a use in the B-1/B-1b, B-2/B-2b/B-2c, I-B, R-P, O-P, A-B, and IS-FBC zones, sound shall be measured at lot boundaries. For any noise generated by a use in the B-3/B-3b/B-3c, sound shall be measured at lot boundaries or within publicly accessible pedestrian open space. For any noise generated by a use in the B-4 zone, sound shall be measured off premises at the source of complaint.
- C. In addition to the sound level standards established in Table 6-G, all uses shall employ best practicable sound abatement techniques to prevent tonal sounds, or sound waves usually perceived as a hum or whine because their instantaneous sound pressure varies essentially as a simple sinusoidal function of time, and impulse sounds, or sound events characterized by brief excursions of sound pressure, each with a duration of less than one second. If such tonal and impulse sounds cannot be prevented, uses shall employ best practicable sound abatement techniques to minimize the impact of such sounds in residential zones.
- D. Sound levels shall be measured with a sound level meter with a frequency weighting network manufactured according to standards prescribed by the American National Standards Institute (ANSI) or its successor body. Measurements shall be made at all major lot lines of the site, at a height of at least four feet above the ground surface. In measuring sound levels under this subsection, sounds with a continuous duration of less than 60 seconds

shall be measured by the maximum reading on a sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of 60 seconds or more shall be measured on the basis of the energy average sound level over a period of 60 seconds (LEQ₁).

E. Wind energy systems

- 1. Where the underlying zone is residential and does not specify sound requirements, or where the system will be within 100 feet of a residential building, the audible sound levels generated by the wind energy system shall not exceed 45 decibels on the A scale between the hours of 9:00 p.m. and 7:00 a.m., and 50 decibels on the A scale between 7:00 a.m. and 9:00 p.m., as measured at the nearest property line in accordance with this provision and technical standards set out in the City of Portland *Technical Manual*.
- 2. For any system over 45 feet in total height not in the Recreation and Open Space, Resource Protection, or Island Transfer Station Overlay Zones, the maximum sound levels allowed by this ordinance shall not be exceeded at the nearest property boundary and at the nearest point vertically above the property line that coincides with the maximum building height allowed in the abutting zone.
- 3. Any system located within the Recreation and Open Space, Resource Protection, or Island Transfer Station Overlay Zones and more than 100 feet from a residential building shall not exceed 55 decibels on the A scale as measured 50 feet from the base of the tower.

4. Audible sound levels of wind energy systems shall include sounds generated in all conditions including low and high winds (furling, yawing, and flutter) and power outages (freewheeling). If after installation, the system is determined to be operating at levels above these limits (as measured at the property lines in accordance with this provision and applicable technical standards, the owner shall take (at the owner's cost) remedial action to ensure compliance with these limits. Required action may include relocation or removal of the system.

F. Exemptions

1. Noises created by construction and maintenance activities between 7:00 a.m. and 10:00 p.m. are exempt from the maximum permissible sound levels set forth above. Construction activities on a site abutting any residential use between the hours of 10:00 p.m. and 7:00 a.m. shall not exceed 50 dBA.
2. The following uses and activities shall also be exempt from the requirements of Table 6-G:
 - a. The noises of safety signals, warning devices, emergency pressure relief valves, and any other emergency devices.
 - b. Traffic noise on public roads or noise created by aircraft and railroads.
 - c. Noise created by refuse and solid waste collection, provided that the activity is conducted between 6:00 a.m. and 7:00 p.m.
 - d. Emergency construction or repair work by public utilities, at any hour.
 - e. Noise created by any recreational activities which are permitted by law and for which a license or permit has been granted by the City, including but not limited to concerts, parades, sporting events, and fireworks displays.

6.8.10 Odor

- A. It shall be a violation of this article to create an odor nuisance.
 1. An odor nuisance shall be considered to exist when 10 confirmed complaints occur in an area within two separate 24-hour periods. The 10 confirmed complaints must originate from 10 different households in an area zoned residential or from 10 different individuals in a commercial or industrial facility. The Building Authority shall only respond to a complainant who confirms that the odor is detectable at the time of the actual complaint. In order to confirm a complaint, the Building Authority or its designee shall first determine that an odor is detectable in the area of the complaint. The Building Authority or its designee shall interview the complainant to verify that the detectable odor is in fact the odor that resulted in the complaint. If the complainant verifies the odor as the source of the complaint, then the Building Authority shall notify the owner or operator of the alleged odor source either in person or by telephone within one working day, with a written confirmation within seven working days of the complaint. In the event that the Building

- Authority is unable to contact the owner or operator of the alleged odor source in person or by telephone within one working day, then the Building Authority shall send written notice to the operator within seven working days of the complaint.
2. In the event that 10 complaints are confirmed as set forth in paragraph (1) above in two separate 24-hour periods within a 90-day period, the Building Authority shall cause a certified odor inspector to investigate any odor complaints received in the next 30 days following the receipt of the tenth confirmed complaint from the second 24 hour period. If the odors remain under the ambient intensity standard as established in this subsection for the next 30 days, then a new odor nuisance must be established after that time in accordance with the requirements of this subsection. The certified odor inspector shall do the following in response to a complaint under this subsection:
 - a. Verify that an odor is detectable in the area of the complaint and confirm that it is the odor that resulted in the complaint.
 - b. Quantify the intensity of the odor on the eight point in butanol intensity scale as defined in regulations promulgated by the Planning & Urban Development Director to establish training and technical standards to support this subsection.
 - c. Track the odor to its source.
- B.** When the certified odor inspector determines that a violation has occurred because an odor has exceeded the maximum ambient odor levels set forth in this subsection, the Building Authority shall notify the owner or operator either by telephone or in person of the violation within one working day of the violation. The Building Authority shall confirm this notification in writing within seven working days of this initial notice. In the event that the Building Authority is unable to contact the owner or operator by telephone or in person within the required time period, then it will send written notification within seven working days of the violation.
- C.** Upon receipt of the written notice of violation, the owner or operator of the odor source shall do the following:
1. Implement odor reduction procedures immediately upon notification by the Building Authority that the facility has violated this subsection wherever odor reduction can be achieved by operational or procedural changes at the facility.
 2. Submit to the Building Authority, within 30 days of the written notice of violation, an odor reduction plan which is designed to reduce ambient odors attributable to emissions from that source to the maximum allowable intensity for that zone. The plan shall include a detailed summary of the measures that the owner or operator will take to mitigate the community annoyance and estimated dates for completion of those measures. In the event that it will take longer than 30 days to develop the odor reduction plan, the owner or operator of the facility shall submit within the 30-day time period a schedule for the development of the odor

reduction plan. The Building Authority shall review this plan to determine whether it will be adequate to resolve the odor nuisance in a reasonable time period.

3. Implement the plan in accordance with the schedule approved by the Building Authority.
- D.** The maximum ambient intensity standard for odors generated by uses located in the industrial zones shall not exceed the following levels when the odor is measured in the zone indicated:
1. 4.0 in any industrial or mixed-use zone for odors resulting from uses in industrial or mixed-use zones.
 2. 3.0 in any residential zone for odors resulting from uses in industrial or mixed-use zones.

6.8.11 Outdoor effects

- A.** In all mixed-use, office, and industrial zones and the IS-FBC zone, uses shall be operated within a completely enclosed structure, except for those customarily operated in open air.
- B.** In the mixed-use and IS-FBC zones, open air activities shall be those licensed by the city.
- C.** There shall be no outdoor kennels.
- D.** No open exterior stairways or fire escapes shall be constructed above the ground floor, except that the Building Authority may permit the installation of an exterior egress stair or an upgrade of an existing exterior fire escape for a conforming or lawfully nonconforming dwelling unit existing as of January 5, 1998, if such egress is required to meet current fire or other life

safety codes, provided that the owner demonstrates to the Building Authority that:

1. There is no practical and economically reasonable way to provide such egress within the interior of the building, as demonstrated by the submission of detailed floor plans showing the projected cost of and the impact on the existing dwelling from an interior stair.
2. The stairway and associated landings and other building fixtures are designed and will be constructed to have a minimal visual impact upon the building, especially as viewed from any public way or public open space, as demonstrated by photographs of the front and any other affected facades of the building and plans or drawings of the proposed egress stairs.

6.8.12 Outdoor storage

Outdoor storage shall comply with the requirements of Table 6-H.

6.8.13 Relocation of displaced residents

In the B-3, B-3b, and B-3c zones, any development which results in the displacement of residents of dwelling units currently located on the development site shall meet the requirements of Section 18.5.

6.8.14 Smoke

Smoke shall not be emitted at a density in excess of the opacity level designated in Table 6-I, as classified in Method 9 (Visible Emissions) of the Opacity Evaluation System of the U.S. Environmental Protection Agency.

TABLE 6-H: OUTDOOR STORAGE STANDARDS

B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, O-P, R-P, A-B¹, and IS-FBC	There shall be no exterior storage with the exception of fully enclosed receptacles for solid waste disposal.
B-4, B-5/B-5b, B-6, B-7, and Industrial	Outdoor storage of materials shall be done in such a manner as to prevent the breeding and harboring of insects or vermin, to prevent the transfer of such materials from the site by natural causes or forces and to contain fumes, dust, or other materials which constitute a fire hazard. This storage shall be accomplished within enclosed containers or by raising materials above ground, separating materials, preventing stagnant water, or by some other means. In the B-4, B-5/B-5b, B-6, and B-7 zones, no outdoor storage shall be permitted in the front setback, except for storage for plant and tree nurseries or lumber yards if listed as a permitted use. In the B-4, B-5/B-5b, B-6, and B-7 zones, any storage of new materials, finished products, or related equipment must be suitably screened from the public way and abutting properties by a landscaped buffer or solid fence at least five feet in height.
B-1/B-1b and B-2/B-2b/B-2c	Vehicles or truck trailers with or without wheels shall not be used for on-site storage. In the B-2/B-2b/B-2c zone, there shall be an exception where such storage is located in a designated loading zone identified on an approved site plan or such storage is not visible from the street or adjacent residences during winter.
B-5	Outdoor storage of rental and moving equipment shall be located on the site and not within a public right-of-way or sidewalk. A curb, guard rail or other barrier shall be provided to contain such equipment and storage on the site as well as out of landscape buffer areas. A landscape buffer shall be provided. Outdoor storage of rental and moving equipment must be accessory to a building in existence as of the date of this ordinance. Exterior lighting shall not exceed that which is necessary for security purposes.

¹ Does not apply to airports.

TABLE 6-I: SMOKE STANDARDS

Zone	Opacity Level
R-P	20%
O-P	
B-1/B-1b	
B-2/B-2b/B-2c	
B-3/B-3b/B-3c	30%
B-4	
B-5/B-5b	
B-6	40%
B-7	
Industrial and A-B zones	20%
IS-FBC	

6.8.15 Storage and repair of vehicles

- A. In all residential zones, all island zones, the R-P zone, and the B-3 zone, only one unregistered motor vehicle may be stored outside for a period not exceeding 30 days.
- B. In other mixed-use zones, storage of unregistered motor vehicles for more than 10 days and outdoor storage of used automobile tires shall be prohibited.
- C. No building in any zone shall be erected, altered or used as a garage for the storage of more than three motor vehicles or for the business of repairing motor vehicles if any part of either old or new building when completed would be

closer than five feet to any part of any church, public or private hospital, or school or if any part of either old or new building when completed would be less than 15 feet from the boundary line of any lot upon which any part of any church, public or private hospital, or school is located. No existing garage used for the storage of more than three motor vehicles or for the business of repairing motor vehicles shall be deemed to become a nonconforming use through the subsequent erection of such church, hospital, or school closer than the aforesaid distance to such a garage.

6.8.16 Traffic

Development in the I-M, I-Ma and I-Mb zones shall utilize streets classified as arterials by the Maine Department of Transportation to the greatest extent possible.

6.8.17 Waste disposal

- A.** All solid waste disposal, including materials which might cause fumes or dust, or constitute a fire hazard if stored out-of-doors, shall be only in fully enclosed, covered containers or receptacles. In all nonresidential zones with the exception of the industrial zones, such containers or receptacles shall be within designated, screened areas. In industrial zones and the B-4 zone, outdoor storage of refuse, debris, or previously used materials awaiting reuse shall either be in an appropriate container or located within a designated, screened area.
- B.** Containers or receptacles shall not leak or otherwise permit liquids or solids to escape from the container or be transferred beyond lot boundaries by natural causes or forces.

Areas attracting large numbers of insects or vermin are prohibited.

- C.** Where food processing is permitted, all food processing waste shall be stored within a completely enclosed structure and if not refrigerated shall be removed from the site in an enclosed container within 48 hours of its generation. All enclosed and exterior food processing waste storage areas shall be cleaned and sanitized on a regular basis.

6.8.18 Vibration

- A.** In any mixed-use zone, the O-P, and the R-P zones, vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries. This shall not apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile-supported pier.
- B.** In all industrial zones, any use creating earthshaking vibrations, with the exception of airports, shall be controlled in such a manner as to prevent transmission beyond lot lines of vibrations causing a displacement of .003 or greater on one inch, as measured by a vibrograph or similar instrument at the property boundaries.

7 DIMENSIONAL STANDARDS

7.1 APPLICABILITY

Construction, alterations, and additions to structures and buildings are governed by this article, except when superseded by other applicable laws or ordinances. It is the intent that, when in doubt, this article should be interpreted to accommodate the goals of the City's Comprehensive Plan and other plans.

7.2 RULES OF MEASUREMENT

Building footprint. The lot area contained within the outermost perimeter of the building envelope including cantilevered portions of the building, projections, and porches, decks, and similar attached structures integral to the building and contributing to its mass, but excluding roof overhangs.

Floor area. The total floor space enclosed by exterior or standard fire walls of a building, exclusive of vent shafts and courts.

Grade, pre-development. Average grade, existing on October 1, 2000, at the corners of the foundation of the proposed structure.

Height. The vertical measurement from grade, or the pre-development grade on the islands, to the highest point of a structure. For buildings, height shall be measured to the roof beams in flat roofs, to the highest point of the roof beams or the highest point on the deck of mansard roofs, to a level midway between the level of the eaves and highest point of pitched roofs or hip roofs, or to a level two-thirds of the distance from the level of the eaves to the highest point of gambrel roofs. For this

purpose, the level of the eaves shall be taken to mean the highest level where the plane of the roof intersects the plane of the outside wall on a side containing the eaves.

Impervious surface ratio. The proportion of a site covered by impervious surfaces, calculated by dividing the total impervious surface area by the lot area. For the purposes of this measurement, impervious surface shall be as defined by the Maine Department of Environmental Protection.

Landscaped open space ratio. The proportion of lot area covered by landscaped open space, calculated by dividing the total landscaped open space area by the lot area. For the purposes of this measurement, landscaped open space shall not include rooftop gardens or structured or engineered surfaces.

Lot area. The area of a lot enclosed within the boundary lines of a lot.

Lot coverage. The proportion of lot area covered by building footprint and the footprint of accessory detached structures.

Lot width. The distance measured between side lot lines through that part of the principal building where the lot is narrowest.

Net land area. The land area arrived at by subtracting from lot area the square footage of the following: a) areas of special flood hazard; b) existing watercourses measured by the area between the top of the banks at the normal high-water mark; c) wetlands; and d) slopes of 25% or greater. Where a slope of 25% or greater was altered to less than 25%

within the two years immediately preceding a development proposal, such slope shall also be subtracted from the lot area.

Setback. A space on a lot which is required by this article to be maintained open, unoccupied, and unobstructed between lot lines and any structure, except as otherwise permitted in this code of ordinances. A setback shall be measured from a line parallel to the lot line drawn through the point of a structure nearest to such lot line. This measurement shall be taken at right angles from such parallel line. When measuring setbacks, setbacks shall be interpreted to include setbacks of structures from property lines and setbacks of principal structures from one another. No principal structure shall occupy the minimum setback of another principal structure. Setbacks shall not apply to fences, flagpoles, raised garden beds, and other similar structures. When setbacks are established in relationship to height, the height in stories or feet of that part of the principal structure adjoining a yard shall be used in determining the required setback.

Setback, front. A setback along the front lot line, extending between side lot lines, the depth of which shall be the shortest horizontal distance between the front lot line and any structure. In the case of lots with frontages on two or more streets, the orientation of the principal entry to the principal building shall prevail. In the case of lots without frontage on a street, the property line that parallels the nearest developed street shall be considered the front.

Setback, rear. A setback along the rear lot line, extending between side lot lines, the depth of which shall be the shortest horizontal distance between

the rear lot line and any structure.

Setback, side. A setback along a side lot line extending from the front lot line to the rear lot line, the width of which shall be the shortest horizontal distance between the side lot line and any structure.

Stepback. A space on a lot which is required by this article to be maintained open, unoccupied, and unobstructed between lot lines and any structure that occurs at a prescribed height above the ground. Stepbacks shall apply to all attached accessory structures, including the minimum necessary housing of elevators, stairways, tanks fans, or other building operating equipment not intended for human occupancy.

Story. That portion of a building included between the surface of any floor and the surface of the floor, or the roof, next above. A half story is a story situated under a sloping roof, the area which at a height four feet above the floor does not exceed two-thirds of the floor area of the story immediately below it. A story which exceeds 18 feet in height shall be counted as two stories. A basement shall be counted as a story for the purpose of height measurement where more than one-half of its height is above the average level of the adjoining ground.

Street frontage. The distance for which a lot line adjoins a public street, from one lot line intersecting said street to the furthest distant lot line intersecting the same street.

7.3 DIMENSIONAL STANDARDS

Tables 7-A to 7-H shall establish the dimensional standards for each zone.

TABLE 7-A: RESIDENTIAL ZONE DIMENSIONAL STANDARDS

		R-1	R-2	R-3 ²	R-4	R-5 ^{2,3}	R-5a ⁴	R-6 ^{6,7}	R-6a ¹³
Lot area (min.)	Governmental	15,000 SF	10,000 SF	6,500 SF	6,000 SF	6,000 SF			
	Hospital			10 ac.		5 ac.		2 ac.	
	Intermediate or long-term, extended care facility	3 ac.	3 ac.	2 ac.		2 ac.	1.5 ac.	1 ac. ⁸	
	Lodging house					9,000 SF		2,000 SF	
	Multiplex				9,000 SF	9,000 SF			
	Place of assembly	<10,000 SF	1 ac.	1 ac.	1 ac.	15,000 SF	.5 ac.	10,000 SF	
		>10,000 SF	2 ac.	2 ac.	2 ac.	30,000 SF	1 ac.	15,000 SF	
	Post-secondary school		2 ac.			2 ac.		2,000 SF	
	Elementary, middle, and secondary school	2 ac.	2 ac.	2 ac.	30,000 SF	30,000 SF		30,000 SF	
	Raising of animals	3 ac.							
	Residential	15,000 SF	10,000 SF	6,500 SF	6,000 SF	6,000 SF ³	6,000 SF / 2 ac. max ⁵	2,000 SF	4 ac.
	All other uses	15,000 SF	10,000 SF	6,500 SF	6,000 SF	6,000 SF		2,000 SF	
	Lot area per dwelling unit (min.)	15,000 SF	10,000 SF	6,500 SF	3,000 SF	3,000 SF	1,600 SF	725 SF	
	Lot area per rooming unit (min.)					1,000 SF		250 SF ⁹	
	Lot area per multiplex unit (min.)				3,000 SF for first 3, 6,000 SF thereafter	4,500 SF			
	Lot area per SNIDU¹ (min.)				2,400 SF	3,600 SF			
	Street frontage (min.)	75 ft.	50 ft.	50 ft.	50 ft.	50 ft.	50 ft.	20 ft.	
	Lot width (min.)	100 ft.	80 ft.	65 ft.	60 ft.	60 ft. 90 ft. for multiplex	60 ft.	20 ft.	
	Front setback (min.)	25 ft. Or average depth of adjacent front yards	25 ft.	25 ft.	25 ft.	20 ft.	25 ft.	5 ft.	
Rear setback (min.)		25 ft.	25 ft.	25 ft.	25 ft.	20 ft.	25 ft.	10 ft..	
	Detached accessory (< 250 SF footprint)	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	
Side setback (min.)	<1.5 stories to 1.5 stories	12 ft.	12 ft.	8 ft.	10 ft.	8 ft.	10 ft.		<45 ft. in height: 10 ft.
	2 stories	14 ft.	14 ft.	14 ft.	14 ft.	12 ft.	14 ft.		
	2.5 stories	16 ft.	16 ft.	16 ft.	16 ft.	14 ft.	16 ft.	5 ft. ¹⁰	
	Detached accessory (< 250 SF footprint)	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.	5 ft.		>45 ft. in height: 15 ft.
	On side street (min.)	20 ft.	20 ft.	20 ft.	20 ft.	15 ft.	20 ft.	None	
		Or depth of front yard directly abutting the lot.							

DIMENSIONAL STANDARDS

TABLE 7-A (CONT.): RESIDENTIAL ZONE DIMENSIONAL STANDARDS

	R-1	R-2	R-3 ²	R-4	R-5 ^{2,3}	R-5a ⁴	R-6 ^{5,7}	R-6a ¹³
Stepbacks (above 35 ft. when property line abuts a residential zone)(min.)							10 ft. from side property line and 15 ft. from rear property line ¹¹	
Structure height (max.)	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	35 ft.	45 ft. ¹²	65 ft.
Detached accessory	18 ft.	18 ft.	18 ft.	18 ft.	18 ft.	18 ft.	18 ft.	
Lot coverage (max.)	20%	20%	35%	30%	40%	30%	60%	
Landscaped open space ratio (min.)							20%	
Width of garage opening on front façade (max.)							9 ft. or 40% of the front facade, whichever is greater, and in no case more than 20 ft.	

¹ Special needs independent dwelling unit.

² See Table 7-B for PRUD standards.

³ Single family homes may be built on small lots in the R-5 under small residential lot dimensional requirements under certain conditions. See Table 7-C for R-5 Small Residential Lot dimensional requirements.

⁴ For R-5a, PRUD standards shall apply to PRUDs, multi-family development of 4 or more units, congregate care, and intermediate, extended, or long-term care facilities, unless noted otherwise in the table above. See Table 7-B for additional standards that apply to these uses.

⁵ Applies to 1-, 2-, and 3-family dwellings only.

⁶ Alterations to single-family, two-family, and multi-family dwellings in existence as of 6/15/15 shall not result in the creation of any additional dwelling unit of less than 600 square feet of floor area, exclusive of common hallways and storage in basement and attic; and shall not result in any existing dwelling unit being reduced in size to less than 1,000 square feet of floor area, exclusive of common areas and storage in basement and attic.

⁷ Subdivisions consisting of horizontally attached dwellings on individual lots are not required to have side yards between such dwellings where a party wall condition will exist. Horizontally attached dwellings located within a single lot shall be required to meet the applicable side setback requirements at the external lot boundaries of the subdivision and internal lot boundaries between such dwellings that are not attached to each other. No minimum lot size width shall be required for individual lots underlying townhouse (horizontally attached) dwelling types. The applicable minimum lot area per dwelling shall apply to each lot.

⁸ Except for long-term and extended care facilities: 10,000 SF for the first 9 residents plus 750 SF for each additional resident, up to a total of 2 ac.

⁹ A minimum lot area per intermediate care resident of 250 SF also applies.

¹⁰ Except that a side setback in the R-6 zone may be reduced to zero, provided that the cumulative side yards are not less than 10 ft. A permanent maintenance easement a minimum of 5 ft. in width shall be provided on the parcel adjacent to the lot line with the reduced side setback.

¹¹ Does not apply on side streets.

¹² Except as provided under the Fort Sumner Park Height Overlay and Munjoy Hill Conservation Overlay.

¹³ All R-6 dimensional standards apply in the R-6a unless otherwise indicated.

TABLE 7-B: PRUD DIMENSIONAL STANDARDS

	R-3	R-5	R-5a³
Lot area¹ (min.)	3 ac.	2 ac.	2 ac. ⁴
Net land area per dwelling unit (min.)	6,500 SF	3,000 SF	1,600 SF ^{4,5}
Units per building (max.)	PRUD < 5 ac.: 2 PRUD > 5 ac.: 6	12	
Average number of units per building (max.)	PRUD > 5 ac.: 5		
Structure height (max.)	35 ft.	35 ft.	55 ft.
Building length (max.)	Without garages: 100 ft. With integral garages: 140 ft.	140 ft.	
Length of accessory garage structure (max.)		60 ft.	
Building setback from external subdivision property lines (min.)	3 or fewer D.U. in building: 25 ft. 4 or more D.U. in building: 35 ft.	Bldg. Length 100 ft. or less: 25 ft. Bldg. Length >100 ft.: 35 ft.	Bldg. Length 100 ft. or less: 25 ft. Bldg. Length >100 ft.: 35 ft.
Distance between detached PRUD dwelling units (min.)	16 ft.		
Common recreation open space area² (min.)	300 SF/D.U.	300 SF/D.U.	200 SF/D.U. ⁴
Habitable space elevation	No habitable space in a PRUD shall be below grade, except basements that are a part of and below above-ground units.		

¹ Areas of special flood hazard as defined in Article 12 shall be excluded from lot area calculations.

² Recreation open space area shall be designated on the site for recreation purposes. Such recreation areas shall be usable, level graded, dry, accessible and properly drained. At a minimum, a contiguous area of 6,000 SF with a minimum dimension of 50 ft. shall be provided which shall at least be usable as a multi-purpose field. Such recreation areas shall be located at least 25 ft. from dwelling units.

³ In the R-5a zone, PRUD standards shall apply to PRUDs, multi-family development of 4 or more units, congregate care, and intermediate, extended, or long-term care facilities unless otherwise noted.

⁴ Does not apply to intermediate, extended, or long-term care facilities but does apply to PRUDs, congregate care, and multi-family development of 4 or more units.

⁵ Minimum land area per intermediate care facility resident: 8,000 SF lot area for first 35 residents, plus 350 SF for each additional resident.

⁶ For PRUD standards in island zones, see Table 7-D.

TABLE 7-C: R-5 SMALL RESIDENTIAL LOT DEVELOPMENT DIMENSIONAL STANDARDS¹

	Lot area (min.)	5,000 SF
		7 ft. ²
Side setback (min.)	Detached accessory (< 250 SF footprint)	5 ft.
	Side yard on side street	10 ft.
	Lot width (min.)	40 ft.
	Street frontage (min.)	40 ft.
	Lot coverage (max.)	50%

¹ Single family homes may be built on small lots in the R-5 under small residential lot development dimensional requirements if the lot is: vacant; or used exclusively for parking; or contains structure(s) not used for residential purposes; or is created from a single lot division of a developed lot and results in a lot meeting the small residential lot dimensional requirements with the remaining developed portion meeting the standard dimensional requirements of the R-5 zone.

² The width of one side setback may be reduced 1 ft. for every foot that the other side yard is correspondingly increased, but no side yard shall be less than 4 ft. in width.

TABLE 7-D: ISLAND ZONE DIMENSIONAL STANDARDS

		IR-1	IR-2	IR-3	I-B ¹⁰	
					<i>Served by Public Water & Sewer</i>	<i>Not Served by Public Water & Sewer</i>
Lot area (min.) ¹¹	Bed and breakfast				5,000 SF for 3 guest rooms plus 5,000 SF/ additional room	10,000 SF/ guest room
	Campground	10 ac.		5,000 SF/ campsite, but not less than 10 ac.		
	Hotel			10,000 SF/ guest room	5,000 SF for 3 guest rooms plus 5,000 SF/ additional room	10,000 SF/ guest room
	Lodging house		10,000 SF/ rooming unit	10,000 SF/ rooming unit	5,000 SF for 3 rooming units, plus 5,000 SF/ additional rooming unit	10,000 SF/ rooming unit
	Place of assembly	>10,000 SF	30,000 SF	30,000 SF	35,000 SF	20,000 SF
		<10,000 SF	15,000 SF	15,000 SF		
	PRUD/PUD	5 ac. ¹	5 ac. ¹	20 ac.		
	Raising of animals	3 ac.				
	Residential	40,000 SF ^{2,3}	20,000 SF ³	42,500 SF ⁶	20,000 SF	
	Restaurant			35,000 SF	10,000 SF	20,000 SF
	Retail			35,000	None	20,000 SF
	Seasonal camp	10 ac.		35,000 SF		
	School/educational facility	40,000 SF	20,000 SF	35,000	20,000 SF	
	All other uses			35,000 SF	20,000 SF	
	Lot area per dwelling unit (min.)	None ⁴	None ⁴	42,500 SF ⁷		
	Street frontage (min.)	100 ft. ⁵	70 ft. ⁵	70 ft. ⁸	40 ft.	
	Lot width (min.)	100 ft. ⁵	80 ft. ⁵	80 ft.	40 ft.	
	Front setback (min.)	30 ft. ⁵	25 ft. or the average of adjacent front yards ⁵	25 ft. ⁹	20 ft. or avg. depth of adjacent front yards	
	Rear setback (min.)		30 ft. ⁵	25 ft. ⁹	10 ft.	
		Detached accessory (< 250 SF footprint)	10 ft. ⁵	10 ft. ⁹		

TABLE 7-D (CONT.): ISLAND ZONE DIMENSIONAL STANDARDS

					I-B ¹⁰	
					<i>Served by Public Water & Sewer</i>	<i>Not Served by Public Water & Sewer</i>
		IR-1	IR-2	IR-3		
Side setback (min.)		20 ft. ⁵	20 ft. ⁵	20 ft. ⁹	10 ft.	
	Detached accessory (^{<} 250 SF footprint)	15 ft. ⁵	15 ft. ⁵	15 ft. ⁹	10 ft.	
	On side street	20 ft. ⁵	20 ft. ⁵	20 ft. ⁹	10 ft.	
Structure height (max.)		35 ft.	35 ft. For Little Diamond Island: 27 ft.	35 ft.	35 ft.	
	Accessory detached	18 ft.	18 ft.	18 ft.	18 ft.	
	Lot coverage (max.)	20%	20%	20%	50%	

¹ PRUDs shall consist of detached dwellings.

² 60,000 SF if not served by public water.

³ For PRUDs, minimum lot area shall be reduced up to 50% provided there is an equivalent corresponding increase in common or public open space that is usable for passive or active recreational opportunities or that serves as a buffer between buildings or between the development and the surrounding neighborhood.

⁴ Except 1 dwelling unit per 40,000 SF of net land area for PRUDs in IR-1 and 20,000 SF of net land area in for PRUDs IR-2.

⁵ For PRUDs, standard shall be reduced up to 50%. For accessory structures in the IR-1, IR-2, and I-B zones, side setbacks from principal structures shall be 5 feet.

⁶ Except that the minimum lot size per dwelling unit shall be reduced by the amounts specified below, to a minimum lot size of 35,000 SF per dwelling unit, provided that the Planning Board finds that the development meets the following criteria: a. The minimum lot size per dwelling unit shall be reduced by 5,000 SF if a public off-island water source provides 75% of the water needs of the development. b. The minimum lot size per dwelling unit shall be reduced by 2,500 SF if the development provides appropriate permanent restrictions or other agreements precluding the use, maintenance and parking of all private motor vehicles exclusive of construction and common service vehicles.

⁷ The maximum density for a PUD shall be based on the applicable minimum lot size for each use as measured in terms of net area. For purposes of calculating density, if separately described lots exceed the applicable minimum lot size, the excess area shall not be credited toward the minimum lot size for any other use.

⁸ Except where the Planning Board finds that the development has an adequate street network to permit access for pedestrians and emergency service vehicles.

⁹ When adjoining any external property boundary.

¹⁰ All I-B standards apply for lots served by public water and sewer and lots not served by public water and sewer unless otherwise indicated.

¹¹ In the IR-3, the minimum lot area for buildings containing both residential and nonresidential uses shall be cumulative. Where there are two or more residential uses contained in a building, the minimum lot area shall be the larger of the applicable minimum lot sizes.

DIMENSIONAL STANDARDS

TABLE 7-E: MIXED-USE ZONE DIMENSIONAL STANDARDS

		B-1/B-1b	B-2/B-2b/B-2c	B-3/B-3b/B-3c	B-4	B-5/B-5b	B-6	B-7
Lot area (min.)	School	20,000 SF			10,000 SF			
	Place of assembly	10,000 SF						
Lot area per dwelling unit (min.)	On-peninsula	435 SF	435 SF					
	Off-peninsula	1,000 SF	1,000 SF, except 435 SF if active street frontage ³					
Lot area per rooming unit (min.)	On-peninsula	150 SF	150 SF					
	Off-peninsula	350 SF	350 SF					
Street frontage (min.)		20 ft.	20 ft.	15 ft.	60 ft.			
Front setback (from all street frontages) (max.)		10 ft., or the average front yard depth of nearest developed lots if < 10 ft.	10 ft.	5 ft.	20 ft.	None, except 10 ft. in B-5b	10 ft. ⁷	10 ft.
Rear setback (min.)	Principal	None, except 10 ft. if abutting a residential zone	10 ft.		20 ft.			
	Accessory	None, except 5 ft. if abutting a residential zone	5 ft.		7 ft.			
Side setback (min.)	Principal	None, except 5 ft. if abutting residential zone	None		10 ft.			
	Accessory		5 ft.		5 ft.			
Stepbacks (above 35 ft. when property line abuts a residential zone) (min.)		Side: 10 ft. Rear: 15 ft.	Side: 5 ft. Rear: 15 ft.					
Length of building wall at maximum setback (min.)							70% of street frontage or 25% of building perimeter ⁸	75% of street frontage or 25% of building perimeter ⁹
Length of undifferentiated blank wall along publicly accessible way (max.)				30 ft., except 15 ft. within PAD Overlay				
Floor area (max.)		Non-residential uses on first floor: 10,000 SF total ¹ Restaurants (public area): 2,000 SF Clinics: 3,000 SF	Laboratory and research facilities, warehousing: 10,000 SF	None, except 15,000 SF for each floor above 125 ft.			Laboratory and research facilities and warehousing: 15,000 SF Exhibition and meeting halls: 20,000 SF	

TABLE 7-E (CONT.): MIXED-USE ZONE DIMENSIONAL STANDARDS

	B-1/B-1b	B-2/B-2b/B-2c	B-3/B-3b/B-3c	B-4	B-5/B-5b	B-6	B-7
Structure height (max.)	On-Peninsula: 45 ft., except 50 ft. along Congress Street if commercial first floor and residential above ² Off-Peninsula: 35 ft.	45 ft., except: 50 ft. if first floor is in commercial use and 65 ft. in B-2 and B-2c on lots >5 ac. if required side and rear setbacks are increased by 1 foot for each foot of height over 45 ft.	See Downtown Height Overlay Map	65 ft.	65 ft., except in B-5b along W. Commercial St. south of Danforth St. ⁵ and 120 ft. on Thompson's Point ⁶	65 ft. or as otherwise governed by the B-6 Building Height Overlay Map	See Bayside Height Overlay Map
Lot coverage (max.)			25% of lot area for portions of structures exceeding 125 ft. in height ⁴				
Impervious surface ratio (max.)	90%	Residential: None Other uses in B-2 and B-2c: 80% Other uses in B-2b: 90%		80%			

¹ Uses in structures which existed prior to the date of enactment of the B-1/B-1b zones are exempt.

² The commercial first floor uses shall utilize at least 75 % of the first-floor frontage along Congress Street and shall have an average depth of at least 20 ft.

³ A building will be determined to have an active street frontage upon meeting the following guidelines to the greatest extent practicable: the primary building façade shall be within 10 ft. feet of the front lot line; there shall be no parking on the lot within 35 ft. of the front lot line; no more than 25% of the first floor primary façade shall consist of access to garages, unutilized space, service entrances, storage or mechanicals and the remaining minimum 75% shall have an average depth of a minimum of 20 ft. for residential or commercial uses; and all primary ground floor entries to multi-family buildings must orient to street, not to interior blocks or parking lots.

⁴ Except that no floor area shall be required to be less than 10,000 SF.

⁵ For parcels of land in the B-5b zone located along W. Commercial St. south of Danforth St.: West of the projection of the centerline of the Fletcher St. right-of-way, the maximum building height shall be 45 ft.; and, east of the projection of the centerline of the Fletcher St. right-of-way and west of the projection of the centerline of the Emery St. right-of-way, the maximum building height shall be 55 ft. A projection of the centerline of a street is defined by extending the centerline of the referenced street right-of-way along its most southerly block to the centerline of W. Commercial St. Furthermore, notwithstanding Subsection 7.5.1, no rooftop structure located between the projections of the centerlines of Emery St. and Fletcher St., as described above, shall exceed a height of 62 ft as measured from average grade of the building at its foundation.

⁶ Applies only to parcels subject to an approved master development plan. Thompson's Point is defined as the contiguous parcels of upland occupying the peninsula bounded on the east by Route 295, on the north by the Mountain Division Rail right-of-way, and on the south and west by the Fore River and its associated wetlands. Nearby lands accessed from Hobart and Osgood Streets are not included.

⁷ Does not apply to parking garages and public transportation facilities. Notwithstanding required setbacks, new structures located in the blocks located south of Fore Street and north of Commercial Street and its extension shall build to the key building envelopes shown on the B6 Building Height Overlay & Building Envelopes map. Buildings located in the area east of the Fore Street Connector shall not have a maximum front setback and shall not be required to build to the key building envelope perimeter. Parking structures and the buildings for public transportation facilities may, however, be set back beyond the key building envelopes (toward the interior of blocks), but may not occupy the land between the key building envelope and the street right-of-way.

⁸ For buildings fronting on two or more streets, the minimum building wall on one street may be decreased so long as the frontage is proportionally increased on other streets in so far that the building wall on the secondary street is not reduced to less than 25 ft. Buildings in the area east of the Fore Street Connector shall not be subject to this requirement.

⁹ Does not apply to additions to or relocations of designated historic structures or structures determined to be eligible by the Historic Preservation Board.

TABLE 7-F: OFFICE PARK & RESIDENCE PROFESSIONAL ZONE DIMENSIONAL STANDARDS

	O-P	R-P ¹
Lot area (min.)	1.5 ac.	6,000 SF
Street frontage (min.)	100 ft.	60 ft.
Lot width (min.)	150 ft.	60 ft.
Front setback (min.)	50 ft.	20 ft., or avg. depth of adjacent front yards ²
Rear setback (min.)	Principal	20 ft.
	Accessory	7 ft.
Side setback (min.)	Principal	1 story: 10 ft.
	25 ft., except 40 ft. where side yard abuts residential zone or use	2 stories: 12 ft.
		3+ stories: 14 ft.
	Accessory	7 ft.
On side street		1-2 stories: 15 ft.
		3+ stories: 18 ft.
Structure height (max.)	55 ft., except 75 ft., including rooftop appurtenances, on lots within office park subdivisions which are > 50 ac. if each minimum setback is increased by 1 ft. for each 1 ft. of height above 55 ft.	45 ft.
Floor area (max)	High-tech manufacturing: 20,000 SF	
Impervious surface ratio (max.)	60%	70%
Pavement setback (min.)	15 ft.	

¹ Residential uses shall meet the dimensional requirements of the nearest residential zone.

² The front yard of a lot existing as of April 4, 1988, which lot is less than 100 ft. deep, need not be deeper than 10% of the depth of the lot.

TABLE 7-G: INDUSTRIAL & AIRPORT ZONE DIMENSIONAL STANDARDS

	I-L/I-Lb		I-M/I-Ma/I-Mb		I-H/I-Hb		A-B
Lot area (min.)							20,000 SF
Street frontage (min.)	60 ft.		60 ft.		60 ft.		50 ft. ²
Lot width (min.)							50 ft.
Front setback (min.)	I-L	25 ft.	I-M/I-Ma	1 ft. for each ft. of building height	I-H	25 ft.	None, except 20 ft. if property has frontage on Westbrook St.
	I-Lb	None	I-Mb	None	I-Hb	None	
Rear setback (min.)	I-L	25 ft., except 40 ft. when abutting residential zone	I-M/I-Ma	1 ft. for each ft. of building height up to 25 ft., except 35 ft. when abutting residential zone	I-H	35 ft.	None., except 50 ft. if abutting residential zone or use ³
	I-Lb	None, except 25 ft. when abutting residential zone	I-Mb	None, except 25 ft. when abutting residential zone	I-Hb		
Side setback (min.)	I-L	25 ft., except 40 ft. when abutting residential zone	I-M/I-Ma	1 ft. for each ft. of building height up to 25 ft., except 35 ft. when abutting residential zone	I-H	35 ft.	None, except 25 ft. if abutting residential zone or use ³
	I-Lb	None, except 25 ft. when abutting residential zone	I-Mb	None, except 25 ft. when abutting residential zone	I-Hb		
Structure height (max.)	45 ft.		I-M/I-Mb	75 ft.	75 ft.		75 ft., except 45 ft. within 100 ft. of a residential zone
			I-Ma	45 ft.			
Impervious surface ratio (max.)	I-L	65%	I-M/I-Ma	75%	I-H	85%	70% ²
	I-Lb	100%	I-Mb	100%	I-Hb	100%	
Pavement setback (min.) ¹	15 ft.		10 ft.		10 ft.		

¹ Shall not apply to entrance drives.

² Except for lots in airport restricted access areas, which shall not be subject to this provision.

³ No structure may extend beyond the building line established for any runway or taxiway. If provided, rear and side yards must not be less than 5 ft. in width.

TABLE 7-H: RECREATION OPEN SPACE ZONE DIMENSIONAL STANDARDS

R-OS ¹		
Front setback (min.)		25 ft.
Rear setback (min.)		25 ft.
Side setback (min.)	Principal	
	Accessory	12 ft.
	On side street	
Structure height (max.)	Principal	35 ft., except 45 ft. if more than 1,000 ft. from a shoreland zone.
	Accessory	
Floor area ratio (max.)		.5
Impervious surface ratio (max.)		25% ²

¹ Public open spaces less than 2 ac. and on the peninsula are not required to meet the R-OS dimensional standards.

² Except 75% for sports complexes and 100% for sewage treatment facilities.

7.4 SUPPLEMENTAL DIMENSIONAL STANDARDS

7.4.1 Corner clearance

No shrub, wall, fence, sign, or pile of material higher than 3 1/2 feet above the lowest elevation at the curblin shall be permitted on a corner lot within the area of a triangle formed by a line connecting the curblines of the intersecting streets at points 25 feet from the corner, unless said obstruction is reviewed by the Public Works Authority and found not to be a traffic or public safety hazard.

7.4.2 Fences

In residential zones, no wall or fence within 15 feet of the street shall be more than four feet in height, unless said fence is located in the side or rear yard.

7.4.3 Solar energy systems

A. Setbacks

- Solar energy systems shall be located in side or rear yards wherever possible.
- Minor solar energy systems shall be setback 50 feet from residential, R-P, B-1/B-1b, and B-2/B-2b/B-2c zones.

- Major solar energy systems shall be setback 75 feet from residential, RP, B-1/B-1b, and B-2/B-2b/B-2c zones.

B. Height

- Ground-mounted solar energy systems.*
Where the total height of the support structure plus the solar energy system is equal to or below the zone-based height maximum, the absolute height of the solar energy system shall be 20 feet above the ground as measured from the base of the support.
- Roof-mounted solar energy systems.*
Where the total height of the support structure/building plus the solar energy system is equal to or below the zone-based height maximum, the absolute height of the solar energy system shall be:
 - In all residential and R-P zones: 5 feet above the roof and set back from the edge of the roof by one foot for every one foot of solar energy system height.

- b. In B-4 and industrial zones: No limit
- c. In all other zones: 8 feet above the roof and set back from the edge of the roof by one foot for every one foot of solar energy system height.

7.4.4 Swimming pools

Outdoor swimming pools as accessory uses shall be subject to the following dimensional standards:

- A.** No swimming pool shall be sited in the front yard.
- B.** No part of any swimming pool shall be located closer than 10 feet from the principal structure, nor closer than 10 feet from side or rear lot lines.

7.4.5 Wind energy systems

A. Setbacks

1. Wind energy systems and associated facilities shall meet all setbacks for principal structures for the zone in which the system is located. Where setbacks vary, the largest setback shall apply. All parts of the wind energy system, including associated facilities and guy wires, shall be at least 10 feet from the property line (except where connecting to the grid), any utility line (in any direction), or other easement/right-of-way. The setback from utility lines, easements, and right-of-way lines may be reduced where the owner/benefitted party provides written permission.
2. Roof-mounted wind energy systems shall be set back from property boundaries and street right-of-way lines by a distance equal to or greater than four times the height of the system as measured from the roof surface at the point of attachment. For systems in and adjacent to waterfront zones, mixed-use zones (except B-1/B-1b and I-B), OP zone, industrial zones, the Island Transfer Station Overlay zone, and the R-OS zone, the setback from property boundaries and street right-of-way lines may be reduced to a minimum distance of 1.0 times the height of the system, where the system is incorporated into the architecture of the building and a certified engineer confirms that it would not present a public safety risk. The setback shall be measured to the center of the wind generator base.
3. Freestanding wind energy systems with a total height of less than 85 feet shall be set back from property boundaries and street right-of-way lines by a distance equal to or greater than 1.1 times the total height of the system, and from residential buildings and hospitals on other properties by a distance equal to or greater than twice the total height of the system. The setback distance shall be measured to the center of wind generator base.
4. Freestanding wind energy systems with a total height of greater than 85 feet shall be set back away from property boundaries and street right-of-way lines by a distance equal to or greater than twice the total height of the system, and from residential buildings and hospitals on other properties by a distance equal to or greater than four

times the total height of the system.

5. For freestanding wind energy systems in and adjacent to waterfront zones, mixed-use zones (except B-1/B-1b and I-B), the O-P zone, industrial zones, the Island Transfer Station Overlay Zone, and the R-OS zone, the setback from property boundaries and street right-of-way lines may be reduced to a minimum distance of 1.0 times the total height of the system where determined that the minimum required setback would be contrary to the public interest.
6. In residential zones, the B-1/B-1b zones, the I-B zone, and the R-P zone, where the lot is less than 0.5 acres, any vertical element of the wind energy system (tower/pole) shall be located in the rear yard or on the rear half of the existing building. Wind energy systems and associated facilities shall be sited to maximize existing vegetative or other screening from nearby residential buildings and public ways. The location shall minimize changes to existing topography and existing natural vegetation which would result from construction or maintenance of the system.

B. Height

1. Heights of wind energy systems, permitted as either freestanding or roof-mounted structures, shall be as shown in Table 7-1.
2. Roof-mounted wind energy systems shall measure no higher than 10 feet above the highest part of the roof.

TABLE 7-1: WIND ENERGY SYSTEM HEIGHT

Zone	Height (max.)
RPZ	10 ft.
Residential Zones¹, R-P, B-1/B-1b, and I-B	25 ft.
Historic Districts² and within 1,000 ft. of designated landmarks	45 ft.
EWPZ, WPDZ, WCZ, B-2/B-2b/B-2c, B-5, and B-6	65 ft.
B-3, B-4, B-7, and O-P	85 ft.
ROS, I-M, I-Mb, I-H, and A-B	160 ft.

¹ Permitted up to 65 ft within USM Overlay Zone or on other sites with institutional uses measuring over 5 acres.

² Permitted up to 85 ft in B-3 part of Downtown Historic District.

7.5 SPACE AND BULK EXCEPTIONS

7.5.1 Height

- A. In the B-3/B-3b/B-3c zones.** Minimum height provisions as depicted on the Downtown Height Overlay Map shall not apply to:
 1. Accessory building components and structures such as truck loading docks covered parking, mechanical equipment enclosures and refrigeration units.
 2. Information kiosks and ticketing booths.
 3. Public transportation facilities of less than 10,000 square feet, or additions of less than 5000 square feet to existing public transportation facilities provided that the cumulative additions as of June 4, 2007 do not exceed 10,000 SF.
 4. Additions to buildings existing as of June 4, 2007 provided that the cumulative additions since June 4, 2007 do not exceed 10% of the building footprint on June 4, 2007, except building additions on those portions of the lot located closer to the street line than the building footprint

- existing as of June 4, 2007 shall not be included in this 10% limitation.
5. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures, and other similar structures.
 6. Additions to and/or relocation of designated historic structures or structures determined by the Historic Preservation Board to be eligible for such designation.
 7. Parking attendant booths or bank remote teller facilities.
 8. Structures accessory to parks and plazas.
 9. Buildings or building additions of less than 2,500 square feet footprint, on lots or available building sites of less than 3,000 square feet.
- B. In the B-6 zone.** Minimum height provisions as depicted on the B-6 Building Height Overlay and Building Envelopes map shall not apply to:
1. Buildings located in the area east of the Fore Street Connector.
 2. Parking attendant booths.
 3. Information kiosks and ticketing booths.
 4. Parking garages.
 5. Public transportation facilities.
 6. Additions to buildings existing as of December 8, 2004 provided that the cumulative additions since December 8, 2004 do not exceed 25% of the building footprint on December 8, 2004, except that such restriction shall not apply to those portions of the building addition that are constructed closer to the street line than the building footprint existing as of December 8, 2004.
 7. Buildings or building additions of less than 2,000 square feet footprint on lots or available building sites of less than 2,000 square feet.
 8. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures.
 9. Additions to and/or relocations of designated historic structures.
- C. In the B-7 zone.** Minimum floor provisions as depicted on the Bayside Height Overlay Map shall not apply to:
1. Accessory building components such as truck loading docks, mechanical equipment enclosures and refrigeration units.
 2. Information kiosks and ticketing booths.
 3. Parking garages.
 4. Public transportation facilities.
 5. Additions to buildings existing as of March 9, 2005 provided that the cumulative additions since March 9, 2005 do not exceed 50% of the ground floor building footprint on March 9, 2005, except that such restriction shall not apply to those portions of the building addition(s) that are constructed closer to the street line than the building footprint existing as of March 9, 2005.
 6. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations,

telephone electronic equipment enclosures, and other similar structures.

7. Additions to and/or relocation of designated historic structures or structures determined by the Historic Preservation Board to be eligible for such designation.
8. Portions of buildings more than 50 feet from the street line.

D. In the Bayside Gateway Urban Height District A.

Buildings in the Bayside Gateway Urban Height District A as depicted on the Bayside Height Overlay Map may be greater than 125 feet but no more than 165 feet in height provided that:

1. Such buildings shall be reviewed by the Planning Board as conditional uses under Section 6.5 of this Land Use Code.
2. Such buildings shall be sited to minimize encroachment into designated view corridors and visual landmarks to and from the downtown or that do not substantially further obstruct such corridors blocked by existing development as referenced in the Bayside Height Study Map and the B-7 design standards.
3. Portions of such buildings higher than 125 feet shall be stepped back at upper levels to provide light and air to adjacent streets, trails, and open spaces, with a ratio of no less than the ratio of building height to width of adjacent streets, trails and open spaces equivalent to 1.5 to 1. The Planning Board may modify this requirement for master development plans or major site plans provided that the following conditions are met:

- a. Each building exceeding 125 feet shall contain at least 20 dwelling units per building.
- b. Building wall stepback requirement along public street frontage for buildings with frontage on one street: Minimum 10-foot stepback between third and fifth stories and a minimum 10-foot stepback between the 125 and 145 foot level.
- c. Building wall stepback requirement along public street frontage for buildings with frontage on multiple streets: Above paragraph (b) requirement along longest building façade street wall, and of the remaining street walls the same requirement as paragraph (b) or a 15 foot wide streetscape improvement area containing a public sidewalk, landscaping, and other streetscape improvements within the abutting street right-of-way and/or private property along the remaining street frontage. A building with frontage on four streets shall meet the above requirement except that two of the streets shall have the stepback requirement.
- d. The Planning Board shall have the authority to waive one or more of the required stepbacks provided that one of the following conditions is met:
 - i. The depth of the building lot precludes a building having an

average minimum lot depth dimension of 170 feet.

- ii. The proposed building has an architecturally significant design that is articulated to avoid a monolithic appearance and emphasizes slender, vertically-oriented proportions while employing a variety of scales, materials, fenestration, and massing to assure a rich, visually interesting experience as viewed within the context of the downtown skyline and provide visual interest and human scale at the pedestrian level.
- e. In the event such a waiver is granted, the Planning Board may require the applicant to mitigate the impacts of the waiver by requiring the following:
 - i. Along all public street frontages and public open spaces, all buildings (regardless of height) shall maintain a pedestrian scale through the use of building elements at the street level as listed in this standard along no less than 60% of the building's horizontal length.
 - ii. Along all public street frontages and public open space for the building(s) over 125 feet, a canopy, awning, or similar permanent architectural feature to provide pedestrian protection and wind mitigation shall be provided within the first 35 feet of height.
 - iii. In order to preserve view corridors and to maintain a varied skyline, all buildings above 125 feet within a single development site should be separated to avoid the appearance of a tall, solid block massing. In accordance with this policy, on development sites of 500 feet or greater as measured parallel to Marginal Way, the aggregate building façade widths above 85 feet shall not exceed 50% of the total development site distance parallel to Marginal Way. Buildings over 125 feet in height that are being reviewed as separate phases of a master development plan shall be entitled to meet the 50% building requirement in aggregate for all such buildings over 125 feet in height in the master development plan, provided that view corridors are retained as each phase is built.
 - iv. The applicant shall demonstrate building design elements and location will reasonably mitigate downdraft effects of the proposed building or buildings.
- 4. Such buildings provide publicly accessible and usable open space, meeting the B-7 design standards, of at least 10% of the building lot area.
- 5. If located on lots including or adjacent to planned or proposed street or pedestrian

way connections, land dedication to such street or connection shall be credited toward the 10% open space requirement. Buildings over 125 feet in height that are being reviewed as separate phases of a master development plan shall be entitled to meet the 10% percent open space requirement in aggregate for all such buildings over 125 feet in height, provided that the open space shall not fall below 10% percent at any built phase or combination of built phases.

6. Such development shall comply with all other requirements and design standards as required by this article.

E. Roof-mounted solar energy systems.

Photovoltaic panels and thermal water heating panels, whether parallel or angled to a pitched or gable roof, may be erected above the height limitation for principal or accessory buildings as follows:

1. *In all residential zones.* Up to three feet above the maximum height allowed in the underlying zone. In the case of flat roofs, the solar energy system may be up to five feet above the maximum height allowed in the underlying zone. All roof-mounted solar energy systems shall be set back from the edge of the roof by one foot for every one foot of solar energy system height.
2. *In B-4 and industrial zones.* Up to four feet above the maximum height allowed in the underlying zone. In the case of flat roofs, there are no height limits.
3. *In all other zones.* Up to three feet above the maximum height allowed in the

underlying zone. In the case of flat roofs, the solar energy system may be up to eight

feet above the maximum height allowed in the underlying zone. All roof-mounted solar energy systems shall be set back from the edge of the roof by one foot for every one foot of solar energy system height.

- F. **Public art.** Except in residential zones, public art that has been individually accepted by the City Council for inclusion within the public art collection pursuant to Article 21 shall not be subject to the height limitations within the underlying zone.
- G. **Rooftop appurtenances.** Unless otherwise noted, rooftop appurtenances for the housing of elevators, stairways, tanks, fans, or other building operating equipment not intended for human occupancy, deck railings, skylights, steeples, flag poles, chimneys, smokestacks, radio or television masts, water tanks, or silos may be erected above the height limitations herein prescribed.
- H. **Telecommunication towers.** Where permitted, ground-mounted telecommunication towers may be erected above the height limitations within the underlying zone.

7.5.2 Length of building wall at maximum setback

- A. **In the B-6 zone.** Buildings located area east of the Fore Street Connector shall not be subject to the building wall requirement.
- B. **In the B-7 zone.** Additions to and relocations of designated historic structures or structures

determined to be eligible under Article 17 shall be exempt from the building wall requirement.

7.5.3 Lot area

A. Institutional uses in residential zones. No minimum lot area shall be required for institutional uses in residential zones in the following cases:

1. Uses existing as of June 1, 1983.
2. Expansion on to land abutting the lot on which the principal use is located.
3. Expansion onto land other than the lot on which the principal use is located to the extent that such expansion consists of the reuse of surface parking area or nonresidential structures existing and in nonresidential use as of June 1, 1983, provided that such reuse is contained within the lot of such structure or parking area as of June 1, 1983.
4. Expansion onto land other than the lot on which the principal use is located of no more than 15% of the total contiguous land area of the existing use, or one acre, whichever is less, within any five-year period.

B. Residential lots not served by public sewers.

A lot in an unsewered residential district shall meet the provisions of the state Minimum Lot Size Law, 12 M.R.S. § 4807 et seq., or the applicable minimum lot area, whichever is larger, except that the minimum lot size may be reduced on the islands in Casco Bay as provided in (C) below.

C. In island zones. In issuing any permit for new development in island zones:

1. The Building or Planning Authority shall require that any lot located in the IR-1 zone shall be at least 40,000 square feet in area and in the IR-2, IR-3, and I-B zones be at least 20,000 square feet in area when the lot is to be serviced by a subsurface wastewater disposal system, except those lots which are located in a subdivision approved by the Planning Board after June 8, 1968 and excluding Peaks Island.
2. Excluding Peaks Island from this paragraph (2), any property owner whose lot does not meet the minimum lot size requirements outlined in (1) above may, for purposes of this subsection only, merge two or more separate lots on the same island in order to meet these requirements. Where the lots so merged are not contiguous, the property owner shall grant to the city as holder a conservation easement upon the lot or lots which will not contain the principal structure. The conservation easement shall contain both an existing legal description and a city assessor's chart, block, and lot description. The Planning Authority shall be authorized to accept such conservation easements on behalf of the city. Said easement shall be recorded by the applicant in the registry of deeds. A copy of the recorded easement and copies of the deeds for both lots shall be submitted to the Planning Authority prior to issuance of a building permit. The property over which the conservation easement has been granted shall be used for passive recreational and conservation purposes

only, and shall be subject to the following restrictions:

- a. No structure shall be permitted on this property.
 - b. No parking or storage of vehicles or machinery shall be permitted on this property at any time.
 - c. No area of this property shall be paved.
 - d. No exterior storage for commercial use shall be permitted on this property.
 - e. The easement deed shall reference the lot which is benefited by this conservation easement. No conservation easement shall be used to benefit more than one lot.
3. Conservation easements shall only be granted over lots which conform either to the provisions of Subsection 4.3.1 or to the minimum lot sizes set forth in Table 7-D. Conservation easements shall not be granted over any lot which is encumbered by any other easement which prohibits all construction on that lot. A conservation easement may also name as a holder or grant a third-party right of enforcement to a nonprofit corporation or charitable trust, the purposes or powers of which include retaining or protecting the natural, scenic, or open space values of real property; assuring the availability of real property for agricultural, forest, recreational, or open space use; protecting natural resources; or maintaining or enhancing air or water quality of real property. Nothing in this

subsection shall be construed to allow an owner of a currently existing and developed lot to convey or permit a portion of that lot to be used to fulfill the requirements of this subsection if such conveyance would render the existing lot nonconforming under the terms of this Land Use Code. The lot upon which a building is to be constructed shall meet the minimum lot size requirements of Subsection 4.3.1.

4. Where an existing subsurface wastewater disposal system serving an existing structure requires replacement, the replacement system shall meet the applicable state requirements. The land area requirements in paragraph (1) above shall not apply to such a replacement system.
5. For purposes of this subsection, the mean high tide mark shall be considered to be the shoreline lot line.

7.5.4 Lot coverage

- A. Lot surrounded by streets or alleys.** Where a lot containing ten thousand 10,000 square feet or less is completely surrounded by streets or alleys, the lot coverage may be increased 20%.

7.5.5 Setbacks

- A. Setbacks in residential and R-P zones.** In any residential zone and the R-P zone, the width of one side setback may be reduced one foot for every foot that the other side setback is correspondingly increased, but no side setback

shall be less than the minimum required for a one-story building.

- B. Setbacks in the O-P zone.** The Planning Board may reduce by up to 50% the minimum setback if another yard within the lot is correspondingly increased so that the combined minimum yards on all four sides equal 150 feet. If two or more buildings are located on one lot, only the requirements of the front, rear or side setbacks that adjoin any external property boundary must be met, provided a sufficient fire line is provided.
- C. Projections in required setback areas.** Any setback may be occupied by a one-story entrance porch not enclosed, with or without a roof, if the area of the porch does not exceed 50 square feet nor the projection from the building exceed six feet. A basement bulkhead of similar size, but not more than 24 inches in height, is also permitted. A cornice eave, sill, canopy, chimney, bay window, balcony, or other similar architectural feature may project into any required setback a distance of not more than two feet.
- D. Pavement setbacks.** Pavement setbacks shall not apply to entrance drives.
- E. Corner lot setbacks.** In case a principal residential structure has its front yard upon the long side of a corner lot, the rear setback may be reduced to a depth not less than the required side setback on the lot, provided that the aggregate of the widths of both sides and depths of front and rear yards is not less than the similar aggregate of required dimensions of all setbacks if the front yard were faced on the short side of the lot.

F. Maximum front setbacks

- 1. Maximum front setbacks shall not apply to utility substations and secondary building components.
- 2. *In the B-1/B-1b zone.* Building additions are encouraged but not required to meet front setbacks.
- 3. *In the B-2/B-2b/B-2c zones*
 - a. Building additions do not have to meet maximum front setback requirements.
 - b. The Planning Board or Planning Authority may approve a different front setback for irregularly shaped lots or lots with frontage greater than 40 feet in width provided the front setback is met to the maximum extent practicable.
 - c. If a lot has less than 40 feet of frontage and is more than 100 feet deep, then no maximum setback is required.
 - d. If existing structures are within 20 feet of the street or meet the front setback maximum and the remainder of the lot has less than 40 feet of frontage, then no maximum setback is required.
 - e. The Planning Board or Planning Authority may waive the maximum front setback for utility substations and alternative energy installations.
 - f. Where setbacks exceed 10 feet, a continuous, attractive, and pedestrian-scaled edge treatment shall be constructed along the street, consisting of street trees spaced at no

- more than 15 feet on center, approved by the City arborist, and a combination of landscaping no less than four feet deep, ornamental brick or stone walls, or ornamental fencing.
4. *In the B-3/B-3b/B-3c zones.* The Planning Board may require or approve an additional setback to comply with the design standards of Article 14 and the City of Portland *Design Manual*.
 5. *In the B-6 zone.* For lots fronting on more than one street in the B-6 zone, the front setback can be increased more than 10 feet if all of the following conditions are met:
 - a. The increased setback occurs at the intersection of the streets.
 - b. The increased setback area is the primary pedestrian entrance to the building.
 - c. 75% of the total building wall length facing the abutting streets shall be setback no greater than 10 feet. All building wall segments which make up the increased setback shall be included in the calculation of the total building wall length.
 - d. For new construction on a lot abutting three or more streets, the maximum setback shall apply only to the two streets with the highest traffic volume.
 6. *In the B-7 zone*
 - a. Parking structures, public transportation facilities, utility substations, secondary building components such as truck loading docks, mechanical equipment enclosures, and refrigeration units are not subject to the maximum front setbacks.
 - b. The maximum front setback may be increased to more than 10 feet if all of the following conditions are met:
 - i. 75% of the total building wall length of an individual building facing the abutting streets is setback no greater than 10 feet.
 - ii. The increased setback area shall include a functional and accessible public pedestrian entrance into the building that faces the street, unless a public pedestrian entrance already exists along the same street.
 - iii. The increased setback shall not be used for surface parking.
 - c. For a corner lot having frontage on two streets, the maximum setback shall apply to both streets. In the case of a lot having frontage on two or more street corners, newly constructed buildings shall be sited at street corners and meet the maximum setback requirement prior to other freestanding buildings being constructed on the lot which shall also meet the maximum street setback. In the case of a corner lot having frontage on a third street (but not a corner) the maximum setback need not apply to the third street.

- d. In the case of a lot having frontage on two streets but not on a corner, the maximum setback shall apply to all streets but in the case of a lot having frontage on three streets but not on a corner, the maximum setback shall apply to only two streets. For purposes of this subsection only, the first building on a lot shall meet the maximum setback on at least one street with future buildings required to meet the maximum setback on the remaining street(s).
- e. In the case of a lot in which a minimum 75% of the total lot frontage has a building within ten feet of the street, other buildings may be located on the lot more than 10 feet from the street. In the case of a lot having frontage on Marginal Way and I-295, the property edge along I-295 shall not be considered street frontage.
- f. The maximum building setback shall not apply to vertical building expansions in the following cases:
 - i. The upper floors of a building in which the lower floors meet the maximum setback and the minimum height requirement.
 - ii. The building existed as of March 9, 2005 and meets the minimum height requirement.
 - iii. A building not meeting the maximum street setback and the minimum height requirement may vertically expand a total of one floor from March 9, 2005.
- iv. In the case of a building in which at least 50% of the building wall(s) abutting street(s) is within 20 feet of the street.
- v. Additions to parking garages existing as of March 9, 2005.
- g. Additions to buildings existing as of March 9, 2005 that are nonconforming as to the maximum setback need not conform to the maximum street setback provided the cumulative building footprint since March 9, 2005 does not exceed 50% of the existing building footprint. Such restriction shall not apply to those portions of the building addition that are constructed closer to the street line than the building footprint existing as of March 9, 2005 and to vertical expansions as provided for in (f) above.
- h. Lots having frontage on streets in which the curve of the street frontage precludes a rectangular-shaped building along the street line, for purposes of calculating the setback, the average setback of the building from the street line may be used, but in no event shall the average setback along the length of the building edge exceed an average setback of 15 feet nor shall the maximum setback exceed 20 feet. The increased setback shall not be used for surface parking, vehicular loading or vehicular circulation.

- i. Additions to and relocations of designated historic structures or structures determined to be eligible by the Historic Preservation Board shall be exempt from the maximum setback requirement.

G. Minimum setback exceptions for lots of record

1. In the case of a lot of record existing as of June 5, 1957 in the R-1, R-2, R-3, R-4, R-5, R-5a, and R-6 zones and less than 100 feet deep, the front setback need not be deeper than 20% of the depth of the lot.
2. In the case of a lot of record existing as of June 5, 1957 in a residential zone, the required side setback for principal structures may be reduced in order to provide a buildable width of up to 24 feet, but in no case shall the resulting side yards be less than the following:
 - a. R-1, R-2: 12 ft.
 - b. R-3, R-5: 8 ft.
 - c. R-4, R-5a: 10 ft.

easement or right-of-way which existed as of July 15, 1985. Such easement or right-of-way shall have a minimum width of 16 feet and a minimum travel width of eight feet except that an easement or right-of-way providing access for three or more lots or providing the only means of access to a parcel or parcels of three acres or more, shall meet the construction requirements of Chapter 25, Article III of the City of Portland Code of Ordinances. In the IR-1 zone, such easement or right-of-way shall conform to the requirements contained within the City of Portland *Technical Manual*. In the IR-2 zone, such easement or right-of-way shall be a minimum of 32 feet wide. Such easement or right-of-way shall be sufficient to permit municipal service delivery.

7.5.6 Stepbacks

A cornice eave, sill, canopy, chimney, bay window, balcony, or other similar architectural feature may project into any required stepback a distance of not more than two feet.

7.5.7 Street frontage

In the IR-1 and IR-2 zones, a lot of record that is buildable pursuant to Subsection 4.3.1 and lots created after July 15, 1985, which are not part of a subdivision need not provide street frontage if access is available by means of a permanent



8 OVERLAY ZONES

8.1 COMPACT URBAN RESIDENTIAL OVERLAY (R-7)

8.1.1 Purpose

The purpose of the R-7 Compact Urban Residential Overlay Zone is to encourage and accommodate compact residential development on appropriate locations on the Portland peninsula, pursuant to the *New Vision for Bayside* and housing plans of the City of Portland. Suitable sites should be within walking distance of downtown or other work places, shopping and community facilities, and have access to public or private off-site parking or transit service. The intent of this zone is to foster increased opportunities for compact living for owners and renters representing a variety of income levels and household types.

Locations for siting the R-7 zone are intended to be located on the peninsula of Portland, in the area encompassed in the *New Vision for Bayside* plan, other peninsula R-6 locations characterized by moderate- to high- density multi-family housing in a form and density exceeding that allowed in the R-6 zone and where infill development opportunities exist, and areas on the peninsula with mixed business and residential zoning and uses which can accommodate higher density infill residential development without negatively impacting the existing neighborhood or adjacent properties. It may be appropriate in some cases to apply the R-7 Overlay Zone through conditional or contract zoning to ensure that the new development is architecturally appropriate and compatible with the surrounding neighborhood.

TABLE 8-A: R-7 DIMENSIONAL STANDARDS

Lot area (min.)		None
Street frontage (min.)		None
Setbacks (min.)	Front	None
	Rear and side	5 ft.
	Side yard on side street	None
Lot coverage (max.)		100%
Lot area per dwelling unit (min.)		435 SF
Structure height (max.)		50 ft.
Dwelling unit size (min.)		400 SF

8.1.2 Permitted Uses

Permitted uses in the R-7 Compact Urban Residential Overlay Zone shall be the uses permitted in the R-6 zone.

8.1.3 Dimensional standards

Residential uses shall comply with the dimensional requirements in Table 8-A. All other uses in the R-7 zone shall observe the dimensional requirements of the R-6 zone.

8.1.4 Design standards

Residential development shall be reviewed by the Planning Board under Article 14. Such development shall also comply with the following development standards. The general intent of these development standards is to achieve an attractive and comfortable city neighborhood environment. Varied and human-scaled building facades are key to making a place “pedestrian-oriented.” Building designs should provide a high level of visual interest, without creating a chaotic image. Residences should include design elements that enhance the streetscape and address the street.

- A. Porches and bays should face the street.
- B. Primary ground floor residential entries to multi-family buildings must orient to street, not to interior blocks or parking lots. Secondary and upper-floor entries from the interior of a block are acceptable. The front door to single-family homes, duplexes, and townhouses must be visible from the street.
- C. The design approach shall provide an architecture that will be a visible and permanent expression of the character of the neighborhood.
- D. The facade shall be varied and articulated to provide visual interest to pedestrians.
- E. The design shall reinforce the public realm of the public open space, sidewalks, and streets through appropriately scaled entries, porches, fenestration, landscaping, and architectural details.
- F. The design shall provide visual and acoustical privacy between units.
- G. The design shall maximize natural light and ventilation within units.

8.2 DOWNTOWN ENTERTAINMENT OVERLAY

8.2.1 Purpose

The purpose of the Downtown Entertainment Overlay Zone is to regulate the location of businesses with entertainment licenses in order to maintain and improve public safety and the quality of life of Portland residents by preventing an over-concentration of businesses with entertainment licenses, particularly those which also have liquor licenses, and the public safety problems that have and will be experienced when too many of these businesses are located too close to each other. These problems include large late-night crowds within which fights and assaults, disorderly conduct

and other breaches of the peace occur and that are difficult to effectively police and that expose not only innocent bystanders but also police officers to danger and personal injury.

8.2.2 Applicability

For the purposes of this section, the Downtown Entertainment Overlay Zone includes and is defined by the boundaries of the following zones as shown on the Downtown Entertainment Overlay Zone map: the B-3, B-3c, and WCZ zones. Any property that lies partly within the Downtown Entertainment Overlay Zone shall be subject to the regulations of the overlay.

8.2.3 Dispersal requirement

A business with an entertainment license as required or authorized by Chapter 4, Section 4-51(a) of the City of Portland Code of Ordinances within the Downtown Entertainment Overlay Zone may not be located within 100 feet of another business with an entertainment license, as measured along or across public ways from the main entrance or entrances of each.

8.2.4 Exemption

- A. A business with an entertainment license located in the Downtown Entertainment Overlay Zone on or before January 3, 2006 shall not have to comply with the requirements of this section and if located within 100 feet of another licensee shall be considered a nonconforming use controlled by Article 4. Such a business is considered an entertainment business for the purpose of calculating dispersion requirements under Subsection 8.2.3 for a new or relocating entertainment business in the Downtown Entertainment Overlay Zone.



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- B. A business with an entertainment license that does not allow amplified entertainment shall not have to comply with the dispersal requirement of Subsection 8.2.3.

8.2.5 Separate business entities

Where two or more entertainment businesses operate on one site, and where each business entity requires or has a separate business license, or displays in a manner visible from public property separate business trademarks, logos, service marks, or other mutually identifying names or symbols, each business entity shall be counted as a separate entertainment business for the purpose of this section.

8.2.6 Conditions

Following a hearing held pursuant to Chapter 15, Section 15-10 of the City of Portland Code of Ordinances, the City Clerk may impose conditions to maintain or improve public safety on the food service license of any business in the Downtown Entertainment Overlay Zone that operates between

1:00 a.m. and 4:00 a.m., following a written recommendation from the Portland Police Department that such conditions are necessary. The City Clerk's decision may be appealed to the City Manager pursuant to Chapter 15, Section 15-9 of the City of Portland Code of Ordinances. Nothing in this section shall be construed to limit the City Clerk's authority in Chapter 15 to deny, suspend, or revoke any license pursuant to the standards and process in that chapter.

8.3 FORT SUMNER PARK HEIGHT OVERLAY

8.3.1 Applicability

The Fort Sumner Park Height Overlay is established to protect the public interest by limiting the impact of development on the quintessential views of natural resources and the changing Portland skyline from Fort Sumner Park. There is established a key apex point in Fort Sumner Park at $43^{\circ} 40' 2.3359''$ N. $70^{\circ} 15' 4.3687''$ W. The Fort Sumner Park Height Overlay includes all land within 200 feet, or the R-6 zone boundary, whichever is closer, of this key apex point that is located closer to the middle line of Sheridan Street than said apex point.

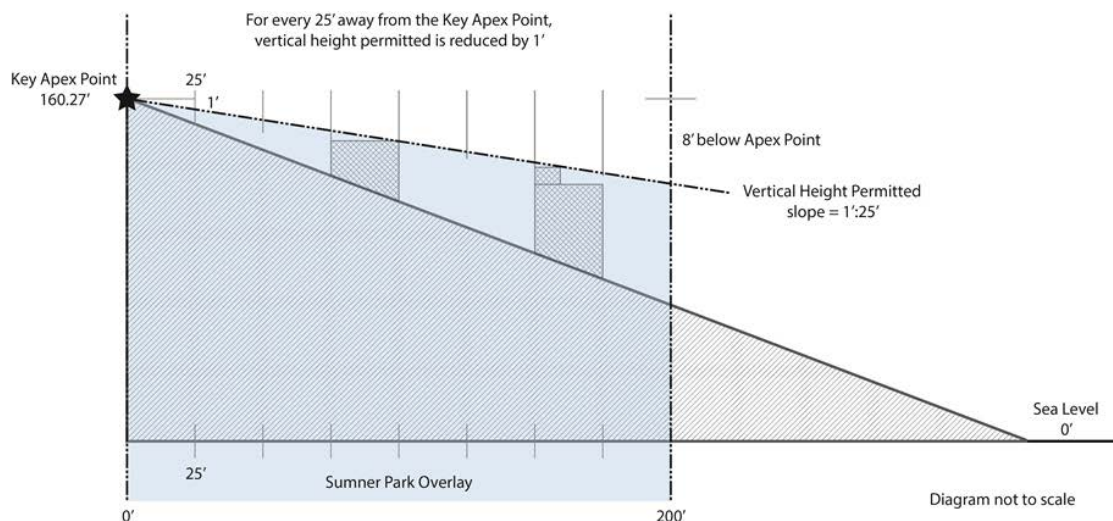


FIGURE 8-A: FORT SUMNER PARK OVERLAY PERMISSIBLE HEIGHT

8.3.2 Standards

Notwithstanding any other section of this Land Use Code, development in the Fort Sumner Park Height Overlay shall be subject to the following additional provisions:

- A. The top of structures, including rooftop appurtenances, within the overlay shall not exceed the baseline vertical height of the apex point (160.27' City of Portland Datum (Mean Tide)). For each 25' radially away from the apex point, the vertical height permitted in the overlay is reduced by 1 foot. (See Figure 8-A.)
- B. The minimum building setback from the park property shall be 15 feet.

8.3.3 Review process

Any project within the Fort Sumner Park Overlay shall go before the Parks Commission for a recommendation to the Planning Board regarding potential impacts on Fort Sumner Park.

8.4 HELISTOP OVERLAY

8.4.1 Purpose

The intent of the Helistop Overlay is to allow for helicopter landing areas on individual sites in addition to those uses permitted in the underlying zone. The purpose of this zone is to protect the public health and safety by allowing helicopters serving medical needs to land in certain areas, while protecting surrounding areas from any negative effects associated with such a use.

8.4.2 Helistop standards

A. High volume helistops (more than five landings per month)

- 1. All take-off, landing, and parking areas shall be surfaced with grass or with a dust-proof material.

- 2. Each landing pad shall be set back at least 200 feet from any residence, school or church. Each landing pad shall be set back at least 50 feet from any commercial or industrial structure. All setbacks shall be measured from the edge of the landing pad.
- 3. The area in which a landing pad is located shall be enclosed by a fence or other barrier of not less than three feet in height or shall be secured by a locked gate, as approved by the Fire Department.
- 4. All high-volume helistops shall be subject to review under Article 14.

B. Low-volume helistops (five or fewer landings per month)

- 1. All low volume helistops shall be subject to approval by the Building Authority and the Fire Department.

8.5 INSTITUTIONAL OVERLAY (IOZ)

8.5.1 Purpose

The Institutional Overlay Zone (IOZ) designation provides a regulatory mechanism available to the city's four major medical and higher education campuses where an improved regulatory structure is needed to facilitate a consistent, predictable, and clear growth management process. The purposes of the Institutional Overlay Zone are to:

- A. Acknowledge that the city's major academic and medical institutions play a prominent role in the health and well-being of the local and regional community, and in order to sustain that role, these institutions need flexibility to change and grow.
- B. Encourage proactive planning for institutional change and growth which identifies and addresses likely long-term institutional needs



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and cumulative impacts while leveraging potential benefits at the neighborhood, city, and regional level.

- C. Ensure that institutional change and growth both complements and, as appropriate, integrates adjacent or surrounding neighborhoods through carefully planned transitions.
- D. Support the formation and continuation of mutually beneficial public-private cooperation.
- E. Support an ongoing public engagement process that benefits both the institutions and nearby neighborhoods.
- F. Reflect Comprehensive Plan and other policy objectives.
- G. Provide a consistent regulatory approach to all major institutions which allows unique regulatory requirements that balance the particular needs of institutions with the needs of the surrounding neighborhood and wider community.

8.5.2 Location and applicability

The city's four primary medical and higher education institutions are eligible to apply for designation as Institutional Overlay Zones. The eligible institutions are the two major hospital institutions of Maine Medical Center and Mercy Hospital and the two major academic institutions of University of Southern Maine and University of New England, their successors and assigns. Designation as an IOZ is the preferred mechanism where the eligible institution's proposed development is inconsistent with the existing zoning.

8.5.3 Establishment

A. Application for an Institutional Overlay Zone.

Where the eligible institution seeks designation

as an IOZ, they shall submit a zone change application consisting of two components:

1. An Institutional Development Plan (IDP) in accordance with Subsection 8.5.4.
2. A regulatory framework in accordance with Subsection 8.5.5 that would, when and if adopted, be the text and map amendment to the City's Land Use Code and zoning map.

B. Required public involvement. At least two neighborhood meetings shall be required. The first shall be held prior to the formal submission of a zone change application for an Institutional Overlay Zone and the second shall be held during the City's review. Meetings shall identify the concerns, if any, of affected residents and property owners, and inform the development of the Institutional Development Plan (IDP) and regulatory framework. Meetings shall be held in a convenient location proximate to the institution. The applicant shall provide written notification to property owners of record within 500 feet of the proposed IOZ boundary at least ten days prior to the meeting dates and maintain written records of the meetings.

C. Required scoping meeting. The eligible institution shall meet with the Planning Authority after the first required neighborhood meeting and prior to submission of the zone change application to confirm the focus of the Institutional Development Plan (IDP) and regulatory framework, including associated study areas that may be outside of the proposed IOZ boundary. The IDP and regulatory framework will vary in detail and focus depending on the eligible institution and its particular context. The content

requirements in Subsections 8.5.4 and 8.5.5 and the comments from neighborhood meeting(s) shall provide direction for the content of the IDP. The Planning Authority or Planning Board may require additional information or modify content requirements as is relevant to the eligible institution.

- D. **Reviewing authority.** The Planning Board shall review the zone change application, including the IDP and regulatory framework. At least one public workshop and a public hearing before the Planning Board are required. Upon recommendation of the Planning Board, the City Council shall review and consider adoption of the Institutional Overlay Zone and the accompanying regulatory framework as an amendment to the City's Code of Ordinances.
- E. **Future institutional development.** All new development by the eligible institution within the boundary of the IOZ shall be compliant with the IOZ and accompanying regulatory framework, consistent with the IDP, consistent with the Comprehensive Plan, and meet applicable site plan standards, unless such standards are superseded by the regulatory framework. Any use/development proposed by the eligible institution outside the IOZ boundary that complies with the zoning for permitted uses in that location shall be reviewed under the standards of that zone. Any use/development proposed by an eligible institution outside of the IOZ boundary that is proposed in a residential zone and is functionally related to the operations within the IOZ shall be addressed by the IDP and require an amendment to the IDP.

8.5.4 Institutional Development Plan (IDP)

- A. **Purpose.** Any use conducted by an eligible institution and any construction by an eligible institution in an Institutional Overlay Zone shall be consistent with an Institutional Development Plan (IDP) approved by the Planning Board in accordance with this ordinance. The purpose of the IDP is to establish baseline data about institutional land uses, facilities, and services and measure, analyze, and address the anticipated or potential impacts of planned institutional growth and change. The IDP shall serve as a background document that supports the proposed regulatory framework and frames subsequent site plan review(s).
- B. **Planning horizon.** An IDP shall provide the City and abutting neighborhoods with a clear outline of the anticipated or potential growth and change of the eligible institution for the short- to medium-term (e.g. 1-5 and 5-10 years respectively), as well as a conceptual growth plan for the long-term (e.g. 10 years or more). however, the specific planning horizons for each institution will be determined as part of the IDP approval process.
- C. **Content.** The IDP submission shall address the following elements unless specifically modified by the Planning Authority or Planning Board, with the scope and level of detail to be clarified at the required scoping meeting:
 - 1. Context information, including:
 - a. The institution's adopted mission, vision, or purpose statement.
 - b. A summary of relevant baseline data on the institution, including:
 - i. A neighborhood context plan.



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- ii. An inventory of current programs and services.
- iii. A current census of the number of people using the institution (e.g., employees, enrollment, patients), with an indication of maximums and minimums over time.
- iv. An inventory and/or plan of all existing property holdings within the main campus and within the City of Portland, including an indication of functional land use links between off-campus properties and the main campus (e.g. remote parking).
- v. An inventory and/or plan of existing facilities, including data on use, floor area, and any existing functional connections between facilities.
- c. A summary of the baseline characteristics of the existing campus and context of the institution, based on identified study areas, including:
 - i. A summary of existing resources, such as historic, open space, and natural resources.
 - ii. A summary of the existing transportation system, including vehicular, pedestrian, transit, bicycle, and parking supply, demand, and utilization.
 - iii. A summary of existing public infrastructure supporting the institution, including demand, utilization and any capacity issues.
 - iv. Relevant municipal plans, projects, and studies that may influence the IDP study area and opportunities for integrating institutional growth.
- d. A summary of public involvement in the development of the IDP, including major areas of public concern.
- 2. Assessment of future institutional growth and change, including:
 - a. A description of institutional needs and areas of future institutional growth and change, with:
 - i. A projected census of users (e.g., enrollment /employment/patient/ visitor figures and anticipated variations over time).
 - ii. Institutional objectives for property both within and outside the IOZ boundary (e.g. acquisition and/or disposition), including an indication of any functional land use connection for sites outside the IOZ boundary to the main campus.
 - iii. A development plan addressing anticipated or potential institutional needs and physical improvements, including the proposed boundary of the IOZ and any phasing of the development.
 - b. Analysis and associated plans that address the following elements in terms of anticipated growth or potential impacts within the identified study area, and support the

development parameters as set out in the regulatory framework, including:

i. Transportation and access, with:

- a) An analysis of the projected changes in parking demand, supply, and impacts to the off-street and on-street parking capacity, including an explanation of the proposed parking plan.
- b) An analysis of the projected changes in vehicular, pedestrian, transit, and bicycle access routes and facilities, their capacity, and safety.
- c) A transportation, access, and circulation plan, representing the synthesis of the analysis, and including a program of potential improvements or set of guidelines to address access deficiencies to and within the IOZ. The plan should outline proposed mechanisms and potential strategies to meet transportation objectives, including transportation demand management, phasing, and when a Traffic Movement Permit (TMP) may be required.

ii. Environment, with:

- a) An analysis of potential cumulative impacts on

natural resources and open spaces.

- b) An analysis of projected energy consumption, hazardous materials generation, noise generation, and similar issues as relevant.
- c) An environmental plan, representing the synthesis of the analysis and including a proposed program or set of guidelines for future preservation, enhancement, conservation, and/or mitigation.

iii. Infrastructure, with:

- a) An analysis of projected public utility demand and the capacity of associated infrastructure.
- b) An analysis of projected public safety needs and projected impacts to the capacity of these services.
- c) An infrastructure plan, representing the synthesis of the analysis and including a proposed program or set of guidelines to support sustainable growth.

iv. Design, with:

- a) An analysis of projected impacts to neighboring properties and public spaces, including potential shadow, wind, and lighting impacts, impacts of height



OVERLAY ZONES

- and massing, and impacts to historic resources.
 - b) An analysis of transition areas between the institution and adjoining neighborhoods, including identification of key character defining components of the surrounding context.
 - c) An analysis of existing Crime Prevention Through Environmental Design issues and identification of how these principles would be addressed as part of the proposed campus development.
 - d) A conceptual built environment/public realm plan, representing the synthesis of the analysis and including a set of guidelines for urban design, landscape, open space, and streetscape treatments, with particular attention to the treatment of edges (both within and abutting the IOZ boundary) to achieve compatible transitions.
 - v. Neighborhood engagement, with:
 - a) A plan for ongoing community engagement that represents best practices, promotes collaborative problem solving around community concerns, fosters transparency, and identifies mechanisms for neighborhood feedback and institutional accountability.
 - b) A property management framework that identifies the institution's process for handling operational property issues with neighbors.
 - c) Strategies for assuring communication pertaining to property acquisition and disposition in surrounding neighborhoods.
 - d) A set of construction management principles to apply to all institutional construction, that represent best practice, aim to minimize short- and long-term construction impacts on surrounding residents and businesses, and ensure a clear communication strategy is in place in advance of construction.
- D. Standards of review.** The IDP shall:
1. Address all content requirements, unless explicitly modified by the Planning Authority or Planning Board.
 2. Reflect the issues/topics identified in the required public process.

3. Demonstrate consistency with the City's Comprehensive Plan and the purpose of this ordinance.
 4. Demonstrate how the property ownership, proposed growth, and requested regulatory framework relate to the institution's mission.
 5. Demonstrate that traffic and parking impacts have been anticipated and that the proposed parking provision is justified as based on an assessment of options for reducing traffic and parking demands.
 6. Outline an approach to open space, natural, and historic resources that supports preservation and enhancement.
 7. Demonstrate that potential cumulative environmental impacts have been anticipated and can be minimized or satisfactorily mitigated.
 8. Demonstrate that utility impacts have been anticipated and can be minimized or satisfactorily mitigated.
 9. Reflect a comprehensive design approach that ensures appropriate transitions with the existing or future scale and character of the neighboring urban fabric.
 10. Promote compatibility with existing or future uses in adjacent neighborhoods, maintain housing, and support local amenities.
 11. Anticipate future off-site improvements that would support the integration of the institution into the community and city-wide infrastructure.
 12. Conform with the standards of Article 17 for designated landmarks or for properties within designated historic districts or designated historic landscapes, if applicable. When proposed adjacent to or within 100 feet of designated landmarks, historic districts, or historic landscapes, the IDP shall be generally compatible with the major character-defining elements of the landmark or portion of the district in the immediate vicinity.
 13. Incorporate strategies to support clear communication and ongoing public engagement between institutions and nearby neighbors.
- E. **Approval.** Upon finding that an eligible institution's IDP meets the standards of review, the Planning Board shall approve, approve with conditions, or deny an IDP.
 - F. **Monitoring.** The IDP shall establish a schedule for reporting on IDP implementation at regular intervals of not more than ten years from the date of approval of the initial or amended IDP, and identify thresholds for IDP amendments.
 - G. **Amendments.** An approved IDP shall guide campus development unless and until amended. If at any time the eligible institutions request minor amendments to an approved IDP, the Planning Authority may approve such minor amendments, provided that they do not constitute a substantial alteration of the IDP and do not affect any condition or requirement of the Planning Board. The applicant shall apply with a written statement of the proposed amendment and proposed amended IDP to the Planning Authority, whose decision as to whether the amendment is minor shall be final. Major amendments shall be reviewed by the Planning Board. When the IDP is amended, the baseline data in the IDP shall be updated as appropriate.



8.5.5 Regulatory framework

- A. **Purpose.** The regulatory framework translates the IDP into a set of clear and specific zoning requirements for the IOZ that constitute the text and map amendments to the City's Land Use Code and zoning map. The zoning requirements are anticipated to include parameters that guide the growth and change of the institution as well as broad strategies to address potential impacts, with plans and details to be developed under site plan review.
- B. **Applicability.** The regulatory framework shall apply only to properties that are within the IOZ boundary and to which the eligible institution holds right, title, or interest. For these properties, the Institutional Overlay Zone shall supersede the underlying zoning, and all new institutional development shall be conducted in compliance with the regulatory framework and the approved Institutional Development Plan. Properties located within the Institutional Overlay Zone not subject to right, title, or interest of the eligible institution shall continue to be governed by the regulations of the underlying zoning designation.
- C. **Uses.** Institutional uses, including hospitals and higher education facilities, shall be permitted, as shall uses that are functionally integrated with, ancillary to, and/or substantively related to supporting the primary institutional use, consistent with the applicable approved IDP.
- D. **Content.** The regulatory framework shall reflect the information and analysis of the IDP. The content shall be tailored to address the particular issues associated with the institution and its neighborhoods. The regulatory framework should be succinct and use tables

and graphics as possible to address the following, if applicable:

1. *Zoning boundary of the IOZ.* The area to which the regulations apply, as shown on the zoning map, subject to other provisions of this ordinance (i.e. the map amendment to the City's zoning map).
2. *Phasing and schedules.* Requirements that relate to particular proposed phases; a chart showing the schedule or thresholds for submitting an amended IDP (or elements of an IDP, such as a Transportation Demand Management (TDM) Plan).
3. *Uses.* Clarification, as necessary, on permitted uses.
4. *Dimensional requirements.* Graphics, sketches, or standards, including details for transition zones within the IOZ boundary.
5. *Transportation.* Elements such as Transportation Demand Management Plan (TDM) trip reduction targets or contribution to area-wide TDM measures; broad parameters for ensuring pedestrian, vehicular, bicycle and transit access and safety; parking ratios and management strategies; thresholds for access improvements.
6. *Environment.* The approach to the inclusion of open space and preservation of environmentally-sensitive areas.
7. *Mitigation measures.* The broad approach to identified mitigation measures, which would be addressed in greater detail in the site plan review process; thresholds for addressing deficiencies; goals for preservation/protection.

8. *Design.* Graphics and standards to clarify building placement and envelope (height and massing); guidelines for integration of site features; required treatments for transition zones and treatment for all edges (both within and abutting the IOZ boundary); guidelines for establishing campus identity.
9. *Neighborhood integration.* Thresholds and strategies for neighborhood engagement; mitigation of impacts on neighboring properties, including construction impacts; buffering requirements; objectives for pedestrian linkages and safety; other requirements that address community concerns.
10. *Monitoring.* A schedule for regular monitoring reports on IDP implementation in accordance with the IDP.

E. Standards of review: The regulatory framework shall:

1. Be consistent with the Comprehensive Plan and the Institutional Development Plan.
2. Provide a clear zoning framework, using graphics and tables as appropriate, to apply to future site plan reviews.
3. Provide specific regulatory statements as appropriate that respond to concerns raised during the required public involvement.
4. Outline measurable goals and thresholds for improvements or other actions identified in the IDP to be advanced in subsequent site plan applications.

F. Approval/adoption. The Planning Board shall review the proposed regulatory framework against the standards of review and make a

recommendation on the institution's IOZ designation and regulatory framework to the City Council for adoption as part of this Land Use Code.

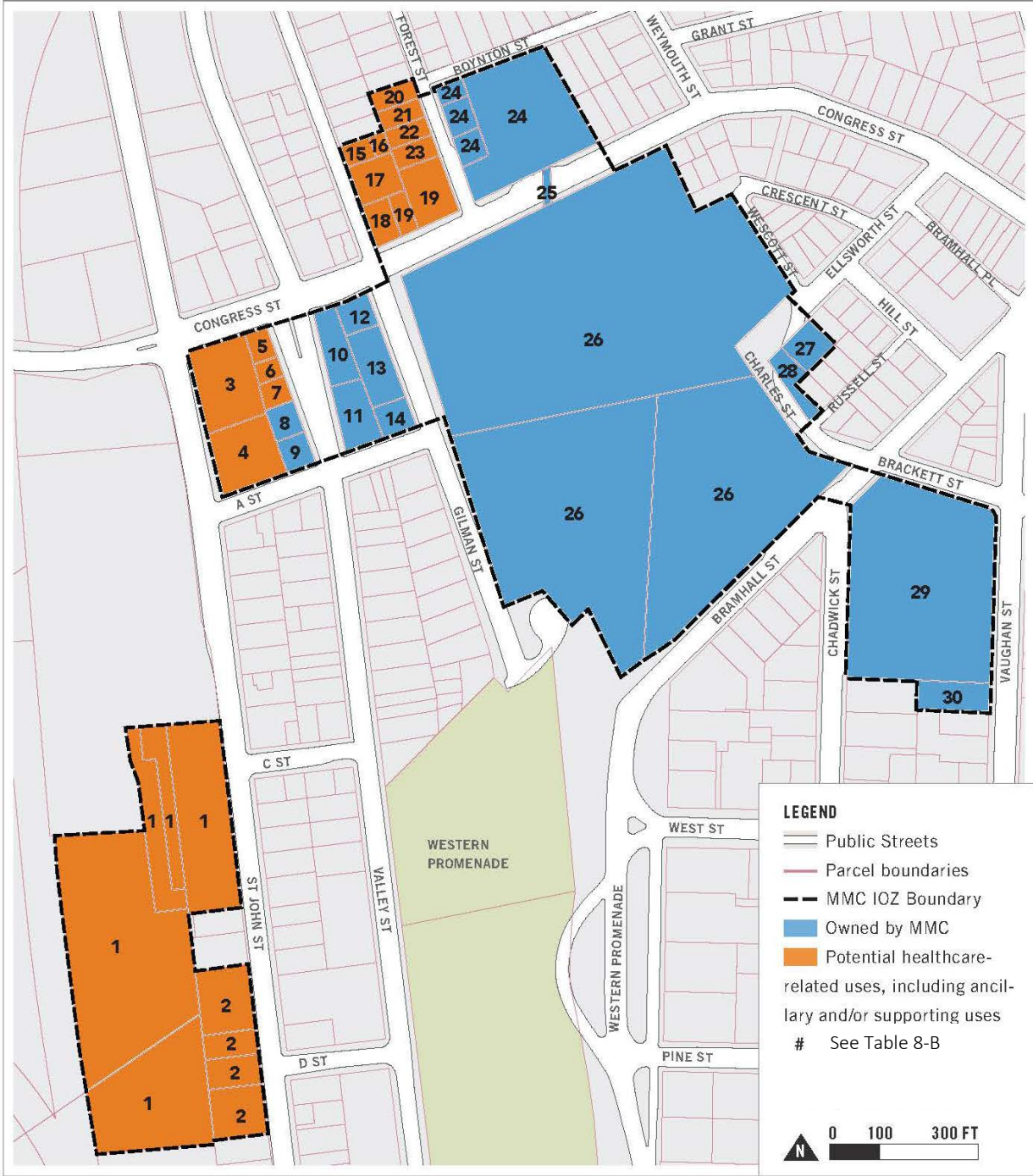
- G. Amendments.** A regulatory framework and IOZ boundary as adopted by the City Council shall remain in force unless and until amended. Amendments to a regulatory framework and/or IOZ boundary may be brought forth by the City or eligible institution. Proposed amendments to the IOZ boundary or regulatory framework shall be reviewed by the Planning Board and adopted by the City Council subject to the provisions of this ordinance.

8.5.6 Maine Medical Center Institutional Overlay Zone Regulatory Framework

- A. Applicability.** All development proposed by Maine Medical Center (MMC) within the boundary of the MMC Institutional Overlay Zone (IOZ) shall be consistent with the approved Institutional Development Plan (IDP), consistent with the Comprehensive Plan, and meet applicable standards of the Land Use Code, unless such standards are superseded by the following regulatory framework. This regulatory framework shall govern future development by MMC within the IOZ unless amended by the Portland City Council upon formal application of MMC. The MMC Institutional Overlay Zone shall have the boundaries depicted in Figure 8-B, below, and shall include the properties listed in Table 8-B.

B. Updates and amendments

1. It is intended that the IDP will be updated on a regular basis to ensure that the data is current and that the document remains accurate. Accordingly, monitoring reports



Note: Refer to Table 8-C for a list of permitted uses.

FIGURE 8-B: MMC IOZ BOUNDARY

TABLE 8-B: LIST OF PROPERTIES INCLUDED IN THE MMC IOZ

Map#	Legal Description	Address	Acreage	Ownership
1	64-A-2-8-9-11/74-A-7/75-A-6	222 St John St.	4.6516	Owned by others
2	68-D-1-3-13-14-16	180 St John St.	0.9494	Owned by others
3	65-G-1	950 Congress St.	0.4628	Owned by others
4	64-B-1	275 St John St.	0.4163	Owned by others
5	65-G-2	942 Congress St.	0.0659	Owned by others
6	65-G-3	940 Congress St.	0.0482	Owned by others
7	65-G-4	274 Valley St.	0.0667	Owned by others
8	65-G-5	268-270 Valley St.	0.0978	MMC
9	64-B-2	262-266 Valley St.	0.0895	MMC
10	65-H-1	932 Congress St.	0.1864	MMC
11	65-H-9	261 Valley St.	0.2185	MMC
12	65-H-2	930 Congress St.	0.1040	MMC
13	65-H-5	52 Gilman St.	0.2384	MMC
14	65-H-8	44 Gilman St.	0.1128	MMC
15	65-E-22	85 Gilman St.	0.0565	Owned by others
16	65-E-32	85 Gilman St.	0.0282	Owned by others
17	65-E-24	81 Gilman St.	0.1653	Owned by others
18	65-E-28	919 Congress St.	0.1059	Owned by others
19	65-E-29-30	909 Congress St.	0.3233	Owned by others
20	65-E-19	22 Forest St.	0.0826	Owned by others
21	65-E-21	18 Forest St.	0.0831	Owned by others
22	65-E-23	14 Forest St.	0.0826	Owned by others
23	65-E-25	12 Forest St.	0.0883	Owned by others
24	53-I-1-2-3-12	887 Congress St.	1.3400	MMC
25	53-X-1	Congress St. Pedestrian Walkway	---	MMC
26	53-D-7/54-H-1/64-C-1	22 Bramhall St.	12.563	MMC
27	54-C-6	34 Ellsworth St.	0.1341	MMC
28	54-C-10	40 Ellsworth St.	0.1155	MMC
29	54-I-1	308 Brackett St.	2.5200	MMC
30	63-B-8	214 Vaughan St.	0.1983	MMC

Notes:

Properties owned by MMC are listed under MMC or MMC Realty Corp.

MMC will not extend its functionally-related Bramhall campus hospital operations beyond the boundary of the IOZ within the City of Portland without further amendment to the IDP. This includes any expansion of functionally-related operations that displace residential uses outside of the IOZ boundary. A functional relationship is defined as uses or activities that are traditionally or customarily linked to the day-to-day operations of the MMC Bramhall Campus that would relocate a significant proportion of the total employee population or activities.



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- will be filed every three years and shall include a summary of progress on IDP implementation and of acquisitions and divestment since the date of IDP approval. At the time of the submission of the monitoring report, MMC shall identify any updates to the IDP which may result from updated master planning, changes in baseline information, or changes in the adjacent neighborhoods which affect MMC, to allow the IDP to remain current. Updates and minor amendments not described below shall be reviewed administratively by the Planning Authority.
2. Minor amendments that impact phasing of the long-term development blocks or change the approach to parking, transportation, neighborhood engagement or design shall be reviewed by the Planning Board for consistency with the objectives of the IDP. In addition to consistency with the objectives of the IDP, review of phasing and development program amendments shall focus on integration with the campus and impacts on transportation or infrastructure. This review may occur simultaneously with the site plan review of an anticipated project.
 3. Major amendments shall be reviewed by the Planning Board and are required under the following circumstances:
 - a. A change to the regulatory framework is required.
 - b. The IDP is no longer representative of the institutional mission or approach to community as a result of redevelopment in the area or City upgrades to neighborhood planning (such as roadway changes, infrastructure upgrades, community design, lighting).
 - c. Development proposed by MMC is inconsistent with the master facility plan, transportation plan intent, design plan intent, or environment and infrastructure plan intent identified in the IDP.
 4. Annual monitoring reports will be submitted for MMC's Transportation Demand Management (TDM) Plan. TDM monitoring reports shall include a summary of progress towards targets established in the TDM Plan.
- C. Uses.** In addition to the uses permitted in the underlying zone, the uses in Table 8-C are permitted as a matter of right. In recognition that MMC is part of a mixed-use area of the city, with important existing services and businesses that serve the local and wider community, healthcare facility development fronting onto Congress Street and St. John Street shall activate the public realm, to the extent able, with uses such as service and retail/restaurant, landscaping, active building entrances, pocket parks, etc., on the ground or other publicly accessible level, consistent with the design intent contained in the approved IDP. In areas identified in the IDP as "Priority zone for commercially oriented/retail uses," usable ground floor retail, restaurant, or comparable community-oriented use that provides services to local residents and employees both during the day and evening hours is required. In areas labeled "Street activation through location of windows, entrances, etc.," usable ground floor retail,



restaurant, or community-oriented use is encouraged to the extent practicable. Such uses, where constructed or facilitated as part of a healthcare related development, are expressly permitted whether ancillary or supporting the healthcare facility or not, and shall be open and welcoming to the general public in addition to employees or visitors of MMC.

TABLE 8-C: PERMITTED USES

Healthcare facilities, including but not limited to the following ancillary and/or supporting uses:

- Hospital
- Medical Office/Clinic
- Laboratory Center / Services
- Research and Development (R&D) Laboratory or Facility
- Educational Facility / Conference Center
- Administrative / Business Office
- Accessory Service or Trade Uses
- Guest House
- Multi-family Housing for Healthcare Staff and Students
- Rehab / Skilled Nursing Facility
- Retail
- Restaurant/Cafe
- Employee Service Amenities
- Day Care Center
- Fitness Center or Gymnasium
- Parking Lot or Garage
- Bicycle Storage
- Heliport
- Antenna Station
- Outdoor use areas, such as green areas, parks, gardens, art installations, and other active and passive non-commercial recreation spaces

D. Dimensional requirements. The MMC Institutional Overlay Zone shall have the dimensional requirements listed in Table 8-D and depicted in Figures 8-C and 8-D.

E. Design. New buildings within the IOZ shall adhere to the Design Guidelines set forth in Chapter 5: Design of the IDP and the site plan standards of Article 14.

F. Signs

1. At the time of first site plan review following IDP approval, a unified campus-wide signage plan shall be submitted for review and approval by the Planning Authority. Any update to such plan due to a change in name or logo shall not require amendment to the IDP.
2. Signs shall be designed in accordance with the campus-wide signage plan. All signs shall be designed in proportion and character with building facades and adjacent street typology. All signs shall be coordinated with the building and landscaping design and be constructed of appropriate permanent, high quality materials and finishes.

G. Transportation

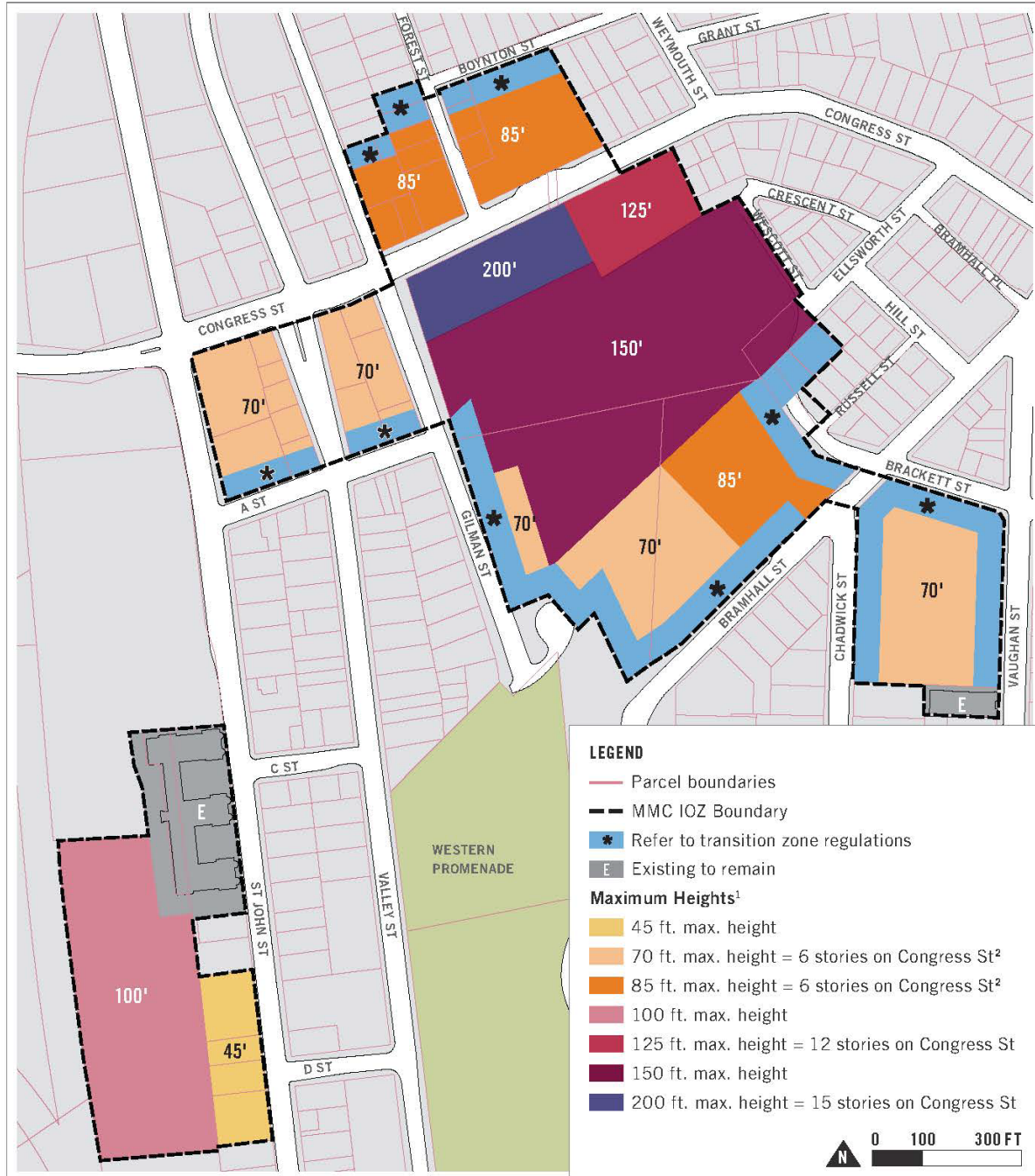
1. *Transportation Demand Management (TDM)*
 - a. At the time of the first site plan review following IDP approval, MMC shall submit a campus-wide TDM Plan substantially in accordance with those TDM objectives and strategies identified in the approved Institutional Development Plan. The TDM Plan may be phased into short-, mid-, and long-term actions to allow for progressive implementation over time.



TABLE 8-D: MMC IOZ DIMENSIONAL REQUIREMENTS

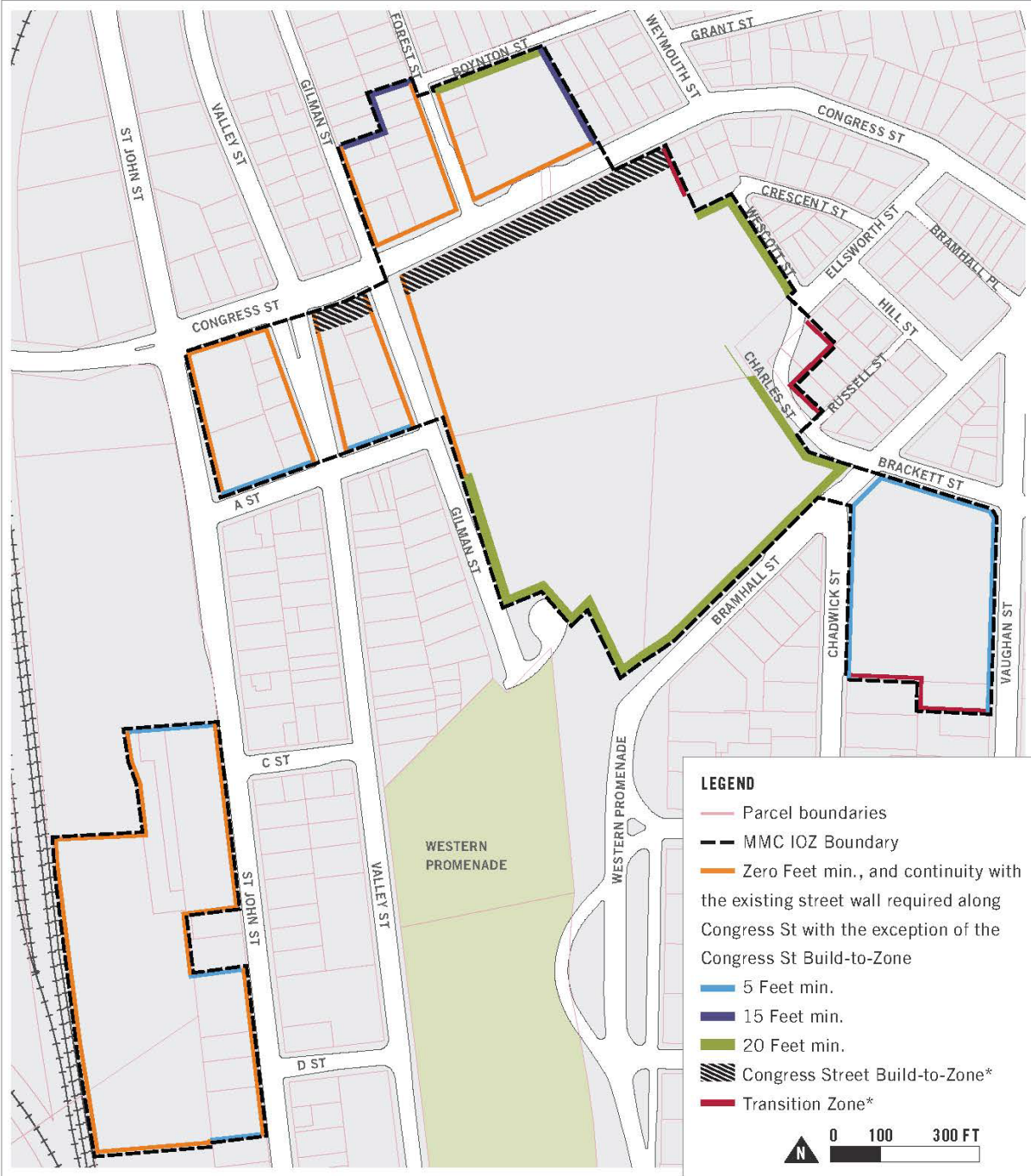
Building heights (max.)	Max. building heights for new buildings within the IOZ shall be governed by the Maximum Building Heights Map in Figure 8-C, or by the transition zones clause of this table for those buildings located in transition zones. Refer to IDP “Chapter 5. Design” for methodology on determining heights.
Building heights (min.)	Three stories, except in transition zones, where the minimum building height shall be two stories. Minimum building heights shall not apply to building awnings, associated kiosks, pavilions or similar building components.
Building length (max.)	Length of proposed parking garage at 222 St John St shall not exceed 500 feet as measured roughly parallel to St John St.
Building setbacks (min.)	Minimum building setbacks shall be governed by the Minimum Setbacks Map in Figure 8-D. Additional requirements are listed in the transition zones and Congress Street build-to zone sections of this table.
Congress Street build-to zone¹	A build-to zone is identified for some properties that abut Congress Street. See Minimum Setbacks Map in Figure 8-D for the location of build-to zone. i. The Congress Street build-to zone extends between 0 to 40 feet from the right-of-way boundary. ii. Buildings located in these parcels must have a minimum of 70% of the façade facing Congress Street located within the build-to zone.
Transition zones	Transition zones are identified inside the IOZ boundary in areas where the IOZ abuts or is located across a public right-of-way from a residential zone or a historic-designated district. See Maximum Building Heights Map in Figure 8-C for location of transition zones. i. Transition zones shall extend 50 feet into the parcel from the parcel boundary. ii. Transition zones that abut a Residential zone with or without an intervening public right-of-way shall have a maximum height limit that matches the maximum height permitted within that Residential zone. iii. In areas where the IOZ abuts a residential zone without an intervening public right-of-way, minimum side and rear yard requirements of the abutting residential zone apply within the IOZ boundary, unless noted otherwise in Minimum Setbacks Map in Figure 8-D.

¹A “build-to zone” is the area on the lot where all or a portion of the street-facing building facade must be located, measured as a minimum and max. yard (setback) range from the public right-of-way boundary.



Notes: 1. Minimum building heights also apply. Refer to Table 8-D.
 2. For buildings with residential use above the ground floor, the following height maximums apply:
 70 ft. maximum height = 7 stories, and 85 ft. maximum height = 8 stories.

FIGURE 8-C: MAXIMUM BUILDING HEIGHTS



* Refer to Table 8-D Dimensional Requirements

FIGURE 8-D: MINIMUM SETBACKS

- b. The TDM Plan shall be designed to provide transportation choice with the goal of reducing parking demand and single-occupancy vehicle trips to and from MMC by employees and visitors.
 - c. The TDM Plan shall establish parking and trip reduction targets associated with the short-term (0-2 years), mid-term (2-5 years), and the long-term (5+ years), as well as a data collection plan.
- 2. *Parking.* Parking requirements in the IOZ shall be established at the time of site plan review based on a parking study that includes a campus-wide analysis of demand and supply. The parking demand study shall determine parking requirements and shall be sufficient to alleviate parking pressure on surrounding neighborhoods. Parking studies developed by MMC shall integrate parking and trip reduction achievements and data contained in the TDM Plan.
- H. Environment.** Development proposed by MMC shall be designed to integrate with the surrounding context, including open space and pedestrian networks and infrastructure.
- I. Mitigation measures.** MMC shall mitigate site plan impacts to off-premise infrastructure in a manner proportionate to those impacts. Mitigation may include financial or in-kind contributions to existing or planned City projects focused on mitigating the impacts of MMC development. Mitigation contribution shall be determined based on the City's standard procedure in effect at the time of site plan review.
- J. Neighborhood Integration and engagement**
 - 1. For the purpose of keeping surrounding residential areas apprised of its future development plans, and to address any neighborhood issues related to the operations of the MMC Bramhall campus, MMC shall adhere to the ongoing community engagement principles identified in the approved Institutional Development Plan.
 - 2. MMC shall conduct ongoing community engagement, including the formation of a Neighborhood Advisory Committee comprised of representatives of MMC, the Parkside neighborhood, the West End neighborhood, the Western Promenade Neighborhood Association, the St. John Valley neighborhood, the Libbytown neighborhood, and the City.
- K. Construction management**
 - 1. At the time of site plan review, MMC shall submit a construction management plan substantially in accordance with those construction management principles identified in the approved Institutional Development Plan for review and approval by the Planning Authority.
 - 2. The construction management plan shall include a construction schedule, as well as strategies for managing neighborhood communication and noise, air quality, traffic, and parking impacts associated with the construction as set forth on the construction management template developed by the City and attached and incorporated to the IDP as Appendix A.



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L. Other requirements

1. *Helipad.* MMC shall be governed by the provisions of the Helistop Overlay Zone with the following exceptions:
 - a. Setback requirements of Subsection 8.4.2(A)(2).
 - b. Fencing requirements of Subsection 8.4.2(A)(3).
2. *Snow ban parking.* When the City of Portland declares a snow parking ban, MMC shall make parking available to neighbors in a designated parking area on or near its campus upon the following condition: Due to the patterns of patient flow in the hospital, the hours of snow ban parking for registered vehicles during an announced City of Portland snow parking bans are 6:00 p.m. until 6:00 p.m. Vehicles that are not moved out of these parking areas by the applicable time each morning are subject to towing at the owner's expense.
3. *Healthy communities.* Recognizing that a stable residential and commercial environment is key to the health of any neighborhood, MMC commits to supporting its existing and future neighbors in the St. John Valley, Parkside, West End, Western Prom, and Libbytown neighborhoods. Accordingly, MMC shall implement and participate in the healthy communities programs as described below.
 - a. *Caring Community Grants.* MMC shall develop an annual grant program with available funds of up to \$30,000. Goals, priorities, eligibility requirements, program guidelines, and

allocation approach will be developed by the MMC Neighborhood Advisory Committee, as described in Chapter 6 of the IDP approved on September 26, 2017. Neighborhood associations or other entities located or operating in the St. John Valley, Parkside, West End, Western Promenade, and Libbytown neighborhoods may apply for grant funding relating to the following initiatives:

- i. *Neighborhood investment and Infrastructure:* Focused on creating strong, safe, accessible and vibrant neighborhoods.
 - ii. *Quality of life:* Focused on improving access to recreation, arts or cultural experiences in the neighborhoods.
 - iii. *Diversity and inclusion:* Focused on fostering the building of relationships and understanding among diverse groups, including capacity building and outreach activities.
 - iv. *Public Safety:* Focused on supporting public safety programs through training programs, equipment or other means in the neighborhoods.
 - v. *Environmental sustainability:* Focused on preventing waste, increasing recycling or supporting other programs that work to improve the environment.
- b. *Healthy Neighborhoods Program.* MMC shall initiate and adopt a memorandum of understanding

(MOU) by and between the MMC, the City of Portland, an identified Community Housing Development Organization and any other community partners that may be identified later establishing a Healthy Neighborhoods program. Such a program shall be designed to fund and execute housing and community improvement and development programs in St. John Valley and the other neighborhoods surrounding MMC's Bramhall Campus.

8.6 ISLAND TRANSFER STATION OVERLAY

8.6.1 Purpose

The purpose of the Island Transfer Station Overlay Zone is to establish a location for a transfer station for municipal solid waste and municipal public works activities. This zone shall be established through a conditional rezoning process in order to ensure the imposition of appropriate conditions for the protection of neighboring properties.

8.6.2 Permitted uses

- A. Municipal solid waste facilities, including compactors and storage bins, provided that the compactor shall be located within a fully enclosed structure.
- B. Recycling facilities, provided that all recycling areas shall be buffered and screened from neighboring properties.
- C. Municipal garages, material storage, and parking for vehicles.
- D. Maintenance of municipal vehicles and equipment.

- E. Minor wind energy systems co-located with public industrial or utility facilities, subject to the standards of Subsection 6.4.18.

8.6.3 Conditions

Requirements for setbacks and any operational limitations shall be established as part of the conditional rezoning process.

8.7 MUNJOY HILL NEIGHBORHOOD CONSERVATION OVERLAY DISTRICT

The residential neighborhoods on Munjoy Hill are experiencing specific development pressures related to its location and the nature of the existing building stock, further documented in work by the City's Planning & Urban Development Department in the winter of 2018. In order to address the negative impacts of these pressures and create a positive framework for investment in the area, there shall be a Munjoy Hill Neighborhood Conservation Overlay District (the "District").

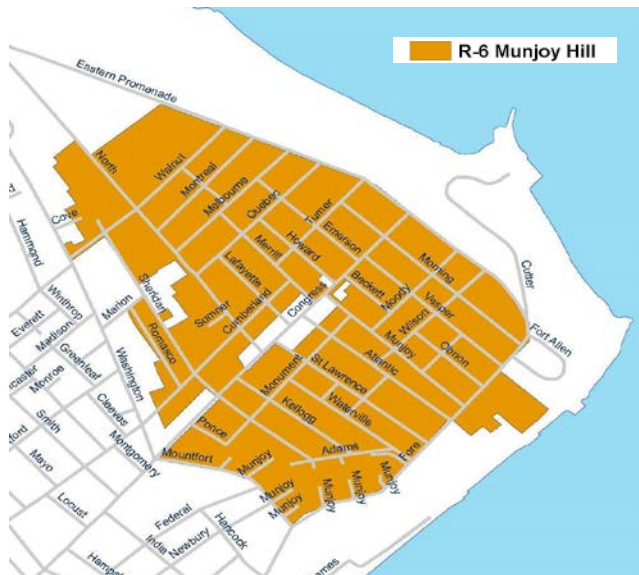


FIGURE 8-E: MUNJOY HILL NEIGHBORHOOD CONSERVATION DISTRICT BOUNDARIES

8.7.1 Area of effect

This District will apply in the highlighted area depicted on the map in Figure 8-E and includes all properties in the R-6 zoning district in an area east of Washington Avenue and Mountfort Street, north of Fore Street, and west of the Eastern Promenade.

8.7.2 Effect of the district

In addition to the standards contained in this Land Use Code that are applicable to properties in the R-6 zone, all properties within this District shall meet the standards of Section 8.7. Where this section imposes a standard that differs from the standards contained in Articles 6, 7, 14, and 15 of this Land Use Code, the City of Portland *Design Manual* or City of Portland *Technical Manual*, the standards in this section shall control.

8.7.3 Dimensional standards

Within the District, the dimensional requirements in Table 8-E supersede those dimensional standards outlined elsewhere in this Land Use Code.

8.7.4 Design review

- A. Design standards.** In addition to the general R-6 design standards, the following design standards shall apply in the Munjoy Hill Neighborhood Conservation District and shall supersede any conflicting design standards:
1. All buildings shall use simple, traditional roof forms as illustrated in Figure 8-F, except that flat roofs are permitted in buildings of three or more units. This requirement may also be modified through Subsection 8.7.4(B) below. Dormers and cross gables are allowed but where readily visible from the public right-of-way shall be

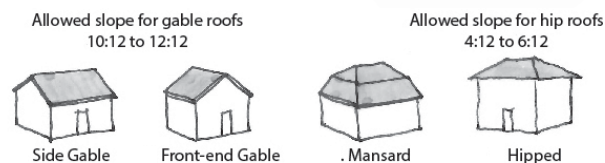


FIGURE 8-F: ROOF FORMS

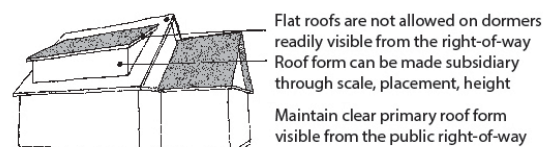


FIGURE 8-G: DORMERS AND SUBSIDIARY ROOFS

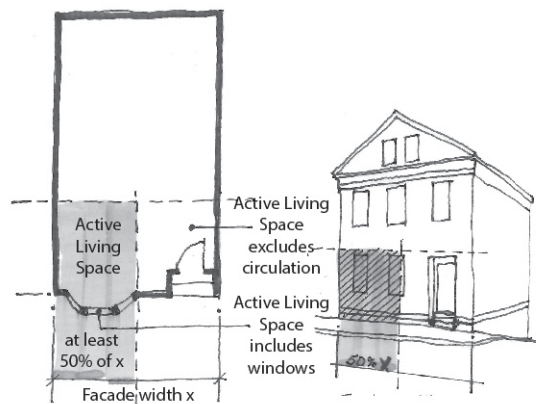
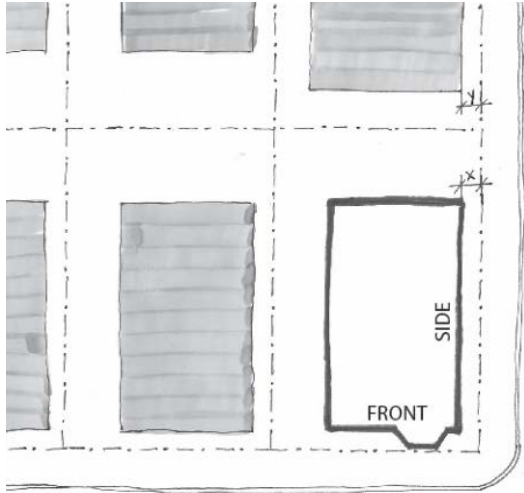


FIGURE 8-H: FRONT FACADE - ACTIVE LIVING SPACE

clearly subsidiary to the primary roof form. (See Figure 8-G.)

2. The first floor shall contain active living space, such as a living room or bedroom, with windows for at least 50% of the width of the front façade in total. (See Figure 8-H.) Active living space does not include space intended primarily for circulation or storage.

TABLE 8-E: MUNJOY HILL NEIGHBORHOOD CONSERVATION DISTRICT DIMENSIONAL REQUIREMENTS

Height (max.)¹	35 ft. 45 ft. for buildings with 3 or more units on lots over 2,000 SF that include at least one workforce housing unit. ²
	Rear Buildings up to 35 ft. in height: 10 ft. Buildings over 35 ft. in height: 15 ft. As measured from rear decks, porches, or similar unenclosed space: 7.5 ft. As measured from accessory structures with a ground coverage of 250 SF or less: 5 ft.
	Side Buildings up to 35 ft. in height: As per underlying zone. Buildings over 35 ft. in height: 10 ft. for all side yards, except that a side yard no less than 5 ft. is permitted when used to continue a documented built pattern of the surrounding streetscape, in which case a proportional increase in another side yard must be provided.
	5 ft. or the minimum depth of the immediately abutting street-facing yard, whichever is less. None when demonstrated that reduced setbacks are necessary to facilitate the provision of underground parking.
Setbacks (min.)	 Side yard on side street Min. setback x = 5' or x = y whichever is less
Stepbacks (min.)	None

¹ Rooftop appurtenances other than chimneys shall not exceed permitted heights, except that HVAC equipment is permitted for up to 5 ft. above these maximum heights if (a) out of view from public rights-of-way, screened adequately, and integrated with the building design and (b) set back at least 5 ft. from the building edge. In addition, height limits and placement of alternative energy equipment is permitted as specified in Articles 6 and 7.

² Unit can be for sale or rent, as defined in Article 3. Workforce units shall be no smaller than 50% of the average size of the other units in the development, must meet the definition for such units and only be sold or rented to a household at or below the applicable income levels. These requirements shall be deed restricted for affordability for the longest term possible under state and federal law.



OVERLAY ZONES

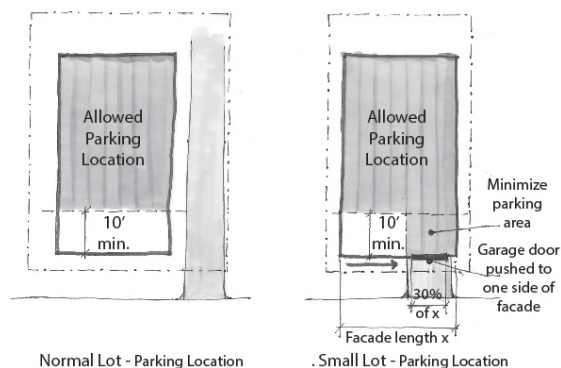


FIGURE 8-1: PARKING LOCATIONS

3. Use of tandem spaces to meet desired parking levels, consistent with the built pattern of the neighborhood, is strongly preferred. Parking shall be located on the side or in the rear of a building, and not within the front 10 feet of depth of the building. The only exception shall be for lots smaller than 2,000 square feet, which shall be permitted one garage door on the front façade no wider than 30% of the building width, but no less than nine feet. In that case, the garage door shall:
 - a. Be of high quality design, consistent with the character and pattern of the rest of the façade, including windows as appropriate.
 - b. Be located on one side of the façade. (See Figure 8-1.)

B. Alternative Design Review. Within the District, developments are only eligible for the R-6 “Alternative Design Review” as outlined by the following process, which shall supersede the process in the City of Portland *Design Manual* in cases of conflict:

1. Any use of Alternative Design Review must be approved by a majority of the Historic Preservation Board after a required public hearing.

2. Alternative Design Review does not permit waivers of the additional design requirements in Subsection 8.7.4(A) above except as explicitly stated.
3. Alternative Design Review is a privilege and is granted at the discretion of the Historic Preservation Board. The applicant has the burden of demonstrating that their proposal meets the criteria for Alternative Design Review Design Certificate.

8.7.5 Demolition Review

A. Purpose. The purpose of this subsection is to preserve and protect buildings within the District that contribute significantly to one’s understanding and appreciation of the architectural, cultural, and/or social history and development pattern of Munjoy Hill and which are outside any designated historic district (“Preferably Preserved Buildings”), encouraging owners of such Preferably Preserved Buildings to explore alternatives to demolition. To achieve this purpose, the issuance of demolition permits for Preferably Preserved Buildings is regulated and may be delayed as provided below.

B. Definitions. For the purposes of this subsection, the following words and phrases shall have the meanings set forth below:

1. *Demolition.* Removal of more than 10% of the front façade of any building, removal of the primary roof line, or removal of 50% or more of the building surface, determined cumulatively over a three-year period. In kind replacement or similar replacement (such as new windows or siding that may differ from the original) is not considered demolition.

2. *Preferably Preserved Building.* Any building which is determined to be in the public interest to be preserved or rehabilitated rather than demolished based on findings that the building meets the following criteria:
 - a. It was constructed prior to 1930.
 - b. It is representative of a building type and/or architectural style that contributes to the identifiable historic visual character of Munjoy Hill.
 - c. It retains sufficient integrity of design, materials, condition, and craftsmanship that adaptive reuse is a viable option.
 3. *Voluntarily demolished.* Any act(s) done by design or intention, which is proposed, intended, or not accidental, that result in demolition. Results of weather events or natural hazards are not considered voluntary demolition. For the purposes of this subsection, the destruction of a Preferably Preserved Building for failure to properly secure it or by neglect shall be considered voluntary demolition.
- C. Exclusions.** This subsection shall not apply to:
1. Any building either individually designated as a local landmark or located within the boundaries of any designated historic district.
 2. Accessory structures with a ground coverage of 250 square feet or less.
 3. Buildings that the Building Authority has determined are dangerous to life or property due to fire, accidental catastrophic damage, or a natural disaster.
 4. Buildings that have received a previous determination that they are not Preferably Preserved.
- D. Procedure.** When the Building Authority receives a demolition permit application for a building within the District, the Building Authority shall, within three business days, notify the Planning Authority in writing that a demolition permit application has been received.
1. *Initial determination.* The Planning Authority shall make an initial written determination as to whether the building that is the subject of the demolition permit application is a Preferably Preserved Building within 30 days of receiving a copy of the application. In making this determination, the Planning Authority may request additional information from the applicant, including photos of the existing building and the surrounding context or other data that may be relevant to making an initial determination. If the Planning Authority determines that the building is not Preferably Preserved, this determination shall be transmitted to the Building Authority and the applicant of record. The applicant will not be required to take any further steps and the permit may be reviewed by the Building Authority under the standards in Chapter 6 of the City of Portland Code of Ordinances.
 2. If the Planning Authority makes an initial determination that the building is Preferably Preserved, it shall notify the Building Authority and the applicant.
 3. If the Planning Authority fails to act in accordance with this subsection or within



- the prescribed time periods, the Building Authority may grant the demolition permit, provided that the applicant has met all other required by Chapter 6 for a permit, and shall notify the Planning Authority that the permit has been granted.
4. *Right to appeal Planning Authority determination.* After the Planning Authority's initial determination that a demolition permit application involves a Preferably Preserved Building, the applicant for a demolition permit may appeal the determination to the Historic Preservation Board with any background information regarding the structure and its context that may be deemed relevant to or appropriate for that review. Such material shall include plans for any replacement use of the parcel that may assist in making a determination. Such appeal must be filed with the Planning Authority within thirty days of the Planning Authority's decision.
 5. *Public hearing.* The Historic Preservation Board shall conduct a hearing on the appeal of the Planning Authority's decision within 45 days of the Planning Authority's decision. The Board shall give the public notice of the hearing at least 14 days prior to the hearing. The Board shall also mail a notice of the public hearing to the applicant, the building owner and all property owners within 100 feet of the subject property at least 10 days prior to the hearing.
 6. *Final determination of Preferably Preserved Building:* Within 21 days following the conclusion of the public hearing, the Historic Preservation Board shall issue a final determination with the Building Authority. If the Board determines that the demolition of the building would be detrimental to the architectural, cultural, or social heritage of Munjoy Hill, it must uphold the initial determination of the Planning Authority of a Preferably Preserved Building. In a case where the initial decision of the Planning Authority is not timely appealed as outlined in Section 8.7.5(D)(4), that decision shall be considered a final decision with respect to the demolition permit, in which case the Planning Authority shall forward the final decision to the Building Authority.
- E. Upon the final determination of Preferably Preserved status, the Building Authority shall not issue a demolition permit for a period of up to 12 months except as specified in (2) below. During this period, the applicant and the owner should actively pursue alternatives to demolition of the Preferably Preserved Building. Should the Historic Preservation Board determine that the building is of sufficient historic and/or architectural significance that it should be designated a landmark or otherwise gain historic designation, that process will proceed as it would for any other building.
 1. Upon a determination of Preferably Preserved status, the owner shall be responsible for properly securing the building.
 2. Notwithstanding the preceding, the Building Authority may issue a demolition permit for all or any portion of subject building at any time upon authorization from the Planning Authority in the event

the Historic Preservation Board approves a development for the site as consistent with the Historic Resource Design Standards as applied to a new building prior to the conclusion of the 12-month delay period. Examples of such proposals may include but are not limited to:

- a. Demolition of a portion of the building while maintaining the principal structure and/or most architecturally significant portion of the building.
- b. Demolition of the Preferably Preserved Building but with a replacement proposal that is acceptably contextual in the surrounding neighborhood. In this case, the Board may condition demolition on construction of a project substantively consistent with the approved replacement proposal, and any substantive variation from that plan would be treated as a violation under (G) below.
- c. Notwithstanding the initial determination, demonstration by the applicant, substantiated by the written opinion of a licensed engineer with experience in renovation, restoration or rehabilitation and confirmed by the Building Authority, that the structural condition of the building is so severe as to make it infeasible to rehabilitate.

- F. Emergency demolition.** Nothing in this subsection shall interfere with the ability of the Building Authority to permit demolition of buildings determined dangerous to life or property due to a condition that pre-dates the effective date of this subsection or is the result

of fire, accidental catastrophic damage, or a natural disaster.

G. Enforcement

1. The Planning Authority and Building Authority are each specifically authorized to institute any and all actions and proceedings, in law or in equity, as they deem necessary and appropriate to obtain compliance with the requirements of this subsection, or to prevent a threatened violation thereof.
2. No building permit shall issue for a new building on any premises where a significant building is voluntarily demolished in violation of this ordinance for a period of two years after the date of demolition.

- H. Reporting.** A demolition review shall be reported to the City Council annually as a communication.

8.8 PEDESTRIAN ACTIVITIES DISTRICT (PAD) OVERLAY

The following restrictions shall apply in the Pedestrian Activities District (PAD) Overlay Zone, which shall include street frontages as delineated on the PAD Overlay Zone map.

8.8.1 Permitted uses

- A.** At least 75% of the street level frontage of a building on a street located within the PAD Overlay Zone must be occupied, and, at minimum, the floor area to be occupied shall be 75% of the street level frontage multiplied by a 20 foot depth, by:
1. Retail as permitted in the B-3 zone.
 2. General services.
 3. Hotels.



OVERLAY ZONES

4. Restaurants as permitted in the B-3 zone.
 5. Bars.
 6. Theaters and performance halls, provided that only ticket and refreshment sales, lobbies, lounges and entrances shall be located within this area.
 7. Cultural facilities.
 8. Governmental uses.
 9. Studios for artists and craftspeople including, but not limited to, carpenters, cabinetmakers, and silk screeners.
 10. Other uses where the applicant can demonstrate to the Building Authority that the proposed use will not differ substantially from a required ground floor retail use in its effect on the continuity of pedestrian-oriented use and that the proposal establishes a ground floor use that generates pedestrian interest and activity.
- B.** For those buildings which have frontage on more than one street located within the PAD overlay zone, the street level area of each such frontage shall meet the above requirements.

8.8.2 Conditional uses

Any use permitted in the B-3 and B-3b zone may be authorized as a conditional use subject to the floor area requirements of Subsection 8.8.1, provided that the Planning Authority shall be substituted for the Board of Appeals as the reviewing authority. Such uses shall meet the following conditions and standards:

- A.** The applicant can prove by competent evidence (including but not limited to reliable documentation of advertising, real estate brokerage efforts, and other sales mechanisms) that the space has been actively marketed, and,

in the case of new construction, available for permitted uses in the PAD Overlay Zone for a period of six months and that it has been unable to market the space for a permitted use in accordance with Subsection 8.8.1.

- B.** The approval of any conditional use under this subsection shall be for the specific tenant proposed for the conditional use approval and shall not run with the space to subsequent tenants. A conditional use approval shall expire at the end of each tenant's use, and a new approval shall be required for new tenants. However, where a conditional use has been approved under this subsection and the term of the effected tenancy is five years or less, the tenant may sublet the area for the approved conditional use which approval may run with said lease but may not be extended without review by the Planning Authority.
- C.** The Planning Authority may impose reasonable conditions concerning the design, appearance, use, and extent of use of the space along the street frontage to ensure maximum pedestrian compatibility and interest.
- D.** Notwithstanding the above, the Planning Authority may authorize a reduction in the percentage of required ground floor pedestrian-oriented uses where the physical limitations of an existing building so require. Any such reduction shall be the least necessary to provide relief and shall include mitigating design factors.
- E.** The Planning Board shall adopt rules and regulations governing the Planning Authority's review of an applicant's marketing efforts under this subsection.

8.8.3 Prohibited uses

In no event shall any required retail frontage area be used for any of the following:

- A. Storage.
- B. Service entrances, including loading docks, dumpsters and compactors, except as provided in Subsection 8.8.4.
- C. Food preparation areas, unless such preparation areas are visually oriented toward pedestrians on streets located within a PAD Overlay Zone.

8.8.4 Exceptions

For those buildings which have 40 feet or less of frontage on a street within the PAD Overlay Zone, the ground floor area requirements for permitted uses under Subsection 8.8.1 shall be reduced to 50% of the frontage where required to accommodate a service entrance. For buildings which have frontage on more than one street located within a PAD Overlay Zone, only one such frontage shall be permitted to reduce the required retail area to 50% of the frontage.

8.9 STREAM PROTECTION OVERLAY (S-P)

8.9.1 Purpose

The purpose of the Stream Protection Overlay Zone is to preserve and protect significant streams outside of the Shoreland Zone by providing a buffer from land development activities in order to conserve stream channel capacity and to minimize siltation and stream bank erosion.

8.9.2 Applicability

The Stream Protection Overlay Zone includes all land areas within 75 feet, horizontal distance, of the normal high-water line of a stream as shown on the City of Portland zoning map. These standards apply

only to areas within the Stream Protection Overlay Zone. Streams within the Shoreland Zone are subject to the provisions of Article 11.

8.9.3 Development standards

- A. **Minimum building setback from normal high-water line of stream:** 75 feet. Notwithstanding this requirement, when a lot is a lot of record under Subsection 4.3.1 or cannot otherwise meet the setback requirement of this subsection due to physical limitations of the site, the Planning Board may approve a reduction of the setback requirement for a principal structure to the least amount necessary to achieve a building dimension of 28 feet, provided that the setback is not reduced to less than 40 feet. Structures in existence on June 15, 1992 may be expanded once during the lifetime of the structure up to 25 feet toward a stream or tributary stream, provided that the setback is not reduced to less than forty 40 feet and the floor area or volume is not increased by more than 30%.
- B. **Filling of material.** Filling of material within a Stream Protection Zone shall require site plan review under the provisions of Article 14.
- C. **Minimum parking setback from normal high-water line of stream:** 75 feet. Notwithstanding this requirement, the Planning Board may reduce the parking setback where the required setback cannot be met to the least extent necessary, provided that such setback shall not be less than the setback of the principal structure from the stream.



8.10 UNIVERSITY OF SOUTHERN MAINE OVERLAY

8.10.1 Purpose

The intention of the University of Southern Maine Overlay Zone is to establish an overlay zone in which an existing university campus can be continued and reasonably expanded within defined boundaries, in addition to those uses permitted in the underlying zone or zones. The purpose of this section is to recognize the unique qualities of a university campus while at the same time protecting the value and integrity of established neighborhoods.

8.10.2 Location and applicability

The University of Southern Maine Overlay Zone is intended to encompass and define the University of Southern Maine campus west of Forest Avenue. Properties in the University of Southern Maine Overlay Zone shall continue to be governed by the regulations applicable to the underlying zone except as specifically modified by this section.

8.10.3 Permitted uses

A. In addition to the permitted uses allowed in the underlying zones and notwithstanding anything to the contrary in the use regulations for the underlying zones, post-secondary schools and university uses are permitted in the University of Southern Maine Overlay Zone, including, but not limited to:

1. Classrooms.
2. Laboratory and research facilities.
3. Student unions.
4. Dining halls.
5. Bookstores.
6. Auditoriums.
7. Concert and lecture halls.

8. Gymnasiums.
 9. Libraries.
 10. Outdoor use areas, such as “quads”, greens, parks, gardens, art installations, and other active and passive noncommercial recreation spaces.
 11. Faculty and student housing.
 12. Parking lots and garages.
 13. Community meeting spaces.
 14. Administrative and faculty offices.
 15. Transportation facilities.
 16. Maintenance facilities.
 17. Utility buildings.
 18. Student health services.
 19. Daycare facilities, nursery schools and kindergartens operated in conjunction with university programs or serving students, faculty or employees of the university and their families, with associated outside play areas.
 20. Other buildings, structures and uses customarily incidental to a university.
- B. On lots fronting on Chamberlain Avenue and Exeter Street, university uses shall be limited to faculty housing, graduate student housing, faculty offices and administrative offices, and buildings containing such uses shall be designed and maintained so as to complement the residential character of the street as required in Subsection 8.10.9
- C. No change of use permit shall be required for any of the above uses in actual existence as of the date of enactment of the University of Southern Maine Overlay Zone.

8.10.4 Conditional uses

The following uses are permitted as provided in Section 6.5:

- A. Minor wind energy systems, subject to the standards of Subsection 6.4.18.

8.10.5 Dimensional requirements

University buildings and structures shall be subject to the dimensional requirements of the underlying zone, except as follows:

- A. **Minimum setbacks.** Minimum setbacks shall be the same as in the underlying zone, except as shown on the University Campus Overlay Setback Map, incorporated herein by reference. Side and rear setbacks shall not be required between buildings on contiguous lots owned by the university on the condition that such contiguous lots shall be considered merged and shall not be separately conveyed unless required setbacks in the underlying zones are provided.
- B. **Maximum building height.** Maximum building height shall be the same as in the underlying zone, except as shown on the University Campus Overlay Height Map, incorporated herein by reference.
- C. **Minimum building height.** All new freestanding buildings in height zone B and height zone C must be built to a height of at least 35 feet or designed and constructed so that they can be expanded to 35 feet or higher. As used in this paragraph, the term “new freestanding building” means any building which is not an addition to or expansion of a building which existed on the date of enactment of the University of Southern Maine Overlay Zone.

- D. **Maximum impervious surface ratio.** A maximum of 66% of the total land area within the University of Southern Maine Overlay Zone, exclusive of public streets, shall be impervious.
- E. **Maximum coverage by buildings.** 40% of the total land area within the University of Southern Maine Overlay Zone, exclusive of public streets, shall be covered by building footprint.

8.10.6 Parking

The amount of parking required for any university building or building addition shall be determined by the Planning Board during site plan review, based on an analysis of campus-wide parking demand and supply, pursuant to a comprehensive university parking management plan, and treating all contiguous land (including land on opposite sides of the street) owned by the university as one lot. In determining the amount of parking required for any university building, the Planning Board may take into account such factors as:

- A. The availability of off-campus parking and shuttle transportation to and from such off-campus facilities.
- B. The ratio of commuter students to resident students.
- C. The use of centrally located on-campus parking facilities so situated that students, faculty, staff and visitors arriving on campus can reasonably be expected to park in the central facilities and walk to their various on-campus destinations during the course of a school day.
- D. Shared use of a single parking facility by two or more buildings when the peak parking demand period for such buildings do not overlap.
- E. Development and implementation of a parking management plan which discourages on-street



parking. On-street parking shall not be used to satisfy the university's parking demand.

- F. Development and implementation of programs designed to reduce the number of automobiles parking on campus, such as ride share programs and incentives for use of bicycles and public transportation.

8.10.7 Loading

The amount of loading area required for any university building shall be determined by the Planning Board during site plan review, based on a campus-wide analysis, treating all contiguous lots owned by the university as one lot. In determining the amount of loading space required for any university building, the Planning Board may take into account such factors as:

- A. The use of centrally located on-campus loading facilities so situated that vehicles making deliveries can load and unload in the central facilities, provided no single location is overburdened with loading facilities.
- B. Shared use of a single loading facility by two or more buildings.
- C. Impacts of the loading area on adjacent uses outside the University of Southern Maine Overlay Zone.

8.10.8 Signage

Signs shall comply with the requirements of Article 20, except as those regulations are modified or augmented below:

- A. Signs shall be designed in accordance with signage standards promulgated by the university, providing for a unified and ADA-compliant campus-wide system for identification, orientation, and regulatory signage.

- B. Banners are allowed as follows:

- 1. Generic banners containing the logo and colors of the university, used for decorative purposes.
- 2. Banners used for advertising university events, which can be displayed for a maximum of four weeks prior to and one week following the event.

8.10.9 Design principles and standards

All development in the University of Southern Maine Overlay Zone is subject to the requirements contained within the City of Portland *Design Manual*.

8.10.10 Campus housing

For any development requiring major site plan review, the university shall submit to the Planning Board a campus housing analysis. The analysis shall include a description of housing demand and supply at the time of the application, a projection of housing demand expected to arise from the proposed development and/or as a result of program changes anticipated to occur concurrently with the proposed development, and a description of how the university intends to meet any increased housing demand through on-campus housing, off-campus housing developed by the university, and/or off-campus housing developed by others.

8.10.11 Required review for change of use, additions, and renovations

In the case of properties fronting Chamberlain Avenue, Exeter Street, and the northerly side of Bedford Street from Surrender Street to Deering Avenue, minor site plan review shall be required of all changes of use and all building additions and renovations affecting an area

equivalent to 25% or more of the existing floor area of a structure, unless major site plan review is otherwise required under Article 14.

8.11 WAYNFLETE SCHOOL OVERLAY

8.11.1 Purpose

The intent of this section is to establish a Waynflete School Overlay Zone which protects the value and integrity of established residential neighborhoods, establishes clearly defined boundaries beyond which residential conversions cannot occur and results in no net loss of dwelling units, while allowing Waynflete School, an existing private day school, to continue and reasonably augment its existing uses and programs, thereby maintaining compatible development at medium densities appropriate to the existing neighborhood patterns. As used in this section, the term “Waynflete School” includes any successor institution that operates as a private day school.

8.11.2 Location and applicability

The Waynflete School Overlay Zone, as shown on the zoning map, is intended to encompass and define Waynflete School’s principal campus on the Portland peninsula. Properties in the Waynflete School Overlay Zone shall continue to be governed by the regulations applicable to the underlying zone except as specifically modified by this section.

8.11.3 Subdistricts

The Waynflete School Overlay Zone consists of two subdistricts. Except where otherwise specified in this Section 8.11, all provisions of this Waynflete School Overlay Zone apply in both subdistricts. The subdistricts, as shown on the Waynflete School Overlay Zone subdistrict map, incorporated herein by reference, are as follows:

- A.** The Campus Core subdistrict defines the interior core of the campus and is intended to allow compact development of school uses, with specific space and bulk regulations designed to accommodate school uses.
- B.** The Campus Edge subdistrict is intended to preserve residential character along the streets bordering the campus by limiting the amount of residential space which can be converted to school uses, by maintaining a number of dwelling units within the subdistrict which equals the number of dwelling units existing in the subdistrict at the time of enactment of this Overlay Zone, and by encouraging mixed-use buildings along the street frontages. The space and bulk regulations of the R-4 zone continue to apply within the Campus Edge subdistrict.

8.11.4 Permitted uses

In addition to the permitted uses allowed in the underlying zones and notwithstanding anything to the contrary in the use regulations for the underlying zones, the following uses are permitted in the Waynflete School Overlay Zone:

- A. School uses.** Elementary, middle and secondary school uses including, but not limited to, the following:
 - 1. Classrooms.
 - 2. Laboratory facilities.
 - 3. Dining halls.
 - 4. Auditoriums.
 - 5. Concert and lecture halls.
 - 6. Gymnasiums.
 - 7. Libraries.
 - 8. Outdoor use areas, such as “quads”, greens, parks, gardens, art installations, and other active and passive recreation spaces.
 - 9. Parking lots and structures.



10. Community meeting spaces.
11. Administrative and faculty offices.
12. Transportation facilities.
13. Maintenance facilities.
14. Utility buildings.
15. Student health services.
16. Bookstores.
17. Accessory uses which are customarily incidental and subordinate to the location, function and operation of a private day school.

- B. Residential uses.** Faculty or staff housing, which shall be considered a residential use, and not a school use, for all purposes under this overlay zone.

8.11.5 Prohibited uses

- A. Boarding schools.
- B. Dormitories.

8.11.6 Residential conversions prohibited

- A. Conversions of existing residential buildings within the Waynflete School Overlay zone shall be prohibited.
- B. The existing houses at 11 Fletcher Street, 3 Storer Street, 305 Danforth Street, and 299 Danforth Street shall not be relocated from their locations existing as of January 20, 2010. This provision shall not apply to garages.
- C. At no time shall the number of dwelling units within the Waynflete School Overlay Zone be reduced below four (the number existing at the time of enactment of this Overlay Zone).

8.11.7 Dimensional requirements

Buildings and structures in the Waynflete School Overlay Zone shall be subject to the applicable

dimensional requirements of the underlying zones, except as follows:

- A. Minimum setbacks shall be the same as in the underlying zone, except that side and rear setbacks shall not be required between buildings on contiguous lots owned or occupied by Waynflete School on the condition that such contiguous lots shall be considered merged and shall not be separately conveyed unless required yard dimensions in the underlying zones are provided.
- B. Minimum street frontage shall be the same as in the underlying zone, except that all the land within the Waynflete School Overlay Zone owned or occupied by Waynflete School shall be considered a single lot for the purpose of complying with minimum street frontage.
- C. Maximum coverage by buildings shall be the same as in the underlying zone, except that in the Campus Core subdistrict the maximum coverage by buildings shall be 40% and all the land within the Campus Core subdistrict owned or occupied by Waynflete School shall be considered a single lot for the purpose of calculating maximum coverage by buildings.

8.11.8 Parking

The amount of parking required for any change of use, new building, or building addition within the zone shall be determined during site plan review, based on an analysis of school-wide demand and supply, pursuant to a comprehensive school-wide Transportation Demand Management Plan (TDM), and treating all land owned by Waynflete School within the Waynflete School Overlay Zone as one lot. Any existing parking management or TDM plan approved as part of a previous approval shall remain in effect until revised or updated pursuant to this

section. In determining the amount of parking required for any building within the Waynflete School Overlay Zone, the Planning Authority or the Planning Board may take into account such factors as:

- A. The use of centrally located on-campus parking facilities so situated that students, faculty, staff and visitors arriving on campus can reasonably be expected to park in the central facilities and walk to their various on-campus destinations during the course of a school day.
- B. Shared use of a single parking facility by two or more buildings when the peak parking demand periods for such buildings do not overlap.
- C. Development and implementation of a parking management plan which discourages on-street parking.
- D. Development and implementation of a TDM plan subject to the review and approval of the Planning Authority or the Planning Board. The TDM plan shall employee elements such as public transit initiatives, parking cash-out, car sharing, car and van pooling incentives, provision of bicycle and pedestrian commuting accommodations, guaranteed ride home programs, employee surveys, newsletters, alternative transportation information sharing, and other such strategies that reduce single occupancy vehicle trips to and from Waynflete school. Waynflete School shall follow the standards and guidelines for developing a TDM plan found in the TDM section of the City of Portland *Technical Manual*.

8.11.9 Loading

The amount of loading area required for any building within the Waynflete School Overlay Zone shall be determined by the Planning Board during

site plan review, based on a campus-wide analysis, treating all land owned by Waynflete School within the Waynflete School Overlay Zone as one lot. In determining the amount of loading space required for any building within the Waynflete School Overlay zone, the Planning Board may take into account such factors as:

- A. The use of centrally located on-campus loading facilities so situated that vehicles making deliveries can load and unload in central facilities, provided no single location is overburdened with loading facilities.
- B. Shared use of a single loading facility by two or more buildings.
- C. Impacts of the loading area on adjacent uses outside the Waynflete School Overlay Zone.

8.11.10 Signage

Signs shall comply with the requirements of Article 20.

8.11.11 Restrictions

Notwithstanding the conditional use provisions for institutional uses within the R-4 or R-6 zones, Waynflete School cannot locate a school use listed in Subsection 8.11.4 on any lot in the R-4 or R-6 zones outside the boundaries of the Waynflete School Overlay Zone that was occupied by a residential use or structure on or after January 20, 2010. This restriction does not prevent Waynflete School from seeking a conditional use permit for a school use, where otherwise allowed by the zoning regulations, on lots outside the Waynflete School Overlay Zone that were not occupied by a residential use or structure on or after January 20, 2010.



9 FORM-BASED ZONES

9.1 INDIA STREET FORM-BASED ZONE

9.1.1 Purpose

The India Street Form-Based Code is different than traditional zoning, placing the primary emphasis on a building's physical form and its relationship to the street, and de-emphasizing land use. The intent of the India Street Form-Based Code Zone is to establish a zone that encourages a vibrant, walkable, mixed-use urban district, preserves and values the existing historic neighborhood fabric, and fosters and supports local businesses and residential areas. The goal of the India Street Form-Based Code is the creation and preservation of an active and human-scale public realm and the reinforcement of existing neighborhood character through good street space design. The components of the form-based code include the guiding principles, Regulating Plan, subdistricts, general development standards, dimensional requirements, building design standards, diagrams, and definitions.

9.1.2 General guiding principles

The general guiding principles set forth here shall be applicable to all subdistricts within the India Street Form-Based Code Zone:

- A. The street is a coherent space, with consistent building and streetscape character on both sides of the street. This agreement of buildings and streetscape across the street contributes to a clear public space and district identity.
- B. The street wall is visually well defined. Land should be clearly public or private. Buildings contribute to the vital and safe public space while providing a clear boundary to the private, protected realm.

- C. Street walls are engaged with the street environment. Buildings are inviting places that interact with and contribute to the street vitality. Inactive edges, vehicle storage, garbage, and mechanical equipment should be kept away from the street. Shared infrastructure, to the extent practicable, including, but not limited to, service alleys, parking areas, stormwater treatment, public transportation facilities, and driveways, shall be utilized.
- D. Buildings are designed for the urban environment. Buildings must be designed for the urban situation within the subdistrict which often includes mixed-uses. Buildings are positioned near the street and facades are oriented to the street.
- E. Respect historic character. If a property is within the India Street Historic District, Article 17 is applicable. New construction, building additions, or alterations in the India Street Historic District shall reflect and complement the character-defining features and elements of the existing historic development to which it is visually related.

9.1.3 Applicability

- A. The requirements set forth in this Section 9.1 shall apply to all new development, primary and accessory structures, including building additions within the India Street Form-Based Code Zone as designated on the India Street Regulating Plan.
- B. A partial waiver of the requirements listed below may be granted if it can be demonstrated to the satisfaction of the

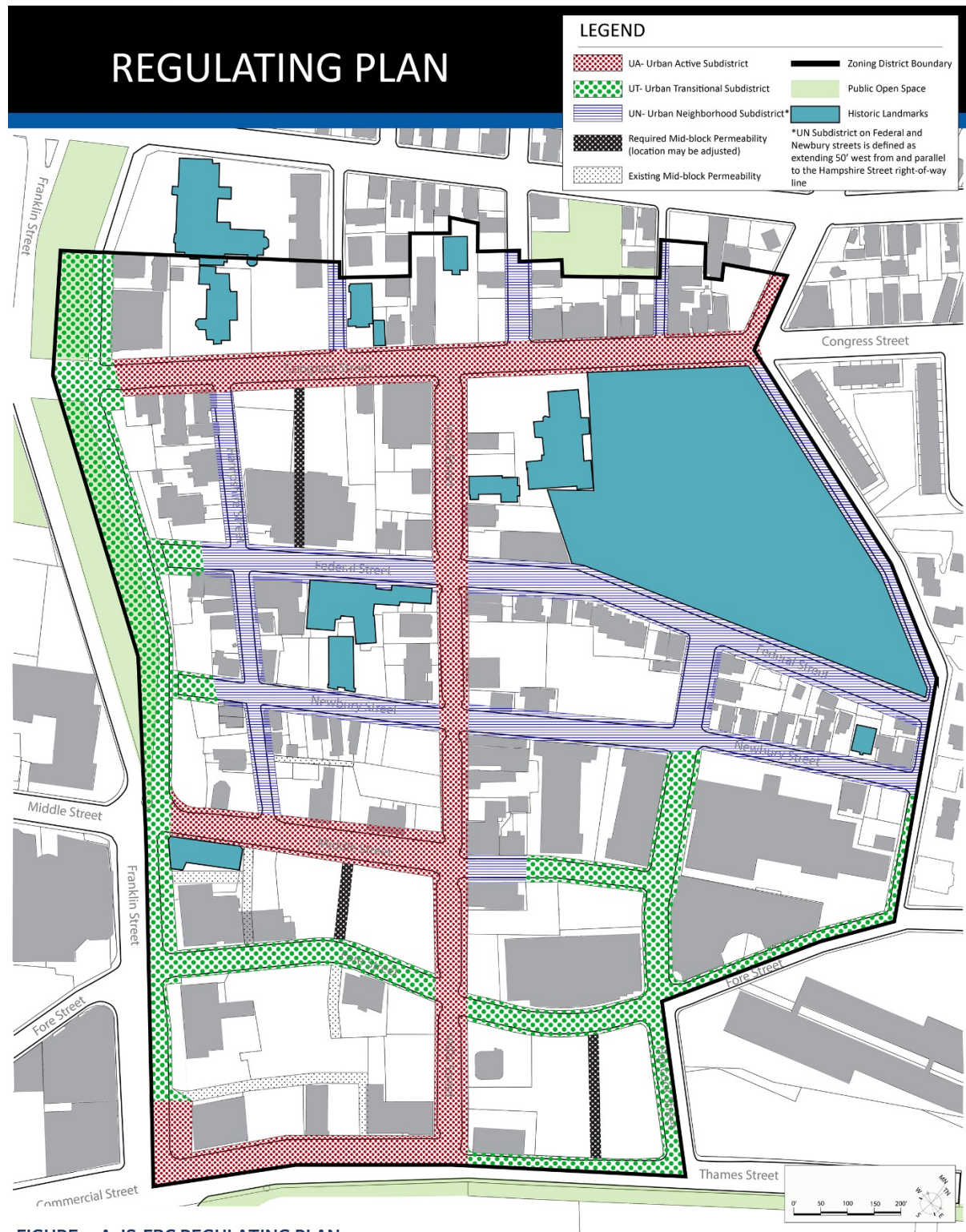


FIGURE 9-A: IS-FBC REGULATING PLAN



Planning Authority that the requirements in Subsection 9.1.3(C) below have been met:

1. Building orientation.
2. Blank façade length (max.).
3. Fenestration, ground floor facade area.
4. Building entry frequency, orientation, or elevation.
5. Garage door setback or width.
6. Additional building length – ground floor partition or module requirements.

C. A partial waiver request must meet the following requirements:

1. The intent of the IS-FBC zone as stated in Subsections 9.1.1 and 9.1.8.
2. Be the least adjustment necessary to satisfy the practical, programmatic, or functional needs of the proposed development.
3. At least one of the following applies:
 - a. The proposed zoning alternative better achieves the zone and subdistrict intent.
 - b. The zone or subdistrict intent will not be met by applying the requirement in this particular circumstance.
 - c. There is a legal or practical necessity or unique conditions.
 - d. Unique site factors make the zoning requirement impractical or cost prohibitive.

9.1.4 Establishment of subdistricts

The India Street Form-Based Code Zone as shown on the Regulating Plan is divided into three subdistricts:

- A. Urban Neighborhood (UN) Subdistrict.
- B. Urban Transitional (UT) Subdistrict.
- C. Urban Active (UA) Subdistrict.

9.1.5 Regulating Plan

The Regulating Plan shows the location of the zone boundary and subdistricts subject to regulation by the IS-FBC zone.

9.1.6 Definitions

Terms used throughout this India Street Form-Based Code Zone may be defined in Article 3 or in Article 7. Terms not so defined shall be accorded their commonly accepted meanings. In the event of any conflict between the definitions in this section and those in Article 3, Article 7, or any other local land use ordinances, rules, or regulations, those of this India Street Form-Based Code Zone shall take precedence. For reference, terms are illustrated in Figure 9-B.

Building, accessory. A detached structure that is incidental and subordinate in area and extent, and/or use to the principal building(s) on the property. A lot may have more than one accessory building.

Building addition. Any increase to footprint or volume of an existing structure.

Building, principal. The main structure(s) on a lot having the predominant area and extent, and/or use. A lot may have more than one principal building.

Buildings, attached. Two or more independent buildings that share at least one common party wall but have full building separation and independent principal entries; not free-standing. Attached buildings may or may not have common ownership.

Building Design Standard (BDS). The basic design parameters governing building form, including

intent, guidelines, and standards for architectural elements such as proportion, articulation, fenestration, entries, roof lines, and materials.

Elevation. An exterior wall of a building not along a frontage line.

Entrance, principal. The main point of access for pedestrians into a building. A building may have more than one principal entrance.

Façade. Any exterior wall of a structure exposed to public view from a public right-of-way.

Façade, blank. A building façade that contains expanses of wall area with no windows, no entrances, no articulation, and no other elements or features, or is otherwise undifferentiated.

Green roof. A roof of a building that is partially or completely covered with vegetation and designed to meet the Maine Stormwater Best Management Practices Manual standards and recommendations. A green roof installation must serve the purpose of reducing stormwater runoff through retention or slowing and consist of an assembly that at a minimum includes a root repellent system, a drainage system, a filtering layer, a growing medium and plants, and shall be installed on a waterproof membrane. The vegetated area of a green roof may be considered pervious for zoning impervious calculations.

Mid-block permeability. A continuous, open-air corridor at least 20' in width that connects two streets or public rights-of-way and physically provides a break in the street wall. The corridor must be unobstructed and open to the sky for the majority of its length.

Party wall. Any partition wall common to two adjacent or attached buildings.

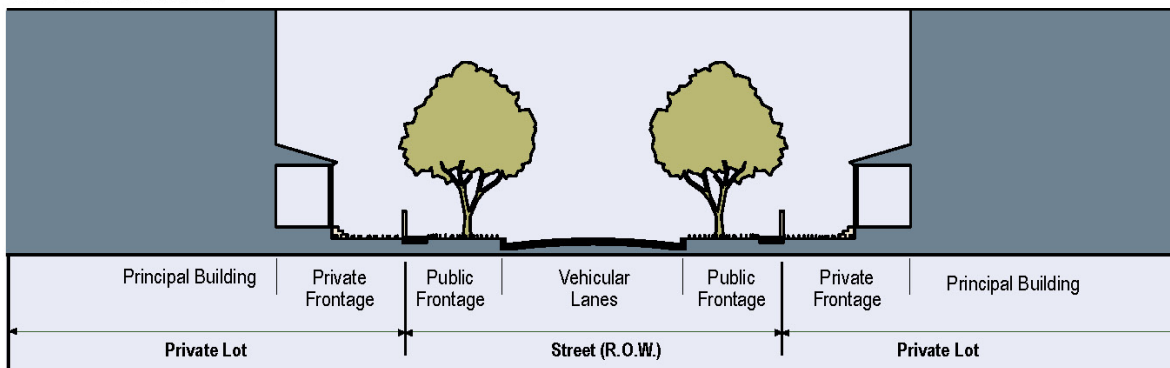
Regulating plan. A zoning map that shows the boundary of the area and subdistricts subject to regulation by the India Street Form-Based Code.

Stepback. A building setback of a specified distance measured from the ground floor building face that occurs at a prescribed number of stories or height above the ground and excludes the minimum necessary housing of elevators, stairways, tanks, fans, or other building operating equipment not intended for human occupancy.

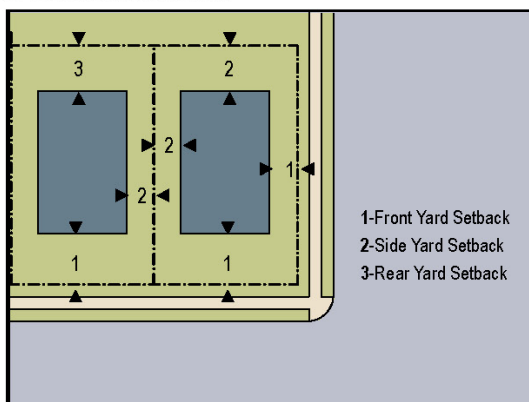
Yard, side. A yard adjoining a side lot line extending from the front yard to the rear yard, the width of which shall be the shortest horizontal distance between the side lot line and any structure. On corner lots, non-frontage yards shall be considered side yards.

Zero lot line. The location of a structure on a lot such that one or more of the structure sides rests directly on a lot line.

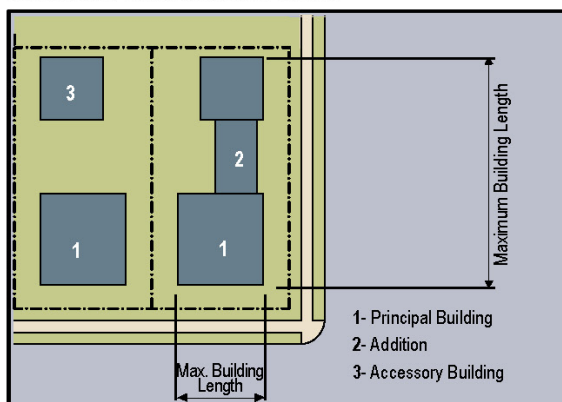
STREETS & FRONTAGES



SETBACK DESIGNATIONS



BUILDING - PRINCIPAL & ACCESSORY



FRONTAGE & LOT LINES

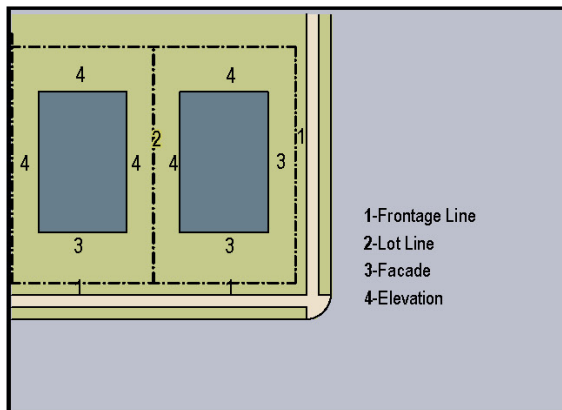


FIGURE 9-B: IS-FBC TERMS ILLUSTRATED

9.1.7 General development standards

A. Prohibited uses

1. Correctional pre-release facilities.
2. Funeral homes.
3. Drive-through facilities.
4. High-impact industrial uses.
5. Auto service stations.
6. Truck terminals.
7. Recycling and solid waste disposal services.
8. Storage and parking facilities for Class 1 flammable and combustible liquids (having an aggregate total of more than 100 gallons) but excluding storage that is part of a motorized vehicle or pleasure craft facility.

B. Siting standards

1. *Mid-block permeability*
 - a. On lots with frontage on two streets roughly parallel to Commercial/Thames Street, for each and every 200 feet in street line length of lot, a full break between structures of at least 20 feet in width shall be provided roughly perpendicular to Commercial/Thames Street and within the middle third of the applicable street frontage. (See Figure 9-G.)
 - b. Is encouraged in any location that connects existing public or private

alleys, passages, or streets.

- c. Any development providing mid-block permeability with public access between two streets is eligible for one additional story of up to 12 feet in height under the provisions of Subsection 9.1.7(C). Public access shall be defined through a legal agreement such as an easement or license.
- d. Refer to Regulating Plan for identified required mid-block permeability locations.
2. *Frontage requirements*
 - a. Minimum street frontage: 30 feet
 - b. Building length measurement shall not include porches, decks, or balconies that are appended to the principal structure.
 - c. In the case of a corner lot or lot bounded by at least three streets, maximum building lengths may not be exceeded in order to meet front yard setbacks.
 - d. Additional building length is allowed beyond the maximum building length under the following circumstances and according to Table 9-A:

TABLE 9-A: ADDITIONAL BUILDING LENGTH

Subdistrict	Attached Buildings	Ground Floor Partitions	Massing Variation	Structured Parking Exception
UN	unlimited run	Not allowed	Not allowed	Not allowed
UT	unlimited run	200 ft. max. length; 2 modules	200 ft. max. length	200 ft. max. length
UA	unlimited run	150 ft. max. length; 3 modules	Not allowed	150 ft. max. length



FORM-BASED ZONES

- i. Attached buildings: An unlimited number of attached buildings having up to 30 feet of street-facing building length is allowed. A party wall condition is required at least every 30 feet and for the entire height of each building. (See Table 9-A Additional Building Length – Attached Buildings.)
 - ii. Ground floor partitions: Additional building length is permitted with the provision of ground floor partitions where the following conditions are met. (See Table 9-A Additional Building Length – Ground Floor Partitions.):
 - a) Partitions must extend from the facade at least $\frac{2}{3}$ of the building depth.
 - b) Partitions must be architecturally expressed on the building exterior.
 - c) Each module created by partition must have at least one functional, street-facing entry.
 - d) Modules created by partition shall be sized to have reasonable function and proportion in relation to overall building length.
 - e) In the UA subdistrict, number of modules are required based on building length. In a building with a length greater than 50 feet but less than 100 feet, at least two modules are required. In a building with a length greater than 100 feet but less than or equal to 150 feet, at least three modules are required.
 - f) Massing Variation: Additional building length is permitted where at least 30% and up to 40% of the total façade building length is set back at least 20 feet. (See Table 9-A Additional Building Length – Massing Variation.)
 - g) Structured Parking
Exception: Additional building length for one facade without partition walls is allowed for the use of ground-level structured parking.
3. *Setbacks*
 - a. Lots with a street frontage of less than 35 feet are exempt from providing side yards but only where required yard is perpendicular to the frontage that is less than 35 feet.
 - b. Where new construction or building additions create a side yard of less than five feet, a maintenance easement is required where a combination of the side yard and

- easement must be at least five feet.
- Party wall conditions are exempt from providing a maintenance easement.
- Corner lots may only apply the side yard reduction to one required side yard.
- c. Building facades within 10 feet of a corner are exempt from setback requirements in order to allow special corner architectural treatments.
 - d. Subdivision developments consisting of horizontally attached buildings on individual lots are not required to have side yards between buildings where a party wall condition will exist, but shall be required to meet the applicable side setbacks at the external and internal subdivision lot boundaries between buildings that are not attached to each other.
4. *Landscaping and screening*
- a. Surface parking areas shall be screened from view from sidewalks, public rights-of-way, and public open spaces using landscaping, walls, fencing, or a combination thereof.
 - b. Walls and fences shall meet the dimensional requirements in Table 9-B.

TABLE 9-B: WALL/FENCE DIMENSIONAL REQUIREMENTS

Location	Height	Visual Permeability
Within front yard	6 ft. max.	Required above 2 ft. from sidewalk grade
Side or rear yard	8 ft. max.	n/a

5. *Building additions*
- a. Building additions which exceed the footprint of the existing building to which it is an addition or which exceeds 50,000 square feet shall be subject to major site plan review.
 - b. Exemptions
 - i. A building addition may not cause the building to exceed the maximum building length requirement except in the case that the building addition is located between a street frontage and an existing building with a legally non-conforming length. In such an instance, a building addition length may match but not exceed the legally non-conforming length of the existing building to which it is an addition. (See Figure 9-G.)
 - ii. Building additions are exempt from story minimums or maximums in order to match existing building in number of stories. All other subdistrict height standards shall apply including height minimum and maximums in feet.

TABLE 9-C: HEIGHT BONUSES

Subdistrict	Pre-Bonus Height (max.)	Mid-Block Permeability ¹	Residential Density	Green Roof	Affordable Housing	Height With Bonus (max.)	Bonus Floor Stepback ² (min.)
UN	45 ft. and 4 stories	n/a	n/a	n/a	1 story up to 12 ft.	57 ft. up to 5 stories	15 ft.
UT	65 ft. and 6 stories	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	77 ft. up to 7 stories	15 ft.
UA (Congress Street only)	50 ft. and 4 stories	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	1 story up to 12 ft.	62 ft. up to 5 stories	15 ft.

¹ Must be publicly accessible.

² Measured from the ground floor building edge facing any public right-of-way.

C. Height standards

1. *Height bonus applicability*
 - a. If a frontage faces a UT street, UN street, or Congress Street, then the portion of the building facing that street is eligible for a height bonus. For lots with multiple frontages where a frontage faces an ineligible street, bonus story must be stepped back at least 35 feet from ineligible street line. (See Subsection 9.1.8(D).)
 - b. Only one height bonus may be applied per structure.
2. One additional story of up to 12 feet in height is allowed if one of the following provisions is met:
 - a. For residential development with residential density equal to or greater than 150 dwelling units per acre (density may be achieved with the bonus floor).
 - b. For any development providing a green roof, where:
 - i. At least 50% of the cumulative lot area is pervious.

- ii. At least 50% of the cumulative roof area is a green roof. Green roof area may be applied towards the 50% lot area requirement.
- c. For residential development where 20% of the units meet the definition of either “Workforce Housing Unit for Sale” or “Low-income Housing Unit for Rent” as per Article 3.

D. Parking standards

1. Parking shall be provided as per Article 19.
2. Structured parking must meet the Building Design Standard for structured parking. (See City of Portland *Design Manual*.)
3. In the case of a building addition, non-conforming existing surface parking may remain. In the case of new construction, surface parking must be brought into conformance with IS-FBC standards.

9.1.8 Subdistrict dimensional requirements

A. Urban Neighborhood (UN) subdistrict

The intent of this subdistrict is to maintain and promote a small-scale, less active urban fabric. Buildings may be more private in character and have smaller footprints with building types including, but not limited to, single-family, rowhouses, duplexes,

triple-deckers, and double-triples. Building frontages may be less transparent and entries may be raised above sidewalk level with frontage types including raised, recessed doorways, porches, and stoops. The streetscape has variable setbacks and landscaping with many buildings within one block and streets tend to be narrow.

UN

SITING STANDARDS

Orientation - Principal Frontage	determined by applicant
Lot Coverage	90% max

FRONTAGE REQUIREMENTS

Building Length - Principal facade	50' max.
Building Length - Secondary fac.	50' max.
BLANK FACADE length (max)	15'
Additional Building Length	(see also Table 9-A)
ATTACHED BUILDINGS	unlimited run
Ground Floor Partitions	not allowed
Massing Variation	not allowed
Structured Parking Exception	not allowed

SETBACKS

Principal Building	
(a) Front Yard	5' max.
Setback Applicability (see Figure 9-G)	75% of total building length must meet front yard setback
(b) Side Yard*	5' min. - May be reduced provided that the cumulative side yards are not less than 10'
(c) Rear Yard	10' min.
Accessory Building	
Front Yard	5' min.
Side Yard	5' min.
Rear Yard	5' min.

BUILDING ENTRIES (SEE ALSO BDS)

Frequency at frontage	at least 35'
Principal Entries	
Orientation	any orientation allowed
Elevated Stoop (> 1 step)	allowed

HEIGHT STANDARDS

Principal Building	
Building Height Min.	25', at least 2 stories
Building Height Max.	45', up to 4 stories
Accessory Building	
Building Height Max.	25'

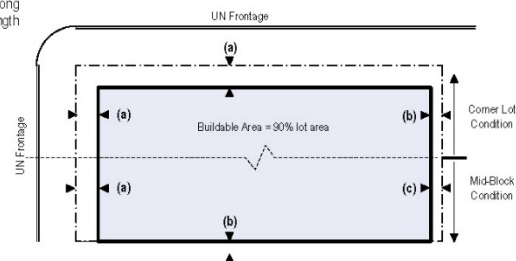
PARKING STANDARDS

Surface Parking Location	35' min. setback from street
Within Side Yard	20' max in width per lot; may not exceed 50% of frontage length
Garage at frontage (attached or detached)	
Garage Door Setback (min)	5'
Garage Door Opening (max)	9' up to 40% of facade length
	20' max. limit

Notes and Exceptions
* Reduced side yards and zero lot lines are allowed under certain conditions (see Subsection 9.1.7(B)(3) Setbacks)

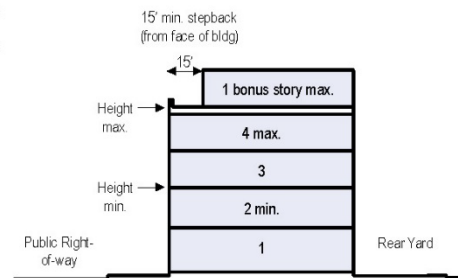
SITING STANDARDS

1. The FACADES and ELEVATIONS of Principal Buildings shall be distanced from the lot lines as shown.
2. FACADES shall be built along the frontage lines to the length specified in the table.



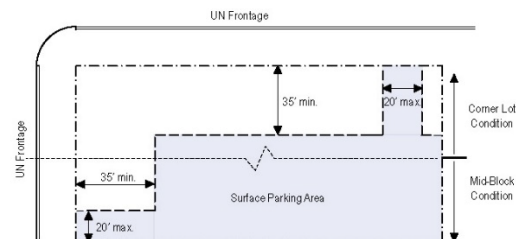
HEIGHT STANDARDS

1. Height shall be measured as specified in Article 7.
2. Number of stories excludes attics and raised basements.



PARKING STANDARDS

1. Surface parking areas may be provided within the shaded area shown.



B. Urban Transitional (UT) subdistrict

The intent of this subdistrict is to encourage higher density, mixed-use building types that accommodate any use. Building frontages are a mix of activity level, have larger footprints, and the most flexibility of height and scale. Building ground floor spaces tend to accommodate flexible and changing

uses with frontage types including doorways, forecourts, arcades, and storefronts. The streetscape may be less active than the UA subdistrict with wide sidewalks, street trees, and setbacks and stepbacks providing relief from large building masses.

UT**SITING STANDARDS**

Orientation - Principal Frontage	determined by applicant
Lot Coverage	90% max

FRONTAGE REQUIREMENTS

Building Length	100' max.
BLANK FACADE length (max)	30'
Additional Building Length	(see also Table 9-A)
ATTACHED BUILDINGS	unlimited run
Ground Floor Partitions	200' max., 2 modules
Massing Variation	200' max.
Structured Parking Exception	200' max.

SETBACKS

Principal Building	
(a) Front Yard	10' max.
Setback Applicability (see Figure 9-G)	75% of total building length must meet front yard setback
(b) Side Yard*	10' min. - May be reduced provided that the cumulative side yards are not less than 20'
(c) Rear Yard	10' min.
(d) STEPBACk (adjacent to UN)	10' min. stepback after 45' height
Accessory Building	
Front Yard	5' min.
Side Yard	5' min.
Rear Yard	5' min.

BUILDING ENTRIES (SEE ALSO BDS)

Frequency at frontage	at least 95'
Principal Entries	
Orientation	any allowed
Elevated Stoop (>1 step)	allowed

HEIGHT STANDARDS

Principal Building	
Building Height Min.	3 stories
Building Height Max.	65', up to 6 stories
Ground Story Height	n/a
Accessory Building	
Building Height Max.	25'

PARKING STANDARDS

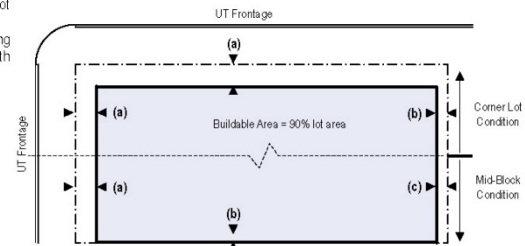
Surface Parking Location	35' min. setback from street
Garage at frontage (attached or detached)	
Garage Door Setback (min)	10'
Garage Door Opening (max)	9' up to 40% of facade length
	20' max. limit

Notes and Exceptions

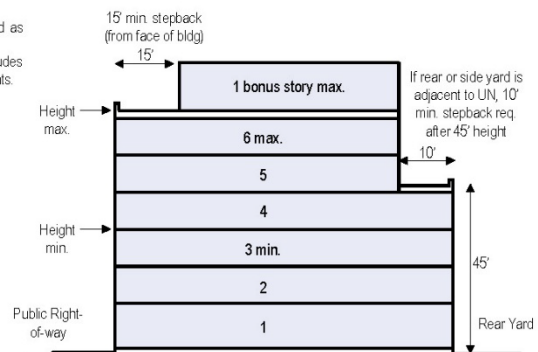
* Reduced side yards and zero lot lines are allowed under certain conditions (see Subsection 9.1.7(B)(3) Setbacks)

SITING STANDARDS

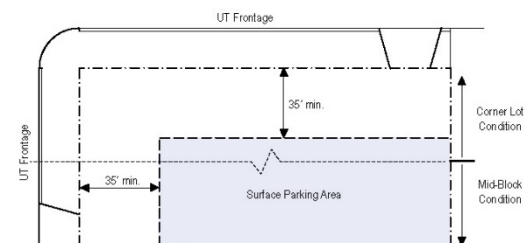
- The FACADES and ELEVATIONS of Principal Structures shall be distanced from the lot lines as shown.
- FACADES shall be built along the frontage lines to the length specified in the table.

**HEIGHT STANDARDS**

- Height shall be measured as specified in Article 7
- Number of stories excludes attics and raised basements.

**PARKING STANDARDS**

- Surface parking areas may be provided within the shaded area as shown.



C. Urban Active (UA) subdistrict

The intent of this subdistrict is to maintain and promote a moderate-scale, diverse, mixed-use neighborhood with vibrant streets and active ground floor spaces. Buildings are more active and engage the street at the ground level. Building

frontages are transparent and entries are at sidewalk level with frontage types including storefronts and recessed doorways. The streetscape has steady street planting, and buildings set close to the street providing a consistent street wall.

UA

SITING STANDARDS

Orientation - Principal Frontage	face a UA street
Lot Coverage	90% max
FRONTAGE REQUIREMENTS	
Building Length	50' max.
BLANK FACADE length (max)	15'
Additional Building Length	(see also Table 9-A)
ATTACHED BUILDINGS	unlimited run
Ground Floor Partitions	150' max., up to 3 modules
Massing Variation	not allowed
Structured Parking Exception	150' max.
Fenestration, ground floor	60-90% (see BDS) facade area

SETBACKS

Principal Building	
(a) Front Yard*	5' max.
Setback Applicability (see Figure 9-G)	75% of total building length must meet front yard setback
(b) Side Yard**	5' min. - May be reduced provided that the cumulative side yards are not less than 10'
(c) Rear Yard	10' min.
Accessory Building	
Front Yard	5' min.
Side Yard	5' min.
Rear Yard	5' min.

BUILDING ENTRIES (SEE ALSO BDS)

Frequency at frontage	at least 40'
Principal Entries	
Orientation	at least 1 facing UA street or corner
Elevated Stoop (>1 step)	not allowed

HEIGHT STANDARDS

Principal Building	
Building Height Min.	3 stories
Building Height Max.	50', up to 4 stories
Accessory Building	
Building Height Max.	25'

PARKING STANDARDS

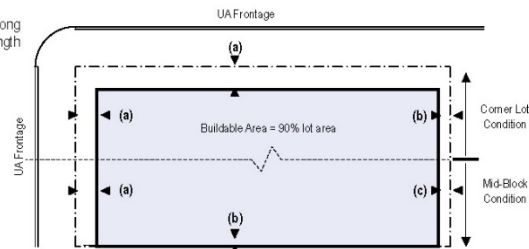
Surface Parking Location	35' from street
Garage at frontage (attached or detached)	
Garage Door Setback	20' min. from street
Garage Door Opening (max)	n/a
Notes and Exceptions	

* Up to 10'0" max. front yard setback is allowed if ground plane at frontage is a continuation of the accessible public right-of-way

** Reduced side yards and zero lot lines are allowed under certain conditions (see Subsection 9.1.7(B)(3) Setbacks)

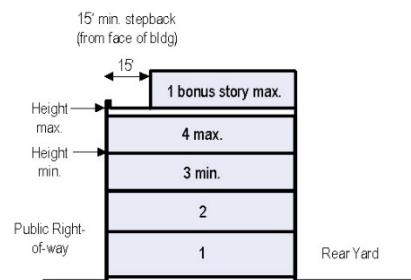
SITING STANDARDS

- The FACADES and ELEVATIONS of Principal Buildings shall be distanced from the lot lines as shown.
- FACADES shall be built along the frontage lines to the length specified in the table.



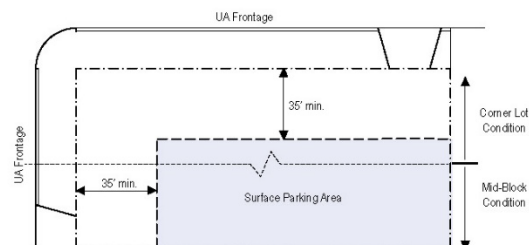
HEIGHT STANDARDS

- Height shall be measured as specified in Article 7.
- Number of stories excludes attics and raised basements.



PARKING STANDARDS

- Surface parking areas may be provided within the shaded area as shown.



D. Corner conditions

For corner lots where two subdistricts intersect at a street corner, the dimensional requirements and building design standards of the “dominant” subdistrict shall apply 35 feet deep into the lot

measured from the dominant lot line along its associated street frontage or public ways including required mid-block permeability. Otherwise, dimensional requirements shall be according to the subdistrict onto which the building façade faces.

CORNER

ORIENTATION

- Corner lots shall be treated as having street frontage on all streets regardless of building orientation
- Principal Building shall designate a Principal Frontage and Secondary Frontage*
- In the case of a corner lot having UA frontage, the Principal Frontage must face a UA street*

SETBACKS

(a) Front Yard (1st Lot Layer)	according to subdistrict
(b) Side Yard	according to subdistrict
Building facades within 10' of a corner are exempt from setback requirements in order to allow special architectural treatments.	

UA INTERSECTS UT

Dominant Subdistrict (35' deep)	UA
Orientation - Principal Frontage	UA street
Dominant Building Design Standards (applicable 35' deep)	
Ground Story Height	12' min. clear
Fenestration, ground floor	60-90% (see BDS) facade area
(measured as a percentage of the FACADE that is 2' above sidewalk grade)	

UA INTERSECTS UN

Dominant Subdistrict (35' deep)	UA
Orientation - Principal Frontage	UA street
Building Length - UN FACADES	100' max.
Dominant Building Design Standards (applicable 35' deep)	
Ground Story Height	12' min. clear
Fenestration, ground floor	60-90% (see BDS) facade area
(measured as a percentage of the FACADE that is 2' above sidewalk grade)	

UT INTERSECTS UN

Dominant Subdistrict (35' deep)	UN
Orientation - Principal Frontage	determined by applicant
• Corner lots shall be treated as having street frontage on all streets regardless of building orientation	

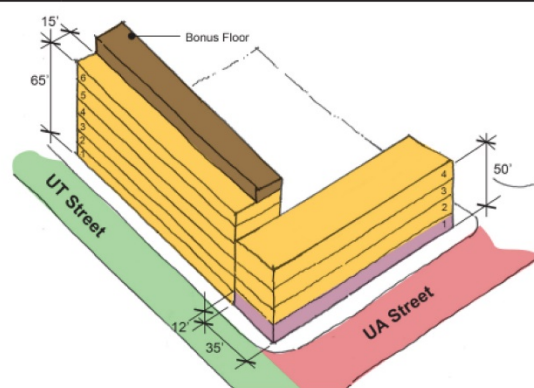
UN INTERSECTS UN

Building Length maximums:	
Principal Frontage	30' max.
Secondary Frontage	50' max.

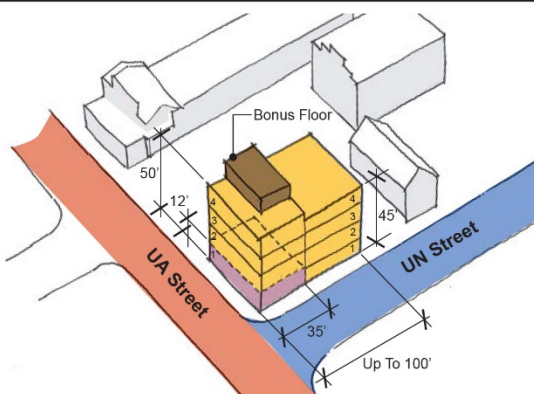
Notes and Exceptions

- * Does not have to correspond to legal building address

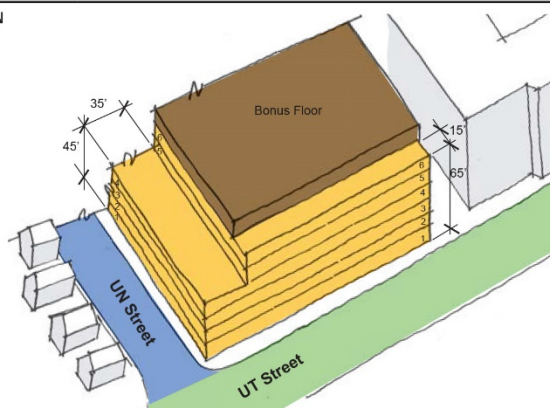
UA INTERSECTS UT
(example only)



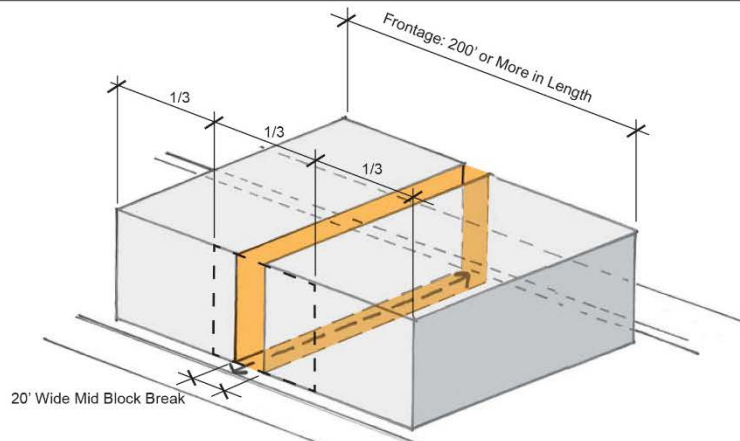
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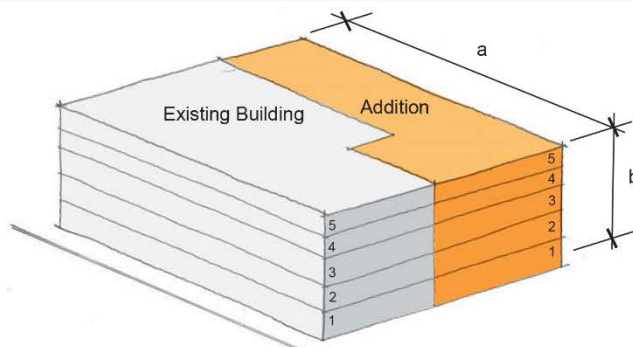
UT INTERSECTS UN
(example only)



MID-BLOCK PERMEABILITY

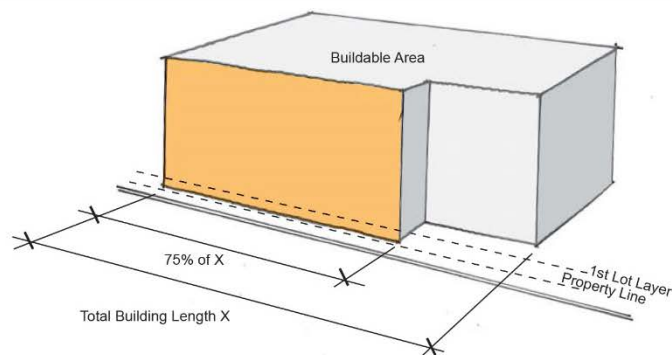


ADDITION



- a - Addition length may match but not exceed the length of existing building to which it is an addition. All other Subdistrict Dimensional Requirements apply.
- b - Addition height may match existing building in number and height of stories. All other Subdistrict Height Standards apply.

BUILDING LENGTH - 1st LOT LAYER



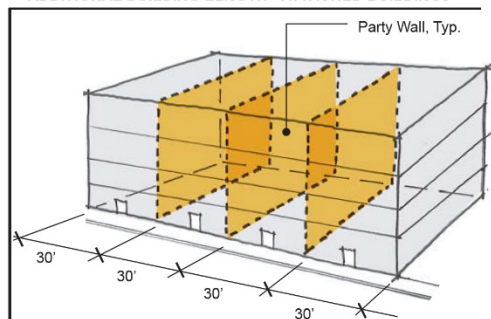
At least 75% of the total building length must be within the 1st LOT LAYER.

FIGURE 9-G: DIMENSIONAL REQUIREMENTS ILLUSTRATED



FORM-BASED ZONES

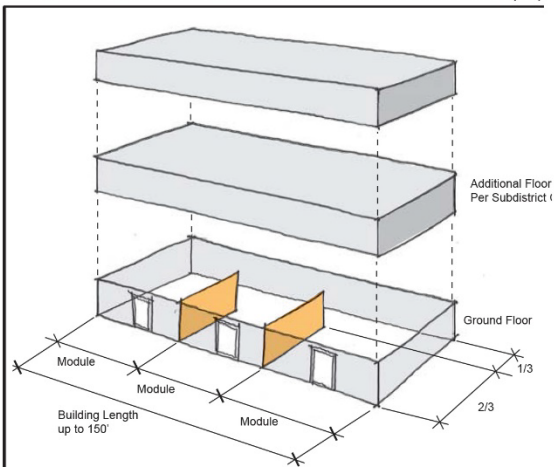
ADDITIONAL BUILDING LENGTH - ATTACHED BUILDINGS



An unlimited number of ATTACHED BUILDINGS having up to 30' street-facing building length is allowed.

A PARTY WALL condition is required at least every 30' and for the entire height of each building.

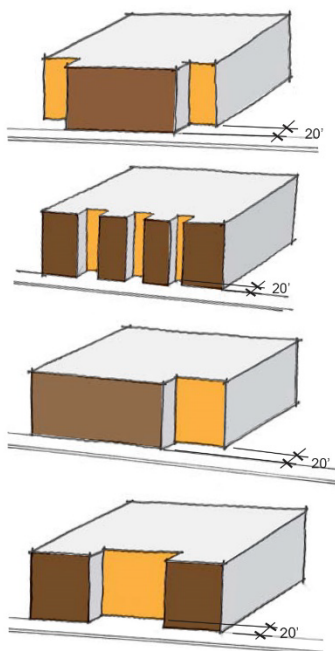
ADDITIONAL BUILDING LENGTH - GROUND FLOOR PARTITIONS (UA)



Additional Building Length is permitted up to 150' with the provision of a least two Ground Floor Partitions

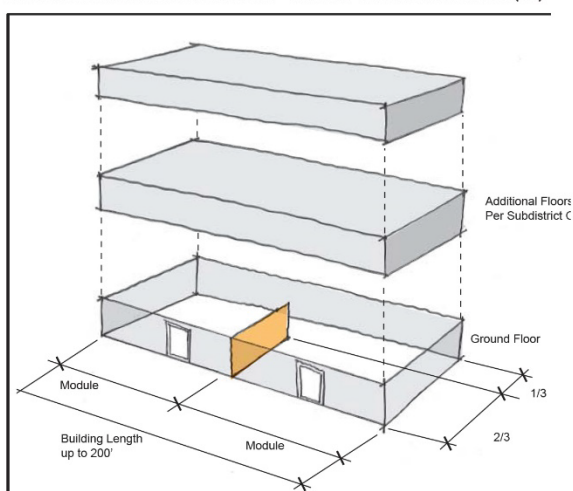
See General Development Standards and BDS for additional requirements.

ADDITIONAL BUILDING LENGTH - MASSING VARIATION (UT)



Additional building length is permitted where at least 30% and up to 40% of the total building length is setback to the 3rd LOT LAYER (20').

ADDITIONAL BUILDING LENGTH - GROUND FLOOR PARTITIONS (UT)



Additional Building Length is permitted up to 200' with the provision of at least one Ground Floor Partition.

See General Development Standards and the BDS for additional requirements.

FIGURE 9-G (CONT.): DIMENSIONAL REQUIREMENTS ILLUSTRATED



10 WATERFRONT ZONES

10.1 IN GENERAL

Portland's waterfront zones were developed to support a wide range of industries unique to the city's maritime environment that rely upon access to the working waterfront. Competing demands for limited access require a more exhaustive use list, specialized performance standards, and a unique set of dimensional restrictions that are unlike those of other zones. Given this high degree of specialization, Article 10 should generally be viewed in isolation from other articles within the Land Use Code, with the exception of waterfront-specific definitions, listed within Article 3. Uses specific to Article 10 may feature some degree of overlap with other defined uses allowed elsewhere within the city. However, in such instances, the use as referenced within this article shall control.

10.2 EASTERN WATERFRONT PORT ZONE (EWPZ)

10.2.1 Purpose

- A. The Eastern Waterfront Port Zone is created to nurture deepwater-dependent activity within the context of the established waterfront. The transport of goods and passengers by water is an important component of both the local and regional economies and this transport and other forms of marine industry are dependent upon land and piers with direct access to Portland Harbor. Given the existing pier infrastructure, proximity to deep water, and urban context, Portland's Eastern Waterfront is uniquely situated to support a wide range of water-dependent industry and commerce through a variety of marine activities.
- B. The support and expansion of Portland's marine industry requires piers, uplands, and circulation consistent with the transportation purpose and use of marine facilities. The growth of Portland's marine passenger industry also requires supporting services and activities to provide a safe, convenient, and enjoyable travel experience for users of marine passenger facilities. Non-marine uses that complement the marine passenger industry, are compatible with existing and future water-dependent uses, and provide opportunities for residents and visitors alike to enjoy the Eastern Waterfront throughout the year, are encouraged.
- C. The primary use of the deep-water resources must be for the berthing and support of large vessels. Non-marine uses that complement and support the deepwater infrastructure and do not conflict or compete for limited space with existing or anticipated deepwater-dependent uses are encouraged. Existing and future pier infrastructure and upland support areas should be designed and maintained to support a variety of marine uses and be responsive to future technologies and trends in the marine industry.
- D. Given the need to nurture and support deepwater-dependent uses and the need for non-deepwater-dependent uses to complement the marine passenger industry and to support the maintenance and repair of pier infrastructure, the Eastern Waterfront Port Zone recognizes the following hierarchy of uses:
 - 1. The first priority of this zone is to protect and nurture existing and potential deepwater-dependent uses (those uses

requiring a minimum of 15 feet of water depth).

2. The second priority is to allow shallow water-dependent and other permitted marine uses, so long as they do not interfere with deepwater-dependent uses, either directly by displacement or indirectly by placing incompatible demands on the zone's infrastructure.
3. Other uses specified herein are allowed only if they do not interfere with and are not incompatible with higher priority uses.

10.2.2 No adverse impact on marine uses

No use shall be permitted, approved or established in this zone if it will have an impermissible adverse impact on future marine development opportunities. A proposed non-water-dependent component of a development will have an impermissible adverse impact if it will result in any one or more of the following:

- A.** The proposed use will displace an existing water-dependent use.
- B.** The proposed use will reduce existing commercial vessel berthing space.
- C.** The proposed use, structure or activities, including but not limited to access, circulation, parking, dumpsters, exterior storage or loading facilities, and other structures, will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other access to the water by water-dependent uses.
- D.** The siting of a proposed use will substantially reduce or inhibit existing public access to marine or tidal waters.

10.2.3 Permitted uses

Subject to a determination that the proposed use meets the standards of Subsection 10.2.2, the following uses are permitted in the Eastern Waterfront Port Zone:

A. Marine passenger

1. Intermodal marine passenger facilities.
2. Cruise ship home port and port-of-call berthing and support.
3. International and domestic ferries.

B. Marine commercial

1. Transient and long-term commercial berthing.
2. Marine-related warehousing.
3. Marine-related construction, manufacturing, fabrication, salvage, and repair.
4. Storage and repair of fishing equipment.
5. Ship and other marine vessel construction, building, servicing, and repair.
6. Boat and marine equipment storage.
7. Harbor and marine supplies and services, chandlery, and ship supply such as fueling and bunkering of vessels.
8. Public, non-profit, or commercial marine transportation and excursion services, including captained charter services, sport fishing and water taxis.
9. Ship and off-shore support services, including but not limited to tug boats, pilot boats, and chandlery.
10. Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices.
11. Marinas located east of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February



WATERFRONT ZONES

1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26.

12. Marine office, including but not limited to offices of owners of marinas, wharves or their agents, and naval architects, and seafood brokers.

C. Commercial

1. Professional, business, government, and general office located in upper floors of structures existing as of September 18, 2006.

**Editor's Note - On-site parking for non-marine commercial uses are permitted as conditional uses subject to the provisions of Subsection 10.2.4.*

2. Temporary events, except festivals as otherwise governed under paragraph (3) listed below. Buildings, piers and lands within the EWPZ may be used for temporary public and private events including but not limited to exhibitions, conferences, meetings, and trade shows under the following conditions:
 - a. Temporary events occupying more than 10,000 square feet of building or outdoor space shall not exceed a combined total of 60 days between May 1st to October 31st.
 - b. No temporary event may continue for more than 14 days of continuous operation.
 - c. Any temporary event that anticipates more than 5,000 people in attendance on any single day must provide and be subject to a parking management plan. The parking management plan must be submitted for the review and

approval of the public works authority at least 60 days prior to the first day of the event.

3. Festivals subject to City license.
4. Street vendors licensed pursuant to Chapter 19 of the City of Portland Code of Ordinances.

D. Public

1. Fire, police, and emergency services.
2. Governmental agency emergency operations/crisis centers.
3. Research, military and visiting attraction vessel berthing.
4. Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces, including without limitation pedestrian and/or bicycle trails.

E. Other

1. A facility for non-profit organizations whose facility may include offices, classrooms, equipment, equipment rentals, storage, and bathrooms for the public.

10.2.4 Conditional uses

- A. The following uses shall be permitted as conditional uses in the Eastern Waterfront Port Zone, provided that, notwithstanding Subsection 6.5.1, or any other provision of this code, the Planning Board shall be substituted for the Board of Appeals as the review authority, and provided further that in addition to the provisions of Subsection 6.5.2, such uses will not impede or preclude existing or potential water-dependent development within the zone, will allow for adequate right-of-way access to the water, are compatible with marine uses, and meet all additional standards set forth below.

B. Conditional use standards

1. *Marine compatibility.* The proposed use shall be compatible with existing and potential marine uses in the vicinity, as required by Subsection 10.2.8(M) and (N).
2. *Parking and traffic circulation.* All applications for conditional use in the EWPZ shall submit a parking and circulation plan for review and approval by the Planning Board. The parking and circulation plan shall show the location of all existing and proposed structures, travel ways, and parking under the common ownership and/or control of the subject pier or property. The plan shall demonstrate that the parking and circulation of the conditional use does not interfere with the functional marine utility of the property and otherwise meets the standards and conditions of the EWPZ.

C. Conditional uses

1. *Marine*
 - a. Marine products, wholesaling, and retailing.
 - b. Ice-making services.
 - c. Marine freight facilities providing service for, and/or intermodal transfer of, container and breakbulk freight.
 - d. Marine educational facilities.
 - e. Seafood retailing, wholesaling, packaging, and shipping.
 - f. Seafood processing for human consumption, subject to the performance standards applicable to the I-L zone as listed in Section 6.8.
 - g. Commercial marinas serving commercial and recreation boats located west of the eastern boundary

of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26, provided that such facilities are located in areas that do not conflict with the navigation and handling of deepwater-dependent vessels accessing existing or potential deepwater berthing.

- h. Fish byproducts processing, provided that:
 - i. Any fish byproducts processing facility has a valid rendering facility license under Chapter 12 of the Portland City Code of Ordinances.
 - ii. Any fish byproducts facility shall employ current and appropriate odor control technology to eliminate or minimize detectable odors from such a process, and in no case shall odors exceed the odor limitation performance standards of the IM zone in Subsection 6.8.10.
 - iii. The processing other material wastes or byproducts shall not be deemed a lawful accessory use permitted herein.

2. *Commercial*

- a. Structured parking available to the general public.
- b. Professional, business, government and general offices uses in upper floors of structures constructed after September 18, 2006.



WATERFRONT ZONES

- c. Passenger support services supporting a marine passenger use listed under Subsection 10.2.3(A). The total ground floor area occupied by any combination of the following uses (regardless of ownership) shall not exceed 35% of the gross floor area of the principal associated marine passenger use and no more than 35,000 square feet cumulative within the EWPZ:
 - i. Retail.
 - ii. Restaurants/food service other than street vendors.
 - iii. Retail service.
 - iv. Passenger information services.
 - 3. *Industrial*. The following industrial uses are permitted provided that such uses shall conform to the IM zone performance standards set forth in Section 6.8 in addition to the performance standards of Subsection 10.2.8. Where redundant or contradictory performance standards exist, the more restrictive standard applies.
 - a. Non-marine-related warehousing in structures existing as of September 18, 2006.
 - b. Facilities for combined marine and general construction.
 - c. Low impact industrial uses as permitted in the IL zone in structures existing as of September 18, 2006, excluding all auto repair service facilities.
 - 4. *Public*
 - a. Utility substations. Public utility substations, including but not limited to electrical transformers, sewage and stormwater pumps and telecommunication switching stations, are permitted under the following conditions:
 - i. The facility is located more than 100 feet from the water's edge.
 - ii. The facility occupies no more than 50 square feet of structure above ground.
 - iii. The facility provides no dedicated on-site parking and all subsurface elements of the facility are installed and operated such that land occupied by the facility is otherwise useable and made available for marine-related uses, including but not limited to parking, travel ways, and/or storage.
 - iv. The facility shall be sized, sited and screened to minimize visual impact and prominence from public ways.
 - b. Maritime museums, limited to 5,000 square feet of ground floor footprint.
- *Editor's Note - On-site parking for non-marine commercial and industrial uses are permitted as conditional uses subject to the following provisions.*
5. *Parking for non-marine uses*.
Notwithstanding Subsection 19.1.6 and Article 14 of this Land Use Code, no parking shall be allowed in this zone for non-marine uses unless the applicant can demonstrate that the number of parking spaces on-site exceeds the number of parking spaces needed to accommodate the demand for marine and water-

dependent uses that are permitted by Subsections 10.2.3 and 10.2.4 which are or may be located on the subject property. (See editor's note below.) The remainder of parking required, if any, for such non-marine uses shall be provided off-site.

**Editor's Note - Vacant ground floor space should be considered to have a parking demand similar to other space housing an existing water-dependent use elsewhere on the subject property or on a comparable property.*

D. The following use shall be permitted only upon the issuance of a conditional use permit subject to the provisions of Section 6.5, and any special provisions, standards, or requirements specified below:

1. Wind energy systems.
2. Solar energy systems.

10.2.5 Prohibited uses

Uses, whether floating or fixed to land, which are not enumerated in Subsections 10.2.3 or 10.2.4 as permitted or conditional uses are prohibited. Those uses that are specifically prohibited shall include, without limitation:

- A.** Residential uses.
- B.** Amusement/theme parks.
- C.** Bulk freight facilities.
- D.** On-site gambling casinos not accessory to and located aboard either a ferry or inter-port cruise ship.

10.2.6 Contract or conditional rezoning

In addition to those marine and non-marine uses authorized in Subsections 10.2.3 and 10.2.4, an applicant may apply to locate a non-marine use not otherwise permitted, if the reviewing body finds the applicant has met the standards of Subsection

10.2.2, the performance standards of Subsection 10.2.8, the applicable standards of contract/conditional rezoning contained in Section 5.3, and conforms to the following requirements:

A. Standards for contract or conditional rezoning:

1. All non-marine uses are either permitted or conditionally permitted in the B-5 zone, and are not specifically prohibited in Subsection 10.2.5 above. Any hotel, inn, or other similar transient lodging establishment proposed must be located landward of the spring tide line and westerly of the extension of the India Street right-of-way.
2. The aggregate ground floor area of any development permitted hereunder located within 100 feet of the pier edge or working edge of the hardened shoreline shall be occupied by at least 50% of one or more marine uses set forth in Subsections 10.2.3 and 10.2.4. Note: the circulation areas and areas occupied for accessory parking serving marine uses shall not be used as the basis for calculating the 50% provision above.
3. The development is consistent with the Comprehensive Plan and without the non-marine use component authorized herein, the site could not otherwise support an economically viable water-dependent use.
4. The project's public benefits outweigh its potential negative impacts, provided that such public benefits include one or more of the following: protection of existing water-dependent uses, preservation of future water-dependent use development opportunities, contribution to the development of and/or on-going



- maintenance of the marine infrastructure for commercial vessels, and visual and physical access to the waterfront for the general public.
5. The non-marine portion of the development will not significantly restrict air or light for marine uses located in the immediate vicinity; will not create significant adverse local climatic effects on marine uses such as an undue increase of winds or shadowing; and will not adversely affect the efficient operation of marine uses, such as by producing less efficient traffic, parking or circulation patterns.
 6. The rezoning contains adequate provisions and/or conditions to ensure that on-site water-dependent infrastructure remains occupied by commercial marine use(s) listed in Subsections 10.2.3 and 10.2.4 and that said use is not abandoned after the project is developed.
- B.** Notwithstanding Subsection 10.2.8(H) and off-street parking standards of Article 14, all on-site parking constructed or used for non-marine uses allowed only by contract or conditional rezoning shall be subject to the conditional use provisions Subsection 10.2.4(C)(5). Additionally, the total amount of parking shall be established by the City Council in the conditional or contract rezoning agreement after consideration of the Planning Board's recommendation on the same.

10.2.7 Dimensional requirements.

In addition to the generally applicable provisions of Section 7.5 of this Land Use Code, lots in the EWPZ shall be subject to the following requirements:

- A. Minimum lot size:** None
- B. Minimum frontage:** None
- C. Minimum yard dimensions:**
 1. *Front setback:* None
 2. *Side setback:* None
 3. *Rear setback:* None
 4. *Setback from pier line:* Notwithstanding the above requirements, a minimum setback of 25 feet from the edge of any pier, wharf or working edge of the hardened shoreline shall be required for any structure, provided that marine offices, as defined in Section 10.2.3(B)(12), may be located up to five feet from the edge of any pier, wharf, or working edge of the hardened shoreline. The setback area may be utilized for water-dependent uses and public uses and activities, subject to the provisions of Subsections 10.2.2 and 10.2.4, and shall not be utilized for restaurant, drinking, or other non water-dependent uses or for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).
- D. Maximum impervious surface:** 100%
- E. Maximum building height:** 45 feet, except as follows:
 1. For purposes of this subsection only, moveable elements such as cranes and gantries, connection devices such as conveyors or bridges, and floating vessels shall not be subject to the space and bulk requirements, but shall be subject to a determination by the Federal Aviation Administration that the location of such equipment will not create a hazard to air traffic.

2. Rooftop appurtenances may exceed the maximum height limits of 45 feet providing that their design and placement is either fully screened or integrated into the architecture of the structure on which they sit.
3. The applicant must provide a determination from the Federal Aviation Administration that structures and equipment in excess of 45 feet will not exceed the applicable height guidelines for the runway approach and will not create a conclusive evidence that the proposed development will not create a hazard.

10.2.8 Performance standards

Development in the Eastern Waterfront Port Zone shall comply with the following standards:

A. Outdoor storage of materials. Outdoor storage of commodities and materials accessory to normal conduct of business shall be entirely contained, including runoff contaminants and residual material, within a designated area.

B. Noise

1. The level of sound, measured by a sound level meter with frequency weighting network (manufactured according to standards prescribed by the American National Standards Institute, Inc.), inherently and recurrently generated within the EWPZ between the hours of 7:00 p.m. and 7:00 a.m. from facilities or operations commenced on or after July 1, 1988, shall not exceed 55 decibels on the A scale at or within the boundaries of any residential zone, except for sound from construction activities, sound from traffic

on public streets, sound from temporary activities such as festivals, sound created as a result of, or relating to, an emergency, including sound from emergency warning signal devices, and maritime navigation signals.

2. In measuring sound levels under this subsection, sounds with a continuous duration of less than 60 seconds shall be measured by the maximum reading on a sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of 60 seconds or more shall be measured on the basis of the energy average sound level over a period of 60 seconds (LEQ1).
3. In addition to the sound level standards otherwise established, facilities or operations established or built in the EWPZ on or after July 1, 1988, shall employ best practicable sound abatement techniques to prevent tonal sounds and impulse sounds or, if such tonal and impulse sounds cannot be prevented, to minimize the impact of such sounds in residential zones. Tonal sound is defined as a sound wave usually perceived as a hum or which because its instantaneous sound pressure varies essentially as a simple sinusoidal function of time. Impulse sounds are defined as sound events characterized by brief excursions of sound pressure, each with a duration of less than one second.

C. Vibration. Vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries. This shall not



apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile-supported pier.

D. Federal and state environmental regulations.

All uses shall comply with federal and state environmental statutes and regulations regarding emissions into the air, except where provisions of this code are more stringent.

- E. Discharges into harbor areas.** No discharge into harbor water areas shall be permitted, unless permitted by the Maine Department of Environmental Protection under a waste discharge license and as approved by the Department of Public Works in accordance with Chapter 24, Article III of the City of Portland Code of Ordinances. All private sewage disposal or private wastewater treatment facilities shall comply with the provisions of Chapter 24, Article II of the City of Portland Code of Ordinances and federal and state environmental statutes and regulations regarding wastewater discharges.

- F. Storage of vehicles.** Storage of any unregistered automotive vehicle on the premises for more than 10 days shall not be permitted.

- G. Landfill of docking and berthing areas.** Landfill of docking and berthing areas shall be governed by 38 M.R.S. § 471-478, and permitted only if the landfill does not reduce the amount of linear berthing areas or space, or berthing capacity. If approved, construction shall be undertaken using methods approved by the Department of Public Works and shall be accomplished in a manner so as to ensure that a stable and impermeable wall of acceptable materials will completely contain the fill

material and will not permit any fill material to leach into docking areas or navigable waters.

- H. Off-street parking and loading.** Off-street parking and loading is subject to provisions as provided in Article 19.
- I. Shoreland and Flood Plain Management regulations.** Any lot or a portion of a lot located in a Shoreland Zone as identified on the City zoning map or in a flood hazard area shall be subject to the requirements of Articles 11 and 12.
- J. Lighting.** All lighting on the site shall be shielded such that direct light sources shall not interfere with vessels transiting the harbor, nor have an unreasonable adverse impact on adjacent residential zones, and shall be compliant with the site lighting standards of the City of Portland *Technical Manual*.
- K. Signs.** Signs shall be permitted as set forth in Article 20.
- L. Storage of pollutants and oily wastes.** On-premises storage of pollutants and oily wastes shall not be permitted for more than 45 days.
- M. Compatibility of non-marine uses with marine uses.** Non-marine uses, structures, and activities, including but not limited to access, circulation, parking, dumpsters, exterior storage, and loading facilities or other structures shall neither unreasonably interfere with the existence or operation of marine uses nor significantly impede access to vessel berthing or other access to the water by existing or potential marine uses.
- N. Functional utility of piers and access to the water's edge.** All development, whether for marine or non-marine uses, must anticipate current and future needs of water-dependent uses to functionally access the water's edge for

the transfer of goods, materials, and passengers between berthed vessels and land bound vehicles. Provisions for the storage and movement of goods, materials, and passengers must be designed into all waterside development and internal circulation routes must be maintained or otherwise provided as an element of any development.

10.3 WATERFRONT CENTRAL ZONE (WCZ)

10.3.1 Purpose

A. The Waterfront Central Zone was created to protect and nurture water-dependent and marine-related support uses so that they may grow and prosper in the present and into the future in an environment and area dedicated to this purpose. The following priority of uses is recognized:

1. The first priority of this zone is to protect and nurture existing and potential water-dependent uses in a setting that enforces their continued economic viability.
2. The second priority is to encourage other marine and marine-related support uses so long as they do not interfere with water-dependent uses, either directly by displacement or indirectly by placing incompatible demands on the zone's infrastructure.
3. Non-marine uses are encouraged provided that they do not interfere with and are not incompatible with first and second priority uses. Non-marine uses are beneficial to the waterfront economy because they provide the financial return to property owners necessary for the maintenance and improvement of the marine infrastructure.

- B.** Water-dependent and marine-related support uses by their nature have activities and operational needs that are unique to this area and are not shared by other commercial and industrial uses in the city. These first and second priority uses and related activities may result in noise, odor, dust, hours of operation, parking, and traffic patterns and traffic control needs that are necessary for the convenient and successful conduct of such uses. Other uses may not be compatible with these types of effects. Other specified uses are permitted in the Waterfront Central Zone, provided that they do not significantly interfere with the activities and operation of water-dependent and marine-related support uses. Such uses must be, and are assumed to be, aware of the impacts associated with marine uses and therefore must accept and be tolerant of them. Other specified uses in the zone shall accommodate to those patterns and needs of the higher priority uses so long as those higher priority uses are not detrimental to public health and safety and the higher priority activities are conducted in accordance with sound practices or practices customary in the trade.
- C.** Commercial Street is recognized as an important economic center for the city and region. Marine-compatible uses are encouraged to locate and grow along Commercial Street while higher priority marine uses are protected on the waterfront.

10.3.2 Definitions

For the purposes of the Waterfront Central Zone only, the following terms shall have the following definitions:



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Common circulation drives. Private driveways, roadways and circulation areas accessible to all on-site tenants and/or occupants of a lot within the Waterfront Central Zone providing access from/to the public street network.

Lot. Any abutting property under common ownership.

Commercial Street Overlay Zone (CSOZ). The Commercial Street Overlay Zone (CSOZ) is a portion of the Waterfront Central Zone, as described below, where new and existing development may be occupied with 100% non-marine use tenants listed under Subsection 10.3.3(B), subject to the standards and use limitations provided in Subsection 10.3.7(B). The geographic limits of the CSOZ are defined by parcels of land and piers within the Waterfront Central Zone located on the landward side of a line established 125 feet south of the southerly sideline of Commercial Street and modified as follows: the seaward limit of the CSOZ extends to a line 300 feet south of the southerly sideline of Commercial Street in the area between the easterly and westerly sideline of Long Wharf. Additionally, all areas subject to this provision are set back landward at least 25 feet from the average high tide line of Portland Harbor and associated coastal wetlands. Where the 125 foot offset intersects with the footprint of a building existing as of May 2019 and such intersection leaves 75% or more of the building within the CSOZ, the entire building shall be considered included in the CSOZ. All offset distances are measured horizontally. All applicants for development within the CSOZ are responsible for demonstrating their location within CSOZ according to the findings of a site specific land

survey conducted by a professional land surveyor licensed by the State of Maine. The limits of the CSOZ shall be shown on all site plans and subdivision plats for proposed development within the CSOZ.

On-site. That portion of any lot included within or directly impacted by a proposed development.

10.3.3 Permitted uses

Subject to a determination that the proposed use meets the standards of Subsection 10.3.7, as applicable, the following uses listed under Subsection 10.3.3(A), (B), (C), and (D) are permitted anywhere in the Waterfront Central Zone. Uses listed under Subsection 10.3.3(E) are only permitted in the CSOZ.

A. Marine

1. Marine products wholesaling, distribution and retailing.
2. Marine repair services and machine shops.
3. Tugboat, fireboat, pilot boat and similar services.
4. Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels.
5. Marine industrial welding and fabricating.
6. Shipbuilding and facilities for construction, maintenance, and repair of vessels.
7. Commercial marine transport and excursion services, including ferries, captained charter services, sport fishing, and water taxis.
8. Cargo handling facilities, including docking, loading, and related storage.
9. Boat repair yards.

10. Boat storage facilities, excluding rack storage facilities (Boat rack storage facilities are included as a conditional use).
11. Seafood processing and retailing.
12. Seafood packing and packaging.
13. Seafood loading and seafood distribution.
14. Fabrication, storage, and repair of fishing equipment.
15. Ice-making services.
16. Facilities for marine construction and salvage.
17. Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices.
18. Fabrication of marine-related goods.
19. Fishing and commercial vessel berthing.
20. Non-commercial berthing of a maximum of 50 linear feet per pier. A non-commercial berth may not displace a commercial berth. Parking for any non-commercial berthing is subject to the provisions of Subsection 10.3.9(G).
21. Marine office, including but not limited to offices of owners of wharves or their agents, and naval architects, and seafood brokers.
22. Public landings.
23. Marine research, education, and laboratory facilities.
24. Bait sales and processing.
25. Harbor security and emergency response services including but not limited to Harbor Master, Marine Patrol and Coast Guard.
26. Commercial parking for water-dependent use business owners and employees.

B. Non-marine commercial and industrial uses.

Non-marine uses permitted by this subsection are subject to the standards listed in Subsection 10.3.7.

1. Professional, business, government, and general offices, except for offices for health care practitioners or health clinics which are only permitted in the CSOZ.
2. Cabinet and carpentry shops, studios for artists and crafts people.
3. Intermodal transportation facilities.
4. Cold storage facilities.
5. Commercial kitchens.
6. Outside accessory activities.

C. Public

1. Landscaped pedestrian parks, plazas, and other similar outdoor pedestrian spaces, including without limitation pedestrian and/or bicycle trails.

D. Other

1. Interior accessory uses customarily incidental and subordinate to the location, function, and operation of permitted uses. Food service establishments, newsstands, and other similar retail and service support uses shall only be permitted as accessory uses if they are part of and located within the lot lines of a use set forth in Subsections 10.3.3(A)(1), (7), (11) or (22); such uses do not exceed 2,000 square feet in total floor area of the building, or 25% of the total floor area of the building, whichever is less, and each individual accessory use does not exceed 1,000 square feet in total floor area of the building; and further provided that such accessory uses provide goods or services that are supportive of the principal use and



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- its clientele. Exterior accessory uses shall be otherwise subject to the provision of Subsection 10.3.7(A).
2. Interior meeting or classroom space accessory to uses permitted in Subsection 10.3.3(A)(23) may be rented out for meeting use by marine-related or non-marine-related groups or organizations, or the general public, and such accessory uses shall not be subject to the limitations contained in (B) above, but shall only be permitted as accessory uses if the total of all support uses, including interior meeting or classroom space, does not exceed 3,000 square feet in total floor area per building, or 15% of the total floor area per building, whichever is less.
- E. Uses permitted only within the Commercial Street Overlay Zone (CSOZ).** Uses permitted by this subsection are subject to the standards listed in Subsection 10.3.7(B).
1. Retail and service establishments, including craft and specialty shops.
 2. Restaurants provided that full course meal food service and consumption shall be the primary function of the restaurant, and full course meal service shall be continued up until the hours of closing.
 3. Banking services without drive-up services.
 4. Museums and art galleries.
 5. Street vendors licensed pursuant to Chapter 19.
 6. Offices of health care practitioners or health care clinics.
 7. Personal service establishments.

10.3.4 Conditional use

The uses listed herein shall be permitted as conditional uses in the Waterfront Central Zone, provided that, notwithstanding Section 6.5, or any other provision of this code, the Planning Board shall be substituted for the Board of Appeals as the review authority, and further provided that in addition to the provisions of Subsection 6.5.2, they shall also meet the applicable Waterfront Central Zone development standards in Subsection 10.3.7:

A. Commercial marine conditional uses

1. Fish by-products processing, provided that:
 - a. Any fish by-products processing facility has a valid rendering facility license under Chapter 12 of the City of Portland Code of Ordinances.
 - b. Any existing fish by-products facility shall employ current and appropriate odor control technology (and any new fish by-product use shall employ current, available odor control technology) to eliminate or minimize detectable odors from such a process, and in no case shall odors exceed the odor limitation performance standards of the I-M zone.
 - c. The processing of other material wastes or by-products shall not be deemed a lawful accessory use under any other provision of this article.
2. Boat rack storage facilities, provided that:
 - a. Parking shall be provided for 100% of the demand generated by the use (notwithstanding Subsection 10.3.9(G)), and such parking shall be provided off-site, in another zone permitting such use.

- b. Boat rack structures shall not exceed 10,000 square feet of building footprint.
- B. Utility substations.** Public utility substations, including but not limited to electrical transformers, sewage, and stormwater pumps, and telecommunication switching stations, are permitted under the following conditions:
 - 1. The facility is located more than 100 feet from the water's edge.
 - 2. The facility occupies no more than 50 square feet of structure above ground.
 - 3. The facility provides no dedicated on-site parking and all subsurface elements of the facility are installed and operated such that land occupied by the facility is otherwise usable and made available for marine uses, including but not limited to parking, travel ways, and/or storage.
 - 4. The facility shall be sized, sited and screened to minimize visual impact and prominence from public ways.

C. Wind energy systems.

10.3.5 Prohibited uses

Uses which are not enumerated in either Subsections 10.3.3 or 10.3.4 as permitted or conditional uses are prohibited. Uses enumerated in Subsection 10.3.3(E) shall be considered prohibited uses outside of the CSOZ. Those uses that are prohibited shall include, without limitation:

- A.** Residential uses.
- B.** Hotels, motels, hostels, bed and breakfasts, inns, lodging houses, tourist homes, short-term rentals, or boatels.
- C.** Auditoriums, civic centers, convention centers, or other meeting facilities not accessory to an otherwise permitted use.

- D.** Drinking establishments, private clubs, or non-profit social and recreational clubs.
- E.** Ground mounted telecommunication towers, antennas, and/or disks.
- F.** Drive-up services for any use other than a permitted use listed under Subsections 10.3.3(A) or 10.3.4(A)(1).
- G.** Auto service stations.
- H.** Laundry and dry-cleaning services.
- I.** Convenience stores with gas pumps.
- J.** Commercial parking for non-marine uses.

10.3.6 Dimensional requirements

In addition to the generally applicable provisions of Section 7.5 of this Land Use Code, lots in the Waterfront Central Zone shall be subject to the following requirements:

- A. Minimum lot size:** None
- B. Minimum frontage along Commercial Street:** 75 feet
- C. Minimum lot width within the CSOZ:** 50 feet measured parallel with Commercial Street and such lot width shall be continuous for the full depth of the lot located within the CSOZ.
- D. Minimum yard dimensions:**
 - 1. *Front setback:* None
 - 2. *Side setback:* None
 - 3. *Rear setback:* None
 - 4. *Setback from pier edge:* Notwithstanding the above requirements, a minimum first-floor setback of 10 feet from the edge of any pier, wharf, or bulkhead shall be required for any structure, exclusive of structurally necessary posts supporting upper floors, and deck-mounted equipment for loading and unloading vessels. The edge of any pier, wharf, or bulkhead shall include any attached



- apron(s). Floats, rafts, and/or barges not structurally integral to the pier, wharf, or bulkhead may not be used to satisfy this requirement. Parking for non-marine uses shall not occupy the 10-foot setback.
- E. Maximum lot coverage:** 100%
- F. Maximum building height:** 50 feet. Except as provided in (H) below, a structure in the Waterfront Central Zone shall provide no more than three habitable floors, however, typical rooftop appurtenances and/or enclosed or open mechanical installations shall be allowed over the third floor.
- G. Minimum ground floor clearance:** Any new building proposed to be larger than 300 square feet and located more than 35 feet from the southerly sideline of Commercial Street shall provide no less than 15 feet of first floor to ceiling vertical clearance to promote marine industrial use potential. New buildings less than 300 square feet or additions to existing multistory buildings are exempt from this provision but shall provide the maximum ground floor clearance practicable.
- H. New non-marine use building exception for usable floors and minimum ground floor clearance:** Notwithstanding provisions (F) and (G) above, for new non-marine use buildings permitted within the CSOZ, four usable floors are allowed and ground floor clearance minimums do not apply.

10.3.7 Development standards

- A. Standards for non-marine uses located outside of the CSOZ.** Non-marine uses listed above in Subsection 10.3.3(B) and 10.3.4(B) that are located outside of the CSOZ shall be subject to the performance standards listed in

Subsection 10.3.9 as well as the following standards:

1. *55% marine use required on ground floors.* At least 55% of the leasable ground floor area of all buildings on a lot (defined in Subsection 10.3.2 above), shall be occupied by marine uses, as listed under Subsection 10.3.3(A) or 10.3.4(A)(1).
2. *55% marine use required for all open areas.* After subtracting areas used for common circulation drives (defined in Subsection 10.3.2 above), at least 55% of unbuilt area (meaning area not occupied by a building) on the lot, when calculated using the aggregate of all such unbuilt areas, shall be occupied by marine uses as listed under Subsection 10.3.3(A) or 10.3.4(A)(1).
3. *Ground floor vacancies and change of occupancy offered to water-dependent/marine uses.* Ground floor vacant space and areas proposed for a change of occupant outside of the CSOZ shall not be filled with any non-marine use without adequate opportunity for marine uses to occupy the space.
 - a. Ground floor vacancy and change of occupant outside of the CSOZ advertised to marine users: In any lot or portion of lot outside of the CSOZ, each time a ground floor occupant departs or gives notice to depart from the lot, the space, along with any associated parking spaces to be vacated, must be made available to new marine occupants. Prior to renting to a non-marine user the property owner shall advertise for a new marine occupant for not less than

- a 180-day period in targeted media and by other means reasonably calculated to reach marine users (e.g. local marine trade publications, marine trade websites, waterfront bulletins.) Should one or more marine users apply, the property owner shall make the space available to a marine occupant, in accordance with terms and rates generally consistent with comparable space in the 55% marine use portion of the zone (outside of the CSOZ.) The property owner may stop advertising sooner than the end of the 180-day period if a lease is signed with a marine user. Should no marine user apply by the end of the 180-day period, the owner may fill the space with a non-marine user provided that the new non-marine occupant will not cause the lot to exceed the non-marine use occupancy maximum of 45% of the ground floor area or open area.
- b. Uses inventoried: To demonstrate adherence to the 55% marine use requirement, the applicant shall submit to the Planning Authority, upon request, an inventory which lists each occupant (tenant or otherwise), as well as a map which depicts the location of each occupant. The map shall show all ground level space, including buildings, parking, open areas and submerged lands associated with the subject lot. For each occupant, the property owner must indicate the square footage of area occupied and whether the occupant is a marine use as defined herein. For vacant space, the last previous occupant shall be listed, along with the date of departure.
 - c. Prior to changes of occupancy and/or as part of applications for new development outside of the CSOZ, the property owner or applicant shall provide proof of compliance with the requirements of this section as a condition of approval.
4. *Pier or bulkhead edge reserved for marine uses.* Notwithstanding any provision of this ordinance to the contrary, excepting only the portion of any pier which might be used for non-commercial berthing pursuant to Subsection 10.3.3(A)(20), all berthing and/or dockage space and associated floats plus the entire linear edge of that portion of every pier or bulkhead which is adjacent to greater than zero feet of water depth at mean low water, to a minimum setback line of at least 10 feet from the edge of the pier, bulkhead, or engineered shoreline may only be used or occupied by one or more marine uses as defined in Subsection 10.3.3(A) or 10.3.4(A). Said edge shall be the seaward extent of any engineered shoreline or working deck of any pier or wharf.
- B. **CSOZ standards.** Non-marine uses listed under Subsections 10.3.3(B), 10.3.3(E) and 10.3.4 located within the CSOZ, as defined in Subsection 10.3.2, shall be subject to the performance standards listed in Subsection 10.3.9 as well as the following standards:



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1. *Vessel access.* Non-marine uses allowed under this provision shall not disrupt or block access to vessel berthing and shall otherwise adhere to the performance standards of this zone described in Subsection 10.3.9.
2. *Maximum setback for new development on lots with 75 or more feet of Commercial Street frontage.* Any new non-marine development constructed subject to this provision which is located on a lot with 75 or more feet of frontage along the Commercial Street right-of-way shall be located with its front façade no further than 35 from the southerly sideline of the Commercial Street right-of-way. Furthermore, any such development shall orient its front façade and its primary pedestrian entrance toward Commercial Street and no vehicular circulation or parking may occupy the land or pier area between the front façade of the building and Commercial Street. Non-marine development subject to this provision on lots with fewer than 75 feet of frontage along the Commercial Street right-of-way, changes of use within existing buildings, and/or building additions of less than 5,000 square feet of new development to existing buildings are exempt from the maximum setback provisions established herein.
3. *Investment in marine infrastructure.* All applicants for site plan review or a change of use permit for non-marine development in the CSOZ are required to invest in marine infrastructure as a condition of development, provided that the total project costs exceed \$250,000. The value of the investment shall be not less than 5% of total project costs over \$250,000 for constructing non-marine space and associated site improvements in the CSOZ. Required investment may occur by one or both the following methods:
 - a. Direct investment in marine infrastructure located on the same lot: Investment shall be for the benefit of marine uses listed in Subsection 10.3.3(A) within the same lot as the proposed non-marine development. Investment may include dredging, pile replacement, new or replaced structural decking (but not pavement resurfacing), new or replaced fendering systems, new or replaced floats, pier expansions, permanent conversions of recreational berthing to commercial berthing, bulkhead or seawall repair or improvements, or any combination of similar improvements. Plans for the marine infrastructure investment shall be submitted to the Planning Authority with the application for site plan review or change of use permit and shall include details and a commitment as to how the marine infrastructure will be utilized by marine users. The marine infrastructure improvements shall be completed prior to the issuance of a certificate of occupancy for the non-marine development project.
 - b. Financial contribution: If direct investment in marine infrastructure is

not made, the developer shall make a financial contribution to the City's Waterfront Loan and Investment Fund.

10.3.8 No contract or conditional rezoning permitted

- A.** This section is intended to accomplish goals from *Portland's Plan 2030*. Specifically, these changes will:
1. Prioritize and promote Portland's unique mix of water-dependent, marine-related and compatible non-marine uses.
 2. Recognize and reinforce the respective roles of the Eastern, Central, and Western Waterfronts.
 3. Celebrate, promote, and protect Portland's lobster and fishing industry as a foundation of the region's economy and a feature of civic pride.
- B.** In light of these goals and the significance of the Central Waterfront to the City's future, no contract or conditional rezoning applications may be approved in the Waterfront Central Zone.

10.3.9 Performance standards

All uses in the Waterfront Central Zone shall comply with the following standards:

- A. Outdoor storage of materials.** Outdoor storage of commodities and materials accessory to normal conduct of business, except pilings and/or cranes, shall be permitted to a maximum height of 45 feet, and such materials shall be entirely contained, including runoff contaminants and residual material, within a designated area within the lot boundaries.

- B. Noise.** The level of sound, measured by a sound level meter with frequency weighting network (manufactured according to standards prescribed by the American National Standards Institute, Inc.), inherently and recurrently generated within the Waterfront Central Zone shall not exceed 75 decibels on the A scale at the boundaries of any lot, except for sound from construction activities, sound from traffic on public streets, sound from temporary activities such as festivals, and sound created as a result of, or relating to, an emergency, including sound from emergency warning signal devices. In measuring sound levels under this subsection, sounds with a continuous duration of less than 60 seconds shall be measured by the maximum reading on a sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of 60 seconds or more shall be measured on the basis of the energy average sound level over a period of 60 seconds (LEQ₁).

- C. Vibration.** Vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries. This shall not apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile supported pier.

- D. Discharges into harbor areas.** No discharge into harbor water areas shall be permitted, unless permitted by the Maine Department of Environmental Protection under a waste discharge license and as approved by the



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Department of Public Works in accordance with Chapter 24, Article III of the City of Portland Code of Ordinances. All private sewage disposal or private wastewater treatment facilities shall comply with the provisions of Chapter 24, Article II of the City of Portland Code of Ordinances and federal and state environmental statutes and regulations regarding wastewater discharges.

- E. **Storage of vehicles.** Storage of any unregistered automotive vehicle on the premises for more than 60 days shall not be permitted.
- F. **Landfill of docking and berthing areas.** Landfill of docking and berthing areas shall be governed by 38 M.R.S. § 480-A through 480-HH, and permitted only if the landfill does not reduce the amount of linear berthing areas or space, or berthing capacity. If approved, construction shall be undertaken using methods approved by the Department of Public Works and shall be accomplished in a manner so as to ensure that a stable and impermeable wall of acceptable materials will completely contain the fill material and will not permit any fill material to leach into docking areas or navigable waters.
- G. **Off-street parking and loading.** No off-street parking or loading shall be required under Article 19.
- H. **Lighting.** All lighting on the site shall be shielded such that direct light sources shall not unreasonably interfere with vessels transiting the harbor nor have an unreasonable adverse impact on adjacent residential zones.
- I. **Storage of pollutants and oily wastes.** On-premises storage of pollutants and oily

wastes shall not be permitted for more than 45 days.

- J. **Urban design.** Construction of new structures located within 35 feet of the southerly edge of Commercial Street between Maine Wharf and the easterly property line of the City fish pier shall conform to the guidelines set forth in the Downtown Urban Design Guidelines, unless such structures are also located within 100 feet of the water. Such structures that are also located within 100 feet of the water shall conform to the extent practicable to the Downtown Urban Design Guidelines.
- K. **Pier and wharf expansions.** In addition to meeting Harbor Commission and Coast Guard requirements for navigation, any expansion or extension of a pier and or wharf in the Waterfront Central Zone shall demonstrate its compatibility with fixed route ferry service and emergency vessel operations.
- L. **Public view protection**
 - 1. Any new development in the Waterfront Central Zone shall perform a public view impact analysis for review and approval by the Planning Board or Planning Authority as a condition of site plan approval. The analysis shall:
 - a. Demonstrate the project's adherence to the Portland View Corridor Protection Plan (City of Portland Comprehensive Plan, 2002) to the extent practicable.
 - b. Promote the public's visual access to the water through sensitive building placement.

2. The Planning Board or Planning Authority shall find at a minimum that the proposed development:
 - a. Retains street corridor views as extended across Commercial Street from the Portland peninsula.
 - b. Retains panoramic views of the water from Commercial Street to the extent practicable.
 - c. Where loss of existing public views to the water is shown to be necessary for the reasonable development of the site, the developer provides alternative public views to the water through newly established view corridors or publicly accessible pedestrian ways. Such pedestrian ways shall not interfere with existing or potential water-dependent uses, nor shall they endanger the public through uncontrolled proximity to industrial activity.

M. Operations and access management plan

1. Any new development, including changes of use or expansion of uses in the Waterfront Central Zone, shall submit a scaled plan and accompanying narrative that demonstrates waterfront access and functional accommodation for water-dependent uses. In accordance with *Portland's Plan 2030*, the plan shall demonstrate consistency with the hierarchy of waterfront uses, as further detailed in Subsection 10.3.1, with non-marine and marine-related uses being subordinate in placement and disposition to water-dependent uses, and designed so as not to impede access to the pier edge

and vessel berthing nor interfere with marine operations.

2. The plan shall, at a minimum, illustrate the following information:
 - a. Location of all existing and proposed structures, rights-of-way, common circulation drives as defined in Subsection 10.3.2, access-ways, sidewalks, pier edges, floats, and docks, showing the entire lot in the context of its respective pier.
 - b. Existing and proposed off-street parking, labeled with associated uses.
 - c. Facilities for the loading and unloading of goods and materials.
 - d. Regularly occurring exterior activities including but not limited to the storage of material, equipment and vehicles, yard area, outdoor seating, and on-site waste management.
 - e. Signage showing parking use, wayfinding, and posted operational restrictions.
 - f. Plan narrative detailing how the standards listed below are achieved, tenant/landlord communication protocols, private enforcement actions to be employed to ensure plan compliance, and the responsible parties representing the property owner.
3. The operations and access management plan shall be reviewed by the Planning Authority.
4. In addition to the information above, the plan shall demonstrate compliance with the following standards:



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- a. Off-street parking is subject to the limitations described in Subsection 10.3.7 (A) (“55% Rule”). Off-street parking spaces intended for use by water-dependent uses shall be sited as close as reasonably possible to associated vessels and/or ground-floor lease area.
- b. Proposals for new non-marine parking, accessory to an otherwise permitted use in the WCZ, shall submit a parking analysis for all uses on the subject lot, justifying the number of non-marine spaces based upon the proposed use and demonstrating sufficient parking supply for marine uses. If sufficient parking is not available to marine uses, off-street parking for non-marine uses shall not be permitted.
- c. Off-street parking, loading facilities, and access ways designated for water-dependent uses shall be exclusive to such uses, except that, if not being occupied by water-dependent tenants, such parking may be made available to non-marine uses between the hours of 5:00 p.m. and 2:00 a.m. Any such shared parking arrangements shall be documented in the operations and access management narrative described above, and clearly signed on-site.
- d. All properties providing commercial berthing shall demonstrate reasonable opportunities to load and unload vessels from the subject lot.
- e. Facilities for the loading and unloading of goods shall account for the frequency of use and vehicle type and, to the extent possible, minimize impacts to pedestrian and vehicle circulation patterns.
- f. Provisions for the storage and movement of goods and materials shall be designed into all pier edge development. Circulation routes must be maintained or otherwise provided as an element of all development. The siting, design, and circulation of non-marine uses, particularly those allowed on first floors, shall accommodate reasonable access for pedestrians, vehicles, and freight transfer to and from berthed vessels.
- g. Non-marine uses shall provide a dedicated pedestrian route between the proposed use and Commercial Street, and shall seek to minimize conflict with vehicle traffic.

10.4 WATERFRONT PORT DEVELOPMENT ZONE (WPDZ)

10.4.1 Purpose

Transport of goods by water to and from Portland is an important component of both the local and regional economy. This commerce is dependent upon land with direct access to the dredged deep-water channel of the Fore River and Portland Harbor. The Port of Portland is integral to the City’s economic, cultural and fiscal health. This zone exists to ensure the continued viability of the Port of Portland. Uses in the Waterfront Port Development Zone, while governed by the similar performance standards as other industrial zones, are primarily

limited to those uses which are dependent upon deep water and which contribute to port activity. Non-marine activity may be allowed to the extent it will not have any adverse impact on marine uses.

10.4.2 No adverse impact on marine uses

No use shall be permitted, approved or established in this zone if it will have an impermissible adverse impact on future marine development. A proposed development will have an impermissible adverse impact if it will result in any one or more of the following:

- A. The proposed non water-dependent use will displace an existing water-dependent use.
- B. The proposed use will reduce existing commercial vessel berthing space.
- C. The proposed nonwater-dependent use, structure, or activities, including but not limited to access, circulation, parking, dumpsters, exterior storage, or loading facilities, and other structures, will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other access to the water by water-dependent uses.
- D. The siting of a proposed nonwater-dependent use will substantially reduce or inhibit existing public access to marine or tidal waters.

10.4.3 Permitted uses

Subject to a determination that the proposed use meets the standards of Subsection 10.4.2, the uses in Table 10-A are permitted (●) or conditional (◐) in the Waterfront Port Development Zone.

10.4.4 Conditional use standards

Conditional uses shall be permitted in the Waterfront Port Development Zone, provided that, notwithstanding Section 6.5 or any other provision of this code, the Planning Board shall be substituted for the Board of Appeals as the review authority. In addition to the provisions of Section 6.5, such uses will:

- A. Not impede or preclude existing or potential water-dependent development on other lots.
- B. Allow for adequate access to the water.
- C. Be compatible with water-dependent and marine uses.
- D. Operationally support one or more water-dependent use(s), or be located in a building or structure that is physically adaptable or relocatable to make way for future development of water-dependent uses.
- E. Meet any additional performance and dimensional standards set forth below.

10.4.5 Prohibited uses

Uses which are not enumerated in Table 10-A as permitted or conditional uses are prohibited. Those uses that are prohibited shall include, without limitation:

- A. Residential uses.
- B. Hotels, motels, or boatels.
- C. Auditoriums, civic centers, convention centers, or other meeting facilities.
- D. Restaurants and drinking establishments.
- E. Marinas, including marina associated boat storage facilities.
- F. Truck terminals.



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TABLE 10-A: WPDZ PERMITTED AND CONDITIONAL USES

Marine	Marine repair services and machine shops	●
	Tugboat, fireboat, pilot boat, and similar services	●
	Harbor and marine supplies and services and ship supply, such as fueling and bunkering of vessels	●
	Shipbuilding and facilities for construction, maintenance, and repair of vessels	●/○ ¹
	Marine cargo handling facilities, including docking, loading and related storage	●/○ ¹
	Boat repair yards	●/○ ¹
	Facilities for marine construction and salvage	●/○ ¹
	Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices	●
	Marine retail and wholesale sales, including yacht brokerage	○
	Boat storage facilities	●/○ ¹
	Seafood processing	○
	Seafood packing and packaging	○
	Fabrication, storage, and repair of fishing equipment	○
	Ice-making services	○
	Fabrication of marine-related goods	○
	Fish by-products processing, provided that any fish by-product processing facility has a valid rendering facility license under Chapter 12 and the processing of other material wastes or by-products shall not be deemed a lawful accessory use under any other provision of this article.	○
	Commercial berthing	●
	Intermodal transportation facilities principally for vessels with regularly scheduled destination service or for railroad transportation service	●/○ ¹
	Marine cargo container and chassis maintenance and repair	●
	Facilities for combined marine and general construction	○ ¹
Industrial	Cold storage facility, warehousing, and storage of goods which are awaiting shipment via cargo carriers	○ ¹
	Low impact industrial uses, including but not limited to bakeries, breweries, bottling, printing and publishing, pharmaceuticals, machine shops, manufacture of products, assembly of electrical components, tool and die shops, and the packaging of food, provided that such uses shall be subject to the performance standards of the I-M zone	○
Public	Public uses including pedestrian and bicycle trails	●
	Utility substations, including sewage collection and pumping stations, water pumping stations, transfer stations, telephone electronic equipment enclosures and other similar structures, provided that such structures are located more than 100 feet from the water.	○
Other	Off-street parking lots, excluding parking structures	○
	Accessory uses customarily incidental and subordinate to the location, function, and operation of permitted uses ²	●
	Minor solar energy systems	●
	Minor wind energy systems	○

¹ Uses that may be located in buildings that exceed the maximum permitted height. Uses marked ●/○ will be considered permitted uses when occupying buildings with a maximum height equal to or less than the maximum applicable height allowable under the permitted use dimensional standards, and conditional Uses when above that height.

² Food service establishments, including food trucks and other similar retail and service support uses shall only be permitted as accessory uses if all such uses do not exceed 2,000 SF in total floor area of the building and each individual use does not exceed 1,000 SF in total floor area of the building; and further provided that such accessory uses provide goods or services that are supportive of the principal use and its clientele.

TABLE 10-B: WPDZ DIMENSIONAL REQUIREMENTS

	Permitted Use Dimensional Standards	Conditional Use Dimensional Standards
Setbacks (min.)	N/A	N/A
Lot size (min.)	N/A	5 acres, limited to 1 building greater than the maximum applicable height allowed under the permitted use dimensional standards.
Setback from pier line, wharf, or bulkhead (including any attached aprons)(min.)¹	5 ft.	5 ft.
Lot coverage (max.)	50% east of a line projected due south from the centerline intersections of W. Commercial Street and the easterly most Cassidy Point Drive.	50% east of a line projected due south from the centerline intersections of W. Commercial Street and the easterly most Cassidy Point Drive.
	100% west of a line projected due south from the centerline intersections of W. Commercial Street and the easterly most Cassidy Point Drive.	100% west of a line projected due south from the centerline intersections of W. Commercial Street and the easterly most Cassidy Point Drive.
Building height (inclusive of roof forms and rooftop appurtenances)(max.)²	55 ft. east of a line projected due south from the centerline intersections of West Commercial Street and the easterly most Cassidy Point Drive and west of Casco Bay Bridge.	60 ft. west of the Casco Bay Bridge ⁷ , except as follows: 75 ft. in the area east of a line projected due south from the centerline intersections of W. Commercial Street and the easterly most Cassidy Point Drive and west of Casco Bay Bridge, on lots 5 contiguous acres or larger. ⁴ 130 ft. for bulk storage ³ facilities west of the projection of the westerly most Cassidy Point Drive segment.
	60 ft. west of a line projected due south from the centerline intersections of West Commercial Street and the easterly most Cassidy Point Drive.	
	In no case may any permitted heights exceed 50ft within 100ft of W.Commercial Street and all area of the WPDZ east of the Casco Bay Bridge. ⁵	In no case may any conditionally permitted heights exceed 50ft within 100ft of W. Commercial Street and all area of the WPDZ east of the Casco Bay Bridge. ⁵
Building length (max.)⁶	450 ft.	450 ft.
	300 ft. within 100 ft. of W. Commercial Street and all area of the WPDZ east of the Casco Bay Bridge.	300 ft. within 100ft of W. Commercial Street and all area of the WPDZ east of the Casco Bay Bridge. 300 ft. for buildings or portions of buildings exceeding the maximum applicable height allowed under the permitted use dimensional standards.

¹ The setback area may be used for activities related to the principal uses in the structure, but shall not be used for off-street parking.

² Buildings and/or structures shall be limited to an absolute height measured from average grade with no portion of the structural roof system or roof top appurtenances exceeding the limits set forth under Table 10-B with the exception of moveable elements or connection devices as listed under Subsection 10.4.7

³ Bulk storage dedicated to materials delivered or awaiting transportation to a site by waterborne transportation.

⁴ A projection of the street centerline shall consist of an extension of the centerline to the water side boundary of the WPDZ.

⁵ Height limitations east of the Casco Bay Bridge are intended to protect vistas of the harbor from public open space.

⁶ As measured by a line parallel with the southern edge of the West Commercial Street right-of-way.

⁷ Only those conditional uses so designated in Note 1 of the Waterfront Port Development Zone Use Table 10-A may be located in buildings taller than 60 ft.



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10.4.6 Dimensional requirements

In addition to the generally applicable provisions of Section 7.5 of this Land Use Code, lots in the Waterfront Port Development Zone shall be subject to the requirements of Table 10-B.

10.4.7 Additional bulk, height, and location standards.

- A. For structures exceeding the maximum applicable height allowed under the permitted use dimensional standards:
 - 1. Moveable elements such as cranes and gantries, and connection devices such as conveyors or bridges shall not be subject to the space and bulk requirements, but shall be subject to a determination by the Federal Aviation Administration that the location of such equipment will not create a hazard to navigation.
 - 2. The applicant must provide a determination from the Federal Aviation Administration that structures and equipment will not exceed the applicable height guidelines for the runway approach and will not create a hazard to navigable airspace. Such a determination shall be accepted as conclusive evidence that the proposed development will not create a hazard.
 - 3. For each lot, at least one view corridor of at least 90 feet in width shall be left unbuilt to preserve a clear line of sight between West Commercial Street and the water.

10.4.8 Performance standards

Proposals in the Waterfront Port Development Zone that qualify for site plan review shall submit, in addition to site plan submission requirements (if

applicable), an impact mitigation narrative summarizing how the project meets the applicable performance standards. All uses in the Waterfront Port Development Zone shall comply with the following standards:

- A. **Outdoor storage of materials.** Outdoor storage of commodities and materials accessory to normal conduct of business, except pilings and/or cranes, shall be permitted to a maximum height of 45 feet, and such materials shall be entirely contained, including runoff contaminants and residual material, within a designated area within the lot boundaries.
- B. **Noise.**
 - 1. The level of sound, measured by a sound level meter with frequency weighting network (manufactured according to standards prescribed by the American National Standards Institute, Inc.), inherently and recurrently generated within the Waterfront Port Development Zone between the hours of 7:00 p.m. and 7:00 a.m. from industrial facilities or operation commenced on or after July 1, 1988, shall not exceed 55 decibels on the A scale at or within the boundaries of any residential zone, except for sound from construction activities, sound from traffic on public streets, sound from temporary activities such as festivals, and sound created as a result of, or relating to, an emergency, including sound from emergency warning signal devices.
 - 2. In measuring sound levels under this subsection, sounds with a continuous duration of less than 60 seconds shall be measured by the maximum reading on a

sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of 60 seconds or more shall be measured on the basis of the energy average sound level over a period of 60 seconds (LEQ₁).

3. In addition to the sound level standards otherwise established, facilities or operations established or built in the Waterfront Port Development Zone on or after July 1, 1988, shall employ best practicable sound abatement techniques to prevent tonal sounds and impulse sounds or, if such tonal and impulse sounds cannot be prevented, to minimize the impact of such sounds in residential zones. Tonal sound is defined as a sound wave usually perceived as a hum or which because its instantaneous sound pressure varies essentially as a simple sinusoidal function of time. Impulse sounds are defined as sound events characterized by brief excursions of sound pressure, each with a duration of less than one second.
- C. Vibration.** Vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries. This shall not apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile supported pier.
- D. Federal and state environmental regulations.** All uses shall comply with federal and state environmental statutes and regulations regarding emissions into the air, except where provisions of this Land Use Code are more stringent.
- E. Discharges into harbor areas.** No discharge into harbor water areas shall be permitted, unless permitted by the Maine Department of Environmental Protection under a waste discharge license and as approved by the Department of Public Works in accordance with Chapter 24, Article III of the City of Portland Code of Ordinances. All private sewage disposal or private wastewater treatment facilities shall comply with the provisions of Chapter 24, Article II of the City of Portland Code of Ordinances and federal and state environmental statutes and regulations regarding wastewater discharges.
- F. Storage of vehicles.** Storage of any unregistered automotive vehicle on the premises for more than 60 days shall not be permitted.
- G. Landfill of docking and berthing areas.** Landfill of docking and berthing areas shall be governed by 38 M.R.S. § 471 through 478, and permitted only if the landfill does not reduce the amount of linear berthing areas or space, or berthing capacity. If approved, construction shall be undertaken using methods approved by the Department of Public Works and shall be accomplished in accordance with the provisions of this Land Use Code and in a manner so as to ensure that a stable and impermeable wall of acceptable materials will completely contain the fill material and will not permit any fill material to leach into docking areas or navigable waters.
- H. Off-street parking.** Off-street parking is required as provided in Article 19.
- I. Shoreland and Flood Plain Management regulations.** Any lot or portion of a lot located in a Shoreland Zone as identified on the City



zoning map or in a flood hazard area shall be subject to the requirements of Articles 11 and 12.

J. **Lighting.** All lighting on the site shall be shielded such that direct light sources shall not unreasonably interfere with vessels transiting the harbor nor have an unreasonable adverse impact on adjacent residential zones.

K. **Signs.** Signs shall be permitted as set forth in Article 20.

L. **Storage of pollutants and oily wastes.** On-premises storage of pollutants and oily wastes shall not be permitted for more than 45 days.

M. **Compatibility of non-marine uses with marine uses.** Non-marine uses, structures and activities, including but not limited to access, circulation, parking, dumpsters, exterior storage and loading facilities or other structures shall neither unreasonably interfere with the existence or operation of marine uses nor significantly impede access to vessel berthing or other access to the water by existing or potential marine uses.

N. **Design.** Design and visual character shall:

1. In building design, including placement and screening of mechanical equipment, take into consideration long views to minimize negative visual impact and provide visual interest, and architecturally integrate exposed industrial systems and equipment where practical.
2. Organize massing to emphasize certain parts of the building such as entries, corners, or different uses.
3. Treat all facades, including the roof, with equal level of detail and articulation.

4. Vary and articulate building facades to add scale and avoid large monotonous walls. Treatments such as texture, color, material changes, or shadow lines or murals must be used to add visual interest and avoid dull, flat, repetitive facades.
5. Use a scaling or articulation element such as stepback, canopy, or fenestration as required for any street-facing façade within 50 feet of West Commercial Street.



11 SHORELAND ZONE

11.1 PURPOSE

The purpose of this article is to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect fish spawning grounds, aquatic life, bird and other wildlife habitat; protect buildings and lands from flooding and accelerated erosion; protect archaeological and historic resources; protect commercial fishing and maritime industries; protect freshwater and coastal wetlands; control building sites, placement of structures, and land uses; conserve shore cover and visual as well as actual points of access to inland and coastal waters and natural beauty, as appropriate in an urbanized environment; and to anticipate and respond to the impact of development in shoreland areas.

11.2 APPLICABILITY

- A. This article applies to all land areas, uses, structures, and land use activities within:
1. 250 feet, horizontal distance, of the normal high-water line of any river.
 2. 250 feet, horizontal distance, of the upland edge of a coastal wetland, including all areas affected by tidal actions.
 3. 250 feet, horizontal distance, of the upland edge of a freshwater wetland.
 4. 75 feet, horizontal distance, of the normal high-water line of a stream.
- B. This article also applies to any structure built on, over or abutting a dock, wharf, or pier, or other structure extending beyond the normal high-water line of a water body, meaning for the purposes of this article any river or stream, or within a wetland.

- C. For the purposes of this article, wetlands shall include coastal and freshwater wetlands as defined in Article 3.
- D. The regulations and controls of this article apply to all land areas, uses, structures, and land use activities cited within this subsection in all zones of the city.

11.3 REVIEW PROCEDURE

Development activities within the Shoreland Zone are reviewed by the Building Authority for compliance with the requirements of Section 11.4. Submission of plans for such development activity shall be prepared by qualified professionals, based upon a boundary survey.

11.4 USE-SPECIFIC LAND USE STANDARDS

11.4.1 Principal and accessory structures

- A. All principal and accessory structures shall be set back at least 75 feet horizontal distance from the normal high-water line of water bodies, the upland edge of a wetland or associated tributary streams within a Shoreland Zone, except that in the following zones the setback shall be as indicated below:
1. *B-3, B-5/B-5b, I-L on-peninsula, and I-M on-peninsula*: 25 feet.
 2. *I-B, WCZ, WPDZ, EWPZ*: No setback required. However, pier edge setbacks apply in the EWPZ, the WCZ, and the WPDZ.
- B. For principal structures, setback measurements shall be taken from the top of a coastal bluff that has been identified on coastal bluff maps as being “highly unstable” or “unstable” by the Maine Geological Survey, as adopted on the City of Portland zoning map.

- C. Notwithstanding this requirement, when a lot is a lot of record as defined in Subsection 4.3.1 or cannot otherwise meet the setback requirement of this subsection due to physical limitations of the site, the Planning Board may approve a reduction of the setback requirement for a principal structure to the least amount necessary to achieve a building dimension of 28 feet, provided that the setback is not reduced to less than 40 feet. Structures in existence on June 15, 1992, may be expanded once during the lifetime of the structure up to 25 feet toward a freshwater wetland, stream or tributary stream, provided that the setback is not reduced to less than 40 feet and the floor area or volume is not increased by more than 30%. In no event shall the setback from a coastal wetland be reduced to less than 75 feet, except as set forth in Subsection 11.4.1(A), above.
- D. In all cases, accessory detached structures of less than 100 square feet of floor area shall be permitted with no setback, provided that such structures shall be used only for the storage of fish, bait, and related equipment. No setback shall be required for piers, docks, retaining walls, or any other structures which require direct access to the water as an operational necessity.
- E. The lowest floor elevation or openings of all buildings and structures including basements shall be elevated at least one foot above the elevation of the 100-year flood, the flood of record, or in the absence of these, the flood as defined by soil types identified as recent flood plain soils.
- F. Notwithstanding the requirements of this section, stairways or similar structures may be

allowed with a permit from the Building Authority to provide shoreline access in areas of steep slopes or unstable soils, provided that:

1. The structure is limited to a maximum of four feet in width.
2. The structure does not extend below or over the normal high-water line of a water body or upland edge of a wetland, unless permitted by the Department of Environmental Protection pursuant to 38 M.R.S. § 480 C.
3. The applicant demonstrates that no reasonable access alternative exists on the property.

11.4.2 Piers, docks, wharves, bridges, and other structures and uses extending over or below the normal high-water line of a water body or within a wetland

- A. Access from shore shall be developed on soils appropriate for such use and constructed so as to control erosion.
- B. The location shall not interfere with existing developed or natural beach areas.
- C. The facility shall be located so as to minimize adverse effects on fisheries.
- D. The facility shall be no larger in dimension than necessary to carry on the activity and shall be consistent with surrounding character and uses.
- E. New permanent structures, and expansions thereof, projecting into or over water bodies shall require a permit from the Department of Environmental Protection pursuant to the National Resources Protection Act, 38 M.R.S. § 480-C. Permits may also be required from the Army Corps of Engineers and Board of Harbor Commissioners if located in navigable waters.



SHORELAND ZONE

- F. Except in the WCZ, EWPZ, WPDZ, and I-B zones, no new structure shall be built on, over or abutting a pier, wharf, dock or other structure extending beyond the normal high-water line of a water body or within a wetland unless the structure requires direct access to the water as an operational necessity.
- G. No existing structures built on, over or abutting a pier, dock, wharf, or other structure extending beyond the normal high-water line of a water body or within a wetland shall be converted to residential dwelling units in any zone.

11.4.3 Clearing or removal of vegetation

- A. In all shoreland areas in Resource Protection Zones, the cutting or removal of vegetation shall be limited to that which is necessary for uses expressly authorized in that zone.
- B. The clearing or removal of vegetation standards of this subsection shall not apply to the following zones: EWPZ, WCZ, WPDZ, B-3, B-5/B-5b, B-6, B-7, I-L (on-peninsula), and I-M zones (on-peninsula).
- C. The clearing or removal of vegetation standards of this subsection shall not apply to those portions of public recreational facilities adjacent to public swimming areas. Cleared areas in these locations shall be limited to the minimum amount necessary.
- D. Other than cutting or removal of vegetation as provided for in this subsection, timber harvesting shall not be permitted. For purposes of this subsection, timber harvesting is defined as the cutting and removal of timber for the primary purpose of selling or processing forest products. The cutting or removal of trees in the Shoreland Zone on a lot that has

less than two acres within the Shoreland Zone shall not be considered timber harvesting. Cutting or removal of such trees shall be regulated pursuant to this subsection.

- E. For purposes of this subsection, vegetation is defined as all live trees, shrubs, and other plants including without limitation, trees both over and under 4 inches in diameter, measured at 4 ½ feet above ground level.
- F. In all areas other than the Resource Protection Zone, a buffer strip of vegetation shall be preserved, except where clearance is required for development of permitted uses, within a strip of land extending 75 feet, horizontal distance, from the normal high-water or upland edge of a coastal wetland, river, stream, or tributary stream within a Shoreland Zone, in accordance with the following:
 - 1. There shall be no cleared opening greater than 250 square feet in the forest canopy or other existing vegetation if a forested canopy is not presented as measured from the outer limits of the tree or shrub crown. Notwithstanding this limitation, a footpath not to exceed six feet in width as measured between tree trunks and/or shrub stems is allowed provided that a cleared line of sight to the water through the buffer strip is not created.
 - 2. Selective cutting of trees within the buffer strip is allowed provided that a well distributed stand of trees and other vegetation is maintained. For the purposes of this subsection, a “well distributed stand of trees” adjacent to a water body, tributary stream or wetland shall be defined as maintaining a minimum rating

TABLE 11-A: SHORELAND TREE STAND RATING SYSTEM

Diameter (at 4½ ft. above ground level)	Points
2 in. ≤ 4 in.	1
4 in. ≤ 8 in.	2
8 in. – 12 in.	4
12 in. or greater	8

score of 16 or more in any 25-foot by 50-foot rectangle area as determined by the rating system in Table 11-A. The following shall govern in applying the point system in Table 11-A:

- a. The 25-foot by 50-foot rectangular plots must be established where the landowner or lessee proposes clearing within the required buffer;
- b. Each successive plot must be adjacent to, but not overlap a previous plot.
- c. Any plot not containing the required points must have no vegetation removed except as otherwise allowed by this ordinance.
- d. Any plot containing the required points may have vegetation removed down to the minimum points required or as otherwise allowed by this ordinance.
- e. Where conditions permit, no more than 50% of the points on any 25-foot by 50-foot rectangular area may consist of trees greater than 12 inches in diameter.

For the purposes of this subsection, “other natural vegetation” is defined as retaining existing vegetation under three feet in height and other ground cover and retaining at least five

saplings less than two inches in diameter at 4 ½ feet above ground level for each 25-foot by 50-foot rectangular area. If five samplings do not exist, no woody stems less than two inches in diameter can be removed until five samplings have been recruited into the plot.

Notwithstanding the above provisions, no more than 40% of the total volume of trees four inches or more in diameter, measured at 4 ½ feet above ground level may be removed in any ten-year period.

3. In order to protect water quality and wildlife habitat, existing vegetation under three feet in height and other groundcover, including leaf litter and the forest duff layer, shall not be cut, covered, or removed, except to provide a footpath or other permitted uses as described in this subsection.
 4. Pruning of tree branches on the bottom one third of the tree is allowed.
 5. In order to maintain a buffer strip of vegetation when the removal of storm damaged, diseased, unsafe or dead trees results in the creation of cleared openings, these openings shall be replanted with native tree species unless existing new tree growth is present.
- G.** Selective cutting of not more than 40% of the volume of trees four inches or more in diameter, measured at 4 ½ feet above ground level, shall be allowed within any ten-year period at distances greater than 75 feet, horizontal distance, from the normal high-water line of any other water body, tributary



stream, or the upland edge of a wetland, except to allow for the development of permitted uses. Tree removal in conjunction with the development of permitted uses shall be included in the 40% calculation. For the purposes of these standards, volume may be considered to be equivalent to basal area. In no event shall cleared openings for any purpose, including but not limited to, principal and accessory structures, driveways, lawns, and sewage disposal areas, exceed in the aggregate 25% percent of the lot area within the Shoreland Zone, including land previously cleared.

- H. Legally existing nonconforming cleared openings may be maintained but shall not be enlarged, except as allowed by this article.
- I. Fields and other cleared openings which have reverted to primarily shrubs, trees, or other woody vegetation shall be regulated under the provisions of this subsection.

11.4.4 Erosion and sedimentation control

- A. All activities which involve filling, grading, excavation or other similar activities which result in unstabilized soil conditions and which require a permit shall require a written soil erosion and sedimentation control plan in accordance with Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices, published by the Cumberland County Soil and Water Conservation District and the Maine Department of Environmental Protection and the City of Portland *Technical Manual*. The plan shall be submitted to the Building Authority for approval and shall include, where applicable, provisions for:

- 1. Mulching and revegetation of disturbed soil.
 - 2. Temporary runoff control features such as hay bales, silt fencing, or diversion ditches.
 - 3. Permanent stabilization structures such as retaining walls or riprap.
- B. In order to create the least potential for erosion, development shall be designed to fit with the topography and soils of the site. Areas of steep slopes where high cuts and fills may be required shall be avoided wherever possible, and natural contours shall be followed as closely as possible.
- C. Erosion and sedimentation control measures shall apply to all aspects of the proposed project involving land disturbance and shall be in operation during all stages of the activity. The amount of exposed ground area at every phase of construction shall be minimized to reduce the potential for erosion.
- D. Any exposed ground area shall be temporarily or permanently stabilized within one week from the time it was last actively worked, by use of riprap, sod, seed, and mulch, or other effective measures. In all cases, permanent stabilization shall occur within nine months of initial exposure. The following standards shall also be met:
 - 1. Where mulch is used, it shall be applied at a rate of at least one bale per 500 square feet and shall be maintained until a catch of vegetation is established.
 - 2. Anchoring the mulch with netting, peg, and twine or other suitable method may be required to maintain the mulch cover.
 - 3. Additional measures shall be taken where necessary in order to avoid siltation into

the water. Such measures may include the use of staked hay bales, and/or silt fences.

- E. Natural and man-made drainage ways and drainage outlets shall be protected from erosion from water flowing through them. Drainage ways shall be designed and constructed in accordance with the City of Portland *Technical Manual*.

11.4.5 Soils

All land uses shall be located on soils in or upon which the proposed uses or structures can be established or maintained without causing adverse environmental impacts, including severe erosion, mass soil movement, improper drainage, and water pollution, either during or after construction. Proposed uses requiring subsurface wastewater disposal and commercial or industrial development or other similar intensive land uses shall require a soils report based on an on-site investigation and prepared by state certified professionals. Certified persons may include Maine Certified Soil Scientists, Maine Registered Professional Engineers, Maine State Certified Geologists and other persons who have training and experience in the recognition and evaluation of soil properties. The report shall be based upon the analysis of the characteristics of the soil and surrounding land and water areas, maximum ground water elevation, presence of ledge, drainage conditions, and other pertinent data which the evaluator deems appropriate. The soils report shall include recommendations for a proposed use to counteract soil limitations where they exist.

11.4.6 Water quality

No activity shall deposit on or into the ground or discharge to the waters of the state any pollutant

that by itself or in combination with other activities or substances will impair designated uses or the water classification of the water body, tributary stream or wetland.

11.4.7 Archaeological sites

Any proposed land use activity involving structural development or soil disturbance on or adjacent to sites listed on, or eligible to be listed on, the National Register of Historic Places, as determined by the Department of Planning and Urban Development, shall be submitted by the applicant to the Maine Historic Preservation Commission for review and comment at least 20 days prior to action being taken by the Planning Authority. The Planning Authority shall consider comments received from the commission prior to rendering a decision on the application. Such sites shall also comply with all applicable provisions of Article 17 of this chapter.

11.4.8 Installation of public utility service

No public utility of any kind shall install services to any new structure located in the Shoreland Zone unless written authorization attesting to the validity and currency of all local permits required under this Code has been issued by the appropriate municipal authorities. Following installation of service, the public utility shall forward the written authorization to the appropriate municipal authorities, indicating that installation has been completed.

11.4.9 Essential services

Where feasible, the installation of essential services shall be limited to existing public ways and existing service corridors. The installation of essential services, other than road-side distribution lines and within existing service corridors, is not allowed in a Resource Protection or Stream Protection Zone,



except where the applicant demonstrates that no reasonable alternative exists. Damaged or destroyed public utility transmission and distribution lines, towers, and related equipment may be replaced or reconstructed without a permit.

11.4.10 Roads and driveways

- A. Roads and driveways shall be setback a minimum of 75 feet from the normal high-water or upland edge of a coastal wetland, freshwater wetland, river or tributary stream within a Shoreland Zone, except:
 - 1. In the EWPZ, WCZ, WPDZ, B-3, B-5/B-5b, I-L (on-peninsula) and I-M (on-peninsula) roads and driveways shall be setback as established for structures in those zones as specified in Subsection 11.4.1(A).
 - 2. If no other reasonable alternative exists, the Planning Board may reduce the road and/or driveway setback requirement to no less than 50 feet, horizontal distance, upon clear showing by the applicant that appropriate techniques will be used to prevent sedimentation of the water body, tributary stream or wetland. Such techniques may include, but are not limited to, the installation of settling basins, and/or effective use of additional ditch relief culverts and turnouts placed so as to avoid sedimentation of the water body, tributary stream, or wetland.
- B. Existing public roads may be expanded within the legal road right of way regardless of their setback from a waterbody, tributary stream, or wetland.
- C. New roads and driveways are prohibited in a Resource Protection Zone except that the Planning Board may grant a permit to construct a road or driveway to provide access to permitted uses within the district. A road or driveway may also be approved by the Planning Board in a Resource Protection Zone, upon a finding that no reasonable alternative route or location is available outside the district. When a roadway or driveway is permitted in a Resource Protection Zone the road and/or driveway shall be setback as far as practicable from the normal high-water line of a water body, tributary stream, or upland edge of wetland.
- D. Road and driveway banks shall be no steeper than slope of two horizontal to one vertical and shall be graded and stabilized in accordance with the provisions for erosion and sedimentation control contained in Subsection 11.4.4.
- E. Road and driveway grades shall be no greater than 10% except segments of less than 200 feet.
- F. In order to prevent road and driveway surface drainage from directly entering water bodies, tributary streams, or wetlands, roads and driveways shall be designed, constructed, and maintained to empty onto an unscarified buffer strip at least 50 feet plus two times the average slope, in width between the outflow point of the ditch or culvert and the normal high-water line of a water body, tributary stream, or upland edge of a wetland. Surface drainage which is directed to an unscarified buffer strip shall be diffused or spread out to promote infiltration of the runoff and to minimize channelized flow of the drainage through the buffer strip.
- G. Ditch relief (cross drainage) culverts, drainage dips, and water turnout shall be installed in a manner effective in directing drainage onto

unscarified buffer strips before the flow gains sufficient volume or head to erode the road, driveway, or ditch. To accomplish this, the following shall apply:

1. Ditch relief culverts, drainage dips, and associated water turnouts shall be spaced along the road or driveway at intervals no greater than indicated in Table 11-B.
2. Drainage dips may be used in place of ditch relief culverts only where the grade is 10% or less.
3. On sections having slopes greater than ten 10%, ditch relief culverts shall be placed at approximately a 30 degree angle downslope from a line perpendicular to the centerline of the road or driveway.
4. Ditch relief culverts shall be sufficiently sized and properly installed in order to allow for effective functioning, and their inlet and outlet ends shall be stabilized with appropriate materials.
5. Ditches, culverts, bridges, dips, water turnouts, and other storm water runoff control installations associated with roads and driveways shall be maintained on a regular basis to assure effective functioning.

TABLE 11-B: DRAINAGE SPACING

Grade (%)	Spacing
0-2	250 ft.
3-5	200-135 ft.
6-10	100-80 ft.
11-15	80-60 ft.
16-20	60-45 ft.
21+	40 ft.

11.4.11 Parking areas

Parking areas shall be set back a minimum of 75 feet from the normal high-water or upland edge of a coastal wetland, freshwater wetland, river, or tributary stream within a Shoreland Zone except:

- A. In the EWPZ, WCZ, WPDZ, B-3, B-5/B-5b, I-L, and I-M zones, parking setbacks shall be as established for structures in those zones, as specified in Subsection 11.4.1(A).
- B. Where the Planning Board finds that no other reasonable alternative exists further from the shoreline or tributary stream, the board may reduce the parking setback requirement to no less than 50 feet in the R-OS and I-B zones to the least amount necessary for construction, provided that the applicant proves by a preponderance of the evidence that appropriate techniques will be used to prevent sedimentation of the water body.

11.4.12 Septic waste disposal

All subsurface sewage disposal systems shall be installed in conformance with the State of Maine Subsurface Wastewater Disposal Rules and the following:

- A. Clearing or removal of woody vegetation necessary to site a new system and any associated fill extensions, shall not extend closer than 75 feet, horizontal distance, from the normal high-water line of a water body or the upland edge of a wetland.
- B. A holding tank is not allowed for a first-time residential use in the Shoreland Zone.

11.4.13 Stormwater runoff

All new construction and development shall be designed to be in compliance with the City of Portland *Technical Manual* to minimize stormwater



runoff from the site in excess of the natural predevelopment conditions. Where possible, existing natural runoff control features, such as berms, swales, terraces, and wooded areas shall be retained in order to reduce runoff and encourage infiltration of stormwater. Stormwater runoff control systems shall be maintained as necessary to ensure proper functioning.

11.4.14 Agriculture

- A.** All spreading or disposal of manure shall be accomplished in conformance with the Manure Utilization Guidelines published by the Maine Department of Agriculture on November 1, 2001, and the Nutrient Management Law (7 M.R.S. §§ 4201-4209).
- B.** Manure shall not be stored or stockpiled within 75 feet, horizontal distance, of water bodies, tributary streams, or wetlands. All manure storage areas within the Shoreland Zone must be constructed or modified such that the facility produces no discharge of effluent or contaminated stormwater.
- C.** Agricultural activities involving tillage of soil greater than 40,000 square feet in surface area within the Shoreland Zone shall require a conservation plan to be filed with the Planning Authority.
- D.** There shall be no new tilling of soil within 75 feet, horizontal distance, from water bodies and coastal wetlands or within 25 feet, horizontal distance, of tributary streams and freshwater wetlands when such new tilling, by itself or combined with all other contiguous tillage, shall exceed 40,000 square feet in surface area. Operations in existence on the effective date of this section and not in conformance with these provisions may be

maintained but shall not be expanded. When the new tilling, by itself or combined with all other contiguous tillage, shall total 40,000 square feet or less, the tillage shall be set back a minimum of 25 feet from all water bodies, tributary streams, or wetlands.

- E.** Newly established livestock grazing areas shall not be permitted within 75 feet, horizontal distance, of water bodies and coastal wetlands or within 25 feet, horizontal distance, of tributary streams and wetlands. Livestock grazing associated with ongoing farm activities and which are not in conformance with the above setback provisions may continue, provided such grazing is conducted in accordance with a soil and water conservation plan filed with the Planning Authority.

11.5 SUPPLEMENTAL SITE PLAN STANDARDS

11.5.1 Site plan standards

The Planning Board or Planning Authority shall approve a site plan located within a Shoreland Zone if it finds that the following standards, in addition to the standards set forth in Article 14, are met:

- A.** The proposal will maintain safe and healthful conditions.
- B.** The proposal will not result in water pollution, erosion, or sedimentation to surface waters.
- C.** The proposal will adequately provide for the disposal of all wastewater.
- D.** The proposal will not have an adverse impact on spawning grounds, fish, aquatic life, bird, or other wildlife habitat.
- E.** The proposal will conserve shore cover and visual, as well as actual, points of access to inland and coastal waters.
- F.** The proposal will protect archaeological and historic resources.

SHORELAND ZONE

- G. The proposal will not adversely affect existing commercial fishing or maritime activities.
- H. The proposal will avoid problems associated with flood plain development and use.
- I. The proposal is in conformance with the standards set forth in this article.

12 FLOOD PLAIN MANAGEMENT

12.1 PURPOSE

The City of Portland, Maine, elects to comply with the 42 USC Section 4001 et seq. requirements of the National Flood Insurance Act of 1968, as amended from time to time. The National Flood Insurance Program, established in the aforesaid act, provides that areas of the city having a special flood hazard be identified by the Federal Emergency Management Agency and that flood plain management measures be applied in such flood hazard areas. This article establishes a Flood Hazard Development Permit system and review procedure for development activities in the designated flood hazard areas of the city. The purposes of this article are to reduce future flood risks and losses, protect against financial and human loss resulting from flood disasters, and to control the placement of structures, construction materials, and methods used to minimize potential property damage due to flooding.

12.2 APPLICABILITY

This article applies to all land areas, uses, structures, and land use activities lying in the special flood hazard areas as identified by the Federal Emergency Management Agency in a report entitled *Flood Insurance Study - City of Portland, Maine, County of Cumberland*, with accompanying “flood insurance rate map” and “flood boundary and floodway map,” dated July 17, 1986. This *Flood Insurance Study* with accompanying maps, and any subsequent amendments thereto, is hereby adopted by reference and declared to be a part of this Land Use Code.

12.3 DEFINITIONS

Area of special flood hazard. The land in the flood plain having a 1% or greater chance of flooding in any given year as specifically identified in the most recently adopted FEMA Flood Insurance Study for the City of Portland.

Base flood. The flood having a 1% chance of being hereof or exceeded in any given year (i.e., a 100-year storm).

Coastal high hazard area. The area subject to high velocity waters, including but not limited to, hurricane wave wash or tsunamis. The area is designated on the flood insurance rate map as zone V1 30.

Development. Any man-made change to improved or unimproved real estate, including but not limited to, the construction of, alteration to, or addition to any buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, or storage of equipment or materials.

Flood boundary and floodway map. The official map issued by the Federal Emergency Management Agency (FEMA) on which the boundaries of the flood have been designated. This may alternatively be referred to as a flood hazard boundary map.

Flood insurance rate map. The official map (FIRM) on which the Federal Emergency Management Agency (FEMA) has delineated both the areas of special flood hazard and the risk premium zones applicable to the city.

Floodproofing. Any combination of structural or nonstructural additions, changes, or adjustments to

structures which reduce or eliminate flood damage to real estate or improved real estate, to water and sanitary facilities, structures, and their contents.

Floodway. The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot as designated on the flood boundary and floodway map. When not designated on the flood boundary and floodway map, it is considered to be the channel of a river or other watercourse and the adjacent land areas to a distance of $\frac{1}{2}$ the width of the flood plain, as measured from the normal high-water mark to the upland limit of the flood plain.

Lowest floor. The lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage, in an area other than a basement area, is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this division.

Mean high tide. The mean height of tidal high waters at a particular point or station over a period of time to such length that increasing its length does not appreciably change this mean. For tidal waters, the cycle of change covers a period of 19 years, and mean high tide is defined as the average of the high waters over a 19 period.

Mean sea level. For purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which

base flood elevations shown on the city's FIRM are referenced.

Structure. A walled and roofed building, including a gas or liquid storage tank, that is principally above ground, or manufactured housing. "Primarily above ground," as used above, means either that at least $\frac{2}{3}$ of its floor to ceiling height is above the average adjoining ground level, or at least 51% of the actual cash value of the structure, less land value, is above ground.

Substantial improvement. Any repair, reconstruction, addition to or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure either before the improvement or repair is started or, if the structure has been damaged and is being restored, before the damage occurred. For purposes of this definition "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions or for any alteration of a structure listed on the National Register of Historic Places or a state inventory of historic places.

12.4 FLOOD HAZARD DEVELOPMENT PERMIT

12.4.1 Permit required

Before any development begins within any areas of special flood hazard, a Flood Hazard Development Permit shall be obtained from the Building

Authority. This permit shall be required prior to issuance of a building permit, if one is required, and shall be in addition to any other permit, site plan, and subdivision review which may be required pursuant to the codes and ordinances of the City. If only a site plan is required for a development, the Flood Hazard Development Permit shall be obtained prior to approval of the site plan.

12.4.2 Filing of application

The application for a Flood Hazard Development Permit shall be submitted in writing to the Building Authority and shall include the following:

- A. A final site plan, where applicable, showing information as required by Article 14.
- B. A final subdivision plat, where applicable, providing information as required in Article 15.
- C. For any development which does not meet the minimum threshold as a development requiring site plan review, the following information shall be provided:
 1. The name, address, and phone number of the applicant, owner, and contractor.
 2. A map with address indicating the location of the development site.
 3. A site plan showing the location of existing and proposed development, including but not limited to specific dimensions of existing and proposed structure(s), wastewater disposal facilities, water supply facilities, areas to be developed, and the dimensions of the lot.
 4. A statement of the intended use of any structure and/or other development.
 5. A statement of the cost of the development including all materials and labor.
 6. A statement of the type of wastewater disposal system proposed.
- D. The elevation in relation to the National Geodetic Vertical Datum (NGVD), or to a locally established datum for Zone A only, of the:
 1. Base flood at the proposed site of all new or substantially improved structures, which is determined in Zones A1-30, AE, AO, AH, V1-30, and VE from data contained in the *Flood Insurance Study — City of Portland, Maine*, or in Zone A, to be the elevation of the ground at the intersection of the flood plain boundary and a line perpendicular to the shoreline which passes along the ground through the site of the proposed building.
 2. Highest and lowest grades at the site adjacent to the walls of the proposed building.
 3. Lowest floor, including basement, and whether or not such structures contain a basement.
 4. Level, in the case of nonresidential structures only, to which the structure will be floodproofed.
- E. A description of an elevation reference point established on the site of all new or substantially improved structures.
- F. Either an elevation certificate (FEMA Form 81 31, 03/97, as amended) completed by a professional land surveyor, registered professional engineer, or architect, or, for nonresidential structures to be floodproofed, a floodproofing certificate (FEMA Form 81 65, 05/93, as amended) completed by a registered professional engineer or architect. These certificates verify that the elevations shown on the application are accurate.

- G. Certifications by a registered professional engineer or architect that structures meet the review standards of Subsection 12.4.5.
- H. A description of the extent to which any watercourse will be altered or relocated as a result of the proposed development.
- I. A statement of construction plans describing in detail how each applicable development standard in Subsection 12.4.5 will be met.
- J. Cross section(s) of the site acceptable to the Public Works Authority.

12.4.3 Fee

A nonrefundable Flood Hazard Development Permit fee as established by the City Council shall be paid to the Building Authority, and a copy of a receipt for the same shall accompany the application.

12.4.4 Review procedure

- A. Upon determination by the Building Authority that an application is complete, the Building Authority shall coordinate review of the application by the City. No permit shall be issued until the Building Authority finds that the development proposal is in compliance with the standards of this article. Compliance with the provisions of this article shall be required prior to beginning any development as defined herein.
- B. The Building Authority shall, when reviewing subdivisions and other proposed developments that require review under federal law, state law, or local ordinances or regulations and all projects on five or more acres, or in the case of manufactured home parks divided into two or more lots, assure that:
 - 1. All such proposals are consistent with the need to minimize flood damage.

- 2. All public utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damages.
 - 3. Adequate drainage is provided so as to reduce exposure to flood hazards.
 - 4. All proposals include base flood elevations, flood boundaries and, in a ravine flood plain, floodway data. These determinations shall be based on engineering practices recognized by the Federal Emergency Management Agency.
 - 5. Any proposed development plan must include a condition of plan approval requiring that structures on lots in the development be constructed in accordance with Subsection 12.4.5 of this article. The condition shall clearly articulate that the municipality may enforce any violation of the construction requirement. The construction requirement shall also be clearly stated on any map, plat, or plan as part of the approval process.
- C. In the review of all Flood Hazard Development Permit applications for compliance with the standards herein:
- 1. The Building Authority shall utilize the base flood data contained in the *Flood Insurance Study* as described in Section 12.2. In special flood hazard areas where base flood elevation data are not provided in the above cited study, the Planning Authority, or Planning Board as appropriate, shall obtain, review, and reasonably utilize any base flood elevation data available from federal, state, or other

reasonably reliable sources in order to administer this article.

2. Prior to approval of issuance of the Flood Hazard Development Permit, the Building Authority shall determine that all necessary permits have been obtained from those federal, state, and local authorities from which prior approval is required by federal or state law, including but not limited to Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1334 as may be amended from time to time), provided, however, that conditional approval may be granted pending proof of receipt of any required permits, but no Flood Hazard Development Permit shall be finally issued until proof of issuance of all such other permits is received by the Building Authority.
3. The Building Authority shall notify adjacent municipalities, the Maine Department of Environmental Protection and the Maine Flood Plain Management Program, prior to any alteration or relocation of a watercourse, and submit copies of such notifications to the Federal Emergency Management Agency.
4. The Building Authority shall maintain, as a permanent record, copies of all Flood Hazard Development Permit applications, corresponding permits issued, and data relevant thereto, including reports of the Board of Appeals on variances granted under the provisions of Section 12.6 of this article, and copies of elevation certificates, floodproofing certificates, certificates of compliance, and certifications of design

standards required under the provisions of Sections 12.4 and 12.5.

12.4.5 Review standards

A. All development. All development shall:

1. Be designed or modified and adequately anchored to prevent flotation (excluding piers and docks), collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
2. Use construction materials that are resistant to flood damage.
3. Use construction methods and practices that will minimize flood damage.
4. Use electrical, heating, ventilation, plumbing, and air conditioning equipment, and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during flooding conditions.

B. Water supply. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems.

C. Sanitary sewage systems. All new and replacement sanitary sewage systems shall be designed and located to minimize or eliminate infiltration of flood waters into the system and discharges from the system into flood waters.

D. On-site waste disposal systems. On site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during floods.

E. Altered or relocated watercourses. All development associated with altered or relocated portions of a watercourse shall be

constructed and maintained in such a manner that no reduction occurs in the flood carrying capacity of the watercourse.

F. Residential. New construction or substantial improvement of any residential structure located within:

1. Zones A1-30, AE, and AH shall have the lowest floor (including basement) elevated to at least two feet above the base flood elevation.
2. Zones AO and AH shall have adequate drainage paths around structures on slopes, to guide flood water away from the proposed structures.
3. Zone AO shall have the lowest floor (including basement) elevated above the highest adjacent grade:
 - a. At least two feet higher than the depth specified in feet on the community's Flood Insurance Rate Map, or
 - b. At least three feet if no depth number is specified.
4. Zone A shall have the lowest floor (including basement) elevated to at least two feet above the base flood elevation utilizing information obtained pursuant to Subsections 12.4.2(D)(2), 12.4.4(B)(4), or 12.4.4(C)(1).
5. Zones V1-30 and VE shall meet the requirements of Subsection 12.4.5(P).

G. Nonresidential. New construction or substantial improvement of any nonresidential structure located within:

1. Zones A1-30, AE, and AH shall have the lowest floor (including basement) elevated to at least two feet above the base flood

elevation, or together with attendant utility and sanitary facilities shall:

- a. Be floodproofed to at least two feet above the base flood elevation so that below that elevation the structure is watertight with walls substantially impermeable to the passage of water.
 - b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.
 - c. Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting the provisions of this section. Such certification shall be provided with the application for a Flood Hazard Development Permit, as required by Subsection 12.4.2(G) and shall include a record of the elevation above mean sea level to which the structure is floodproofed.
2. Zones AO and AH shall have adequate drainage paths around structures on slopes, to guide flood water away from the proposed structures.
 3. Zone AO shall have the lowest floor (including basement) elevated above the highest adjacent grade:
 - a. At least two feet higher than the depth specified in feet on the community's flood insurance rate map, or
 - b. At least three feet if no depth number is specified, or
 - c. Together with attendant utility and sanitary facilities be floodproofed to

meet the elevation requirements of this subsection and floodproofing standards of Subsection 12.4.5(G).

4. Zone A shall have the lowest floor (including basement) elevated to at least two feet above the base flood elevation utilizing information obtained pursuant to Subsections 12.4.2(D)2, 12.4.4(B)(4), 12.4.4(C)(1).
5. Zones V1-30 and VE shall meet the requirements of Subsection 12.4.5(P).

H. Manufactured homes. New or substantially improved manufactured homes located within:

1. Zones A1-30, AE, and AH shall:
 - a. Be elevated on a permanent foundation such that the lowest floor is at least two feet above the base flood elevation.
 - b. Be securely anchored to an adequately anchored foundation system to resist flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to:
 - i. Over the top ties anchored to the ground at the four corners of the manufactured home, plus two additional ties per side at intermediate points (manufactured homes less than 50 feet long require one additional tie per side).
 - ii. Frame ties at each corner of the home, plus five additional ties along each side at intermediate points (manufactured homes less than 50 feet long require four additional ties per side).

iii. All components of the anchoring system shall be capable of carrying a force of 4,800 pounds.

2. Zones AO and AH shall have adequate drainage paths around structures on slopes, to guide flood water away from the proposed structures.
3. Zone AO shall have the lowest floor (including basement) elevated above the highest adjacent grade:
 - a. At least two feet higher than the depth specified in feet on the community's Flood Insurance Rate Map, or
 - b. At least three feet if no depth number is specified, and
 - c. Meet the requirements of Subsection 12.4.5(H)(1)(b).
4. Zone A shall:
 - a. Be elevated on a permanent foundation such that the lowest floor is at least two feet above the base flood elevation utilizing information obtained pursuant to Subsection 12.4.2(D)(2), 12.4.4(B)(4), or 12.4.4(C)(1).
 - b. Meet the requirements of Subsection 12.4.4(B)(2).
5. Zones V1-30 and VE shall meet the requirements of Subsection 12.4.5(P).

I. Recreational vehicles. Recreational vehicles located within:

1. Zones A1-30, AH, and AE shall either:
 - a. Be on the site for fewer than 180 consecutive days, or
 - b. Be fully licensed and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or

jacking system, is attached to the site only be quick disconnect type utilities and security devices, and has no permanently attached additions.

2. Zones V1-30 and VE shall meet the requirements of either Subsection 12.4.5(I)(1)(a), 12.4.5(I)(1)(b), or 12.4.5(P).

J. Accessory structures. Accessory structures located within Zones A1-30, AE, AO, AH, and A shall be exempt from the elevation criteria required in Subsection 12.4.5(F) and 12.4.5(G) if all other requirements of Subsection 12.4.5 and all the following requirements are met.

Accessory structures shall:

1. Be 500 square feet or less and have a value less than \$3,000.
2. Have unfinished interiors and not be used for human habitation.
3. Have hydraulic openings, as specified in Subsection 12.4.5(L), in at least two different walls of the accessory structure.
4. Be located outside the floodway.
5. When possible be constructed and placed on the building site so as to offer the minimum resistance to the flow of flood waters and be placed further from the source of flooding than is the primary structure.
6. Have only ground fault interrupt electrical outlets. The electric service disconnect shall be located above the base flood elevation and when possible outside the special flood hazard area.

K. Floodways

1. In Zones A1-30 and AE, encroachments, including fill, new construction, substantial improvement, and other development shall not be permitted in ravine areas, for which

a regulatory floodway is designated on the community's flood insurance rate map or flood boundary and floodway map, unless a technical evaluation certified by a registered professional engineer is provided demonstrating that such encroachments will not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

2. In Zones A1-30 and AE riverine areas, for which no regulatory floodway is designated, encroachments, including fill, new construction, substantial improvement, and other development shall not be permitted in the floodway as determined in (3) below, unless a technical evaluation certified by a registered professional engineer is provided demonstrating that the cumulative effect of the proposed development, when combined with all other existing development and anticipated development:

- a. Will not increase the water surface elevation of the base flood more than one foot at any point within the community.
- b. Is consistent with the technical criteria contained in Chapter 5 entitled "Hydraulic Analyses," *Flood Insurance Study — Guidelines and Specifications for Study Contractors* (FEMA 37/January 1995, as amended).

3. In Zones A1-30, AE, and A riverine areas for which no regulatory floodway is designated, the regulatory floodway is determined to be the channel of the river

- or other watercourse and the adjacent land areas to a distance of 1/2 the width of the flood plain as measured from the normal high-water mark to the upland limit of the flood plain. Encroachments, including fill, new construction, substantial improvement, and other development shall not be permitted unless a technical evaluation certified by a registered professional engineer is provided meeting the requirements of (2) above.
- L. Enclosed areas below the lowest floor.** New construction or substantial improvement of any structure in Zones A1-30, AE, AO, AH, and A that meets the development standards of Subsection 12.4.5, including the elevation requirements of Subsection 12.4.5(F), (G), or (H) and is elevated on posts, columns, piers, piles, “stilts,” or crawl spaces may be enclosed below the base flood elevation requirements provided all the following criteria are met or exceeded:
1. Enclosed areas are not basements.
 2. Enclosed areas shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood water. Designs for meeting this requirement must either:
 - a. Be engineered and certified by a registered professional engineer or architect, or
 - b. Meet or exceed the following minimum criteria:
 - i. A minimum of two openings having a total net area of not less than one square inch for every square foot of the enclosed area.
 - ii. The bottom of all openings shall be no higher than one foot above the lowest grade.
 - iii. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the entry and exit of flood waters automatically without any external influence or control such as human intervention, including the use of electrical and other non-automatic mechanical means.
 3. The enclosed area shall not be used for human habitation.
 4. The enclosed areas are usable solely for building access, parking vehicles, or storing of articles and equipment used for maintenance of the building.
- M. Bridges.** New construction or substantial improvement of any bridge in Zones A1-30, AE, AO, AH, A, V1-30, and VE shall be designed such that:
1. When possible, the lowest horizontal member (excluding the pilings, or columns) is elevated to at least two feet above the base flood elevation.
 2. A registered professional engineer shall certify that:
 - a. The structural design and methods of construction shall meet the elevation requirements of this section and the floodway standards of Subsection 12.4.5(K).
 - b. The foundation and superstructure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind

and water loads acting simultaneously on all structural components. Water loading values used shall be those associated with the base flood.

- N. Containment walls.** New construction or substantial improvement of any containment wall shall meet the following requirements by zone:
1. Zones A1-30, AE, AH, V1-30, and VE shall have the containment wall elevated to at least two feet above the base flood elevation, have structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy, and be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting the provisions of this section. Such certification shall be provided with the application for a Flood Hazard Development Permit, as required by Subsection 12.4.2.
 2. Zones AO and AH shall have adequate drainage paths around containment walls on slopes, to guide flood water away from the proposed walls.
 3. Zone AO shall have the top of the containment wall elevated above the highest adjacent grade at least two feet higher than the depth specified in feet on the community's flood insurance rate map, or at least three feet if no depth number is specified.
 4. Zone A shall have the containment wall elevated to at least two feet above the base flood elevation utilizing information

obtained pursuant to Subsections 12.4.2(D)(2), 12.4.4(B)(4), or 12.4.4(C)(1).

- O. Wharves, piers, and docks.** New construction or substantial improvement of wharves, piers, and docks are permitted in Zones A, A1-30, AE, AO, AH, V1-30, and VE, in and over water and seaward of the mean high tide if the following requirements are met:

1. Wharves, piers, and docks shall comply with all applicable local, state, and federal regulations.
2. Commercial wharves, piers, and docks involving fill shall adhere to the design and construction standards contained in the U.S. Army Corps of Engineers' Shore Protection Manual.

P. Coastal flood plains

1. All new construction located within Zones A1-30, AE, A, V1-30, and VE shall comply with all applicable local, state, and federal regulations.
2. New construction or substantial improvement of any structure located within Zones V1-30 or VE shall be elevated on posts or columns such that:
 - a. The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to two feet above the base flood elevation.
 - b. The pile or column foundation and the elevated portion of the structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.

- c. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable state and local building standards.
3. New construction or substantial improvement of any structure located within Zones V1-30 or VE shall have the space below the lowest floor:
 - a. Free of obstructions, or
 - b. Constructed with open wood lattice work, or insect screening intended to collapse under wind and water without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting piles or columns, or
 - c. Constructed with non-supporting breakaway walls which have a design safe loading resistance of not less than 10 or more than 20 pounds per square foot.
4. A registered professional engineer or architect shall develop or review the structural design, specifications, and plans for the construction, which must meet or exceed the technical criteria contained in the *Coastal Construction Manual* (FEMA 55/February, 1986).
5. A registered professional engineer or architect shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the criteria of Subsections 12.4.5(P)(2) and (3).
6. The use of fill for structural support in Zones V1-30 and VE is prohibited.
7. Human alteration of sand dunes within Zones V1-30 and VE is prohibited unless it can be demonstrated that such alterations will not increase potential flood damage.
8. The enclosed areas may be used solely for parking vehicles, building access, and storage.
9. Lobster sheds and fishing sheds located seaward of mean high tide shall be exempt from the elevation requirement in Subsection 12.4.5(G) only upon review and approval by the Planning Authority or Planning Board and if all the following requirements of Subsections 12.4.5(A), (K), and (L) are met:
 - a. The conditional use shall be limited to low value structures such as metal or wood sheds 200 square feet or less and shall not exceed more than one story.
 - b. The structure shall be securely anchored to the wharf or pier to resist flotation, collapse, and lateral movement due to the effect of wind and water loads acting simultaneously on all building components.
 - c. The structure will not adversely increase wave or debris impact forces affecting nearby buildings.
 - d. The structure shall have unfinished interiors and shall not be used for human habitation.
 - e. Any mechanical, utility equipment and fuel storage tanks must be anchored and either elevated or floodproofed to two-feet above the base flood elevation.

All electrical outlets shall be ground fault interrupt type. The electrical service disconnect shall be located on shore above the base flood elevation and when possible outside the special flood hazard area. If a flood hazard permit application is granted, the applicant shall be notified in writing that flood insurance is not available for structures located entirely over water or seaward of mean high tide.

12.4.6 Permit

Upon determination that the development or substantial improvement plan is in compliance with this article, the Building Authority shall issue one of the following Flood Hazard Development Permits based on the type of development:

A. Two-part Flood Hazard Development Permit for elevated structures. Part I shall authorize the applicant to build a structure to and including the first horizontal floor only above the base flood level. At that time the applicant shall provide the Code Enforcement Officer with a second elevation certificate completed by a professional land surveyor, registered professional engineer or architect based on the Part I permit construction, “as built,” for verifying compliance with the elevation requirements of Subsections 12.4.5(F), (G), (H), or (P). Following review of the elevation certificate data, which shall take place within 72 hours of receipt of the application, or as soon as practicable thereafter, the Code Enforcement Officer shall issue Part II of the Flood Hazard Development Permit. Part II shall authorize the applicant to complete the construction project.

B. Flood Hazard Development Permit for floodproofing of nonresidential structures.

This permit shall apply for nonresidential structures that are new construction or substantially improved nonresidential structures that are not being elevated but that meet the floodproofing standards of Subsection 12.4.5(G)(1). The application for this permit shall include a floodproofing certificate signed by a registered professional engineer or architect.

C. Flood Hazard Development Permit. This permit shall apply for all other development and building permits that are not new construction or a substantial improvement, such as repairs, maintenance, renovations, or additions, whose value is less than 50% of the market value of the structure. This includes, but is not limited to: accessory structures as provided for in Subsection 12.4.5(J), mining, dredging, filling, grading, paving, excavation, drilling operations, storage of equipment or materials, deposition or extraction of materials, public or private sewage disposal systems or water supply facilities that do not involve structures, and nonstructural projects such as bridges, dams, towers, fencing, pipelines, wharves, and piers.

12.5 CERTIFICATE OF COMPLIANCE

No land in an area of special flood hazard shall be occupied or used in violation of this article, and no structure in such an area which is developed or substantially improved shall be occupied until a Certificate of Compliance is issued by the Building Authority. Said Certificate of Compliance shall be issued only after the Building Authority has received all permits and certificates from the applicant as

required by this article. For structures in Zones V1-30 and VE and for floodproofed structures, a written certification by a registered professional engineer or architect shall be provided to the Building Authority stating that the design and methods of construction used are in compliance with the applicable provisions of Subsection 12.4.5. Within 30 working days, the Building Authority shall review the elevation certificate and the applicant's written notification and, upon determination that the development conforms with the provisions of this article, shall issue a certificate of compliance.

12.6 VARIANCES

12.6.1 Authority

The Board of Appeals may authorize variances from the provisions of this article as authorized in Subsection 2.3.11 except:

- A. As otherwise expressly provided in Subsection 2.3.11(E).
- B. Variances shall not be granted within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result.

12.6.2 Standards

Subsection 2.3.11 notwithstanding, variances from the requirements of this article shall be granted only upon:

- A. A showing of good and sufficient cause.
- B. A determination that should a flood comparable to the base flood occur, the granting of a variance will not result in increased flood heights, additional threats to public safety, or public expense, or create nuisances, cause fraud or victimization of the public, or conflict with existing local laws or ordinances.

- C. A showing that the issuance of the variance will not conflict with other state, federal, or local laws or ordinances.
- D. A determination that failure to grant the variance would result in "undue hardship," which in this subsection means:
 - 1. That the land in question cannot yield a reasonable return unless a variance is granted.
 - 2. That the need for a variance is due to the unique circumstances of the property and not to the general conditions in the neighborhood.
 - 3. That the granting of a variance will not alter the essential character of the locality.
 - 4. That the hardship is not the result of action taken by the applicant or a prior owner.
- E. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

12.6.3 Standards for specific variances

- A. Variances may be issued for the repair, reconstruction, rehabilitation, or restoration of historic structures upon the determination that:
 - 1. The development meets the criteria of Subsection 12.6.2.
 - 2. The proposed repair, reconstruction, rehabilitation, or restoration will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

- B. Variances may be issued for new construction, substantial improvements, or other development for the conduct of a functionally dependent use provided that:
1. The criteria of Section 12.6 and Subsection 12.4.5 are met.
 2. The structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

12.6.4 Notice to applicants

- A. Any applicant who meets the criteria of this section shall be notified by the Board of Appeals in writing with the signature of the Chair of the Board of Appeals that:
1. The issuance of a variance to construct a structure below the base flood level will result in greatly increased premium rates for flood insurance up to amounts as high as \$25 per \$100 of insurance coverage.
 2. Such construction below the base flood level increases risks to life and property.
 3. The applicant agrees in writing that the applicant is fully aware of all the risks inherent in the use of land subject to flooding, assumes those risks and agrees to indemnify and defend the municipality against any claims filed against it that are related to the applicant's decision to use land located in a flood plain and that the applicant individually releases the municipality from any claims the applicant may have against the municipality that are related to the use of land located in a flood plain.

- B. The above Subsections 12.6.4(A)(1), (2), and (3) shall be included with or on all applications for a variance hereunder, as well as the following statements:

1. The applicant understands and is fully aware of all of the risks inherent in the use of land subject to flooding and understands and agrees that they are fully assuming any potential or actual liability resulting therefrom. Applicant agrees to indemnify and defend the municipality against any claims filed against it that are related to the applicant's decision to use the land located in a flood plain and that the applicant individually releases the municipality from any claims the applicant may have against the municipality that are related to the use of land located in a flood plain. Applicant further understands and agrees that the City has no responsibility therefore, and in the event a variance is granted to applicant, applicant agrees to inform any purchaser, assignee, or other transferee of applicant of the existence of said variance and of this agreement.
2. Applicant shall signify in writing that they have read, understands, and agrees to all of the stipulations in this Subsections 12.6.4(A) and (B).

12.6.5 Record of variances

The Board of Appeals shall submit to the Building Authority a report of all variance actions, including justification for the granting of the variance and an authorization for the Building Authority to issue a Flood Hazard Development Permit, which includes any conditions to be attached to said permit.

12.7 RECORDS & REPORTING

- A. The Building Authority shall maintain, as a permanent record, copies of all Flood Hazard Development Permits issued, certificates of compliance and data relevant thereto, including reports of the Board of Appeals on variances granted hereunder.
- B. The Building Authority shall be responsible for filing such annual reports regarding participation in the National Flood Insurance Program as may be required by FEMA. Said annual reports shall include, but not be limited to, a report on implementation of this article and on any variances granted hereunder. A copy of such annual reports shall also be sent to the Maine Flood Plain Management Program.
- D. Evidence that the property owner has been provided notice of the violation and the prospective denial of insurance.
- E. A clear statement that the declaration is being submitted pursuant to Section 1316 of the National Flood Insurance Act of 1968, as amended.

12.8 PENALTIES

It shall be the duty of the Building Authority to enforce the provisions of this ordinance pursuant to Title 30-A M.R.S. § 4452. The penalties contained in Title 30-A M.R.S. § 4452 shall apply to any violation of this ordinance. In addition to any other actions, the Building Authority, upon determination that a violation exists, shall submit a declaration to the Administrator of the Federal Insurance Administration requesting a denial of flood insurance. The valid declaration shall consist of:

- A. The name of the property owner and address or legal description of the property sufficient to confirm its identity and location.
- B. A declaration that the property is in violation of a cited state or local law, regulation, or ordinance.
- C. A clear statement that the public body making the declaration has authority to do so and a citation to that authority.

13 RESOURCE PROTECTION ZONE

13.1 USE

No building shall be erected, altered, enlarged, rebuilt or used, and no premises shall be used, in a Resource Protection Zone except for the following uses:

- A. Non-intensive recreational uses not requiring structures, such as fishing and hiking.
- B. Motorized and non-motorized vehicular traffic on existing roads, trails, and rails, as appropriate.
- C. Bikeways, pedestrian trails, and walkways.
- D. Fire prevention activities.
- E. Wildlife management activities.
- F. Soil and water conservation activities.
- G. Surveying and natural resource analysis.
- H. Emergency operations as defined in Article 3.
- I. Harvesting of wild crops.
- J. Nonresidential structures for educational, scientific, or nature interpretation purposes, containing a maximum floor area of not more than 10,000 square feet.
- K. Public and private parks and recreational areas, including one or more structures containing a total maximum floor area of not more than 10,000 square feet.
- L. Permanent and temporary piers, docks, wharves, bridges and uses projecting into water bodies, as allowed in Subsection 11.4.2.
- M. Storehouses for fishermen's gear.
- N. Essential services as defined in Article 3 accessory to the uses permitted herein.
- O. Signs, as allowed in Article 20.
- P. Road construction, in accordance with the provisions of Section 11.4.
- Q. Parking facilities for uses permitted under this section.

- R. Landfill and other earth-moving activity, as allowed in Subsection 11.4.4.

13.2 DIMENSIONAL REQUIREMENTS

No building or structure shall be erected, altered, enlarged, rebuilt, or used in a Resource Protection Zone which does not comply with the following requirements:

TABLE 13-A: RPZ DIMENSIONAL STANDARDS

Lot area (min.)		20,000 SF
Lot width (min.)		100 ft.
Lot frontage on street or shoreline (min.)		100 ft.
Front setback (min.)		25 ft.
Rear setback (min.)		75 ft. ¹
Side setback (min.)	Principal	15 ft.
	Accessory	5 ft.
Side setback on side street (min.)		20 ft.
Shoreline setback (min.)		75 ft. ²
Structure height (max.)	Principal	2 stories or 25 ft.
	Accessory	1 story or 15 ft.
Building area (max.)		10% of lot area ³

¹ Does not apply to boathouses or storehouses for fishing gear.

² Does not apply to permitted piers, docks, wharves, breakwaters, causeways, bridges, boathouses, and storehouses for fishing gear.

³ For principal building or group of buildings.

13.3 OFF-STREET PARKING

Any off-street parking in a Resource Protection Zone is required as provided in Article 19.

13.4 SHORELAND AND FLOOD PLAIN MANAGEMENT REGULATIONS

Any lot or portion of a lot located in a Shoreland Zone as identified on the City zoning map or in a flood hazard area shall be subject to the requirements of Articles 11 and 12.



14 SITE PLAN

14.1 PURPOSE

Pursuant to Portland's Comprehensive Plan, this article advances the vision for a sustainable city with shared goals for the environment, community, and economy. This article complements the zoning and subdivision regulations of this Land Use Code.

14.2 APPLICABILITY

14.2.1 Site plan approval required

All development meeting the thresholds of Table 14-A shall require site plan approval prior to commencing any work or undertaking any alteration or improvement of the site. A final, approved site plan is a prerequisite to issuance of building, street opening, or certificate of occupancy permits for development subject to the provisions of this article. No such permit shall be issued until such permit is determined to be consistent with the final, approved site plan and any conditions of approval. In the event of any inconsistency between the approved site plan and any permit issued, the approved site plan shall control, provided, however, site plan approval shall not excuse failure to meet any independent requirement of any other law or ordinance. Neither the acceptance of any application nor any determination or approval hereunder shall authorize the issuance of a permit under Chapter 6 of the City of Portland Code of Ordinances for any use which would violate the provisions of Articles 6 and 7 of this Land Use Code.

14.2.2 Exceptions

The Planning Authority may grant written authorization for the release of a demolition or interior building permit for a development subject to this article upon written request of the applicant

describing the extent of proposed work. Any exterior demolition requires a performance guarantee for site stabilization.

14.3 PROJECT CLASSIFICATION

14.3.1 Site plan classifications

The Planning Authority shall classify each development proposal as a major or minor site plan application according to the classifications in Table 14-A. The Planning Authority may, due to the scope or anticipated impacts of a project, classify any project a review level higher than otherwise indicated in Table 14-A.

14.3.2 Master development plan

- A.** An applicant may elect to submit a master development plan application for a large, multi-phase development program consisting of multiple buildings and site improvements on a site of one acre or more of total land area which is designed as a cohesive and integrated whole. The master development plan option shall not apply in residential zones, except for institutional, multi-family, congregate care, and intermediate, extended, and long-term care uses in the R-5a and R-6a zones.
- B.** A master development plan approval, including an approval of waivers, establishes the general parameters for the development, including the general development program, massing, open space plan, and infrastructure plan. A master development plan approval shall not be construed as final authorization of the development. Approval shall confer pending proceeding status upon the development with the effect of maintaining the applicability of regulations in effect at the time of approval for as long as the master development plan

TABLE 14-A: SITE PLAN CLASSIFICATIONS

	Minor¹	Major
New construction or additions²	Single or two-family structures 250 – 10,000 SF 250 – 20,000 SF in industrial zones 250-50,000 SF in IS-FBC zone	Multi-family development of 3 or more units ^{3, 4} > 10,000 SF > 20,000 SF in industrial zones >50,000 SF in IS-FBC zone
Stripping, grading, grubbing, filling, or excavation	1,000 SF - 3 ac.	> 3 ac.
Site alterations	Alteration of watercourse or wetland	
Creation of impervious surface	1,000 SF – 1 ac.	> 1 ac.
Construction or paving of existing parking	5 – 75 parking spaces	> 75 vehicles
Construction of structures⁵ in the Shoreland Zone	Rehabilitation, reconstruction or new construction	
Change of use⁶	10,000 – 20,000 SF	> 20,000 SF
Other	Auto service station	Development with drive-through facilities

¹ For purposes of fee assignment and submission requirements, the minor application includes two exceptions: “minor residential” and “low-impact site development.” See Section 16 of the *Technical Manual* for more information.

² Includes cumulative expansion of building floor area within a three-year period.

³ Includes any division of a new or existing structure into 3 or more dwelling units whether the division is accomplished by sale, lease, development, or otherwise.

⁴ Addition of one or two units to any residential development shall trigger minor site plan review.

⁵ Includes piers, docks, wharves, bridges, retaining walls, and other structures

⁶ Includes any change in use of an existing building, whether or not alterations are involved, from any use in the following list to any other uses on the list:

- A. Industrial
- B. Residential
- C. Institutional
- D. Commercial/Service
- E. Water-dependent use and marine use



approval remains valid, including permissible extensions if granted. Subsequent site plan approvals shall be required.

14.4 REVIEW AND APPROVAL AUTHORITY

The review and approval authority for site plans and master development plans shall be determined based on the classification of the project as shown in Table 14-B. At any point in the review process, the applicant may request that Planning Authority reclassify the application to the next highest review level.

14.5 REVIEW PROCEDURES

14.5.1 Pre-application meeting

Applicants for site plan or master development plan review are encouraged to schedule a pre-application meeting. The purpose of this meeting is

to familiarize the applicant with the City of Portland, site plan submittal requirements, review procedures, and applicable review standards. A pre-application meeting shall not confer pending proceeding status under Title 1 MRSA 302. No decisions relative to the plan shall be made at the pre-application meeting, nor shall any advice or information provided by the City be construed as a decision.

14.5.2 Application, plans, and submittals

All applicants shall submit a site plan or master development plan application to the Planning Authority in such form as prescribed by the Planning Authority. A payment of a nonrefundable application fee, as established by the City Council to cover administrative costs and costs of a hearing, shall accompany each application.

14.5.3 Staff completion check

- A. The Planning Authority shall determine whether the application, plans, and submittals meet the submittal requirements of the *Technical Manual*. If the application is deemed incomplete or not in compliance with Articles 6

TABLE 14-B: REVIEW AND APPROVAL AUTHORITY

Plan Classification	Review Authority
Minor	Planning Authority
Major	Planning Board
Master Development Plan	Planning Board

TABLE 14-C: SITE PLAN REVIEW PROCEDURES

	Minor	Major	Master Development Plan	Public Notice Requirement
Pre-application meeting	●	●	●	
Site plan, application, plans, and submittals	●	●	●	
Staff completion check	●	●	●	●
Staff review	●	●	●	
Neighborhood outreach		●	●	●
Planning Board workshop		●	●	●
Revised plans and submittals	●			
Final staff review & recommendation	●*	●	●	
Planning Board public hearing		●*	●*	●

● Required ● Recommended * Decision point: approve/approve with conditions/deny

or 7, the Planning Authority shall inform the applicant in writing of the finding and the additional plans or submittals required to complete the application. A review of the application will not be conducted until the application is found complete.

- B. Once the application is determined to be complete, receipt of application notices shall be sent to all property owners within 500 feet of the subject property lines or within 1,000 feet if it is a subdivision within an industrial zone, unless the Planning Authority, in its discretion, chooses to notice a larger area and incur the additional expense for the expanded notification. Notices shall be sent to all others, including neighborhood organizations, as may be required by the Planning Authority.

14.5.4 Staff review

When the application is determined to be complete, the plans and submittals shall be reviewed by the Planning Authority and other departments of the City of Portland as appropriate against the review standards of this article. Written comments from reviewers shall be provided to the applicant and shall include a staff recommendation to either provide a revised plan and submittals, schedule a Planning Board workshop, or schedule a public hearing.

14.5.5 Neighborhood meeting

Applicants for major site plan and master development plan review shall conduct at least one neighborhood meeting in accordance with the following:

- A. **Timing and location.** The meeting shall be conducted within 30 calendar days of an application being deemed complete and no less

than seven calendar days before a public hearing. The meeting shall be held at a convenient location within the City of Portland neighborhood surrounding the proposed site. All costs associated with the neighborhood outreach shall be borne by the applicant.

- B. **Notice.** The applicant shall mail notice to all property owners within 500 feet of the subject property lines or within 1,000 feet if it is a subdivision within an industrial zone, and to all others, including neighborhood organizations, as may be required by the Planning Authority at least 10 calendar days prior to the neighborhood meeting or event. The notice shall contain a brief description of the proposal and the date, time, and place of the neighborhood meeting or event. A digital copy of the neighborhood notice shall be sent to the Planning Authority, which shall be distributed to the City's list of interested citizens.

C. Meeting procedures

1. *Record of participants.* The applicant shall keep a record of neighborhood participants in the outreach. A copy of this record shall be submitted to the Planning Authority prior to final review.
2. *Content.* The neighborhood outreach shall include an explanation of the proposal and provide an opportunity for public questions and comment.
3. *Record of feedback.* The applicant shall keep a record of feedback generated through the neighborhood outreach. A copy of this record shall be submitted to the Planning Authority prior to final review. Any other individual or entity also may submit comments on the neighborhood meeting to the Planning Authority.



14.5.6 Review costs

- A. Applicants shall pay a fee to cover the review costs and administrative costs incurred by the City. The fee shall be based upon the actual hours of review time and prevailing hourly rate for reimbursement of City costs, and shall be invoiced periodically by the City.
- B. No land use permits or applications of any kind shall be processed, reviewed or issued, and no building permits of any kind shall be issued, for any project whose permit fee is governed by this article unless all charges due under this article have been paid and the developer is otherwise in compliance with the City Code of Ordinances.

14.5.7 Notice of public meeting

- A. For all applications that are subject to Planning Board review, the applicant shall be responsible for posting a notice of public meeting sign as specified by the Planning Authority on the property where the development is to occur.
- B. The sign shall be posted at least ten days prior to the public workshop or hearing date, and shall be removed from the site no more than three days following the date of the meeting.
- C. Once the required notice of public meeting signage is posted, the applicant shall submit a completed certification of posting form to the Planning Authority.
- D. In the event that a required notice of public meeting sign is knocked over or made illegible, it shall be the responsibility of the applicant to promptly reset or replace the sign, though failure to do so shall not invalidate the review.

14.5.8 Planning Board workshop

Applicants for major site plan and master development plan review may request a workshop with the Planning Board. The workshop will be scheduled on a date that follows the neighborhood meeting and initial staff review. The workshop shall be informational and shall not result in any formal approval or disapproval of the project. At the workshop, the Planning Board shall discuss the plans and submittals, consider the staff review with respect to the review standards of this article, hear public comments and questions, and provide direction to the applicant regarding issues to be addressed.

14.5.9 Revised plans and submittals

All applicants shall provide revised plans and submittals to the Planning Authority. The Planning Authority shall determine whether the revised plans and submittals meet the submittal requirements of the City of Portland *Technical Manual*.

14.5.10 Final staff review and recommendation

When determined to be complete, the revised plans and submittals shall be reviewed by the Planning Authority and other City departments as appropriate against the review standards of this article. Written comments from reviewers shall be provided to the applicant. In the case of a major site plan or master development plan review, comments shall include a staff recommendation to either approve, approve with conditions, or deny the revised site plan and submittals. In the case of a minor site plan application, following staff review, the Planning Authority shall approve, approve with conditions, or deny the revised site plan application based on the review standards of this article.

14.5.11 Planning Board public hearing

Applicants for major site plan or master development plan review must appear before the Planning Board for a public hearing. The hearing shall be scheduled on a date that meets all public noticing requirements contained in Article 2. At the hearing, the Planning Board shall approve, approve with conditions, or deny an application, based upon the review standards of this article.

14.5.12 Lapse in application

A site plan or master development plan application must be diligently pursued from the date of submission. Notwithstanding the submission of a complete application, any applicant shall provide additional information, studies, or reports from qualified professionals when determined by the Planning Board or the Planning Authority to be reasonably necessary to make any of the determinations required by this article. Failure to submit required information within 120 days of the date upon which the written request was made shall cause the application to expire and be deemed null and void.

14.6 SITE PLAN REVIEW STANDARDS

The reviewing authority shall not approve a site plan application unless the development proposal meets applicable standards of the City of Portland *Technical Manual* and the City of Portland *Design Manual* and the criteria below.

14.6.1 Transportation standards

A. Impact on surrounding street systems. The provisions for vehicular loading and unloading, parking, and vehicular and pedestrian circulation on the site and onto adjacent public

streets and ways and the incremental volume of traffic will not:

1. Create or aggravate any significant hazard to safety on the surrounding street network.
2. Substantially increase congestion on any street which is already at a level of service below Level "D" without mitigation proportionate to the level of impact.

B. Access and circulation

1. *In general*
 - a. All development subject to this article shall provide safe and reasonable access and internal circulation for all users of the site and shall comply with the transportation systems and street design standards of the *Technical Manual*.
 - b. Continuous internal walkways shall be provided between existing or planned public sidewalks adjacent to the site, transit stops and street crossings, and building entrances on the site.
 - c. Points of access and egress shall be located to avoid conflicts with turning movements and traffic flows.
 - d. The site must have stacking capacity for vehicles waiting to use these service features without impeding on-site vehicular circulation or creating hazards to vehicular circulation on adjoining streets.
2. *Loading and servicing.* All developments served by delivery or other service vehicles shall provide access that permits safe turning and backing for all vehicles that would service the development. Loading and servicing access shall not impede



- vehicle circulation, bicycle or pedestrian movements, or parking.
3. *Curb and sidewalks*
- a. All development shall provide curb and sidewalks along all frontages, installed to specifications as described in the transportation systems and street design standards of the *Technical Manual*.
 - b. Where sidewalks already exist but are in substandard condition, they shall be repaired or replaced in conformance with Chapter 25 of the City of Portland Code of Ordinances and the transportation systems and street design standards of the *Technical Manual*.
 - c. An applicant may request a waiver from sidewalk installation requirements if they meet two or more applicable waiver criteria as listed below:
 - i. There is no reasonable expectation for pedestrian usage coming from, going to, and traversing the site.
 - ii. There is no sidewalk in existence or expected within 1000 feet and the construction of sidewalks does not contribute to the development of pedestrian-oriented infrastructure.
 - iii. A safe alternative walking route is reasonably available, for example, by way of a sidewalk on the other side of the street that is lightly traveled.
 - iv. The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program (CIP) or has been funded through an earlier CIP or through other sources.
 - v. The street has been constructed or reconstructed without sidewalks within the last 24 months.
 - vi. Strict adherence to the sidewalk requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.
- d. An applicant may request a waiver from curb installation requirements if they meet two or more applicable waiver criteria as listed below:
- i. The cost to construct the curbing, including any applicable street opening fees, is in excess of 5% of the overall project cost.
 - ii. The reconstruction of the street is specifically identified and approved in the first or second year of the current CIP or has been funded through an earlier CIP or through other sources.
 - iii. The street has been rehabilitated without curbing in the last 60 months.
 - iv. Strict adherence to the curb requirement would result in the loss of significant site features

related to landscaping or topography that are deemed to be of a greater public value.

- v. Runoff from the development site or within the street does not require curbing for stormwater management.

C. Public transit access

1. All residential development consisting of 20 or more dwelling units and all commercial and institutional developments of at least 20,000 square feet gross floor area shall provide a transit shelter adjacent to or within the public right-of-way along its frontage when the following criteria are met:
 - a. The development is proposed along an existing public transit route on a principal or minor arterial roadway, as shown in the Federal Street Classification Map.
 - b. The nearest existing transit shelter on the route is more than $\frac{1}{4}$ mile from the site, measured along rights-of-way.
2. Transit facilities shall be connected to the public sidewalk system.
3. All or some of this standard may be waived if the review authority determines one or more of the following:
 - a. That some or all of the required improvements cannot reasonably be made due to site constraints and/or insufficient right of way width.
 - b. That the development is not anticipated to generate public transit usage due to particular characteristics of the development or proposed use.

D. Parking

1. *Vehicular parking*
 - a. All developments shall provide off-street parking in accordance with the parking requirements of this Land Use Code.
 - b. Where a parking study is required, the City encourages Transportation Demand Management (TDM) strategies to be employed.
 - c. Developments proposing to exceed minimum parking requirements by 10% or more must demonstrate through a parking study that the amount of parking is appropriate for the proposed use of the site.
 - d. Parking spaces and aisles shall meet applicable dimensional standards as detailed in the transportation systems and street design standards of the *Technical Manual*.
2. *Bicycle parking*
 - a. All development shall provide secure bicycle parking in accordance with the parking requirements of this Land Use Code and the transportation systems and street design standards of the *Technical Manual*.
 - b. Waiver: The review authority may reduce the required number of bicycle parking spaces if it is determined, based on evidence submitted by the applicant, that the proposed development is expected to generate reduced demand for bicycle parking due to particular site characteristics or proposed uses.



3. *Snow storage*
 - a. All developments shall include areas for snow storage or provide an acceptable snow removal plan.
 - b. Snow storage areas may not encroach on areas designed to meet minimum parking requirements or on pedestrian walkways and shall not be located where they would adversely impact the functionality of stormwater management systems. Landscaping in designated snow storage areas shall be such that it can withstand the snow pile.
4. *Electric Vehicle (EV) charging*
 - a. All development shall adhere to applicable EV standards as provided in Section 1 of the *Technical Manual*.

E. Transportation Demand Management (TDM)

1. The following types of development shall design and implement a Transportation Demand Management (TDM) plan:
 - a. All major site plan triggering development in the B-7 zone.
 - b. All commercial, institutional, or mixed-use developments of 50,000 square feet or more total floor area.
 - c. All commercial or institutional uses designed to accommodate 100 or more employees or, for educational institutions, 100 or more students.
2. The TDM Plan shall comply with the transportation systems and street design standards of the *Technical Manual*.

14.6.2 Environmental quality standards

A. Preservation of significant natural features

1. All development shall preserve and protect significant natural features by incorporating them into site design. Significant natural features shall be defined as:
 - a. Populations of trees and plants listed on the Official List of Endangered and Threatened Plants in Maine, published by the Maine Natural Areas Program.
 - b. Habitat for species appearing on the official state or federal list of endangered or threatened animal species.
 - c. High and moderate value waterfowl and wading bird habitat including nesting and feeding areas, as defined by the Department of Inland Fisheries and Wildlife.
 - d. Aquifers on islands in Casco Bay, as identified in the City of Portland Island Groundwater Management Study and/or by the Maine Geological Survey.
 - e. Waterbodies including wetlands, watercourses, significant vernal pools and floodplains.
2. Where areas set aside for preservation are part of a larger existing habitat block extending beyond the boundaries of the site, the contiguity of these features shall be preserved where possible.
3. Waiver: Where complete preservation of significant natural features substantially compromises development of the site as otherwise permitted by zoning, the review authority may reduce the requirement to



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accommodate development provided that the applicant demonstrates compliance with applicable state and federal regulations and implements preservation measures to the extent practicable.

B. Landscape preservation

1. Site development shall be designed to incorporate, limit disturbance to, and limit removal of existing trees.
2. The site plan shall include adequate measures to protect vegetation to be preserved from construction impacts, in accordance with the landscaping and landscape preservation standards of the *Technical Manual*.
3. All development subject to zoning setbacks shall preserve a minimum of 30% of existing trees 10 inches DBH or greater within the required setback area unless trees are non-native invasive species, as identified in the landscaping and landscape preservation standards of the *Technical Manual*, or are deemed unsalvageable by the Portland City Arborist or their designee.
4. Waiver: Where the applicant can demonstrate that preservation of existing vegetation would compromise development of the site, the review authority may permit the substitution of landscaping in other areas of the site as described in Table 14-D and/or a financial contribution to the City of Portland Tree Fund for an amount proportionate to the cost of trees removed. Replacement trees shall be of a species identified on the City of Portland Recommended Tree List as described in the landscaping and

TABLE 14-D: TREE REPLACEMENT REQUIREMENTS

Size of Tree Removed	Replacement Requirement
10 – 16” DBH	1 tree
> 16” DBH	2 trees

landscape preservation standards of the *Technical Manual*.

5. Where the planting of replacement trees on the site is not feasible, the applicant shall contribute an amount proportionate to the cost of required replacement trees to the City of Portland Tree Fund, as described in the Landscaping and landscape preservation standards of the *Technical Manual*.

C. Site landscaping and buffers

1. *Landscaping.* All development subject to required zoning setbacks shall include a minimum of one shade tree or six plantings per 30 linear feet of all frontages as measured along the property line. A planting shall be defined as one shrub, one ornamental grass, and/or three perennials. Required plantings may be installed anywhere on the site, including a green roof, if proposed, and may be planted in any arrangement. Existing vegetation to be preserved on the site may be counted towards this requirement as described in the landscaping and landscape preservation standards of the *Technical Manual*.
2. *Buffers*
 - a. Loading and servicing areas, trash and recycling areas, storage areas, and roof- and ground-mounted utility structures, except for renewable energy systems, shall be screened



- from view from public sidewalks, streets and adjacent properties by dense evergreen landscaping, fencing, architectural screening products, masonry walls, building walls, or a combination thereof.
- b. For nonresidential development abutting a residential zone, an evergreen, densely landscaped buffer of not less than 10 feet wide and six feet tall is required along the side abutting the residential zone. Where site constraints prevent such a buffer from being established, the width of the landscaped buffer may be reduced but shall include architectural fencing of not less than six feet tall and a mix of evergreen and deciduous trees spaced no further than 20 feet apart abutting the residential zone.
 - c. All residential development shall provide and/or preserve evergreen vegetated buffers where necessary to buffer the development from detrimental impacts of existing surrounding development.
3. *Parking and vehicle display lot landscaping*
 - a. Developments shall include at least two trees (or one tree and three shrubs) per five parking spaces planted in landscaped islands to screen, shade, and break up parking. Trees and shrubs in parking lots may be in informal groups, straight rows, or concentrated in clusters as described in the landscaping and landscape preservation standards of the *Technical Manual*.
 - b. Landscaped islands shall be distributed so that uninterrupted pavement does not exceed forty parking spaces.
 - c. Where site constraints prevent implementation of all or a portion of required parking lot landscaping, as determined by the review authority, the requirements may be all or partially waived and the applicant shall contribute an amount proportionate to the cost of required parking lot trees to the City of Portland Tree Fund.
 4. *Street trees*
 - a. All development shall include street trees in numbers and locations as specified in the Landscaping and landscape preservation standards of the *Technical Manual*. Street trees are intended to benefit public spaces by providing green and natural elements that contribute to the streetscape and the urban forest ecosystem, provide health benefits, and increase the tree canopy to maximize shade and reduce energy use. Street trees shall be of a species identified on the City of Portland Recommended Tree List, unless otherwise approved by the City Arborist or his/her designee. The provision of measures to enhance tree survival (such as raised planters, irrigation, and structural soils as recommended by the City Arborist) shall be required.
 - b. Where the applicant can demonstrate that site constraints prevent the

planting of required street trees in the city right-of-way, the review authority may permit the following to be counted towards the street tree requirement, subject to the standards set out in the *Technical Manual*:

- i. The preservation of existing healthy trees that are six inches or more DBH, on the site within twenty feet of the property line, and visible from the right-of-way.
- ii. The planting of street trees on the site within 20 feet of the property line where visible from the right-of-way.
- iii. The installation of other planted features in the right-of-way or within 10 feet of the right-of-way and visible from the right-of-way, which are documented to the satisfaction of the City Arborist and Planning Authority to meet the objectives of the street tree requirement.
- iv. The planting of new street trees on public land or public facilities in the neighborhood where a reasonable chance of good health and longevity is documented.
- v. Where other alternatives are not feasible, a contribution for each required street tree made to the City of Portland's Tree Fund. The contribution would primarily be for new trees in the neighborhood of the development, but would include an element of maintenance.
- vi. Where the proposed development includes the removal of an existing street tree determined by the City Arborist to be a heritage or feature tree, the applicant shall be required to contribute to the Tree Fund at the designated rate in the *Technical Manual* so that the total replacement cost is significantly higher than planting a new street tree/contributing for a new street tree.

D. Water quality, stormwater management, and erosion control

1. All development shall be designed to minimize total area of impervious surface on the site and both the volume and rate of runoff from the lot. Provisions for stormwater management shall demonstrate the following:
 - a. Any stormwater draining onto or across the lot in its pre-improvement state will not be impeded or re-directed so as to create ponding on, or flooding of, adjacent lots.
 - b. Any increase in volume or rate of stormwater draining from the lot onto an adjacent lot or City property following the improvement can be handled on the adjacent lot or City property without creating ponding, flooding or other drainage problems and that the owner of the lot being improved has the legal right to increase the flow of stormwater onto the adjacent lot or City property.



- c. Any increase in volume or rate of stormwater draining from the lot into the City's separated storm sewer system can be accommodated in the system without creating downstream problems or exceeding the capacity of the storm sewer system.
2. All development shall comply with the Stormwater management standards of the *Technical Manual*.
3. Development shall not pose a risk of groundwater contamination either during or post-construction, as described in the stormwater management and water supply standards of the *Technical Manual*.
- b. Access control that promotes authorized and/or appropriate access to the site.
 - c. Territorial reinforcement that promotes a sense of ownership and responsibility through environmental design.
2. All developments shall be designed to provide adequate emergency vehicle access to the site and comply with the Public Safety standards of the *Technical Manual*.

C. Public utilities

14.6.3 Public infrastructure and community safety standards

A. Consistency with City master plans

1. All developments shall be designed so as to be consistent with City Council-approved master plans and facilities plans and with off-premises infrastructure.
2. The site plan shall include suitable easements, rights, and improvements to connect or continue off-premises public infrastructure as may be required by the review authority.

B. Public safety and fire prevention

1. All development shall incorporate the following public safety principles for Crime Prevention through Environmental Design (CPTED) into site design to enhance the security of public and private spaces and to reduce the potential for crime:
 - a. Natural surveillance that promotes visibility of public spaces and areas.

1. The development shall not overburden sanitary sewers and storm drains, water lines or supply, or other public infrastructure and utilities. Development shall provide adequate utility infrastructure on-site and in connection to surrounding locations and facilities.
2. Electrical service shall be underground unless otherwise specified for industrial uses, or if it is determined to be unfeasible due to extreme cost, the need to retrofit properties not owned by the applicant or complexity of revising existing overhead facilities.
3. All sanitary sewer lines, storm drains, water lines, and other utilities proposed as part of the development shall be designed to conform with the sanitary sewer and storm drain and water supply standards of the *Technical Manual*.
4. All development within 200 feet of a public sanitary collection and treatment system shall connect sanitary sewer lines into the nearest available public sewer. If a public sanitary collection and treatment system is

not available, a private wastewater system may be used according to the requirements of Chapter 24 of the City Code and the sanitary sewer and storm drain standards of the *Technical Manual*.

5. All residential development of 20 units or more, commercial development, and industrial development shall provide for the temporary storage and timely removal of all trash and recyclable materials including, at a minimum, paper, corrugated cardboard, plastics, and metals. Storage containers for recyclable materials shall be separated from trash containers. All exterior storage of trash and recyclables shall be screened from view from public sidewalks, streets, and adjacent properties.

14.6.4 Site design standards

A. Massing, ventilation, and wind impact

1. The bulk, location, or height of proposed buildings and structures shall not result in health or safety problems from a reduction in ventilation to abutting structures or changes to the existing wind climate that would result in unsafe wind conditions for users of the site and/or adjacent public spaces.
2. The bulk, location, or height of proposed buildings and structure shall minimize, to the extent feasible, any substantial diminution in the value or utility to neighboring structures under different ownership and not subject to a legal servitude in favor of the site being developed.
3. Development shall locate all HVAC venting mechanisms to direct exhaust away from

public spaces and residential properties directly adjacent to the site.

- B. **Shadow.** All development outside the B-3, B-5, B-6 and B-7 zones shall be designed to avoid and/or mitigate the adverse impacts of shadows cast by new structures or building additions from falling on publicly accessible open space in accordance with the shadow standards of the *Technical Manual*.

- C. **Snow and ice loading.** All development shall be designed to prevent significant amounts of accumulated snow and ice from loading or falling onto adjacent properties or public ways.

- D. **View corridors.** The massing, location, and height of development shall not substantially obstruct public view corridors identified in the *Downtown Vision View Corridor Protection Plan*.

E. Historic resources

1. When developments affect designated landmarks or lie within designated historic districts or historic landscape districts, such development shall be required to obtain a Certificate of Appropriateness under Article 17.
2. When any part of a proposed development is within 100 feet of any designated landmark, historic district, except the India Street Historic District, or historic landscape district, such development shall be generally compatible with the major character-defining elements of the landmark or portion of the district in the immediate vicinity of the proposed development. Character-defining elements of landmarks and historic districts are identified in the historic resources inventory and respective historic district



designation reports. For the purposes of this provision, “compatible” design shall be defined as design which respects the established building patterns and visual characteristics that exist in a given setting and, at the same time, is a distinct product of its own time. To aid the review authority in its deliberations, Historic Preservation staff shall provide a written analysis of the proposed development’s immediate context, identifying the major character-defining elements and any established building patterns that characterize the context.

3. All development shall document and protect state or local archaeological resources known to exist or discovered on the site.
 - a. Protection shall include leaving archaeological resources untouched beneath a new development through adaptation of foundation design or architectural layout.
 - b. Where the applicant can demonstrate that complete protection is not feasible, the applicant shall excavate and document archeological resources. Such measures shall be conducted in consultation with the City’s historic preservation program and Maine Historic Preservation Commission. For resources of state significance, excavation and documentation shall be conducted by a qualified professional, in coordination with Maine Historic Preservation Commission. Local archeological resources may or may

not be recognized by the Maine Historic Preservation Commission as significant and shall include the following:

- i. Original seawall structure located landward of Commercial Street.
 - ii. Inactive historic family cemetery plots.
 - iii. Historic railroad beds including but not limited to the Portland-Lewiston interurban railroad.
 - iv. Original structure and/or landforms associated with the Cumberland and Oxford Canal.
 - v. Buried portions of colonial and post-colonial period structures or built features located on the Portland Peninsula predating the Great Fire of 1866.
 - vi. Pre-colonial occupation sites identified by shell middens or other evidence.
 - vii. Sites listed or eligible for listing on the National Register of Historic Places.
- c. In order to preserve archeological resources, the review authority may waive standards listed in the City of Portland *Technical Manual* where necessary if it is determined that such a waiver would not jeopardize the health, safety, or welfare of the development’s occupants, the public, or the natural environment.

F. Exterior lighting

1. *Site lighting*

- a. All exterior site lighting shall be full cutoff with no light emitted above the horizontal plane or spilled onto adjacent properties and streets. Illumination levels shall be adequate but not excessive for the safety, comfort, and convenience of occupants and users of the site, and shall conform to the lighting standards of the *Technical Manual*.
- b. Where light from a proposed development may adversely impact adjacent residential properties, exterior lighting shall employ house-side shielding.

2. *Architectural and specialty lighting*

- a. Architectural and specialty lighting of such features as architectural details, monuments, public art, or other site features shall be designed to illuminate specific details or attributes only and shall meet the lighting standards of the *Technical Manual*.
- b. Up-lighting by any method is prohibited except for public buildings and parklands; clock towers and steeples; landscape features; designated historic landmarks; flags of state, federal, or national jurisdictions; and public art. Such light fixtures, brackets, conduits, and all other components shall be designed by a lighting professional and shall be scaled and placed to minimize their visibility and installed in accordance

with the lighting standards of the *Technical Manual*.

3. *Street lighting*. All development shall provide municipal street lighting adequate for the safety and comfort of pedestrians and motorists and, where applicable, conforming to specific lighting district requirements as specified in the street lighting standards of the *Technical Manual*.

G. Noise and vibration. All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment shall meet applicable state and federal emissions requirements and shall be located to the interior of the site, away from abutting residential properties

H. Signage and wayfinding

1. The size, scale, proportions, design, materials, placement, and source and intensity of illumination of all permanent building or freestanding signs shall be designed to complement the subject building and its immediate context, as follows:
 - a. Signage shall not conceal architectural features such as window sills, lintels or cornices from view.
 - b. Signs shall be designed and sized to fit the scale and proportions of the building and the feature or area of the building to which it is affixed.
 - c. Freestanding signs shall not adversely affect visibility at intersections or access drives.
 - d. Sign lighting shall be downwardly directed, internally-illuminated and/or



shielded to avoid glare and light spillover towards the sky.

- e. Signs shall not be affixed to rooftop mechanicals, mechanical penthouses or other rooftop appurtenances unless those appurtenances have been screened and integrated into the architecture of the development.
2. On-site directional traffic signage may be provided to enable users to safely and easily navigate into, around and out of the site. Directional signage shall not adversely affect visibility at intersections on or off the site.

I. Design standards

1. Development of certain types and/or proposed in certain zones, as specified below, are subject to the design standards of the City of Portland *Design Manual* in order to ensure that building and site design contribute to and enhance the goals and policies for specific zones within the City. The City of Portland design standards are listed in the City of Portland *Design Manual*, which is incorporated by reference as part of the City of Portland Land Use Code. If the development is located in a historic district or associated with a historic landmark, City of Portland Historic Preservation standards shall supersede:
 - a. Development in the B-3, B-5, B-5b, and B-7 zones and in the B-6 and EWPZ zones shall be designed to support the development of dense, mixed-use neighborhoods with attractive, safe, and convenient street-level pedestrian environments. New development along the Eastern Waterfront should avoid large monolithic massing along all street frontages and should promote permeability through and within the development at a scale compatible with the existing street networks of the Eastern Waterfront. Where new structures are larger than buildings characteristically found in Portland's waterfront, horizontal and vertical variation should be used to break large expanses of building into components that are in scale with the context to which they most closely relate.
 - b. Development in the R-P Residential Professional Zone, where there is a discernable architectural style or character to existing structures in the immediate vicinity in which the development is proposed, shall not be incongruous to that established style or character.
 - c. Development in the B-1/B-1b, B-2, and B-2b zones shall provide an established street wall with entrances and public portions of the building oriented to and directly accessible from the public sidewalk and shall be designed and scaled to be compatible with surrounding residential and commercial development.
 - d. Development in the University of Southern Maine (USM) Overlay Zone shall be designed to support a cohesive campus environment that integrates with and respects the residential character of surrounding neighborhoods.

- e. Residential developments, as listed below, shall integrate with and respect the character of surrounding residential development in terms of architectural form, landscaping and open space, façade materials, roof pitch, massing, and height.
 - i. Planned Residential Unit Developments (PRUDS) in the R-3, R-5, and R-5a residential zones.
 - ii. Multiple family and multiplex developments in the R-5 zone.
 - iii. Small residential lot development of single-family homes in the R-5 zone.
 - iv. All residential development in the R-6 zone.
 - v. Residential development of the following types: manufactured housing parks, two-family and multiple family housing not already specified above, special needs independent dwelling units, lodging houses, bed and breakfasts, and emergency shelters.

14.7 MASTER DEVELOPMENT PLAN REVIEW STANDARDS

The Planning Board shall not approve a master development plan unless the development proposal meets the review standards below.

14.7.1 In general

- A. Integration with the surrounding context.** A master development plan shall be designed to integrate with the surrounding context with respect to land use, architecture, open space

and pedestrian networks, vehicular access and circulation, off-site public facilities and all other infrastructure.

- B. Consistency with City plans.** A master development plan shall be consistent with the objectives of this ordinance, consistent with the City's Comprehensive Plan, and consistent with City Council-approved master plans and facility plans for off-premise infrastructure.

14.7.2 Natural features and open space

- A. Preservation of natural features.** A master development plan shall locate buildings and improvements in a manner that considers the existing topography, provides usable open space, preserves significant natural features as defined in Subsection 14.6.2, and preserves existing trees to the maximum extent possible.
- B. Provisions for open space.** A master plan shall include provisions for the ownership and maintenance of usable open space as appropriate

14.7.3 Historic Preservation

- A.** A master development plan shall be developed so as to conform with standards for designated landmarks or for properties within designated historic districts or historic landscape districts as found in Article 17.
- B.** When proposed adjacent to or within 100 feet of a designated landmark, historic district, or historic landscape, the master development plan shall be developed so as to be generally compatible with the major character-defining elements of the landmark or portion of the district in the immediate vicinity of the proposed development.



14.7.4 Infrastructure

- A. **Adequacy of infrastructure capacity.** A master development plan shall be designed with sizing of street and other infrastructure systems to accommodate the overall service demand of the plan.
- B. **Continuation of street grid.** A master development plan shall be designed to create a street grid pattern that reflects average city block sizes of the surrounding neighborhood.

14.7.5 Design

- A. **Creation of a cohesive identity.** A master development plan shall be designed to create a cohesive identity through building scale, massing, and articulation; use of quality exterior materials and architectural detailing at pedestrian scale; consistency of design and materials for streetscape and pedestrian amenities; framing of outdoor open space and linkages; a clear conveyance of the function and significance of various buildings, entrances, and features; and to generally comply with design and development standards of the zone in which it is located.

14.8 WAIVERS

14.8.1 Waiver requests

An applicant may request a waiver with respect to the submittal requirements or review standards of this article. If a waiver is requested, the applicant shall document the rationale for the waiver request within the application.

14.8.2 Waiver criteria

Except for where waiver criteria are provided for individual review standards, the review authority, if it finds that extraordinary conditions exist or that

undue hardship may result from strict compliance with the submittal requirements or review standards of this article, may vary these regulations so that substantial justice may be done and the public interest secured, provided that such variation will not have the effect of nullifying the intent of this article.

14.9 PHASING

14.9.1 Site plan

A major site plan may be divided into up to three phases. Each phase must be at least 20% of the total development and in addition, show the entire tract or parcel. Each phase of such project shall be independent of subsequent phases and shall conform to all standards of this article in the event that subsequent phases do not go forward.

14.9.2 Master development plan

An applicant proposing a master development plan is seeking approval for an overall concept of development that may subsequently be brought for site plan approval in two or more phases and in a phase sequence that extends beyond the timeframes allowed for site plan approvals. Site plans for each phase of a master development plan shall generally conform with the master development plan. For areas proposed as future development phases, the proposed interim conditions shall be managed and maintained to ensure stable, safe, and attractive site conditions. One or more phases of the master development plan may be reviewed as a site plan concurrently with the review and approval of the master development plan.

14.10 CONDITIONS OF APPROVAL

Notwithstanding the review standards of this article, the review authority may impose any condition upon its approval of any site plan or master development plan to minimize or abate any adverse impact of the proposed development on the value or utility of other private property, or public property or facilities, to the extent feasible; to bring the development into compliance with the review standards of this article; or to minimize any other adverse environmental effects of the proposed development.

14.11 POST-APPROVAL PROCEDURES

14.11.1 Advanced site work

No alterations shall be made to a site with a pending or approved site plan until:

- A.** The performance guarantee has been posted and final site plans have been submitted to the Planning Authority.
- B.** Written permission has been received from the Planning Authority. Such permission shall be granted only after submission of a written request describing the proposed scope of work to be conducted on the site and a determination by the Planning Authority that the request is reasonable, time is imperative, and the work will not compromise any aspect of the ensuing review process. All such work shall be done in compliance with information provided with the site plan application including, but not limited to, an erosion control plan. Such written permission shall not be required if the only work proposed is the digging of test pits.

14.11.2 Final plans

Following final site plan approval and prior to issuance of any building permit, the developer shall submit final plans meeting all the conditions of the site plan approval, including without limitation all streets, sewers, drainage structures, and landscaping. Thereafter, limited and minor departures from the approved site plan shall be approved by the Public Works Authority and/or Planning Authority as field changes pursuant to Section 14.14. Amendments or revisions to the approved site plan shall be reviewed by the Planning Authority pursuant to Section 14.14.

14.11.3 Performance and defect guarantees

The following performance and defect guarantee requirements shall apply:

- A. Performance guarantee required.** Following approval of site plan applications and prior to the issuance of a building permit, the developer shall post with the City a performance guarantee in the form and amount specified herein, specifying the completion of the required site plan improvements within two years from the origination date of such guarantee. In no case shall the term of such guarantee be for a period of less than one year, nor shall any performance guarantee expire between October 20 and April 15 of the following year.
- B. Inspection fees.** At the same time that the developer posts a performance guarantee, the developer shall also pay to the City an inspection fee as determined by the City Council. If a performance guarantee is extended beyond its original expiration date, then an additional inspection fee in an amount to be determined by the City shall be required.



C. Minor residential development. All minor residential development, which for the purposes of this section shall be defined as single- or two-family development and any associated site improvements, is exempt from performance guarantee requirements except when those projects complete construction in the winter, and site work is incomplete due to weather conditions. A performance guarantee will then be required that is sufficient to complete the remaining site work as approved on the site plan. The performance guarantee must be reviewed and approved by the Planning Authority prior to the release of a certificate of occupancy. All minor residential development is subject to inspection fees, as specified herein.

D. Performance guarantee amount

1. The performance guarantee shall be equal in value to 100% of the estimated cost of the required site improvements as shown on the approved site plans, as a condition of planning approval, as required in the City of Portland Code of Ordinances, and/or as required by the City of Portland *Technical Manual*.
2. The performance guarantee amount shall be estimated by the applicant or representative using the cost estimate spreadsheet provided by the City and shall be submitted for review and approval to the Planning Authority. Costs to be included in the estimate, and which shall be covered by the performance guarantee, include but are not limited to: street and sidewalk improvements including street lights, monuments, curbing, ramps and detectable warning panels, and striping;

earth work and grading; utilities infrastructure and connections including sewer, stormwater, and water service; exterior site lighting; erosion control measures as shown on the approved erosion and sedimentation control plan; open space and recreation amenities; and final site stabilization and landscaping.

3. The Planning Authority may waive all or any portion of this requirement if it determines that the developer has a proven record of satisfactory performance and sufficient financial capability.

E. Phased projects. If a project is reviewed and approved as a phased project, the corresponding performance guarantee may also be phased. A separate performance guarantee shall be posted for each phase. Each phase of such project shall be independent of subsequent phases and shall conform to all standards of this article in the event that subsequent phases do not go forward.

F. Advanced site work

1. No public utility, water district, sanitary district or any utility company of any kind shall install services to any lot in a subdivision which has not received Planning Board approval.
2. On a case-by-case basis, permission for advanced site work may be granted by the Director of Planning and Urban Development. Such permission is solely within the discretion of the Director of Planning and Urban Development and shall be granted only after submission of a written request setting forth the work proposed to be done on the site. Such written permission shall not be required

when the only work proposed is the digging of test pits.

G. Acceptable forms of performance guarantee.

The performance guarantee, in the amount approved by the Planning Authority, shall be a letter of credit, an escrow account with a responsible financial institution, or the deposit to the City of Portland Finance Department and shall be in conformance with the templates and forms made available by the City. If the performance guarantee is a deposit to the City, the City shall hold such funds in a noninterest bearing account until criteria for performance guarantee release have been satisfied. The performance guarantee shall be in the name of the City and shall be approved by the finance director as to financial sufficiency and the corporation counsel as to proper form and legal sufficiency.

H. Performance guarantee reductions.

1. Up to three times during the construction of a project, upon request of the developer, a performance guarantee may be reduced by the value equal to the estimated cost of the completed improvements. In no case shall any performance guarantee be reduced by any line item on the cost estimate spreadsheet where improvements remain to be completed. Requests shall be submitted on the cost estimate spreadsheet for review and approval by the Planning Authority.
2. In no case shall any performance guarantee be reduced to an amount equal to or less than the required defect guarantee until all criteria set forth for converting to the defect guarantee have

been met, as approved by the Planning Authority.

- I. **Extension of the performance guarantee.** If the Planning Authority and/or the Public Works Authority has reasonable doubt concerning the stability or proper construction of the required site improvements, the developer shall be required to reconstruct or otherwise address the issues to the City's satisfaction. If the performance guarantee is scheduled to expire before the extent or necessity for such further work can be determined, the developer shall be required to extend the performance guarantee covering such improvements, or secure a new guarantee, for a period and amount deemed necessary by the Planning Authority and/or the Public Works Authority.

J. Performance guarantee release/conversion to defect guarantee.

1. No performance guarantee shall be released until all fees generated by the project are paid to the City, including but not limited to engineering, inspection, and administrative fees. The guarantor shall not be released from the guarantee except and until authorized in writing by the Planning Authority.
2. For roadway extension projects, no performance guarantee shall be released until the Department of Public Works has performed a final inspection of the roadway and determined satisfactory completion of the required improvements. Additionally, no performance guarantee shall be released until the City in receipt of a petition for street acceptance, deemed complete and satisfactory by Corporation Counsel and/or the Department of Public



- Works. The petition for street acceptance must include a warranty deed (with metes and bounds description) to the property within each street of the subdivision or roadway extension and any other improvements intended for City maintenance.
3. Upon the satisfactory completion of the required site improvements and compliance with all conditions of approval including the submission of as-built drawings as applicable, the Planning Authority will authorize in writing, conversion to the defect guarantee. The defect guarantee shall be 10% of the original performance guarantee amount and shall remain in place for a period of one year. The defect guarantee shall ensure the workmanship and the durability of all materials used in the construction of the required site improvements. The Planning Authority may authorize the defect guarantee to be released at any time within the one-year period, provided all required site improvements have been constructed and in-place for one year or more and the workmanship and the durability of all materials has been inspected and confirmed to be satisfactory.
- K. **Acceptable forms of defect guarantee.** The defect guarantee, 10% of the original performance guarantee amount approved by the Planning Department, shall be a letter of credit, an escrow account with a responsible financial institution, or the deposit to the City of Portland finance department and shall be in conformance with the templates and forms made available by the City. If the defect guarantee is a deposit to the City, the City shall hold such funds in a noninterest bearing account until the criteria for performance guarantee release have been satisfied. The performance guarantee shall be in the name of the City and shall be approved by the finance director as to financial sufficiency and the corporation counsel as to proper form and legal sufficiency.
- L. **Abandoned site.** In the event that a development site is abandoned or the site improvements do not meet City standards as approved in the site plan, the performance guarantee may be utilized to stabilize, secure, complete construction, and/or restore the site as may be necessary, including, but not limited to, revegetation of areas, grading, and fencing.
- 14.11.4 Inspection fee**
- At the same time that the developer posts a performance guarantee, the developer shall also pay to the City a site plan improvement inspection fee equal to two percent of the estimated costs of required site improvements for which a performance guarantee is to be posted. At the conclusion of the project, and before a temporary or permanent certificate of occupancy is issued, the developer shall pay to the City the balance of any inspection fees actually incurred by the City in its review of the project.
- 14.11.5 As-built plans**
- Upon completion of a development (excluding minor residential and low-impact site development as specified in Section 16 of the *Technical Manual*), the applicant shall submit the as-built plans as specified in the *Technical Manual*.

14.11.6 Certificates of occupancy

No certificate of occupancy shall be issued to any portion of development where, in the opinion of the Planning Authority, the site conditions or work required to complete the development will endanger the health or safety of persons visiting or inhabiting the completed portion. Certificates of occupancy may be granted as follows:

A. Temporary certificates of occupancy

1. Notwithstanding any other provision of the Land Use Code, a certificate of occupancy may be issued for a development or portion of a development which has otherwise been completed in accordance with final site plan approval and all applicable provisions of this Land Use Code where the applicant submits a written request to the Planning Authority stating those improvements which remain to be completed, the reasons why such improvements have not been completed, and the cost and time to complete the remaining work. In no event shall any temporary or permanent certificate of occupancy be issued where:
 - a. Conditions exist which would justify denial of a certificate of occupancy under Chapter 6 of the City of Portland Code of Ordinances.
 - b. Required improvements to the City right-of-way remain to be completed by the developer.
 - c. All access roads and any other roads and driveways required for the building or building(s) for which the certificate(s) are requested have not been improved to a passable condition.
 - d. A remaining balance for fees incurred by the City exists.
 - e. The developer otherwise is in violation of the City Code of Ordinances.
2. Where a temporary certificate of occupancy is sought for a portion of any development prior to the completion of the entire development, the following standards shall be met, in addition to all applicable requirements set forth above, prior to the issuance of any certificate of occupancy:
 - a. Those parking areas required for the portion of the development for which a certificate of occupancy is sought shall be available for use. Alternative arrangements must be made on-site for parking for any periods during which such parking areas will not be available for use.
 - b. All foundation plantings and other landscaping required for the portion of a development for which a certificate of occupancy is sought shall be installed prior to the issuance of a certificate of occupancy. This requirement may only be waived where, in the opinion of the Public Works Authority, landscaping improvements cannot practically be completed due to seasonal weather conditions.
 - c. A performance guarantee shall be in place and in an amount sufficient to cover all remaining required improvements and not less than 10% of the initial performance guarantee amount.



- B. Final certificate of occupancy.** All improvements which are not completed prior to the issuance of any temporary certificate of occupancy must be completed prior to the completion date specified in the performance guarantee or in the temporary certificate of occupancy, whichever occurs first, in order for a final certificate of occupancy to be issued by the City. Where any person accepts a temporary certificate of occupancy and does not complete the improvements as specified in the certificate, the City is authorized to enter upon such property itself or through its agents or contractors to complete such improvements with no liability therefore and may recover the costs thereof through the mechanic's lien procedure for the improvement of real property to the extent that the performance guarantee may be inadequate.

14.12 EXPIRATION OF APPROVALS

14.12.1 Site plan

Site plans approved under this article shall expire 12 months from the date of approval unless development has been undertaken in accordance with the approved site plan and site work or building construction is ongoing. Any lapse in construction for a period in excess of 12 months shall result in an expiration of the site plan.

14.12.2 Master development plan

Master development plans approved under this article shall expire six years from the date of approval if no site work or building construction has commenced.

14.13 EXTENSION OF APPROVALS

14.13.1 In general

Extension requests must be made in writing by the applicant prior to the expiration of the approval. An extension may not be granted if changes to the City's zoning, subdivision, or site plan ordinance, the *Technical Manual* or the *Design Manual* would render the development nonconforming in any respect or significantly impact the approved site plan or master development plan as determined by the Planning Authority.

14.13.2 In case of appeal

Where the approval or any related land use approval granted to the same applicant by any agency of the City with respect to the same development is appealed to any court by an opponent of the development, the applicant shall be granted extensions, beyond the expiration of said approval, where the applicant has exercised due diligence with respect to defending such appeal, which extensions shall not last beyond one year from entry of final judgment.

14.13.3 Site plan

Site plan approvals may be extended by the Planning Authority for up to three years from the date of approval.

14.13.4 Master development plan

Master development plan approvals may be extended by the Planning Authority up to two times, for up to two years from the date of expiration of the original master development plan approval.

14.14 AMENDMENTS TO APPROVED PLANS

14.14.1 Field changes

Changes associated with unforeseen difficulties that arise during the course of construction and involving such technical detail as utility location and substitution of equivalent plantings shall be approved by the Public Works Authority and/or the Planning Authority. Field changes shall not involve substantial alteration of the approved plan or conditions imposed by the review authority.

14.14.2 Minor amendments

The Planning Authority is authorized to approve minor amendments to site plans and master development plans. An applicant may request a minor amendment to an approved site plan or master development plan by submitting a written statement of the proposed amendments and proposed amended plans to the Planning Authority. Minor amendments:

- A. Are generally consistent with the approved plan.
- B. Do not impact the layout of buildings and open space.
- C. Do not propose new uses.
- D. Do not increase building ground coverage, floor area ratio, or residential density.
- E. Do not substantially change access, circulation, or infrastructure on or adjacent to the site.
- F. Do not involve new waiver requests.
- G. Do not affect any condition or requirement of the Planning Board.

14.14.3 Major amendments

An applicant may request approval by the review authority of a major amendment to an approved site plan or master development plan by submitting an application for the amendment to the Planning

Authority. Major amendments include changes that exceed the limited criteria for a minor amendment under Subsection 14.14.2. Review procedures shall follow those for major site plan review.

14.15 CONSISTENCY WITH APPROVED SITE PLANS

A. Sites shall be developed and maintained as depicted in the approved final site plan and the written submission of the applicant. Any deviations from an approved site plan, including, but not limited to, changes in topography, vegetation and impervious surfaces as shown on the final site plan or alteration of a parcel which was the subject of site plan approval after May 20, 1974, shall require the prior approval of a revised site plan by the Planning Board or the Planning Authority pursuant to the terms of this article. Any such parcel lawfully altered prior to the enactment date of these revisions shall not be further altered without approval as provided herein. Modification or alteration shall mean and include any deviations from the approved site plan including, but not limited to, topography, vegetation, and impervious surfaces shown on the site plan.

B. All construction or alterations to the site performed under authorization of building permits or certificates of occupancy issued for development within the scope of this Land Use Code shall be in conformance with the approved final site plan or an amendment thereto under Section 14.14. The Planning Authority shall institute or cause to be instituted any and all actions, legal or equitable, that may be appropriate or necessary for the enforcement of this article.



- C. Where work is required pursuant to the terms of Chapters 24 or 25 as part of an approval granted under this article, such work shall be accomplished in the sequence established by the Public Works Authority. Where the Public Works Authority determines that work has been completed prior to the receipt of all approvals required by this article or which is out of sequence or is not in compliance with the standards of Chapters 24 and 25 of the City of Portland Code of Ordinances, a stop work order may be issued. Work shall recommence only after such order has been lifted by the Department of Public Works or the Building Authority on the basis of an approved mitigation plan or action by the developer.
- D. Where construction, alteration, or modification to a site is performed without a valid site plan approval, an after-the-fact review shall be performed by the Planning Board or Planning Authority, as applicable.

of Civil Procedure and 30-A M.R.S §§ 2691 & 4483. Decisions of the Planning Board are final as of the date the written decision is issued.

14.16 APPEALS

14.16.1 Site plan

- A. When the Planning Authority has approved, approved with conditions, or disapproved a minor site plan, any person aggrieved may appeal the decision to the Planning Board within 30 calendar days of the date of the written decision of the Planning Authority. Upon the taking of such an appeal, the application shall be reviewed as a new application.
- B. When the Planning Board has approved, approved with conditions, or disapproved a major site plan, any person aggrieved or the City may appeal the decision to the Superior Court, pursuant to Rule 80B of the Maine Rules



15 SUBDIVISIONS

15.1 PURPOSE

This article is adopted pursuant to the terms and provisions of 30-A M.R.S. § 3001 and 4403, as amended. The purpose of this article is to provide for the harmonious and economic development of the city; for the orderly subdivision of land and its development; for the orderly development of the general area surrounding such subdivision; for the coordination of streets within the general area; for adequate provisions for drainage, flood control, light, air, and other public purposes; for the adequate and proper installation of streets, drainage, sanitary sewers, water, and other utilities and facilities; for the dedication to the City of land for streets, alleys, or other public purposes or the transfer to the City of easements or other rights or privileges; for the reservation for the City of land to be acquired for public facilities; and to protect public safety.

15.2 APPLICABILITY

15.2.1 Jurisdiction

- A.** This article shall govern each and every subdivision of land as defined under 30-A M.R.S. § 4401 and 4402 within the limits of the city unless specifically exempted under this article.
- B.** When application is made for the resubdividing of a previously recorded subdivision under the provisions of these regulations, it shall be treated as a new subdivision provided the applicant is the owner of rights in the recorded subdivision.

15.2.2 Enforcement, conveyance, markers, and recording

- A.** No person may sell, lease, develop or build upon, or convey for consideration, offer or agree to sell, lease, develop or build upon, or convey for consideration any land in a subdivision unless the subdivision has been approved by the Planning Board, and unless a recording plat showing permanent marker locations at all lot corners has been recorded in the county registry of deeds.
- B.** No subdivision plan shall be recorded by the registry of deeds which has not been approved as required by this article. Approval for the purpose of recording shall appear in writing on the recording plat.
- C.** No public utility, water district, sanitary district, or any utility company of any kind shall install services to any lot in a subdivision which has not received Planning Board approval.
- D.** Any person who sells, leases, develops or builds upon, or conveys for consideration any land in a subdivision which has not been approved as required by this article shall be punished by a fine of not more than \$500 for each such occurrence. The City may institute proceedings to enjoin any violation of this section.

15.3 REVIEW PROCEDURE

15.3.1 Application

To obtain approval of a proposed subdivision the subdivider or applicant shall submit an application to the Planning Authority in such form as prescribed by the Planning Authority. The application shall meet the submission requirements of the City of Portland *Technical Manual*, including the provisions for a subdivision plat for presentation to the Planning Board and public, all engineering data and

plans necessary for the completion of the required improvements, supplemental submission items, a recording plat, and written submittals demonstrating compliance with the review criteria of this article. A payment of a nonrefundable application fee, as established by the City Council to cover administrative costs and costs of a hearing, shall accompany each application.

15.3.2 Receipt of application notice

- A.** When an application for subdivision is received or generated by the Planning Authority, it shall give a dated receipt to the applicant and shall notify, by mail, the following, where applicable.
 - 1. All property owners within 500 feet of the proposed subdivision, except that for subdivisions within industrial zones, the notice range shall be 1,000 feet.
 - 2. The clerk and the reviewing authority of municipalities that abut or include any portion of a proposed subdivision.
 - 3. A public drinking water supplier if the subdivision is within its source water protection area.
- B.** The notice hereunder shall include a brief description of the application, the address or location of the property involved and a telephone number at the City where additional information may be obtained. The cost of noticing shall be charged to the applicant.

15.3.3 Neighborhood meeting

An applicant for the subdivision of five or more units or lots shall conduct a neighborhood meeting according to the provisions of Subsection 14.5.5.

15.3.4 Notice of public meeting

- A.** Prior to any Planning Board workshop or hearing on the subdivision application, the applicant shall be responsible for posting a notice of public meeting sign as specified by the Planning Authority on the property where the subdivision is to occur.
- B.** The sign shall be posted at least ten days prior to the public workshop or hearing date, and shall be removed from the site no more than three days following the date of the meeting.
- C.** Once the required notice of public meeting signage is posted, the applicant shall submit a completed certification of posting form to the Planning Authority.
- D.** In the event that a required notice of public meeting sign is knocked over or made illegible, it shall be the responsibility of the applicant to promptly reset or replace the sign, though failure to do so shall not invalidate the review.

15.3.5 Review costs

- A.** The subdivider shall pay a fee to cover the engineering review costs and administrative costs to be incurred by the City. The fee shall be based upon the actual hours of review time and prevailing hourly rate for reimbursement of City costs, and shall be invoiced periodically by the City.
- B.** No land use permits or applications of any kind shall be processed, reviewed, or issued, no signed subdivision plats shall be released or recorded, and no building permits of any kind shall be issued, for any project whose permit fee is governed by this article unless all charges due have been paid and the developer is otherwise in compliance with the City of Portland Code of Ordinances.



15.3.6 Timing of subdivision review

- A. Within 30 days of receiving an application, staff shall notify the applicant in writing either that the application is complete or, if it is determined to be incomplete, the specific additional materials needed to make it a complete application. After the review authority has determined that a complete application has been filed, it shall notify the applicant and begin its full evaluation of the proposed subdivision.
- B. A public hearing shall be commenced within 30 days following the receipt of a complete subdivision application by the review authority. The Planning Board shall render its decision on any application submitted to it within 30 days of a public hearing or such other time as may be mutually agreed to by the Planning Board and the applicant.

15.3.7 Subdivision approval

The Planning Board shall approve, approve conditionally, or disapprove such subdivision application at a public hearing. If approved conditionally, the conditions and reasons shall be stated and given in writing to the subdivider and, if necessary, the Planning Board may require the subdivider to submit a revised subdivision plat. If the Planning Board should disapprove the subdivision plat, the reasons for such action shall be stated and given in writing to the subdivider, and the board may state the conditions under which the proposed subdivision would be approved.

15.3.8 Effect of subdivision approval

Receipt of the approved copy of the subdivision plat of the subdivider is not authorization that the developer may proceed with the construction of

any improvements. No construction will proceed until the recording plat, meaning a completed subdivision plat in form for approval and recording, including all waivers and a surveyor's stamp, has been approved by the Planning Board and has been properly recorded as required in Subsections 15.3.9 and 15.3.10.

15.3.9 Recording plat approval

Consideration of the recording plat shall not take place until the subdivision plat is approved.

15.3.10 Recording

- A. Prior to the release of a signed, approved recording plat, all current charges due under this article shall be paid.
- B. When the recording plat, meeting the requirements of the City of Portland *Technical Manual*, is approved, the subdivider shall pay the actual cost of recording and reproduction.
- C. The recording plat shall be recorded in the office of the Cumberland County Registry of Deeds by the subdivider.
- D. The registry book and page numbers shall be transcribed on one mylar copy of the recording plat to be sent to the Public Works Authority. Unless the subdivider shall record his or her approved recording plat within three years after the Planning Board has approved the subdivision plat, the recording plat approval shall become null and void. The preceding sentence notwithstanding, if the Planning Board's initial approval of a subdivision is based in part upon the granting of a waiver from any of the applicable subdivision approval standards, no such waiver shall be valid unless that fact shall be expressly noted on the face of the recording plat and shall be noted in a



certificate, each of which shall conform to 30-A M.R.S. § 4406, and such recording plat or such certificate or both of them are recorded in the Cumberland County Registry of Deeds within two years of final subdivision approval.

15.3.11 Sectional recordings

Following subdivision plat approval, the Planning Board may permit the subdivision to be divided into two or more sections for recording purposes subject to any conditions that the board deems necessary in order to insure the orderly development of the plan. The applicant may seek approval of and record a sectional recording plat with the Cumberland County Registry of Deeds only if the section constitutes at least 20% of the total number of lots contained in the approval plat and, in addition, shows the entire tract or parcel. For the purposes of this article, tract or parcel shall mean all contiguous land in the same ownership, provided that lands located on opposite sides of a public or private road shall be considered each a separate tract or parcel of land unless such road was established by the owner of land on both sides thereof. In these circumstances, if the first section of the plat has been recorded within three years after Planning Board approval, subdivision plat approval of the remaining sections of the plat shall remain in effect for five years after Planning Board approval.

15.4 REVIEW STANDARDS

15.4.1 Standards of review

Before granting approval, the Planning Board shall determine that the proposed subdivision:

- A.** Will not result in undue water or air pollution.
In making this determination the Planning Board shall at least consider the elevation of

land above sea level and its relation to the flood plains, the nature of soils and subsoils and their ability to adequately support waste disposal, the slope of the land and its effect on effluents, the availability of streams for disposal of effluents, and the conformity to the applicable state and local health and water resources regulations.

- B.** Has sufficient water available for the reasonably foreseeable needs of the subdivision.
- C.** Will not cause unreasonable burden on an existing water supply.
- D.** Will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.
- E.** Will not cause unreasonable highway or public road congestion or unsafe conditions with respect to use of the highway or public roads existing or proposed.
- F.** Will provide for adequate sanitary waste and storm water disposal and will not cause an unreasonable burden on municipal services if they are utilized.
- G.** Will not cause an unreasonable burden on the ability of the City to dispose of solid waste and sewage if municipal services are to be utilized.
- H.** Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the Department of Inland Fisheries and Wildlife or by the City, rare and irreplaceable natural areas, or any public rights for physical or visual access to the shoreline. For subdivisions within local historic districts, the Planning Board shall apply the standards of Subsection 17.8.3(C). The Planning Board may request that the Historic Preservation Board



prepare an evaluation of the proposed subdivision based upon the standards of Subsection 17.8.3(C).

- I. Is in conformance with the Comprehensive Plan or its successor.
- J. The subdivider has adequate financial and technical capacity to meet the standards of this subsection.
- K. Whenever situated, in whole or in part, within the watershed of any pond or lake or within 250 feet of any wetland, great pond, or river as defined in Title 38, Chapter 3, Subchapter I, Article 2B, will not adversely affect the quality of such body of water or unreasonably affect the shoreline of such body of water.
- L. Will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater.
- M. Is or is not in a flood prone area, based on the Federal Emergency Management Agency's flood boundary and floodway maps and flood insurance rate maps, and information presented by the applicant. If the subdivision, or any part of it, is in such an area, the subdivider shall determine the 100-year flood elevation and flood hazard boundaries within the subdivision. The proposed subdivision plan must include a condition of plan approval requiring that principal structures in the subdivision will be constructed with their lowest floor, including the basement, at least one foot above the 100-year flood elevation.
- N. Will provide for adequate stormwater management.
- O. Will not have lots with a lot depth-to-shore frontage ratio greater than 5 to 1 if any lots in the proposed subdivision have shore frontage on a river, stream, brook, great pond, or coastal

wetland as these features are defined in Title 38 § 480-B.

- P. For any proposed subdivision that crosses municipal boundaries, will not cause unreasonable traffic congestion or unsafe conditions with respect to the use of existing public ways in an adjoining municipality in which part of the subdivision is located.

15.5 TECHNICAL AND DEVELOPMENT STANDARDS

15.5.1 Technical standards

All subdivisions and associated improvements, excluding subdivisions exempted under Section 15.12 of this article, shall, in addition to the criteria listed herein, adhere to all applicable standards of the City of Portland *Technical Manual*, unless formally waived by the Planning Board.

15.5.2 Timing of subdivision improvements

The Department of Public Works shall establish the sequence in which work is to be accomplished. Where it is determined by the Public Works Authority that work has been completed prior to the receipt of all approvals required by this article or which is out of sequence or is not in compliance with the standards of this section and of Chapter 25, the Director of Public Works or an inspector from the Public Works Authority may issue a stop work order. Work shall recommence only after the stop work order has been lifted by the Director of Public Works or an inspector from the Public Works Authority. Violation of the stop work order shall be considered an offense.



15.5.3 Subdivision names

Subdivision names for plats shall be subject to approval by the Planning Board and not duplicate the name of any plat already recorded.

15.5.4 Streets

- A. All streets shall be platted along contour elevations which result in minimum grades and greatest visibility whenever practicable, with consideration given for anticipated use of the land. Street grades in all proposed subdivisions shall be subject to the approval of the Public Works Authority.
- B. The proposed street layout shall be coordinated with the street system of the surrounding areas. All streets must provide for the continuation or appropriate projection of streets in surrounding areas and provide means of ingress and egress for surrounding tracts.
- C. When connecting streets within residential neighborhoods, new streets shall contribute to a neighborhood street system characterized by a network of interconnected streets, which minimizes through-traffic in residential neighborhoods. The layout of subdivision lots, streets, and pedestrian ways shall promote multiple paths of travel to get to destinations within and between neighborhoods by foot and bicycle, as well as auto.
- D. The interconnection of new and existing streets is further subject to the following provisions to minimize and mitigate through-traffic in residential neighborhoods:
 1. Where a determination is made that a proposed street connection will result in substantial increases in traffic volume and speed on the effected public streets, the Planning Board may require appropriate traffic calming solutions as set forth in Chapter 28 of the City of Portland Code of Ordinances. The Public Works Authority may by regulation and amendment to the *Technical Manual* establish standards for determining what is a “substantial increase in traffic volume and speed.”
 2. In any circumstances where a street connection is allowed, the Planning Board may condition subdivision approval to require the developer to monitor future traffic patterns to determine whether, using existing traffic calming standards, new or additional traffic calming measures should be employed. The extent and design of traffic calming shall be determined by the Public Works Authority to mitigate the post development impact of connecting new and existing streets.
 3. In cases where post-development monitoring shows that increased traffic volume and speed is such that further traffic calming would be insufficient to mitigate traffic negative impacts of through-traffic, the DPW may require that the connection be modified to exclude regular vehicular traffic, while retaining bicycle, pedestrian, and where needed, emergency vehicle connections. The Public Works Authority shall develop typical standards and specifications for bicycle, pedestrian, and emergency vehicle connections and/or turnarounds.
 4. Where a determination is made by the Public Works Authority that a proposed street connection will result in substantial increases in traffic volume and speed on the affected public streets, the Planning



- Board may disallow a proposed street connection for vehicular purposes in favor of a connection for non-vehicular purposes in situations where a proposed residential street connection meets all of the following criteria:
- a. The new street would result in the connection of two arterials.
 - b. The street would be located in a neighborhood where there is no existing public through-street network connecting the same arterials.
 - c. There is no likelihood that other public street connections will be developed in the future that would connect the arterials, whether because of topography limitations, existing development patterns, or other similar reason.
5. In circumstances where vehicular connections are disallowed, the Planning Board shall require that adequate right-of-way is reserved to permit the extension of the street for pedestrian, bicycle, emergency use, and potential vehicle connections as may develop in the future.
- E.** Reserve strips or spine strips for unspecified or unacceptable purposes are prohibited.
- F.** Street right-of-way widths shall be as provided in Chapter 25 of the City of Portland Code of Ordinances and the City of Portland *Technical Manual*. However, private streets within PRUDs shall be exempt from the street right-of-way and roadway width requirements established in the City's *Technical Manual*, provided that no such street shall be accepted by the City unless it is first improved to City standards at the expense of those persons requesting the street acceptance. Private streets within a PRUD or a shall meet specifications established by the Public Works Authority. All private streets shall be designed by a professional engineer and shall be built according to accepted engineering standards.
- G.** Proposed subdivisions along existing, or dedicated, or platted streets where rights-of-way are inadequate shall provide additional land to meet the minimum standards.
- H.** Streets shall not occupy more land than needed to provide access nor create unnecessary fragmentation of the subdivision into small blocks. Streets will be designed to discourage outside traffic from traversing the development.
- I.** All dead-end streets shall provide for a cul-de-sac or, in the case of a dead-end street which will be extended, a temporary turn around at the end of the street, subject to the approval of the Public Works Authority.
- J.** Sidewalks shall be constructed on each side of each street in accordance with Chapter 25 of the City of Portland Code of Ordinances. Sidewalks to be used by pedestrians are to be so located as to minimize contacts with normal automotive traffic, with preference given to interior walks away from streets in common open space in block interiors.
- K.** Curbs shall be constructed on each side of each street. The curbing shall be constructed as provided in Chapter 25 of the City of Portland Code of Ordinances.
- L.** Street names for all subdivisions shall appear on the subdivision plat and be subject to approval by the Planning Board.

15.5.5 Sewers and storm drains

- A. All subdivisions shall be provided with adequate storm drain systems within the subdivision separate from any sanitary sewer system required in Chapter 25 of the City of Portland Code of Ordinances. The design of all sewers and storm drains shall be subject to approval by the Public Works Authority.
- B. Any natural or manmade areas, systems or facilities designated for stormwater control purposes and intended for City maintenance shall, except for detention or retention ponds or basins and regularly free flowing watercourses, be structurally enclosed in accordance with the standards of the Public Works Authority, and shall be dedicated with sufficient land for maintenance purposes. Warranty deeds to such areas shall be submitted for acceptance by the City Council at the same time as the acceptance of streets. All such areas as are not intended for City maintenance shall be permanently protected and maintained by private agreement, deed covenant or restriction, as appropriate, in form approved by the Corporation Counsel.
- C. The subdivider shall be responsible for the construction of all sewers and storm drains including manholes, catch basins and any other appurtenances as may be deemed necessary by the Public Works Authority. All work shall be in accordance with public works specifications.

15.5.6 Blocks

- A. A maximum block length of 800 feet, measured from the nearest street lines of intersecting streets, shall be observed except where, in the opinion of the Planning Board, conditions justify a departure from this standard. In

general, block size should be the maximum consistent with the use and shape of the site and the convenience and safety of the occupants.

- B. In blocks exceeding 800 feet in length, measured from the nearest street lines of intersecting streets, the Planning Board may require where feasible the reservation of a 20 foot wide easement to the City through the block to provide for the crossing of underground utilities and pedestrian traffic where needed or desirable and may further specify, at its discretion, that a four foot wide paved foot path be included.
- C. The length, width and shape of blocks shall be determined on the basis of:
 - 1. Provision of adequate building sites suitable to the special needs of the type of use contemplated.
 - 2. Zoning requirements as to lot sizes, setbacks and dimensions.
 - 3. Needs for convenient access, circulation, control and safety of street traffic.
 - 4. Limitations and opportunities of topography.
- D. Blocks with lots having double frontage on streets shall be avoided.
- E. The foregoing dimensions may be adjusted by the Planning Board where type of use or topography requires such modification.

15.5.7 Lots

- A. Lots shall conform to the provisions of Article 7 and all other relevant provisions of the City of Portland Code of ordinances.
- B. Where easements for public utilities, storm drains, or sanitary sewers are contemplated, the lot lines shall be located in such a manner



as to facilitate construction of such facilities and the maintenance thereof.

- C. Lots which are reserved or laid out for business, commercial, or industrial purposes shall have sufficient width and depth to accommodate the off-street parking and loading facilities required for the type of use and development contemplated, as established in Article 19.
- D. Where feasible, side lot lines shall be at right angles to street lines (or radial to curving street lines).

15.5.8 Public open space

- A. In all subdivisions open space may be provided for parks, recreational and other public areas. Where no public open space or recreational areas exist in close proximity to the subdivision, or where a lack of such areas in the subdivision would require its disapproval under Section 15.4, the Planning Board may require provision of land for park or recreational purposes. Such lands may be designated for public or private ownership in accordance with the conditions stated in this subsection, subject to the approval of the Planning Board.
- B. If a tract or parcel is intended for public ownership and is so designated on the subdivision plat, the acceptance of such land shall be first recommended by the various departments and the Planning Board and sent to the City Council for final determination.
- C. If a tract or parcel is designed or intended to be owned and used in common for recreational or other public or semi-public purposes and such intent is so designated on the subdivision plat, appropriate documents in form approved by the Corporation Counsel shall be submitted to

the Planning Board. Such documents shall clearly:

- 1. Set forth the nature of the permanent organization under which common ownership is to be established, including its purpose, how it shall be governed and administered, the provisions made for permanent care and maintenance of the common property for its share of the cost of administering and maintaining such common property.
- 2. Set forth the extent of common interest held by the owner of each individual parcel in the tract held in common with others.

15.5.9 Access to shoreline

- A. In all subdivisions having shore frontage on the island of Casco Bay, existing legal rights of public access to the shoreline shall be preserved. The proposed street layout and circulation plan shall be suitably integrated with such existing public access in a manner that reasonably promotes the public use of such access. The proposed street layout and circulation plan shall also be designed to preserve any legal rights to any significant water views and scenic vistas from such rights-of-way.
- B. In all subdivisions having any lots within the Shoreland Zone, legal rights of private access to waters shall, to the extent reasonably feasible, be established for the benefit of all lots within the subdivision not otherwise having such access.

15.5.10 Additional requirements for nonresidential subdivisions

All nonresidential subdivisions, meaning subdivisions not intended for human habitation, such as a commercial or industrial subdivision, must meet the following additional requirements, except as waived by the Planning Board due to the commercial or industrial nature of the development:

- A. Proposed industrial parcels shall be suitable in area and dimensions to the commercial or industrial development anticipated.
- B. Street rights-of-way and pavement shall be adequate to accommodate the type, weight, and volume of traffic anticipated to be generated.
- C. The design and installation of public utilities including water, sewers, and storm water drainage, shall be adequate to accommodate the anticipated usage.
- D. Streets carrying truck traffic shall not normally be extended to the boundaries of adjacent existing or potential residential areas.

15.6 WAIVERS

15.6.1 Request for waivers

A waiver of plat requirements or technical standards shall be applied for in writing by the subdivider. The decision of the Planning Board on such request shall be final.

15.6.2 Waiver standards

- A. Except for the requirements set forth Subsection 15.5.4 pertaining to the provision and construction of curbs and sidewalks, the Planning Board, if it finds that extraordinary conditions exist or that undue hardship may result from strict compliance with these regulations may vary the regulations so that

substantial justice may be done and the public interest secured, provided that such variation will not have the effect of nullifying the intent and purpose of the Comprehensive Plan and the regulations of this article.

- B. Where the Planning Board or Planning Authority finds that, for each of the requirements listed in (1) and (2) below, two or more of the conditions exist with respect to compliance with the requirements set forth Subsection 15.5.4 pertaining to the provision and construction of curbs and/or sidewalks, it may waive, in whole or in part, the regulations so that substantial justice may be done and the public interest secured.

1. Sidewalks

- a. There is no reasonable expectation for pedestrian usage coming from, going to and traversing the site.
- b. There is no sidewalk in existence or expected within 1000 feet and the construction of sidewalks does not contribute to the development of a pedestrian oriented infrastructure.
- c. A safe alternative-walking route is reasonably and safely available, for example, by way of a sidewalk on the other side of the street that is lightly traveled.
- d. The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program or has been funded through an earlier CIP or through other sources.
- e. The street has been constructed or reconstructed without sidewalks within the last 24 months.



- f. Strict adherence to the sidewalk requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.
- 2. *Curbing*
 - a. The cost to construct the curbing, including any applicable street opening fees, is in excess of 5% of the overall project cost.
 - b. The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program or has been funded through an earlier CIP or through other sources.
 - c. The street has been rehabilitated without curbing in the last 60 months.
 - d. Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.
 - e. Runoff from the development site or within the street does not require curbing for stormwater management.
- C. In no event shall the waiver have the effect of creating potentially hazardous vehicle and pedestrian conflict or nullifying the intent and purpose and policies of the Comprehensive Plan relating to transportation and pedestrian infrastructure and the regulations of this article.
- D. At its discretion, the Planning Authority may refer any petition for a waiver from the curb

and sidewalk requirement to the Planning Board for decision.

15.6.3 Modifications for Planned Unit Developments

The standards and requirements of this article may be modified by the Planning Board in the case of a plan and program for a planned unit development which in the judgment of the Planning Board provides adequate public spaces and improvements for the circulation, recreation, light, air, and service needs of the tract when fully developed and populated, and which also provides such covenants or other legal provisions as will assure conformity to and achievement of the Comprehensive Plan.

15.6.4 Modifications approved by Public Works

If at any time before or during the construction of the required improvements the subdivider demonstrates to the satisfaction of the project engineer and the Public Works Authority that unforeseen conditions make it necessary or preferable to modify the design of the required improvements, the Public Works Authority may authorize modifications provided that the modifications do not amount to a waiver or substantial alteration of the function of any improvements required by the Planning Board.

15.6.5 Conditions

In granting waivers and modifications, the Planning Board and City Council may require such conditions as will, in their judgment, secure substantially the objectives of the standards or requirement so waived or modified.



15.7 GUARANTEES AND ASSOCIATED FEES

15.7.1 Performance guarantee required

Following subdivision approval and prior to the release of the signed recording plat, the subdivider shall post with the City a performance guarantee in the form and amount specified herein, specifying the completion of the required subdivision improvements within two years from the origination date of such guarantee. In no case shall the term of such guarantee be for a period of less than one year, nor shall any performance guarantee expire between October 30 and April 15 of the following year.

15.7.2 Inspection fees

At the same time that the developer posts a performance guarantee, the developer shall also pay to the City an inspection fee as determined by the City Council. If a performance guarantee is extended beyond its original expiration date, then an additional inspection fee in an amount to be determined by the City shall be required.

15.7.3 Establishing the performance guarantee amount

- A. The performance guarantee shall be equal in value to 100% of the estimated cost of the required subdivision improvements as shown on the approved subdivision plat, as a condition of Planning Board approval, as required in the City of Portland Code of Ordinances, and/or as required by the City of Portland *Technical Manual*.
- B. The performance guarantee amount shall be estimated by the applicant or representative on a form provided by the City and shall be submitted for review and approval to the Planning Authority. Costs to be included in the

estimate, and which shall be covered by the performance guarantee, include but are not limited to: street and sidewalk improvements including street lights, monuments, curbing, ramps, detectable warning panels, and striping; earth work and grading; utilities infrastructure and connections including sewer, stormwater, and water service; exterior site lighting; erosion control measures as shown on the approved erosion and sedimentation control plan; open space and recreation amenities; and final site stabilization and landscaping.

- C. The Planning Authority may waive all or any portion of this requirement if it determines that the subdivider has a proven record of satisfactory performance and sufficient financial capability.

15.7.4 Phased projects

If a project is reviewed and approved as a phased project, the corresponding performance guarantee may also be phased. A separate performance guarantee shall be posted for each phase. Each phase of such project shall be independent of subsequent phases and shall conform to all standards of this article in the event that subsequent phases do not go forward.

15.7.5 Advanced site work

On a case-by-case basis, permission for advanced site work may be granted by the Planning Authority. Such permission is solely within the discretion of the Director of Planning and Urban Development and shall be granted only after submission of a written request setting forth the work proposed to be done on the site. Such written permission shall not be required when the only work proposed is the digging of test pits.



15.7.6 Alterations to pending subdivisions

Alterations may be made to a site with a pending subdivision application if:

- A.** At minimum, a performance guarantee for the proposed site alterations has been posted and final plans have been submitted to the Planning Authority.
- B.** Written permission has been received from the Planning Authority or his/her designee that such site alterations may proceed pending subdivision approval. Such permission is solely within the discretion of the Planning Authority and shall be granted only after submission of a written request setting forth the work proposed to be done on the site. All such work shall be done in compliance with information provided with the subdivision application. An erosion control plan shall also be submitted when deemed necessary by the Planning Authority. Such written permission shall not be required when the only work proposed is the digging of test pits.

15.7.7 Acceptable forms for the performance guarantee

The performance guarantee, in the amount approved by the Planning Authority, shall be a letter of credit, an escrow account with a responsible financial institution, or the deposit to the City of Portland Finance Department and shall be in conformance with the templates and forms made available by the City. If the performance guarantee is a deposit to the City, the City shall hold such funds in a noninterest-bearing account until criteria for performance guarantee release have been satisfied. The performance guarantee shall be in the name of the City and shall be approved by the finance director as to financial sufficiency and the

Corporation Counsel as to proper form and legal sufficiency.

15.7.8 Reductions of the performance guarantee

- A.** Up to three times during the construction of a project, upon request of the subdivider, a performance guarantee may be reduced by the value equal to the estimated cost of the completed improvements. In no case shall any performance guarantee be reduced by any line item on the cost estimate where improvements remain to be completed. Requests shall be submitted on a form provided by the City for review and approval by the Planning Authority.
- B.** In no case shall any performance guarantee be reduced to an amount equal to or less than the required defect guarantee until all criteria set forth for converting to the defect guarantee have been met, as approved by the Planning Authority.

15.7.9 Extension of the performance guarantee

If the Planning Authority and/or the Public Works Authority has reasonable doubt concerning the stability or proper construction of the required site improvements, the developer shall be required to reconstruct or otherwise address the issues to the City's satisfaction. If the performance guarantee is scheduled to expire before the extent or necessity for such further work can be determined, the developer shall be required to extend the performance guarantee covering such improvements, or secure a new guarantee, for a period and amount deemed necessary by the Planning Authority and/or the Public Works Authority.



15.7.10 Release of the performance guarantee

- A. No performance guarantee shall be released until all fees generated by the project are paid to the City, including but not limited to engineering, inspection, and administrative fees. The guarantor shall not be released from the guarantee except and until authorized in writing from the Planning Authority.
- B. For subdivisions, no performance guarantee shall be released until the Public Works Authority has performed a final inspection of the roadway and determined satisfactory completion of the required improvements. Additionally, no performance guarantee shall be released until the City is in receipt of a petition for street acceptance, deemed complete and satisfactory by Corporation Counsel and/or the Public Works Authority. The petition for street acceptance must include a warranty deed (with metes and bounds description) to the property within each street of the subdivision or roadway extension and any other improvements intended for City maintenance.
- C. Upon the satisfactory completion of the required site improvements and satisfactory compliance with all conditions of approval including the submission of as-built drawings as applicable, the Planning Authority shall authorize, in writing, conversion to the defect guarantee. The defect guarantee shall be 10% of the original performance guarantee amount and shall remain in place for a period of one year. The defect guarantee shall ensure the workmanship and the durability of all materials used in the construction of the required site improvements. The Planning Authority may authorize the defect guarantee to be released at any time within the one-year period,

provided all required site improvements have been constructed and in-place for one year or more and the workmanship and the durability of all materials has been inspected and confirmed to be satisfactory.

15.7.11 Improvements required prior to release of guarantee

Prior to the release of the performance guarantee, the subdivider shall have completed the following improvements:

- A. All streets shall be graded in conformity with the requirements set out Section 15.5 and in accordance with Chapter 25 of the City of Portland Code of Ordinances.
- B. On all streets, side streets, and alleys, a suitable hard surfaced permanent pavement shall be installed meeting the requirements set forth in Chapter 25 of the City of Portland Code of Ordinances.
- C. Water, gas, sanitary sewer mains, and storm drains shall be constructed prior to the installation of paving with all mains being extended from all lots having sufficient stub outs to avoid subsequent breaking of pavement.
- D. Sidewalks and curbs shall be constructed as required in Section 15.5.
- E. Adequate storm drains shall be constructed subject to the provisions of Section 15.5 and in accordance with the Public Works Authority specifications.
- F. A total of two trees per lot, which shall be street trees, shall be planted near the street line in full public view on private property, as directed by the City Arborist. Existing healthy trees may be credited toward this requirement, subject to the approval of the City Arborist.



- G. Permanent markers shall be set as prescribed by the Public Works Authority.
- H. All utility lines shall be placed underground unless otherwise approved by the Planning Board.
- I. Street lighting shall be installed in accordance with the standards of the Public Works Authority.
- J. A public water supply shall be installed subject to the approval of the Portland Water District.
- K. Erosion control measures shall be taken both during and after construction in accordance with the standards of the Public Works Authority.

15.7.12 Acceptable forms for the defect guarantee

The defect guarantee, 10% of the original performance guarantee amount approved by the Planning Authority, shall be a letter of credit, an escrow account with a responsible financial institution, or the deposit to the City of Portland finance department and shall be in conformance with the templates and forms made available by the City. If the defect guarantee is a deposit to the City, the City shall hold such funds in a noninterest-bearing account until criteria for performance guarantee release have been satisfied. The performance guarantee shall be in the name of the City and shall be approved by the finance director as to financial sufficiency and the Corporation Counsel as to proper form and legal sufficiency.

15.7.13 Abandoned site

In the event that a development site is abandoned or the site improvements do not meet City standards as approved in the subdivision plat, the performance guarantee may be utilized to stabilize, secure, complete construction, and/or restore the

site as may be necessary, including, but not limited to, revegetation of areas, grading, and fencing.

15.8 CONSTRUCTION RECORDS AND INSPECTION

15.8.1 Inspection of construction

The project engineer and City Engineer shall have the right to enter and inspect the construction site during all phases of the project to ensure compliance with this article.

15.8.2 Required construction records

After approval of the subdivision plat and prior to the construction of any of the subdivision's public improvements, the subdivider shall supply the City Engineer with a complete set of engineering drawings showing all streets, sanitary sewers, and surface water drains, and all appurtenant work within the subdivision.

15.9 TRANSFER OF OWNERSHIP

The purchasing party or other succeeding owner of a subdivision for which a recording plat has received prior approval, but which has not yet been accepted by the City, shall assume full responsibility for completion of the subdivision's improvements until the subdivision street or streets are accepted by the City. The purchaser or other succeeding owner of an unaccepted subdivision shall be required to comply with all the provisions of this article as if he were the original subdivider, and shall become responsible for completing such improvements in the same manner as the original subdivider.

15.10 PLAT AMENDMENTS

The Planning Authority may approve alterations to an approved recording plat when all of the following

conditions are met. Otherwise, a new subdivision plat must be submitted to the Planning Board:

- A. The rearrangement of lot lines does not increase the number of lots within a block or other subdivision unit or area.
- B. The alteration will not affect any street, alley, utility easement or drainage easement.
- C. The alteration meets all of the minimum requirements of this Land Use Code and other applicable state and local codes.
- D. The alteration is approved by the Public Works Authority and the Fire Department.

Such approved alterations shall be properly recorded in the registry within 30 days thereof or they shall be null and void. Recording of approved alterations also shall be in accordance with the requirements of 30 A M.R.S. § 4406.

15.11 VACATION OF PLATS

Any such plat recorded, or any portion thereof, may be vacated with the consent of the City Council as follows:

- A. At any time before the sale of any lot therein, by written instrument, signed by the City and the owners of such subdivision, declaring the same to be vacated and describing therein the part or portion to be so vacated.
- B. At any time after the sale of any lot therein and by written instrument, signed by the City and all owners of record of lots shown on the plat, declaring the same to be vacated and describing therein the part or portion to be so vacated.
- C. Any instrument so executed vacating all or a portion of any plat shall be duly filed and recorded in the Cumberland County Registry of Deeds. The execution and recording of the instrument described in (B) above shall vest fee

simple title to the centerline of the street, alley or easement for public passage so vacated in the owners of abutting properties. Title to property located within the vacated streets, alleys, or easements for public passage shall pass to abutting property owners free and clear of any rights of the public or other owners of lots shown in the plan, but subject to the rights of the owners of any public utility installations which have been previously erected therein.

15.12 EXEMPTIONS

15.12.1 Subdivisions prior to 1979

This article does not apply to subdivisions approved prior to June 6, 1979, nor to subdivisions in existence prior to June 6, 1979, nor to subdivisions which have been legally recorded in the Registry of Deeds prior to June 6, 1979.

15.12.2 Division by demise, condemnation, order, or gift

A division accomplished by devise; condemnation; order of court; gift to a person related to the donor by blood, marriage, or adoption, unless the intent of such gift is to avoid the objectives of this article; or by transfer of any interest in land to the owner abutting thereon shall not be considered to create a lot or lots for purposes of this article.

15.13 APPEALS

An appeal from any final decision of the Planning Board regarding subdivision approval may be taken by the applicant or his or her authorized agent to superior court in accordance with Rule 80B of the Maine Rules of Civil Procedure.

16 IMPACT FEES

16.1 PURPOSE

The purpose of this article is to ensure that new development in the City of Portland bears a proportional or reasonably-related share of the cost of new, expanded, or replacement infrastructure necessary to service that development through the payment of impact fees dedicated to funding improvements made necessary by development, or the construction of improvements as provided for herein. This ordinance is enacted pursuant to the authority of 30-A M.R.S. § 4354 and 30-A M.R.S. § 3001.

16.2 APPLICABILITY

The following shall be subject to impact fees, with the exception of municipal buildings, which shall be considered exempt:

- A. Any new building or addition to existing buildings which results in net new residential dwelling units, nonresidential building square footage, or water/wastewater meters, and
- B. Any change of use which results in a net increase in impact fee per Subsection 16.3.6.

16.3 CALCULATION OF IMPACT FEE

16.3.1 In general

Impact fees shall be calculated based on the impact fee schedule in effect at the time of submittal of a complete application for a building permit.

16.3.2 Determination of use

The determination of the applicable land use category in the impact fee schedule shall be made by the Department of Permitting and Inspections with reference to the City of Portland's most recent

Impact Fee Study. If the proposed development is of a type not listed in the impact fee schedule, then the impact fees applicable to the most nearly comparable type of land use listed in the impact fee schedule shall be used.

16.3.3 Mixed use development

In the event that there is more than one use within a building, impact fees shall be calculated separately for each use.

16.3.4 Redevelopment

In calculating the impact fee for a new building that involves the full or partial demolition of a building housing an existing, legally established use or uses, such new building shall be credited with an amount equal to the fee that would have been charged to the use or uses which occupied the structure at the time of demolition permit. If the impact fee calculation for the post-development condition is greater than the credit, the applicant shall pay the difference. If the impact fee calculation for the post-development condition is less than the credit, then the applicant shall not be required to pay an impact fee. The City shall not grant credits for demolitions for which a permit was issued more than 10 years prior to the complete application for a building permit.

16.3.5 Building additions

In calculating the impact fee for building additions, each developed property shall be credited with an amount equal to the fee that would have been charged to the existing use at the time of the addition of floor area. If the impact fee calculation for the post-development condition is greater than

the credit, the applicant shall pay the difference. If the impact fee calculation for the post-development condition is less than the credit, then the applicant shall not be required to pay an impact fee.

16.3.6 Changes of use

In calculating the impact fee for changes of use, each developed property shall be credited with an amount equal to the fee for the use in the highest fee category that has existed on the developed property within the previous 10 years. If the impact fee calculation for the proposed use is greater than the credit, the applicant shall pay the difference. If the impact fee calculation for the proposed use is

less than the credit, then the applicant shall not be required to pay an impact fee.

16.4 ANNUAL ADJUSTMENT OF IMPACT FEE

To account for inflation, there shall be an automatic annual increase in the impact fee schedule reflected in this ordinance every January 1 based on the change in the construction cost index as published by *Engineering News Record*. The fee adjustment shall be calculated by dividing the index amount published on January 1 of the current year by the index amount published on January 1, 2018 and multiplying the resulting ratio by each fee amount. Annual adjustments shall be made available for public reference.

TABLE 16-A: PARKS & RECREATION AND TRANSPORTATION IMPACT FEE SCHEDULE¹

Land Use Type	Unit of Measure	Parks/Recreation Impact Fee	Transportation Impact Fee
Single-family/Two-family	per unit	\$1,126	\$2,159
Multi-family	per unit	\$752	\$1,023
Retail/Service	per 1,000 SF GFA	\$534	\$8,248
Office	per 1,000 SF GFA	\$677	\$2,800
Industrial	per 1,000 SF GFA	\$363	\$1,130
Institutional	per 1,000 SF GFA	\$645	\$3,082
Hotel/Motel	per room	\$875	\$2,404

¹ Land use types included impact fee schedule correspond to those in the City's most recent *Impact Fee Study*.

TABLE 16-B: WASTEWATER IMPACT FEE SCHEDULE

Meter Size	Capacity Ratio	Impact Fee
5/8 inch	1.00	\$1,886
3/4 inch	1.50	\$2,829
1 inch	2.50	\$4,715
1 1/2 inches	5.00	\$9,430
2 inches	8.00	\$15,088
3 inches	16.00	\$30,176
6 inches	50.00	\$94,300
8 inches	80.00	\$150,880



16.5 MODIFICATION OF IMPACT FEES

16.5.1 Equivalent improvements

- A. A required impact fee may be modified, in whole or in part, by formal vote of the Planning Board in cases when an applicant is otherwise before the Planning Board, or by the Planning Authority in all other cases, if the reviewing authority finds that:
1. The developer or property owner who would otherwise be responsible for the payment of the impact fee voluntarily agrees to make infrastructure improvements for which the impact fee would be collected or an equivalent improvement approved by the reviewing authority, or
 2. The developer or property owner is required, as part of a development approval by the City or a state or federal agency, to make or to pay for infrastructure improvements for which the impact fee would be collected or an equivalent improvement.
- B. Credit amounts shall be determined based on plans, details, and cost estimates for the proposed infrastructure improvements for which the credit is requested. Such plans, details, and cost estimates shall be prepared by a licensed professional engineer and submitted at the time of site plan, subdivision, or building permit application. The applicant shall pay for any third-party review of plans, details, or cost estimates. On-site or immediately adjacent improvements providing direct service to a site as required under subdivision or site plan regulations shall not be considered eligible under this subsection.

16.5.2 Substantially-reduced demand

The Planning Board may by formal vote modify the payment of a required impact fee, in whole or in part, if it finds that documentation is provided to demonstrate that a proposed use will impose no or substantially-reduced demands on capital facilities for which impact fees have been adopted. Such documentation shall be prepared by a licensed professional engineer or other qualified professional and include a written analysis of the demand for capital facilities generated by the proposed use based on industry standards and the most recent *Impact Fee Study*. Documentation shall be submitted at the time of site plan, subdivision, or building permit application. The applicant shall pay for any third-party review of plans, details, or cost estimates.

16.6 REDUCTION IN FEES FOR AFFORDABLE HOUSING

Any residential development including low-income or workforce housing units and qualifying as an eligible project under Subsection 18.2.2 shall receive a reduction of fees in accordance with Subsection 18.2.2.

16.7 COLLECTION OF IMPACT FEE

The City of Portland shall not issue any certificate of occupancy required under the Land Use Code until the applicant has paid any impact fees required by this ordinance.

16.8 SEGREGATION OF IMPACT FEES FROM GENERAL REVENUES

Impact fees collected pursuant to this ordinance shall be maintained in separate, non-lapsing impact fee accounts for each of the facilities for which

impact fees are assessed, and shall be segregated from the City's general revenues. These accounts shall be dedicated for funding of the improvements for which the fee is collected, as determined through the City's most recent *Impact Fee Study*. Funds from these accounts shall be distributed to City departments solely for the purpose of capital projects identified in the City of Portland's most recent *Impact Fee Study*.

16.9 USE OF IMPACT FEES

Impact fees collected by the City pursuant to this ordinance may be used only for financing facility improvements which the City Council, through the City of Portland's most recent *Impact Fee Study*, has determined are made necessary by new development. The City Council has determined that fees imposed by schedules in this ordinance are reasonably related to the demands created by new development. Impact fees collected pursuant to this ordinance shall be used exclusively for capital improvements, and the City of Portland shall expend funds collected from impact fees solely for the purposes for which they were collected.

16.10 REFUND OF UNUSED IMPACT FEES

Impact fees collected pursuant to this ordinance shall be used by the City according to the schedules for the completion of specific capital improvements as specified in the City of Portland's most recent *Impact Fee Study*, but in no event later than ten years after the date upon which the impact fee was collected. Any impact fees which are not so used and any impact fees collected which exceed the City's actual costs of implementing the infrastructure improvements for which such fees were collected shall be refunded. Refunds shall be paid to the owner of record of the property for

which the impact fee was collected, determined as of the date the refund is made.

16.11 REVIEW AND REVISION

The impact fees established in this ordinance are based upon the best estimates of the costs of the construction of the facilities for which the fees are collected as determined through the City's most recent *Impact Fee Study*. The Council may, by amendments to this ordinance, change the amounts of the impact fees from time to time as warranted by new information or changed circumstances.

16.12 ADMINISTRATIVE RULES AND REGULATIONS

The Planning Board is hereby authorized to develop rules and regulations governing the administration of impact fees collected pursuant to this ordinance.

16.13 EFFECTIVE DATE

The provisions of this article shall apply to all building permit applications submitted following December 19, 2018, with the exception that any development for whom site plan approval has been granted as of December 19, 2018 shall be considered exempt. Master development plan approval prior to the effective date shall not confer exempt status.

17 HISTORIC PRESERVATION

17.1 PURPOSE

The purpose of this article is to promote the educational, cultural, economic, and general welfare of the City of Portland by:

- A. Creating a mechanism to identify, preserve and enhance distinctive areas, sites, structures, and objects that have historic, cultural, architectural, and archaeological significance.
- B. Providing a resource of information and expertise to help those interested in rehabilitation or new construction in a district or restoring a landmark.
- C. Applying review standards in a reasonable and flexible manner to prevent the unnecessary loss of the community's historical features and to ensure compatible new construction and rehabilitation in historic districts while not stifling change and development or forcing modern recreations of historic styles.
- D. Fostering civic pride in the city's history and development patterns as represented in such distinctive areas, sites, structures, and objects.
- E. Protecting and enhancing neighborhood character.
- F. Stabilizing and improving the values of designated properties and areas.
- G. Protecting and enhancing the attractiveness of the city to its home buyers, home owners, residents, tourists, visitors, businesses and shoppers.
- H. Fostering and encouraging preservation, restoration, and rehabilitation that respects the historic, cultural, architectural, and archaeological significance of distinctive areas, sites, structures, and objects.

17.2 DEFINITIONS

Alteration. Any act or process requiring a building permit and any other act or process not requiring a building permit but specifically listed in this article as a reviewable action, including without limitation the repair, reconstruction, demolition, or relocation of any structure or object, or any part of a structure or object.

Certificate of Appropriateness. A certificate issued by the Planning Authority evidencing approval of specific plans for alteration of a structure, site, or designated historic landscape or new construction on a site in accordance with this article.

Certificate of Economic Hardship. A certificate issued by the Planning Authority evidencing a hardship variance approved by the Zoning Board of Appeals in accordance with Article 2.

Certificate of Non-Applicability. A certificate issued by the Planning Authority evidencing a determination that specific plans for alteration of a structure, site, or designated historic landscape or new construction on a site do not require approval under this Article.

Contributing. A classification applied to a site, structure, or object within a historic district signifying that it contributes generally to the qualities that give the historic district cultural, historic, architectural, or archaeological significance as embodied in the criteria for designating a historic district.

Demolition. Any act or process that partially or totally destroys a structure or object.

District. A historic district or historic landscape district.

Historic district. A geographically definable area possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or by past events or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically but linked by association or history.

Historic landscape district. A geographically definable area possessing a significant concentration, linkage, or continuity of landscape components which are united by human use and past events or aesthetically by design, plan or physical development.

Historic Resources Design Manual. A manual including guidelines for meeting historic preservation ordinance review standards and other information.

Landmark. Any property, site, structure, or object of particular historic, architectural, or archaeological significance to Portland, the State of Maine and/or the United States relating to its cultural, social, economic, political, or architectural heritage, or which is associated with historic persons, important events or themes in local, state, or national history.

New construction. The adding to a structure by an addition, the erection or placement of any new structure on a lot or property, or the comprehensive redesign/renovation of an existing structure.

Noncontributing. A classification applied to a site, structure, object, or portion thereof, within a historic district signifying that: 1) it does not contribute generally to the qualities that give the historic district cultural, historic, architectural, or archaeological significance as embodied in the criteria for designating a historic district; 2) was built within 50 years of the date of district designation unless otherwise designated in the historic resources inventory; or 3) where the location, design, setting, materials, workmanship, and association have been so altered or have so deteriorated that the overall integrity of the site, structure, or object has been irretrievably lost. A portion of an otherwise contributing or landmark structure may be determined by the Historic Preservation Board to be non-contributing if it meets one or more of the above conditions.

Object. Anything constructed, fabricated, or created, the use of which does not require permanent or semi-permanent location on or in the ground.

Ordinary maintenance. Acts of maintenance or repair which do not include a change in the design, material, or outer appearance of a structure, including without limitation repainting, replacement of materials or windows of the same scale, texture and color, and landscaping other than within an historic landscape district.

Preservation. The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic

materials and features rather than the extensive replacement and new construction.

Rehabilitation. The act or process of returning a property to a state of utility through repair or alteration which makes possible an efficient contemporary use while preserving those portions or features of the property which are significant to its historical, architectural, and cultural value.

Relocation. Any removal or relocation of a structure on its site or to another site.

Restoration. The act or process of accurately depicting the form, features, and character of the property as it appeared at a particular period of time by means of the removal of features from other period in its history and reconstruction of missing features from the restoration period.

Site. The location of a significant event, an archaeological site, a landscape or traditional cultural property, or a building or structure, whether standing, ruined or vanished, where the location itself maintains historical or archaeological value regardless of the value of any existing structure.

17.3 ADMINISTRATIVE PROCEDURES

17.3.1 Costs

A. Any project may be subject to fees as established by the City Council to cover administrative costs and the costs of Historic Preservation Board review. Applicants shall also pay a fee to cover the professional and administrative costs for analysis associated with project review, including but not limited to planning, legal, or other services. The fee shall

be based on the hours of review and processing time and prevailing hourly rate for reimbursement of City costs. The City shall periodically invoice the applicant for such costs incurred by the City, which invoice shall be paid promptly by the applicant.

- B.** Every applicant shall bear the entire expense of giving notice by mail and publication in accordance with this article.
- C.** No Certificate of Appropriateness, building, demolition, or other permit shall issue until all current charges due under this article have been paid. The balance of any remaining review and administrative costs invoiced or incurred after a permit has been issued shall be paid in full by the developer prior the issuance of any temporary or permanent certificate of occupancy.

17.3.2 Notice of public meeting

- A.** For all Certificate of Appropriateness applications that are subject to Historic Preservation Board review, the applicant shall be responsible for posting a notice of public meeting sign as specified by the Planning Authority on the property where the development is to occur.
- B.** The sign shall be posted at least 10 days prior to the public workshop or hearing date, and shall be removed from the site no more than three days following the date of the meeting.
- C.** Once the required notice of public meeting signage is posted, the applicant shall submit a completed certification of posting form to the Planning Authority.
- D.** In the event that a required notice of public meeting sign is knocked over or made illegible, it shall be the responsibility of the applicant to

promptly reset or replace the sign, though failure to do so shall not invalidate the review.

17.3.3 Notices and public comment

- A.** Except as provided in Subsection 17.7.5, notice of proceedings upon any application for a Certificate of Appropriateness shall be given only when the proposed activity otherwise constitutes major site plan. Notice of such proceedings also shall be furnished to any persons interested in historic preservation who have registered with the Planning Authority, and to the Historic Preservation Board and/or the Planning Board when the proceeding is pending before a different body. The failure to give any notice required by this article shall not affect the validity of any action taken.
- B.** The Historic Preservation Board, the Planning Board, the Board of Appeals, and the City Council shall each invite public comment at a public meeting in accordance with their respective rules, prior to any final action being taken under this article.
- C.** The Planning Authority shall advise the Historic Preservation Board and the Planning Board of any demolition permit application received by the Planning Authority as to structures or objects that have been classified as noncontributing within nominated or designated districts, but there shall be no Historic Preservation Board review of such permit applications.

17.4 CATEGORIES AND CRITERIA FOR DESIGNATION

17.4.1 Minimum criteria for designation

- A.** The Historic Preservation Board shall limit its consideration to the following criteria in

making a determination on a proposed nomination of an area, site, structure, or object for designation by ordinance as a landmark or district:

1. Its value as a significant example of the cultural, historic, architectural, archaeological, or related aspect of the heritage of the City of Portland, State of Maine, New England region, or the United States.
2. Its location as a site of a significant historic or prehistoric event or activity which may have taken place within or which involved the use of any existing structure on the property.
3. Its identification with a person or persons who significantly contributed to the cultural, historic, architectural, archaeological, or related aspect of the development of the City of Portland, State of Maine, New England region, or the United States.
4. Its exemplification of a significant architectural type, style, or design distinguished by innovation, rarity, uniqueness, or overall quality of design, detail, materials, or craftsmanship.
5. Its identification as the work of an architect, designer, engineer, or builder whose individual work is significant in the history or development of the City of Portland, the State of Maine, the New England region, or the United States.
6. Its representation of a significant cultural, historic, architectural, archaeological, or related theme expressed through distinctive areas, sites, structures, or

objects that may or may not be contiguous.

- B. In the case of a nominated historic district, the Historic Preservation Board shall also determine whether there is an interrelationship of resources within it which creates an identifiable entity, even if composed of a wide variety of resources. A district must convey a visual sense of the overall historic environment or be a grouping of historically or functionally related properties. A historic district can comprise both individually distinctive historic resources and historic resources that may lack individual distinction but which contribute to the significance and visual character of the district as a whole.
- C. In the case of a nominated historic landscape district, the Historic Preservation Board shall also consider its significance as a geological, natural, or designed landscape associated with the development, heritage, or culture of the City of Portland, State of Maine, New England region, or the United States.
- D. The Planning Board and City Council shall apply the criteria of (A), (B), and (C) above as well as historic preservation goals included in the Comprehensive Plan, but shall also consider the effect of such designation on other aspects of the Comprehensive Plan of the City.

17.4.2 Integrity of landmarks and historic districts

Any area, structure, or object that meets the criteria in Section 17.4.1 must also have sufficient integrity of location, design, condition, materials, and workmanship to make it worthy of preservation or restoration.

17.4.3 Designation of historic landscape districts

An historic landscape district may be nominated and considered for designation only if the entire area of the district is owned by a unit of federal, state, or local government, or any combination of such ownership.

17.5 NOMINATION, CONSIDERATION AND DESIGNATION

17.5.1 Procedure

The provisions of this section shall govern the nomination, consideration, and designation of landmarks and districts.

17.5.2 Initiation of nomination

- A. Nomination of an area, site, structure, or object for consideration of designation as a landmark, historic district, or historic landscape district shall be submitted to the Planning Authority by the following:
 1. Any two members of the Historic Preservation Board on their own initiative, by written notice to the Planning Authority, or
 2. By written petition of any owner, in the case of a landmark, or
 3. By written petition of one or more owners of affected property in the case of a district, provided two members of the Historic Preservation Board must sponsor the petition.
- B. A nomination shall be completed and filed with the Planning Authority with all required signatures for the nomination to be pending.
- C. Upon nomination, the Planning Authority shall notify the owner or owners of the nomination and shall transmit the nomination to the Historic Preservation Board for its preliminary

consideration at a scheduled meeting, which in no event shall be held later than 60 days following nomination.

- D. If documentation and analysis that is necessary for the consideration of a given designation has not been provided at the time of nomination, such documentation shall be completed prior to further consideration by the Historic Preservation Board of the nominated landmark, district, or historic landscape.
- E. At any time after a complete nomination is filed for an historic district, the owner of a structure who seeks a permit for demolition may apply to the Historic Preservation Board for a determination that the structure to be demolished is noncontributing and eligible for a demolition permit. The determination of the Historic Preservation Board that the structure is eligible for a permit shall be conclusive.

17.5.3 Notification of nomination and public hearing

- A. A public hearing on the nomination shall be held by the Historic Preservation Board following one or more preliminary workshops of the Historic Preservation Board.
- B. The hearing shall be conducted in accordance with procedures adopted by the Historic Preservation Board. The Historic Preservation Board shall consider all testimony or evidence relating to the designation criteria in Section 17.4 from any person who makes written submissions or appears at the public hearing. The owner of a nominated landmark or of property within a nominated district shall be allowed reasonable opportunity to present testimony or evidence concerning the

applicability of the designation criteria in Section 17.4.

17.5.4 Recommendation by Historic Preservation Board

- A. Within 45 days following the close of the public hearing, the Historic Preservation Board shall make recommendation to the City Council in the case of a landmark, or to the Planning Board in the case of a district, upon the evidence as to whether the nominated landmark or district meets the criteria for designation in Section 17.4. Such recommendation shall be approved by at least four members of the Historic Preservation Board and shall be accompanied by a report to the City Council and/or Planning Board containing the following information:
 - 1. Explanation of the significance or lack of significance of the nominated landmark or district as it relates to the criteria for designation.
 - 2. Explanation of the integrity or lack of integrity of a nominated landmark or historic district.
 - 3. Proposed design guidelines for review of alteration or construction may be recommended. The specific design guidelines may provide explanation by text and/or schematic examples of visual compatibility for purposes of complying with Section 17.8.
 - 4. Relationship of the nominated landmark or district to the ongoing effort by the Historic Preservation Board to identify and nominate areas, sites, structures, and objects that meet the criteria for designation.

5. A map showing the location of the nominated landmark and/or the boundaries of the nominated district.
 6. A list, including the address, of every site, structure, and object in each nominated historic district indicating their degree of cultural, historic, architectural, or archaeological significance by classification as a landmark, contributing, or noncontributing.
- B.** Where a motion either in favor of a recommendation or in opposition to a recommendation results in a vote of fewer than four members, the item shall automatically be tabled to the next regularly scheduled meeting.

17.5.5 Notification of Historic Preservation Board recommendation

- A.** The recommendation of the Historic Preservation Board, including a copy of the report, shall be transmitted to the City Council in the case of a landmark and to the Planning Board in the case of a district. Notice of the recommendation shall be sent by mail to the owner of a nominated landmark and to all owners within a nominated district within 14 days following adoption of the recommendation and report.
- B.** If the recommendation of the Historic Preservation Board is that the property or district not be designated, the nomination process shall terminate and no new nomination shall be submitted for the identical property or area for a period of one year from the date of termination, except upon a showing of substantial and material newly discovered information.

17.5.6 Determination by Planning Board

- A.** The Planning Board, upon receipt of a recommendation and a report from the Historic Preservation Board concerning nomination of a district, may hold one or more workshops pursuant to the provisions of Article 2. After review of the Historic Preservation Board recommendation and report, the Planning Board shall hold a public hearing.
- B.** All meetings, hearings, and deliberations of the Planning Board to consider the recommendation and report of the Historic Preservation Board shall be held in conformity with Article 2.
- C.** The Planning Board may request the chair of the Historic Preservation Board, or a member designated by the chair, to appear at any meeting, hearing or deliberation to explain any recommendation or report.
- D.** A public hearing shall be scheduled within 30 days of the Planning Board's final workshop. At the conclusion of the public hearing, the Planning Board shall make its final determination including written findings as to whether the nominated district meets the criteria for designation in Section 17.4. A copy of the determination of the Planning Board shall be sent by regular mail to all owners within a nominated district within 14 days following the determination.

17.5.7 Planning Board recommendation to City Council

The recommendation of the Planning Board regarding a nominated district shall be filed with the City Clerk within 14 days. It shall be accompanied by a copy of the report and recommendation of the Historic Preservation Board, including any specific

proposed design guidelines applicable to the nominated landmark or district. The recommendation of the Planning Board may include proposed changes in other City ordinances, policies, infrastructure, or recommendations with respect to the Comprehensive Plan of the City relating to the proposed designation.

17.5.8 Action by City Council

- A.** Within 60 days after the filing of a Planning Board recommendation, or Historic Preservation Board recommendation in the case of a landmark, on the nomination with the City Clerk pursuant to Section 17.5.6, the City Council shall designate the landmark or district or reject designation. Any designation may include specific design guidelines for the designated landmark or district.
- B.** Designation of a district shall be accompanied by a list, including the address, of every site, structure and object in the district. Every site, structure, or object shall be assigned a classification of landmark, contributing, or noncontributing, indicating their degree of cultural, historic, architectural, or archaeological significance. This list may be amended thereafter by the City Council upon recommendation from the Historic Preservation Board and Planning Board under the same procedures as set forth above. Where there are no express findings by the City Council in the designation ordinance, there shall be a presumption that the City Council found that all requirements of Section 17.4 were met.
- C.** Notice of the proposed action of the City Council shall be provided by mail to the nominator and the owner of the nominated

landmark and/or of all properties adjacent thereto prior to City Council action.

- D.** Notice of City Council action to the same persons shall be sent within 14 days following the City Council action. A copy of each designation and any design guidelines shall be sent to the Planning Board, the Historic Preservation Board, and the Planning Authority.
- E.** A complete schedule of all landmarks and districts, including design guidelines and a listing of landmark and contributing structures, shall be maintained by the Planning Authority and shall be available online or for public inspection and copying during ordinary business hours.

17.5.9 Amendment or rescission of designation

Amendment or rescission of any designation shall be upon the request of a person or persons authorized to nominate the property or properties affected, or upon request of the City Council, and shall follow the procedure set forth in Section 17.5 for designation. The City Council may rescind or amend a designation only after all of these procedures have been followed. The standards for rescission or amendment applied by the Historic Preservation Board, Planning Board, and City Council shall be limited to those provided in Subsections 17.4.1(A) and (B) and Subsection 17.4.2. Amendments may include reclassification of a portion of a contributing property to noncontributing status, refinement or correction of design guidelines, maps, and other parts of any designation.

17.5.10 Time limits

If any time limit in the nomination and designation process as provided in Sections 17.4 or 17.5 is not

met, the validity of any designation and the interim protection provided by Section 17.6 shall not be affected, provided the Historic Preservation Board, Planning Board or City Council announce the delay and the basis for such in a public meeting, as well as the date to which the matter will be rescheduled.

17.6 INTERIM PROTECTION FOR NOMINATIONS

17.6.1 Nominated landmarks and districts

- A.** From the time of nomination until the Historic Preservation Board acts upon such nomination, a site, structure, object or area nominated but not yet designated as a landmark or district shall be subject to all of the provisions of Sections 17.9 and 17.10 governing demolition and minimum maintenance, to the same extent as if designated. Upon final action of the Historic Preservation Board recommending designation, the site, structure, object, or area nominated shall be subject to all of the protections of this article until a final decision on designation by the City Council becomes effective. If the City Council rejects designation or fails to designate a property, that property shall no longer be subject to the provisions of Sections 17.9 and 17.10 of this article.
- B.** Alteration or new construction commenced pursuant to a building permit issued prior to nomination shall not require a Certificate of Appropriateness, unless such permit has expired, been canceled or revoked. No project for which any application is pending and which has received substantive review by the Planning Board prior to nomination shall be affected by nomination. Substantive review, as used in this paragraph, shall include workshop review of any completed application under Article 14 and Article 15 of the Land Use Code.

17.6.2 National Register of Historic Places

Upon notice to the City that a property or area has been listed in the national register after the adoption of this article, a nomination shall be deemed submitted to the Historic Preservation Board for designation of such property or area as a landmark, historic district, or historic landscape district under this article, and the procedures of Section 17.6 shall be applicable thereto.

17.6.3 Properties eligible for listing on national register or for local designation

A Certificate of Economic Hardship shall be obtained prior to demolition of any structure which has not been designated in accordance with this article but which has been determined by the Maine Historic Preservation Commission as eligible for listing in the National Register of Historic Places under the criteria established by 16 U.S.C. Section 470(a) or its successor statute and/or regulations made thereunder or which has been determined to be eligible for local listing under the criteria for designation of this article. The determination of eligibility for listing shall be made by the Planning Authority, which may refer such a determination to the Historic Preservation Board, and by the Board of Appeals if an appeal is taken. Upon determination of eligibility, the structure so determined shall also be subject to the provisions of Section 17.10 until a final decision by the City Council on designation becomes effective. If the City Council rejects designation or fails to designate a structure which has been determined to be eligible under the terms of this section, that structure shall no longer be subject to the provisions of Sections 17.9 and 17.10 of this article.

17.7 CERTIFICATES OF APPROPRIATENESS AND NON-APPLICABILITY

17.7.1 Certificate of Appropriateness

A. Except as provided in Subsections 17.7.2 and 17.7.3, a Certificate of Appropriateness shall be required before the following actions affecting any landmark, contributing or noncontributing structures, objects, sites, or property in a district may be undertaken and shall be a condition precedent to the issuance of any permit authorizing such work:

1. Any exterior alteration or new construction requiring a building permit from the City of Portland, including, but not limited to the following:
 - a. Removal and replacement of architectural detailing including, but not limited to, porch spindles and columns, railings, window moldings, and cornices.
 - b. Moving of structures or objects on the same site or to another site.
 - c. Construction of rooftop additions or decks.
 - d. Alteration of accessory structures such as garages.
 - e. Porch replacement or new construction of porches.
 - f. Installation of exterior access stairs.
 - g. Window or door replacement requiring enlargement of openings.
 - h. Installation of antennas and satellite receiving dishes.
 - i. Installation of solar collectors.
2. Any exterior alteration that does not require a building permit but which involves any one of the following activities:
 - a. Installation or replacement of either roofing or gutters where the roofing or gutters are a significant and integral feature of the structure including, but not limited to, mansard roofs, cupola roofs, ornamental slate roof features, and built-in gutter systems and the installation or replacement of siding.
 - b. Window and door replacement whether or not it requires enlargement of openings.
 - c. Masonry work including, without limitation, tuckpointing, sandblasting, chemical cleaning.
 - d. Site features other than vegetation including, without limitation, fencing, walls, paving, and grading. However, required review for alterations to cemeteries designated under this article shall not include review of alterations to headstones made for the purpose of recognition of additional decedents or installation of grave markers and/or tombs.
 - e. Streetscape and pedestrian improvements within historic districts, including but not limited to installation of pedestrian lighting, alteration to road or intersection alignment, installation of public signage (other than public-safety-related signage).
 - f. Landscaping within an historic landscape district.
 - g. Exterior lighting where proposed in conjunction with commercial and institutional signage or awnings or architectural lighting.

- h. Exterior utilities including mechanical, HVAC, plumbing, and electrical, where placed on elevations readily visible from a public way.
- 3. Installation or alteration of any exterior sign.
- 4. Any relocation of a landmark or contributing structure within a district.
- B. There shall be a rebuttable presumption that all structures within a district shall be contributing unless the designation report and Historic Resources Inventory expressly identifies otherwise. Where the Planning Authority or the owner believes that the identification is erroneous, the Historic Preservation Board shall determine whether the structure is noncontributing.

17.7.2 Exceptions to requirement of Certificate of Appropriateness

A Certificate of Appropriateness is not required:

- A. Where a Certificate of Non-Applicability has been issued within the previous 12 months.
- B. Where the work consists solely of ordinary maintenance and/or restoration, provided that there is no substitution of materials or alteration of architectural details.
- C. Where the work consists solely of emergency repair of a temporary nature.
- D. Where a Certificate of Economic Hardship has been issued and remains valid.
- E. In the case of either alteration of a structure (other than a landmark) or of new construction within a district, a Certificate of Appropriateness shall not be required where the Planning Authority determines that the proposed exterior changes to a structure are not readily visible at pedestrian heights from

any public way or public open space. Where a Certificate of Appropriateness is required for such changes, it shall be limited to those portions of the structure or structures so visible.

17.7.3 Alterations or new construction within historic landscape districts

A Certificate of Appropriateness shall be obtained before any site alteration or new construction within a historic landscape district may be undertaken, except where a Certificate of Non-Applicability has been issued or where construction or alteration is pursuant to a master plan approved by a prior Certificate of Appropriateness within five years of commencement and where the master plan is sufficiently detailed to guide the specific work

17.7.4 Applications for Certificate of Appropriateness

- A. Application for a Certificate of Appropriateness shall be made on a form prepared by the City and shall be submitted to the Planning Authority along with the applicable fee. Upon receipt of an application, the Planning Authority shall determine whether the application is complete. The Planning Authority shall determine whether the scope, nature, or scale of the proposed project requires review by the Historic Preservation Board or whether it is a minor or routine project that is appropriately reviewed at the administrative level.
- B. If the Planning Authority determines that the project should be reviewed by the Historic Preservation Board, the item shall be scheduled for the next available Historic Preservation Board meeting, provided that the notice requirements of this article can be met prior to

that meeting. The Planning Authority shall transmit a copy of the complete application to the Historic Preservation Board at least four days prior to their next scheduled meeting. The Planning Authority shall not issue or act upon the application until the Historic Preservation Board has completed its review and approval process. An application for a Certificate of Appropriateness shall be treated as an application for a Certificate of Economic Hardship under Section 17.9 whenever the Historic Preservation Board or the Planning Board, as applicable, determines that the proposed alteration includes any demolition which would:

1. Have the effect of causing the structure to no longer meet the criteria for designation of Section 17.4, or
 2. Materially impair the significance and integrity of the structure.
- C. Where a determination under (B) above is made by the Historic Preservation Board, the Planning Board shall review that decision as a preliminary matter, whether the Historic Preservation Board has taken final action with respect to the application or not. Upon any final determination that an application for a Certificate of Appropriateness is required to be treated as an application for a Certificate of Economic Hardship, no further action shall be taken with respect to the application until that certificate is applied for and is granted.
- D. Where the applicant has done work or caused work to be done on a structure or a property for which a Certificate of Appropriateness is sought and such work is either not done in compliance with an approval received under this article or was performed without the

approvals required under this article, no application for such structure or property shall be considered by the Planning Authority or by the Historic Preservation Board until the work done without approval is brought into compliance with the requirements of this article. The Historic Preservation Board may waive this requirement if the Historic Preservation Board determines that the work does not alter the essential character of the structure or district and one or more of the following standards are also met:

1. The work was needed to bring a building into conformance with any building or safety code.
 2. The applicant can demonstrate a good faith belief that necessary approvals had been received for the work at issue prior to the commencement of the work.
 3. The applicant can demonstrate a good faith belief that the work done was not subject to review under this article.
- E. Review of any application by the Planning Authority or by the Historic Preservation Board shall not constitute waiver of any future claims by the City concerning violations and shall not stop the City from prosecuting any violation.
- F. Once a completed application has been submitted, it shall be diligently pursued. Failure of an applicant to attend two or more Historic Preservation Board meetings at which an application is scheduled for review shall cause the application to expire and to be deemed null and void, unless the Planning Authority determines that good cause is shown for the failure to attend. Where good cause is shown for a failure to attend, the Historic Preservation

Board shall table an application to a date mutually agreed upon in writing.

- G. In determining the existence of the circumstances specified in this article, the Historic Preservation Board, Planning Board, or Board of Appeals may require such additional documentation or evidence as they may respectively determine to be necessary, including plans, drawings, and elevations, and notwithstanding any time limit for action or decision specified in this article, it may continue a proceeding for such additional time as it reasonably takes an applicant or any other party to comply with the request for additional relevant documentation or evidence and may draw a negative inference with regard to the content of any material evidence not produced upon reasonable request.

- H. Prior to issuance of any Certificate of Appropriateness, any applicant shall demonstrate sufficient right, title, or interest in the property, technical capacity, and financial capacity to complete any change proposed to be undertaken under the Certificate of Appropriateness, upon reasonable request of the Planning Authority. If the Planning Authority determines that the applicant has failed or refused to demonstrate an ability to complete the proposed activity, it shall refer the issuance to the Planning Board which shall make a final determination as to whether the applicant has demonstrated a sufficient capability to complete the proposed activity. Notwithstanding any other provision of this article, the Historic Preservation Board or Planning Board may include reasonable conditions, including the provision of adequate financial security, to ensure that actions taken

under a Certificate of Appropriateness will be successfully prosecuted to completion, as approved, in a timely manner.

17.7.5 Review process for Certificate of Appropriateness

The process for review of an application for a Certificate of Appropriateness shall be as follows, except to the extent specifically provided elsewhere in this Section 17.7:

- A. **For administrative-level reviews.** An application for a Certificate of Appropriateness for installation or alteration of any exterior sign; minor or routine alterations; and temporary alterations, construction, or improvements shall be reviewed by the Planning Authority for compliance with the standards of Section 17.8 and the *Historic Resources Design Manual*. Where staff determines that such an application meets these requirements, the Certificate of Appropriateness shall be issued by staff without presentation to the Historic Preservation Board for approval. Staff shall provide the Historic Preservation Board with written notice of staff approvals on a quarterly basis.
 1. If staff approves an application with conditions, the applicant may request review by the Historic Preservation Board. The application shall then be subject to review by the Historic Preservation Board pursuant to Subsection 17.7.5(B).
 2. Staff may elect to forward to the board an application found by staff to meet review standards but for which board confirmation is sought. The application shall be placed upon the next consent agenda of the Historic Preservation Board.

Any member of the Historic Preservation Board may remove an application from the consent agenda for the purpose of giving it a public hearing.

3. If the Planning Authority determines that the application does not meet the requirements of Section 17.8 and the *Historic Resources Design Manual*, the application shall be scheduled for review by the Historic Preservation Board pursuant to Subsection 17.7.5(B), unless the applicant withdraws the application.
4. For purposes of this subsection only, temporary is defined as either a one-time occurrence that does not exceed 30 days or as an annual occurrence that does not exceed one 30-day period each year. Minor or routine alterations are defined as incidental changes or additions to a building, site features, or exterior utilities which require building permits but will neither result in substantial changes to any significant historic features nor obscure such features. In no event shall any change be deemed minor when, in the opinion of the Planning Authority, such change shall alter the historic character of the building or site.

B. For Historic Preservation Board-level

reviews. The Planning Authority shall review the application and prepare a report for the Historic Preservation Board's consideration which addresses the proposed project's compliance with the review standards in Section 17.8. The Planning Authority may schedule one or more preliminary workshops on the application prior to a public hearing.

1. Following any preliminary workshop(s) and upon determination by the Historic Preservation Board that the application is complete, the application shall be scheduled for a public hearing at the next available meeting of the Historic Preservation Board which allows for adequate notice.
2. Following a public hearing, the Historic Preservation Board shall make a decision on the application.
3. The Historic Preservation Board shall enter findings of fact concerning the relationship between the application and the applicable standards of Section 17.8 immediately following a denial or conditional approval of any Certificate of Appropriateness. Written notice of the determination of staff or the Historic Preservation Board on the application, including a copy of the findings of fact, shall be sent by regular mail to the applicant.

C. Review process involving major site plans.

The process for review of an application for alteration or new construction that is also a major site plan as defined in Article 14 shall be as follows:

1. Site plan review by the Planning Board and historic preservation review by the Historic Preservation Board shall, to the extent feasible, proceed concurrently. Any proposed major site plan required to obtain a Certificate of Appropriateness under this article shall be exempt from the design standards included in Article 14, and shall comply with the applicable design standards listed within Article 17.

2. Upon receipt of the application for a Certificate of Appropriateness, the Planning Authority shall review the application and schedule a workshop for preliminary review by the Historic Preservation Board. The Planning Authority shall prepare an analysis of the application based upon the standards in Section 17.8 for consideration at the workshop. Additional workshops may be scheduled by the Historic Preservation Board with the consent of the applicant.
3. Following preliminary workshop(s) and upon determination by the Historic Preservation Board that the application is complete, the Historic Preservation Board shall conduct a public hearing and make a final decision on the application.
4. If the Historic Preservation Board finds that the application meets the applicable standards of Section 17.8, it shall issue a Certificate of Appropriateness, with or without conditions. If the action by the Historic Preservation Board is a denial or conditional approval, the Historic Preservation Board shall make findings of fact concerning the relationship between the application and the applicable standards of Section 17.8.
5. Written notice of the determination of the Historic Preservation Board on the application, including a copy of the findings of fact, if any, shall be sent by regular mail to the applicant within 14 days following its determination.

17.7.6 Issuance of Certificate of Appropriateness

- A. The Planning Authority shall issue the Certificate of Appropriateness within 14 days following a proposed affirmative decision by the Historic Preservation Board becoming final.
- B. Unless work authorized by a Certificate of Appropriateness shall be commenced within six months of the date of issuance of the Certificate of Appropriateness, the Certificate of Appropriateness shall expire and shall become null and void. The Planning Authority may approve additional extensions of this six-month period, not to exceed a total of two years, provided that a written request for extension is received prior to the expiration date of the Certificate of Appropriateness. In the event of litigation arising out of the granting of a Certificate of Appropriateness, the certificate shall remain valid until one year after the entry of final judgment in the litigation or until the end of the two-year period, whichever is later.
- C. An approval shall expire and become null and void upon the expiration of the authorization for the work, or for the development, under the applicable provisions of Chapter 6 of this Code of Ordinances or Articles 14 or 15.

17.7.7 Certificate of Non-Applicability

- A. The Planning Authority shall issue a Certificate of Non-Applicability as to property subject to this article when requested to do so when:
 1. The Planning Authority determines that none of the proposed work requires a Certificate of Appropriateness.
 2. The Planning Authority determines that all of the proposed work is ordinary

maintenance, restoration, or a combination thereof.

3. In the case of the alteration of a structure other than a landmark or of new construction within a district, where the Planning Authority determines that the proposed exterior changes to a structure are not readily visible at pedestrian heights from any public way. Where a Certificate of Appropriateness is required for such changes, a Certificate of Non-Applicability shall be issued upon request for those portions of the structure or structures not visible at such heights, provided, however, this paragraph shall not apply to alteration of a landmark or to any demolition.
 4. After any appeal where the Historic Preservation Board, Planning Board or any court determines that paragraphs (1), (2) or (3) of this subsection are applicable.
- B. The Planning Authority shall act upon any application for a Certificate of Non-Applicability within 14 days of receiving a complete written description of all work to be undertaken.

17.7.8 Amendments to approved certificates of appropriateness

- A. If at any time before or during work approved under the procedures set forth in this Section 17.7 the applicant requests minor amendments to approved work, the Planning Authority may approve such minor amendments under the procedures set forth in Subsection 17.7.5, provided that such amendments will not result in a waiver or substantial alteration of the approval or any condition attached to the approval. The applicant shall supply a written statement of the proposed amendment and

amended plans or drawings to the Planning Authority. The decision of the Planning Authority as to whether an amendment may be reviewed under this subsection shall be final.

17.7.9 Review process for demolition of landmarks or contributing structures within a district

- A. Any applicant seeking demolition of a landmark or contributing structure must apply for a Certificate of Economic Hardship to the Board of Appeals in accordance with Section 17.9 of this article. Said application must be approved by the Board of Appeals before a demolition permit can be issued.
- B. Any applicant seeking demolition of a noncontributing building as defined in this article may apply directly for a demolition permit without receiving approval from the Historic Preservation Board or a Certificate of Economic Hardship from the Board of Appeals.
- C. Any applicant seeking demolition of a portion of a contributing or landmark structure may request that the Historic Preservation Board make a determination as to whether such portion of the structure is noncontributing based on the definition of that classification contained in this article. If the board determines the portion to be noncontributing, the applicant may apply directly for a demolition permit.

17.8 STANDARDS FOR REVIEW OF APPLICATION FOR CERTIFICATE OF APPROPRIATENESS

17.8.1 *Historic Resources Design Manual*

- A. The Historic Preservation Board may provide further guidance on how to meet the standards

of this article in the *Historic Resources Design Manual*, which shall supplement this article. The *Historic Resources Design Manual* may include but need not be limited to maps and descriptions of landmarks and districts, a listing of properties which have been determined to be eligible for listing on the national register or for local designation, a glossary of terms and architectural styles, descriptions, and illustrations of how the standards of this article will be interpreted, and all designation ordinances, reports, and design guidelines. All provisions of the *Historic Resources Design Manual* shall be consistent with the standards of this article and any designation ordinance adopted hereunder.

- B. Amendments to the *Historic Resources Design Manual* shall be forwarded to the City Council as a communication and shall become effective 45 days from the date on which said amendments are sent to the City Council, unless the City Council takes official action disapproving the amendments, in whole or in part, prior to the expiration of the 45-day period.
- C. The *Historic Resources Design Manual* shall be maintained by the Planning Authority.

17.8.2 Standards for review of alteration

In considering an application for a Certificate of Appropriateness involving alteration, the Historic Preservation Board and the Planning Board shall apply the following general standards, as further described in the *Historic Resources Design Manual*, and any design guidelines accompanying the specific designation:

- A. Every reasonable effort shall be made to provide a compatible use for a property which

requires minimal alteration to the character defining features of the structure, object, or site and its environment or to use a property for its originally intended purpose.

- B. The distinguishing original qualities or character of a structure, object, or site and its environment shall not be destroyed. The removal or alteration of any historic material or distinctive architectural features should be avoided when possible.
- C. All sites, structures, and objects shall be recognized as products of their own time, place, and use. Alterations that have no historical basis or create a false sense of historical development, such as adding conjectural features or elements from other properties, shall be discouraged.
- D. Changes which may have taken place in the course of time are evidence of the history and development of a structure, object, or site and its environment. Changes that have acquired significance in their own right shall not be destroyed.
- E. Distinctive features, finishes, and construction techniques or examples of skilled craftsmanship which characterize a structure, object, or site shall be treated with sensitivity.
- F. Deteriorated historic features shall be repaired rather than replaced wherever feasible. Where the severity of deterioration requires replacement of a distinctive feature, the new feature should match the feature being replaced in composition, design, texture, and other visual qualities and, where possible, materials. Repair or replacement of missing historic features should be based on accurate duplications of features, substantiated by documentary, physical, or pictorial evidence

rather than on conjectural designs or the availability of different architectural elements from other structures or objects.

- G. The surface cleaning of structures and objects, if appropriate, shall be undertaken with the gentlest means possible. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be undertaken.
- H. Every reasonable effort shall be made to protect and preserve significant archaeological resources affected by or adjacent to any project. If resources must be disturbed, mitigation measures shall be undertaken.
- I. Contemporary design for alterations and additions to existing properties shall not be discouraged when such alterations and additions do not destroy significant cultural, historical, architectural, or archaeological materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the size, scale, color, material, and character of the property, neighborhood or environment.
- J. Wherever possible, new additions or alterations to structures and objects shall be undertaken in such a manner that, if such additions or alterations were to be removed in the future, the essential form and integrity of the historic property would be unimpaired.

17.8.3 Standards for review of new construction

In considering an application for a Certificate of Appropriateness involving new construction, the Historic Preservation Board and the Planning Board shall apply the following general standards as may be applicable to the context of the proposed construction. The intent and application of the

following standards are further described in the *Historic Resources Design Manual* and shall guide the board in its review.

A. Scale and form

1. *Height.* The proposed height shall be visually compatible with surrounding structures when viewed from any street or open space and in compliance with any design guidelines.
2. *Width.* The width of a building shall be visually compatible with surrounding structures when viewed from any street or open space and in compliance with any design guidelines.
3. *Proportion of principal facades.* The relationship of the width to the height of the principal elevations shall be visually compatible with structures, public ways, and open spaces to which it is visually related.
4. *Roof shapes.* The roof shape of a structure shall be visually compatible with the structures to which it is visually related.
5. *Scale of a structure.* The size and mass of structures in relation to open spaces, windows, door openings, porches, and balconies shall be visually compatible with the structures, public ways, and places to which they are visually related.
6. *Applicability to Congress Street Historic District.* In the Congress Street Historic District, for new construction within the B-3 zone, the Historic Preservation Board shall not impose conditions more restrictive than the dimensional requirements of the B-3 zone.
7. *Applicability to India Street Historic District.* For new construction within the

India Street Historic District, the Historic Preservation Board shall not impose conditions more restrictive than the dimensional requirements of the IS-FBC zone, except for in the case of a building addition which proposes to change the height of a contributing historic structure.

B. Composition of principal facades

1. *Proportion of openings.* The relationship of the width to height of windows and doors shall be visually compatible with structures, public ways, and places to which the building is visually related.
2. *Rhythm of solids to voids in facades.* The relationship of solids to voids in the facade of a structure shall be visually compatible with structures, public ways, and places to which it is visually related.
3. *Rhythm of entrance porch and other projections.* The relationship of entrances and other projections to sidewalks shall be visually compatible with the structures, public ways, and places to which they are visually related.
4. *Relationship of materials.* The relationship of the color and texture of materials (other than paint color) of the facade shall be visually compatible with the predominant materials used in the structures to which they are visually related.
5. *Signs.* Any new sign, and any change in the appearance of an existing sign located on a landmark, within a historic district, or within an historic landscape district, which is readily visible from any street or open space shall not be incongruous to the historic character of the landmark or district and shall comply with the criteria

and guidelines specified in the *Historic Resources Design Manual*.

C. Relationship to street

1. *Walls of continuity.* Facades and site structures, such as masonry walls, fences, and landscape masses, shall, when it is a characteristic of the area, form cohesive walls of enclosure along a street to ensure visual compatibility with the structures, public ways, and places to which such elements are visually related.
2. *Rhythm of spacing and structures on streets.* The relationship of a structure or object to the open space between it and adjoining structures or objects shall be visually compatible with the structures, objects, public ways, and places to which it is visually related.
3. *Directional expression of principal elevation.* A structure shall be visually compatible with the structures, public ways, and places to which it is visually related in its directional character, whether this be vertical character, horizontal character, or nondirectional character.
4. *Streetscape, pedestrian improvements.* Streetscape and pedestrian improvements and any change in the appearance thereof located adjacent to or on a landmark, within a historic district, or within a historic landscape district which is readily visible from any street or open space shall not be incongruous to the historic character of the landmark or district and shall comply with the criteria and guidelines specified in the *Historic Resources Design Manual*.

D. Other standards

1. *Compatible use.* Every reasonable effort shall be made to provide a compatible use for a property which requires minimal alteration to the character defining features of the structure, object, or site and its environment or to use a property for its originally intended purpose.
2. *Distinguishing original character.* The distinguishing original qualities or character of a structure, object, or site and its environment shall not be destroyed. The alteration of any historic material or distinctive architectural features should be avoided when possible.
3. *Archeological resources.* Every reasonable effort shall be made to protect and preserve significant archaeological resources affected by or adjacent to any project. If resources must be disturbed, mitigation measures shall be undertaken.
4. *Contemporary design.* Contemporary design for additions to existing properties shall not be discouraged when such alterations and additions do not destroy significant cultural, historical, architectural, or archaeological materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the size, scale, material, and character of the property, neighborhood and environment.
5. *Additions.* Wherever possible, new additions to structures and objects shall be undertaken in such a manner that, if such additions were to be removed in the future, the essential form and integrity of the structure would be unimpaired.

17.8.4 Standards for review of alterations to or redesign of noncontributing structures

- A. In considering an application for a Certificate of Appropriateness involving alteration(s) to a noncontributing structure the standards for review of alterations set forth in Subsection 17.8.2 shall apply as applicable. The intent of the review shall be to ensure no further erosion of any existing architectural character of the subject structure determined to be significant by the Planning Authority or Historic Preservation Board and, where practicable, to guide projects toward a more compatible relationship with the surrounding context.
- B. In considering an application for a Certificate of Appropriateness involving comprehensive redesign of a noncontributing structure, the standards for review of construction set forth in Subsection 17.8.3 shall apply.

17.8.5 Standards for review of relocation

In acting upon an application for a Certificate of Appropriateness involving relocation, the Historic Preservation Board and the Planning Board shall apply the following general standards and any design guidelines in the ordinance designating the landmark or district:

- A. Whether the historic or urban design character and aesthetic interest of the structure or object contribute to its present setting.
- B. If located within a district, whether there are definite plans for the area to be vacated and what the effect of those plans is on the character of the surrounding area. In such cases, consideration of additional design guidelines for construction to be imposed as a condition of approval is appropriate.

- C. Whether the relocation of the structure or object can be accomplished without significant damage to its physical integrity.
- D. Whether the proposed relocation area is compatible with the cultural, historical or architectural character of the structure or object.

17.8.6 Standards for review of signage

In considering an application for a Certificate of Appropriateness involving the installation or modification of sign(s), including awning(s) which incorporate signage, signs shall be compatible with the subject building and its surrounding context as detailed in the signage design guidelines included in the *Historic Resources Design Manual*. If there is a conflict between this standard and the requirements of Article 20, the stricter standard shall apply.

17.9 CERTIFICATE OF ECONOMIC HARDSHIP

17.9.1 Applicability

- A. Any applicant seeking demolition of a landmark or a contributing structure within a district may make application for a Certificate of Economic Hardship from the Board of Appeals. The application shall be submitted to the Planning Authority, together with the applicable fee.
- B. The Planning Authority shall transmit a copy of the application to the Board of Appeals, with copies to the Planning Board and the Historic Preservation Board, within 14 days following receipt of a properly completed application.

17.9.2 Standard to be applied

- A. The Board of Appeals shall approve an application for a Certificate of Economic Hardship only upon a determination that the

denial of approval of the proposed activity or of the proposed demolition will result in the loss of all reasonable use of the structure as required by Subsections 17.9.5 and 17.9.7.

- B. In applying this standard, the Board of Appeals shall consider among other things any evidence presented concerning the following:

1. Any opinions from a licensed engineer or architect with experience in renovation, restoration, or rehabilitation as to the structural soundness of the structure and its suitability for continued use, renovation, restoration, or rehabilitation.
2. Any estimates of the cost of the proposed alteration, construction, demolition, or removal and an estimate of any additional cost that would be incurred to comply with the recommendations of the Planning Board for changes necessary for it to be approved.
3. Any estimates of the market value of the property in its current condition; after completion of the proposed alteration, construction, demolition, or removal; after any expenditures necessary to comply with the recommendations of the Planning Board for changes necessary for it to approve a Certificate of Appropriateness; and in the case of a proposed demolition, after renovation of the existing structure for continued use.
4. In the case of a proposed demolition, any estimates from architects, developers, real estate consultants, appraisers, or other real estate professionals experienced in rehabilitation as to the economic feasibility of restoration, renovation, or rehabilitation of any existing structures or objects.

17.9.3 Information to be supplied by applicant

A. The applicant shall submit by affidavit the following information for an application to be considered to be complete:

1. The assessed value of the property and/or the structure in the case of a demolition for the two most recent assessments.
2. Real property taxes paid for the previous two years.
3. The amount paid for the property by the owner, the date of purchase, and the party from whom purchased, including a description of the relationship, if any, between the owner and the person from whom the property was purchased.
4. The current balance of any mortgages or any other financing secured by the property and the annual debt service, if any, for the previous two years.
5. All appraisals obtained within the previous two years by the owner or applicant in connection with purchase, offerings for sale, financing, or ownership of the property, or state that none were obtained.
6. All listings of the property for sale or rent, price asked and offers received, if any, within the previous four years, or state that none were obtained.
7. All studies commissioned by the owner as to profitable renovation, rehabilitation, or utilization of any structures or objects on the property for alternative use, or a statement that none were obtained.
8. For income-producing property, itemized income and expense statements from the property for the previous two years.

9. Estimate of the cost of the proposed alteration, construction, demolition, or removal and an estimate of any additional cost that would be incurred to comply with the recommendations of the Planning Board for changes necessary for it to approve a Certificate of Appropriateness.
10. Form of ownership or operation of the property, whether sole proprietorship, for profit or not for profit corporation, limited partnership, joint venture, or other.

B. In the event that the information required to be submitted by the applicant is not reasonably available, the applicant shall file with the affidavit a statement of the information that cannot be obtained and shall describe the reasons why such information is unavailable.

C. Notwithstanding the submission of the above information, the Board of Appeals may require additional evidence as provided in Subsection 17.7.4(G).

17.9.4 Public hearing

A. The Board of Appeals shall hold a public hearing on the application within 30 days following receipt of the completed application form. Where the application requests the demolition of a landmark or a contributing structure within a district, the public hearing shall not be held less than 90 days following receipt of the completed application, unless the applicant makes a clear showing that the delay will result in undue hardship of a unique or exceptional character which could not reasonably be or have been avoided. Upon such a showing, the Planning Authority may waive all or any part of the 90-day period and schedule the hearing before the board. Undue hardship

shall not include mere inconvenience or incidental financial loss. No such waiver shall be granted without the Planning Authority giving best practical notice to all persons entitled to notice of the hearing.

- B. Where the application requests the demolition of a landmark or a contributing structure within a district, the Planning Authority shall promptly notify any persons interested in historic preservation, who have registered in writing with him or her, give notice by mail to all owners of property within 500 feet of the structure, and shall require that the applicant immediately place a notice, to be supplied by the building official, in a prominent place on the structure and to maintain it there at all times during the pendency of the demolition application. The notice shall state that the structure has been proposed to be demolished by its owner and provide contact information for further information. The failure to give any notice required hereunder shall not affect the validity of any action taken by the Planning Authority or the Board of Appeals.
- C. The Planning Board may provide a report or any other information, documentation or evidence or request the Historic Preservation Board to assist the Board of Appeals in considering the extent of variance necessary, an appropriate incentive plan, or reasonable condition to be imposed.
- D. The Board of Appeals may continue a proceeding for such additional time as it reasonably takes an applicant, any other interested person, the Historic Preservation Board, or the Planning Board to comply with a request for additional information or evidence.

The applicant shall be afforded the right to present rebuttal evidence.

17.9.5 Determination by the Board of Appeals

- A. The determination by the Board of Appeals shall be made within 45 days following close of the public hearing and submission of all information, documentation, or evidence requested by the board. The determination shall be accompanied by findings of fact.
- B. The Board of Appeals shall not grant approval of an application involving demolition unless the board determines, upon clear and convincing evidence, that one or more of the following circumstances apply:
 1. The structure is not subject to this article.
 2. Denial of a demolition permit would result in a hardship to the property owner so great that it would effectively deprive the owner of all reasonable use of the structure. The extent of any demolition permitted shall be limited to the amount necessary to allow reasonable use of the structure. Where the condition of the structure is claimed to prevent any reasonable use, the applicant shall establish that such condition is not the result of the acts or neglect of the owner or his predecessors in title occurring in whole or in part after August 1, 1988.

17.9.6 Disapproval by Board of Appeals

If the determination of the Board of Appeals is to disapprove the application for a Certificate of Economic Hardship, the applicant shall be notified within five business days. The notice shall include a copy of the findings of fact and report.

17.9.7 Determination of no reasonable use

- A.** If the determination of the Board of Appeals is that the denial of the Certificate of Appropriateness has resulted in the denial of all reasonable use of the structure, or the entire property in the case of new construction, then the Certificate of Economic Hardship shall be issued by the Planning Authority 90 days following the determination unless during that time the City Council approves an incentive plan pursuant to Subsection 17.9.8.
- B.** A copy of the determination of the Board of Appeals, together with the findings of fact, shall be mailed to the applicant and filed with the City Clerk, the Planning Board, and the Historic Preservation Board within 14 days following the determination of economic hardship.

17.9.8 Incentive plan

The purpose of an incentive plan is to provide a mechanism to allow a reasonable use without the demolition of the complete structure or important architectural elements. The Planning Board, in cooperation with the Historic Preservation Board and the owner, may prepare a report and recommend to the Board of Appeals an incentive plan to assure reasonable use of the structure. This incentive plan may include, but is not limited to, loans or grants from the City of Portland or other public or private sources; acquisition by purchase or eminent domain; building and safety code modifications to reduce cost of maintenance, restoration, rehabilitation, or renovation; changes in applicable zoning regulations, including a transfer of development rights; or relaxation of the provisions of this article sufficient to allow reasonable use of the structure.

17.9.9 City Council consideration of incentive plan

- A.** Upon receipt of a report from the Board of Appeals recommending an incentive plan to assure reasonable use of the property, the City Council shall give prompt consideration to the determination of economic hardship and the report of the board, including the recommended incentive plan. The City Council shall approve or disapprove the incentive plan determined by the Board of Appeals to allow reasonable use of the structure within 90 days following the determination by the Board of Appeals.
- B.** A copy of the ordinance enacted by the City Council, together with the incentive plan, if any, shall be mailed to the applicant and transmitted to the Board of Appeals, the Planning Board, and the Historic Preservation Board within five business days following the enactment of the ordinance.

17.9.10 Issuance of Certificate of Economic Hardship

- A.** Upon receipt by the Board of Appeals of a copy of City Council action disapproving an incentive plan, or upon failure of the City Council to act to either approve or disapprove an incentive plan within the time specified, the Board of Appeals shall approve a Certificate of Economic Hardship to the applicant within 30 days. The certificate may be subject to conditions including design guidelines for subsequent new construction not inconsistent with the standards set forth in this article and the *Historic Resources Design Manual*. The Certificate of Economic Hardship shall be valid for a period of 120 days from approval by the

Board of Appeals, except as provided in Subsection 17.9.7 where an incentive plan has been proposed. Certificates of Economic Hardship shall not be transferable from the applicant to another subsequent owner of the same property.

- B. Upon presentation by the applicant of a valid Certificate of Economic Hardship to the Planning Authority, the Certificate of Appropriateness shall be issued to the applicant within 14 days.

17.10 MAINTENANCE

17.10.1 Preservation of protected structures

- A. All landmarks, and all contributing structures located in an historic district, shall be preserved against decay and deterioration by being kept free from the following structural defects by the owner and any other person or persons who may have legal custody and control thereof:
 1. Deteriorated or inadequate foundation which jeopardizes its structural integrity.
 2. Defective or deteriorated floor supports or any structural members of insufficient size to carry imposed loads with safety which jeopardize its structural integrity.
 3. Members of walls, partitions, or other vertical supports that split, lean, list, or buckle due to defective material or deterioration which jeopardize its structural integrity.
 4. Structural members of ceilings and roofs, or other horizontal structural members, which sag, split, or buckle due to defective materials or deterioration or are of insufficient size to carry imposed loads

with safety which jeopardize its structural integrity.

5. Fireplaces or chimneys which list, bulge, or settle due to defective material or deterioration or are of insufficient size or strength to carry imposed loads with safety which jeopardize its structural integrity.
 6. Lack of weather protection which jeopardizes the structural integrity of the walls, roofs, or foundation.
- B. The owner or such other person shall repair such building, object, or structure within a specified period of receipt of a written order to correct defects or repairs to any structure as provided by (A) above, so that such structure shall be preserved and protected in accordance with the purposes of this article.
 - C. Any such order shall be in writing, shall state the actions to be taken with reasonable particularity and shall specify dates for compliance, which may be extended by the Planning Authority for reasonable periods to allow the owner to secure financing, labor or materials.

17.11 PENALTIES

17.11.1 Fines for violation

Failure to perform any act required by this article or performance of any act prohibited by this article or of any conditions or any certificate issued hereunder shall constitute a violation and be subject to a fine as provided in 30 A M.R.S. §4452. Each day on which there is failure to perform a required act or on which a violation exists shall constitute a separate violation for purposes of this section.

17.11.2 Additional penalties for willful violation or gross negligence

- A.** In addition to the penalties authorized by Subsection 17.11.1, a violation which is intentional, or occurs through gross negligence, shall be subject to the following provisions:
1. No permit shall be issued under Chapter 6 of this Code of Ordinances for any alteration or new construction affecting such property for a period of five years following the last date of the violation, other than permits necessary to correct the violation. However, upon presentation of evidence satisfactory to the Planning Authority that the violation has been corrected, any remaining portion of the five-year prohibition on issuance of a permit may be waived.
 2. For a period of 25 years, any alteration or new construction on the property shall be subject to this article, whether or not any remaining structure or object on the property continues to have the cultural, historical, architectural, or archaeological character and integrity that caused it to be nominated or designated as a landmark or part of a district.
 3. As a condition for any new land use approval, the owner may be required to rebuild, reconstruct, restore, or replicate the structure or object on the property.
- B.** Paragraphs (A)(1) and (2) above shall not apply to violations which are limited to noncontributing structures.

17.11.3 Other remedies

Notwithstanding the provisions of Subsections 17.11.1 and 17.11.2, the City may institute appropriate

proceedings in law and equity to prevent or remedy any violation of this article.

17.11.4 Liberal construction of article

This article shall be liberally applied and construed to effectuate the purpose of preservation set forth in Section 17.1.

17.11.5 Exception for dangerous buildings

This article shall not apply to any structure which has been ordered demolished by the municipal officers or a court, in accordance with 17 M.R.S. § 2851 et seq., its equivalent, as it may be amended from time to time, or to any structure which has been partially destroyed and is determined by the Planning Authority to represent an immediate hazard to the public health or safety, which hazard cannot be abated by reasonable measures specified by the Planning Authority, including without limitation securing apertures and/or erecting fencing.

17.12 APPEALS

The applicant, or any person who has participated in opposition to the application and demonstrates a particularized harm caused by the approval of any application associated with this article, may appeal that decision in accordance with Article 2.

18 HOUSING

18.1 HOUSING PRESERVATION AND REPLACEMENT

18.1.1 Purpose

The purpose of the housing preservation and replacement ordinance is:

- A. To promote and facilitate an adequate supply of housing, particularly affordable housing for all economic groups.
- B. To limit the net loss of housing units in the city.
- C. To preserve housing in zones where housing is permitted in the city for all residents in order to promote the health, safety, and welfare of its citizens.

18.1.2 Applicability

- A. Except as otherwise provided in this section, the housing preservation and replacement ordinance shall apply to the loss of three or more dwelling units in a five-year period, provided that such dwelling units were a legally registered residential use as of July 1, 2002. For the purposes of this section, dwelling units shall be as defined in Article 3, but also include rooming units that people rent in or sleep in within lodging houses, dormitories, shelters, and sheltered care group homes.
- B. Except as otherwise provided in this section, the housing preservation and replacement ordinance shall also apply to proposals that result in the loss of fewer than three dwelling units which were legally registered residential use as of July 1, 2002 for the purposes of creating surface parking.
- C. For the purposes of this section, loss of dwelling units shall mean the elimination or conversion to nonresidential use of a dwelling unit and dwelling units that remain vacant for

three years or more or are lost due to demolition unless the vacancy or demolition results from accidents outside of the owner's control, fire, natural disasters, or acts of war.

- D. Determination of number of the dwelling units within a structure or structures and the number of units lost will be based on the records of the Building Authority indicating the legal, registered use of the property since July 1, 2002 through the time of application. The actual use of the property for purposes of applicability of this section may be rebutted by the owner by proof of documentary evidence including but not limited to photographs, letters, and sworn affidavits. The Planning Authority may conduct its own investigation of the actual use and shall determine the applicability of this section based on the totality of the evidence.

18.1.3 Exemptions

This section does not apply to:

- A. Consolidation, elimination, or reconfiguration of one or more dwelling units within an existing structure, as long as all the resulting units remain as dwelling units after such consolidation, elimination, or reconfiguration, except as provided by (E) below. Conversion of a dwelling unit to a hotel or motel room shall not qualify for the exemption provided by the paragraph.
- B. Proposals that result in a number of units equal to or greater than the number of units lost as determined by the Planning Authority.
- C. Legally nonconforming dwelling units existing in zones which no longer permit residential uses.
- D. Property which has been ordered demolished by the City, pursuant to 17 M.R.S. § 2851, et seq.,

as amended, except where it is determined by the Building Authority that the deterioration was caused by neglect or lack of maintenance.

- E. Paragraph (A) above notwithstanding, the conversion to a nonresidential use of any dwelling units located on the ground floor of a building within a mixed-use zone.

18.1.4 Planning Authority approval required

Notwithstanding any other provision of this section, a proposal to demolish or to convert three or more dwelling units to a nonresidential use in a zone where such use is otherwise permitted must first obtain approval from the Planning Authority. In addition to any other requirements of the Land Use Code, the applicant must submit a statement certifying the number of dwelling units to be demolished or converted to nonresidential use, as well as a description of the characteristics of each of those units.

18.1.5 Tenant notification requirements

Prior to elimination as a result of demolition or conversion to nonresidential use, the owner shall:

- A. Provide the Planning Authority a list containing the name of each tenant currently residing in the dwelling units to be demolished or converted to nonresidential use, as well as verification of compliance with tenant notice requirements of this subsection.
- B. Deliver to each tenant who occupies such a dwelling unit a written notice to vacate the unit. The notice shall either be sent by certified mail, return receipt requested, or served in-hand. The notice will grant the tenant not less than 90 days from the date of receipt of the notice to vacate the unit.

- C. File proof of service of the notice with the Planning Authority.

18.1.6 Housing replacement requirements

- A. The Planning Authority shall require, as a condition of approval, that an owner shall replace any dwelling units that are demolished or converted to nonresidential use.
- B. This requirement may be satisfied in any one of the following ways, which may be used in combination:
 1. *Construction of units.* The construction of housing units within a new structure or a new addition either on site or off-site.
 2. *Residential conversion.* The conversion of a nonresidential building to residential use.

18.1.7 Replacement unit requirement

In addition to the foregoing, all replacement units built pursuant to Subsection 18.1.6.B above shall:

- A. Be located within the same United States census block group as the parcel from which the dwelling units are being removed or within 1,500 feet of the dwelling units being removed.
- B. Not previously have been on the market as of the date of application.
- C. Be situated within a development which has not been a candidate for site plan approval as of the date of the application.
- D. Be comparable in size to the units replaced. For the purpose of this section, “comparable in size” means that the aggregate size of the replacement units will be no less than 80% of the size of the aggregate of the original units to be replaced.

18.1.8 Contribution to the Housing Trust Fund

- A. The applicant may meet the requirements of this housing replacement ordinance by depositing \$50,000 for each dwelling unit into the City's Housing Trust Fund.
- B. Beginning on January 1, 2004 and annually thereafter, the amount of the contribution shall be adjusted by multiplying this amount originally deposited for each unit by a fraction, the denominator of which shall be the "Consumer Price Index for Urban Wage Earners and Clerical Workers ("CPI-W"), U.S. City Average, "All Items Index," as published by the United States Bureau of Labor Statistics ("the index") for January 1, 2003 year, and the numerator of which shall be the index for the same month in each subsequent year. In the event that the index is not then in existence, the parties shall use such equivalent price index as is published by any successor governmental agency then in existence, or, if none, then by such nongovernmental agency as may then be publishing an equivalent price index, in lieu of and adjusted to the index. If the index shall cease to use 1982-84 equals 100 as the basis of calculation, or if a substantial change is made in the terms or number of items contained in the index, the base index shall be adjusted to conform to such change, using such computation thereof, if available, as shall be employed by the United States Department of Labor in computing same. Notwithstanding anything herein to the contrary, contributions made after January 1, 2004 shall not be less than the amount originally required to be deposited for each rooming or dwelling unit.

18.1.9 Performance guarantee

Owners or affiliates must post a performance guarantee in the form of a letter of credit, or other security acceptable to the City attorney, in the amount equivalent to the amount the applicant would have been required to contribute to the City's Housing Trust Fund if the applicant had chosen that option pursuant to Subsection 18.1.8. Such a performance guarantee shall be valid for no more than three years, after which the full amount due shall be provided to the City's Housing Trust Fund if replacement units satisfying the conditions of this housing replacement ordinance do not have certificates of occupancy.

18.1.10 Partial waiver of replacement requirements

- A. Any owner who has applied for site plan review for elimination or conversion to nonresidential use of dwelling units may apply to the Zoning Board of Appeals for a partial waiver from the housing replacement requirements of this section. Such waiver may be a downward adjustment of up to 50% of the owner's housing replacement obligation if the owner establishes to the board's satisfaction that:
 1. The proposed development is consistent with the Comprehensive Plan.
 2. The proposed development provides significant value and benefit to the immediate and surrounding neighborhood, including, but not limited to, community enhancement, social benefits or job creation.
 3. The applicant demonstrates with objective evidence that the imposition of the requirements of this section would impose such an economic burden upon the

project relative to its scope that it renders the project impossible to develop.

4. The requested relief does not constitute a grant of a special privilege inconsistent with the limitations upon similar properties.
- B.** The Zoning Board of Appeals must make positive findings on each of the four criteria above in order for any such adjustment to be valid. An applicant aggrieved of a decision of the Zoning Board of Appeals may appeal a decision under this subsection pursuant to the provisions of Article 2.

18.1.11 Effect of other City ordinances

- A.** Nothing in this section shall permit the demolition or conversion to nonresidential use of dwelling units in residential property protected by Article 17, except as permitted by that ordinance.
- B.** A conditional zone may not be used to circumvent the application of this section. The terms of this section shall apply to any conditional zone which involves dwelling units affected by this section. Notwithstanding the foregoing, nothing herein shall be deemed to prevent the City and the applicant from agreeing to terms which exceed those imposed by this section by means of a conditional zone.

18.1.12 Appeals

Any applicant aggrieved by a decision of the Planning Authority under this section may appeal to the Zoning Board of Appeals within 30 days of that decision.

18.2 AFFORDABLE HOUSING

18.2.1 Purpose

It is in the public interest to promote an adequate supply of housing that is affordable to a range of households at different income levels. The purpose of this section therefore is to offer incentives to developers to include units of affordable and workforce housing within development projects, thereby mitigating the impact of market rate housing construction, or the demonstrated increase in affordable housing needs resulting from the creation of new lower-income jobs, on the limited supply of available land for suitable housing, and helping to meet the housing needs of all economic groups within the city. The City believes that this section will assist in meeting the City's comprehensive goals for affordable housing, in the prevention of overcrowding and deterioration of the limited supply of affordable housing, and by doing so promote the health, safety, and welfare of its citizens.

TABLE 18-A: AFFORDABLE HOUSING FEE REDUCTIONS

% of New Units That are Low- Income or Workforce	Development Fee Discount	Cost of Work (Building Permit) Fees
5% up to but not including 10%	5% reduction	\$10.50 per \$1,000
10% up to but not including 15%	10% reduction	\$9.90 per \$1,000
15% up to but not including 20%	15% reduction	\$9.35 per \$1,000
20% up to but not including 25%	20% reduction	\$8.80 per \$1,000
25% or more	25% reduction	\$8.25 per \$1,000



18.2.2 Reduction of fees

- A.** Notwithstanding any other provision of this Land Use Code or Chapter 6 to the contrary, development fees shall be reduced by the City for an eligible project in the manner described in Table 18-A.
- B.** Development fees shall include:
1. Site plan review and inspection fees.
 2. Subdivision review and inspection fees.
 3. Impact fees.
 4. Administrative fees.
 5. Construction and permit fees as described in Chapter 6 of the City of Portland Code of Ordinances.
- Development fees do not include any fees charged for review conducted by any party other than the City.
- C.** Eligible project shall mean a development project:
1. That is permissible under the provisions of this Land Use Code in the zone in which it is proposed.
 2. That will be a single-family or multi-family dwelling, or subdivision consisting of a group of dwellings, and will not be located in an R-1 or R-2 zone.
 3. That creates new dwelling units, among which is at least one low-income or workforce housing unit for rent or sale, through new construction, substantial rehabilitation of existing structures, adaptive reuse or conversion of a nonresidential use to residential use, or any combination of these elements. Affordable housing units for sale or rent may not differ in exterior design from other units within an eligible project.

4. Projects shall not be considered “eligible projects” solely because they are subject to Subsection 18.2.3.
- D.** The Planning Authority shall perform its review of an eligible project in as expedited a manner as is practical, without impairing the scope or thoroughness of the review. The Planning Authority may adopt administrative procedures to prioritize review of eligible projects and facilitate this expedited review.
- E.** The Planning Board shall make its best efforts to give priority in scheduling workshops and public hearings related to any plans or applications required for an eligible project that are within the Planning Board’s jurisdiction, without impairing the scope or thoroughness of its review. At the conclusion of these public meetings, the Planning Board shall promptly issue a decision on all such plans and applications before it for consideration.

18.2.3 Ensuring workforce housing

- A. Purpose.** Based on the City’s Comprehensive Plan and the City’s 2015 housing study, it is in the public interest to promote an adequate supply of housing that is affordable to a range of households at different income levels. The purpose of this subsection is to ensure that housing developments over a certain size provide a portion of workforce housing units and, by doing so, promote the health, safety, and welfare of Portland citizens.
- B. Applicability.** This subsection shall apply to development projects that create ten or more net new dwelling units for rent or for sale through new construction, substantial rehabilitation of existing structures, adaptive reuse or conversion of a nonresidential use to

residential use, or any combination of these elements, with the exception that projects using public financing requiring affordability restrictions, as defined by tax increment financing, U.S. Department of Housing and Urban Development funds such as HOME or CDBG, other federal, state, or local housing program, or the Low-income Housing Tax Credit program, shall be considered exempt.

C. Standards. Development projects subject to this subsection shall be subject to the following requirements:

1. Notwithstanding any language to the contrary in this Land Use Code, all developments of ten units or more are conditional uses subject to Planning Board review on the condition that they comply with the requirements of this subsection, unless they are within the India Street Form-Based Code Zone, in which case the review will be conducted administratively or by the Planning Board in accordance with the thresholds of site plan review for the district.
2. At least 10% of the units in the project shall meet the definition of workforce housing unit for sale or for rent as defined in Article 3. The project shall have the option of paying a partial fee-in-lieu as per (6) below or providing an additional unit on-site for any fractional value.
3. Projects shall not be segmented or phased to avoid compliance with these provisions. In cases where projects are completed in phases, affordable units shall be provided in proportion to the development of market rate units unless otherwise permitted through regulations.
4. Workforce units are encouraged to be integrated with the rest of the development, should use a common entrance, and should provide no indications from common areas that these units are workforce housing units.
5. Workforce units need not be the same size as other units in the development but the number of bedrooms in such units, either on- or off-site, shall be no less than 10 percent of the total number of bedrooms in the development. For the purposes of calculating the number of bedrooms in a development, every 400 square feet in each market rate unit will count as a bedroom if the Planning Authority determines this method is appropriate in lieu of counting actual bedrooms.
6. As an alternative to providing workforce housing units, projects may pay a fee-in-lieu of some or all of the units. In-lieu fees shall be paid into the Housing Trust Fund. The fee for affordable units not provided shall be \$100,000 per unit, adjusted annually in the same way as the fee under Subsection 18.1.8.
7. Workforce housing units for sale, if converted to workforce housing units for rent, shall become subject to the income limits and other requirements of such units.
8. If at least 33% of the units in a development are workforce units, the development is eligible for subsidy through an Affordable Housing TIF, subject to City Council approval.
9. The term of affordability for the required 10% workforce units provided shall be defined as shown in Table 18-B.



- D. Implementing regulations.** Regulations to further specify the details of this subsection shall be developed, including, but not limited to:
1. Specific methodology for income verification.
 2. Situations where less than permanent affordability might be considered.
 3. Guidelines for meeting the requirement that off-site units be “in the same neighborhood.”

TABLE 18-B: MINIMUM TERM OF AFFORDABILITY FOR REQUIRED WORKFORCE UNITS

% of Workforce Units Provided	Minimum Term of Affordability
	Longest term permitted under federal, state, and local laws and ordinances
10%	
25%	30 years
50%	20 years
100%	10 years

TABLE 18-C: BONUSES FOR ELIGIBLE PROJECTS

% Low-income Units	% Workforce Units	Density Permitted ¹	Additional Height Permitted ²	Setback Reductions ³
10%	20%	1.1 x base	N/A	N/A
20%	40%	1.2 x base	10 ft.	N/A
30%	60%	1.3 x base	10 ft.	5 ft.
50%	100%	2.0 x base	15 ft.	5 ft.
75%	N/A	2.5 x base	25 ft.	10 ft.

¹ “Base” is the number of units allowed under the zoning without this bonus but with any other bonuses applied. In R-P zones, multifamily is permitted with a “base” no less than 1 unit per 1,500 SF. of land area. If an eligible project is providing both workforce and affordable housing units, the applicant shall have the option of utilizing applicable incentives, but not cumulatively.

² The maximum additional height permitted in the B-1/B-1b zones and the R-P zone shall be 15 feet. In addition, the maximum structure height is 50 feet within 750 feet of the Portland Observatory.

³ Setback reductions are absolute reductions in front, side, and/or rear setback requirements. The maximum setback reductions in the B-1/B-1b and R-P zones shall be 5 ft.

- E. Reporting to City Council.** In conjunction with the annual report on the Housing Trust Fund, the Planning Authority shall annually report on developments subject to this subsection, the number of units produced, the amount of fee-in-lieu collected, and the overall effectiveness of this subsection in achieving its stated purpose.

18.2.4 Density and dimensional bonuses and reductions

Notwithstanding any other provision of this Land Use Code to the contrary, in order to encourage low-income and workforce units in designated growth areas, eligible projects as defined under Subsection 18.2.2 may avail themselves of the following options:

- A. Density bonuses.** The maximum number of units that would otherwise be allowed under this Land Use Code shall be increased for an eligible project in the manner described in Table 18-C, applicable in the B-1/B-1b, B-2/B-2b/B-2c, B-3/B-3b/B-3c, B-5, R-7, and R-P zones.
- B. Planned Residential Unit Developments (PRUDs).** In order to promote orderly development of low- and moderate-income development as PRUDs, any project in which more than 50% of the units are low-income or workforce units for rent or for sale may utilize the following dimensional bonuses and changes:
1. Minimum lot area per dwelling unit is reduced by 50%.
 2. Maximum number of units and maximum length of buildings do not apply but may be set through site plan review.
 3. Minimum building setbacks may be reduced to 10 feet.

4. The PRUD may cross public rights of way provided that the right of way does not count towards minimum lot size nor towards any open space requirements.
 5. Minimum recreation open space area is reduced to 200 square feet per dwelling unit of common area designated for recreational purposes by the residents. Minimum contiguous size and setbacks do not apply and shall be set through site plan review.
 6. The Planning Board's *Design Manual*, design standards, and guidelines with respect to PRUDs shall apply in full to PRUDs utilizing this subsection.
- C. Unit size and term of affordability.** In order to be eligible for this subsection, the low-income and workforce housing units must meet Subsections 18.2.3(C)(3), (4), and (5) and be affordable for the longest term permitted under federal, state, and local laws.
- D. Required public process.** The developer of the project must also commit to a good faith effort to communicate openly with affected properties as their process moves forward. At a minimum, no less than 30 days prior to application for site plan review, any project that wishes to take advantage of this subsection must hold a public meeting noticed to all properties within 500 feet of their site and post a sign on the property in question describing the proposed project, intent to submit an application to the City in 30 days (cite anticipated submission date), and contact information for the developer and the Planning Authority. The Planning Board may adopt regulations regarding the content and

processes for noticing as part of the *Technical Manual*.

- E. Projects under 18.2.3.** Projects that are subject to Subsection 18.2.3 that choose to provide the required workforce housing units on site are eligible for a 25% increase in total permitted units. If an eligible project as defined under Subsection 18.2.2 is also subject to Subsection 18.2.3, the applicant shall have the option of utilizing either this bonus or any bonuses they are eligible for under Subsections 18.2.4(A) and (B) but not both.

18.2.5 Inclusionary zoning for hotel projects

- A. Purpose.** This subsection is based on City analysis, most specifically the analysis documented in the Greater Portland Council of Government study *Proposed Hotel Linkage Fee: Supportable Range* dated August 29, 2018, that finds that new hospitality developments create a need for new affordable housing. This need is the result of the fact that hospitality developments necessarily create a number of jobs that do not pay employees at a rate sufficient to allow those employees to afford market-rate housing in the City of Portland.
- B. Hotel projects.** For the purposes of this subsection, hotel projects shall include any hotel as defined in Article 3 consisting of 10 or more guest rooms for rent. Any expansion of an existing hotel by 10 or more rooms within any five-year period will also be considered a hotel project.
- C. Hotel projects conditional uses.** Notwithstanding anything to the contrary in this Land Use Code, all hotel projects are conditional uses subject to Planning Board

review on the condition that they comply with the requirements of this Subsection 18.2.5.

- D. **Low-income housing minimum.** All hotel projects shall provide one unit of low-income housing for rent in the City of Portland for every 28 rooms in the hotel project, which shall meet the standards outlined in Subsections 18.2.3(C)(3), (4), and (5) and in the implementing regulations governing low-income units. This amount shall be rounded up to the nearest increment of 28 rooms. These units shall be deed restricted for the longest period permitted by law, shall not be used for short-term rentals of less than 30 days, and must be provided with distinct entrances from the street to delineate them from the hotel itself.
- E. **Fee-in-lieu alternative.** As an alternative to providing low-income housing units under Subsection 18.2.5(D) above, a hotel project may pay a fee-in-lieu of \$3,806 per hotel guest room. This amount shall be paid into the City's Housing Trust Fund and used for the purposes set forth in the ordinance and regulations applicable to that trust.
- F. **Annual adjustments.** The amounts in Subsection 18.2.5(E) above shall be adjusted annually in the same way as the fee under Section 18.1.8.
- G. **Regulations.** The Planning Board may promulgate implementing regulations based on this subsection.

18.3 HOUSING TRUST FUND

18.3.1 Purpose

The purpose of enacting this section is:

- A. To establish a City of Portland Housing Trust Fund for the promotion, retention, and

creation of an adequate supply of housing, particularly affordable housing, for all economic groups and to limit the net loss of housing units in the city.

- B. To serve as a vehicle for addressing very low, low, and median income housing needs through a combination of funds as set out in this article.

18.3.2 Establishment of the Housing Trust Fund

The City Council shall establish a special revenue account under the name "City of Portland Housing Trust Fund." Deposits into the fund shall include:

- A. Contributions from the City's housing replacement ordinance under Subsection 18.1.8.
- B. In-lieu fees under Subsections 18.2.3 and 18.2.5.
- C. Funds appropriated to be deposited into the fund by vote of the City Council.
- D. Voluntary contributions of money or other liquid assets to the fund.
- E. Any federal, state, or private grant or loan funds provided to the fund.
- F. Interest from fund deposits and investments.
- G. Repayments of loans made from the fund.

18.3.3 Management of the trust fund

The City Manager, or his or her designee, shall serve as the manager of the Housing Trust Fund. The responsibilities of the manager, subject to the orders of the City Council, shall include:

- A. Maintaining the financial and other records of the Housing Trust Fund.
- B. Disbursing and collecting Housing Trust Fund monies in accordance with the Housing Trust Fund annual plan.
- C. Monitoring the use of monies distributed to successful applicants for Housing Trust Fund support to assure on-going compliance with

the purposes of the fund and the conditions under which these monies were granted or loaned.

18.3.4 Housing Trust Fund annual plan

- A. Each fiscal year, the City Council shall adopt a Housing Trust Fund annual plan. The City Manager shall submit to the City Council a recommended Housing Trust Fund annual plan, utilizing the revenues of the Housing Trust Fund as well as any other funds the manager may propose as appropriate. The housing committee of the City Council or such other committee as the council shall designate shall conduct public hearings on the recommended plan and refer the matter to the council for action.
- B. The Housing Trust Fund annual plan shall include:
 - 1. A description of all programs to be funded in part or in full by the Housing Trust Fund.
 - 2. A description of how funds from the Housing Trust Fund will be distributed among very low-income, low-income and moderate-income households.
 - 3. The amount of funds budgeted for programs funded in part or in full from the Housing Trust Fund.
- C. Priority for the expenditure of funds collected pursuant to Section 18.1 shall be given to the creation of new housing stock, through either new construction or conversion of nonresidential buildings to residential use.

18.3.5 Distribution and use of the Housing Trust Fund's assets

- A. All distribution of principal, interest, or other assets of the Housing Trust Fund shall be made

in furtherance of the public purposes set out in Section 18.1.

- B. During each year, the Housing Trust Fund shall disburse as grants or loans so much of the Housing Trust Fund's assets as the City Council in its discretion has approved in the Housing Trust Fund annual plan.
- C. Funds shall not be used for City administrative expenses.
- D. Funds shall not be used for property operating expenses or supporting services.
- E. No grants or loans shall be awarded by the Housing Trust Fund to corporations, partnerships, or individuals who are delinquent at the time of application in the payment of property taxes or other fees to the City of Portland, who have been convicted of arson, who have been convicted of discrimination in the sale or lease of housing under the fair housing laws of the State of Maine, or who have pending violations of current City electrical, plumbing, building, or housing codes or zoning ordinances.

18.3.6 Term of affordability

- A. Whenever funds from the Housing Trust Fund are used for the acquisition, construction, or substantial rehabilitation of an affordable rental or cooperative unit, the City of Portland shall impose enforceable requirements on the owner of the housing unit that the unit remain affordable for the remaining life of the housing unit, assuming good faith efforts by the owner to maintain the housing unit and rehabilitate it as necessary. The remaining life of the housing unit shall be presumed to be a minimum of 30 years.



- B. Whenever funds from the Housing Trust Fund are used for the acquisition, construction, or substantial rehabilitation of ownership housing, the City of Portland shall impose enforceable resale restrictions on the owner to keep the housing unit affordable for the longest feasible time, while maintaining and equitable balance between the interests of the owner and the interests of the City of Portland.
- C. The affordability restriction requirements described in this subsection shall run with the land and the City of Portland shall develop appropriate procedures and documentation to enforce these requirements and shall record such documentation in the Cumberland County Registry of Deeds.

18.4 CONDOMINIUM CONVERSION

18.4.1 Purpose

The purpose of this section is to regulate the conversion of rental housing to condominiums, to minimize the potential adverse impacts of such conversion on tenants, to ensure that such converted housing is safe and decent, and to maintain a reasonable balance of housing alternatives within the city for persons of all incomes.

18.4.2 Applicability

This section shall apply to the conversion of any rental unit to a condominium unit. For the purposes of this section, developer shall mean any person or other legal entity, but not including an established lending institution unless it is an active participant in a common promotional scheme, who, whether acting as principal or agent, records a declaration of condominium that includes real estate, any portion of which was previously a rental unit.

18.4.3 Protection of tenants

- A. **Notice of intent to convert.** A developer shall give to each tenant, meaning any occupant in lawful possession of a rental unit, whether by lease, sublease, or otherwise, written notice of intent to convert at least one 120 days before the tenant is required by the developer to vacate. If a tenant has been in possession of any unit within the same building for more than four consecutive years, the notice period shall be increased by 30 additional days for each additional year, or fraction thereof, to a maximum of 240 additional days. The notice shall set forth specifically the rights of tenants under (A), (B), and (C) of this subsection and Subsection 18.4.4, and shall contain the following statement:

If you do not buy your apartment, the developer of this project is required by law to assist you in finding another place to live and in determining your eligibility for relocation payments. If you have questions about your rights under the law, or complaints about the way you have been treated by the developer, you may contact the Department of Permitting & Inspections, City of Portland, 389 Congress Street, Portland, Maine 04101.

- B. If the notice specifies a date by which the tenant is required to vacate, the notice may also serve as a notice of termination under the applicable law of forcible entry and detainer, if it meets the requirements thereof. The notice shall be hand delivered to the tenant or mailed, by certified mail, return receipt requested, postage prepaid, to the tenant at the address of the unit or such other address as the tenant

may provide. The notice shall be effective when actually received. No tenant may be required by a developer to vacate without having been given notice as required herein, except for the reasons specified in the applicable law of forcible entry and detainer, and in accordance with the procedures thereof. The terms of a tenancy, including rent, may not be altered during the notice period, except as expressly provided in a preexisting written lease. If, within 120 days after a tenant is required by a developer to vacate, the developer records a declaration of condominium without having given notice as required herein, the developer shall be presumed to have converted in violation of this article.

- C. Option to purchase.** For a 60-day period following the giving of notice as required in Subsection 18.4.3(A), the developer shall grant to the tenant an exclusive and irrevocable option to purchase the unit of which the tenant is then possessed, which option may not be assigned. If the tenant does not purchase or contract to purchase the unit during the 60-day period, the developer may not convey or offer to convey the unit to any other person during the following 180 days at a price or on terms more favorable than the price or terms previously offered to the tenant, unless the more favorable price or terms are first offered exclusively and irrevocably to the tenant for an additional 60-day period. This subsection shall not apply to any rental unit that, when converted, will be restricted exclusively to nonresidential use. If, within two years after a developer records a declaration of condominium, the use of any such unit is changed such that but for the preceding

sentence, this subsection would have applied, the developer shall be presumed to have converted in violation of this article.

18.4.4 Relocation payments

If the tenant does not purchase the unit, the developer shall, before the tenant is required by the developer to vacate, make a cash payment to the tenant in an amount equal to the amount of rent paid by the tenant for the immediately preceding two months, provided that this requirement shall not apply to any tenant whose gross income exceeds 80% of the median income of the Portland SMSA, adjusted for family size, as determined by the U.S. Department of Housing and Urban Development at the time notice is given as required in Subsection 18.4.3. Additionally, the developer shall, upon demand, provide assistance to the tenant in the form of referrals to other reasonable accommodations and in determining the tenant's eligibility for relocation payments as provided herein.

18.4.5 Conversion permit

Before conveying or offering to convey a converted unit, the developer shall obtain a conversion permit from the Building Authority. The permit shall issue only upon receipt of a completed application therefore in a form to be devised for that purpose, payment of a fee as established by the City Council, and a finding, upon inspection, that each unit, together with any common areas and facilities appurtenant thereto, is in full compliance with all applicable provisions of Chapter 6, Articles II, III, and V and Chapter 10, Article II of the City of Portland Code of Ordinances, and the Life Safety Code as adopted by the state. The developer shall post a copy of the permit in a conspicuous place in each



unit and shall make copies available to prospective purchasers upon request.

18.4.6 Variation by agreement

No provision of or right conferred by this Section 18.4 may be waived by a tenant, by agreement or otherwise, and any such waiver shall be void. Any attempt to require, encourage, or induce a tenant to waive any provision hereof, or right conferred hereby, shall be a violation of this article. Nothing herein shall be construed to void any term of a lease which offers greater rights than those conferred hereby.

18.5 RELOCATION OF DISPLACED TENANTS

18.5.1 Purpose

The purpose of this section is to encourage the retention of a diverse housing supply throughout the downtown and in areas readily accessible to the downtown, to ensure that persons displaced as the result of redevelopment of residential units to nonresidential uses within the B-3 Downtown Business zone are treated fairly and consistently, and to ensure that persons so displaced will be relocated at the reasonable expense of the developer to comparable housing at a location providing comparable access to services and amenities.

18.5.2 Notice and eligibility for relocation assistance

When a proposed development will result in the displacement of residents of an existing structure, the developer of the property shall give all tenants written notice as set forth below and shall provide relocation assistance as set forth below for any tenant whose gross income is 80% or less of the median income of the Portland SMSA, adjusted for

family size, as determined by the U.S. Department of Housing and Urban Development at the time the developer gives the tenant written notice of intent to cause removal of the residential unit. Such written notice shall be given to the tenant at least 120 days before the tenant shall be required to vacate the premises and shall contain the following statement:

The developer of this project is required by law to assist you in finding another place to live and in determining your eligibility for relocation payments. If you have questions about your rights under the law, or complaints about the way you have been treated by the developer, you may contact the Department of Planning and Urban Development, City of Portland, 389 Congress Street, Portland, Maine 04101.

18.5.3 Relocation assistance for all tenants

The developer shall provide, upon demand, assistance to all tenants who will be displaced by the development in the form of referrals to other reasonable accommodations and in determining the tenants' eligibility for relocation payments as provided herein. The developer shall make relocation payments to eligible tenants in accordance with the schedule adopted by the City Council in Subsection 18.5.4.

18.5.4 Schedule of relocation payments for eligible tenants

The developer shall, before the tenant is required by the developer to vacate, make a cash payment to the tenant in an amount equal to the amount of rent paid by the tenant for the immediately preceding two months.

19 OFF-STREET PARKING & LOADING

19.1 OFF-STREET PARKING

19.1.1 General

Off-street parking, either by means of structured or surface spaces, in addition to being a permitted principal use in certain zones, shall be considered as an accessory use when required or provided to serve principal uses. The provisions of this article shall apply to parking as an accessory use.

19.1.2 Uses requiring off-street parking

Except as provided in Table 19-B and as provided elsewhere in this article, minimum off-street parking requirements shall be as provided in Table 19-A. For any use not listed in Table 19-A, the parking provisions for the most similar use, as determined by the Building Authority or the Planning Authority, shall apply.

19.1.3 Rules of calculation

- A. Floor area.** Unless otherwise stated, all square footage-based off-street parking standards shall be computed on the basis of gross floor area used or intended to be used for service to customers, patrons, clients, or patients. It need not include floors or parts of floors used principally for non-public purposes, such as bulk storage, cellar, or food preparation areas. These provisions notwithstanding, the "floor area" used as the basis for computing off-street parking requirements shall never be less than 80% of the total gross floor area.
- B. Fractions.** Any fraction greater than or equal to 0.5 will be rounded up to the nearest whole number. Any fraction less than 0.5 will be rounded down to the nearest whole number.

- C. Multiple uses.** When two or more principal uses or separate establishments are located within the same lot, off-street parking shall be provided for each principal use or separate establishment according to Table 19-A, unless joint use is approved under Subsection 19.1.5.
- D. Accessory uses.** Off-street parking shall not be calculated separately for accessory uses.
- E. New construction.** In the case of new construction, the minimum off-street parking requirements in Table 19-A shall be met.
- F. Changes of use.** In the case of changes of use, the only additional off-street parking required shall equal the difference between the parking required for the new use and the parking required for the existing use.
- G. Building additions or alterations.** In the case of additions or alterations which increase the number of units or square footage of a given use, the only additional off-street parking required shall equal the difference between the parking required for the use in the post-development condition and the parking required for the use in the pre-development condition.

19.1.4 Shared use vehicles

The required parking for multi-family residential buildings may be partially met through provision of shared-use vehicles, which are vehicles available for use on a fee basis to the residents of the building. One shared use vehicle shall be deemed to satisfy eight required car spaces, but in no case shall more than 50% of the parking requirement be satisfied by a shared vehicle use.

TABLE 19-A: OFF-STREET PARKING MINIMUMS

	Vehicular	Bicycle
Single-, two-, or multi-family units	1 space/ dwelling unit	
Lodging house	1 space/5 rooming units ¹	
Special needs independent dwelling unit	1 space/4 dwelling units, plus 1 space/staff member normally present at any one time	2 spaces/5 units
Sheltered care group home	1 space/2 employees	
Congregate care facilities	1 space/3 dwelling units	
Emergency shelters	1 space/2 employees	
Long-term, extended care, and intermediate care facilities	1 space/5 beds, plus 1 space/employee normally present during weekday morning shift	
Governmental uses	1 space/400 SF of floor area	
Hospitals and clinics	1 space/500 SF of floor area	
Places of assembly	1 space/150 SF of floor area used for assembly purposes ²	
Preschool facilities	1 space/staff member normally present at any one time	
Schools	For students up to 15 years	1 space/room used for instruction purposes
	For students 16 years and older	1 space/10 seats used for instruction purposes or, if no fixed seats, 1 space/100 SF used for instruction purposes
Bed and breakfasts	1 space/2 guest rooms for first 4 guest rooms, plus 1 space/additional room thereafter ³	2 spaces/10 vehicle parking spaces for the first 100 vehicle spaces required, plus 1 space/20 vehicle parking spaces thereafter ⁴
General offices	1 space/400 SF of floor area	
Hostels	1 space/8 beds or, if within ¼ mi. of a transit stop, 1 space/12 beds	
Hotels	1 space/4 guest rooms	
Retail	1 space/200 SF of first floor area in excess of 2,000 SF, plus 1 space/700 SF for each floor above	
Restaurants and bars	1 space/150 SF of floor area	
Theaters, performance halls, funeral homes	1 space/5 seats or, if no fixed seats, 1 space/100 SF of assembly space	
Industrial uses	1 space/1,000 SF of floor area in excess of 3,000 SF not including area catering to retail	

¹ Except in the R-5 zone, where the requirement shall be 1 space/2 rooming units.

² Except for neighborhood centers which primarily serve clientele from the surrounding neighborhood, where the parking requirement shall be 1/1,000 SF of floor area

³ Except in the I-B zone, where no off-street parking shall be required for beds and breakfasts.

⁴ Development with under 10 required vehicular parking spaces shall provide at least two bicycle parking spaces.

TABLE 19-B: CATEGORICAL EXCEPTIONS TO OFF-STREET PARKING MINIMUMS

Categorical Vehicular Exceptions		
Major site plans	The Planning Board shall establish the off-street parking requirement based on a parking study.	
Affordable housing	The Planning Board may establish a parking requirement within that is less than 1 space per workforce or low-income housing unit, regardless of the size of the structure.	
Multi-family housing	No off-street parking shall be required for multi-family housing within ¼ mile of fixed-route transit service. For all other multi-family housing, the Planning Board may establish a parking requirement that is less than the normally required number of spaces upon a finding of unique conditions that result in a lesser parking demand, such as housing for persons who cannot drive, housing that participates in a Transportation Demand Management program, or housing which includes permanent restrictions on automobile usage, and which is permanently restricted from utilizing resident on-street parking stickers.	
Historic structures	No off-street parking in excess of that existing on or servicing the lot as of March 15, 1999 shall be required. ¹	
Accessory Dwelling Units	No off-street parking shall be required.	
Zone-Based Vehicular Exceptions		
	Residential	Nonresidential
R-6	No off-street parking required for first three dwelling units. ²	
IR-1/I-B		Off-street parking requirements for nonresidential uses shall be reduced by 75%.
IR-3	No off-street parking required.	
R-OS	Off-street parking shall be adequate to serve projected employee and visitor needs.	
B-2/B-2b/B-2c		For changes of use of 10,000 SF or less, no off-street parking shall be required for nonresidential uses. ³
IS-FBC	No off-street parking required for first three dwelling units.	For changes of use of 10,000 SF or less, no off-street parking shall be required for nonresidential uses. ³
B-3	No off-street parking required for changes of use.	
B-5	No off-street parking required.	
B-6	Off-street parking requirement shall be determined based on a parking study.	
B-7	Off-street parking requirement shall be determined based on a parking study.	
Waterfront Zones	Off-street parking requirements shall be reduced by 50%. No off-street parking required in the WCZ.	

¹ Exception applies for uses within any contributing structure in a local or national register historic district or locally-designated or national register landmark building under Article 17. However, parking may not be decreased from that existing on or servicing the lot on March 15, 1999 except to the extent necessary to meet the requirements of the Americans with Disabilities Act.

² For alterations of buildings containing three or more dwelling units in the R-6 zone, no parking shall be required for the creation of one additional dwelling unit above existing conditions as of June 3, 2015. This exemption may be used one time.

³ If the number of existing parking spaces serving the site is less than the requirements of this article, that number of parking spaces may not be reduced lower than the required amount prior to the change of use except to the extent necessary to meet the requirements of the Americans with Disability Act, to the extent it is a requirement or a condition of site plan review, or to the extent the change of use requires less parking than the previous use and the total number of parking spaces serving the site exceeds the parking requirements of this article for all uses on the site including the change of use. A newly constructed building, a building addition, or a change of the use of a building exceeding 10,000 SF of floor area, shall provide parking as required by this article.

19.1.5 Joint use

The joint use of a parking facility by two or more principal uses may be permitted where it is clearly demonstrated that the parking facility will substantially meet the intent of the off-street parking requirements by reason of variation in the probable time of maximum use by patrons or employees among such establishments.

19.1.6 Off-site parking

Required off-street parking shall be located on the same lot with the principal use, except as follows:

- A. For uses in residential zones.** Off-street parking may be located off-site upon an applicant demonstrating the following:
1. Off-street parking cannot reasonably be provided on the same lot with the principal use.
 2. Off-site parking is proposed to be located no more than 300 feet from the principal use, measured along lines of public access.
 3. The premises to be used for off-site parking are held, either under the same ownership or by lease, by the applicant. Evidence of such control, either by deed or lease, shall be provided.
 4. The premises to be used for off-site parking have adequate parking supply to meet any parking required for existing uses on those premises.
 5. The premises to be used for off-street parking are located in the same or less restrictive zone as that of the building or use served.
- B. For uses in nonresidential zones.** Off-street parking may be located off-site at a distance of no more than 100 feet from the principal use, measured along lines of public access.

Off-street parking may be located further than 100 feet from the principal use provided the applicant demonstrates the following:

1. Off-site parking is proposed to be located no more than 1,500 feet from the principal use, measured along lines of public access.
2. The premises to be used for off-site parking are held, either under the same ownership or by lease, by the applicant. Evidence of such control shall be provided by showing, at a minimum, a signed letter of intent, purchase and sale agreement, or option for sale or lease at the time of approval, and an executed deed or lease prior to issuance of any certificate of occupancy for review and approval by Corporation Counsel. Off-site parking leases shall be for a term of not less than five years with an option to renew.
3. The premises to be used for off-site parking have adequate parking supply to meet any parking required for existing uses on those premises.

19.1.7 Fee-in-lieu of parking

- A. Applicability.** Any development subject to site plan review shall either provide the required parking on- or off-site or pay a fee-in-lieu of parking of not less than \$5,000 per space not provided. Fees shall be deposited into the Sustainable Transportation Fund, as established in Section 19.3 of this article. The fee shall be paid on or before the date upon which a certificate of occupancy is issued. Payment shall be secured by a bond at the time the amount of the fee is set.
- B. Annual adjustment.** The value of the fee shall be adjusted annually according to the

Engineering News Record construction index as published on January 1st of the current calendar year. The fee adjustment shall be calculated by dividing the index amount published on January 1st of the current year by the index amount published on January 1, 2010 (\$8,660), multiplied by the minimum fee amount of \$5,000. The base fee, the adjustment index, or the calculation method may be otherwise amended by action of the City Council from time to time.

19.1.8 Location of vehicular parking

A. In general

1. Tandem vehicular parking shall be permitted for residential uses, and for developments where managed parking is part of an approved site plan.
2. Parking shall be prohibited in the front yard, which shall mean the open space between the street line and building, except for parking within driveways on lots containing single- or two-family dwellings. "Driveway," as used in this paragraph, shall not include any turnaround area.
3. Where an existing front yard exceeds a maximum front setback, a maximum of 10% of the total parking area provided on the site may be located between the principal structure and the street.

B. In residential zones

1. Where off-street parking for six or fewer vehicles is required or provided, parking located within five feet of any lot line shall be located 50 feet or greater from any street line, except for in the R-6 zone, and parking in all residential zones shall maintain the minimum front setback from

any street line, except on a corner lot where parking shall maintain the side setback on a side street.

2. Where off-street parking for more than six vehicles is required or provided:
 - a. Parking for nonresidential uses shall be located 25 feet or greater from any residential structure on an adjoining lot.
 - b. Where vehicles are to be or may be parked within a required setback:
 - i. A continuous, permanently-anchored curb guard, at least five feet from the lot line, shall be provided between such off-street parking and that lot line involved, the top of which shall be at least 20 inches in height so that bumpers of vehicles cannot project beyond its face.
 - ii. Where such off-street parking abuts a lot in residential use or an unoccupied lot located in a residential zone, a fence, not less than 48 inches in height, shall be provided and maintained between such off-street parking and that part of the lot line involved.

C. In mixed-use zones

1. Where off-street parking for more than six vehicles is required or provided:
 - a. Where vehicles are to be or may be parked within 10 feet of any street line, a continuous, permanently-anchored curb guard shall be provided and maintained between such off-street parking and that part of the street line involved so that vehicle

- bumpers cannot project beyond its face toward the street line involved.
- b. Where such off-street parking abuts a lot in a residential zone or in residential use, a fence, not less than 48 inches in height, shall be provided and maintained between such off-street parking and that part of the lot line involved.
- 2. In the B-7 zone, off-street surface parking shall be located 35 feet or greater from any street, except in the case of:
 - a. A lot where 80% of the frontage has a building within 10 feet of that frontage.
 - b. A lot where all or a portion of the 35-foot setback area had a gravel surface not exceeding 15,000 square feet as of 9/29/15 and the principal use served is in a building meeting the minimum height requirements of the Bayside Height Overlay or of 25,000 square feet or greater. In these cases, the total number of spaces within the 35-foot setback and elsewhere on site shall not exceed parking requirements. Parking within the 35-foot setback shall provide stormwater quality treatment.
 - c. The 35-foot setback requirement shall not apply to a driveway located perpendicular to the site.

19.1.9 Off-street parking restricted

Off-street parking shall not include:

- A. More than one commercial motor vehicle in any residential zone, the R-P zone, or the B-1/B-1b zones.

- B. More than six commercial motor vehicles in the B-2/B-2b/B-2c zone.
- C. Loading, sales, dead storage, repair, or servicing of any kind, except when customarily incidental or accessory to a conforming principal use when located in an industrial zone.
- D. Notwithstanding Section 19.1.9(A), any truck body, commercial trailer, or similar commercial vehicles in any residential zone or the R-P zone.

19.2 OFF-STREET LOADING

19.2.1 Uses requiring off-street loading

Off-street loading is not required in the B-6, B-7 or WCZ zones. In all other zones, the minimum off-street loading bays or loading berths shall be as provided in Table 19-C. These minimum requirements shall be met and maintained in the case of new construction, alterations, and change of use.

19.2.2 Design of off-street loading

Each loading bay shall have minimum dimensions of 50 feet by 14 feet and may be located either within a building or outside and adjoining an opening in the building, except that in the case of hospitals and intermediate, long-term, and extended care facilities, the off-street loading area provided for ambulance and other emergency vehicles shall be exempt from the minimum dimensional requirement but shall be of sufficient width and depth to permit expeditious access and egress from the loading area. Every part of such loading bay shall be located completely off the street. In case trucks, trailers, or other motor vehicles larger than the dimensions of the minimum loading bay habitually serve the building in question, additional space shall be provided so that such vehicle shall park or stand completely off the street.

TABLE 19-C: OFF-STREET LOADING REQUIREMENTS

Use and Size (Gross Floor Area)		Minimum Number of Bays or Berths
General offices and hotels (> 100,000 SF)		1
Retail and industrial	5,000 - 40,000 SF	1
	40,000 - 100,000 SF	2
	100,000 - 160,000 SF	3
	160,000 - 240,000 SF	4
	240,000 - 320,000 SF	5
	320,000 - 400,000 SF	6
Each 90,000 over 460,000 SF		1 additional
Hospitals and intermediate, long-term, and extended care facilities		2 off-street loading areas shall be provided whereby one service area for ambulance and other emergency vehicles shall be separate from one service area accommodating supply vehicles, and whereby both off-street loading areas shall be separate from parking and entrance locations.

19.2.3 Requirements for additional bays, alterations, or modifications

Any additional loading bays which are provided in excess of the requirements of this article or any loading bays otherwise established shall meet the requirements of Subsection 19.2.2, and no alterations or modifications shall be made in an existing building or structure whereby loading openings or platforms are constructed or established unless the provisions of Subsection 19.2.2 are met.

19.2.4 Nonconformity as to off-street loading

A building which is nonconforming as to the requirements for off-street loading shall not be enlarged or added to, unless off street loading is provided sufficient to satisfy the requirements of Article 19 for both the addition or enlargement and the original building or structure.

19.3 SUSTAINABLE TRANSPORTATION FUND

19.3.1 Establishment

By act of the Portland City Council, the Sustainable Transportation Fund is hereby established.

19.3.2 Purpose

The purpose of the Sustainable Transportation Fund is to implement those provisions of the *Peninsula Transit Study Report and Action Plan*, as adopted by the Portland City Council on August 3, 2009, which recommended creation of a Sustainable Transportation Fund. The *Peninsula Transit Study Report and Action Plan* established a goal to reduce the number and impact of single-occupancy vehicle trips to and from the Portland Peninsula. Achieving this goal requires transportation choice for residents, businesses, and visitors. This ordinance establishes a funding source for broadening transportation choice and facilitating development with lower traffic impacts and reduced parking requirements. The mechanism and protocol for collecting fees and spending funds are consistent with state requirements for utilizing transportation-related impact fees.

19.3.3 Deposits and expenditures

A. Deposits. The City shall establish a Sustainable Transportation Fund to be set up as a separate account within the City. Deposits into the fund shall include:

1. 100% of the revenue generated by the fee in-lieu of parking program, as established in Subsection 19.1.7 of this article.
2. Funds appropriated for deposit into the fund by vote of the City Council.
3. Voluntary contributions of money or other liquid assets to the fund.
4. Any federal, state or private grant or loan funds provided to the fund.

B. Accounting of deposits. Funds from the fee in-lieu of parking program, as established in Subsection 19.1.7, shall be individually collected and accounted for by project and the geographic fee in-lieu of parking subdistrict in which it is located.

C. Funds to be used within 10 years of deposit. Funds collected under the fee in-lieu of parking ordinance shall be spent on eligible infrastructure and/or capital improvements or expenses within 10 years of the date of collection. Any funds which are not so utilized and which exceed the City's actual costs of implementing the infrastructure improvement or improvements for which such fees were collected shall be refunded. Refunds shall be paid to the owner of records of the property for which the funds were collected, determined as of the date the refund is made.

D. Use of funds by subdistrict. Funds collected under the fee in-lieu of parking ordinance shall be spent on permitted expenditures of the fund within the same geographic fee in-lieu of parking sub-district as the contributing project.

However, for projects located within 250 feet of an abutting subdistrict, contributed fees can be used for eligible infrastructure projects in either abutting subdistrict.

E. Permitted expenditures of the fund. The Sustainable Transportation Fund may only be expended on the activities as described below:

1. Funds collected as fees in-lieu of parking shall be expended toward capital transportation improvements. Such capital improvements shall include but are not limited to the following:
 - a. Parking infrastructure:
 - i. Shared use, publicly accessible parking facilities.
 - ii. Publicly accessible bicycle racks and bicycle parking shelters.
 - b. Transit capital improvements and expenses:
 - i. Bus shelters, bus turnouts, transit signage and other transit amenities.
 - ii. Buses and transit vehicles.
 - iii. Transit and transportation information systems.
 - iv. Fixed guide way and/or rail transit systems.
 - c. Pedestrian and bicycle infrastructure:
 - v. Multi-use trails and non-vehicular transportation corridors.
 - vi. Pedestrian infrastructure and amenities located on publicly accessible rights-of-way including but not limited to crosswalks, signalization, landscaping, street furniture, wayfinding signage, traffic calming, and lighting.

- vii. New public sidewalks and new bicycle lanes along publicly accessible rights of way or corridors where such facilities are not previously provided.
 - d. Other such improvements intended to enhance transportation choice and promote transit and non-automotive transport.
- 2. Funds collected or appropriated by means other than from a fee in-lieu of parking may be used for any of the capital transportation improvements listed above, and for any of the following uses:
 - a. Transportation Demand Management program administration.
 - b. On- or off-peninsula transit and/or non-automotive transportation capital or operating expenses.
 - c. Transit and/or non-automotive transportation promotion and education material.
 - d. Other such programs or improvements intended to enhance transportation choice and promote transit and non-automotive transport for the City of Portland.

- F. Annual Sustainable Transportation Plan and appropriations schedule.** Annually, the City Manager shall submit to the City Council a recommended sustainable transportation plan and appropriations schedule, utilizing the revenues of the Sustainable Transportation Fund. The Transportation Committee of the City Council or such other committee as the council shall designate shall recommend and refer the plan and appropriations schedule to the City Council for action.

20 SIGNS

20.1 PURPOSE

This article has been adopted to ensure that all signs installed in the city are compatible with the unique character and environment of the community through a comprehensive system of reasonable, effective, consistent, content-neutral, and nondiscriminatory sign standards and requirements. More specifically, this article is intended to:

- A. Ensure that all signs are compatible with the unique character and environment of the City of Portland, and that they support the desired urban design and development patterns of the various zones, overlay zones, and historic areas within the city.
- B. Balance public and private objectives by allowing adequate avenues for both commercial and non-commercial messages.
- C. Improve pedestrian and traffic safety by promoting the free flow of traffic and the protection of pedestrians and motorists from injury and property damage caused by, or which may be fully or partially attributable to, cluttered, distracting, and/or illegible signage.
- D. Prevent property damage, personal injury, and litter caused by signs that are improperly constructed or poorly maintained.
- E. Protect property values, the local economy, and quality of life by preserving and enhancing the appearance of the streetscape.
- F. Provide consistent sign design standards that enable the fair and consistent enforcement of these sign regulations.

20.2 DEFINITIONS

Sign. A structure, device, figure, display, message placard, or other contrivance, or any part thereof, situated outdoors or indoors, which is designed, constructed, intended, or used to advertise, provide information in the nature of advertising, provide historical, cultural, archeological, ideological, political, religious, or social information, or direct or attract attention to an object, person, institution, business, product, service, message, event, or location by any means, including words, letters, figures, designs, symbols, fixtures, colors, or illumination.

Sign, animated. Flashing, blinking, reflecting, revolving, or other similar sign with visibly moving or rotating parts or visible mechanical movement of any kind.

Sign, awning. Any sign that is part of or attached to an awning, canopy, or other fabric, plastic, or structural protective cover over a door, entrance, window, storefront, or outdoor service area.

Sign, A-Frame. A pedestrian-oriented self-supporting sign that is not permanently affixed to a structure or the ground.

Sign, bandit. Any advertising sign that is placed on public property or on private property without the consent of the property owner or as authorized in this article.

Sign, blade. A permanent, pedestrian-scaled sign mounted either to the wall of building by means of a bracket or attached to the underside of a lintel, arch, or other overhead structure above a porch or

walkway and which is typically hung perpendicular to the wall of the building.

Sign, building identification. A sign consisting of letters or numbers applied to a building wall, engraved into the building material, or consisting of a sculptural relief which contains the name of the building or describes its function, but which does not advertise any individual tenant of the building or any products or services offered.

Sign, building-mounted. Sign attached to, connected to, erected against the wall, parapet, or fascia of a building or structure.

Sign, bus shelter. As specified in 23 M.R.S.A. §1908-A, any outdoor sign visible to the traveling public from public right-of-way that is affixed to a publicly-owned bus shelter operated by a transit agency.

Sign, cabinet. A permanent building-mounted or freestanding sign with its text and/or logo symbols and artwork on a translucent face panel that is mounted within a metal frame or cabinet either that contains the lighting fixtures which illuminate the sign face from behind.

Sign, canopy. A sign that is printed, painted, or affixed to a canopy, typically used to accent building entries.

Sign, center identification. A sign identifying the name of a building, office park, or shopping center only.

Sign, changeable copy. A sign that is designed so that characters, letters, numbers, or illustrations can be manually or mechanically changed or rearranged

without altering the face or surface of the sign. For the purposes of this article, a sign whose message changes more than eight times per day is considered an animated sign and not a changeable copy sign.

Sign, directional. A sign erected to inform the viewer of the approximate route, direction, or location of a facility or use.

Sign, direct illumination. Illumination resulting from light emitted directly from a light bulb or light fixture, and not light diffused through translucent signs or reflected from other surfaces such as the ground or building face.

Sign, directory. A permanent sign which provides information in a list, roster, or directory format.

Sign, Electronic Message. A sign or portion of a sign that utilizes computer-generated messages or some other electronic means of changing its characters, letters, numbers, illustrations, display, color, and/or light intensity, including animated graphics and video, by electronic or automatic means. An Electronic Message Sign is not a Single- or Two-Color LED Sign.

Sign, externally-illuminated. A sign whose illumination is reflected from its source by the sign surface to the viewer's eye, the source of light not being visible to the viewer.

Sign, feather banner. A temporary sign that is taller than it is wide and made of a flexible material (typically cloth, nylon, or vinyl) and mounted to a pole to fly freely.



Sign, freestanding. A permanent sign that is erected or mounted on its own self-supporting permanent structure or base detached from any supporting elements of a building.

Sign, fuel pump topper. A temporary sign affixed to the top of an operable fuel dispensing pump used to advertise goods offered for sale on the same parcel on which the fuel pump is located.

Sign, incidental. A sign which provides incidental information, including security, credit card acceptance, business hours, open/closed, directions to services and facilities, or menus.

Sign, individual letter. A cut-out or etched letter or logo which is individually mounted on a building wall or freestanding sign.

Sign, internally illuminated. Any sign in which the source of light is entirely enclosed within the sign and not directly visible.

Sign, landmark. A permanent sign indicating individual historic landmarks, local historic districts, or otherwise determined by the City to have attained a high degree of community, cultural, aesthetic, or historic significance.

Sign, logo. A stylized group of letters, words, numbers, or symbols used to represent and distinguish a business, product, or organization.

Sign, marquee. A permanent sign structure placed over the entrance to a building and typically used for a theater or other entertainment use.

Sign, monument. A permanent freestanding sign with a solid base that is at least 60% the width of the sign face.

Sign, off-premise. Any sign that directs attention to a business, commodity, service, entertainment, product, structure, use, or property different from a structure or use existing on the property where the sign is located, and/or any sign on which space is rented, donated, or sold by the owner of said sign or property for the purpose of conveying a message.

Sign, permanent. A sign constructed of durable materials and intended to exist for the duration of time that the use or occupant is located on the premises.

Sign, pole. An elevated permanent sign typically supported by one or two poles, posts, or columns that do not meet the base width requirements for a monument sign.

Sign, projecting. A permanent sign that is attached to and extends perpendicular from a building from the wall.

Sign, service island canopy. A permanent sign mounted on or under a service island canopy, including on a fascia.

Sign, single-color or two-color LED. A permanent or temporary sign or portion of a sign composed of single-color or two-color LEDs that displays static or changeable sign messages using characters, letters, and numbers only. Examples of these signs include, but are not limited to, "open" or "closed" signs, time

and temperature” signs, or signs indicating the number of available spaces in a parking garage.

Sign, temporary. A sign constructed of paper, cloth, or similar expendable material, which is intended for a definite and limited period of display and which is designed to be moved easily and is not permanently affixed to a structure, sign area, or window.

Sign, wall. A permanent sign affixed to or erected against the wall or fascia of a building or structure, with the exposed face of the sign parallel to the plane of wall or fascia to which it is affixed or erected.

Sign, wall banner. A temporary sign constructed of cloth, bunting, plastic, paper, or similar non-rigid material, and securely attached to the wall or support structure for which it is advertising. Flags are not considered temporary wall banners.

Sign, window. A permanent or temporary sign posted, painted, placed, or affixed in or on a window, or otherwise exposed to public view through a window.

Sign, Yard, Type I. A small temporary sign typically constructed of corrugated plastic and supported on a wire frame used, for example, for advertising by local businesses or by election campaigns.

Sign, Yard, Type II. A temporary sign mounted on a single post installed securely in the ground with a small sign hanging from a cross-bar mounted parallel to the ground.

Sign, Yard, Type III. A temporary large sign mounted on two posts installed securely in the ground.

Sign copy. Any graphic, word, numeral, symbol, insignia, text, sample, model, device, or combination thereof that is primarily intended to advertise, identify, or notify.

Sign face. The exterior surface of a sign, exclusive of structural supports, on which is placed the sign copy.

Sign substructure. The supports, uprights, bracing and/or framework of a sign.

20.3 APPLICABILITY

20.3.1 Applicability

This article applies to all permanent and temporary signs within the city unless specifically exempted.

- A. The provisions of this article shall be applied in a content-neutral manner. Non-communicative aspects of all signs, not related to the content of the sign, must comply with the provisions of this article. “Non-communicative aspects” include the time, place, manner, location, size, height, illumination, spacing, and orientation of signs.
- B. Nothing in this article shall be construed to prohibit a person from holding a sign while picketing or protesting on public property.

20.3.2 Substitutions and interpretations

This article is not intended to, and does not, restrict speech on the basis of its content, viewpoint, or message. No part of this article shall be construed to favor commercial speech over non-commercial speech. A non-commercial message may be



substituted for any commercial or non-commercial message displayed on a sign without the need for any approval or permit from the City, provided that the sign is otherwise permissible under this article. To the extent any provision of this subsection is ambiguous, the term will be interpreted not to regulate on the basis of the content of the message.

20.3.3 Exemptions

The following signs are not regulated under this article and are not subject to the permitting requirements of Section 20.4:

- A. Numerals and letters identifying an address from the street to facilitate emergency response compliant with City requirements.
- B. Building identification signs not exceeding two square feet in area for residential buildings and four square feet in area for nonresidential and mixed-use buildings.
- C. Any sign, posting, notice, or similar signs placed, installed, or required by law by a city, county, or a federal or state governmental agency in carrying out its responsibility to protect the public health, safety, and welfare, including the following:
 - 1. Emergency and warning signs necessary to warn of dangerous and hazardous conditions and that serve to aid public safety or civil defense.
 - 2. Numerals and letters identifying an address from the street to facilitate emergency response and compliant with City requirements.
 - 3. Traffic signs and signs at bus stops and in bus shelters.
 - 4. Signs required to be displayed by any applicable federal, state, or local law, regulation, or ordinance.
 - 5. Signs directing the public to points of interest.
 - 6. Signs showing the location of public facilities.
 - 7. Signs subject to the provisions of 23 M.R.S. § 1913-A.
- D. Historic plaques and commemorative signs erected and maintained by non-profit organizations, building cornerstones, and date-constructed stones not exceeding four square feet in area.
- E. Non-illuminated incidental signs which provide information including, but not limited to, credit card acceptance, business hours, open/closed, no soliciting, directions to services and facilities, or menus, provided these signs do not exceed an aggregate of two square feet in sign area in the Residential Sign District and six square feet in sign area in all other sign districts.
- F. Landmark signs.
- G. Signs posted on a community bulletin board, not to exceed 11 inches by 17 inches.
- H. Signs not readable from the public right-of-way, such as:
 - 1. Signs or displays located entirely inside of a building and not visible
 - 2. from the building's exterior.
 - 3. Signs intended to be readable from within a parking area but not readable beyond the boundaries of the lot or parcel upon which they are located or from any public right-of-way.
 - 4. Signs located within City recreation facilities.
 - 5. Signs that are an integral part of an allowed vending machine or similar facility located outside of a business.

6. Temporary signs placed within the public right-of-way, subject to the provisions of 23 M.R.S.A. §1913-A.

20.4 REVIEW PROCEDURES

20.4.1 Review Authority

Table 20-A establishes the final review authority for sign-related applications.

20.4.2 Applications and fees

- A. **Filing of applications.** An application for a permanent or temporary sign permit must be submitted to the Building Authority on an application form or in accordance with the application specifications published by the Building Authority. Each application must be accompanied by the applicable fee, which shall be established by the City Council.
- B. **Review and approval**
 1. Following receipt of a complete application, the Building Authority shall review all sign permit applications and supporting documentation for compliance with the standards of this article.
 2. The Building Authority shall either:
 - a. Issue the sign permit if the sign that is the subject of the application conforms to the requirements of this article, and also provided that any other required permits as determined by the Building Authority have been obtained, or
 - b. Deny the sign permit if the sign that is the subject of the application fails to conform to the requirements of this article. If the sign permit application is denied, the reason shall be stated in writing.

TABLE 20-A: REVIEW AUTHORITY

Application Type	Building Authority	Planning Authority – Historic Preservation
Sign permit	●	-
Signs in historic districts	●	●

20.4.3 Permanent sign permits

- A. **Sign permit required.** A sign permit is required to erect, install, construct, move, alter, replace, suspend, display, or maintain (i.e., removal of the sign so that structural elements supporting the sign may be maintained) any permanent sign, unless otherwise specified in this article. Each sign and change of copy (i.e., changing of the face or letters on a sign) requires a separate sign permit except as allowed in Subsection 20.7.4. Exceptions to the requirement for a sign permit include the exemptions listed in Subsection 20.3.3, as well as building-mounted directional signs, building-mounted directory signs, and window signs. Refer to Section 20.8 for permanent sign standards that apply even when no sign permit is required. Any sign not authorized pursuant to this article is not allowed.
- B. **Assignment of permanent sign permits.** A current and valid permanent sign permit issued under this article shall be freely assignable to a successor as owner of the property or operator of the premises. The assignment shall not require approval by the Building Authority.
- C. **Expiration.** A permanent sign permit will expire and become null and void if the work authorized in compliance with the permit is not commenced within 180 days from the date of issuance of the permit, or if work is suspended



or abandoned for a period of 180 days or more at any time after the work has commenced.

20.4.4 Temporary sign permits

- A. **Sign permit required.** A temporary sign permit is required to display a temporary wall banner sign and an A-frame sign placed in the public right-of-way. All other temporary sign types do not require a sign permit.
- B. **Duration of temporary sign permit.** A temporary sign permit for a wall banner is valid for 60 days from the date of issuance. There are no time limitations for A-frame signs installed in public right-of-way.

20.4.5 Signs in historic districts

- A. **Applicability.** The standards established in this subsection shall be applied within historic districts in addition to the standards otherwise established in this article.
- B. **Review.** In addition to being subject to the other provisions of this article, all permanent signs proposed in historic districts must be reviewed for approval by the Planning Authority in accordance with the sign standards included in Subsection 17.8.6 as detailed in the *Historic Resources Design Manual*. If there is a conflict between the standards included in Article 17 and the requirements of this article, the stricter shall apply.

20.4.6 Appeals

Appeals of sign permit decisions are within the jurisdiction of the Zoning Board of Appeals.

20.5 SIGN DISTRICTS ESTABLISHED

Table 20-B combines the zones established in Article 5 into sign districts based on similarity of use,

building form, and character. For sign standards specific to overlay zones, see Article 8. If no sign standards exist within the overlay zone, the standards of the underlying zone shall apply.

20.6 GENERAL RESTRICTIONS FOR ALL SIGNS

20.6.1 Location restrictions

Except where specifically authorized in this article, signs may not be placed in the following locations:

- A. **Public right-of-way.** Within, on, or projecting over public property, City rights-of-way, or waterways, except signs specifically authorized in this article.
- B. **Obstructing traffic signals.** Any location that obstructs the view of any authorized traffic sign, signal, or other traffic control device.
- C. **Obstructing intersection visibility.** At the intersections of streets or streets and driveways where the visual lines of sight for drivers of motor vehicles are obstructed. Signs shall observe corner clearance requirements as listed in Subsection 7.4.1.
- D. **Ingress and egress.** Areas allowing for ingress to or egress from any door, window, vent, exit way, or fire lane required by Chapter 6 of the City of Portland Code of Ordinances or Fire Department regulations currently in effect.
- E. **Landscape elements or utilities.** Tacked, painted, burned, cut, pasted, or otherwise affixed to trees, rocks, light and utility poles, posts, fences, ladders, benches, or similar supports that are visible from a public way.
- F. **Off-premises.** Off the premises of the business to which the commercial advertising sign refers, except as provided in Section 20.9.
- G. **Roof-mounted.** Mounted on the roof of a building or structure.

TABLE 20-B: SIGN DISTRICTS ESTABLISHED

Sign District	Zones	Description
Residential Sign District	R-1 Residential Zone R-2 Residential Zone R-3 Residential Zone R-4 Residential Zone R-5/R-5a Residential Zone R-6/R-6a Residential Zone IR-1 Island Residential Zone IR-2 Island Residential Zone IR-3 Island Residential Zone	These zones comprise the vast majority of residential land in Portland. Signage is limited in these zones, as a variety of sign types could detract from the desired residential character.
Small Mixed-Use Sign District	R-P Residence-Professional Zone B-1/B-1b Neighborhood Business Zone B-2b & B-2c Community Business Zone IS-FBC UA, UN, and UT Zones I-B Island Business Zone O-P Office Park Zone	These zones allow a variety of sign types to achieve a diverse, mixed-use character appropriate for neighborhood residential, office, service, and retail uses.
Large Mixed-Use Sign District	B-2 Community Business Zone B-4 Commercial Corridor Zone EWPZ Eastern Waterfront Port Zone	These zones comprise the major commercial centers in Portland and allow a variety of sign types to achieve a diverse character appropriate for major office, service, and retail uses.
Downtown Sign District	B-3/B-3b/B-3c Downtown Business Zone B-5/B-5b Urban Commercial Mixed-Use Zone B-6 Eastern Waterfront Mixed Zone B-7 Mixed Development Zone WCZ Waterfront Central Zone	The downtown core zones allow a variety of sign types to achieve a diverse, mixed-use character appropriate for office, service, retail and mixed-uses in the Downtown.
Industrial and Transportation Sign District	A-B Airport Business Zone I-L/I-Lb Industrial Zone I-H/I-Hb Industrial Zone I-M/I-Ma/I-Mb Industrial Zone WPDZ Water Port Development Zone	These zones allow a number of sign types to achieve a character appropriate for industrial manufacturing, warehousing, and transportation uses.
Open Space Sign District	R-OS Recreation and Open Space Zone RPZ Resource Protection Zone	These zones prohibit most sign types, allowing only those necessary to provide information for primarily open space and recreation uses.



- H. **Storage containers and receptacles.** On fuel tanks, storage containers, and/or solid waste receptacles or their enclosures, except for a manufacturer's or installer's identification, appropriate warning signs and placards, and information required by law.

20.6.2 Prohibited signs

Except as otherwise provided in this article, the following signs are prohibited:

- A. Billboards.
- B. Signs that could be confused with any authorized traffic signal or device or that interfere with, obstruct, confuse, or mislead traffic.
- C. Bandit signs.
- D. Signs or other devices that are inflatable or affected by the movement of the air or other atmospheric or mechanical means, including inflatable balloons, spinners, strings of flags and pennants, feather banners, fixed aerial displays, streamers, tubes, and inflated characters used as signs, whether attached to a sign or to vehicles, structures, poles, trees and other vegetation, or similar support structures, except as allowed in Section 20.9.
- E. Any sign which advertises a business no longer in existence or a product or service no longer being sold, except for landmark signs.
- F. Any temporary sign, other than those signs allowed pursuant to Section 20.9.
- G. Any other signs not specifically allowed by the provisions of this article.

20.6.3 Display restrictions

Except as otherwise provided in this article, the following display features are prohibited:

- A. Animated features which rotate, move, or give the appearance of moving by mechanical, wind, or other means. Barber poles no more than three feet in height and 10 inches in diameter and clocks are excepted from this restriction.
- B. Sound, odor, or any particulate matter including bubbles, smoke, fog, confetti, or ashes.
- C. Lighting devices with intermittent, flashing, rotating, blinking, or strobe light illumination, animation, motion picture, or laser or motion picture projection, or any lighting effect creating the illusion of motion, as well as laser or hologram lights.
- D. Search lights or laser light displays when used as attention-attracting devices.
- E. Strings of lights used in connection with commercial premises, except when used for temporary lighting for decoration, and lights arranged in the shape of a product, arrow, or any commercial message.

20.7 GENERAL REQUIREMENTS FOR ALL SIGNS

20.7.1 Sign measurement

Sign area and height shall be measured as described in Tables 20-C and 20-D.

20.7.2 Computation of the number of signs

When determining the number of signs, a single sign shall be considered either enclosed within a single frame or composed of modular parts with identical frame elements designed to be joined together to form a single composite sign.

TABLE 20-C: SIGN AREA MEASUREMENT

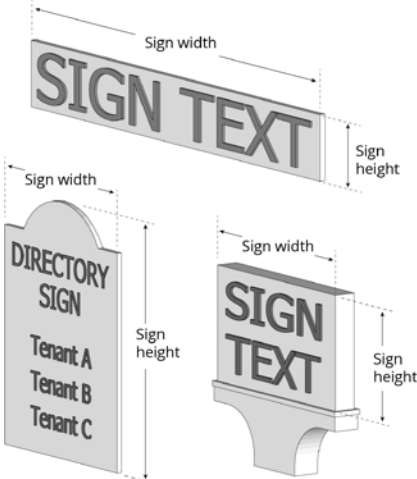
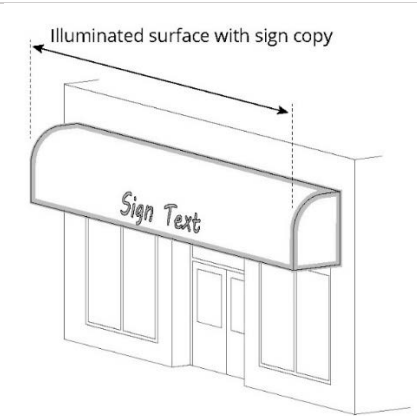
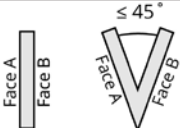
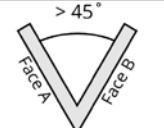
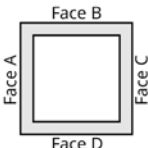
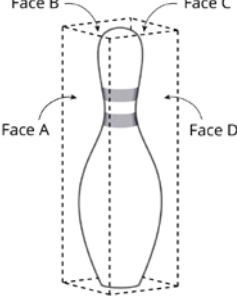
Signs on background panel	Sign copy mounted, affixed, or painted on a background panel or surface distinctively painted, textured, or constructed as a background for the sign copy, is measured as that area contained within the sum of the smallest rectangle(s) that will enclose both the sign copy and the background.	
Signs as individual letters	Sign copy mounted as individual letters or graphics against a building surface that has not been painted, textured, or otherwise altered to provide a distinctive background for the sign copy, is measured as a sum of the smallest rectangle(s) that will enclose each word and each graphic in the sign.	
Signs on illuminated surface	Sign copy mounted, affixed, or painted on an illuminated surface or illuminated element of a building or structure, is measured as the entire illuminated surface or illuminated element, which contains sign copy. Such elements may include lit canopy fascia signs, and/or interior lit awnings.	

TABLE 20-C (CONT.): SIGN AREA MEASUREMENT

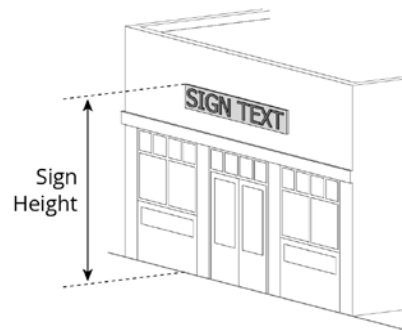
Irregular-shaped signs	Sign area for irregular shaped signs is determined by dividing the sign into squares, rectangles, triangles, circles, arcs, or other shapes the area of which is easily calculated.	
Multi-face signs	For two-face signs, if the interior angle between the two sign faces is 45 degrees or less and the sign faces are less than 42 inches apart, the sign area is determined by the measurement of one sign face only. If the angle between the two sign faces is greater than 45 degrees, the sign area is the sum of the areas of the two sign faces. For three- or four-face signs, the sign area is 50 percent of the sum of the areas of all sign faces.	 Sign Area = A  Sign Area = A + B  Sign Area = $(A + B + C) \div 2$  Sign Area = $(A + B + C + D) \div 2$
Spherical, free-form, or sculptural signs	Spherical, free-form, or sculptural signs are measured as 50% of the sum of the areas of the four vertical sides of the smallest four-sided polyhedron that will encompass the sign structure. Signs with greater than four polyhedron faces are prohibited.	 Sign Area = $(A + B + C + D) \div 2$

Note: Numerals and letters used to identify an address are not included in the determination of sign area.

TABLE 20-D: SIGN HEIGHT MEASUREMENT

Building-mounted signs

The height of signs mounted on a building is the vertical distance measured from the base of the wall on which the sign is located to the top of the sign or sign structure.



Freestanding signs

Sign height is measured as the vertical distance from the finished grade at the base of a sign to the top of the sign exclusive of any filling, berming, mounding, or landscaping solely for the purpose of locating the sign and excluding decorative embellishments as permitted in Section 20.8.



20.7.3 Sign illumination

A. Sign illumination by sign district

1. Table 20-E identifies the type of illumination permitted (●) or not permitted () by sign district. All allowed permanent signs may also be non-illuminated. All permanent signs for single-family residences or duplexes and all temporary signs must be non-illuminated.
2. The illumination level of a sign must be reduced if the Building Authority determines the light output to be excessive. The Building Authority shall use the following criteria to determine if the illumination is excessive:
 - a. The amount of illumination is substantially greater than the illumination level of other nearby signs.

- b. The sign's illumination interferes with the visibility of other signs or with the perception of objects or buildings in the vicinity of the sign.
- c. It directs glare toward streets or motorists.
- d. It adversely impacts nearby residents or neighborhoods.
- e. The illumination reduces the night time readability of the sign.

B. Internal illumination. To minimize glare, internally-illuminated signs must either be constructed with an opaque background and translucent text and symbols, or with a colored background. Backgrounds must not be white, off-white, light gray, cream, or yellow.

TABLE 20-E: SIGN ILLUMINATION BY SIGN DISTRICT

Sign District Name	Type of Illumination						
	External	Direct	Internal (Cabinet Sign)	Internal (Individual Letters /Logo)	Neon	Single or Two-Color LED	Electronic Message Signs
Residential Sign District	-- ¹			-- ¹			-- ¹
Small Mixed-Use Sign District	●	● ²	● ³	●	●	●	
Large Mixed-Use Sign District	●	●	●	●	●	●	●
Downtown Sign District	●	●	●	●	●	●	
Industrial and Transportation Sign District	●	●	●	●	●	●	● ⁴
Open Space Sign District	●						

¹ Allowed for institutional uses only.

² Only allowed in B-1/B-1b, B-2b/B-2c, IS-FBC, and I-B zones.

³ Only allowed in B-2b, B-2-c, and OP zones.

⁴ Only allowed in I-L, I-Lb, I-M, I-Ma, I-Mb, I-H, and I-Hb zones.

C. External illumination

- Externally-illuminated signs must be illuminated only with steady, stationary, fully-shielded light sources directed solely onto the sign without causing glare.
- The light source for externally-illuminated signs must be arranged and shielded to substantially confine all direct light rays to the sign face and away from streets and adjacent properties as illustrated in Figure 20-A.

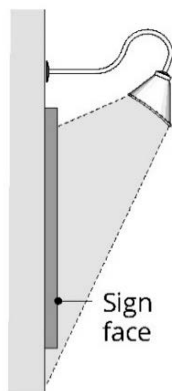


FIGURE 20-A: EXTERNAL ILLUMINATION

D. Direct illumination.

All direct illumination must be turned off daily at the close of business or 10 p.m., whichever occurs last.

E. Neon.

Exposed neon sign lighting must be turned off daily at the close of business or 10 p.m., whichever occurs last.

F. Single-color or two-color LED signs.

- Single or two-color LED signs are exempt from the sign area limitations for window signs and building-mounted signs.
- Single or two-color LED signs must be turned off daily at the close of business or 10 p.m., whichever occurs last.

G. Electronic Message Signs

- One electronic message sign is allowed per lot.
- Electronic message signs must not flash, blink, flutter, include intermittent or chasing lights, or display video messages (i.e., any illumination or message that is in motion or appears to be in motion). Electronic message signs may display

changing messages provided that each message is displayed for no less than 30 seconds.

3. Electronic message signs must be equipped with photocell technology to control and vary the intensity of light output depending on the amount of ambient light that is present to prevent overly bright luminance at night. Automatic controls must limit night luminance to a maximum of 100 nits when the display is set to show maximum brightness in 100 percent full white mode.
4. The applicant shall provide a written certification from the sign manufacturer that the night time luminance has been factory pre-set not to exceed 100 nits as described in (3) above, and that this setting is protected from end-user modification by password-protected software or other method as deemed appropriate by the Building Authority.
5. Electronic message signs must be turned off daily at the close of business or 10 p.m., whichever occurs first.

20.7.4 Changeable sign copy

Changeable sign copy must comply with the following standards:

- A. **Maximum area.** The maximum area of changeable sign copy shall be limited to 50% of the total sign area, except for marquee signs. This does not apply to any signs required by law.
- B. **Sign design.** The changeable sign copy must be an integral part of a permanent building-mounted or freestanding sign.

- C. **Illumination.** Changeable sign copy may be non-illuminated or internally-illuminated.

20.7.5 Structure and installation

- A. **Authority.** The construction of signs shall be enforced and administered by the Building Authority. All signs and advertising structures must be designed to comply with the provisions of this article and applicable provisions of Chapter 6 of the City of Portland Code of Ordinances and constructed to withstand wind loads, dead loads, and lateral forces.
- B. **Electrical features.** Where electrical service is provided to freestanding signs or landscape wall signs, all such electrical service must be placed underground and concealed. Electrical service to building-mounted signs, including conduit, housings, and wire, must be concealed or, when necessary, painted to match the surface of the structure upon which they are mounted. An electrical permit shall be issued prior to installation of any new signs requiring electrical service.
- C. **Raceway cabinets.** Raceway cabinets, as illustrated in Figure 20-B, shall only be used in building-mounted signs when access to the wall behind the sign is not feasible, shall not extend in width and height beyond the area of the sign, and shall match the color of the building to which it is attached. Where a raceway cabinet provides a contrast background to sign copy, the colored area is counted in the total allowable sign area allowed for the site or business. A raceway cabinet is not a cabinet sign.

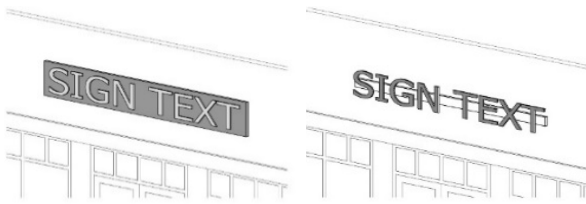


FIGURE 20-B: RACEWAY CABINET EXAMPLES

- D. Materials.** All permanent signs allowed by this article must be constructed of durable materials capable of withstanding continuous exposure to the elements and must be permanently attached to the ground, a building, or another structure by direct attachment to a rigid wall, frame, or structure.

20.7.6 Sign maintenance

All signs must be maintained by any property owner, lessor, lessee, manager, agent, or other person having lawful possession or control over a building, structure, or parcel of land, in a condition or state of equivalent quality to which was approved or required by the City. All signs together with their supports and appurtenances must be maintained in good structural condition, in compliance with applicable provisions of Chapter 6 of the City of Portland Code of Ordinances, and in conformance with this article. Maintenance of a sign includes periodic cleaning, replacement of flickering, burned out, or broken light bulbs or fixtures, repair or replacement of any faded, peeled, cracked, or otherwise damaged or broken parts of a sign, and any other activity necessary to restore the sign so

that it continues to comply with the requirements and contents of the sign permit issued for its installation and provisions of this article.

20.8 STANDARDS FOR PERMANENT SIGNS

20.8.1 Permitted sign types by sign district

Table 20-F establishes which sign types are permitted (●) or not permitted () in each sign district. Any combination of allowed sign types may be used within a given sign district unless specifically prohibited.

20.8.2 Permanent building-mounted sign standards

The maximum total area for all building-mounted signs is established in Table 20-G. The area of all building-mounted signs is included in the maximum total sign area, except when specifically exempted. All permanent building-mounted signs shall comply with the corresponding sign type standards provided in Tables 20-H to 20-Q.

20.8.3 Permanent freestanding sign standards

All permanent freestanding signs shall comply with the standards of Table 20-R and the corresponding sign type standards established in Tables 20-S to 20-V. Unless specifically indicated, standards applicable within a sign district apply to single- and multi-tenant buildings. There is no setback requirement for permanent freestanding signs, provided that the sign is entirely located on the property where the sign is permitted, and the sign is located in compliance with Table 20-F.

TABLE 20-F: ALLOWED SIGN TYPES BY SIGN DISTRICT

	Sign Type	Residential Sign District ¹	Small Mixed-Use Sign District	Large Mixed-Use Sign District	Downtown Sign District	Industrial Sign District	Open Space Sign District
Building-Mounted	Awning Sign		● ²	●	●	●	●
	Canopy Sign		● ²	●	●	●	
	Blade Sign		●	●	●		
	Directional Sign		● ²	●	●	●	●
	Directory Sign	● ³	●	●	●	●	
	Marquee Sign			●	●		
	Projecting Sign		● ²	●	●	●	
	Service Island Canopy Sign			●	●	●	
	Wall Sign	●	●	●	●	●	●
	Window Sign		●	●	●	●	●
	Freestanding Directional Sign	●	●	●	● ⁴	●	●
Freestanding	Freestanding Directory Sign	● ³	●	●	● ⁴	●	●
	Monument Sign		●	●	● ⁵	●	
	Pole Sign			●	● ⁵	●	

¹ For institutional uses in residential zones, all permanent sign types are allowed except for the following: awning sign, blade sign, canopy sign, marquee sign, pole sign, projecting sign, service island canopy sign; and window sign.

² Not allowed in the R-P Zone.

³ Not allowed in the R-1, R-2, R-4, IR-1, and IR-2 zones.

⁴ Not allowed in the B-3 zone.

⁵ In the B-3 and B-5 zones, freestanding signs are permitted only if the front façade of the building is set back a distance of at least 20 ft. from either of the front facades of abutting buildings. In the case of a multi-tenant building, the individual tenants' frontage must be set back a distance of at least 20 ft. from other tenant's frontages.

TABLE 20-G: DIMENSIONAL STANDARDS FOR BUILDING-MOUNTED SIGNS BY SIGN DISTRICT

Sign District	Total Area for All Signs (per Tenant or Façade)		Number of Signs (max.)
Residential	Single-family lots	2 SF max.	1 per lot (either freestanding or building-mounted)
	PRUDs, multi-family lots	10 SF max.	1 per street frontage
	Institutional use in all residential zones	1.5 SF per linear foot of building façade where the sign is placed 150 SF max.	1 per street frontage, plus 2 additional
Small Mixed-Use	Single-tenant building	I-B zone: 1 SF per linear foot of building façade where the sign is placed; Max. 40 SF All other zones: 1.5 SF per linear foot of building façade where sign is placed; Max. 100 SF	1 per street frontage, plus 1 additional
	Multi-tenant building	1.5 SF per linear foot of building façade where the sign is placed 150 SF max.	1 per tenant ^{5,6} , plus 1 additional for the building.
Large Mixed-Use	Single-tenant building	2 SF per linear foot of building façade where the sign is placed 200 SF max. ¹	1 per street frontage, plus 2 additional
	Multi-tenant building	1.5 SF per linear foot of tenant façade where the sign is placed 150 SF max.	1 per tenant ⁶ , plus 1 additional for the building.
Downtown	Single-tenant building	2 SF per linear foot of building façade where the sign is placed	1 per street frontage, plus 2 additional
	Multi-tenant building	Ground floor tenants: 2 SF per linear foot of tenant frontage where the sign is placed Building ID and upper floor tenants: 5% of building wall area where sign is placed max.	1 per tenant ^{5,6} 1 per tenant, plus 2 additional for the building
	Single-tenant building	2 SF per linear foot of building façade where sign is placed 250 SF max.	1 per street frontage, plus 2 additional
Industrial & Trans.	Multi-tenant building	2 SF per linear foot of tenant frontage where the sign is placed 200 SF max.	1 per tenant, plus 2 additional for the building
Open Space	Commercial signs/facility signs ^{2, 3}	1 SF per linear foot of building façade where the sign is placed 20 SF max. ⁴	1 per use (either freestanding or building-mounted)
Sign placement		The total sign area for signs on single-tenant or multi-tenant buildings may be placed on any building elevation, provided that at least 1 sign must be placed above or associated with the building entry or tenant's building entry, in the case of a multi-tenant building.	

¹ Where a building features two principal entry facades facing parallel streets, each entry façade shall be eligible for the full amount of signage relative to its frontage, notwithstanding the total area.

² Standards do not apply to municipal stadiums with more than 6,000 seats. The standards for the Small Mixed-Use Sign District shall apply instead.

³ Building signs shall be visually related to the building on which they are located in terms of materials, color, scale, etc., as determined by the Building Authority.

⁴ Product trademarks limited to 5 percent of total sign area.

⁵ On the peninsula, each tenant may have two signs, provided that one sign is a blade sign and one sign is placed parallel to the building façade.

⁶ If a tenant faces additional street frontages, one additional sign is allowed per frontage for that tenant.

TABLE 20-H: STANDARDS FOR AWNING SIGNS

Standard	Requirements
Sign area (max.)	1 SF per linear foot of awning width
Mounting height	7 ft. min. from the bottom of the awning to the nearest grade or sidewalk 25 ft. max.
Sign placement	Must be placed above the doors and windows of the ground floor of a building. Awnings shall not project above, below, or beyond the edges of the face of the building wall or architectural element. Sign width shall not be greater than 60% of the width of the awning face or valance on which it is displayed (if an awning is placed on multiple storefronts, each business is permitted signage no greater than 60% of the width of the storefront). May project into public right-of-way with permit approval.
Valance height (max.)	6 in.
Horizontal distance from back of curb (min.)	2 ft.
Illumination	Illumination allowed under the awning.

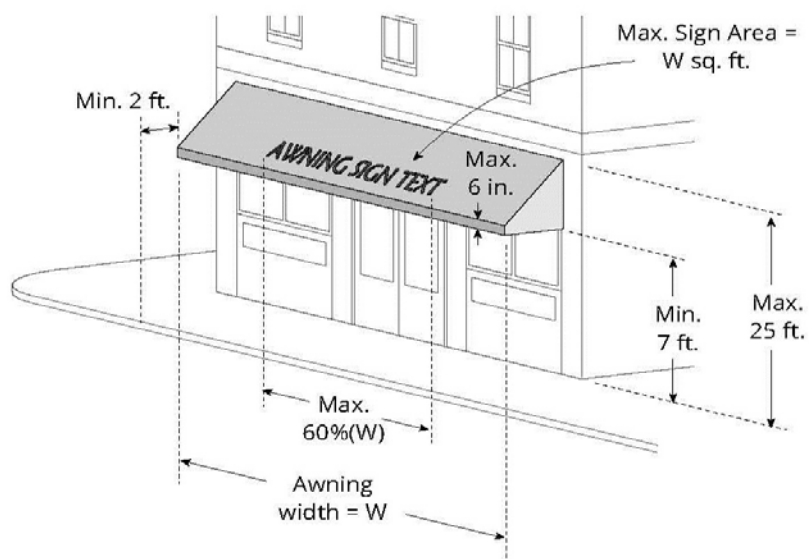


TABLE 20-1: STANDARDS FOR CANOPY SIGNS

Standard	Requirements
Sign area (max.)	1 SF per linear foot of canopy width
Mounting height	8 ft. min. from the bottom of the sign to the nearest grade or sidewalk 20 ft. max.
Sign placement	Must be placed above the doors and windows of the ground floor of a building. Sign width shall not be greater than 60% of the width of the canopy on which it is displayed (if a canopy is placed on multiple store fronts, each business is permitted signage no greater than 60% of the store width or tenant space). May project into public right-of-way with permit approval.
Horizontal distance from back of curb (min.)	2 ft.
Illumination	Direct illumination or internal illumination

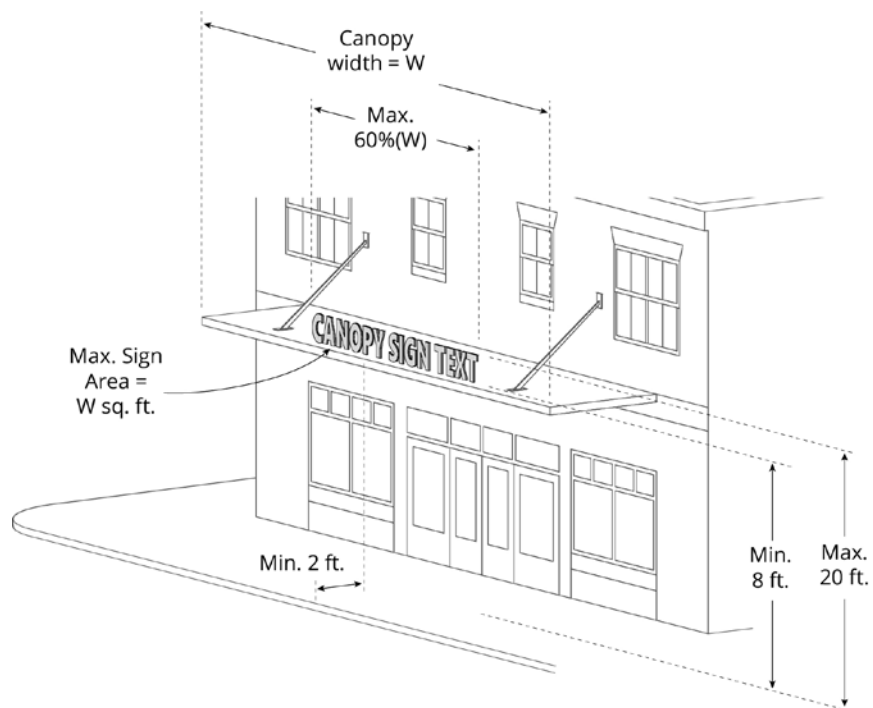
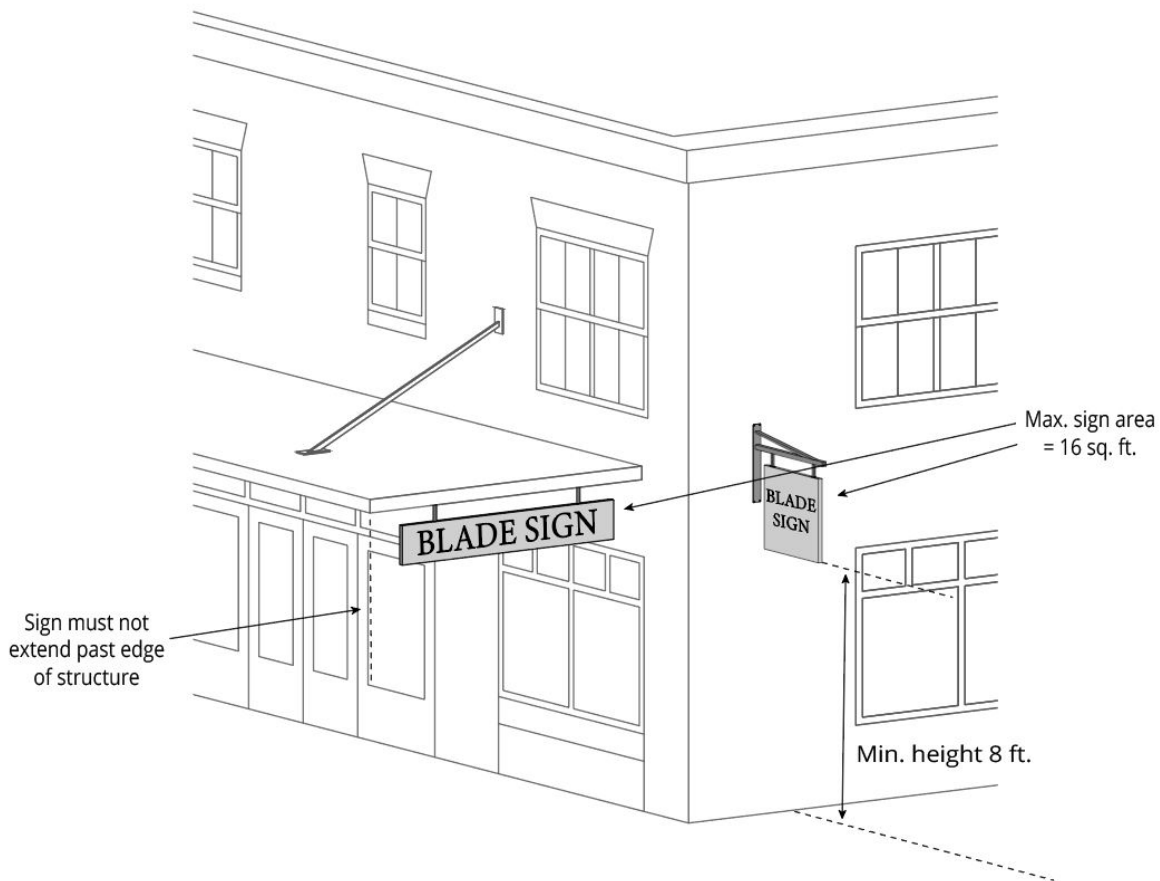


TABLE 20-J: STANDARDS FOR BLADE SIGNS

Standard	Requirements
Sign area (max.)	12 SF
Mounting height	8 ft. min. from the bottom of the sign to the nearest grade or sidewalk Must be mounted perpendicular to the building face or corner of the building.
Sign placement	If mounted below the underside of a walkway or overhead structure, must not extend beyond the edge of the structure on which it is located. May project into public right-of-way with permit approval.
Illumination	External illumination





SIGNS

TABLE 20-K: STANDARDS FOR DIRECTIONAL SIGNS (BUILDING-MOUNTED)

Standard	Requirements
Sign area (max.)	3 SF per sign face (excluded from the total allowed sign area for all building-mounted signs)
Mounting height	6 ft. max. from nearest grade
Number of signs (max.)	1 at each driveway, drive-through lane, or alley, not to exceed 3 signs per lot (excluded from the total number of allowed signs for all building-mounted signs)
Illumination	Internal illumination

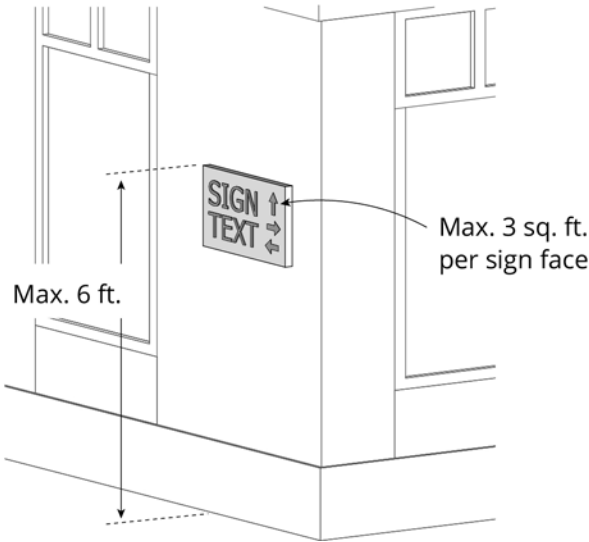


TABLE 20-L: STANDARDS FOR DIRECTORY SIGNS (BUILDING-MOUNTED)

Standard	Requirements
Sign area (max.)	1 SF per occupant of tenant space and 16 SF total max. (excluded from the total allowed sign area for all building-mounted signs)
Mounting height	8 ft. max. from nearest grade
Number of signs (max.)	1 per primary building entrance (excluded from the total number of allowed signs for all building-mounted signs)
Illumination	External illumination or internal illumination

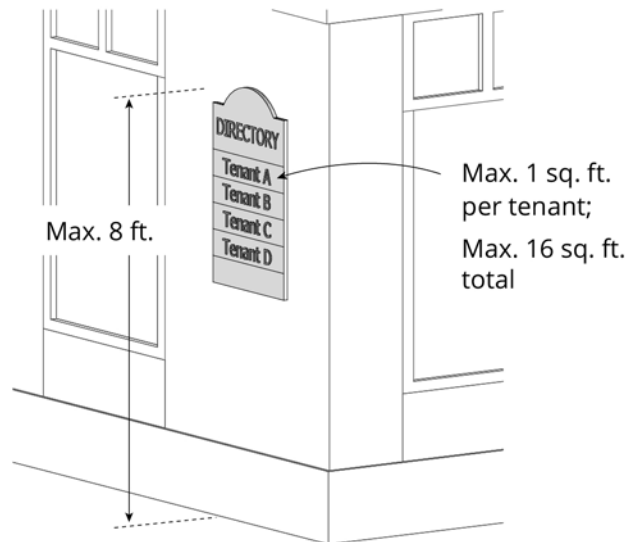




TABLE 20-M: STANDARDS FOR MARQUEE SIGNS

Standard	Requirements
Sign area (max.)	1 SF to 1 linear foot of marquee width
Mounting height	12 ft. min. from the bottom of the marquee to the nearest grade or sidewalk
Number of signs (max.)	1 per business
Sign placement	May project into public right-of-way with permit approval.
Horizontal distance from back of curb (min.)	2 ft.
Illumination	Direct illumination or internal illumination

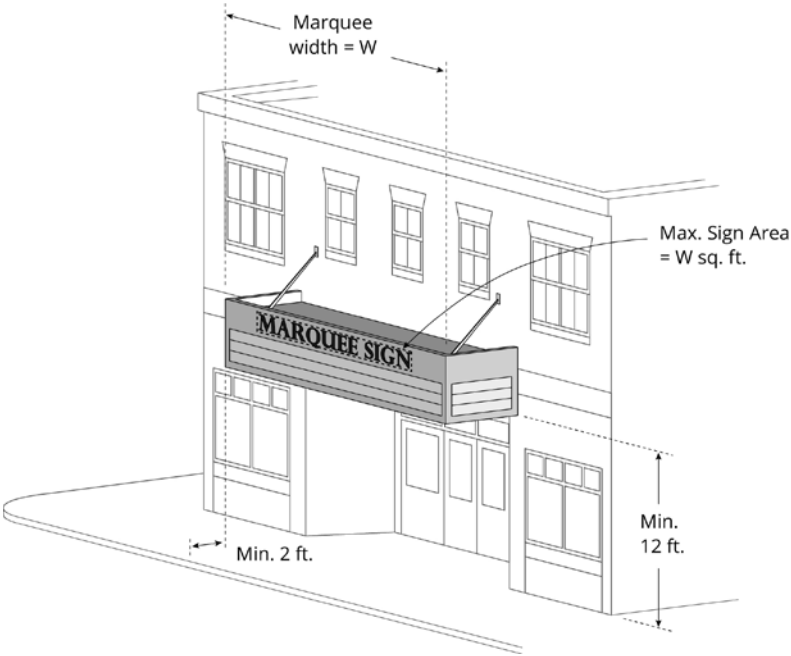


TABLE 20-N: STANDARDS FOR PROJECTING SIGNS

Standard	Requirements
Sign area (max.)	24 SF
Mounting height	8 ft. min. from the bottom of the sign to the nearest grade or sidewalk.
Sign placement	Only on the wall of a building. May project into public right-of-way with permit approval.
Number of signs (max.)	1 per business
Projection (max.)	4 ft. from the building wall to the outer edge of the sign
Illumination	External illumination, direct illumination, neon, or internal illumination of individual letters or graphics only.

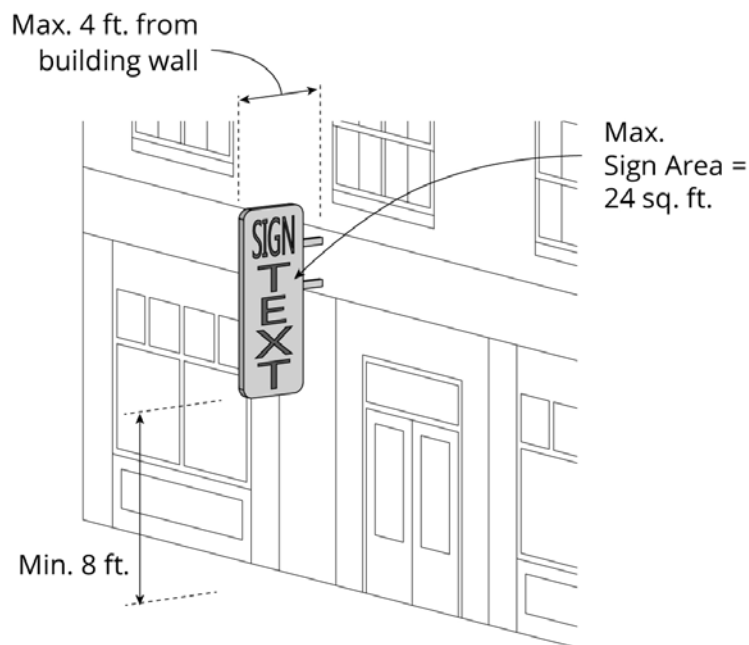


TABLE 20-O: STANDARDS FOR SERVICE ISLAND CANOPY SIGNS

Standard	Requirements
Sign area (max.)	20 SF
Number of signs (max.)	1 per canopy façade, not to exceed 2 signs total
Illumination	Internal illumination

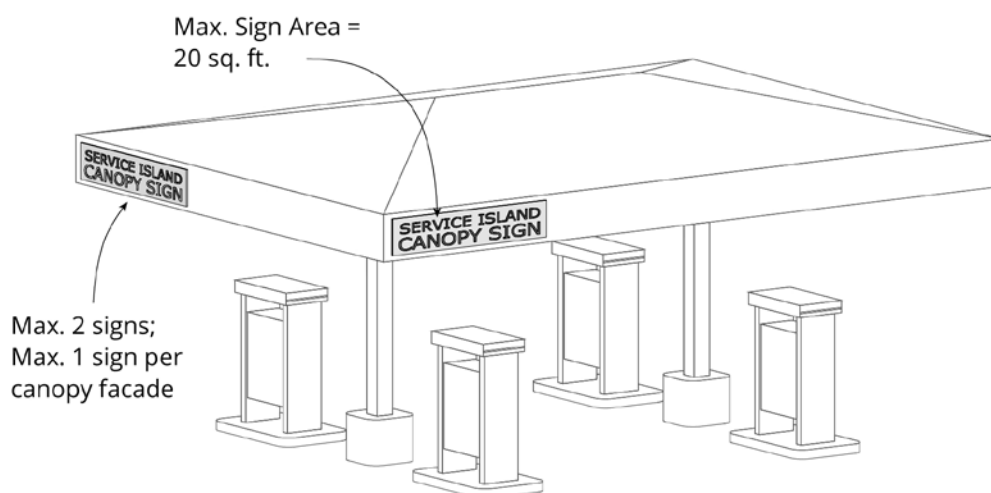


TABLE 20-P: STANDARDS FOR WALL SIGNS

Standard	Requirements
Sign area (max.)	As provided in Table 20-G
Number of signs (max.)	As provided in Table 20-G
Illumination	External illumination, direct illumination, internal illumination, or neon
Special provisions	Painted wall signs are allowed on any exterior building wall of an individual tenant space or building. The allowable area for painted wall signs shall be increased by 10% over the normal allowable sign dimensions for the zone.

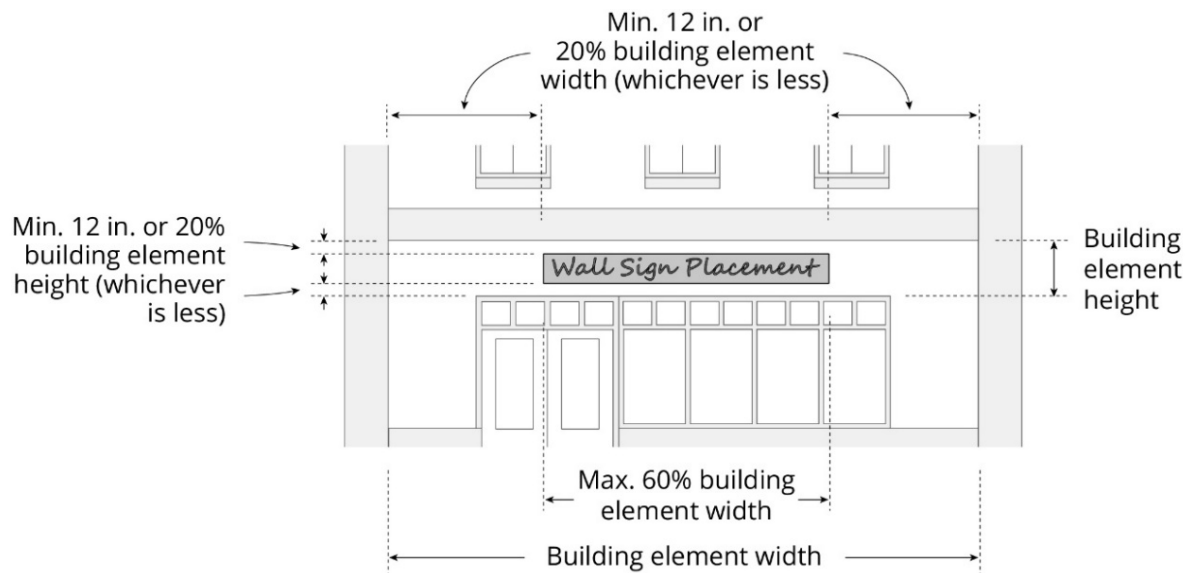


TABLE 20-Q: STANDARDS FOR WINDOW SIGNS

Standard	Requirements
Sign area (max.)	Combined area of temporary and permanent window signs must not exceed 50% of the area of the window on which they are displayed. Painted window signs or perforated vinyl signs are included in this calculation. Excluded from the total allowed sign area for all building-mounted signs.
Sign placement	Must be mounted or displayed on the interior of the window. Allowed on 1st and 2nd story windows only.
Illumination	Neon or single- or two-color LED signs



$$\text{Sign Area A} + \text{Sign Area B} \leq 50\% \text{ Window Area}$$

TABLE 20-R: DIMENSIONAL STANDARDS FOR FREESTANDING SIGNS BY SIGN DISTRICT

Sign District			Area (max.)	Height (max.)	Number of Signs	
Residential		Single-family lots	2 SF	5 ft.	1 per lot (freestanding or building-mounted)	
		PRUDs, multi-family lots	15 SF	5 ft.	1 per major vehicular entrance	
	Institutional	Street frontage ≤ 100 ft.	15 SF	6 ft.	1 per frontage ^{1, 2}	
		Street frontage 100 – 250 ft.	25 SF	8 ft.	1 per frontage ^{1, 2}	
		Street frontage ≥ 250 ft.	50 SF	8 ft.	1 per frontage ^{1, 2}	
Small Mixed-Use		Single-tenant building	32 SF	B-1/B-1b, B-2b/B-2c	1 per lot ¹	
	Multi-tenant building	< 1 acre lot	32 SF	zones: 16 ft.		
		1 – 2.5 acre lot	100 SF	In all other zones:		
		> 2.5 acre lot	140 SF	8 ft.		
		I-B Zone ³	20 SF	10 ft.	1 per use	
	OP zone	Center identification sign	50 SF	8 ft.	1 per major vehicular entrance	
		Tenant sign	15 SF	5 ft.	1 per tenant ²	
Large Mixed-Use	Single-tenant building	Street frontage ≤ 200 ft.	65 SF	B-4 zone: 25 ft.	1 per lot ¹	
		Street frontage > 200 ft.	100 SF	In all other zones: 18 ft.		
	Multi-tenant building	< 1 acre lot	65 SF	B-4 zone: 25 ft.	1 per lot ¹	
		1 - 2.5 acre lot	100 SF	In all other zones:		
		> 2.5 acre lot	140 SF	18 ft.		
Downtown			16 SF	6 ft.	1 per frontage ¹	
Industrial & Transportation		Single-tenant building	35 SF	10 ft.	1 per lot ¹	
		Multi-tenant building	70 SF	15 ft.	1 per lot ¹	
	AB zone	Single-tenant building	Street frontage ≤ 200 ft.	32 SF	16 ft.	1 per lot ¹
			Street frontage > 200 ft.	65 SF	16 ft.	1 per lot ¹
		Multi-tenant building	< 1 acre	32 SF	16 ft.	1 per lot ¹
			1 - 2.5 acres	100 SF		
			≥ 2.5 acres	140 SF		
Open Space ⁴	Park identification signs ⁵		20 SF	5 ft.	1 per major vehicular entrance	
	All other signs ⁵		16 SF ⁶	8 ft.	1 per use (building-mounted or freestanding)	

¹ Lots with multiple street frontages are allowed one freestanding sign for each frontage, provided that the signs are not concurrently visible from the public right-of-way.

² Where a lot contains more than one affiliated use or tenant, uses and tenants may be allocated space on a shared sign. Individual uses or tenants are not allowed to have individual freestanding signs.

³ Only allowed for marine-related uses serving vessel traffic.

⁴ Standards do not apply to municipal stadiums with more than 6,000 seats. The standards for the Small Mixed-Use Sign District shall apply instead.

⁵ All signs must be integrated into existing landscape features or visually related to the materials, colors, scale, etc. of existing buildings as determined by the Building Authority.

⁶ Product trademarks limited to 5% of total sign area.

TABLE 20-S: STANDARDS FOR DIRECTIONAL SIGNS (FREESTANDING)

Standard	Requirements
Sign area (max.)	3 SF per sign face (excluded from the total allowed sign area for all freestanding signs)
Height (max.)	6 ft. from nearest grade, except 4 ft. at driveway or drive-through lanes
Number of signs (max.)	1 at each driveway or drive-through lane, not to exceed 3 signs per lot (excluded from the total number of allowed signs for all freestanding signs)
Illumination	Internal illumination

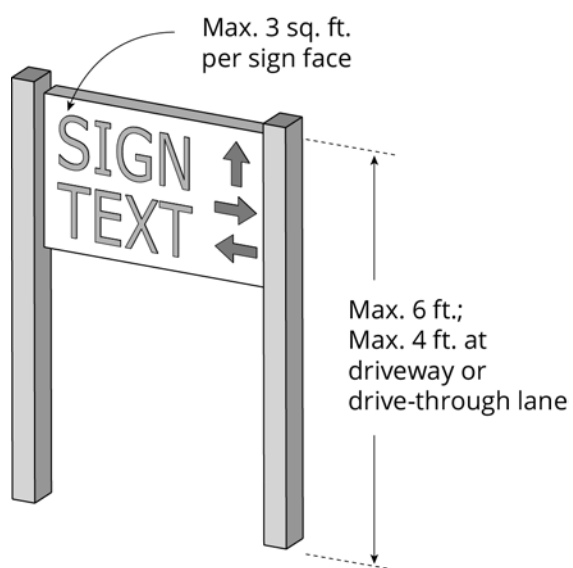


TABLE 20-T: STANDARDS FOR DIRECTORY SIGNS (FREESTANDING)

Standard	Requirements
	12 SF total
Sign area (max.)	1 SF max. per occupant or tenant space (excluded from the total allowed sign area for all freestanding signs)
Height (max.)	6 ft. from nearest grade, except 4 ft. at driveway or drive-through lanes
Number of signs (max.)	1 per building (excluded from the total number of allowed signs for all freestanding signs)
Illumination	External illumination or internal illumination

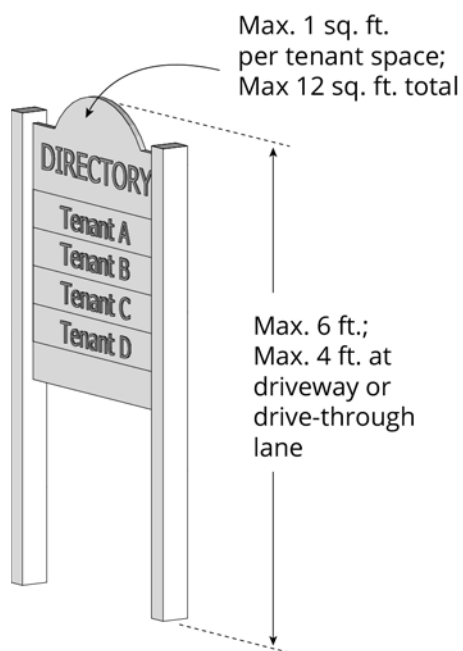
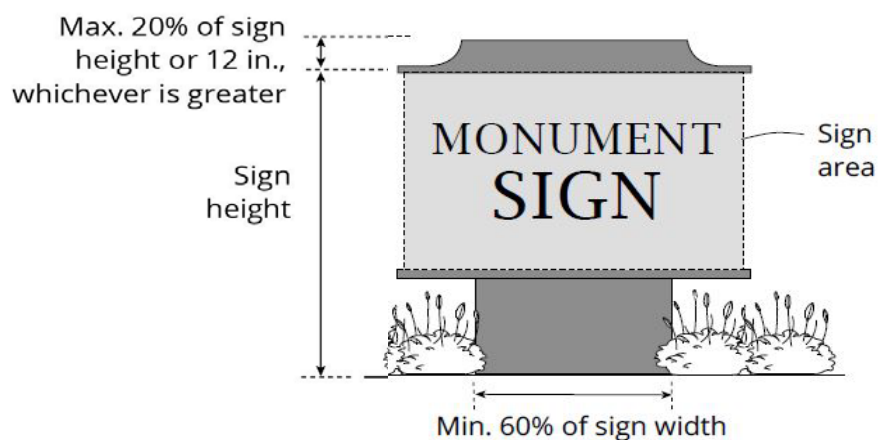


TABLE 20-U: STANDARDS FOR MONUMENT SIGNS¹

Standard	Sign District					
	Residential Sign District ²	Small Mixed-Use Sign District	Large Mixed-Use Sign District	Downtown Sign District	Industrial Sign District	Open Space Sign District
Sign area (max.)	50 SF	50 SF	140 SF	50 SF	70 SF	20 SF
Height (max.)	8 ft.	8 ft.	18 ft.	6 ft.	16 ft.	5 ft.
Base width (max.)	The base of a monument sign must be at least 60% of the width of the sign.					
Illumination	Non-illuminated, internal illumination, or external illumination					
Special provisions for sign height	Elements to enhance the design of a sign structure may extend above the sign to a max. of 20% of the sign's allowed height, or 12 inches, whichever is greater.					

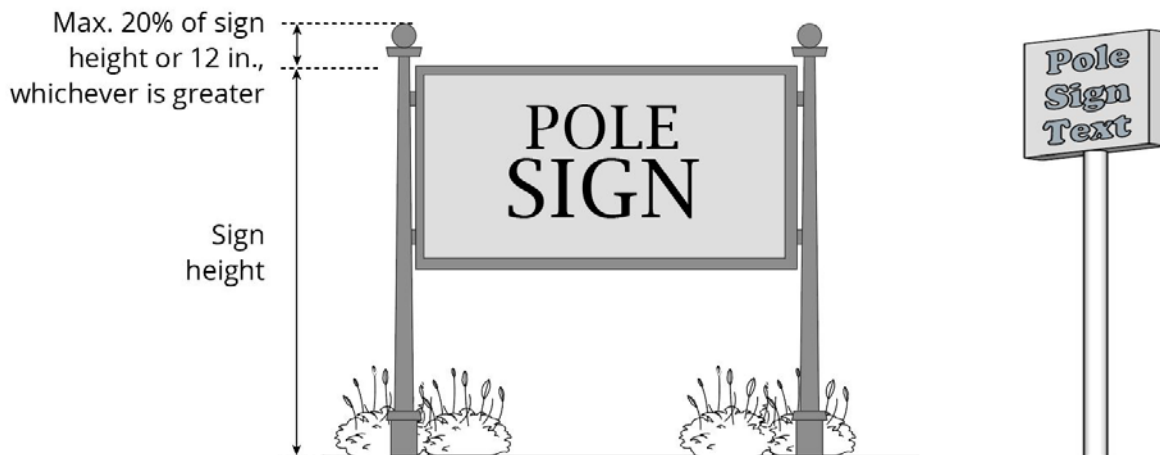


¹ The maximum sign area and sign height standards may be further limited by the standards established in Table 20-R. If no value is included in the table below, then a monument sign is not allowed in that sign district

² Allowed for institutional uses in residential zones only.

TABLE 20-V: STANDARDS FOR POLE SIGNS¹

Standard	Sign District						
		Residential Sign District	Small Mixed-Use Sign District	Large Mixed-Use Sign District	Downtown Sign District	Industrial Sign District	Open Space Sign District
Sign area (max.)	Signs ≤ 8 ft. High	15 SF	24 SF	24 SF	24 SF	24 SF	20 SF
Height (max.)		5 ft.	8 ft.	8 ft.	6 ft.	8 ft.	8 ft.
Sign area (max.)	Signs 8 - 25 ft. high			140 SF		140 SF	
Height (max.)				25 ft.		16 ft.	
Illumination	Non-illuminated or internal illumination Signs ≤ 8 ft. in height may have external illumination						
Sign placement	Signs ≥ 8 ft. in height must have minimum 75 foot separation from other pole signs ≥ 8 ft. on the same side of the street.						
Sign height	Elements to enhance the design of a sign structure ≤ 8 ft. in height may extend above the sign to a max. of 20% of the sign's allowed height, or 12 inches, whichever is greater.						



¹ The maximum sign area and sign height standards may be further limited by the standards established in Table 20-R.



20.9 STANDARDS FOR TEMPORARY SIGNS

20.9.1 In general

Temporary signs are allowed only in compliance with the provisions of this section.

- A. **Information required for display.** All temporary signs are required to display the name and address of the entity placing the sign, and the date the sign was erected.
- B. **Not included in permanent sign allowances.** Temporary signs are not counted toward the maximum total sign area established in Section 20.8.
- C. **General time, place, and manner restrictions.** Unless specifically exempted by this section, temporary signs must be placed in compliance with Subsection 20.6.1. Temporary signs must

not be placed to create a hazard for pedestrian or vehicular traffic and must allow for a 4-foot wide sidewalk to comply with the Americans with Disabilities Act.

- D. Any form of illumination, including flashing, blinking, or rotating lights; animation; reflective materials; and attachments such as balloons, ribbons, and loudspeakers are prohibited.
- E. Temporary signs must be of sufficient weight and durability to withstand wind gusts, storms, and other exterior elements.

20.9.2 Additional standards for temporary signs

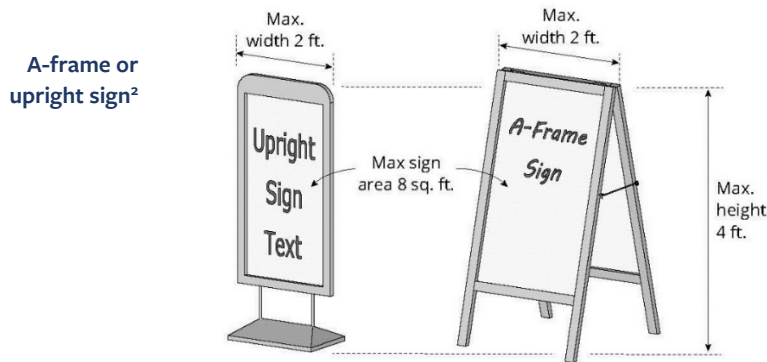
All temporary signs shall comply with the standards of Tables 20-W and 20-X.

TABLE 20-W: TEMPORARY SIGN STANDARDS BY SIGN DISTRICT

	Standard	Requirement
Residential	Total area of all temporary signs at any one time (max.)	16 SF per lot.
	Number of signs (max.)	Unlimited except that the total sign area must not exceed 16 SF
	Time limit (max.)	None
Other	Total area of all temporary signs at any one time (max.)	24 SF per tenant, with a total of max. 72 SF per lot (excludes the area of temporary window signs and permitted wall banner signs) Exception: In the Downtown Sign District and historic districts, max. 12 SF per tenant (excludes the area of temporary window signs and permitted wall banner signs)
	Number of signs (max.)	1 wall banner per tenant in a multi-tenant building. All other temporary sign types unlimited, except that the total sign area of all temporary signs (excludes the area of temporary window signs and permitted wall banner signs) must not exceed the total square footage provided above. Exception: In multi-tenant shopping centers or offices, max. 2 temporary wall banner signs per 150 linear feet of property frontage, not to exceed 24 SF combined.
	Time limit (max.)	60 days per temporary sign permit, and up to 180 days per calendar year.

TABLE 20-X: STANDARDS FOR TEMPORARY SIGN TYPES

Temporary Sign Type ¹	Standard			Other Requirements
	Height	Width (max.)	Area (max.)	
	Min. 30 in. Max. 4 ft.	2 ft.	8 SF	Prohibited in residential zones. Must not be placed in public right-of-way except as permitted by the City. ³ If advertising a business, only permitted during regular business hours.



32 SF

Prohibited in residential zones.
Must be mounted on a building wall or on T-posts or stakes installed ≤ 6" from a wall on which the wall banner will be hung.
Mounting height (max.): 25 ft. to top of banner.

Wall banner

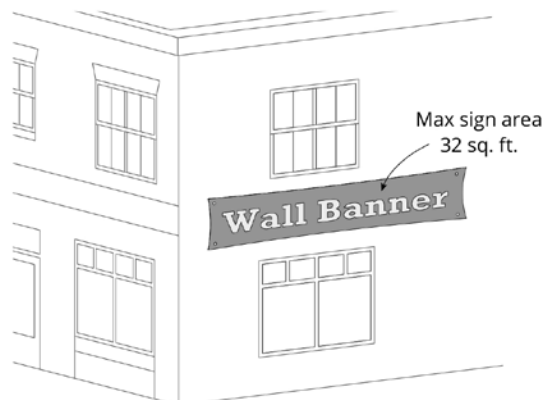
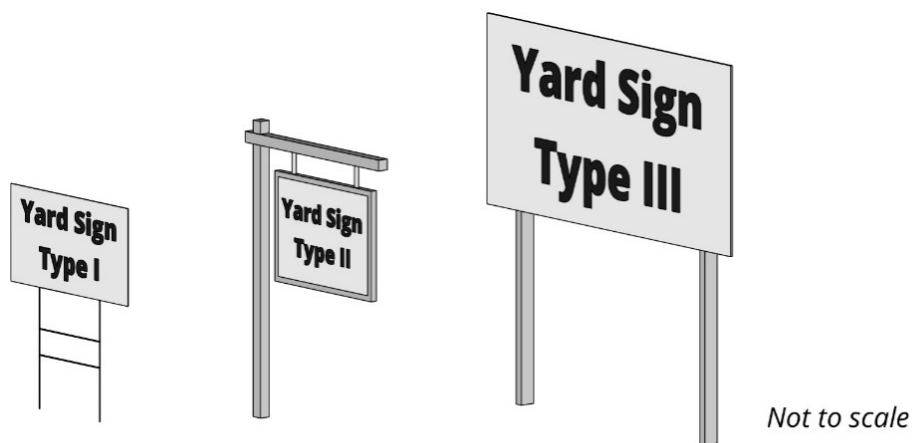


TABLE 20-X (CONT.): STANDARDS FOR TEMPORARY SIGN TYPES

Temporary Sign Type ¹	Standard			Other Requirements
	Height (max.)	Width (max.)	Area (max.)	
Window sign			See End Note ⁴	Mounting height (max.): Placed no higher than second story windows. Inside mounting required. Not included in the total sign area for all temporary signs.
Yard sign (Type I)	4 ft.	2 ft.	3 SF	Installation requirements: Installed securely in the ground.
Yard sign (Type II)	6 ft.	2 ft.	4 SF	Installation requirements: Installed securely in the ground.
Yard sign (Type III)	6 ft.	8 ft.	32 SF	Installation requirements: Installed securely in the ground.



¹ Other temporary sign types may be allowed (e.g. fuel pump topper signs; wrap around waste receptacles) provided the max. area limitation for all temporary signs is not exceeded.

² These signs may be used to identify businesses located down a wharf in the EWPZ and WCZ Zones that have no street frontage and where no other options for on-site permanent signage are available.

³ A min. 4-foot wide pedestrian walkway must be maintained at all times.

⁴ The area of temporary and permanent window signs combined (including signs constructed of perforated vinyl or painted on the window) must not exceed 50% of the area of the window on or within which they are displayed.

20.10 NONCONFORMING SIGNS

20.10.1 Applicability

- A. Maintenance.** Nonconforming signs may be maintained, expanded upon, and/or reduced only in accordance with the provisions of this section.
- B. Continuation.** All lawfully nonconforming signs may be continued, subject to this section.
 - 1. Lawfully nonconforming permanent directional signs for existing nonconforming businesses that are established and operational in any residential zone may continue to be used subject to this section.
 - 2. Lawfully nonconforming permanent signs for nonconforming uses established and operational in any residential zone may continue to be used subject to this section.

20.10.2 Removal or replacement of a nonconforming sign

Lawfully nonconforming signs must be made to conform or shall be removed if any of the following occurs, unless the improvements are required to achieve compliance with applicable federal, state, or local regulations, other than the provisions of this article, and the improvements do not require replacement of the nonconforming sign. In no event will the degree of nonconformity of any sign or type of signage on any lot be increased.

- A. Major site plan review.** Major site plan review is sought for any new structures or building additions on the site, except as provided in (E) below.
- B. New building permit for rehabilitation.** A building permit is sought for a rehabilitation of a building where the value of the rehabilitation exceeds 50% of the assessed value of the building, or \$100,000, whichever is less,

provided that where rehabilitation is of a multi-tenant building, only the tenant or tenants whose building or area is being rehabilitated shall be required to come into conformance with this article.

- C. New sign permit.** An application is filed for a new sign permit in accordance with the following:
 - 1. When an application is filed for a new building-mounted sign, all building-mounted signs on the lot must come into compliance with all requirements of this article for building signs.
 - 2. When an application is filed for a new freestanding sign, all freestanding signs on the lot must come into compliance with all requirements of this article for freestanding signs.
- D. Modification of sign.** A sign is modified in any way, except for routine maintenance or repair of sudden and accidental damage, or for a change in the message panel only, unless otherwise required to conform under this subsection. Repair of sudden and accidental damage will not include replacement of the entire sign, which is treated as a modification under this subsection. Letters on nonconforming signs designed for changeable messages may be changed without triggering the terms of this subsection as long as no other change is made to the sign. Replacement of an awning covering with substantially the same material and text is not considered a modification.
- E. Signs on multi-tenant properties**
 - 1. In the case of nonconforming freestanding shared signs for multi-tenant properties, signs may be added or modified to reflect

a change in individual tenants without triggering the terms of this subsection, provided that the degree of nonconformity is not increased.

2. In the case of building signs on multi-tenant properties, this subsection shall apply only to the individual business tenant that is adding or modifying a sign or seeking major site plan review and shall not trigger the conformance requirement for other tenants' building signs.

F. Abandoned or vacant site. Removal of a nonconforming sign, or replacement of a nonconforming sign with a conforming sign, is required when the use of the sign and/or the property on which the sign is located has been abandoned, ceased operations, become vacant, or been unoccupied for a period of 180 consecutive days or more, as long as the period of non-use is attributable at least in part to the property owner, tenant, or other person or entity in control of the use. For purposes of this section, rental payments or lease payments and taxes are not considered as a continued use. In the event this should occur, such conditions will be considered as evidence of abandonment, requiring removal of such sign by the owner of the property, his or her agent, or person having the beneficial use of the property, building, or structure upon which such sign or sign structure is erected within 30 days after written notification from the Planning Authority. If such sign(s) is (are) not removed within the 180-day period, enforcement action will be pursued consistent with Section 20.11.

20.10.3 Permanent directional signs in residential zones

- A. A lawfully existing business located in a residential zone is allowed an off-premise sign in the public right-of-way if it meets the following requirements:
 1. The business is not a home occupation.
 2. The business is not located within 500 feet of a major or minor arterial.
 3. The off-premise sign will be no larger than 12 inches by 48 inches and complies with the requirements established in the *MDOT/MUTCD Standard Sign Manual*.
- B. Such lawfully existing retail business may qualify for one two-sided or two one-sided off-premise signs that must be located within the public right-of-way of a major or minor arterial in a location determined safe by the City Traffic Engineer and upon the payment of an initial fee of \$300, with an annual renewal fee of \$30.
- C. In the event the sign is damaged or destroyed, the replacement of the sign shall be the sole responsibility of the permittee. The permittee shall be required to obtain a permit for the replacement sign from the Planning Authority, after securing \$400,000 insurance and naming the City of Portland as an additional insured.

20.10.4 Nonconforming signs in residential zones

- A. Lawfully-existing permanent signs for lawfully existing nonconforming uses in any residential zone may continue to be used.
- B. If an application is filed for new or replacement building-mounted sign(s) for a lawfully-existing nonconforming use located in a residential zone, the building-mounted sign(s) must either be the same size and number as the lawfully existing building-mounted sign(s), or must

comply with the standards established for the Small Mixed-Use Sign District in Table 20-G, whichever is less. Sign types shall be limited to blade, directory, wall, and window signs. Illumination shall be limited to external illumination only.

- C. If an application is filed for replacement freestanding sign(s) for a lawfully-existing nonconforming use located in a residential zone, the freestanding sign(s) must be the same size and number as the lawfully existing freestanding signs, or must comply with the standards established for the Small Mixed-Use Sign District in Table 20-R, whichever is less. No new freestanding signs for a nonconforming use in a residential zone shall be permitted. Illumination shall be limited to external illumination only.

work on the sign until appropriate permits are obtained.

- B. Permits issued for work commenced without a sign permit, or any work beyond the authorized scope of a sign permit shall be assessed double the required permit fees for the sign(s).
- C. Failure to perform any act required by this article, failure to obtain any permit required, or the performance of any act prohibited by this article constitutes a violation and is subject to penalties as set forth in 30-A M.R.S. §4452.
- D. Each day on which a violation exists will constitute a separate violation for purposes of this section.

20.11 ENFORCEMENT

20.11.1 Authority

The requirements of this article shall be enforced by the Building Authority as stated in Article 1. The Building Authority has the authority to order the repair, maintenance, or removal of any sign or sign structure that has become dilapidated or represents a hazard to public health, safety, or welfare.

20.11.2 Violations

- A. It shall be unlawful for any person, firm, or corporation to erect, construct, enlarge, alter, repair, display, maintain, or use a sign within the City contrary to, or in violation of, any provision of this article. Any work commenced without a sign permit, or beyond the authorized scope of a sign permit constitutes a violation of this article and is grounds for the Building Authority to issue a correction notice and/or to stop all

21 PUBLIC ART PROGRAM

21.1 ESTABLISHMENT

It shall henceforth be the policy of the City to provide on an annual basis regular funding for the preservation, restoration, and enhancement of its public art collection. This article and the funding contemplated are in recognition of the fact that only by instituting a steady stream of funding for this effort and standing by that commitment, will the City over time be able to fulfill its role as steward of its public art collection and help nurture and enrich thereby the quality of life in this city.

21.2 PURPOSE

The purpose of this article is to promote the educational, cultural, economic, and general welfare of the City of Portland by providing the means to fund the acquisition and care of art works by the City of Portland, which shall be the City's public art collection. The Public Art Program seeks to:

- A. Care for and maintain the public art collection of the City of Portland by documenting, preserving, restoring, and repairing the collection.
- B. Commission or acquire works of public art, and to seek donations of art work for the City's public art collection.
- C. Provide curatorial expertise and project management for the care of Portland's public art collection.
- D. Enhance and enrich the lives of the city's residents, visitors, and employees by incorporating the visual arts into public spaces.
- E. Contribute to the city's civic pride and sense of identity.
- F. Increase access to works of art for residents and visitors to the area.

- G. Enhance Portland's growing reputation as a city which celebrates the arts.
- H. Celebrate the multi-cultural and diverse character of Portland's communities with place-specific art.
- I. Encourage collaboration between artists, landscape architects, urban planners, architects, engineers, and other designers.

21.3 DEFINITIONS

Art work. For the purposes of the Public Art Program, art work shall include the following:

- A. Sculpture, statues, or monuments in any material or combination of materials.
- B. Painting.
- C. Graphic arts, printmaking, and drawing.
- D. Photography.
- E. Crafts in clay, fiber and textiles, wood, metal, plastics, glass, and other materials.
- F. Mixed media, any combination of forms or media, including collage.
- G. Functional art such as street furniture, as described in the *Guidelines for the Public Art Ordinance*.
- H. Environmental art consisting of landforms and artistic landscape composition.

The following shall not be considered public art for the purposes of the Public Art Program:

- A. Reproductions by mechanical or other means of original works of art, except for limited editions, controlled by the artist, of original prints, cast sculptures, photographs, or other works of art.
- B. Decorative, ornamental, or functional elements which are designed by the building architect or consultants engaged by the architect which are

a traditional and typical element of architectural design.

- C. Those elements generally considered to be conventional components of a landscape architectural design including, but not limited to, plant materials, pools, paths, benches, receptacles, fixtures, and planters except as allowed by (G) and (H) in the list of included art work above.
- D. Art objects which are mass produced or of a standard design, such as playground sculpture or fountains, except pieces of historical significance to the city.
- E. Directional or other functional elements, such as supergraphics, signage, color coding, and maps, except where sculptural pieces are used to define gateways in the city.
- F. Electrical, water, or mechanical service for activation of the work.
- G. Exhibitions and educational programs related to the work.
- H. Performing arts.
- I. Art that displays slogans, logos, mascots, or commercial advertising.

Public art collection. Art objects that are owned by the City of Portland which are permanently installed in public, accessible locations. Permanent public art must be located in a public place with public visibility and impact, and shall have a permanence at least comparable to associated capital projects.

Public art guidelines. The regulations adopted by the committee and approved by the City Council which establish procedures to carry out the purpose of this article. The guidelines shall include but not be limited to criteria for selection of artists and art works, maintenance of a file of interested

artists, procedures for artistic competitions, and requirements for the maintenance of works of art.

21.4 FUNDING

21.4.1 Establishment of Public Art Fund

The City shall establish a special revenue fund designated as the Public Art Fund in the City treasury from which expenditures may be made in accordance with this ordinance. The Public Art Fund shall contain a capital account to fund permanent public improvements in the form of the purchase, acquisition, or commission of new public art, or major restorations, and an operations and maintenance account. Authorized expenditures include, but are not limited to, associated site installation costs, such as lighting and landscaping, and costs associated with the commission, engineering, contract administration, unveiling, and dedication activities. Also authorized are expenditures associated with preservation, conservation, and repair of existing public art. Capital funds may come from any source, including the sale of general obligation bonds. The City's capital improvement program shall contain an annual appropriation for the Public Art Fund calculated in accordance with Subsection 21.4.2. Funds for the operation and maintenance account may come from any source except bonds.

21.4.2 City-funded projects

A percentage of the City's Capital Improvement Program (CIP) shall be calculated and appropriated annually to the Portland Public Art Fund. The annual appropriation shall be .5% of the total annual CIP. Nothing contained herein shall preclude funding the acquisition of art for municipal property in other ways.

21.5 ADMINISTRATION

21.5.1 Public Art Committee responsibilities

The City Public Art Program shall be administered by the Public Art Committee whose members shall be appointed by the City Council, and shall have the following responsibilities:

- A. Develop an annual art plan for Portland which shall be presented to the City Council for approval.
- B. Establish such guidelines as are necessary to carry out the purpose of this article. The guidelines shall include but not be limited to criteria for selection of artists and art work, maintenance of a file of interested artists, review criteria for proposed gifts of art work to the City, procedures for artistic competitions, and requirements for the maintenance of art work. Any and all guidelines or changes to guidelines shall be placed on a City Council agenda as a communication. The guidelines shall take effect 45 days after the date of placement on the council agenda, unless the City Council takes official action disapproving the guidelines, in whole or in part, prior to the expiration of the 45-day period. If a part of a guideline is vetoed, the remainder shall continue in effect. Any guideline adopted, which is not required by the statutes of the state or by this article, may be waived by the chair upon good cause being shown.
- C. Recommend to the City Council the expenditure of funds for the acquisition or commissioning of public art, for maintenance of public art, and for administration of this program.
- D. Seek private donations of funds and/or works of art for the purposes of expanding the public art collection or the maintenance of the collection.
- E. Oversee the maintenance, care, and repair of the public art collection.
- F. Review the appropriateness of proposed public art which is intended to fulfill all or part of the contribution required by this article.
- G. Review potential gifts of art to the City on City property, and assist in the development process of such gifts, in accordance with the *Guidelines for the Public Art Ordinance*.
- H. Recommend appropriate locations and accessibility to the public for permanent art, with suggestion as to the type of art which is appropriate.
- I. Solicit advice from arts professionals, the business community, and from local residents on the appropriateness of proposed art.
- J. Recommend revisions to policies and guidelines for the improved implementation of this program.
- K. Ensure that the use of funds collected under this program will increase the amount of art in the city that is available to the public.

21.5.2 Public Art Committee structure

- A. The Public Art Committee shall be composed of eleven voting members who are appointed by the City Council. The City Council shall appoint one of its members, the City Manager shall recommend a member, and Creative Portland shall recommend one of its members to serve on the Public Art Committee. The City Council shall appoint the remaining eight members who shall be volunteers and have interest and/or expertise in public art. Such experience may include, but shall not be limited to, education and experience as an architect, a

landscape architect, a professional curator, a professional artist, and/or an art educator. Persons appointed to the Public Art Committee must live or work in Portland and shall be appointed through the City's annual appointment process.

- B.** Each Public Art Committee member shall serve for a period of three years. The appointments shall be staggered so that three appointments terminate each year.
- C.** Whenever a vacancy shall occur, the vacancy shall be filled by the City Council.
- D.** The Public Art Committee shall adopt its own rules for the conduct of its business not inconsistent with the statutes of the state and this article. Any and all rules or changes to rules shall be placed on a City Council agenda as a communication. The rule or rules shall take effect 45 days after the date of placement on the council agenda, unless the City Council takes official action disapproving the rules, in whole or in part, prior to the expiration of the 45-day period.
- E.** The members of the Public Art Committee shall annually elect one of their members as a chair to preside at all meetings and hearings and to fulfill the customary functions of that office, and another of their members as vice-chair.

22 REGULATION OF EXPLOSIVES

22.1 PURPOSE

The purpose of this article is to protect the public's health, safety, and general welfare by regulating and controlling blasting operations within the city.

22.2 APPLICABILITY

This article shall apply to all blasting operations related to construction and development of real estate within the city. The City of Portland *Technical Manual* is incorporated into this article by reference. Standards listed in the *Technical Manual* shall be additional to the provisions of this article.

22.3 REVIEW PROCESS

22.3.1 Permit Required

No person may conduct blasting operations within the city without first obtaining a permit from the Fire Department, as required by the National Fire Protection Association 1 Fire Prevention Code, as adopted and amended in Chapter 10 of the City of Portland Code of Ordinances. Fees for this permit shall be as established by order of the City Council.

22.3.2 Application Requirements

Prior to the issuance of a permit the following information shall be submitted to the City:

- A. A blasting plan shall be submitted by the applicant to the Planning Authority for all projects where more than 300 cubic yards of material shall be removed. The blasting plan shall conform to the provisions of this article and of Section 3 of the City of Portland *Technical Manual*.
- B. A blasting submittal shall be submitted to the Planning Authority where between 50 and 300 cubic yards of material shall be removed. The

blasting submittal shall conform to the provisions of this article and of Section 3 of the City of Portland *Technical Manual*.

- C. A blasting application shall be submitted to the Planning Authority where less than 50 cubic yards of material shall be removed, or where utility trench work in the accepted public right of way, including City or Portland Water District infrastructure is proposed. Small blasts where less than 50 cubic yards of material shall be removed are not required to submit either a blasting plan or blasting submittal. Such projects must conform to the National Fire Protection Association Fire Prevention Code and applicants shall submit a monitoring report upon request. Information provided in the blasting application shall confirm that the proposed small blast conforms to all applicable provisions of this ordinance and of Section 3 of the City of Portland *Technical Manual*.
- D. A blasting plan or blasting submittal may be required for any blasting operation at the discretion of the Planning Authority when it determines that conditions at or near the site of the blasting operations warrant the provision of a plan.

22.4 STORAGE AND HANDLING

All explosives shall be stored and handled in accordance with the provisions of this code, the laws of the State of Maine, and the National Fire Protection Association 1 Fire Prevention Code.

22.5 ENFORCEMENT

In the event that there are more than three documented violations of the blasting plan, blasting submittal, or blasting permit, or any other violation of this article, a stop work order may be issued on

all construction or development related to the permitted operation. The permittee shall then be required to submit a revised blasting plan to the Planning Authority for review and approval. Work shall not be allowed to continue until the revised blasting plan is approved.

22.6 PENALTIES

In addition to the possibility of a stop work order in the event of a violation, the permittee shall be subject to the following penalties:

1st offense	\$500
2nd offense	\$1,000
Subsequent offenses	\$1,000

22.7 NOTICE REQUIREMENTS

22.7.1 Basic noticing requirements

At least 10 days prior to the start of any blasting operation, notice shall be published in a newspaper of local publication and shall be mailed by first class mail to all property owners within the distance specified below of the perimeter of the blasting site:

- A. **Small blast (trench blast or under 50 cubic yards of rock removed).** All property owners within 250 feet of the perimeter of the blasting site.
- B. **Medium blast (removal of 50-300 cubic yards of rock material).** All property owners within 500 feet of the perimeter of the blasting site.
- C. **Large blast (removal of over 300 cubic yards of rock material).** All property owners within 600 feet of the perimeter of the blasting site.

22.7.2 Content of notice

Notice shall conform to the model notice contained in Section 3 of the City of Portland *Technical Manual* and shall include a description of the proposed blasting operations, estimated schedule

and duration of blasting operations, description of the blasting signals to be used during operations, the complaint protocol and the complete address, telephone numbers and email contact for the blasting contractor, the Planning Authority, and Fire Department where neighbors and property owners may request further information and notification.

22.7.3 Additional noticing requirements

- A. For medium blasts where 50-300 cubic yards of rock material is to be removed, and large blasts where over 300 cubic yards of rock material is to be removed, additional notification requirements shall apply during construction, as detailed in Section 3 of the City of Portland *Technical Manual*.
- B. If blasting operations are to occur within 250 feet of any structure, additional notification requirements shall apply, as detailed in Section 3 of the City of Portland *Technical Manual*, in order to prevent adverse public health and safety impacts due to blasting-related carbon monoxide migration.

22.8 HOURS OF BLASTING

Blasting shall occur Monday through Friday, between the hours of 9 a.m. and 4 p.m., unless otherwise approved by the Planning Authority. Requests for extension of hours of blasting must be submitted by the applicant in writing.

22.9 WAIVERS

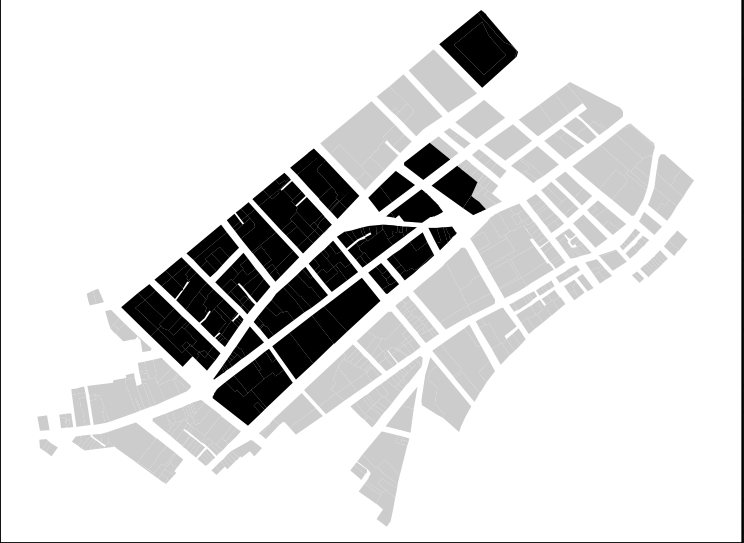
Upon written request by the applicant, the Planning Authority, based on a positive recommendation by the Fire Department, may waive all or a portion of the blasting provisions of Section 3 of the City of Portland *Technical Manual*, provided that all waivers

are consistent with the purposes set forth in Section 22.1.

22.10 SUSPENSION OF BLASTING OPERATIONS

If it is determined that blasting operations pose any risk to public health, safety, or general welfare, the Planning Authority or the Fire Chief or their designee shall have the authority to suspend the blasting permit at any time until they deem it safe for blasting operations to continue.

Areas Eligible for Architectural Cap***
Eligible areas are represented in black below.



Downtown Height Overlay Portland, Maine

As amended xxxx xx, xxxx **Draft 7.24.20**

Height Overlay Zone Legend Maximum Height (ft.)

- 45
- 50 (maximum street wall height within 15 ft. stepback)**
- 50 (maximum street wall height within 30 ft. stepback)**
- 65
- 85
- 90 (maximum street wall height within 15 ft. stepback)**
- 90 (maximum street wall height within 30 ft. stepback)**
- 125
- 150
- 190
- 210

Notes
No new construction of any building shall be less than 35 feet in height within 50 feet of any street frontage. See Land Use Code for exceptions.

Maximum street wall height within the B3 zone is 65 ft. unless otherwise noted.

*Boundary offsets are from street centerline unless otherwise noted.

**Multiple stepbacks cumulatively reaching at least the minimum noted above (15 and 30) are acceptable.

***Architectural Cap Allowance: The building form may extend up to 40 ft. above the designated height limit for the purpose of providing a distinctive graduated design for an architectural building top and to enclose rooftop appurtenances. No habitable floor area shall be developed within the building envelope provided by the additional 40 ft. unless at least 50% of such habitable floor area is devoted exclusively to one or more publicly accessible uses, and provided that such floor area is incidental to the primary design intent of the space.

B-6 Building Height Overlay & Building Envelopes

Draft 7.24.20

Legend

- 35 ft max
- 45 ft max
- 45 ft max with 55 ft extensions
- 45 ft max with 65 ft extensions
- Building Break Line
- View Corridor
- Area of Mountfort St. Ext.
- Area of future Fore Street connector
- View Protection Splays

B6 Building Height Overlay Notes:

1. For buildings located East of Hancock Street, except as provided in note 2 below, no building mass higher than 45 feet shall be wider than 70 feet measured parallel with the waterfront nor longer than 140 feet measured perpendicular with the waterfront. The 70-foot wide building extension allowed above must be at least 90 feet apart, measured parallel with the waterfront, and if abutting Mountfort Street (extension) must be set back 25 feet from any street.
2. For buildings east of Mountfort Street but west of the area indicated for the future Fore Street Connector Road, no building mass higher than 45 feet shall be wider than 125 feet within 70' of the Fore Street right-of-way, as measured perpendicular to the Fore Street right-of-way. 125 feet shall be a cumulative maximum for this Building Envelope area within 70' of Fore Street.
3. For buildings east of Mountfort Street but west of the area indicated for the future Fore Street Connector Road, no buildings shall exceed 35 feet in height above the adjacent Fore Street grade within 40' of the Fore Street right-of-way, as measured perpendicular to the Fore Street right-of-way.
4. In Defined View Corridors, no building allowed above the corresponding Fore Street elevation.
5. For buildings located east of the area indicated for the future Fore Street Connector Road, no building shall exceed 35 feet in height above the adjacent Fore Street grade within 100 feet of the Fore Street right-of-way, as measured perpendicular to the Fore Street right-of-way.
6. Location of Building Break Line is approximate as shown and intended to promote a break in building mass to allow for the development of blocks and site permeability. The exact location of blocks and site permeability shall be identified, defined, and reviewed under a Master Development Plan or Site Plan review.
7. There shall be no new buildings in the areas of the Mountfort Street Extension and the Fore Street Connector Road, which shall be reserved for protection of public views and future extension of streets built to City street design standards. Precise layout and design shall be identified, defined, and reviewed under a Master Development Plan or Site Plan Review.
8. View Protection Splays. These areas shall be prioritized for view protection, site circulation, and active public space.
9. Interpretation of Boundaries. View Corridor limits shall be drawn from an extension of the corresponding streets where these streets meet Fore Street, or in the case of Kellogg Street where it meets Adams Street. Building Envelope boundaries shall take their boundaries from the nearest view corridor and/or street extension boundaries where applicable; when a Building Envelope does not align with a view corridor or street extension, the boundary shall be the parcel boundary.
10. No new construction of any building shall have less than three (3) floors of habitable space above the average adjacent grade within twenty-five (25) feet of any public street (except where buildings are located east of the Fore Street connector, which shall not be subject to a minimum building height).

Height Districts

A. Gateway Urban Height District

Min. 4 floors, max. ht. 125', except as permitted under subsection 7.5.1(D)(Space and Bulk Exceptions) of the Land Use Code, where buildings may have a maximum height of 165'.

B. Intermediate Urban Height District

min. 3 floors, max. ht. 105'

C. Transitional Neighborhood Height

min. 3 floors, max. ht. 85'

D. Traditional Neighborhood Height min.

2 floors, max ht. 55'



Bayside Height Overlay Map Draft 7.24.20

Note** Newly constructed buildings shall have the required minimum number of floors as provided by the Bayside Height Overlay Map within 50 feet of any frontage. Such floors shall be occupiable or habitable and above the average grade of the abutting street.



ONE CLIMATE FUTURE

Charting a Course *for*
Portland and South Portland

Draft Plan Presentation to Sustainability & Transportation Committee
By Troy Moon, Sustainability Director
September 16, 2020

Climate Goals



- 1 Reduce community-wide greenhouse gas emissions **80% by 2050**, from 2017 levels.
- 2 Run all municipal operations on **100% clean renewable energy by 2040**.

In 2019, we declared a climate emergency, committing to accelerate emissions reductions **by 2030**.

Engagement Timeline

- = Presentation/Discussion
- = Training
- = Tabling
- = Workshops

2019

FEB

- Equity Partner Training
- Engaged Volunteer Training

MAR

- Friends of Casco Bay: Ocean Acidification, Climate Change, and You
- CPCC Kick-off Meeting

APR

- Allagash Brewery
- Green Neighborhood Family Fest
- Knitting Nook Lunch & Learn
- CPCC Vulnerability Workshop



MAY

- Green New Deal Presentation at Portland Resilience Hub
- Parks Commission, Green Space Gathering
- Sierra Club Statewide Conference
- Portland High School
- Neighborhood Connection Night
- South Portland Farmers Market
- "Paris to Pittsburgh" Movie Discussion



AUG

- National Night Out at Redbank Community Center
- Climate Change: What Everyone Needs to Know at Congregation Bet Ha'am
- St. Luke's Episcopal Cathedral & First Parish Portland Unitarian Universalist Church
- Allen Avenue UU Church
- Maine Mall
- Hinckley Park
- Deering Oaks Park Farmers Market
- South Portland Farmers Market
- South Portland Library



JULY

- St. Luke's Episcopal Cathedral
- Gateway to Opportunity High Schooler Discussion
- Stars and Stripes Spectacular
- Bug Light Movies
- Revision Energy event
- "Paris to Pittsburgh" Movie Discussion in the West End
- Hinckley Park
- University of Southern Maine
- Climate Change: What Everyone Needs to Know at the South Portland Library
- Council on International and Educational Exchange (CIEE) Lunch and Learn
- Third Thursday at Trinity Park
- WillardFest
- Bug Light Movies
- Monument Square Farmers Market
- Cla Cafe
- Climate Change: What Everyone Needs to Know at the Knitting Nook
- OCF Open City Night



JUNE

- E-waste Drop Off: City staff passed out surveys at the annual drop off event
- Deering Oaks Park Farmers Market
- Monument Square Farmers Market
- St. Luke's Episcopal Cathedral Coffee Hour
- Old Port Festival
- Launch Event
- Portland Housing Authority
- Republican City Committee
- CPCC Mitigation Workshop
- Monthly Meeting at St. Luke's Episcopal Cathedral
- Maine Medical Center
- West End Neighborhood Association Meeting
- South Portland Community Dinner
- South Portland Farmers Market
- Redbank Community Dinner
- Startup Maine

NOV

- EcoMaine Presentation
- Global Warming Prayer
- Resilient Food Systems strategy discussion
- Sustainability Programs and Initiatives Lunch and Learn
- Gulf of Maine Symposium
- IDEXX Environmental Stewardship Committee

OCT

- Greenhouse Gas Emissions Lunch and Learn
- Redbank Community Center Climate Discussions
- PassivhausMAINE Fall Forum
- "Paris to Pittsburgh" Movie Discussion
- Home Energy Fair
- Conversation about Climate Change at Tandem Coffee
- The Impacts of Climate Change in East Bayside and Surrounding Communities
- Maine Public Health Conference
- Portland West End Neighborhood Association



SEPT

- Portland GreenFest
- St. Luke's Start Up Sunday
- Opportunity Alliance
- Portland Green Fest
- We are Portland Walk & Dance
- Portland Electric Vehicle Ride & Drive
- Vajra Vidya Portland Climate Change Art Discussion
- Portland King Middle School Solar Discussion
- RiverPlace Apartments
- Portland Parking Day
- WGAN Radio Show



DEC

- Vulnerability Assessment Lunch and Learn
- Portland Public Library Sustainability Series
- Portland Rotary Club



2020

JAN

- Equity in Sustainability Lunch and Learn

FEB

- South Portland Planning Board
- Resilient Affordable Housing strategy discussion
- University of Southern Maine Lunch and Learn
- Green & Healthy Maine- Home + Energy Show



MAR

- South Portland Polling Locations

APR

- Online Workshop Series
- Stormwater and Green Infrastructure strategy discussion
- Resilient Ecosystems strategy discussion
- Waterfront Alliance
- IDEXX Environmental Stewardship Committee

MAY

- Maine Conservation Voters Lunch & Learn Series
- Transportation and Land Use strategy discussion
- Regional Public Transportation strategy discussion

JUL

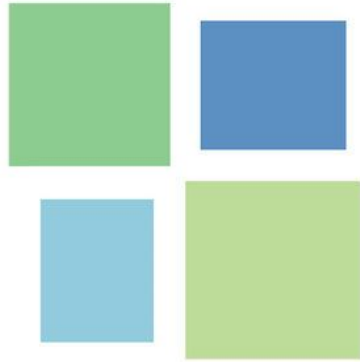
- CPCC "Six Big Moves" Workshop

Staff Engagement

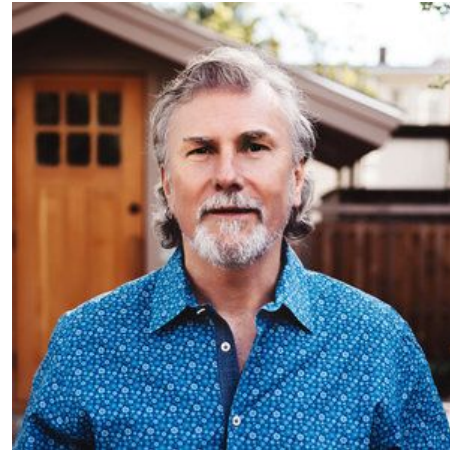


Partner Agencies





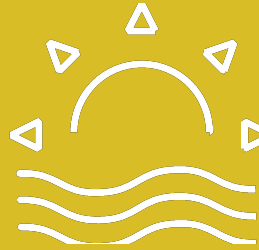
LINNEAN SOLUTIONS



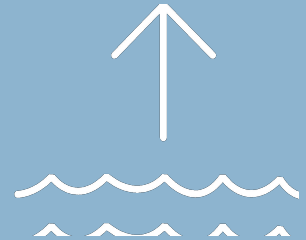
Portland & South Portland's Climate Trends, Projections, and Impacts



More Rainfall &
Less Snow



Increasing
Temperatures

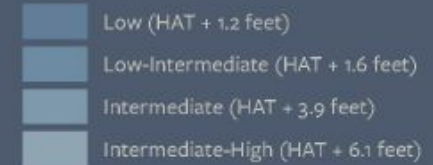


Sea Level Rise

What Sea Level Rise Means for Us...

Reported from the Bayside Adapts study:

Sea Level Rise / Storm Surge Scenarios



Scenario	Mean Sea Level (feet), relative to NGVD29	
	2050	2100
Low	1.08	1.58
Intermediate Low	1.28	2.00
Intermediate	1.94 – “Commit to manage”	4.30 – “Commit to manage”
Intermediate High	2.63	6.46
High	3.41	9.19 – “Prepare to manage”
Extreme	3.84 – “Prepare to manage”	11.25 – “Be aware of”

Portland's Top Ten



Strained Social Services



Environmental Impacts



Hazardous Waste



Social Inequity



Food Security



Power Disruptions



Property Damage

Climate Vulnerabilities



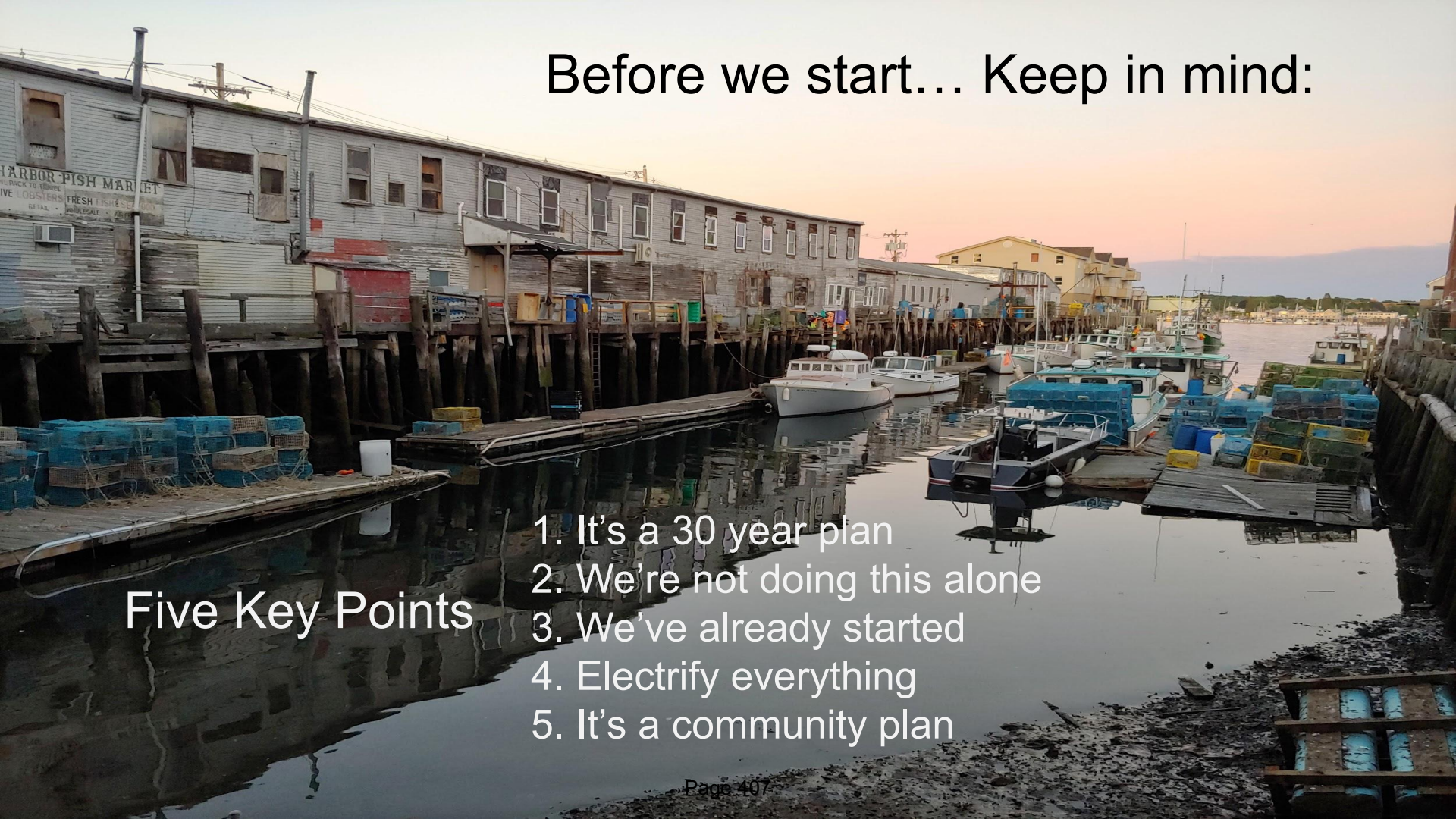
Public Health Challenges



Transportation Disruptions



Water Systems Disruptions



Before we start... Keep in mind:

Five Key Points

1. It's a 30 year plan
2. We're not doing this alone
3. We've already started
4. Electrify everything
5. It's a community plan

EMISSIONS BY SECTOR

34% COMMERCIAL BUILDINGS

22% RESIDENTIAL BUILDINGS

0.3% WASTEWATER

3% SOLID WASTE

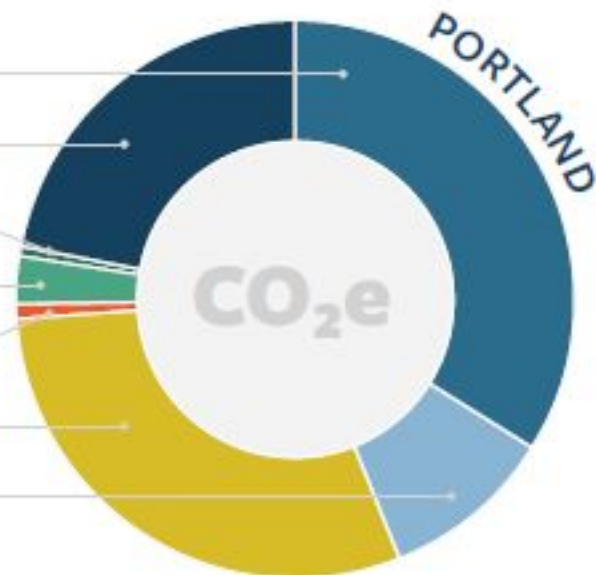
0.8% WATERBORNE TRANSPORTATION

30% ON-ROAD TRANSPORTATION

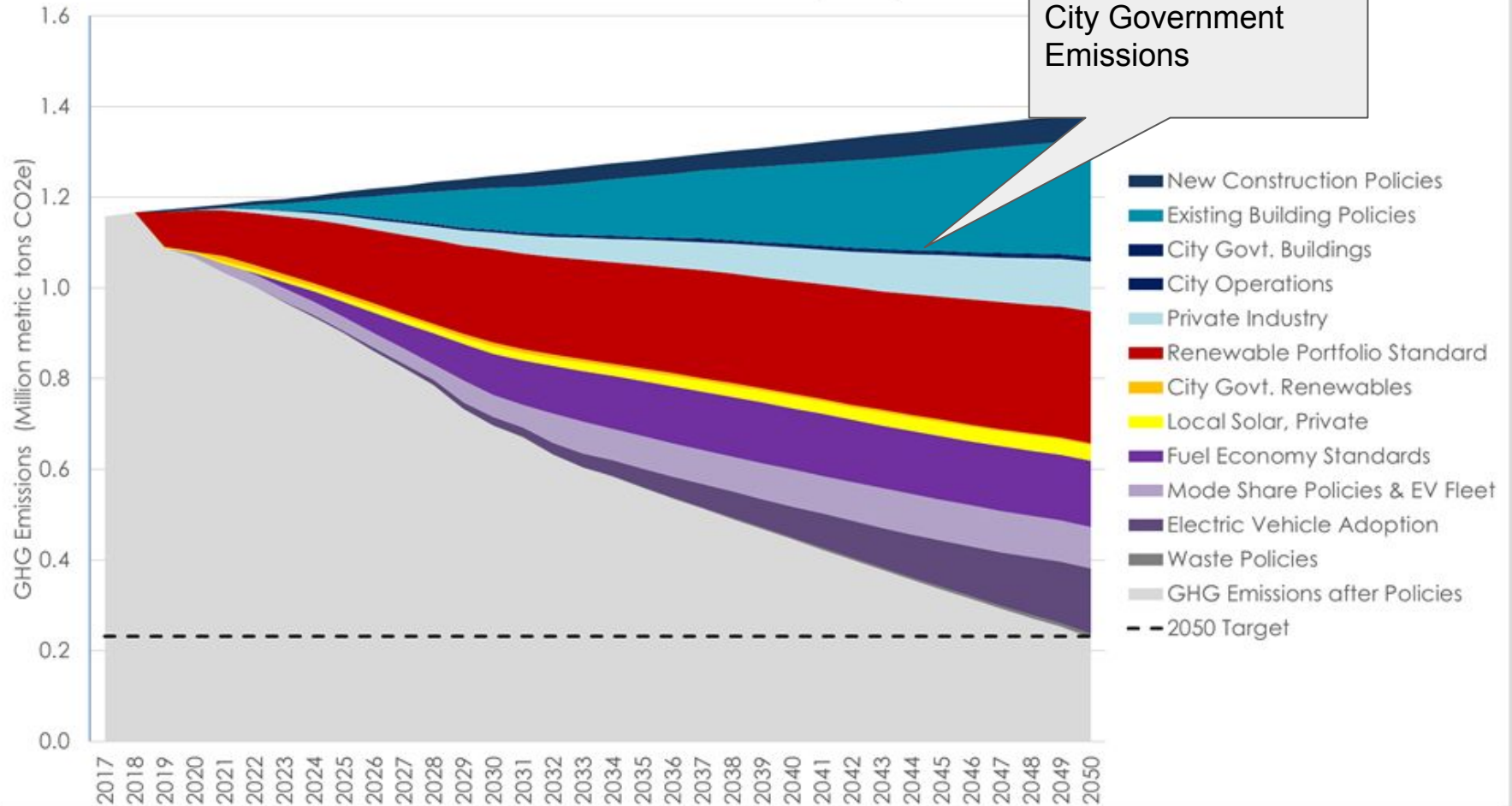
10% INDUSTRIAL BUILDINGS

840,419 MTCO₂e

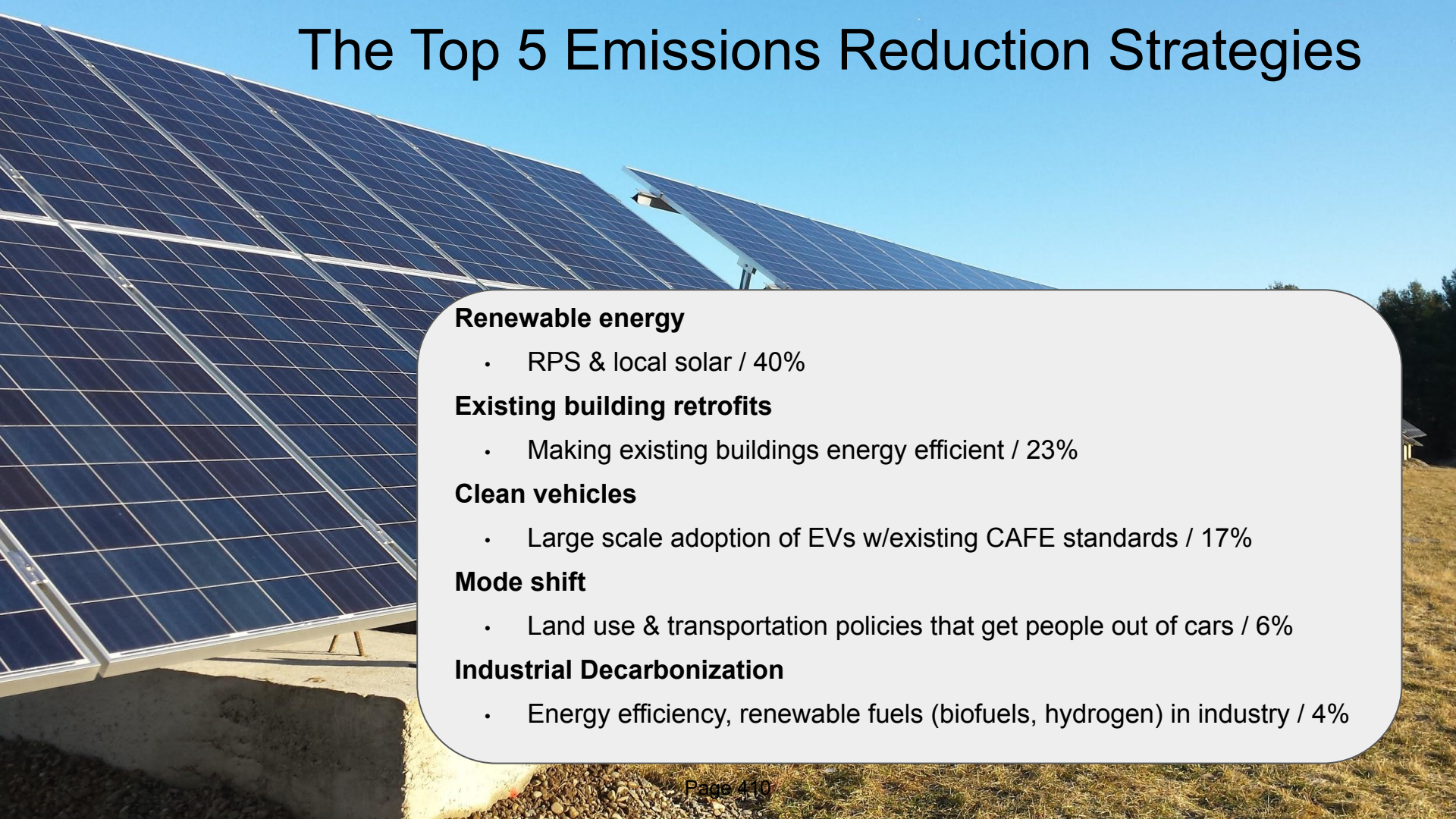
OF GREENHOUSE GASES EMITTED IN 2017



GHG Reductions by Policy



The Top 5 Emissions Reduction Strategies



Renewable energy

- RPS & local solar / 40%

Existing building retrofits

- Making existing buildings energy efficient / 23%

Clean vehicles

- Large scale adoption of EVs w/existing CAFE standards / 17%

Mode shift

- Land use & transportation policies that get people out of cars / 6%

Industrial Decarbonization

- Energy efficiency, renewable fuels (biofuels, hydrogen) in industry / 4%

Plan Elements



BUILDINGS & ENERGY USE

Using energy efficiently, transitioning to renewable energy, and encouraging high performing buildings



TRANSPORTATION & LAND USE

Designing and connecting our homes, businesses, and public spaces around an efficient transportation network



WASTE REDUCTION

Minimizing waste by changing how our community consumes and disposes of goods and materials



CLIMATE RESILIENCE

Ensuring all our neighborhoods can withstand, respond to, and recover from a disruption

Portland and South Portland's **SIX BIG MOVES**

One Climate Future includes nearly 70 strategies across four focus areas for how our two cities will address climate change. These “six big moves” summarize how we—the communities of Portland and South Portland—will create thriving, inclusive, low-carbon cities over the next thirty years.

1. Build better buildings.

Key milestone: All new buildings to be net zero energy starting in 2030.

Strategies to achieve our goals:

- BE 2.1 Energy Stretch Code
- BE 3.1 Energy Benchmarking
- BE 3.2 Building Performance Standards
- BE 3.3 Energy Efficiency Spending
- BE 3.7 Energy Efficient Rental Housing
- CR 1.1 Resilient New Development
- CR 1.2 Resilient Existing Buildings
- CR 2.1 Housing Affordability and Resilience



2. Connect people to places to opportunity.

Key milestones: 1) By 2035, 26% of trips in the cities will use public transit or active transportation (up from 12% today). 2) Growth in housing such that anyone working in the cities can live within the cities by 2030.

Looking to read more? Check out these strategies, in particular:



TLU 1.1 Inclusive Transit-Oriented Development

TLU 1.2 Public Transit Networks

TLU 1.3 Bike Accessibility

TLU 1.4 Complete Streets

TLU 1.5 Employer Transit Partnerships

TLU 1.7 Land Use for a Smaller Carbon Footprint

CR 2.4 Transportation Access

3. Power (almost) everything with renewable electricity.

Key milestones: 1) 50 MW of rooftop solar in Portland and South Portland by 2030 and 245 MW of rooftop solar by 2050. 2) All-electric Greater Portland METRO and South Portland Bus Service fleets by 2040.

Looking to read more? Check out these strategies, in particular:

- BE 1.1 Renewable Municipal Electricity
- BE 2.2 Solar-Ready and EV-Ready Code Requirements
- BE 3.4 Renewable Heating and Cooling
- BE 3.6 Solar Proliferation
- BE 5.1 Renewable Portfolio Standard and Community-Scale Purchasing
- BE 5.5 Electrical Transmission and Distribution
- BE 5.3 Utility Regulatory Reform to Support Electrification
- TLU 2.1 - 2.7 (full section) Vehicle Electrification
- TLU 3.4 Shore Power



4. Grow a circular economy.

Key milestones: Reduce organics in waste stream 70% by 2030; Achieve “Zero Waste” (90% waste diverted from waste stream) by 2050

Looking to read more? Check out these strategies, in particular:

- WR 1.2 Single Stream Recycling
- WR 1.3 Food Waste Reduction and Organics Recycling
- WR 1.4 Single Use Plastics
- WR 1.5 Circular Sharing Economy
- WR 2.1 Construction and Demolition Waste
- WR 2.2 Industrial Waste
- WR 2.4 Sustainable Purchasing Policy
- CR 3.2 Workforce for a Resilient Economy
- CR 3.3 Climate-Ready Industries and Innovation

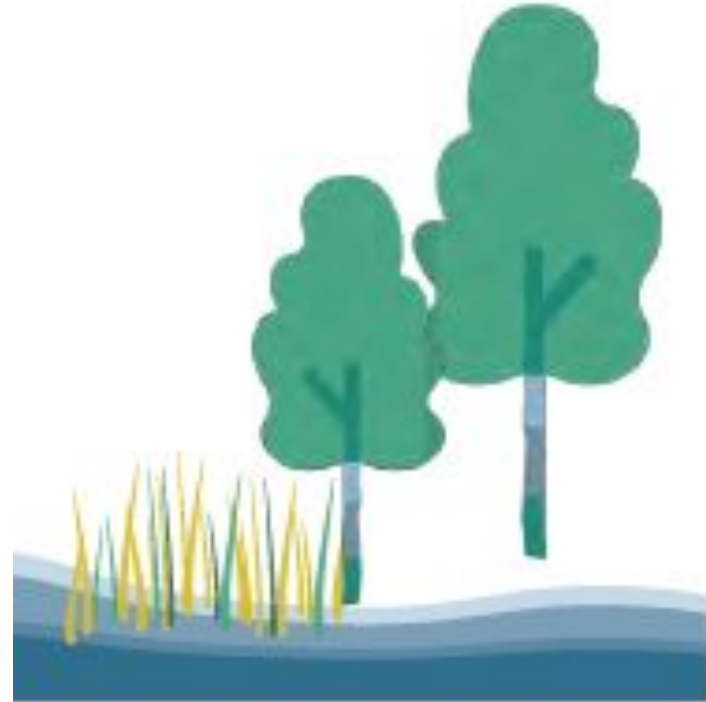


5. Nourish ecosystems, which then nourish us.

Key milestones: Convert 15% of the City's impervious surfaces to green infrastructure by 2050; Ensure all residents live within half a mile of a park or open space by 2035.

Looking to read more? Check out these strategies, in particular:

- CR 1.3 Resilient Open Space Planning
- CR 2.2 High Heat Mitigation
- CR 2.3 Resilient Food Systems
- CR 4.2 Green Infrastructure
- CR 5.1 Ecosystem Adaptive Management
- CR 5.2 Soil Health



6. Build collaborative capacity to create this future.

Key milestones: Create partnerships and design processes that cultivate collaboration and foster community ownership; Award resilience grants to expand the capacity of local organizations, neighborhood associations, and community groups by 2025.

Looking to read more? Check out these strategies, in particular:

- BE 2.5 Leadership and Education
- BE 5.2 Utility Data Access Reform
- TLU 1.2 Public Transit Networks
- TLU 1.4 Complete Streets (Vision Zero)
- TLU 1.5 Employer Transit Partnerships
- TLU 3.2 Freight Transit Partnerships
- CR 2.2 High Heat Mitigation
- CR 2.3 Resilient Food Systems
- CR 2.4 Transportation Access
- CR 2.5 Neighborhood Resources



... equitable.

An equitable community is one where deliberate policies and practices ensure that all people—regardless of race or ethnicity, income, gender identity, sexuality, age, citizenship, or ability—have the opportunity, tools, and support to achieve their potential and to lead healthy and fulfilling lives.

... regenerative.

A regenerative community is one where our daily activity continuously restores and nourishes (as opposed to exploits and diminishes) the long-term health and vitality of our natural systems, people, and communities.

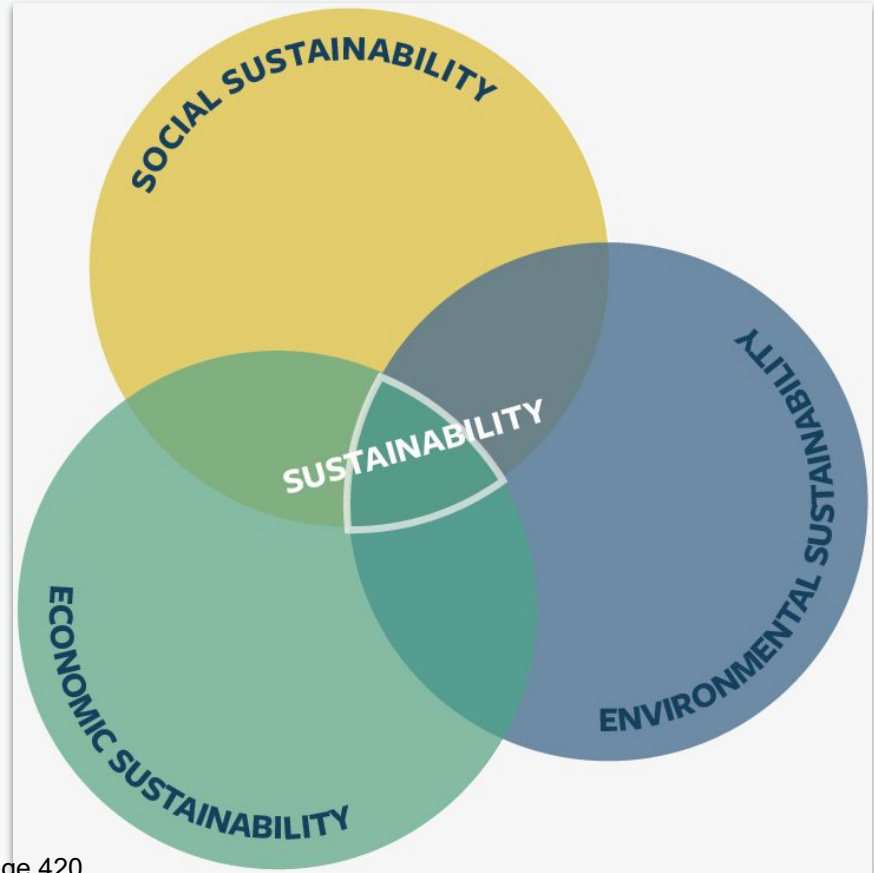
... resilient.

A resilient community is one that has the capacity to respond, recover, and bounce forward in response to stresses and new challenges.

But reducing greenhouse gas emissions isn't enough.

OCF Means Sustainable Community

The One Climate Future plan expresses the vision of Portland and South Portland to be thriving, vibrant, and sustainable communities now and in the future.



CR 2.1 Summary - Housing Affordability and Resilience

PRIMARY COMPONENTS

- Launch area-wide housing supply studies in both cities.
- Review zoning codes and re-assess development fees to remove constraints.
- Enable options for renewable energy financing for affordable housing.
- Advocate for changes to state financing requirements.
- Use repositioning to retrofit for resilience and energy efficiency.
- Assess displacement risk and anti-displacement strategies.
- Work with community partners to lead a “We are Portland/South Portland” storytelling initiative.

How this strategy advances a future that is...

Equitable



- (a) Addresses injustice
- (b) Expands access
- (c) Creates inclusive processes

Regenerative



- (a) Draws down carbon
- (d) Builds shared wealth

Resilient



- (a) Reduces vulnerability
- (b) Strengthens communities
- (d) Builds partnerships

KEY MILESTONES

- Portland to increase housing units affordable to lower and middle income households by 10% by 2025 (from 2019 baseline)
- South Portland to establish affordable housing goal through comprehensive plan or standalone process

CITY STEWARD

P: Housing Office, Planning Department, Sustainability Office, Permitting & Inspections, Health & Human Services
SP: Sustainability Office, Planning Department

FINANCING MECHANISMS

Public housing repositioning, adjustments to Qualified Allocation Plan cost caps (for financing projects); revolving loan funds, power purchase agreements (for solar installations); private grants, community partnerships (for storytelling initiative)

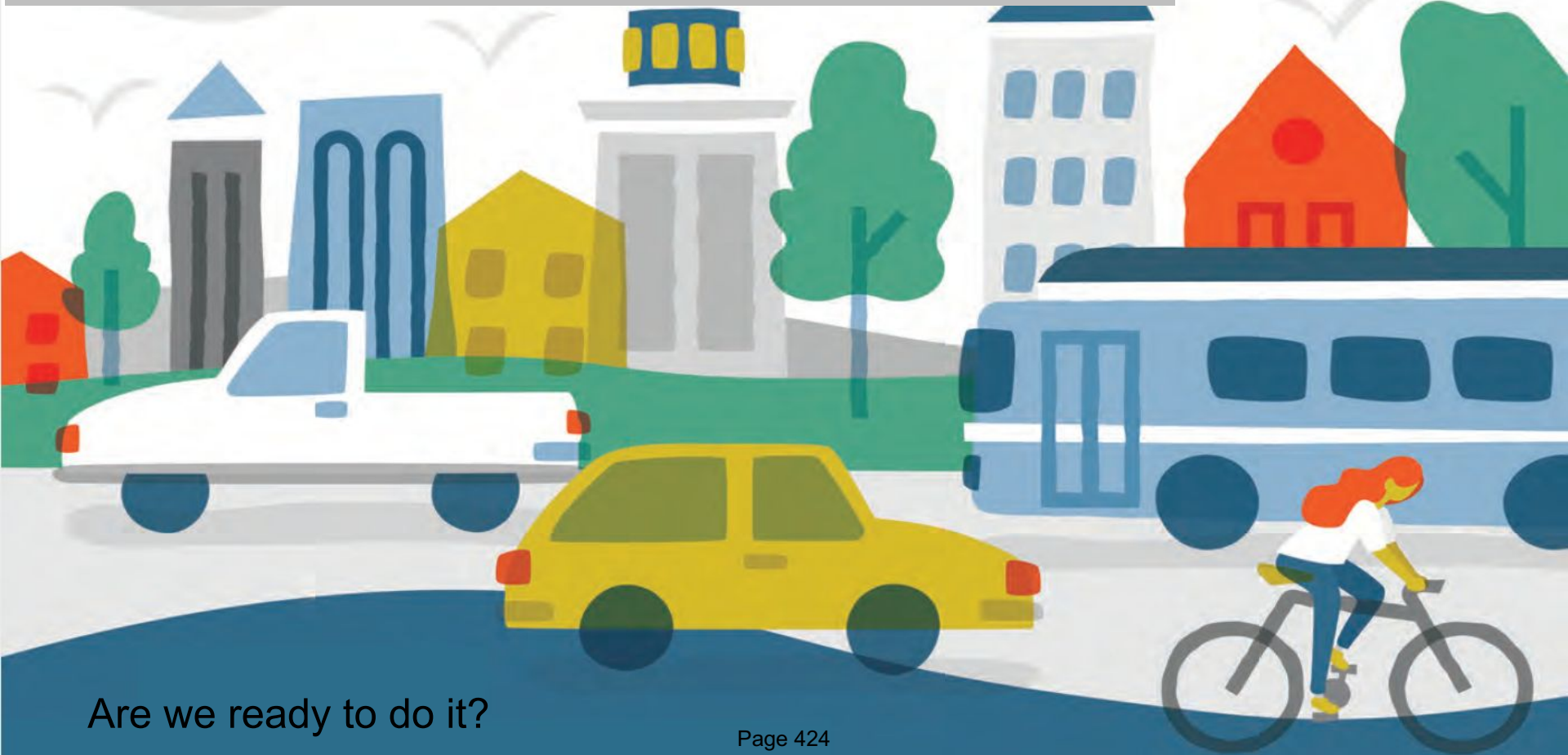
Timelines



Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
TLU 1 Mode Shift and Land Use						
TLU 1.1	Public Transit Networks Support efforts to “Make Transit Easier,” “Expand Local Connections,” and “Introduce Rapid Transit” in alignment with the Transit Tomorrow vision for the PACTS region.	a. Advocate for/implement coordinated measures between transit agencies.	●	●		● Roll-out of coordinated measures (portal, schedules, etc.) by 2025 ● All specified upgrades to transit stops implemented by 2028 ● METRO and SPBS achieve carbon neutrality by 2040
		b. Advocate for increases in state funding for multimodal transportation.	●	●		
		c. Improve safety and accessibility of transit stops.		●		
		d. Invest in roadway design advantages for buses along transit routes.		●		
		(+ numerous actions captured by other strategies - see text)				

We live in a rapidly changing world. Innovative technologies disrupt long standing business models, people move around the country and around the world in search of opportunity, and unforeseen events—such as the COVID-19 pandemic—completely transform the way we live our lives. In a future of climate disruptions, we should anticipate that change will be the one thing we can count on.

One Climate Future is achievable.



Are we ready to do it?

Advocate for policies at State & Federal levels

State Legislature

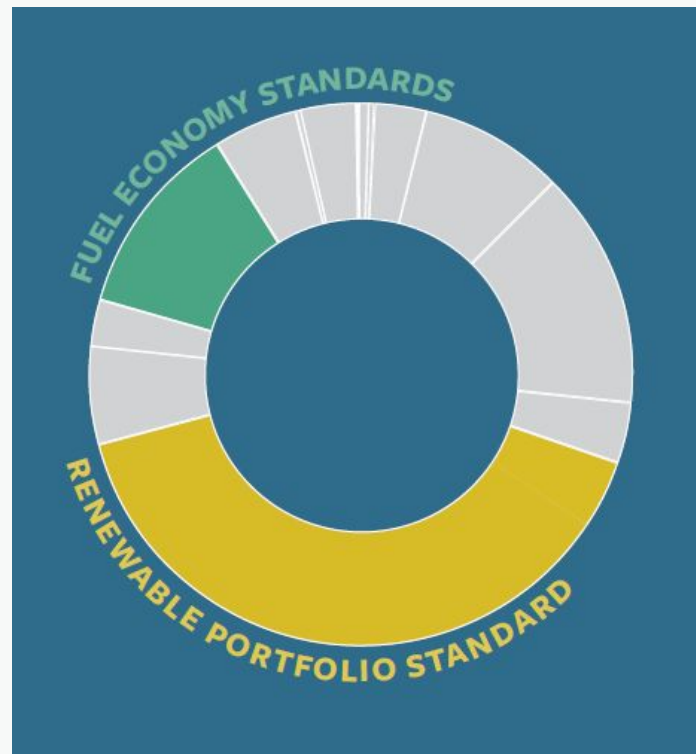
- Renewable energy, financial support, building standards

Maine PUC

- Rules for implementing policy, improving performance of utilities

Federal

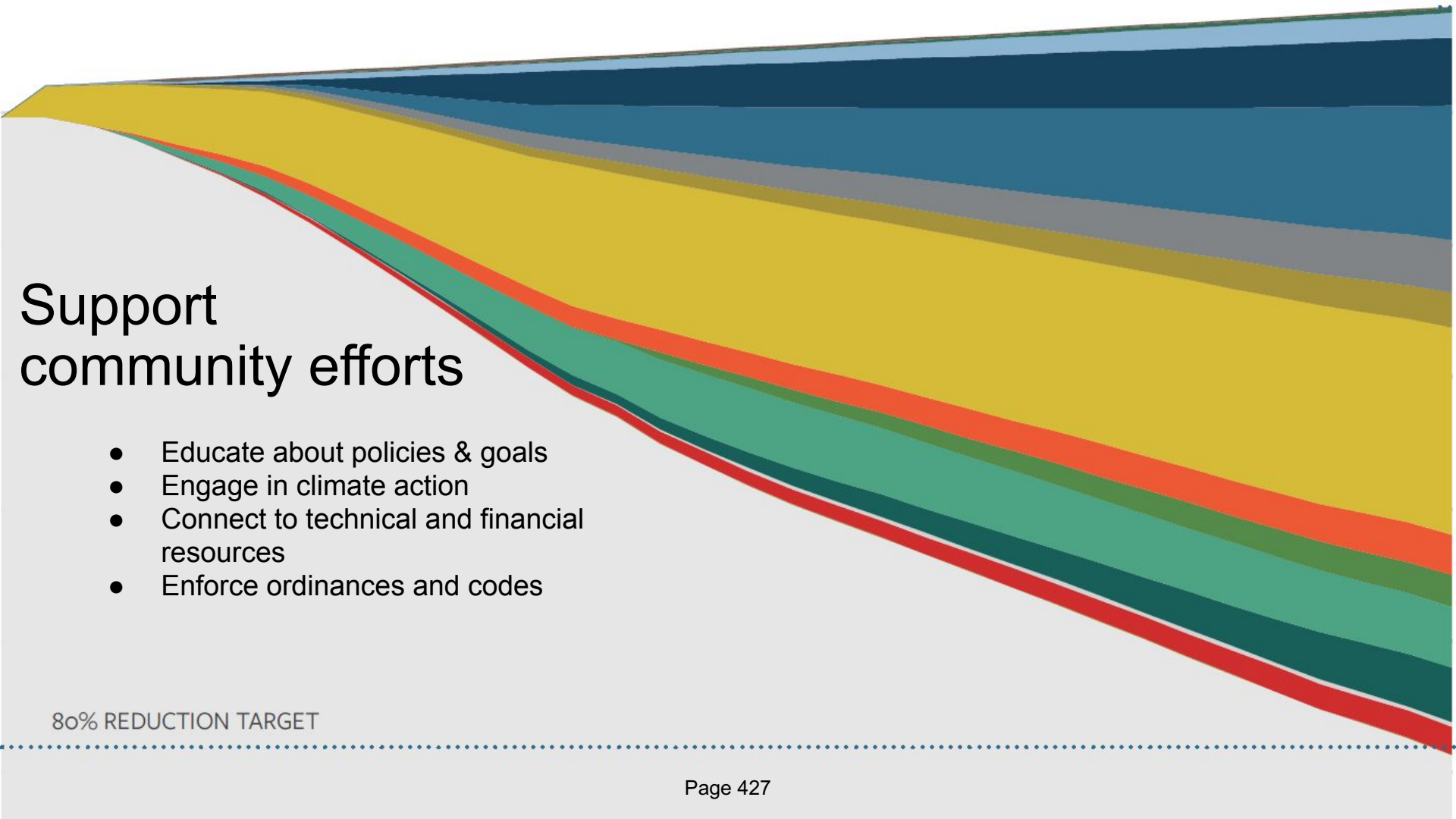
- Fuel economy standards, investments in renewable energy, financial support for resilience/preparedness



Creative Use of Financial tools

PPAs, ESCOs, Efficiency Rebates, C-PACE, Green Bank, Tax Incentives, P3s, TIFs





Support community efforts

- Educate about policies & goals
- Engage in climate action
- Connect to technical and financial resources
- Enforce ordinances and codes

80% REDUCTION TARGET

Invest In the Future



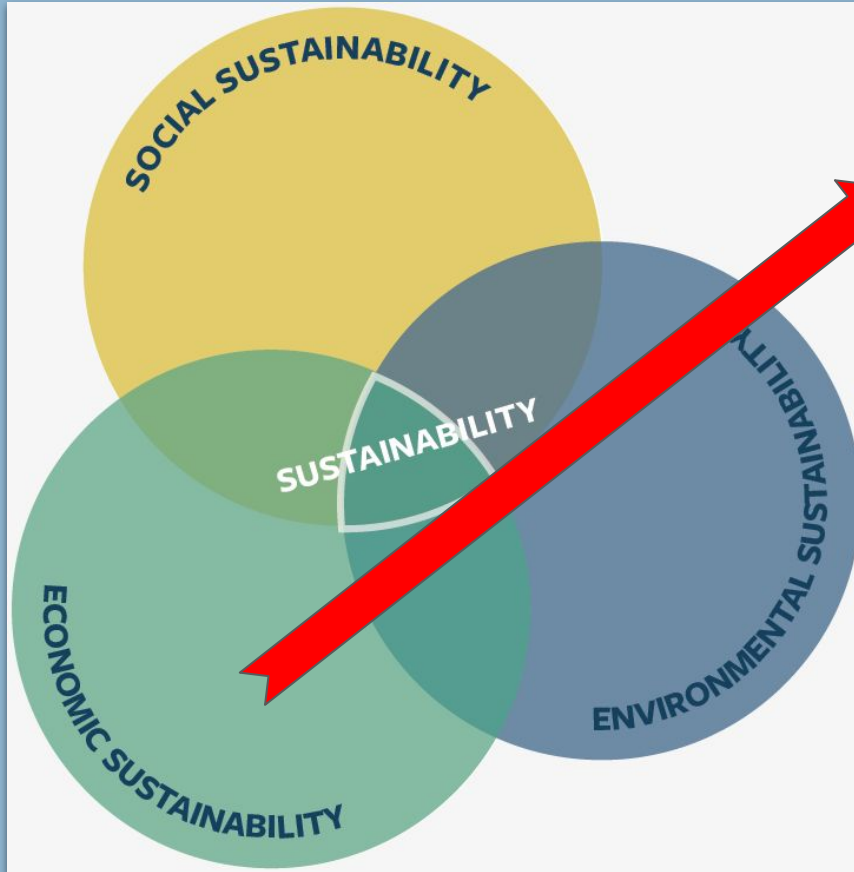
Maine Climate Council
@MaineClimate

The reports that the combination of 1.6 feet of sea level rise and storm surges by 2050 could lead to \$17.5 billion in building damage cumulatively between 2020 and 2050, plus the loss of 22,000 jobs in Maine.

[#ClimateChange](#)

“An average of 3% additional upfront capital investment is required to build resilience into infrastructure, yet every dollar invested in resilience generates four dollars of economic value.”

-- World Economic Forum



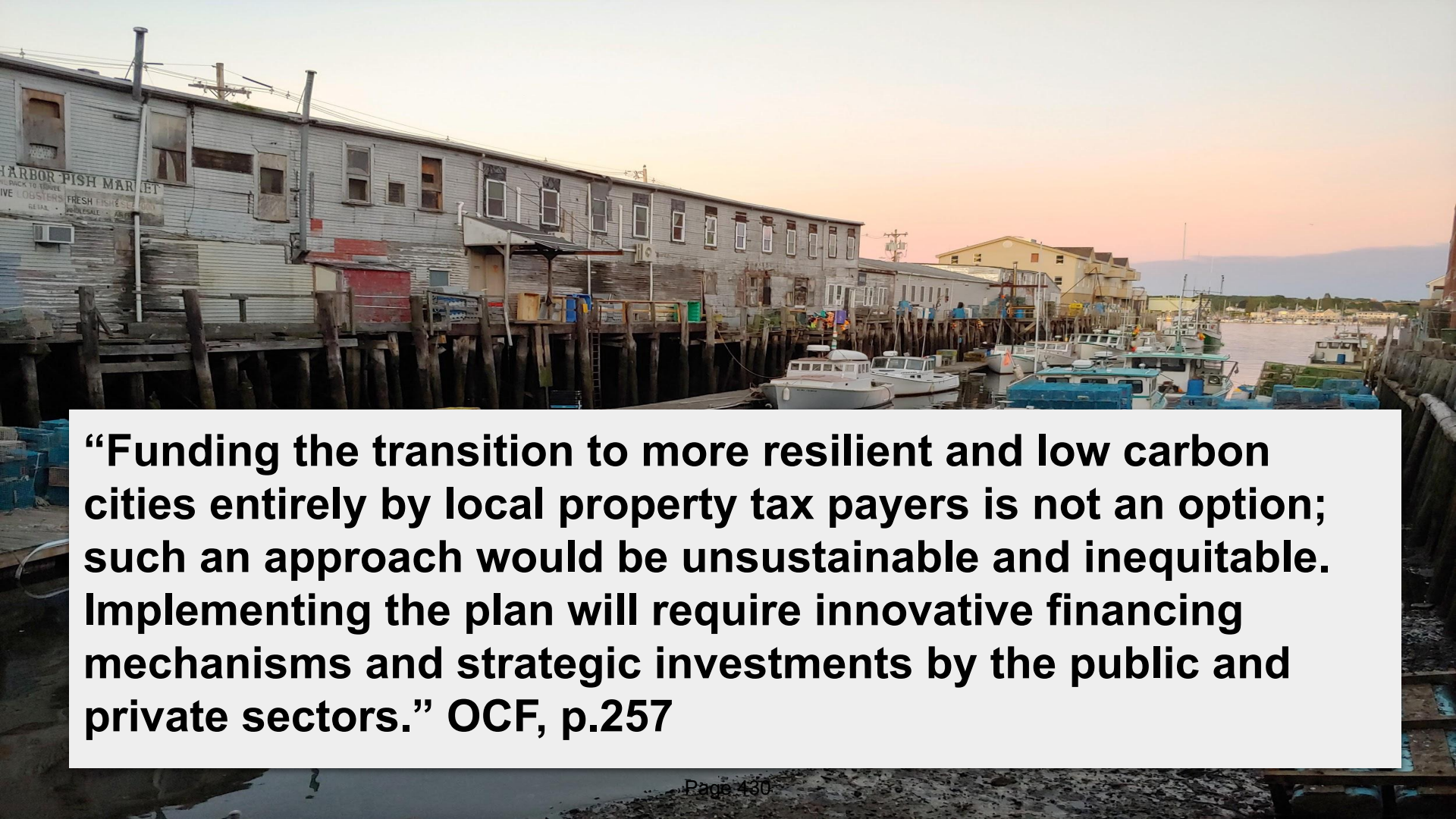
ECONOMIC SUSTAINABILITY

Incentivize business activities that align with OCF goals.

Support local business that hire local people and that circulate money in the local economy by using goods and services provided by other local businesses.

Use public money wisely and efficiently

Invest in resilience to protect infrastructure from the impacts of climate change.



“Funding the transition to more resilient and low carbon cities entirely by local property tax payers is not an option; such an approach would be unsustainable and inequitable. Implementing the plan will require innovative financing mechanisms and strategic investments by the public and private sectors.” OCF, p.257

Financial Tools

Internal Operations:

- Solar energy savings & REC sales
- ESCOs & performance contracting
- Power purchase agreements
- Stormwater fees
- Impact fees
- Grants and incentives - FEMA, State, etc.
- Investments for resilience & efficiency in infrastructure projects

Community Wide Projects:

- Transportation & Land Use - PACTS funding, TIFs, Bonding, Impact Fees, Grants, existing contributions (METRO)
- Energy - Developer fees, Efficiency Maine incentives, Tax incentives, Community Solar, Savings from conservation, Private investment
- Future Programs: C-PACE, Green Bank

Internal Operations:

- Solar energy savings & REC sales
- ESCOs & performance contracting
- Power purchase agreements
- Stormwater fees
- Impact fees
- Grants and incentives - FEMA, State, etc.
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- Energy - Developer fees, Efficiency Maine incentives, Tax incentives, Community Solar, Savings from conservation, Private investment
- Future Programs: C-PACE, Green Bank

Questions?

This is One Climate Future.



Sustainability
Office

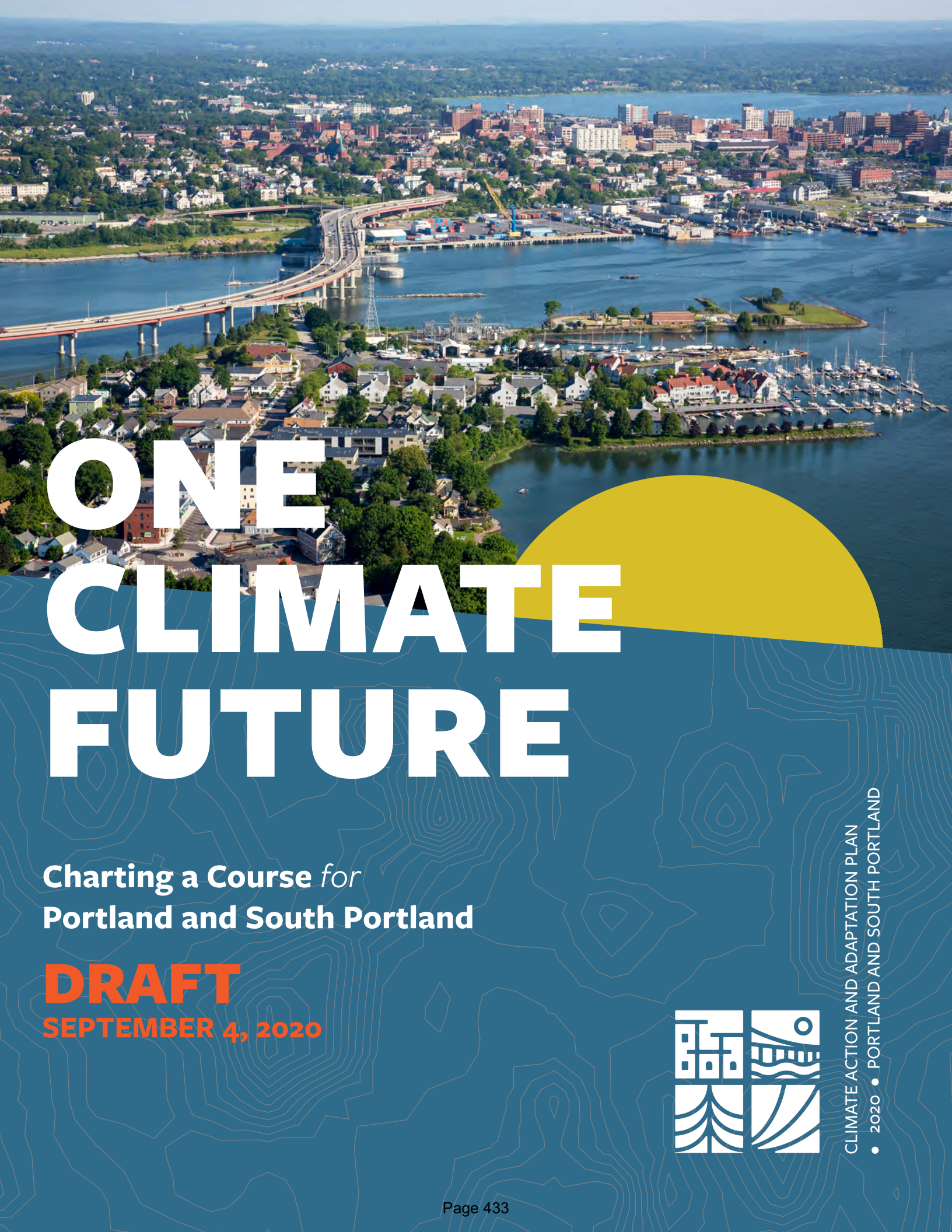


**ONE
CLIMATE
FUTURE**

Charting a Course for
Portland and South Portland

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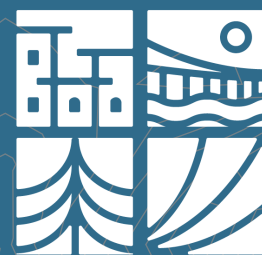




ONE CLIMATE FUTURE

Charting a Course *for*
Portland and South Portland

DRAFT
SEPTEMBER 4, 2020



CLIMATE ACTION AND ADAPTATION PLAN
• 2020 • PORTLAND AND SOUTH PORTLAND

One Climate Future

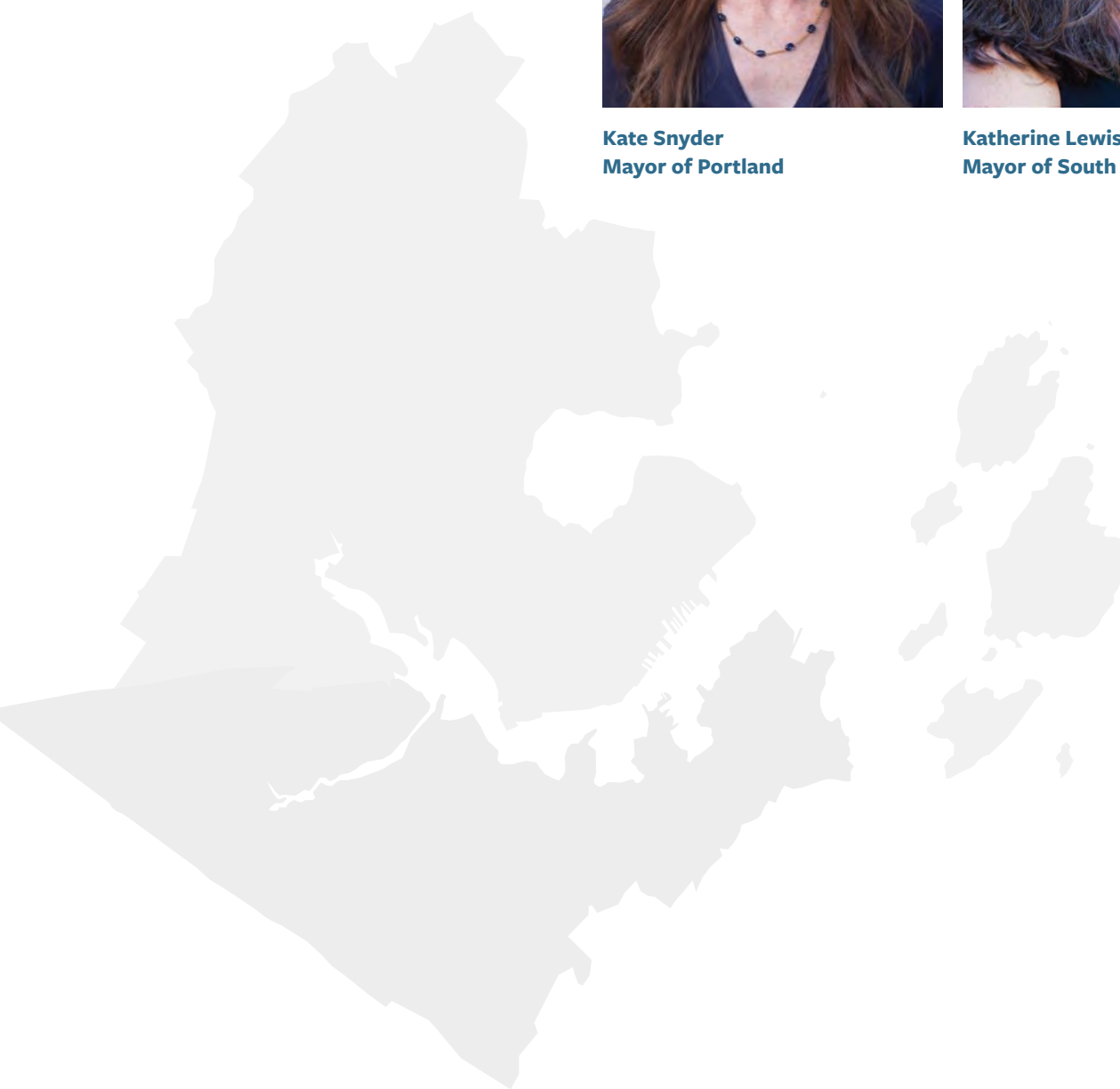
LETTER TO THE COMMUNITIES of Portland & South Portland



Kate Snyder
Mayor of Portland



Katherine Lewis
Mayor of South Portland



Dear fellow residents:

On June 10, 2019 the Mayors of Portland and South Portland joined community members from both cities at the Gulf of Maine Research Institute to kick off One Climate Future, our groundbreaking effort to develop a joint climate action and adaptation plan for our two cities. During this event, speakers shared what makes Portland and South Portland great places to live, work, and play—the beauty of Casco Bay, a strong sense of community, opportunities for business, and a commitment to ensure that everyone can participate meaningfully in civic life. These friends and neighbors also spoke of the need for action to ensure that the people who live here in 2050 will still be able to experience this wonderful way of life in the face of higher seas, more intense storms, and other threats brought on by climate change. City staff and community members have worked hard during the past year and a half to create an ambitious but achievable plan designed to make sure our cities are vibrant, livable communities now and in the future.

This plan recognizes and builds on the strong geographic, economic, and social connections that join our two cities. It recognizes that our efforts to address climate change will have more impact if we coordinate our actions and speak in unison at the State and Federal levels for policies that we will need to make our work successful. It builds on our shared vision for regional climate action that began in 2017 with joint commitments to the Mayors National Climate Action Agenda and continued in 2018 with the adoption of aggressive climate goals to decarbonize and strengthen our communities. In 2019, we listened to the youth who filled the courtyard in front of Portland City Hall and declared a climate emergency, pledging to act quickly to ensure the wellbeing of future generations in the face of this climate crisis.

Adoption of this plan signals our resolve to act, despite the many challenges we face now and will continue to face in the coming decades. In June of 2019, we didn't hesitate to welcome asylum seekers to our Cities, providing immediate assistance while also searching for long-term shelter. In the spring of 2020, our businesses demonstrated ingenuity in the face of a global pandemic to reimagine daily operations while ensuring the health of our community. At the same time, we began a process of looking inwards to address systemic racism and attend to deep inequities. Through it all, we elevated the voices of those in need and came together around our shared wellbeing. Our approach to the climate crisis is and will be no different.

We are immensely proud to launch One Climate Future together. Over the next 30 years Portland and South Portland will chart a collaborative course to a carbon-neutral future. One Climate Future is about more than climate action and clean energy. It is also about improving public health, building a diverse economy, and ensuring the vitality of our coastal ecosystems. This will be a transformative undertaking. With your input and support we can build inclusive, thriving, and resilient communities.

Sincerely,

Kate Snyder
Mayor of Portland

Katherine Lewis
Mayor of South Portland

One Climate Future

ACKNOWLEDGMENTS

One Climate Future would not be possible without the significant contributions in time and thought of many. Thank you to the hundreds of Portland and South Portland residents and local and regional organizations who provided input in the development of this plan.

.....

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Justin Costa, District 4
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South Portland

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Addy Smith-Reiman, Portland Society of Architecture
Barry Woods, ReVision Energy

* Municipal staff with asterisks next to their names also served on the Climate Planning Process Committee.

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South Portland Public Works Department - Doug Howard
South Portland School Department - Ken Kunin
South Portland Bus Service - John Duncan
South Portland Fire Department - James Wilson

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Kim Lundgren Associates - Angie Cleveland, Kim Lundgren, Maggie Peard, Mike Steinhoff

With contributions from:

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Heather Foran, Resilience Hub
Lorenzo Macaluso and Ashley Muspratt, Center for EcoTechnology
Portland Climate Action Team (PCAT)

Design Credits

Portland Design Co. (portlanddesignco.com)

Additional thanks to the **Gulf of Maine Research Institute** for the use of their facility to host One Climate Future events.

One Climate Future

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BE 5 Clean and Renewable Energy Infrastructure and Regulatory Transformation (101)	BE 5.1 Renewable Portfolio Standard and Community-Scale Purchasing	(101)
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One Climate Future Strategies

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01

One Climate Future **IN SUMMARY**

**PORTLAND AND SOUTH PORTLAND
ARE WORKING TOGETHER TO
CREATE A PROSPEROUS AND
INCLUSIVE LOW-CARBON FUTURE.**

CASCO BAY BRIDGE, PORTLAND AND SOUTH PORTLAND • Photo by City of South Portland



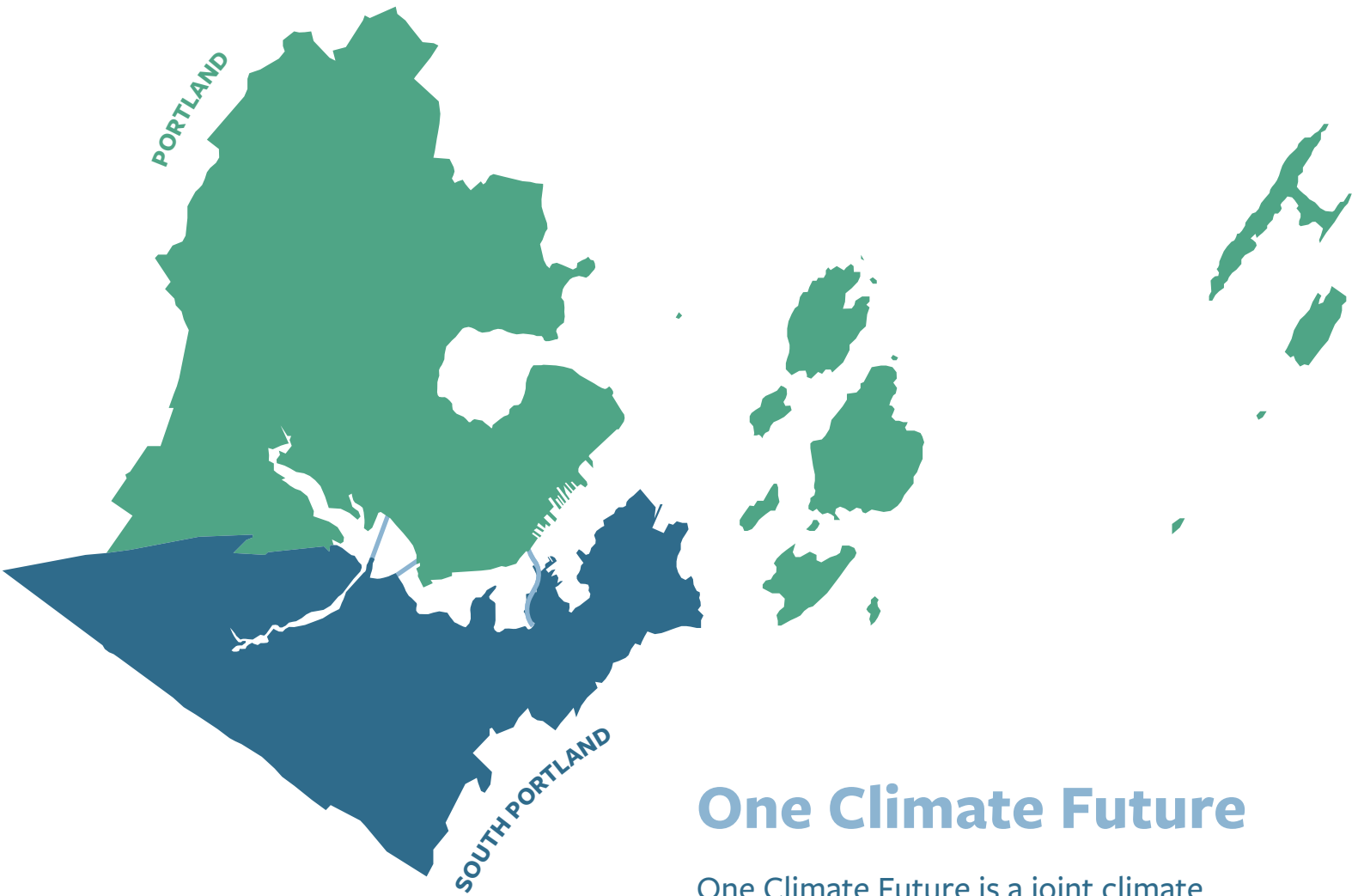


The communities of Portland and South Portland have set our sights on a livable future. This future is powered by clean, renewable energy. It opens doors to economic opportunity. In this future we continuously innovate, working in partnership with natural systems, replenishing resources, and creating new potential from waste. Clean air, clean water, and healthy food are a given.

In this livable future, we create buildings and neighborhoods that maximize our health and happiness and minimize our carbon footprint. We create stronger connections—on the sidewalks, in the parks, on the bus, on the ferry—linking people to people, places, and opportunity.

We invest in people and communities. In this future, we equip our communities with the resources to adapt to change and to create the quality of life we each envision. We partner, seeking the insight of people with direct experience and diverse knowledges. Together, we create a prosperous future for everyone, now and for generations to come.

This is One Climate Future.



One Climate Future

One Climate Future is a joint climate action and adaptation plan for the Cities of Portland and South Portland. We are working together to be thriving, vibrant, and inclusive communities now and in the future.

SUMNER PARK OVERLOOK • Photo by Ian Johnson



A joint plan for climate action.

Portland and South Portland residents, businesses, organizations, and city leaders are seeing, feeling, and anticipating the growing effects of climate change—and calling for accelerated action. Along our coast, we are observing rising sea levels and the warming of the Gulf of Maine at increasing rates. We can also track how our current use of fossil fuels will continue to alter the climate, with further harm to ecosystems, our economy, and neighborhoods. Most importantly, we can envision a future for our cities that is both low-carbon and prosperous, and we know that we have the tools, solutions, and will within our cities to create this future.

Together, the communities of Portland and South Portland have created One Climate Future, a climate action and adaptation plan that charts a course towards a low-carbon, thriving, and inclusive future. This plan builds on the momentum of past and ongoing efforts to improve the sustainability and resilience of our cities, and lays out next steps for meeting aggressive carbon reduction goals, growing a circular economy, building community resilience, and creating more just and equitable cities.

PORTLAND AND SOUTH PORTLAND'S CLIMATE GOALS

Leading up to the launch of One Climate Future, the Cities of Portland and South Portland committed to a set of climate goals to reduce greenhouse gas emissions and to prepare our cities for the effects of climate change. One Climate Future charts a course to meeting these goals.

● **80% x 2050** COMMUNITY-WIDE

Portland and South Portland will reduce community-wide greenhouse gas emissions 80% from 2017 baseline levels by 2050.

● **100% x 2040** MUNICIPAL

Portland and South Portland will run all municipal operations on 100% clean renewable energy by 2040.

● **CLIMATE RESILIENCE**

Portland and South Portland will build the resilience of our neighborhoods, infrastructure, and ecosystems to the impacts of climate change.

CLIMATE EMERGENCY

Driven by youth climate leadership, Portland and South Portland declared a climate emergency in November 2019. Through this declaration, we reaffirmed our commitment to a rapid and equitable transition to clean renewable energy, and to **accelerating greenhouse gas emissions reductions between now and 2030.**



LIBERTY SHIP MEMORIAL • Photo by Paul VanDerWerf

► One Climate Future is a partnership.

Portland and South Portland have committed to tackling climate change together. Our cities share invaluable resources—stretches of forests, nesting grounds along the Fore River, and the abundance of Casco Bay. We share communities, exchanging people through a daily ebb and flow as our residents commute to work in each other's cities. Likewise, climate change is not confined to jurisdictional boundaries; our cities share risks created by climate hazards and we share many of the same challenges in reducing greenhouse gas emissions. Importantly, our cities' leadership also share a commitment to addressing these challenges head-on.

It was only natural that we also share solutions. One Climate Future was crafted by the combined knowledge, ideas, and experience of city staff, organizations, businesses, and residents across our two communities. We developed joint approaches, with opportunities to take advantage of economies of scale and to use resources wisely. By continuing to work together in

implementation, we can magnify our impact, creating a more regional response to climate change.

At the same time, One Climate Future is much more than a partnership between two municipalities. Nearly every action in the plan calls on partnerships—with our community organizations, development sector, property owners and renters, food growers and producers, and working waterfronts, for example—to identify the best ways to implement each action. The strategies likewise call on regional partnerships to build out a robust and integrated public transportation system, develop more efficient freight transit, and link regional bike networks. Finally, the strategies depend on statewide coordination: meeting our renewable energy targets statewide will be integral to achieving our Cities' climate goals. We will continue to advocate for and support state policy across energy, buildings, transportation, and waste sectors that will enable emissions reductions for our cities, as well as statewide.

► One Climate Future is a transformation.

Portland and South Portland have committed to transitioning all municipal operations to clean energy sources by 2040, and to reducing community-wide greenhouse gas emissions 80% below 2017 levels by 2050. Driven by the leadership of the youth in our cities and globally, we have committed to accelerate this transition, aiming to achieve as much greenhouse gas emissions savings as possible within a 2030 timeframe.

These goals require bold changes: we know we must transform how we power our cities, rethink the way we design buildings, re-envision how we travel, and transition to a more circular economy. As a starting point, powering homes, offices, cars, buses, ferries (and so much more) with renewable electricity requires that we work with regional and state partners to reform how utilities currently operate, build out renewable energy sources at a much larger scale, and significantly expand the capacity of the grid—radically transforming our current energy systems and infrastructure.

One Climate Future likewise sets bold goals in other sectors—aiming for “zero waste” through smarter production, consumption, and material reuse, and committing to improving the safety of our streets and traffic patterns until we have zero pedestrian and bicyclist fatalities. With a vision for more walkable, transit-oriented neighborhoods, we aim for a seven-fold increase in the size of our bus fleets to create a more robust and integrated public transit system. By meeting our 2050 goals, 40% of all trips will be taken by walking, biking, and public transit—over three times the number of trips taken by these modes today.

But perhaps just as importantly, we will also transform many of our processes. We will use climate data to inform changes to our city zoning, and resilience metrics to monitor and adapt how we manage our stormwater, transportation, energy, and open space networks. We will focus on job training, skill building, and knowledge sharing to improve how we build buildings and expand regenerative industries. We will also continue to focus on how processes play a role in advancing equity in our cities, ensuring that decisions are informed by the people who will be most affected, and by focusing on community ownership of projects to create more just and equitable cities.



STATE-LEVEL ACTIONS

Several recent state-level actions are particularly significant to the work in our cities to address climate change.

MAINE RPS

In June 2019, Maine passed a new renewable portfolio standard (RPS). Electricity in the state will come from **80% renewable sources by 2030, and 100% by 2050.**

80% x 2050 STATE-WIDE

At the same time, the State committed to reducing greenhouse gas emissions 80% from 1990 levels by 2050.

MAINE CLIMATE COUNCIL

Maine also launched the Maine Climate Council to develop a state climate action plan. City staff from Portland and South Portland participate in the working groups.



BAYSIDE PLAYGROUND • Photo by Corey Templeton

► One Climate Future is achievable.

While One Climate Future is ambitious, it is also achievable. The actions in this plan identify steps that can be implemented today, based on current technology, policy, and funding streams. They draw on successful models in other cities, while catering to our strengths, resources, and context here in Portland and South Portland, and in Maine. For actions that require new state policies, coordination with regional partnerships, or longer-term research and implementation, One Climate Future identifies the initial incremental steps that will advance those bigger efforts.

For such an ambitious shared vision to come to fruition, the approach must be practical. The transition to a cleaner, more resilient future cannot be funded entirely by local property tax payers. Such a method would be both unsustainable and inequitable. Implementing One Climate Future will require innovative financing mechanisms and strategic investments by the public and private sectors—creative approaches that the Cities of Portland and South Portland have already begun to use for sustainability investments. We have used power purchase agreements for renewable energy, lease-purchase contracts for lighting infrastructure, and a public-private partnership to access federal money for a large-scale dredging

project in Portland Harbor. The State of Maine is currently considering legislation to help businesses and municipalities access private capital (C-PACE) as well as a green bank that could help finance infrastructure projects. Efficiency Maine already provides significant funding to support energy efficiency, and One Climate Future recommends new state policies that could generate additional sources of revenue to support their programs.

Furthermore, we have a head start on many of the actions in this plan. Portland and South Portland have adopted municipal climate action plans, enacted benchmarking ordinances to increase building energy efficiency, and implemented aggressive waste reduction and recycling programs. We have built large-scale solar arrays (with more solar procurement in the works!), and have deployed electric vehicles and charging infrastructure. We have run workshops and planning processes on adapting to sea level rise. These initiatives build on the significant efforts of our youth, residents, businesses, and organizations who are leading campaigns for school rooftop solar, building energy efficient buildings, and finding innovative ways to produce less waste. All of these initiatives provide the groundwork for the steps ahead.

Implications of the COVID-19 pandemic.



Thirteen months into the One Climate Future planning process, the novel coronavirus (COVID-19) pandemic hit the United States. The ramifications have been severe: businesses closed for extended periods of time to curb the spread of the virus, and workers across nearly all sectors have been furloughed or laid off. Even as Maine has progressively reopened, the dearth of tourism and the precautions around face-to-face interaction have kept a rebound in the economy at bay.

The pandemic has therefore become a potent test for our community resilience—challenging us to think on our feet and employ a lot of Maine ingenuity. Our cities' hospitals and health centers have worked overtime, ramping up protocols to serve COVID-19 patients and keep staff and other patients safe. Businesses have shifted to new online service models; restaurants that had been purely dine-in establishments have started offering takeout. Portland closed down certain streets to cars to allow for outdoor eating and social distancing, and community centers, restaurants, shelters, and schools across both cities have stepped up in new ways to offer free meals.

At the same time, COVID-19 has both highlighted and exacerbated the cracks in our systems. The number of hungry families has escalated, while we have seen an enormous amount of food loss regionally as procurement chains have been put on hold. Schools shifted quickly to online learning, a process that has amplified the sharp disparities between families who have internet access at home and those who don't. COVID-19 has thus further exposed vulnerabilities that hinder the capacity of communities to respond, adapt, and thrive—regardless of whether we are facing a pandemic or climate change.

The direct experiences of Portland and South Portland residents during the pandemic will therefore be one of the most important sources of insight as we collectively build community resilience through the implementation of One Climate Future. These insights will be core to shaping how we support business resilience (see action CR 3.3); build back the strength of our workforce (see action CR 3.2); and enhance the resilience of our food systems (see action CR 2.3). They will also be foundational in how we identify

There will be a continuous need to accommodate change and remain flexible with implementation. And yet, this uncertain context makes the work of One Climate Future all the more meaningful, critical, and timely.

ways to support the existing solutions in our communities, and particularly those that have emerged in response to elevated need (see action CR 2.5).

While we first and foremost seek to restore our economic and public health, there may also be lessons drawn from the drastic shift in status quo that could carry forward. Bringing restaurant tables into the streets to limit the transference of the virus has created a pilot for activating the streetscape, an approach to encourage walking over vehicle use. Companies and organizations proved the possibility of teleworking, which if sustained, could significantly cut greenhouse gas emissions from commuting (see action TLU 1.5). Given the option to work remotely, we may see growth in our cities' populations as employees from other states move to Portland and South Portland. We want to use these changes in our favor.

Lastly, we recognize that One Climate Future will be launched into the world at a very uncertain time for our cities—for employment, for financial resources, and for the lives of our residents. There will be a continuous need to accommodate change and remain flexible as we move forward with implementation. And yet, this uncertain context makes the work of One Climate Future all the more meaningful, critical, and timely. Now more than ever we will want to use One Climate Future to build our community resilience, to bolster the solutions in our communities that are investing in our people and their health, and to be proactive about improving the ways that we deal with uncertainty to build the safe, healthy, and vibrant future we want.

One Climate Future is for everyone.

Hundreds of people provided input in the development of this plan, and that was essential: the implications of climate change are diverse and widespread, affecting our infrastructure, economies, ecosystems, and community health. We also currently use fossil fuels in nearly all areas of our daily lives. To address these integrated challenges we needed strategies that create systems-level change—and we needed insight across sectors, city departments, and communities to collectively develop those solutions.

For the same reason, implementing One Climate Future will involve everyone. The actions we will take are not housed within one city department, but rather integrate resilience and sustainability thinking across city planning and operations. The strategies for advancing building performance apply to building owners, homeowners, renters, and property managers, across all building types. Businesses across sectors play a role in new approaches to employee commuting, alternatives to single-use plastics, and improving business resilience. And even more broadly, the actions touch nearly everyone's daily lives, shaping housing and transportation affordability, influencing our access to healthy food, and improving the cleanness of the air we breathe.

The key to the success of One Climate Future will therefore come from making climate action increasingly affordable, accessible, and collaborative. The partnerships, funding mechanisms, and participatory processes for further shaping the development and implementation of strategies are some of the most important attributes of the One Climate Future plan. We will achieve the greatest collective success as we involve more people and benefit more people. It is with the combined will, experience, and vision of our communities that we can create vibrant, thriving, and inclusive low-carbon cities.



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Portland and South Portland's **SIX BIG MOVES**

One Climate Future includes nearly 70 strategies across four focus areas for how our two cities will address climate change. These “six big moves” summarize how we—the communities of Portland and South Portland—will create thriving, inclusive, low-carbon cities over the next thirty years.



1. Build better buildings.

With the help of new policies, we will improve the way we design, build, and retrofit our buildings—creating spaces to live and work that are more energy efficient, comfortable, healthier, resilient to extreme weather, and powered by renewable energy. The goal is to build smarter, not more expensively, and to ensure everyone can benefit from climate-ready homes. We will work to expand financial incentives to make retrofits more affordable, encourage upgrades to rental properties to lower renters’ utility bills, and continue to expand our cities’ low-carbon and resilient affordable housing.

Key milestone: All new buildings to be net-zero energy starting in 2032.

Looking to read more?

Check out these strategies, in particular:

- BE 2.1** Energy Stretch Code
- BE 3.1** Energy Benchmarking
- BE 3.2** Building Performance Standards
- BE 3.3** Energy Efficiency Spending
- BE 3.7** Energy Efficient Rental Housing
- CR 1.1** Resilient New Development
- CR 1.2** Resilient Existing Buildings
- CR 2.1** Housing Affordability and Resilience



2.

Connect people to places, to opportunity.

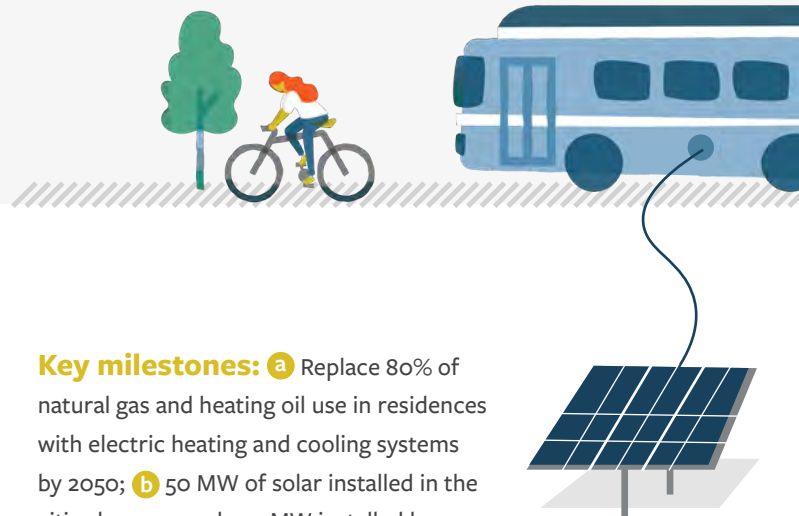
We will create connected neighborhoods—where it is easy to push a stroller to the park, roll a wheelchair to the grocery store, ride your bike to school, and take the bus to a new job opportunity. To reach this goal, we will implement safer street designs, build out our network of bikeways, and radically expand our public transit system, while making travel on transit more accessible and seamless. Supported by land use policy, we will cluster a mix of housing and businesses near transit, and increase housing in the cities to bring people closer to jobs. And we will ensure that the people who most rely on public transit systems, due to income, disability, or otherwise, are part of the decision-making teams connecting our homes, businesses, open spaces, and community resources.

Key milestones: **a** By 2035, 26% of trips in the cities will use public transit or active transportation (up from 12% today). **b** Housing stock meets workforce demand within the cities by 2035.

Looking to read more?

Check out these strategies, in particular:

- TLU 1.1** Public Transit Networks
- TLU 1.2** Inclusive Transit-Oriented Development
- TLU 1.3** Bike Accessibility
- TLU 1.4** Complete Streets
- TLU 1.5** Employer Transit Partnerships
- TLU 1.7** Land Use for a Smaller Carbon Footprint
- CR 2.4** Transportation Access



Key milestones: **a** Replace 80% of natural gas and heating oil use in residences with electric heating and cooling systems by 2050; **b** 50 MW of solar installed in the cities by 2030 and 245 MW installed by 2050; **c** All-electric Greater Portland METRO and South Portland Bus Service fleets by 2040.

Looking to read more?

Check out these strategies, in particular:

- BE 1.1** Renewable Municipal Electricity
- BE 3.4** Renewable Heating and Cooling
- BE 3.6** Solar Proliferation
- BE 5.1** Renewable Portfolio Standard & Community-Scale Purchasing
- BE 5.3** Utility Regulatory Reform to Support Electrification
- TLU 2.1 - 2.7** (full section) Vehicle Electrification
- TLU 3.4** Shore Power

3.

Power everything* with clean renewable electricity.

We will power everything possible with electricity—including cars, buses, ferries, as well as building heating systems. Rebates, tax incentives, and federal funding will help us reach this goal. The proportion of electricity that comes from renewable sources in Maine will ramp up to 100% by 2050, driven by the new renewable portfolio standard (RPS). The RPS is vital to transforming Maine's energy sector and to reaching our cities' carbon reduction goals. We will continue to advocate for the timely implementation of the state RPS and lead by example: we will meet all municipal electricity demand with renewable energy by 2032, and we will launch a solar proliferation strategy with a focus on community solar to expand access to the benefits of clean energy.

* Ok, almost everything. Some operations—such as certain industrial processes or heavy-duty vehicles—are currently difficult to power by electricity. Switching to biofuels is another low-carbon alternative that will have increasing viability between now and 2050.

4.

Grow a circular economy.

The old unsustainable model for economic growth was “take resources, make products, and discard waste.” We will innovate: we will extend the useful lifespan of materials and products, encouraging alternatives to single-use plastics and growing the sharing economy. We will find new value in waste, using organic waste to improve soil health, expanding the reuse marketplace for building materials, and taking advantage of “by-product synergies” where one industrial waste stream serves as the source material to another. We will further invest in the people and skillsets to lead growth in clean energy and other regenerative industries. Through a circular economy, we will build and replenish not only our economic capital, but our natural and community capital, too.

Key milestones: **a** Reduce organics in waste stream 70% by 2030. **b** Achieve “zero waste” (90% waste diverted from waste stream) by 2050.

Looking to read more?

Check out these strategies, in particular:

- WR 1.2** Single Stream Recycling
- WR 1.3** Food Waste Reduction & Organics Recycling
- WR 1.4** Single-Use Plastics
- WR 1.5** Circular Sharing Economy
- WR 2.1** Construction and Demolition Waste
- WR 2.2** Industrial Waste
- WR 2.4** Sustainable Purchasing Policy
- CR 3.2** Workforce for a Resilient Economy
- CR 3.3** Climate-Ready Industries and Innovation

5.

Nourish ecosystems, which nourish us.

Our natural resources, on land and at sea, are our biggest assets in facing climate change. We will continue to protect open spaces and coastal waters to ensure our ecosystems can adapt and thrive despite new pests, invasive species, and climate conditions. In the process, we will increase the capacity of our soils, forests, and wetlands to sequester and store carbon, and we will expand tidal wetlands and living shorelines to buffer our neighborhoods against storm surge. We will capture and store more stormwater in green infrastructure systems, in turn reducing the effects of coastal acidification to support marine industries. A more robust tree canopy will mitigate extreme heat, protected open spaces will foster community, and healthy soils and marine ecosystems will cultivate more resilient food systems. In other words, we will protect and nourish ecosystem health, economic health, and community health in tandem.

Key milestones: **a** Convert 15% of the cities’ impervious surfaces to green infrastructure by 2050. **b** Ensure that all residents live within ½ mile of a park or open space by 2035.

Looking to read more?

Check out these strategies, in particular:

- CR 1.3** Resilient Open Space Planning
- CR 2.2** High Heat Mitigation
- CR 2.3** Resilient Food Systems
- CR 4.2** Green Infrastructure
- CR 5.1** Ecosystem Adaptive Management
- CR 5.2** Soil Health



6.

Build collaborative capacity to create this future.

We will create new systems for working together, locally, regionally, and statewide. We will share data—improving access to data, crowdsourcing data, and generating new data—to make decisions about flood risk, track progress on energy efficiency, and improve upon our approaches to transportation demand management, for example. By sharing processes, we will create more integrated transit systems, take advantage of economies of scale in electricity procurement, and magnify the impact of our efforts. And we will share resources, equipping the people in our communities who are rich with experiential knowledge and low on resources to lead these solutions.

Key milestones: **a** Create partnerships and design processes that cultivate collaboration and foster community ownership starting today. **b** Award resilience grants to expand the capacity of local organizations, neighborhood associations, and community groups by 2025.

Looking to read more?

Check out these strategies, in particular:

BE 2.5 Leadership and Education

BE 5.2 Utility Data Access Reform

TLU 1.2 Public Transit Networks

TLU 1.4 Complete Streets

TLU 1.5 Employer Transit Partnerships

TLU 3.2 Freight Transit Partnerships

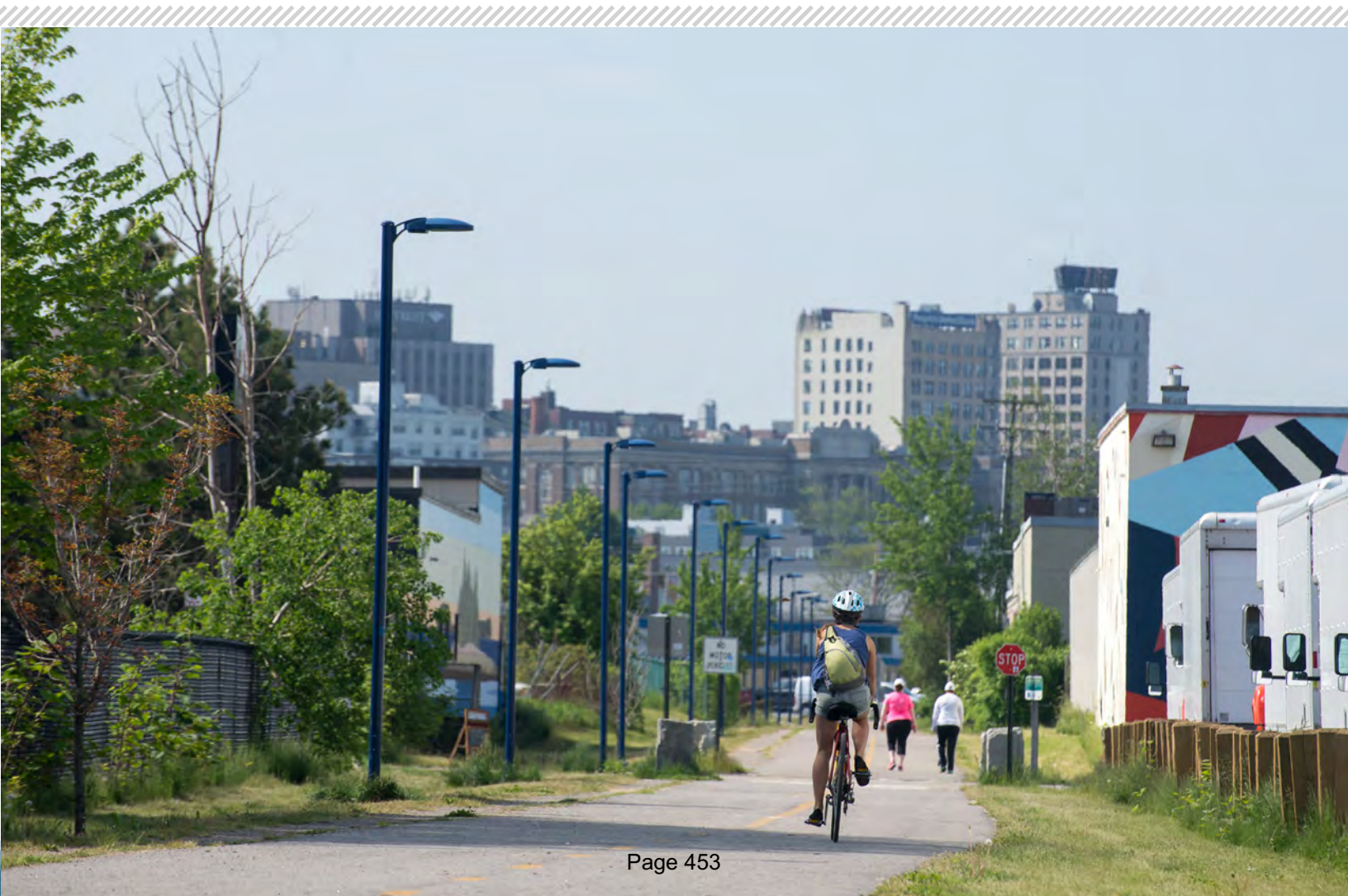
CR 2.2 High Heat Mitigation

CR 2.3 Resilient Food Systems

CR 2.4 Transportation Access

CR 2.5 Neighborhood Resources

BAYSIDE TRAIL • Photo by Corey Templeton



02

One Climate Future **THE CONTEXT**

**THE GREENHOUSE GASES WE ARE
ADDING TO THE ATMOSPHERE TODAY
WILL CONTINUE TO DRIVE CHANGES TO
OUR CLIMATE DECADES FROM NOW.**



GREENHOUSE GASES

Greenhouse gases in the atmosphere trap heat radiating from the earth back into space. This trapped heat increases global temperatures, driving climate change.

BURNING FOSSIL FUELS

Burning fossil fuels adds large quantities of greenhouse gases into the atmosphere. Gasoline, diesel, heating oils, and natural gas are fossil fuels we use daily that produce greenhouse gas emissions.

CLIMATE CHANGE IMPACTS

Rising sea levels, higher temperatures, and more extreme storms are some of the many effects of climate change that can severely impact our ecosystems, economies, and health.

The challenges we are tackling with the One Climate Future plan

One Climate Future addresses the causes of climate change, the effects of climate change, and many underlying patterns that work against our vision of being thriving, inclusive, and sustainable cities now and in the future.

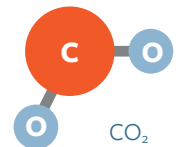
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Rapidly rising greenhouse gas concentrations

For three million years, the concentration of carbon dioxide in the atmosphere never surpassed 300 parts per million (ppm). Yet as recently as the mid-1900s, burning fossil fuels to heat our homes, drive our vehicles, and to power industries has caused carbon dioxide levels to rise at an alarming and accelerating rate—passing 400 ppm in 2016, and reaching 415 ppm less than 5 years later. Carbon dioxide and other greenhouse gases trap energy from the sun and are warming the earth: average global temperatures have increased over 1.0 degree Celsius since pre-industrial times. Without a rapid shift to carbon-free energy sources, we can expect carbon dioxide concentrations of 500 ppm within 50 years, and a temperature increase over 3.0 degrees Celsius.

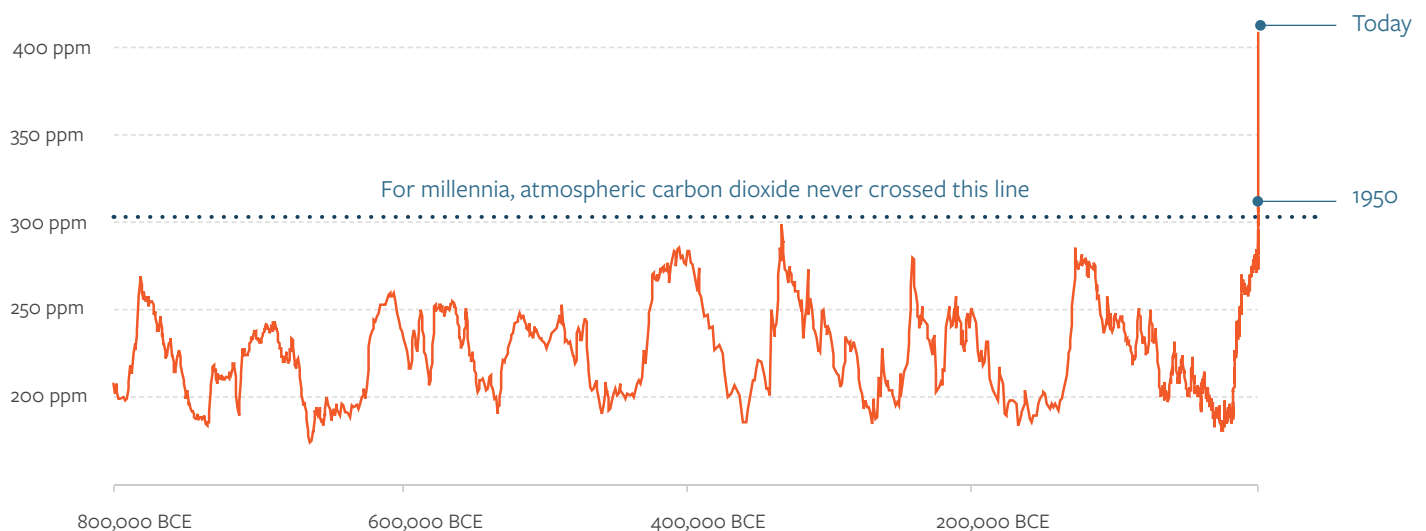
GREENHOUSE GASES

There are dozens of types of greenhouse gases in the atmosphere. We primarily focus on carbon dioxide (CO₂) emissions, because they are the primary driver of climate change. The One Climate Future plan also looks at methane (CH₄) emissions.



Global carbon dioxide in the atmosphere

Average long-term atmospheric carbon dioxide (CO₂) measured in parts per million (ppm). Source: EPICA Dome C CO₂ record (2015) & NOAA (2018).



2 Cascading hazards from a changing climate

While a 1.0 degree increase in global temperature sounds minimal, it is enough to create significant repercussions: globally, we are seeing melting ice sheets in the Arctic, reduced snow pack in the mountains, rising sea levels, droughts, wildfires, and record-breaking storms. In Maine, sea levels have been rising 0.07 inches per year since 1912; the duration of winter snow pack has decreased by two weeks over the past century; and the Gulf of Maine is warming faster than 99% of the world's oceans. With these changes we know we will increasingly experience new sources of vulnerability, including threats to our health and safety, strain on our economy, stress on our food systems, degradation of our native ecosystems, and higher risk of infrastructure failure.

3 Even bigger systems at play

The climate challenges we face are ultimately indicators of bigger systems that continue to work against a vibrant, inclusive, and sustainable future. Our use of fossil fuels is only one part of a model of economic growth that uses resources inefficiently and unsustainably, and that fails to fully capture the value of healthy communities and ecosystems. Climate change disproportionately burdens communities that have faced a long history of oppression and marginalization; therefore, climate change increases social inequity, and existing social inequity magnifies the harm created by climate change. Addressing these bigger challenges thus becomes integral to how we create a carbon-neutral and resilient future.

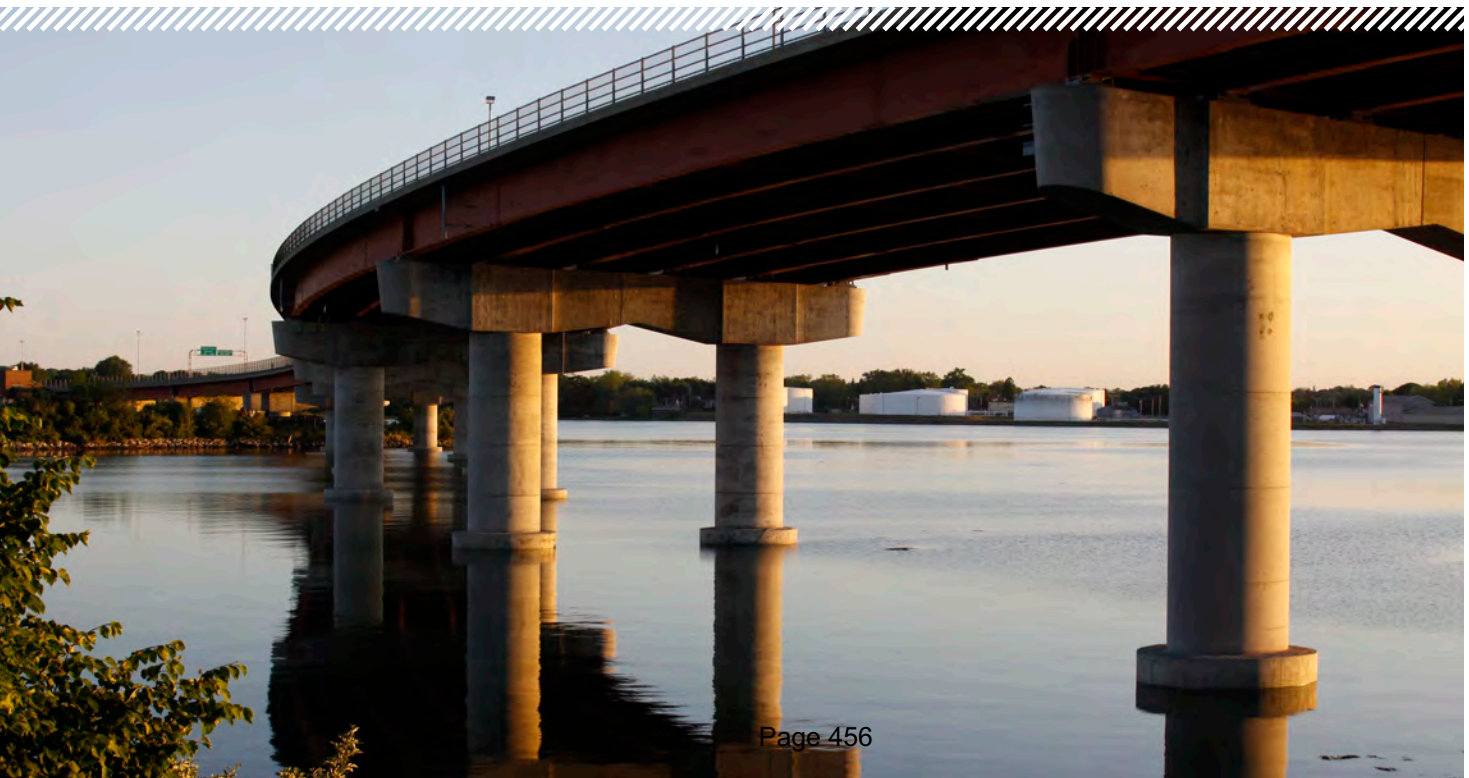
Where we are today

Part of addressing these challenges involves understanding where we are starting from. Community-wide greenhouse gas inventories were conducted for each of our cities to identify large sources of emissions and the magnitude of emissions reductions we must achieve (see pages 26-29). The One Climate Future Vulnerability Assessment summarizes changes in the local climate to date, and the range of changes we expect to see over the next century, depending on the pace of global greenhouse gas emissions reductions. The Vulnerability Assessment also identifies vulnerabilities across our communities, economy, infrastructure, and ecosystems (see pages 30-33).

Defining the change we envision

The assessments of where we are today help to define the change we hope to see, including the quantity of greenhouse gas emissions reductions, areas to increase the resilience of our cities, and the opportunity for creating just and sustainable cities (see pages 34-35). This context sets the foundation for the One Climate Future strategies, through which Portland and South Portland will play our part in minimizing the worst effects of climate change, while simultaneously investing in our local businesses, our health, and our communities.

UNDER THE CASCO BAY BRIDGE • Photo by Denise Michaud



Sustainability defined.

The One Climate Future plan expresses the vision of Portland and South Portland to be thriving, vibrant, and sustainable communities now and in the future. As we work toward that goal, it's important to define what we mean. Too often, people imagine that sustainability simply means protecting the environment. While that is important, it isn't enough. A popular analogy illustrates sustainability as a series of interlocking rings. To be truly sustainable, a community must reach the sweet spot where the rings equally overlap. Our cities will work with our residents, businesses, community organizations, and other stakeholders to achieve this alignment. Here's how we characterize each ring:



Social Sustainability

In order to be truly sustainable, a community must strive to meet the needs of all its members regardless of factors such as race, ability, gender identity, education, place of birth, or income. One Climate Future imagines a future where all residents of Portland and South Portland are able to fully participate in the civic, economic, and social life of the community, where everyone has access to safe, affordable housing, healthy food, and where people can move about safely and conveniently on foot, by bicycle, or by transit.

efficiently, adopting a conservation mindset, and considering how the City's financial decisions impact property taxes and other fees. Maintaining a high bond rating allows our cities to access capital markets to support investments to prepare vital municipal infrastructure for future storms and sea level rise. Such investments make good financial sense because, according to the World Economic Forum, "An average of 3% additional upfront capital investment is required to build resilience into infrastructure, yet every dollar invested in resilience generates four dollars of economic value."

Economic Sustainability

Portland and South Portland can become more sustainable by investing in and incentivizing business activity that aligns with our One Climate Future Goals. This means working to attract diverse businesses to locations where they can anchor neighborhoods built near transit corridors, allowing people to shop or seek entertainment within walking distance of their home. It means supporting locally-owned businesses that invest in the community, create local jobs, and circulate money throughout the economy by using goods and services provided by other local businesses. It means encouraging entrepreneurship and business development for everyone including New Mainers looking for an opportunity to participate in the economy.

Economic sustainability also means being good stewards of the public's financial resources by providing services

Environmental Sustainability

To be environmentally sustainable, Portland and South Portland work to achieve a circular economy so that we don't deplete natural resources or cause long lasting damage to the planet. We must continue our efforts to clean our stormwater, increase the health of our soils, and protect the quality of the air we breathe to ensure community members can thrive now and in the future. We must meet our goal to eliminate carbon emissions to avert the worst impacts of climate change that could devastate marine- and land-based ecosystems. We must also work to mitigate the disproportionate burden of industrial processes and pollution on neighborhoods with vulnerable populations.

These three interlocking rings define the full picture of what it means to be a sustainable city.

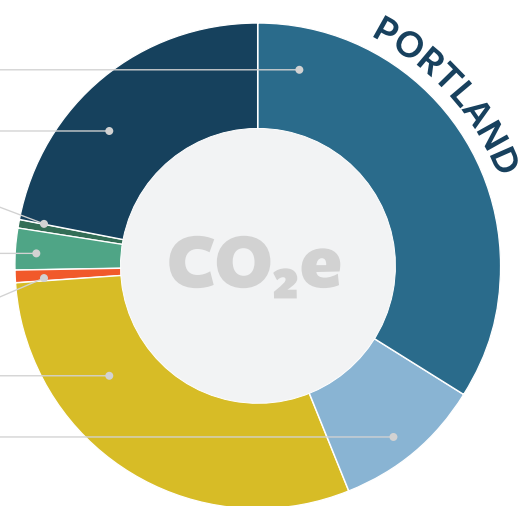
Portland and South Portland’s greenhouse gas emissions

In 2017, Portland and South Portland collectively emitted 1,192,665 MTCO₂e. This threshold will serve as our baseline for measuring emissions reductions moving forward.

EMISSIONS BY SECTOR

- 34% COMMERCIAL BUILDINGS
- 22% RESIDENTIAL BUILDINGS
- 0.3% WASTEWATER
- 3% SOLID WASTE
- 0.8% WATERBORNE TRANSPORTATION
- 30% ON-ROAD TRANSPORTATION
- 10% INDUSTRIAL BUILDINGS

840,419 MTCO₂e
OF GREENHOUSE GASES EMITTED IN 2017



Portland’s greenhouse gas emissions

In 2017, Portland emitted 840,419 MTCO₂e of greenhouse gas emissions community-wide. The use of electricity, natural gas, and fuel oil in buildings is the main driver of Portland’s greenhouse gas footprint—commercial and residential buildings emit over half (56%) of our city’s greenhouse gas emissions. Another 10% of emissions comes from industry, including industrial buildings and process loads. Transportation within the city is responsible for roughly one third (31%) of Portland’s emissions, with just under 1% of those emissions attributed to waterborne transportation, including Casco Bay Lines and cruise ships while in port. The remaining 3% of Portland’s emissions are produced from the incineration of solid waste and processing of wastewater.

South Portland’s greenhouse gas emissions

In 2017, South Portland emitted 352,246 MTCO₂e of greenhouse gas emissions community-wide. As in Portland, the use of electricity, natural gas, and fuel oil in buildings is a primary driver of South Portland’s greenhouse gas footprint—commercial and residential buildings emit 42% of our city’s greenhouse gas emissions. In South Portland, however, a much larger proportion (24%) of emissions comes from our industrial sector, including industrial buildings and process loads. Transportation within the city is responsible for roughly one third (32%) of our emissions, and the incineration of solid waste and processing of wastewater is responsible for the remaining 3%.

What is MTCO₂e?

MTCO₂e is an abbreviation for “metric tons of carbon dioxide equivalent.” Each greenhouse gas has a different capacity to trap heat, or “global warming potential.” By expressing quantities of greenhouse gases in MTCO₂e, we are converting one metric ton of a greenhouse gas into the equivalent number of metric tons of carbon dioxide, based on their global warming potential, in order to compare and sum the emissions from various greenhouse gases.

EMISSIONS BY SECTOR

23% COMMERCIAL BUILDINGS

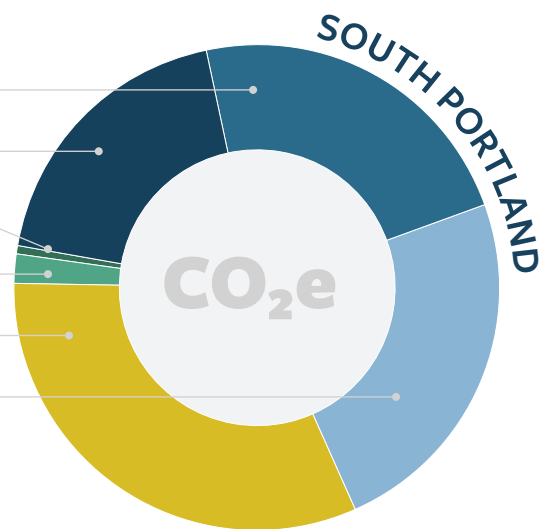
19% RESIDENTIAL BUILDINGS

0.4% WASTEWATER

3% SOLID WASTE

32% ON-ROAD TRANSPORTATION

24% INDUSTRIAL BUILDINGS



352,246 MTCO₂e

OF GREENHOUSE GASES EMITTED IN 2017

CASCO BAY LINES FERRIES • PHOTO BY ANNA ACKERMAN

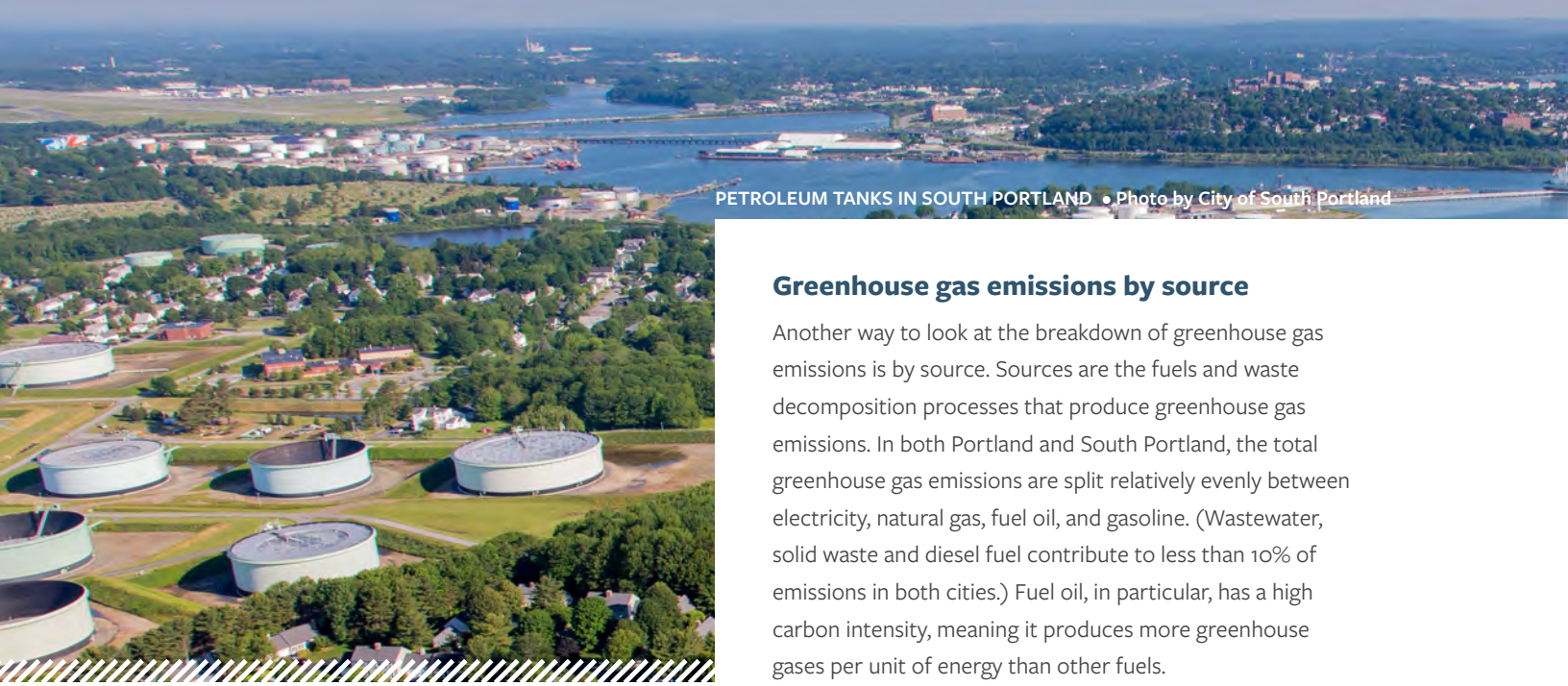
WHAT'S INCLUDED IN THE INVENTORIES?

Greenhouse gas inventories are generally divided into three scopes:

- Scope 1:** All emissions within the city.
- Scope 2:** Emissions occurring as a result of grid-supplied electricity used within the city.
- Scope 3:** Other emissions occurring outside the boundaries of the city as a result of activities taking place within the city.

The inventories follow the BASIC approach to the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC). BASIC includes all scope 1 and 2 emissions, as well as scope 3 out-of-boundary waste and wastewater emissions. It excludes other scope 3 emissions sources, such as emissions from natural gas leakages, electric transmissions losses, or out-of-boundary aircraft or ships. Using the BASIC methodology aligns the inventories better with the elements the cities can control.





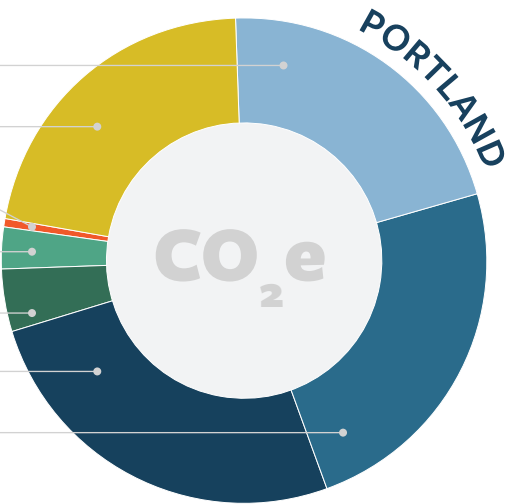
PETROLEUM TANKS IN SOUTH PORTLAND • Photo by City of South Portland

Greenhouse gas emissions by source

Another way to look at the breakdown of greenhouse gas emissions is by source. Sources are the fuels and waste decomposition processes that produce greenhouse gas emissions. In both Portland and South Portland, the total greenhouse gas emissions are split relatively evenly between electricity, natural gas, fuel oil, and gasoline. (Wastewater, solid waste and diesel fuel contribute to less than 10% of emissions in both cities.) Fuel oil, in particular, has a high carbon intensity, meaning it produces more greenhouse gases per unit of energy than other fuels.

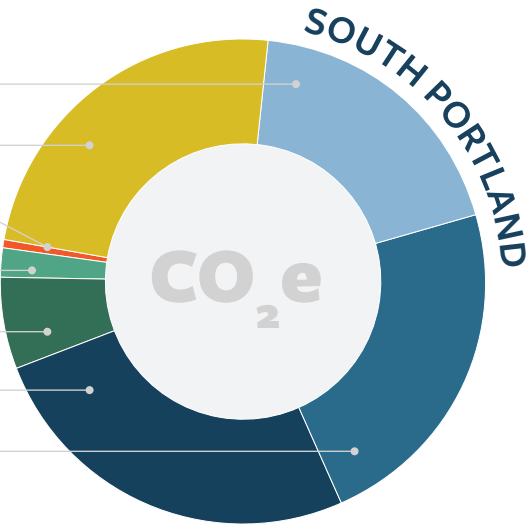
EMISSIONS BY FUEL SOURCE

- 21% NATURAL GAS
- 22% ELECTRICITY
- 0.3% WASTEWATER
- 3% SOLID WASTE
- 4% DIESEL
- 26% GASOLINE
- 24% FUEL OIL



EMISSIONS BY FUEL SOURCE

- 19% NATURAL GAS
- 24% ELECTRICITY
- 0.4% WASTEWATER
- 2% SOLID WASTE
- 6% DIESEL
- 26% GASOLINE
- 23% FUEL OIL

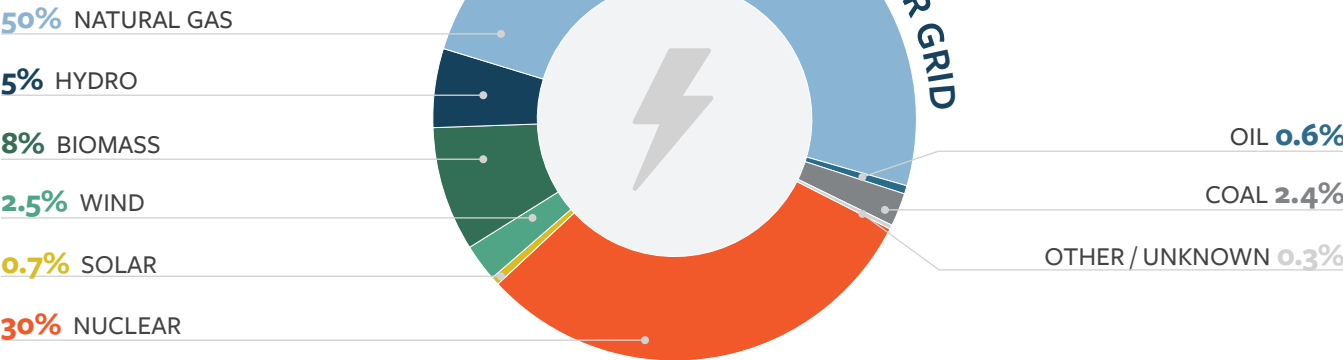


The role of electricity

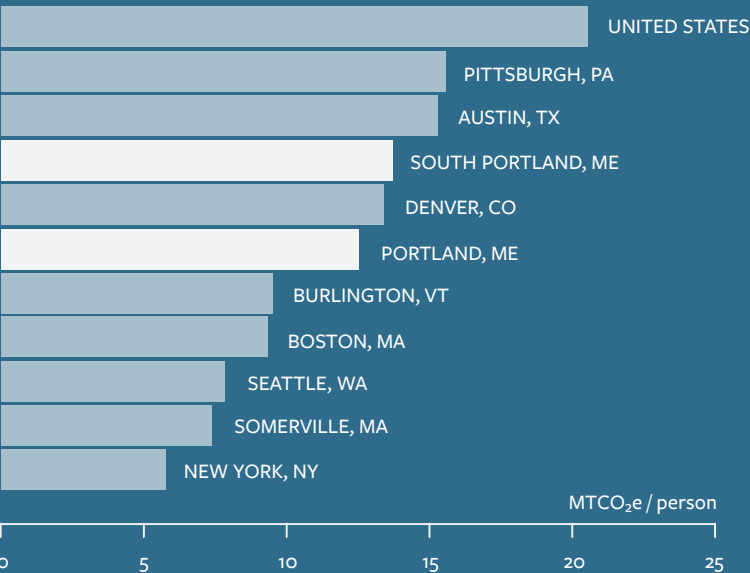
Just under a quarter of all greenhouse gas emissions in both cities come from electricity, due to the mix of fuel sources that are currently used to produce electricity. As we continue to expand the amount of renewable energy on the electrical grid, such as solar and wind power, the greenhouse gas emissions from electricity (the yellow wedges in the “Emissions by Fuel Source” charts) will shrink. If Maine continues to hit its renewable portfolio standard targets, we will reach zero emissions from electricity by 2050.

Therefore, the primary way that we can reduce greenhouse gas emissions involves three steps: 1) Ensuring our systems run as efficiently as possible, 2) Expanding the amount of electricity that comes from renewable sources, and 3) Switching as many systems that are currently powered by fossil fuels to electricity, such as transportation and building heating and cooling. In some cases we can switch to biofuels, particularly for processes (such as industrial processes) that are difficult to run on electricity.

ELECTRICITY SOURCES



EMISSIONS PER CAPITA



How do we stack up?

On a per capita basis, South Portland emits 13.8 MTCO₂e per resident and Portland emits 12.6 MTCO₂e per resident. These numbers are well below the U.S. national average of 20.7 MTCO₂e per resident, but are more emissions-intensive than a number of other Northeast cities. In general, these differences reflect the greater use of fuel oil for heating, lower density development and less robust public transit systems, higher reliance on private vehicles, and a greater proportion of industrial energy use.

Note: Emissions per capita are shown for rough comparison; Inventory methodologies may differ.

Climate change in Portland and South Portland

Portland and South Portland are already feeling the local effects of global climate change—including rising sea levels, more intense storms, warmer air and water temperatures, and ocean acidification. The changes that we detect today are only indicators for the more significant changes that are projected to come.

• See the **One Climate Future Vulnerability Assessment** at oneclimatefuture.org for more. •

Changes in sea level, storm surge, and tidal flooding

Sea levels in the Greater Portland area have been rising at a rate of 0.07 inches per year since 1912. According to the 2018 National Climate Assessment, sea levels will continue to rise and the pace will likely accelerate. Under an intermediate sea level rise scenario, we can expect to see 1.5 feet of sea level rise by 2050 and nearly 4 feet by 2100. Under the most extreme scenarios, we could see over 3 feet as early as 2050, and upwards of 8.8 - 10.8 feet by 2100. Portland and South Portland are likely to experience more intense and frequent flooding from sea level rise and storm surge, and certain areas that flood now during heavy storm events will likely experience daily flooding at high tide by the end of the century.

See pages 10-19 of the One Climate Future Vulnerability Assessment for more information.

Changes in precipitation and storm patterns

As the climate changes, warming ocean surface temperatures lead to higher levels of evaporation and greater moisture in the air—contributing to more precipitation and extreme weather events. The average amount of precipitation that Maine sees in a year has already increased six inches (13%) since 1895. Precipitation in the Greater Portland area is projected to increase by another 4–5% from current totals by 2050. We expect most of this yearly increase to come in the fall and winter, and for precipitation to fall increasingly as rain rather than snow. With increasing storm intensity, more precipitation will fall in shorter periods of time, causing strain on stormwater systems and increasing the risk from flooding.

See pages 20-24 of the One Climate Future Vulnerability Assessment for more information.





FLOODING AT THE PORTLAND PIER • Photo by [BEING CONFIRMED]

Changes in air temperatures

Average annual temperatures across Maine have increased 3°F since 1895. Along the coast, temperatures are expected to continue to increase another 3.5–4°F by 2050. In addition to warmer average temperatures, Portland and South Portland are expected to experience more days of extreme heat and fewer days below freezing. The Portland area has historically experienced four high-heat days a year where the heat index reaches over 95°F. The number of high-heat days per year is expected to reach 13.5 by 2050. Extreme heat is a significant public health risk, while fewer days below freezing are leading to increases in rates of pest outbreaks and vector-borne diseases, like Lyme disease.

See pages 25–28 of the One Climate Future Vulnerability Assessment for more information.

Changes in water temperature and acidification

Between 2004 and 2013, the Gulf of Maine warmed 0.41°F per year, a rate faster than 99% of the world's oceans. In Casco Bay, specifically, water temperatures have increased roughly 2.5°F between 1993 and 2018. At the same time, oceans globally are becoming more acidic as they absorb carbon dioxide from the atmosphere, and as stormwater runoff reduces their buffering capacity. The Gulf of Maine is particularly susceptible to acidification due to its relatively low pH, cold water, and freshwater inputs off the coast. Ocean warming and acidification are affecting species health, species distributions, and creating shifts in marine ecosystems and food webs.

See pages 29–31 of the One Climate Future Vulnerability Assessment for more information.

Vulnerabilities enhanced by climate hazards

Climate hazards, such as sea level rise and more extreme storms, will exacerbate vulnerability in our cities, and put strain on our infrastructure, ecosystems, and community health. Below are ten of our top concerns for Portland and South Portland.

● See the One Climate Future Vulnerability Assessment at oneclimatefuture.org for more. ●



BUILDING AND PROPERTY DAMAGE
Sea level rise and more extreme storms will damage buildings and decrease property values if we don't increase the resilience of existing buildings and new development.



MORE POWER OUTAGES
Extreme storms increase the likelihood of power outages, which can disrupt transportation, communication, and water systems, and create short- and long-term economic losses for businesses.



TRANSPORTATION CLOSURES
Sea level rise and storm surge are expected to increasingly flood roads, including portions of I-295. A category 2 hurricane could cut off access to bridges between the two cities.



STORMWATER AND SEWER SYSTEM RISKS
Portions of the cities' sewer and stormwater systems along the coast are vulnerable to storms and sea level rise that may lead to pipe damage, saltwater infiltration, and failure of electrical pumping equipment.



ECOSYSTEM IMPACTS
Climate change will affect freshwater, marine, and land ecosystems by allowing new invasive species and pests to thrive. Sea level rise and more stormwater runoff can further degrade sensitive tidal ecosystems.



EXPOSURE TO HAZARDOUS WASTE
Without proactive preparedness, sea level rise and more extreme storms could increase our exposure to toxins from hazardous waste sites along the coast, posing a risk to human and environmental health.



PUBLIC HEALTH CHALLENGES

Heat-related illnesses, diseases carried by ticks, poor air quality, and emotional stress are some of the public health challenges our region will increasingly face as our climate changes.



FOOD SYSTEM VULNERABILITY

International droughts, floods, and new pests will impact global food systems and potentially increase food prices here in Maine. Climate hazards locally will likely compromise food distribution and food access.



STRAIN ON SOCIAL SERVICES

Climate hazards will increase the need for social services. At the same time, climate hazards can make essential services inaccessible to vulnerable populations during weather-related emergencies.



GREATER SOCIAL INEQUITY

Residents facing poverty, a disability, or other forms of marginalization will experience disproportionate harm from climate change. Climate adaptation planning and implementation must address these inequities to ensure that benefits are shared equitably among our communities.

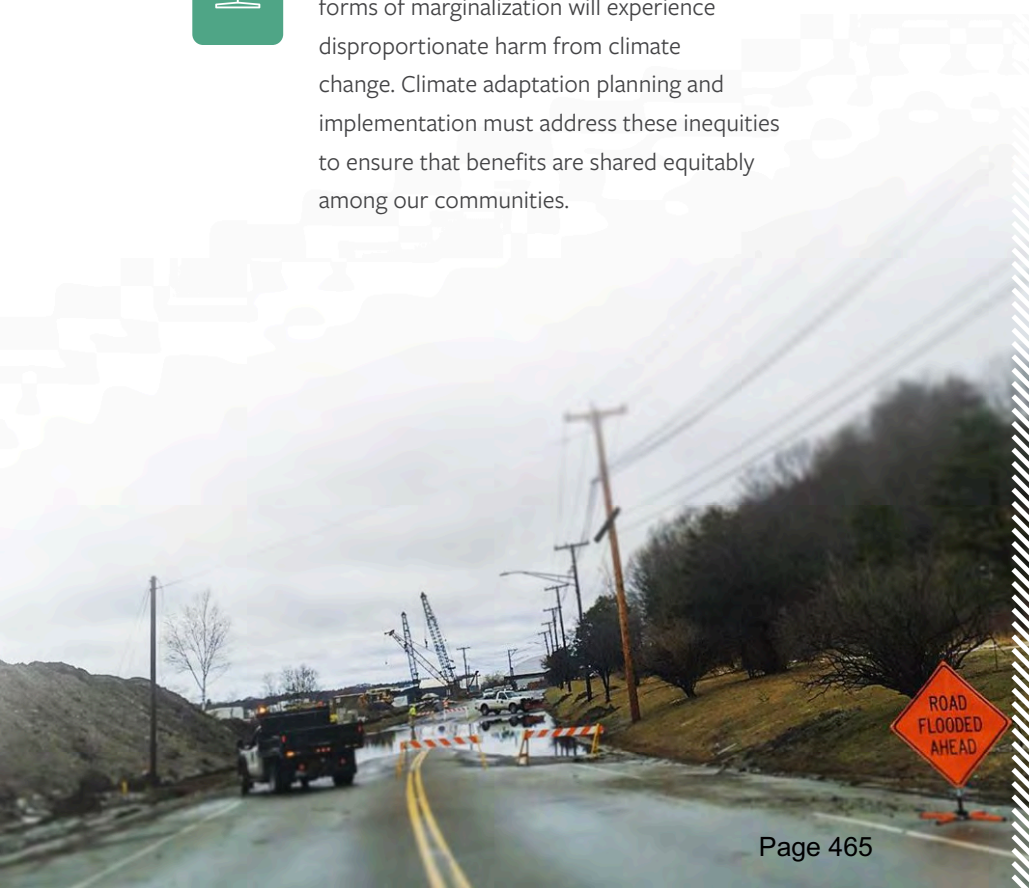


Parallels with the COVID-19 pandemic

As of fall 2020, the COVID-19 pandemic has created severe financial uncertainty for businesses, organizations, and residents in Portland and South Portland, as well as nationwide. Although not directly related to climate change, the pandemic has similarly tested the resilience of our economy, our social services, and our healthcare systems, and has exposed many of the same vulnerabilities that we will likely see with future climate hazards.

There are also significant parallels in how the COVID-19 health emergency and the climate crisis disproportionately affect residents with existing health conditions, communities of color, and low income communities. These frontline communities face greater exposure to both hazards, and have more limited financial safety nets, more limited access to healthcare, and fewer resources to respond. In other words, both crises magnify the stark systemic inequities in the country. For this reason, becoming more resilient cities and more equitable cities are intertwined.

See page 15 for further discussion on how the experiences and lessons drawn from the COVID-19 health emergency will shape the implementation of One Climate Future. See page 34 for a discussion on becoming just, resilient, and sustainable cities.



Creating just, resilient, sustainable cities

Climate change will not affect us all equally, and will instead magnify existing inequities. We have the opportunity to create more equitable cities as we work towards a carbon-neutral future.

.....

Just climate action

Frontline communities are those that will be impacted “first and worst” by the effects of climate change. These communities include Indigenous, Black, and communities of color, low-income communities, workers, and other groups that face greater exposure to pollution and climate hazards with more limited resources to respond. This is a circumstance created by systems that reinforce the oppression and marginalization of these communities, and have for hundreds of years. We see these patterns across the United States and world, as well as here in Maine.

Taking *just climate action* refers to the enormous opportunity to not only run our economies on clean and renewable energy, but to transition to a regenerative economy—and to make that transition in a just and equitable way. A regenerative economy is one where our work and livelihoods continuously restore and build (as opposed to exploit and diminish) the long-term health and wellbeing of our natural systems, people, and communities. We collectively stop processes that threaten our quality of life, including polluting water and air. We create pathways for workers to transition to clean industries. By doing so, we work to reverse the disproportionate burden on frontline communities and create ways to equitably distribute the benefits of a growing clean economy.

For just climate action, processes and decisions must center the direct experiences of frontline communities. The Cities are able to develop better and more equitable solutions through more inclusive processes when community members are partners in problem-solving and capacity building, and when those who are most impacted have the greatest say in the approach and outcomes. We become more sustainable cities when we can create a great quality of life without living better at the expense of others, including our future generations. And ultimately, this creates greater outcomes for everyone. This promise is fundamental to the vision of One Climate Future.



- “We live in an interconnected world, in an interconnected time, and we need holistic solutions. We have a crisis of inequality, and we need climate solutions to solve that crisis.” ●
- Naomi Klein

BAYSIDE ANCHOR, PORTLAND • Photo by Kaplan Thompson Architects



03

One Climate Future **CHARTING A COURSE**

OVER 18 MONTHS, THOUSANDS OF
COMMUNITY MEMBERS HELPED TO
SHAPE A BOLD CLIMATE PLAN FOR
OUR CITIES.

KING MIDDLE SCHOOL
students discuss the
opportunities for solar!



How this plan was developed

In collaboration

One Climate Future is a people-based plan that would not have been possible without the engagement of so many Portland and South Portland residents, organizations, and neighborhood groups. Over the course of 18 months, thousands of community members helped to shape a bold climate action plan for our cities. By answering surveys, attending book discussions, participating in community workshops, joining Lunch and Learns, and gathering around neighborhood tables, your voices elevated One Climate Future to take on the climate crisis in equitable, smart, ambitious, and creative ways. Thank you for your participation in this endeavor, and for your shared commitment to ensuring that Portland and South Portland are places of opportunity for all residents and businesses to thrive in a changing climate.

KING MIDDLE SCHOOL • Photo by Troy Moon



At the beginning of the process, the Cities set a series of goals to guide the development and implementation of a robust community engagement campaign. Our goals for engagement were threefold:

1 Deliver an Equitable Process that gives residents from all neighborhoods and backgrounds in Portland and South Portland a voice in the process. Our cities will not be sustainable unless they are also equitable. It is important that the planning and implementation of One Climate Future be shaped by the insight, input, and direction of populations and members of our frontline communities that have been underrepresented or historically excluded from planning processes, and who will be most disproportionately impacted by climate change.

Driven by this imperative, the plan's process reached a large number of residents and community groups in a variety of ways. And yet we know there is more we can do to ensure that One Climate Future advances a just and equitable future as we implement the plan. We must ensure that every community member has access to the resources they need to be resilient in the face of climate change, and can equitably benefit from the opportunities created by climate action. Portland and South Portland are committed to these outcomes, and to partnering with frontline communities that are already leading this work to create healthier and more resilient cities.

2 Build Local Capacity by equipping partner organizations, community leaders, and other residents with the tools, resources, and knowledge to discuss climate change and its impacts, and to take an active role in making our cities stronger tomorrow than we are today. We came together, leveraging existing strengths and networks across both cities and regionally. An enthusiastic group of volunteers, community partners, and street team members stepped up to lead climate conversations and host events after participating in trainings on messaging, surveying, and presenting project materials. This leadership and the partnerships through this process set us on a course for climate action that enhances existing solutions and builds towards bold new initiatives.

3 Spark an Ongoing Climate Conversation by building on the momentum of this process to ensure One Climate Future is only the start of our climate change dialogue. Residents with diverse backgrounds and stories joined the conversation—as youth, New Mainers, islanders, parents, seniors, college students, people of color, residents with low incomes, and residents representing local businesses, the building and affordable housing sector, food justice and urban agriculture, the fishing and waterfront community, and many other sectors. Each shared the ways in which they are already feeling the local effects of climate change and their goals for climate action. Both Cities are harnessing this opportunity to keep the conversation going, and to turn talk into measurable change.

Over 50 volunteers, 100 events and 1,500 completed surveys in 4 languages later, Portland and South Portland are excited for the next phase of this plan. We extend deep gratitude to each and every one of you that participated in the planning process, grounded One Climate Future in the local community context, and launched Portland and South Portland in an ambitious direction of climate leadership.

MANY OF THE HIGHLIGHTS

ARE RECAPPED IN THE FOLLOWING PAGES

1,625
COMPLETED
SURVEYS
TAKEN IN 4 LANGUAGES

91
EVENTS HOSTED
OR ATTENDED
TO DISCUSS ONE CLIMATE FUTURE

57
VOLUNTEERS
TRAINED
VIA THE VOLUNTEER TRAINING

6
STREET TEAM
MEMBERS
PAID TO LEAD CLIMATE CONVERSATIONS

MEETING IN A BOX

The “Meeting in a Box” built local capacity by equipping community partners and volunteers with tools and content to host their own presentations and events. Discussion questions, handouts, surveys, trivia questions, and other materials fostered robust conversations at neighborhood meetings and community gatherings across the two cities.



KEEP IN TOUCH!

oneclimatefuture.org
Check for updates on the One Climate Future website at oneclimatefuture.org where you can also download a copy of the vulnerability assessment and One Climate Future plan.

Community Newsletter
Sign up for the One Climate Future Community Newsletter by emailing Lucy Perkins, South Portland Sustainability Coordinator, at lperkins@southportland.org.

Follow One Climate Future:

 [@sustainableportlandme](https://www.instagram.com/sustainableportlandme)
[@soposustainability](https://www.instagram.com/soposustainability)
 City of Portland Sustainability Office
City of South Portland Sustainability Office
 [@SustainPortME](https://twitter.com/SustainPortME)

Engaged Volunteer Training

Volunteers played a critical role in shaping One Climate Future and promoting engagement with the planning process. At an evening training, over 50 community members refined approaches to engaging people in effective climate conversations by delivering public presentations; talking to friends and family; and effectively leveraging social media.



Equity Partner Training & Workshop

The Cities connected with community organizations that are run by and/or directly support communities in the cities that will be most affected by climate change. Through a training in climate change communication, this group became advocates and spokespeople for how climate change intersects with their existing work to build stronger communities. Later in the process, these community organizations joined us again to identify ways that the plan can advance equity and elevate existing community priorities.



Street Team

The Street Team, made up of six paid community members, attended events to communicate the goals of One Climate Future to the public and to gather feedback through surveys. The team collectively attended over 25 events throughout the summer, spreading enthusiasm and interest in the plan and creating a great way for our young residents to drive conversations on climate change.

Official Launch Event

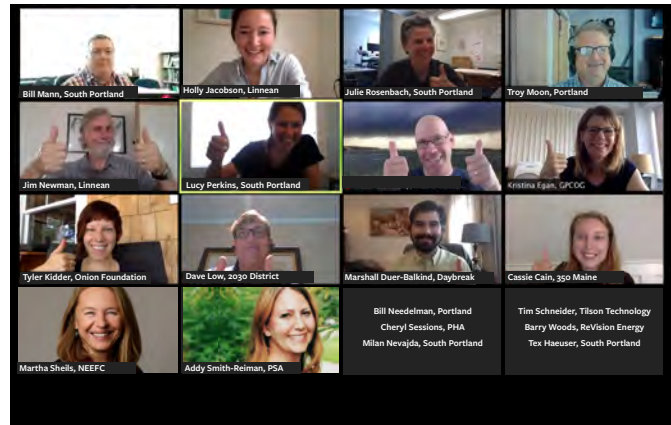
On June 10th, community leaders and representatives took the stage at the Gulf of Maine Research Institute for the official launch of One Climate Future. The event attracted over 100 people and set the tone for the Cities' continued collaboration on climate action.

Did you miss the launch? Watch the press conference with the featuring remarks from community members at the following link!
<https://www.youtube.com/watch?v=G6oe3gyhz4g&feature=youtu.be>



Climate Planning Process Committee (CPPC)

The Climate Planning Process Committee, appointed by the City Councils, served as a sounding board to the plan's development. The Committee provided input on the plan's potential for impact, climate vulnerabilities, the largest levers for reducing greenhouse gas emissions, and the plan's big picture narrative in four workshops—in addition to participating in strategy development calls and providing feedback to written drafts.



Topic Area Engagement Posters

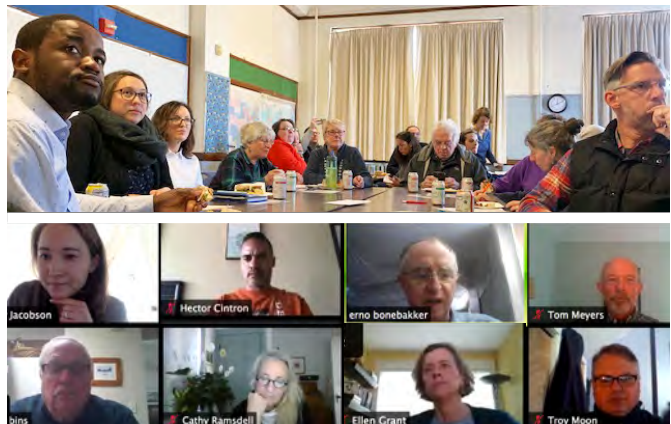
Community members provided informal, creative ideas on posters strategically located throughout the Cities, including in cafes, libraries, and events.

Climate Change Book Discussions

We hosted a series of gatherings to discuss Joseph Romm's *Climate Change: What Everyone Needs to Know*. By sharing what surprised us and where we had questions, the book helped us, as a community, to get on the same page about climate science.

Lunch & Learns ... and Online Workshops

Over 85 community members joined us for a series of lunchtime workshops to learn about and discuss Portland and South Portland's greenhouse gas emissions, climate vulnerabilities, ways we can reduce emissions and build resilience, and how we can advance equity in the process. In the spring of 2020, the COVID-19 pandemic prohibited in-person events. Remaining adaptive, we went virtual with a series of online workshops. More than 75 attendees tuned in to help us refine the strategies within the context of the lived experiences of our residents and community members.

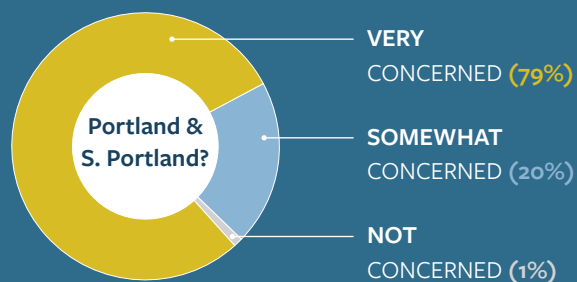
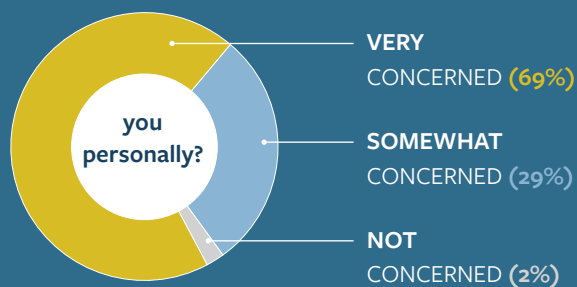


Presentations with Community Partners

Local businesses and organizations hosted community presentations about One Climate Future. Open discussions after each presentation created opportunities for community members to share feedback and find ways to continue their involvement in climate action in the cities.



How concerned are you that climate change will affect...



Surveys

Through three surveys over the course of the plan's development, community members collectively completed over 1,600 surveys, grounding the plan in the needs and ideas of our residents and businesses. The first survey captured climate concerns and established a benchmark of existing community actions. The second survey identified barriers to taking further climate action. The final survey gathered community input on the proposed strategies for the plan.

A snapshot of what we heard:

“ I want those who work in the cities to be able to live in the cities. ”

“ Yes to Stretch Code! Yes to Net-Zero for any city incentives. ”

“ We need financial support, rebates, and affordable options for renewable energy conversion for local residents. ”

“ Micro-grid creation for neighborhood sustainability! ”

“ We need to protect the ecosystems in order to have a sustainable marine culture. ”

“ I think the Old Port should be car-free in the summer. ”

“ More affordable housing ”

“ The [bus] systems just aren't coordinated very well. If they were, I wouldn't have to try to figure out where one system's buses connect with another's by navigating two different websites to come up with travel plans. I get off one bus and then have to wait an hour for a connection to the other system. I'm never going to choose the bus over a car if that's the case. ”

“ Support regional agriculture! ”

Engagement Timeline

- = Presentation/Discussion
- = Training
- = Tabling
- = Workshops

2019

FEB

- Equity Partner Training
- Engaged Volunteer Training

MAR

- Friends of Casco Bay: Ocean Acidification, Climate Change, and You
- CPPC Kick-off Meeting

APR

- Allagash Brewery
- Green Neighborhood Family Fest
- Knitting Nook Lunch & Learn
- CPPC Vulnerability Workshop



MAY

- Green New Deal Presentation at Portland Resilience Hub
- Parks Commission, Green Space Gathering
- Sierra Club Statewide Conference
- Portland High School
- Neighborhood Connection Night
- South Portland Farmers Market
- "Paris to Pittsburgh" Movie Discussion



AUG

- National Night Out at Redbank Community Center
- Climate Change: What Everyone Needs to Know at Congregation Bet Ha'am
- St. Luke's Episcopal Cathedral & First Parish Portland Unitarian Universalist Church
- Allen Avenue UU Church
- Maine Mall
- Hinckley Park
- Deering Oaks Park Farmers Market
- South Portland Farmers Market
- South Portland Library



JULY

- St. Luke's Episcopal Cathedral
- Gateway to Opportunity High Schooler Discussion
- Stars and Stripes Spectacular
- Bug Light Movies
- Revision Energy event
- "Paris to Pittsburgh" Movie Discussion in the West End
- Hinckley Park
- University of Southern Maine
- Climate Change: What Everyone Needs to Know at the South Portland Library
- Council on International and Educational Exchange (CIEE) Lunch and Learn
- Third Thursday at Trinity Park
- WillardFest
- Bug Light Movies
- Monument Square Farmers Market
- Cia Cafe
- Climate Change: What Everyone Needs to Know at the Knitting Nook
- OCF Open City Night



JUNE

- E-waste Drop Off: City staff passed out surveys at the annual drop off event
- Deering Oaks Park Farmers Market
- Monument Square Farmers Market
- St. Luke's Episcopal Cathedral Coffee Hour
- Old Port Festival
- Launch Event
- Portland Housing Authority
- Republican City Committee
- CPPC Mitigation Workshop
- Monthly Meeting at St. Luke's Episcopal Cathedral
- Maine Medical Center
- West End Neighborhood Association Meeting
- South Portland Community Dinner
- South Portland Farmers Market
- Redbank Community Dinner
- Startup Maine

NOV

- EcoMaine Presentation
- Global Warming Prayer
- Resilient Food Systems strategy discussion
- Sustainability Programs and Initiatives Lunch and Learn
- Gulf of Maine Symposium
- IDEXX Environmental Stewardship Committee

OCT

- Greenhouse Gas Emissions Lunch and Learn
- Redbank Community Center Climate Discussions
- PassivhausMAINE Fall Forum
- “Paris to Pittsburg” Movie Discussion
- Home Energy Fair
- Conversation about Climate Change at Tandem Coffee
- The Impacts of Climate Change in East Bayside and Surrounding Communities
- Maine Public Health Conference
- Portland West End Neighborhood Association



SEPT

- Portland GreenFest
- St Luke’s Start Up Sunday
- Opportunity Alliance
- Portland Green Fest
- We are Portland Walk & Dance
- Portland Electric Vehicle Ride & Drive
- Vajra Vidya Portland Climate Change Art Discussion
- Portland King Middle School Solar Discussion
- RiverPlace Apartments
- Portland Parking Day
- WGAN Radio Show



DEC

- Vulnerability Assessment Lunch and Learn
- Portland Public Library Sustainability Series
- Portland Rotary Club



2020

JAN

- Equity in Sustainability Lunch and Learn

FEB

- South Portland Planning Board
- Resilient Affordable Housing strategy discussion
- University of Southern Maine Lunch and Learn
- Green & Healthy Maine- Home + Energy Show



MAR

- South Portland Polling Locations

APR

- Online Workshop Series
- Stormwater and Green Infrastructure strategy discussion
- Resilient Ecosystems strategy discussion
- Waterfront Alliance
- IDEXX Environmental Stewardship Committee

MAY

- Maine Conservation Voters Lunch & Learn Series
- Transportation and Land Use strategy discussion
- Regional Public Transportation strategy discussion

JUL

- CPPC “Six Big Moves” Workshop

04

One Climate Future

THE COURSE WE TAKE

.....

PORTLAND AND SOUTH PORTLAND
WILL ADVANCE OVER 65 ACTIONS
ACROSS FOUR FOCUS AREAS TO
CREATE MORE REGENERATIVE,
RESILIENT, AND EQUITABLE CITIES.



Our plan for creating a thriving future

The communities of Portland and South Portland have developed **68 strategies** across **4 focus areas** that set us on a course to be thriving, inclusive, low-carbon cities. Three key components:

Meeting our greenhouse gas emissions goals

Through energy and emissions modeling, we evaluated the effects of a suite of policies on greenhouse gas emissions reductions, and identified implementation timelines and targets for meeting our climate goals.

[SEE PAGE 46](#)

Focusing on the potential for transformation

We looked beyond greenhouse gas emissions reductions, working to craft strategies that would help us become increasingly equitable, regenerative, and resilient cities.

[SEE PAGE 52](#)

Setting an achievable course for implementation

We outlined timelines, milestones, city stewards, and financing mechanisms to create a feasible course for implementation in the near-term and over the next thirty years.

[SEE PAGE 256](#)

STRATEGIES ACROSS 4 FOCUS AREAS



Buildings and Energy

[SEE PAGE 56](#)



Waste Reduction

[SEE PAGE 118](#)



Transportation and Land Use

[SEE PAGE 140](#)



Climate Resilience

[SEE PAGE 202](#)

The strategies are summarized in a **matrix** at the end of this chapter.

[SEE PAGE 262](#)



OCEAN AVE SOLAR, PORTLAND • Photo by Troy Moon

Achieving our greenhouse gas emissions reductions goals

Portland and South Portland have committed to the following goals for greenhouse gas emissions reductions:

- 1 Reduce community-wide greenhouse gas emissions **80% by 2050**, from 2017 levels.
- 2 Run all municipal operations on **100% clean renewable energy by 2040**.

In 2019, we declared a climate emergency, committing to **accelerate emissions reductions by 2030**.

► How will particular policy actions help us to achieve those goals?

Modeling energy and emissions reductions

As part of the One Climate Future planning process, we modeled greenhouse gas emissions that will be generated by activity in our cities over the next thirty years—both if we were to take no action to reduce emissions and if we were to take immediate and aggressive action to meet our goals. For each policy action, the magnitude of emissions reductions depends on the pace and the extent of implementation or adoption. The model bases these assumptions on trends in other U.S. jurisdictions, as well as assessments of what is both ambitious and achievable for Portland and South Portland, given our current housing stock, transportation systems, industries, location within Maine, and other factors.

The model looks at fifteen sets of policies, all of which are components of the One Climate Future strategies. Not all of the plan's strategies are included in the model, and in some cases the model looks at the combined effect of several strategies, based on where emissions savings can be readily quantified with available data or appropriate proxies. For this reason, the modeled policies do not match the One Climate Future strategies one-for-one. Actions such as promoting leadership and education in high performance buildings (action BE 2.4) are more difficult to directly quantify, yet will still play an important role in reaching our climate goals. The emissions savings attributed to each of the One Climate Future strategies or sets of strategies, where applicable, are included in the implementation matrix on pages 262 - 285.

A pathway to reaching our climate goals

The combined effects of the modeled policies show one pathway for Portland and South Portland to reach our climate goals—specifically how we can reduce community-wide greenhouse gas emissions over 81% by 2050, relative to 2017 emissions totals. As modeled, all municipal operations are run on 100% clean energy by 2040 based on initiatives to decarbonize municipal buildings, procure renewable electricity, and transition to electric vehicle fleets. Many of the assumptions in the model are conservative, and greater savings may well be possible with additional state and federal support.

MODELED POLICIES



Municipal Renewable Energy

Renewable energy procurement to cover municipal energy use



Municipal Building Policies

Energy efficiency upgrades and net-zero energy new municipal buildings starting in 2026



New Construction Policies

New energy stretch code with net-zero energy requirement starting in 2030



Existing Building Efficiency

Expansion of energy benchmarking, energy efficiency retrofits, and gut-rehabs



Existing Building Decarbonization

Switching to electric heating, cooling, and cooking systems, such as air source heat pumps



Industrial Decarbonization

Efficiency improvements, and conversions to combined heat and power, biofuels, and natural gas



Local Solar

Solar installations within the cities; Emissions savings from local solar are also attributable to the RPS



Renewable Portfolio Standard (RPS)

Statewide policy to generate 80% of electricity from renewable sources by 2030, and 100% by 2050



Mode Shift and Land Use Policies

Targeted reductions in vehicle miles traveled based on the expansion of public transit and development policies



Bus Electrification

Transition to all-electric bus fleets by Greater Portland METRO and South Portland Bus Service by 2040



Fuel Economy Standards

Retaining California Corporate Average Fuel Economy (CAFE) Standards for vehicle efficiency



Electric Vehicle Adoption

Growth in electric vehicle adoption, representing 60% of new vehicle purchases by 2040, and 100% by 2050



Ferry and Ship Electrification

Transition to all-electric Casco Bay Lines ferry fleet by 2045, and shore power for cruise ships by 2040



Solid Waste Reduction

Waste reduction by source reduction, recycling, and composting to achieve “zero waste” (90% diversion)



Wastewater Efficiency

Efficiency upgrades to treatment plants and through anaerobic digester

See the modeling memorandum in Appendix B for further details.

Based on the energy and emissions modeling, the One Climate Future actions can reduce our cities' emissions by over 81% by 2050, relative to 2017.

Accelerating emissions reductions

Recognizing the scale of the global climate crisis and the need to take aggressive action, many actions have been front-loaded. The plan's implementation timeline considers municipal staff and funding capacities, and prioritizes the early and aggressive implementation of strategies that will have the most significant emissions savings. Almost half of the plan's actions are fully implemented in the next decade. As such, the Portland and South Portland are projected to achieve a 33% reduction in greenhouse gas emissions by 2030, and a 50% reduction by 2036, relative to 2017.

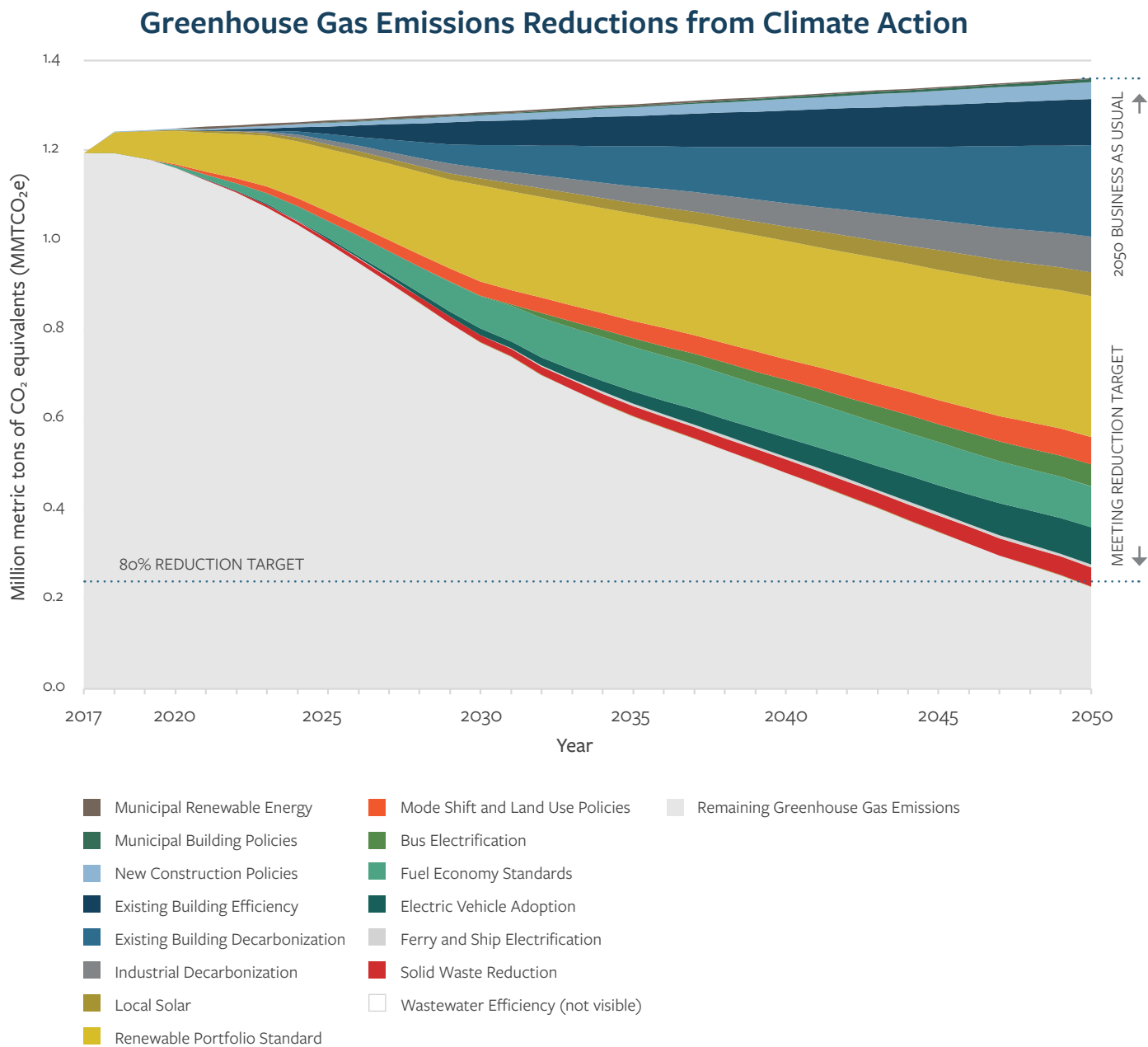


Table 1. Greenhouse gas emissions reductions in 2030, 2040, and 2050 compared to the 2017 baseline, driven by climate action policies.

Climate action “Wedge”	GHG reductions in year 2030		GHG reductions in year 2040		GHG reductions in year 2050	
	MTCO ₂ e	% of 2030 reductions	MTCO ₂ e	% of 2040 reductions	MTCO ₂ e	% of 2050 reductions
Municipal Renewable Energy	3,567	0.7%	3,542	0.4%	1,930	0.2%
Municipal Building Policies	1,429	0.3%	4,299	0.5%	7,170	0.6%
New Construction Policies	11,797	2.4%	24,477	2.9%	38,116	3.3%
Existing Building Efficiency	41,122	8.4%	79,137	9.5%	100,336	8.8%
Existing Building Decarbonization	51,019	10.4%	125,181	15.0%	204,056	17.9%
Industrial Decarbonization	5,413	1.1%	35,779	4.3%	66,144	5.8%
Local Solar	16,598	3.4%	34,497	4.1%	56,474	4.9%
Renewable Portfolio Standard	227,605	46.2%	276,951	33.2%	333,004	29.2%
Mode Shift & Land Use Policies	30,744	6.2%	46,681	5.6%	61,089	5.4%
Bus Electrification	2,093	0.4%	29,837	3.6%	48,866	4.3%
Fuel Economy Standards	71,726	14.6%	98,559	11.8%	91,746	8.0%
Electric Vehicle Adoption	13,959	2.8%	42,853	5.1%	82,396	7.2%
Ferry & Ship Electrification	0	0.0%	1,578	0.2%	6,852	0.6%
Solid Waste Reduction	15,292	3.1%	29,292	3.5%	42,272	3.7%
Wastewater Efficiency	0	0.0%	917	0.1%	1,024	0.1%

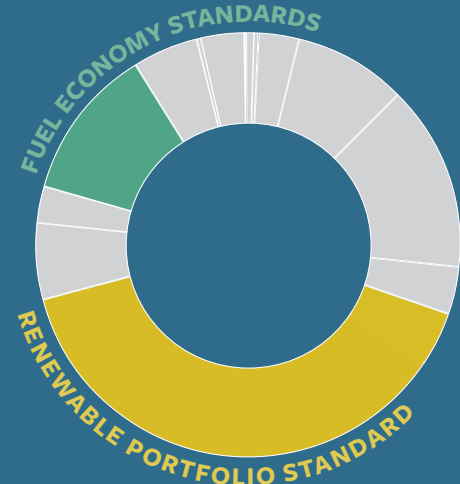
Scenario	2030	2040	2050
Business as usual (BAU) greenhouse gas (GHG) emissions (MTCO ₂ e)	1,283,823	1,321,596	1,360,362
GHG emissions after One Climate Future actions (MTCO ₂ e)	791,459	488,017	218,887
Percent change from baseline (Baseline = 1,192,784 MTCO ₂ e)	-33%	-59%	-81%
Percent change from BAU	-38%	-63%	-84%

Table 2. Cumulative greenhouse gas emissions savings between now and 2050.

Climate action “wedge”	Corresponding One Climate Future actions	Cumulative greenhouse gas savings 2020-2050	
		MTCO ₂ e	% of total savings
Municipal Renewable Energy	BE 1.1	110,421	0.6%
Municipal Building Policies	BE 1.2, 1.3	93,748	0.5%
New Construction Policies	BE 2.1, 2.3	578,672	2.9%
Existing Building Efficiency	BE 3.1, 3.2, 3.3	1,744,458	8.7%
Existing Building Decarbonization	BE 3.4, 3.5, 5.4, 5.6	2,800,102	14.0%
Industrial Decarbonization	BE 4.1, 4.2	753,726	3.8%
Local Solar	BE 2.2, 3.5, 3.6, 5.1	828,246	4.1%
Renewable Portfolio Standard	BE 5.1	7,247,418	36.3%
Mode Shift & Land Use Policies	TLU 1 (all)	1,151,719	5.8%
Bus Electrification	TLU 2.3	604,305	3.0%
Fuel Economy Standards	N/A	2,320,100	11.6%
Electric Vehicle Adoption	TLU 2.1, 2.2, 2.4, 2.5	982,046	4.9%
Ferry & Ship Electrification	TLU 3.3, 3.4	64,965	0.3%
Solid Waste Reduction	WR 1 (all)	685,655	3.4%
Wastewater Efficiency	WR 2.3	13,998	0.1%

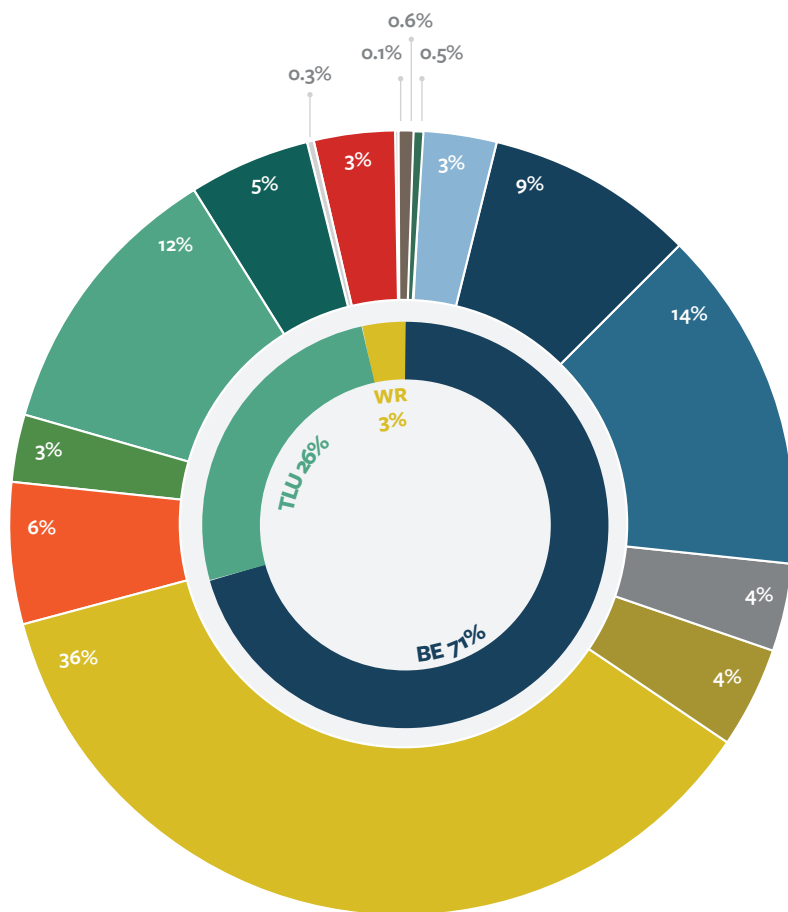
State and federal action included in the model

Maine has committed to a new renewable portfolio standard (RPS), which will ensure electricity in Maine comes from 100% renewable sources by 2050. Maine has also remained committed to the California Corporate Average Fuel Economy (CAFE) Standards, which are aligned with vehicle fuel efficiency standards set under President Obama. These two policies will play a significant role in reducing greenhouse gas emissions in our cities, accounting for over 50% of cumulative emissions savings by 2050. We have chosen to show these actions as part of our pathway (rather than assume they will proceed in the business as usual case) to emphasize the importance of these policies being implemented as planned for reaching our climate goals—as well as their impact on the rest of Maine. While we broke out local solar to show its specific contribution, locally generated solar counts towards the renewable portfolio standard (RPS). The donut chart to the right includes local solar within the RPS to show the full effect of the RPS.



Cumulative greenhouse gas emissions savings from 2020 - 2050

The **outer ring** shows the proportion of cumulative emissions savings achieved between 2020 and 2050 that can be attributed to each set of climate policies. The **inner ring** shows the proportion of cumulative emissions savings that can be attributed to the following three sections of the One Climate Future plan: Buildings & Energy (BE), Transportation and Land Use (TLU), and Waste Reduction (WR).



BE Buildings & Energy

- Municipal Renewable Energy
- Municipal Building Policies
- New Construction Policies
- Existing Building Efficiency
- Existing Building Decarbonization
- Industrial Decarbonization
- Local Solar
- Renewable Portfolio Standard

TLU Transportation & Land Use

- Mode Shift and Land Use Policies
- Bus Electrification
- Fuel Economy Standards
- Electric Vehicle Adoption
- Ferry and Ship Electrification

WR Waste Reduction

- Solid Waste Reduction
- Wastewater Efficiency

Areas for largest emissions savings

The five most significant areas for cumulative greenhouse gas emissions savings between now and 2050 include:

- Renewable energy**
The renewable portfolio standard and policies to support local solar contribute to 40% of all cumulative savings.*
- Existing building retrofits**
Existing building efficiency improvements and decarbonization contribute to 23% of all cumulative savings.
- Clean vehicles**
Electric vehicle adoption in conjunction with maintaining current federal fuel economy standards contribute to 17% of all cumulative savings.
- Mode shift**
Land use and transportation policies that encourage travel in ways other than a private vehicle contribute to 6% of all cumulative savings.
- Industrial Decarbonization**
Policies to support energy efficiency savings and switching to renewable energy sources (e.g., biofuels) in the industrial sector contribute to 4% of all cumulative savings.

* Note: While we've highlighted the potential impact from local solar, in almost all circumstances, local solar will count towards the RPS. Thus the RPS and Local Solar wedges actually represent the full effect of the RPS.

But reducing greenhouse gas emissions isn't enough.

Our goal is to reduce emissions in a way that creates abundance—through quality jobs in sustainable industries; through a circular economy that creates potential instead of waste; through protecting and strengthening the health of our ecosystems and communities; and through ensuring that everyone, regardless of where they are starting from, has access to this future.

.....

The One Climate Future strategies work to collectively chart a course towards a future that is...

... equitable.

An equitable community is one where deliberate policies and practices ensure that all people—regardless of race or ethnicity, income, gender identity, sexuality, age, citizenship, or ability—have the opportunity, tools, and support to achieve their potential and to lead healthy and fulfilling lives.

... regenerative.

A regenerative community is one where our daily activity continuously restores and nourishes (as opposed to exploits and diminishes) the long-term health and vitality of our natural systems, people, and communities.

... resilient.

A resilient community is one that has the capacity to respond, recover, and bounce forward in response to stresses and new challenges.







Photo credits (left to right, top to bottom):
Pg. 39: Holly Jacobson, Ashley Krulik, Ian Johnson, Emily Scully, Holly Jacobson, Bill Mann, Corey Templeton, Holly Jacobson, Holly Jacobson, Ian Johnson, Paul VanDerWerf, City of South Portland, Denise Michaud
Pg. 40: Corey Templeton, Daderot, Corey Templeton, unknown, Denise Michaud, Denise Michaud, Denise Michaud, Denise Michaud, Denise Michaud, Denise Michaud

In what ways does each strategy support a transformation towards a more equitable, regenerative, and resilient future? For each strategy it's different, but measured based on the following parameters:

.....

equitable.

- a** **Addresses injustice:** Reduces disproportionate burden from climate change; mitigates social disparities
- b** **Expands access:** Ensures benefits of climate action flow equitably; improves access and affordability specifically for communities disproportionately affected by climate change
- c** **Creates inclusive processes:** Supports inclusive and participatory decision-making, inclusive of people from underrepresented groups
- d** **Builds community ownership:** Creates opportunities for community ownership and leadership of projects, planning, investments

regenerative.

- a** **Draws down carbon:** Reduces our carbon footprint and our reliance on fossil fuels
- b** **Restores ecosystems:** Builds and protects the health and vitality of marine, freshwater, and land ecosystems
- c** **Supports a circular economy:** Develops closed-loop systems that eliminate waste and reuse, renew, and recycle materials and products
- d** **Builds shared wealth:** Distributes (as opposed to consolidates) wealth, access, and opportunity; supports a sharing economy; supports quality sustainable jobs

resilient.

- a** **Reduces vulnerability:** Reduces exposure, vulnerability, or level of impact from climate change hazards or pollution
 - b** **Strengthens communities:** Provides households or neighborhoods with tools and resources to adapt and thrive in response to stresses and challenges
 - c** **Adapts processes:** Develops processes to monitor, learn, and change our approach over time (i.e., through feedback loops)
 - d** **Builds partnerships:** Fosters relationships locally and/or regionally to jointly solve challenges
-

Each strategy is marked with the above indicators, based on how it advances an equitable, regenerative, and resilient future.

One Climate Future Strategies

BE BUILDINGS & ENERGY



Buildings and Energy

The Buildings and Energy strategies focus on transitioning to renewable sources of electricity, increasing the energy efficiency of new and existing buildings, and transitioning building systems to electric heating and cooling. Collectively, the actions in this section account for 71% of our cumulative greenhouse gas emissions savings between now and 2050.

BE 1 PAGE 58

Municipal Buildings and Energy Supply

Includes municipal renewable electricity procurement, and reducing emissions in municipal buildings and operations.

BE 2 PAGE 66

New Construction Energy Efficiency and Decarbonization

Includes new building standards, and promoting education and leadership in the building sector.

BE 3 PAGE 80

Existing Buildings Energy Efficiency and Decarbonization

Includes increasing energy efficiency of existing buildings, and switching to electric heating and cooling systems.

BE 4 PAGE 96

Industrial Energy Efficiency and Decarbonization

Includes increasing funding for industrial energy efficiency and a study on industrial efficiency and decarbonization.

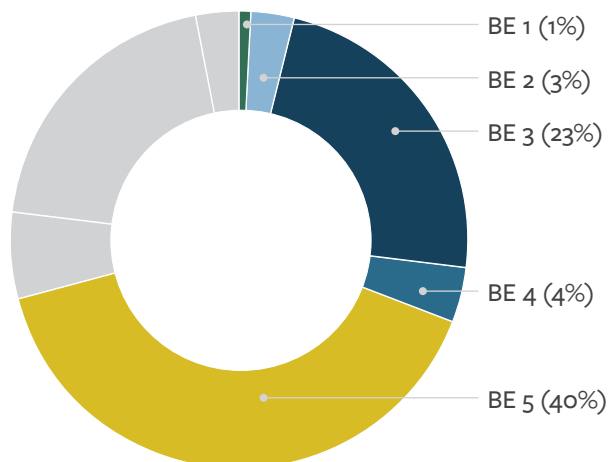
BE 5 PAGE 101

Clean and Renewable Energy Infrastructure and Regulatory Transformation

Includes infrastructural and regulatory changes to expand distributed energy resources, support electrification, and transition away from natural gas.

Cumulative greenhouse gas emissions savings attributed to each section

The renewable portfolio standard is the single most influential policy for reaching our climate goals, followed by decarbonizing and improving the energy efficiency of our existing building stock.



BE 1

Municipal Buildings and Energy Supply



DANIEL F. MAHONEY MIDDLE SCHOOL • Photo by Denise Michaud

BE 1.1 Renewable Municipal Electricity

ACTION: Pursue power purchase agreements (PPAs) to reach 100% renewable energy for city facilities ahead of the state renewable portfolio standard (RPS) schedule.

Where we are today

A renewable portfolio standard (RPS) requires that electricity must be increasingly produced using renewable energy sources over time. In 2019, the State of Maine adopted legislation (LD 1494), which raised the renewable portfolio standard for the state to 80% renewable electricity by 2030 and 100% by 2050. This ambitious step towards carbon neutrality will be transformational for Maine's electricity sector, and in our greenhouse gas (GHG) emissions projections, represents the single largest contribution to achieving One Climate Future goals. Nevertheless, the Cities have an opportunity and obligation to lead by example, and to move towards 100% renewable electricity faster than the state as a whole.

Around the country, local governments are entering into power purchase agreements (PPAs) for regional solar and wind power to reach near-100% renewable electricity. Power purchase agreements are contracts between electricity generators (i.e., sellers) and consumers (i.e., buyers) in which a buyer provides the payment stream necessary for a seller to generate the electricity. The contracts ensure that electricity generation can help finance the development of projects in instances where it might otherwise be unfeasible. Generally, these PPAs are based on projected future electricity demand after efficiency improvements, and usually come slightly shy of 100%, so the city is not on the hook to buy more power than it needs. The

remaining electricity is covered with renewable energy credit (REC) purchases.

The Cities have an opportunity and obligation to lead by example, and to move towards 100% renewable electricity faster than the state as a whole.

The action we will take

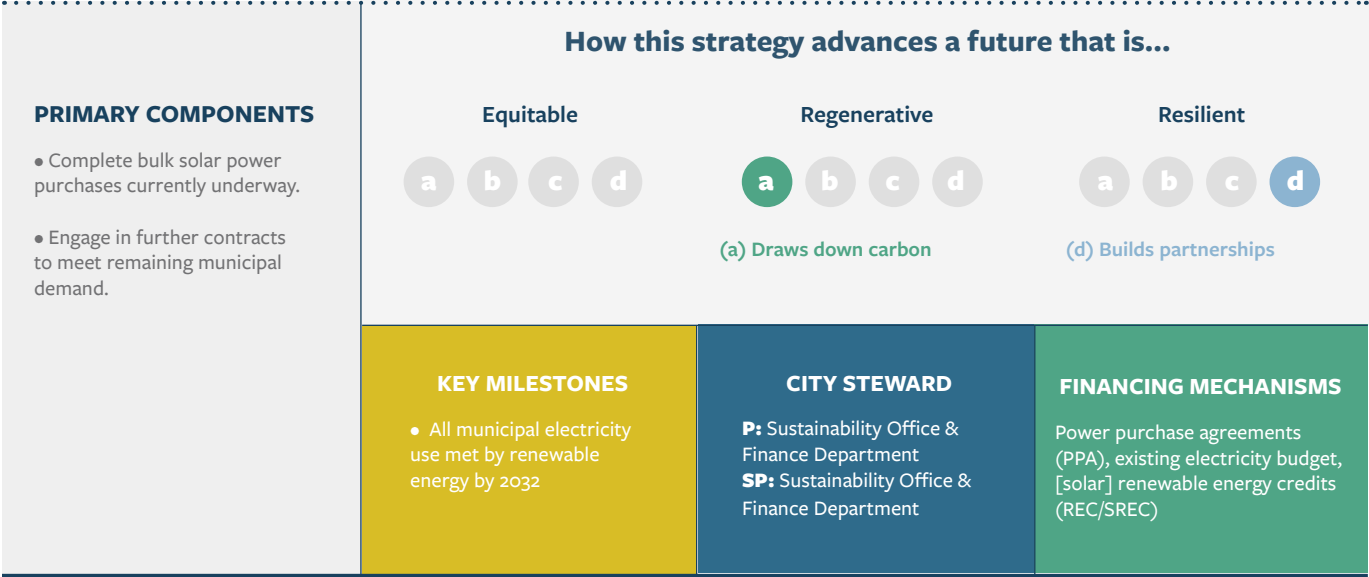
Through power purchase agreements, the Cities will meet 100% of the electricity demand for municipal facilities with renewable sources by 2032. Both Cities are currently in the process of securing large bulk solar deals that will supply a significant percentage of the current electricity demand for municipal operations with in-state, utility-scale solar. Portland has entered a renewable energy consortium through which it will procure 20 million kilowatt-hours per year—66% of the municipal load—from new solar farms within the state. South Portland is expanding its solar capacity within the city by 4.7 million kilowatt-hours per year through solar developments

on the City’s capped landfill and on the roof of the Community Center, at which point, 65% of South Portland’s electricity load will be supplied by solar. South Portland is further pursuing a 1.3 million kilowatt-hour off-site solar project in the coming year to meet 80% of the City’s electricity load in total. The remainder of the load could be met with a subsequent power purchase agreement, potentially for onshore or offshore wind. The Cities will evaluate additional renewable energy needs, incorporating forecasts for energy efficiency improvements, and will engage in subsequent contracts by 2028 to meet the remainder of future demand.

Our next steps

- Complete development of on-site renewable projects at the City’s landfill and Community Center (South Portland).
- Evaluate additional renewable energy needs, after forecasting efficiency improvements, and by 2028 develop additional projects or agreements to meet the remainder of future municipal demand.

BE 1.1 Summary - Renewable Municipal Electricity



BE 1.2 Net-Zero Energy New City Buildings

ACTION: Pursue net-zero energy (NZE) buildings for new city government buildings through performance-based procurement.

Where we are today

A net-zero energy (NZE) building is a highly energy-efficient building where 100% of the site energy use is met with renewable energy in net over the course of a year, either completely from on-site or a combination of on-site and off-site renewable energy. Most NZE buildings are all-electric (though some supplement with renewable thermal resources), as most NZE certifications do not allow any fuel combustion on site. Designers of NZE buildings should maximize the energy efficiency potential and on-site solar generation potential of the building before supplementing with off-site renewable energy. Studies have found that net-zero energy buildings can be delivered in a cost-effective manner, with first cost premiums for commercial NZE buildings ranging from 0% to 7%, but generally with positive net present values. High-profile real-world examples of “what is possible” help rapidly advance sector-wide change. The current Green Building Code in Portland requires new municipal buildings to be built to LEED Silver standards; no similar requirements exist in South Portland. Encouraging the development of NZE new municipal buildings through procurement will both support the decarbonization of city buildings and serve as a precedent to other building projects in Portland and South Portland.

The action we will take

To promote cost-effective net-zero energy and other progressive performance targets, the Cities will use a performance-based procurement (PBP) methodology for new

Performance-based procurement has shown success in allowing governments to achieve the highest level of feasible building performance without increasing costs.

city buildings or substantial retrofits. The PBP methodology has shown success in allowing governments to achieve the highest level of feasible building performance without increasing costs. A summary of the approach follows; for more, see the U.S. Department of Energy’s “How-To Guide for Energy-Performance-Based Procurement.”²²

In a performance-based procurement approach, the city issues a request for proposals (RFP) stating the maximum budget and specific environmental performance goals for the project. Bidders’ responses detail what level of environmental performance their team can achieve within the stated budget. While performance-based procurement allows a city to set minimum environmental performance targets for projects, there is also the opportunity to encourage incrementally higher performance by articulating tiers of performance in the RFP.

Tier 1: “Mission Critical” outlines performance targets that are required in all basic responses to the RFP.

Tier 2: “Highly Desirable” outlines performance targets that represent a more ambitious level of performance overall;

This level would be for achieving energy performance levels substantially above code, or net-zero-energy-ready.

Tier 3: “If Possible” outlines performance targets that are considered “best in class” and that could be pursued when project parameters and budget allow; this tier would be for net-zero energy.

The benefits of this approach include that the process:

- Guarantees a minimum standard environmental performance;
- Lowers the city’s risk by bestowing the contractual responsibility for performance on the design team;
- Encourages innovation and creativity;
- Reduces design and construction costs; and
- Results in higher-performance buildings than a conventional procurement process.

One deficiency of this method is that it may be more challenging to adapt to community feedback, especially for the first such projects. Therefore, the approach may be best piloted in a new development area where there is community support for the required flexibility. The Cities may choose to also include sector-specific standards, such as Collaborative for High Performance Schools (CHPS) standards for K-12 educational facilities.

Our next steps

- ☐ Use performance-based procurement, targeting NZE, for the next appropriate city-owned building.
- ☐ By 2026, aim for new city buildings to be built NZE-ready.

BE 1.2 Summary - Net-Zero Energy New City Buildings



BE 1.3 Energy Efficiency Retrofits for City Buildings

ACTION: Develop a strategic energy management plan (SEMP) for all city facilities and lead by example by pursuing deep energy retrofits and electrification for large existing city buildings.

Where we are today

The Cities of Portland and South Portland track the energy consumption of government buildings and disclose this data as part of the Cities’ benchmarking laws (discussed more in action BE 3.1). This data can be used to identify buildings most in need of energy retrofits. Because cities have large, diverse portfolios, with buildings changing uses, the process of tracking energy usage will require a regular quality control review. A dashboard of public building energy usage data can also help increase transparency and help building owners in the private sector see the value of energy data. However, while benchmarking helps to identify the worst-performing buildings and to target retrofits, it does not tell us what needs to be done to improve those buildings. For an individual building, the next step is often conducting an energy audit that meets a common standard, such as an ASHRAE Level II audit. However, these audits can be expensive, and their findings cease to be relevant if not acted upon within a few years. Therefore, for large portfolio owners like cities, conducting audits of every building can not only be expensive but can produce more data than the portfolio owner is capable of acting on within a timely period. Rather, what is needed is a strategic energy management plan (SEMP) for each city’s building portfolio, along with targeted audits.

Strategic energy management (SEM) is a focused, long-term approach to reducing energy use through efficiency and conservation. SEM can also involve complementary steps to reduce costs and greenhouse gas emissions, with a focus on continuous improvement and ongoing re-evaluation to ensure

retrofit projects are performing as designed. As outlined by the U.S. Department of Energy, “A successful strategic energy management plan builds long-term relationships with energy users and targets persistent energy savings. The benefit of effective planning ensures continuous improvement of energy efficiency and increases the property value of buildings. For public buildings, strategic energy management reduces costs across many end uses, institutionalizes practices to sustain long-term savings, and can serve as a model for the private sector.”³ These programs originally focused on industrial customers, but are now increasingly targeting commercial and institutional facilities.

A strategic energy management plan (SEMP) also helps to establish the level of investment needed to allow public buildings to lead by example. SEMP’s should target deep energy retrofits over shallower measures wherever possible. A deep energy retrofit is a building-specific, whole-building analysis designed to identify points in the building lifecycle where investments in energy efficiency can achieve the highest return. They involve bigger measures, such as replacing all windows to reduce heating and cooling loads—which in turn can allow a switch to building equipment that requires less energy. A deep energy retrofit may occur over a few years, and will require a more significant financial commitment than conventional energy retrofits. The energy savings created with a deep energy retrofit can be greater than 40%.

The action we will take

The Cities will build on their benchmarking program by contracting for the development of a SEMP for municipal facilities, built on the ISO 50001 standard for continuous energy improvement. Each city's SEMP will establish an ongoing approach to persistently identifying, assessing, prioritizing, and implementing energy and greenhouse gas reduction measures. It will specify guiding policies, clarify roles and responsibilities, codify the methods used to evaluate potential opportunities, and identify and begin to resolve any organizational barriers. Most importantly, the SEMP will lay out a path to pursue deep energy retrofits of city buildings, as well as a comprehensive plan for transitioning all non-industrial municipal and school buildings to air-source or ground-source heat pumps or other zero-carbon or low-carbon heating technologies.

In the next few years, we will target buildings for whole-building retrofits that aim to reduce building site energy use by an average of 30% or more. Retrofits will also focus on beneficial electrification through air-source and ground-source heat pumps, which will reduce the municipal carbon footprint and enable our procurement of renewable power to serve ever larger portions of our total energy needs.

As the Cities gain experience in operating net-zero energy (NZE) new buildings, we will begin to target NZE retrofits of existing buildings—with the goal that all retrofits undertaken by 2030 and thereafter be NZE retrofits. By 2050, all government office buildings, city schools, and public libraries will have been retrofitted to be NZE buildings, and all other municipal buildings will have been retrofitted to the highest levels of efficiency appropriate for their use. Portland and South Portland will also complete the transition of all streetlights and traffic lights to LEDs.

Our next steps

- ☐ Set up an energy management platform, and institute an annual quality control review of all energy, water, and space use data for public buildings being benchmarked in Portfolio Manager.
- ☐ By 2025, both Portland and South Portland will commission strategic energy management plans for all municipal facilities, including public schools as appropriate.
- ☐ By 2026, begin deep energy retrofits of municipal buildings, with a focus on beneficial electrification.

BE 1.3 Summary - Energy Efficiency Retrofits for City Buildings



BE 1.4 Internal Carbon Pricing for Municipal Construction and Operations

ACTION: Create either a shadow carbon price for evaluating all city decisions, and/or an internal carbon charge paid to a central climate emergency fund.

Where we are today

Incorporating the true environmental costs of carbon emissions into decisions is an essential part of combating climate change. In lieu of a carbon tax, municipalities, institutions, and organizations have two main methods they can use to internalize this cost into their own operations:

The first option is a “shadow carbon price” policy that adds an additional charge for carbon emissions into any financial cost-benefit analysis. No actual money is collected or paid, but the institution thus makes decisions as if it had to pay that carbon charge. This can change the calculus on investments and construction projects, and increase the modeled benefit of zero-carbon or low-carbon technologies. A shadow carbon price is most effective when applied consistently.

The second option is a “carbon charge,” which is a fee charged internally to all organizational departments based on their energy use and carbon emissions. This is a model being experimented with in numerous institutions, and thus there are various approaches to implementing a carbon charge. The fee may be based on the emissions intensity of the buildings, based on the year-over-year change in emissions, or based on each building or organizational unit’s performance relative to an appropriate benchmark. The carbon charge also may or may not be revenue-neutral by design. In a revenue-neutral model, the charge is rebated back in proportion to the degree to which the building/department reduced its emissions relative to the institution as a whole, or it may be rebated in full with a requirement it be spent on energy efficiency. In other

models, the revenues collected by the charge can be used to fund energy or sustainability programs and staff, or put into a revolving fund for energy efficiency investments.

In 2016, the U.S. Environmental Protection Agency (EPA) calculated the social cost of carbon at between \$46 to \$138 per ton, depending on assumptions for climate impacts and the discounting of future costs.⁴ Several leading colleges and universities in New England and the mid-Atlantic are currently using carbon charges and shadow carbon prices of \$100 or more per ton.⁵

The action we will take

Portland and South Portland will evaluate the appropriate level for an internal carbon charge and/or shadow carbon price. A shadow carbon price will help guide investments, and will be implemented as soon as feasible. An internal carbon charge would also be beneficial, but needs further evaluation to determine its organizational, financial, and legal feasibilities. In setting an internal price on carbon, the Cities will consider the following:

- The best estimates of the social and environmental damages associated with one metric ton of CO₂e (carbon dioxide equivalent) emissions;
- The best estimates for the price that would be necessary to align the global economy with a 1.5-degree or 2-degree global warming scenario;
- The carbon prices that are used by other cities and institutions;

- d. The cost that would be necessary to help the Cities meet their 2040 municipal carbon neutrality commitment;
- e. A consistent methodology for allocating the charge across departments or buildings;
- f. A consistent and effective methodology for internal assessment for collecting the charge; and
- g. Whether the charge should be rebated back to incentivize savings, or whether the revenues should be used directly to fund efficiency improvements and emissions reductions.

The Cities also recognize the value in implementing a statewide carbon price to more fully account for the social and environmental costs associated with carbon emissions. We will work with the Maine Climate Council to support the development of a statewide carbon price, as discussed in action BE 5.7.



PORTLAND CITY HALL • Photo by Alexius Horatius

Our next steps

- ☐ Determine appropriate levels for a carbon charge and/or shadow carbon price.
- ☐ Implement shadow carbon price and/or carbon charge for municipal operations by 2026.

BE 1.4 Summary - Internal Carbon Pricing

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — if implement internal carbon charge	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability (c) Adapts processes
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	Municipal shadow carbon price or carbon charge implemented by 2026	P: Sustainability Office & Finance Department SP: Sustainability Office & Finance Department	N/A

BE 2

New Construction Energy Efficiency and Decarbonization

VIEW FROM FORT SUMNER PARK • Photo by Ian Johnson

BE 2.1 Energy Stretch Code

ACTION: Advocate for an advanced energy stretch code with an optional net-zero energy compliance path, and adopt the stretch code once finalized. Advocate for the stretch code to require net-zero energy buildings by 2030.

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Where we are today

Building codes are the single most powerful tool that states and cities have at their disposal to require higher levels of performance from new buildings. In general, codes tend to increase in stringency using small percentage improvements that occur at regular intervals. For example, many cities and states across the country have adopted ASHRAE Standard 90.1 building standard as a basis for their energy codes, and ASHRAE also created ASHRAE Standard 189.1-2014, which supplements 90.1 with a higher performance green building standard. Provisions in this code offer an excellent resource for more aggressive energy improvements. Most energy codes offer both a prescriptive path, where certain specific measures

are required, and a performance path, where an energy model is used to demonstrate that the building can achieve a certain required level of performance. Good code enforcement and strong performance requirements are essential to ensuring the intentions of the code are met.

Energy codes are usually mandated by state code boards. In some states, the state allows local governments to develop and adopt their own codes, or the state develops a second, more stringent energy code, and allows local governments the option to use and enforce either the base state code or this alternate code. This latter approach is called a “stretch code,” and has

found great success in Massachusetts over the past decade. As of November 14, 2019, 278 Massachusetts municipalities, comprising over 85% of the state's population, have adopted the stretch code.

Since 2010, Maine has continued to use the 2009 International Energy Conservation Code (IECC 2009) and ASHRAE 90.1-2007. In 2019, the state legislature adopted LD 1543 requiring the state to update the Maine Uniform Building and Energy Code (MUBEC) to the latest 90.1 and IECC energy codes, and to develop a stretch code.

Recent developments demonstrate that efficiency and affordability are not at odds. High performance and more efficient building designs demonstrably reduce energy usage and operating costs. In 2016, Avesta Housing completed the development of Bayside Anchor. This 45-unit property designed to Passive House standards is approximately 61% more efficient and costs 39% less to operate than a code compliant development created by Avesta Housing the same year.⁶ These savings more than offset the initial capital investment. Such projects, now becoming more common in Maine, demonstrate that a stretch code with strong performance requirements can have significant implications for the long-term resilience and affordability of our built infrastructure.

The action we will take

Portland and South Portland will adopt Maine's Energy Stretch Code when it is released. The Cities have been active in supporting the stretch code legislation with the state legislature and in supporting the development of the stretch code. We will continue our advocacy to ensure that the code creates a pathway to net-zero energy (NZE) buildings.

While energy codes have achieved significant reductions in building energy use over the past 30 years, the stepwise improvements of a few percentage points each cycle will not be enough to achieve our One Climate Future goals. To achieve those goals, the code must move aggressively to higher performance, and eventually to NZE performance. While it is premature to require NZE levels of performance today, the State and Cities can build a foundation for net-zero performance within the next decade.

We will continue our advocacy to ensure that the stretch code creates a pathway to net-zero energy (NZE) buildings.

Leading jurisdictions have begun to put NZE requirements into codes as an optional path. For example, the District of Columbia's new 2020 energy code includes an "Appendix Z," the first voluntary, performance-based code compliance pathway for buildings in North America. The Appendix establishes minimum building performance requirements for overall energy use intensity, thermal energy performance, and airtightness. To achieve NZE performance, a building must be made as energy efficient as possible before specifying the renewable energy equipment that would supply the building's energy. The Appendix also outlines requirements concerning the appropriate type of renewable energy generation, as well as specific stipulations for energy metering and building commissioning. Including this optional path in the stretch code moves NZE from generalities to code-specific language, and provides contractors a line in the sand for targeting future performance. It is also important that the next stretch code, and future stretch codes, begin to incrementally move buildings towards NZE. The stretch code should be updated every three years. The Cities will advocate for the following recommendations in future code cycles.

For commercial buildings, the next stretch code should:

- Adopt ASHRAE Standard 90.1-2019 and chapter seven of ASHRAE 189.1;
- Adopt a commercial air leakage performance testing requirement;
- Include sub-metering of major systems, including plug loads (pending feasibility and value analysis).

For residential buildings, the next stretch code should:

- Adopt a requirement for the use of cold-climate heat pumps as the primary heating source in any residential buildings using electric heating above 2 kW of installed capacity;
- Offer alternative compliance paths for third-party standard pathways, such as the U.S. Green Building Council LEED for Homes certification, Enterprise Community Partners Green Communities certification, Passive House Institute U.S.



Community Spotlight

Bayside Anchor

In 2015 the Portland Housing Authority (PHA) completed its Strategic Vision Plan for all of its 1,000 units of public housing. As a part of this plan, PHA identified various sites in Portland with under-utilized land and parking lots that could serve as creative solutions to meeting the need for more affordable housing in southern Maine. On one of these parking lots, a unique partnership between Avesta Housing and PHA led to the creation of Bayside Anchor. Bayside Anchor now stands as a catalyst for future redevelopment through the re-imagining of hundreds of units of public housing in East Bayside.

Bayside Anchor is now a service hub for low-income residents in East Bayside, giving the project its name as a stabilizing “anchor” for the community. PHA’s local property management offices were relocated to the first floor, along with a Headstart pre-school, and the East Bayside Community Policing Office. Bayside Anchor successfully increased the availability of affordable housing while fostering community connections in an innovative, multi-use building.

In addition to providing resilience benefits, Bayside Anchor was built to Passive House standards and received PHIUS+ certification. Combining the very low cost target with the ambitious goal of Passive House certification drove the development team to conduct a rigorous management process that dove deep into building design and engineering details. Through this process, the development team achieved a very low construction cost of \$149 per square foot, achieving the maximum affordability points under the State of Maine scoring system. The success of Bayside Anchor demonstrates that we don’t have to pay a premium to construct safe, energy efficient buildings. The project sets a gold standard for the future growth of Portland and South Portland that is both affordable and high-performing.

INSIDE BAYSIDE ANCHOR • Photo by Jeff Stevenson

(PHIUS) Passive House certification, and the International Living Future (ILFI) Living Building Challenge; and,

- Mandate air performance sealing and strong envelope requirements.

Specific prescriptive minimums for the commercial code could include:

- Strong insulation: R-40 walls, R-60 roof
- Minimum windows: $U = 0.22$
- Minimum air leakage rate: 1.0 ACH at 50 pascals
- Ventilation: Rate and locations per ASHRAE using heat recovery and dedicated outdoor air systems, solar electric pre-heat
- Lighting density: 0.3 W per square foot
- A minimum level of daylighting for all occupied spaces
- Occupant and operator energy monitoring system and reduction strategy
- Minimum appliance standard: Best in class ENERGY STAR®

The stretch code should also mandate solar and electric vehicle readiness; these are discussed in action BE 2.2.

Where existing land development ordinances prescribe strict performance standards, bulk/massing standards, and design guidelines may impair the ability of a development project to meet energy performance goals, the Cities will

provide flexibility through a Green Development Flexibility Ordinance. Allowances or concessions will be made based on demonstrated achievement of energy use reduction and high performance building improvements. The Cities may explore establishing a voluntary offset fund and/or carbon impact fee as alternative approaches to meeting energy performance goals.

A Green Development Flexibility Ordinance will apply to all development undergoing site plan review, requesting conditional uses or special use permits, or participating in tax increment financing (TIF). Affordable housing projects will be exempt if the applicants can demonstrate that the energy performance requirements undermine the ability of the project to provide the affordable housing, but affordable housing projects will be incentivized to comply with the standard by offering concessions and waivers to development standards that may allow for cost offsets for the green building requirements. New development not subject to site plan review may also opt-in to the Green Development Flexibility Policy.

Additionally, the prevalence of mass timber construction is growing across the United States and Canada. Mass timber is the use of solid and engineered wood for structural support (as opposed to stick-frame construction). Solid and engineered woods can provide structural support in buildings similar to concrete. However, while concrete is extremely carbon-intensive, mass timber actually sequesters carbon. It is also beautiful, and because of its heavy mass, fire-resistant. Given

the importance of the forestry industry in Maine, Maine could become a leader in mass timber, which would not only help sequester carbon, but support the local economy. The Maine Mass Timber Commercialization Center at the University of Maine Orono is one of multiple entities working to advance mass timber manufacturing in Maine. Support for mass timber is growing, and tall wood buildings using mass timber will be allowed in the 2021 International Building Code. The Cities will advocate for the adoption of IBC 2021 for the state building code once finalized, with particular focus on the permitting of mass timber construction.

Our next steps

- ☐ Advocate for best-in-class prescriptive requirements and an NZE code path in the next feasible code cycle.
- ☐ Convene representatives from the development community, affordable housing community, and other relevant stakeholders to develop Green Development Flexibility Ordinance.
- ☐ Adopt the energy stretch code, when finalized, and the Green Development Flexibility Ordinance.
- ☐ Conduct a review of zoning codes to identify and address any conflicts with the energy code, such as solar setback requirements.
- ☐ Advocate for the adoption of the IBC 2021 for the state building code once finalized, with particular focus in the permitting of mass timber construction.

BE 2.1 Summary - Energy Stretch Code

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability
	KEY MILESTONES - Energy stretch code adopted immediately upon finalization - All new buildings to be net-zero energy starting in 2030	CITY STEWARD P: Sustainability Office; Planning Department; Code Enforcement SP: Sustainability Office; Planning Department; Code Enforcement	FINANCING MECHANISMS Codes are generally designed to be cost effective; city resources for stretch code adoption could be supported through same methods as code enforcement

BE 2

BE 2.2 Solar-Ready and EV-Ready Code Requirements

ACTION: Adopt or advocate for solar-ready and EV-ready requirements for new construction, followed by renewable energy generation building code requirements.

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Where we are today

In 2019, the Maine State Legislature adopted legislation requiring the state to update the building energy code to ASHRAE Standard 90.1-2016 / IECC 2016, and to develop a stretch code (see action BE 2.1 for further details). This stretch code would allow cities to adopt a more stringent energy code for new construction, and could also be expanded to include renewable energy or “renewable energy-ready” requirements. A renewable energy-ready building is one that is designed to accommodate a renewable energy installation (such as solar) at some point in the future. Not all buildings can accommodate renewable energy due to siting and sizing of mission-critical needs. The National Renewable Energy Laboratory has produced guidelines on what solar readiness means in practice.⁷

Renewable energy-ready buildings offer greater opportunity and flexibility in achieving One Climate Future targets, and would also support grid resilience objectives. A requirement to install renewable energy systems on new buildings and existing buildings undergoing deep energy retrofits will also directly support ongoing efforts to study and realize neighborhood-scale energy systems (e.g. microgrids) and net-zero or net-positive buildings. For context, the State of California has already instituted requirements for new single-family homes to have solar power. However, given the costs of solar, solar-ready requirements will be an easier first step. In the commercial sector, building owners tend to purchase solar as a power purchase agreement (PPA) instead of directly owning

the panels, and therefore solar-ready requirements will likely remain appropriate until the stretch code is a net-zero energy code.

The action we will take

Portland and South Portland will advocate for the new stretch code, either in this code cycle or the next, to include requirements for buildings to be solar-ready and electric-vehicle-ready (EV-ready). Putting these requirements in the code, instead of in separate legislation, simplifies both implementation and compliance. An EV-ready building is a building with electrical conduits laid in all parking spaces to support charging stations in the future, as well as Level 2 chargers in a certain percentage (e.g. 10% or 20%) of the spaces (see action TLU 2.1 for further details).

When it comes to moving from a solar-ready requirement to a solar requirement, it may not be feasible to set a specific, universal percentage of energy that must come from on-site solar. Most large office and multifamily buildings can typically only generate a couple percentage points of their total energy use from on-site solar, absent deep energy retrofits. Conversely, a one-story warehouse might easily be able to get 25% or 50% of its energy from on-site solar, and a net-zero energy single family home should be able to get most of its energy from on-site solar. While emphasizing solar deployment, it is also essential to recognize the potential limitations of a building-

by-building approach. The most well-intentioned owner, combined with the most progressive building code, will still fail to realize a new building’s potential for solar if the new power supply cannot be integrated with the local distribution system. We recognize that solving this problem requires action beyond the scale of the building—either at a neighborhood-scale (see action BE 3.5) or grid scale (see actions BE 5.3 and BE 5.4).

Our next steps

- ☐ Advocate for solar-ready and EV-ready requirements in the next energy stretch code, and future base energy codes thereafter.
- ☐ In the cycle thereafter, transition new single-family homes to having an on-site solar requirement.
- ☐ Conduct a review of existing City codes to ensure there are no conflicts (see BE 2.1).



ELECTRIC VEHICLE CHARGING WITH SOLAR POWER • Photo by ReVision Energy

BE 2.2 Summary - Solar-Ready and EV-Ready Code Requirements

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d
	KEY MILESTONES - EV-ready / solar-ready requirements to be implemented by 2028 - On-site solar requirements to be implemented by 2032	CITY STEWARD P: Sustainability Office & Planning Department SP: Sustainability Office & Planning Department	FINANCING MECHANISMS Solar-readiness can be implemented with no added cost; EV-readiness can be supported with Efficiency Maine incentives / VW settlement funds; <i>Future: federal funding</i>

BE 2.3 Code Enforcement

ACTION: Ensure code compliance in all buildings through increased investment in robust code enforcement.

Where we are today

Even though states and cities across the nation are adopting increasingly stringent energy and green codes, overall code compliance rates remain low. This is often the result of a combination of factors such as insufficient financial investment in the energy code enforcement program, lack of trained staff dedicated solely to energy and green code enforcement, lack of political support for tough enforcement, and a local building industry that has not yet caught up to speed or been well-educated on the new, more complex codes. In Maine, while the building codes and energy codes are set by the state, enforcement remains a local government responsibility.

The action we will take

Portland and South Portland will invest additional resources in code enforcement. Enforcement of energy codes by dedicated and resourced staff is associated not only with improved compliance, but also energy-related cost savings. As the code advances, it becomes increasingly important that staff have the technical knowledge and tools to provide sufficient oversight of compliance, correctly evaluate a project's energy performance, and advise applicants on operational elements of efficient design. Buildings following the performance path must submit an energy model, but in cities without sufficient staff capability, these models can often go unreviewed. Each City would benefit from having at least one full-time staff member with expertise in reviewing energy models for effective quality control.⁸

ASHRAE Building Energy Modeling Professional (BEMP) and AEE's Building Energy Simulation Analyst (BESA) professional certification are two credentials that recognize individuals with expertise and experience in building energy simulation software.

Additionally, the Cities will explore third party code enforcement as a complimentary approach. In this model, a private sector company verifies compliance with building codes on behalf of the government regulatory agency. Third party code enforcement is a particularly good fit for large commercial projects, and has been critical to bringing compliance rates up in other jurisdictions. For example, in the District of Columbia, the third-party code enforcement program helped achieve a weighted commercial code compliance rate of 99%. The Institute for Market Transformation (IMT), in their report "Third Party Building Code Enforcement," reports that a third-party program would be more cost-effective for small or medium-size jurisdictions with populations under 100,000,⁹ suggesting that Portland and South Portland would be good fits for a third-party program.

Funding for either a code enforcement officer or for third-party verification can be generated through a surcharge on development fees. The Cities will also advocate for state or Efficiency Maine funding, as energy code compliance will be critical for the State to also reach its climate goals.

Our next steps

- ☐ By 2026, identify funding to hire at least one staff member or third-party consultant in each City with the qualifications to critically review energy models, and to purchase appropriate software licenses.
- ☐ Investigate launching a third-party code enforcement program for commercial projects.



OVERLOOKING SPRING STREET • Photo by Corey Templeton

BE 2.3 Summary - Code Enforcement

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — against substandard housing	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability (c) Adapts processes
	KEY MILESTONES At least one staff person or consultant hired to review energy models by 2026	CITY STEWARD P: Permitting and Inspections SP: Code Enforcement	FINANCING MECHANISMS Developer impact fees, special assessments, general fund, fine revenue, utility funding (through Efficiency Maine or utility cost recovery with EERS)

BE 2.4 Leadership and Education

ACTION: Partner with organizations in the building sector to develop and promote platforms for education and leadership in high-performance buildings.

Where we are today

In other jurisdictions that have seen success in the proliferation of high-performance building design, a strategy for education and leadership promotion has been an essential element. The transformation that is needed in the built environment cannot be forced solely by regulation or driven by incentives—there must be private sector demand as well. While the exact set of strategies vary by city, the following are a selection of methods that have proven successful in building a “virtuous cycle” for continued improvement in the built environment.

The action we will take

Portland and South Portland will partner with organizations in the building sector to develop and/or promote platforms for education and leadership in high performance buildings, including net-zero energy and passive house buildings; building materials and practices that reduce embodied carbon; and land use planning. Options that will be explored include:

- **Educational series.** An educational series can cover a set of different topics related to high performance buildings for different audiences. As cost can be a barrier to entry for such courses, we will explore options to underwrite the course and/or ensure basic provider costs are met to improve attendance and popularity. The goal of these educational series will be largely to support a transition from conventional building techniques and usher in a larger market transformation towards sustainable design principles. Potential topics could include energy benchmarking, improved building operations,

basics of net-zero energy buildings, net-zero energy case studies, mass timber buildings, life cycle assessments and embodied carbon, next generation technologies, and maximizing passive and active energy opportunities.

- **Annual conference.** An annual conference for southern Maine on energy efficiency, renewable energy, and net-zero energy building can serve to unite the industry, spread knowledge, build excitement, and facilitate new connections. We will seek to partner with, encourage, or support a local/regional organization with interest and capacity to launch a regular conference that has experience in developing educational materials on building energy management and operations.

- **High-performance building media, outreach, and communications strategy.** We will explore ways to create a “narrative of success” in addressing climate change and fossil fuel independence in the building sector as a core element of our media and outreach on the topic. Demand for high-performance buildings can increase as the principles and benefits become well-known and better understood. Individual homeowners and office tenants will seek higher levels of efficiency in their homes and workplaces. The narrative would combine down-to-earth stories of what living/working in such a building is like, positive success stories of high-performance energy homes and offices, and information about available energy incentives and opportunities.



PRESENTATION BY PSA AT PORTLAND CITY HALL • Photo by Ashley Krulik

Community Spotlight

Portland Society for Architecture

Portland Society for Architecture (PSA) is a non-profit organization that encourages innovation and vision in the built environment of Greater Portland through education, advocacy, and engagement with community members, design professionals, and civic leaders.

PSA works with many stakeholders. Their diverse programming brings people together to talk about how place is shaped—whether through the signature *Complete City: Imagined* community charrettes and design competitions, the *Mechanics of the Built Environment* series that brings together practitioners and policy makers, a high school curriculum linking math and architectural and urban design, construction site tours, or PSA's annual Beaux Arts Ball.

PSA helps empower people to advocate on issues related to the built environment: zoning, streets and transportation, urban in-fill, neighborhoods, and climate change. One Climate Future has provided concrete data to help them re-imagine what our built environment should look like in the future—from energy consumption to protective measures against sea-level rise. PSA will continue to use this data—whether with policy makers, designers and contractors, students, or the public—and will continue to produce programming that embodies sustainable, responsible, and creative growth.

- **Energy leadership groups.** We will partner with leading firms and organizations in the building sector to launch energy leadership groups made up of prominent and forward-thinking design and construction industry members. Pulling local leaders together, recognizing their contributions, and uniting them around a common understanding and strategy could greatly accelerate forward movement on energy efficiency and renewable energy. This group will also help educate peers, and support the development and implementation of the energy stretch code.

- **Mayor's One Climate Future Awards for Climate Leadership.** These awards would recognize individuals, companies, organizations, and buildings that are contributing to achieving One Climate Future goals and a zero-carbon future across One Climate Future's four focus areas. At least one award each year would go to a high-performance new or existing building. Energy benchmarking data can be used to identify and highlight best-in-class energy performers.

- **Contractor training and realignment.** The Cities will identify ways to partner with HVAC and envelope/siding subcontracting unions and trade associations to prepare for a

transition to heat-pump-based systems and high-performance envelopes. To do so, we will partner with educational and career development organizations to support the creation of a job skills program focused on next generation building technologies. These efforts can connect to the existing economic initiatives in creating stronger workforce pipelines to connect residents with the skills they need for well-paying, sustainable jobs that help our cities address climate change (see action CR 3.2 for further details).

- Community charrettes.** Design charrettes bring together community members, stakeholders, and decision-makers to co-develop solutions for the build environment. By embedding community members into the design process, charrettes create a non-traditional format for collaborative planning and policy work. The Cities will partner with a facilitator to hold design charrettes that engage the public in site design and land use planning initiatives focused on decarbonization of the built environment and energy systems.

Our next steps:

- ☐ Identify organizations and groups in the building sector who may champion one or more of these platforms; develop partnerships and funding streams to support one or more of these initiatives.
- ☐ Establish the Mayor’s One Climate Future Awards for Climate Leadership.

BE 2.4 Summary - Leadership and Education





BE 3

Existing Buildings Energy Efficiency and Decarbonization

SOLAR ON THE FORE STREET GARAGE • Photo by ReVision Energy

BE 3.1 Energy Benchmarking

ACTION: Expand Portland and South Portland’s energy benchmarking programs, and couple with outreach programs to turn energy savings opportunities into action.

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Where we are today

Energy benchmarking is a procedure where buildings measure their energy use in order to see whether they use more or less energy than peer buildings of a similar size, occupancy, and climate. Energy use is measured in energy use intensity (EUI) or the amount of energy used per square foot. Portland and South Portland both have benchmarking laws that require large buildings to annually measure their energy performance in ENERGY STAR Portfolio Manager and report it to the Cities for public disclosure. ENERGY STAR Portfolio Manager is a free, online software tool provided by the U.S. Environmental Protection Agency (EPA) that allows building

owners to calculate an ENERGY STAR score to “benchmark” their building’s energy use against its peers and its own past performance. The ENERGY STAR score is a 1-100 score that allows fair evaluation of a building’s performance, accounting for weather and use factors.

In November 2016, the Portland City Council adopted Order 67 16/17. The Order requires municipal buildings greater than 5,000 square feet, non-residential buildings greater than 20,000 square feet, and multifamily properties with at least 50 residential units to participate in a benchmarking



MILL CREEK • Photo by City of South Portland

and transparency program. Municipal buildings are already benchmarking, and implementation will expand to owners of buildings with at least 20,000 square feet of single-tenant floor space in 2020. Implementation for multi-tenant commercial and multifamily buildings is currently on hold, awaiting cooperation from the utility companies to provide whole building data. Whole building aggregated data access is an important prerequisite to the implementation, and is discussed further in action BE 5.2.

In January 2017, South Portland adopted its Energy and Water Use Performance Benchmarking ordinance, which introduced benchmarking to sections of South Portland. South

Portland's ordinance only applies to municipal, commercial, and multifamily buildings in the Mill Creek area of South Portland (including the Village Extension, Broadway Corridor, and Mill Creek Core zoning districts). Non-residential buildings over 5,000 square feet and residential buildings with over 10 units have to comply. Because of the limited geographic scope of the law, South Portland has been able to collect data, but is also limited in the ability to require whole-building data from multi-tenant buildings.

Over twenty cities in the United States have adopted similar laws requiring benchmarking using Portfolio Manager. Coupled with effective outreach to turn the identification of savings opportunities into action, benchmarking laws can yield actual savings; findings around the country range from 7% to 14% over a 5-year period.

The action we will take

Portland and South Portland will expand the reach and effectiveness of their benchmarking programs through overcoming limitations in data access, expanding the program citywide (South Portland) and to smaller buildings (Portland), and coupling the benchmarking ordinances with outreach programs to turn energy savings opportunities into action. The first step to successful use of the benchmarking laws will be full implementation of the laws currently on the books. This requires that the utility companies provide building owners with aggregated whole-building data for multi-tenant buildings, provided via direct upload to ENERGY STAR Portfolio Manager. This is discussed further in action BE 5.2.

Once the current laws are successfully implemented with compliance rates above 80%, the Cities will look to expanding the laws. For Portland, the law will be expanded to apply to residential buildings with 20 or more units (this is the level of coverage of several other successful benchmarking laws, and is the lower limit for the ENERGY STAR score for multifamily buildings). South Portland will first adjust the size and scope of buildings covered in the pilot program, and then expand the current law to cover buildings across the whole city.

To ensure the benchmarking data is being put to good use, the Cities will build out an outreach and training program to turn the energy savings opportunities identified by benchmarking into action. New York City’s Retrofit Accelerator program serves as an example of this approach. It offers building owners and operators free, independent, and building-specific technical assistance and advice on energy and water efficiency. The program targets buildings with high savings potential, via a combination of public and non-public datasets collected under Local Law 84 (for energy and water benchmarking) and Local Law 87 (for energy audits and retrocommissioning).

The Cities would staff or contract for a retrofit accelerator program that pairs Portfolio Manager and energy efficiency training with targeted energy efficiency consulting at the “walkthrough” level. Efficiency Maine may be able to support the accelerator and/or support building owners with forgivable loans for energy audits. The Cities will also explore foundation funding to support the initiative.

Our next steps

- ☐ Work with the Maine Public Utilities Commission and utility companies to improve building energy data access.
- ☐ Update the existing benchmarking ordinance to be more in line with other cities with a 20,000 square foot reporting threshold (South Portland).
- ☐ Work to achieve 80% compliance in the pilot area, and then expand the geographic scope of the ordinance to apply citywide (South Portland).
- ☐ Work to achieve 80% compliance with existing covered properties, and then expand the building size scope of the ordinance to include smaller buildings (Portland).
- ☐ Develop a program to support buildings below the reporting threshold to achieve higher energy performance.

BE 3.1 Summary - Energy Benchmarking

How this strategy advances a future that is...			
Equitable	Regenerative	Resilient	
a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability	
PRIMARY COMPONENTS - Implement current benchmarking law. - Work with PUC/CMP to overcome limitations in data access. - Expand the program to citywide and/or to include smaller buildings. - Develop outreach and training program to encourage better energy performance in buildings outside reporting threshold.	KEY MILESTONES 80%+ compliance achieved within 2 years of utility data access challenges resolved (see BE 5.2), ideally by 2025	CITY STEWARD P: Sustainability Office SP: Sustainability Office	FINANCING MECHANISMS Utility cost recovery (investments in data access); Efficiency Maine funds and/or public/private grants (retrofit accelerator)

BE 3

BE 3.2 Building Performance Standards

ACTION: Incorporate tune-up or performance standards into the Cities’ benchmarking programs for large buildings to achieve carbon savings, and strengthen coordinated job-training programs to support building retrofits.

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Where we are today

Cities around the country are finding that energy benchmarking is an important first step for encouraging energy efficiency retrofits in large existing buildings (see action BE 3.1), but that benchmarking alone does not incite the deep energy efficiency improvements that are needed to reach greenhouse gas emissions reductions goals for existing buildings. To reach an 80% reduction in citywide emissions, and eventually carbon neutrality, more proactive performance policies are needed. Several different levels of “building performance standards” have been adopted around the country:

- **Austin, TX:** Requires energy efficiency rating and improvements for single family homes at point of sale;
- **Boston, MA:** Requires large buildings to undertake an energy audit, or achieve 15% savings every five years;
- **Los Angeles, CA:** Requires large buildings to either be ENERGY STAR Certified, reduce energy use by 15% every five years, or undertake an audit and retrocommissioning/ retrofit every five years;
- **Seattle, WA:** Requires building “tune-ups” for commercial buildings every five years. Building tune-ups involve assessment and implementation of operational and maintenance improvements to achieve energy and water efficiency, and can be thought of as a simpler form of retrocommissioning;
- **New York, NY:** Requires large buildings to meet greenhouse gas intensity requirements by 2030 and 2050. The 2030 targets will drive both energy efficiency improvements and phasing out of fuel oil use; the 2050

targets will likely require deep energy efficiency and electrification.

- **Washington, DC:** Requires buildings 10,000 square feet or larger to perform at or better than the median energy efficiency (ENERGY STAR score) for their building type, with the bar adjusted every five years. Buildings must meet the threshold, drop energy use by 20%, or undertake prescriptive measures comparable to a 20% reduction.

Coupling performance standards with the Cities’ benchmarking programs will encourage property owners to invest in retrofits that can both result in energy cost savings for building owners and accelerate decarbonization of existing buildings throughout our cities.

The action we will take

Portland and South Portland will assess options for adding a performance mandate to the Cities’ energy benchmarking programs within 3-5 years, after buildings have had several years to track their energy use. To support electrification and thermal decarbonization, these policies will be most effective if they are based on greenhouse gas emissions intensities instead of energy use. The standards will apply to all buildings covered under the building benchmarking programs, phased in over two to three years—starting with the largest buildings first. It is premature to identify specific greenhouse gas emissions reductions targets at this time, but the targets will be optimized to drive thermal decarbonization and cost-effective energy efficiency retrofits.

Building owners will be offered the opportunity to apply for an exemption under certain conditions or contribute to an offset fund explored under the Green Development Flexibility Ordinance (see action BE 2.1 for further details). These conditions may include buildings that are already achieving sufficient performance levels, buildings that hold certain certifications, or buildings that have recently undergone equivalent action to improve energy performance. (Under Seattle’s Building Tune-Up Program, exemplary performance options include the U.S. Green Building Council’s LEED Gold or Platinum O+M certifications and the International Living Future Institute’s Living Building, Petal, or Zero Energy certifications, among others, while equivalent action options include Active Monitoring and Continuous Commissioning, ASHRAE Level II Audit recommendations, and Substantial Alteration or New Construction, among others). The affordable housing sector will also be afforded additional flexibility.

Adopting performance targets will increase demand for building retrofits and a skilled workforce in construction trades. The Cities will work with partners—including colleges, technical schools, high schools, labor groups, career development organizations, and other partners—to advise and recommend opportunities for strengthening employment pipelines and job

training programs in building trades to help meet this need (see action BE 2.4 and CR 3.2 for further details). Programs could work with HVAC and envelope/siding subcontracting unions and trade associations to prepare for a transition to heat-pump-based systems, high-performance envelopes, and next-generation building technologies. A technical series on select technologies and approaches, including heat pumps, high-performance detailing, and air sealing performance testing led by a career development program could help build workforce capacity. Likewise, modern, energy-efficient commercial buildings require specialized knowledge to operate, and poor energy management can negate all the gains of high efficiency building systems. The Cities will work with schools, universities, labor groups, and other career training partners to advise and recommend opportunities to expand program options for Building Operator Training. A good example is the City University of New York Building Performance Lab, which offers Building Operator Certification (BOC).

Our next steps:

- ☐ Conduct a quantitative study and stakeholder process to identify appropriate greenhouse gas emissions standards, and adopt performance requirements for large existing buildings.

BE 3.2 Summary - Building Performance Standards



BE 3.3 Energy Efficiency Spending

ACTION: Expand statewide and local energy efficiency spending; advocate for changes in Efficiency Maine spending that remove barriers for fuel switching.

Where we are today

Maine currently spends \$33 million per year on energy efficiency—equivalent to 2.13% of retail sales. Energy savings in 2018 were equivalent to 0.87% of electric sales and 0.7% of residential gas sales. These levels are competitive nationally—in the top 10 for spending, and the 60th percentile for savings—but will likely need to be better in order to achieve energy and climate goals statewide, and to support electrification. Neighboring jurisdictions including Massachusetts and Vermont spend upwards of 5% of utility revenues on efficiency, and see energy savings in excess of 2-3% per year.

Efficiency Maine Trust is the primary administrator for statewide programs to improve energy use efficiency and reduce greenhouse gas emissions in homes and businesses throughout Maine. As currently structured, Efficiency Maine achieves these goals primarily through offering residents and businesses financial incentives to reduce the costs of high-efficiency building systems and appliances that help customers save electricity, natural gas, and other fuels.

The action we will take

Portland and South Portland will advocate for increases in Efficiency Maine funding, an expansion of eligible programs, and adjustments in how Efficiency Maine funding is earmarked. In particular, we will advocate for all Efficiency Maine Trust (EMT) revenue from electric and natural gas conservation charges to be targeted towards beneficial electrification and energy efficiency, behind-the meter, and storage programs

independent of fuel source to reduce overall electrical demand. It is important that the measures of tracking Efficiency Maine performance and evaluating savings be transitioned to fuel-neutral metrics. Separate efficiency targets for gas and electricity force investments in renewing gas infrastructure. Switching to a fuel neutral target, such as site energy consumption or greenhouse gas emissions would allow Efficiency Maine to count the savings associated with removing gas systems. Often utilities are disincentivized from fuel switching because it creates “negative savings” in electricity use. To counteract this, the state should explore allowing increased electricity use from electrification projects to not count against the energy savings, so long as the electric technology is best-in-class (such as an air source heat pump with a coefficient of performance of 3).

The Cities will also advocate for increased Efficiency Maine funding, which could occur in several ways:

- **Increasing conservation charges.** Conservation charges (also known as “system benefits charges”) are surcharges on residential and commercial bills that support conservation programs. These rates currently sit at 0.12 cents per kilowatt-hour, which is substantially below many other Northeast states. While the simplest method, this method also places the cost burden most directly on ratepayers. It is important that low income ratepayers be exempted from any system benefits charge increase.

It's important that fuel-neutral metrics are used to track Efficiency Maine's performance in order to better incentivize beneficial electrification.

• **Direct re-capitalization by the State.** Currently Efficiency Maine is seeking up to \$5 million to re-capitalize their revolving loan fund to support low-to-moderate income Mainers with efficiency projects. Governor Mills has proposed a state bond to re-capitalize the fund.

• **Energy Efficiency Resource Standard (EERS).** An EERS is a law requiring electricity and/or natural gas utilities to achieve specified levels of customer energy savings, either through direct investment in energy efficiency, or payments to a third-party that is subject to performance requirements and incentives. In Oregon, efficiency programs are administered by the Energy Trust of Oregon, a similar entity to Efficiency Maine.

The Energy Trust of Oregon receives a portion of its funding from a system benefits charge, but much of its funding comes directly from the utility companies, who provide funding to the trust based on a negotiated agreement as to the funding needed to achieve the EERS. Except for New Hampshire, all other New England states have an EERS. In drafting an EERS, it is important that it does not authorize the utilities to run their own efficiency programs, but instead directs funding to Efficiency Maine.

• **Elimination of the “opt-out” for industrial and large users.** Currently, large industrial customers are able to opt out of supporting Efficiency Maine, with no strict requirements for any comparable self-investment in efficiency. Elimination of this opt-out clause would increase funds, particularly for industrial energy efficiency programs. Alternatively, the State could allow industrial users to choose to opt-out on a case-by-case basis, instead of automatically, on the condition they operate their own self-directed efficiency program subject to oversight and guidance from Efficiency Maine or another state entity.¹⁰ See action BE 3.1 for more discussion on this issue and options for addressing it.

BE 3.3 Summary - Energy Efficiency Spending



• **Creation of a green bank.** To meet the long-term energy infrastructure needs, the State would benefit from the creation of a green bank or infrastructure bank. Green banks are typically public or quasi-public entities that leverage private sector capital to increase the overall level of investment in renewable, low-carbon energy. A green bank could supply a range of financial products, including credit enhancements, warehousing and securitization services, direct lending, underwriting support, and other technical expertise. This initiative could expand, enhance and supplement existing financing programs currently offered by Efficiency Maine, the Finance Authority of Maine, Coastal Enterprises Inc., and the Maine Technology Institute. For example, a green bank could offer forgivable loans for energy audits; the loan would pay the costs of the energy audit, and would convert to a grant if all the cost-effective measures recommended in the audit were installed.

Throughout the One Climate Future plan, there are multiple actions that will strongly benefit from, or require, support from Efficiency Maine, including:

- Offering a pay-for-performance (P4P) program to support complex whole-building programs that include operational improvements;
- Design assistance and financial incentives for net-zero energy new buildings (see BE 2.1 and BE 2.3);

- Establishing a retrofit accelerator or similar outreach program that is targeted at encouraging buildings submitting benchmarking data or other performance data to undertake simple retrofits (see BE 3.1);
- Supporting the uptake of cold-climate air source heat pumps (see BE 3.4);
- Supporting a bulk buy program for heat pumps, solar photovoltaics, and/or electric vehicles (see BE 3.5);
- Focusing more deeply on industrial energy efficiency (see BE 4.1);
- Ensuring that the custom industrial programs include heat recovery applications (BE 4.2); and
- Custom incentives for district-scale energy solutions (see BE 5.4).

Our next steps:

- ☐ Advocate for an increase in system benefits charges or the creation of an EERS that supports an expansion in revenue to Efficiency Maine Trust.
- ☐ Advocate for the creation of fuel-neutral metrics for Efficiency Maine performance (and EERS, if applicable) that incentivize beneficial electrification.
- ☐ Continue to advocate for the creation of a green bank.

BE 3

BE 3.4 Renewable Heating and Cooling

ACTION: Launch a program to shift single family homes and larger multifamily and commercial buildings from fuel oil directly to all-electric heating and cooling.

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Where we are today

Fuel oil remains a major source of heating in Maine at large and in both Portland and South Portland. Analysis conducted for this plan shows that the majority of single-family homes and many commercial buildings in Portland and South Portland still use fuel oil for heating, and fuel oil makes up almost a quarter of citywide energy use and greenhouse gas emissions for both cities (23% of site energy and 24% of emissions in Portland; 22% of site energy and 23% of emissions in South Portland). This rate of use is dramatically higher than much of the country—in the Mid-Atlantic, fuel oil typically makes up less than 5% of energy use and emissions. However, there is an ongoing transition to natural gas use in both cities. Natural gas use in Portland in 2018 was higher than in 2017, and dramatically higher than the values reported in Portland’s 2010 greenhouse gas inventory. While these conversions have the short-term benefit of reducing fuel costs and emissions, they locks homeowners and businesses into a fossil fuel combustion technology for the next 15-30 years.

To reduce greenhouse gas emissions, cities are increasingly looking to modern heat pumps, paired with renewable sources of electricity, to provide renewable heating and cooling. People may have the impression that electric heat pumps cannot handle the cold Maine winter. However, modern cold-climate air source heat pumps are far superior to older models that people may be familiar with. Research by the Rocky Mountain Institute (RMI) notes that cold-climate heat pumps can heat homes even when outdoor temperatures dip to -12 degrees Fahrenheit and found that supplemental electric resistance heating was needed just 3% of the time in Bozeman (a similar



HOMES ON THE EAST END • Photo by Paul VanDerWerf

climate zone to Portland) and 10% of the time in Duluth (a colder climate than Portland).¹¹

The State of Maine has made electrifying heating with air source heat pumps a policy priority. State legislation LD 1766 sets the goal to install 100,000 new heat pumps throughout the state within five years—a goal that will have benefits for both reducing greenhouse gas emissions and improving comfort. Most homes in Maine do not have cooling/air conditioning. However, as summers get warmer, more people will install air conditioning, which will drive up electricity use. Air source and ground source heat pumps can provide renewable heating as well as energy-efficient cooling. In other markets in the region, studies have found it to be cost-

Air-source and ground-source heat pumps can provide renewable electric heating and energy efficient cooling—an important option as summers in Maine continue to get warmer. Studies have found it to be cost-effective to switch directly from heating with fuel oil to heat pumps.

competitive to switch directly from heating with fuel oil to heat pumps—however, once a building has switched to natural gas, switching to electric heat pumps rarely provides cost savings.

The action we will take

The Cities will begin operating a program to shift single family homes and larger multifamily and commercial buildings from fuel oil directly to all-electric heating and cooling via air source heat pumps and ground source heat pumps, aligning with

the LD 1766 goal of installing 100,000 new heat pumps in the state within 5 years, and in an effort to get ahead of ongoing gas conversion. The Cities worked with Meister Consultants Group (now part of Cadmus) in 2018 to analyze the potential for heat pumps. The study identified which single family and multifamily homes were the best fit for ductless or ducted air source heat pumps, ground source heat pumps, or wood pellet boilers. This data must be looked at with some caution since it did not involve home inspections, and natural gas service penetration has increased dramatically in just the last couple years. Nonetheless, it provides a good foundation for launching a targeted marketing and incentive program for heat pump conversions.

The program will initially target homes and businesses that use fuel oil. As stated above, fuel oil to electric conversions are cost-effective from the start, delivering utility savings and increased reliability. The marketing and incentive program will dovetail with existing state-led consumer outreach and education to grow demand for energy efficiency and heat pump technologies while maximizing energy savings. Where appropriate, electrification can be combined with on-site solar

BE 3.4 Summary - Renewable Heating and Cooling

How this strategy advances a future that is...			
Equitable	Regenerative	Resilient	
a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability	
PRIMARY COMPONENTS - Launch electrification incentive program, following review and research of New England air-source heat pump incentive models. - Adopt legislation to require code compliant tanks (or decommissions).	KEY MILESTONES - Electrification incentive program launched by 2023 - Oil tanks to be code compliant or decommissioned by 2028	CITY STEWARD P: Sustainability Office SP: Sustainability Office	FINANCING MECHANISMS State incentives, Efficiency Maine funding, Residential PACE loans; <i>Future: Federal funding</i>

and battery storage to improve resilience. However, the priority should be on electrification of thermal demand. Bulk buy programs will be one mechanism to help reduce the cost of heat pump technology (see action BE 3.5 for further details).

To further incentivize conversions, the Cities will consider adopting legislation requiring that any building owners with an active oil tank either update their tank to a code-compliant tank or decommission their tank by the end of 2028 (or otherwise specified date). Such legislation would address rusting, corrosion, and leakage from older oil tanks; help to protect soil and groundwater; as well as establish a date by which building owners must invest in a new system, encouraging transition to renewable electric systems at that point, if not sooner. It will be important that the Cities and State simultaneously indicate that natural gas will not be a long-term viable option (through statewide bans on new pipelines or restrictions on new hookups; see action BE 5.6) to prevent this policy from driving conversions to natural gas. A statewide carbon tax (see action BE 5.7) would further make electric heating systems a preferable option, discouraging updates to a code-compliant oil tank or natural gas system.

Our next steps

- ☐ Review Meister Consultants Group recommendations, and study best practices in beneficial electrification incentives in other New England states. Work with Efficiency Maine, key heat pump manufacturers, and the local HVAC contractor industry to design and launch a program to shift buildings to air source heat pumps.
- ☐ Explore ways to address split economic incentives for renters versus property owners in multi-tenant buildings (see action BE 3.7).
- ☐ Aim to launch a new electrification marketing and incentive program by 2023 (see action BE 3.5).
- ☐ Adopt legislation by 2023 to require building owners with active oil tanks to update their tank to a code-compliant tank or decommission their tank by 2028, or another a specified date.

BE 3

BE 3.5 Bulk Buy Programs

ACTION: Launch bulk buy programs for solar power and heat pumps, paired with electric vehicles as appropriate.

Where we are today

Bulk procurement programs are a way for cities to buy large quantities of products—such as solar panels, air source heat pumps, or other energy efficiency technology—and offer them for purchase at a reduced price to residents and businesses. Making energy efficient and renewable energy technology more affordable will support the State’s policy priority to install 100,000 new heat pumps throughout the state within five years (see action BE 3.4), as well as advance both the State’s and Cities’ goals of decarbonizing building energy consumption.

Successful bulk purchase programs in other jurisdictions include Solarize and HeatSmart Massachusetts, and Benefits Boulder County. Solarize and Solar United Neighbors (SUN) programs work by encouraging groups of residents to jointly sign up for solar installations, and once a critical mass is met, a contractor comes and installs solar on all the homes at a reduced, bulk price. HeatSmart Mass is modeled on Solarize and applies the same model to the purchase and installation of air source heat pumps (ASHP) and ground source heat pumps (GSHP). Local governments sign up to participate in the statewide program, and in 2019, it led to the installation of 282 heat pumps. Benefits Boulder County is a combined solar, electric vehicle, and electric bike bulk buy, which over the past two years, facilitated the sale of 123 discounted residential solar systems, 289 discounted electric vehicles, and over 280 discounted electric bikes. The pairing of electric vehicles with solar was found to introduce additional complications and in Maine may work better as an optional add-on.

The action we will take

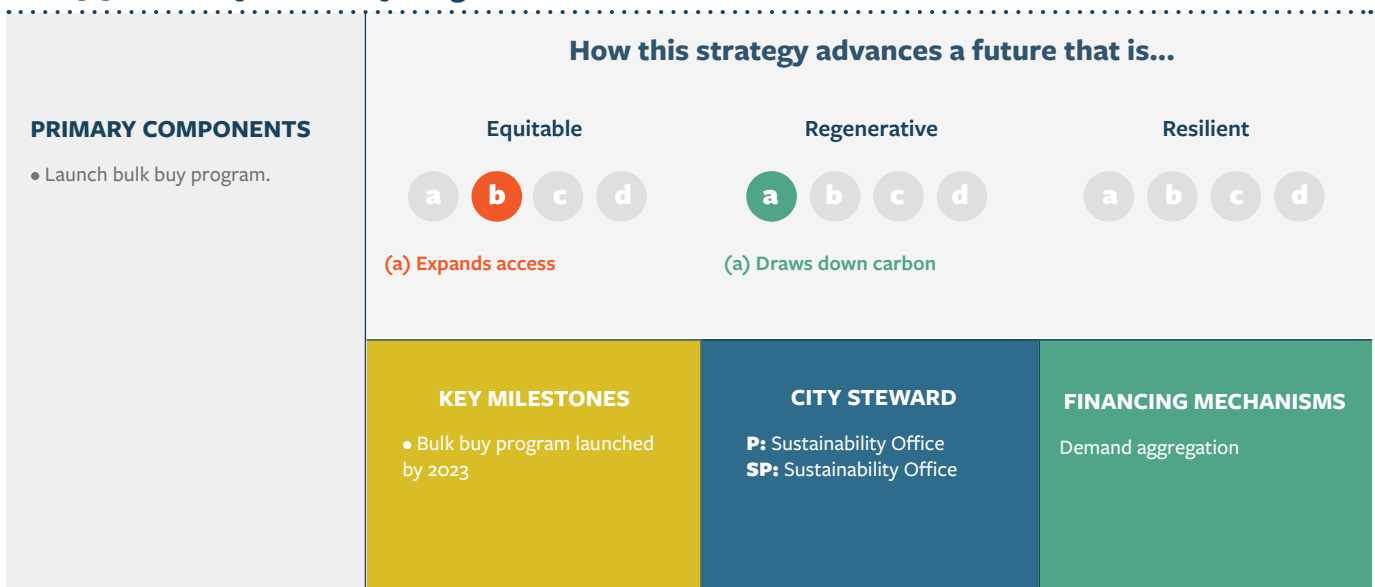
The Cities will launch a bulk purchase program for residential solar and cold-climate air source heat pumps, either as a municipal program or as part of a regional or statewide initiative. A well-orchestrated bulk buy program will require no government funding (other than staff time), and will result in an increase in the number of installations. This program would be a part of the larger campaign to convert homes to heat pumps as discussed in action BE 3.4.

Our next steps

- ☐ Assign staff to connect with Massachusetts and Boulder, Colorado program staff to learn how these bulk buy programs were designed, implemented, and managed. Determine which staff may be best suited to lead the initiative, whether a minimum number of buyers would need to be procured, and the type of manufacturer and installer partnerships required.
- ☐ By 2023, launch the bulk buy program.

Launching a bulk buy program will support the State’s priority of installing 100,000 new heat pumps throughout the state within the next five years.

BE 3.5 Summary - Bulk Buy Programs



BE 3.6 Solar Proliferation

ACTION: Continue to enhance the attractiveness of solar through a solar proliferation strategy, as well as offering financial and/or structural incentives.

Where we are today

Rooftop solar panels are “contagious.” When a building owner installs rooftop panels, others often soon follow atop other nearby buildings.¹² Efforts to enhance the attractiveness of solar can help to increase the number of solar photovoltaic installations, while generating resident and business awareness and interest. It builds on ongoing work to modernize and increase the resilience of the grid, and acts as a catalyst to build local workforce capacity and economic development opportunities in the renewable energy sector.

In 2020, GridSolar completed an analysis of rooftops in the Greater Portland area to estimate the cities’ maximum capacity for rooftop solar generation, based on a set of physical and economic parameters for what constitutes a viable rooftop solar array. The study found that Portland and South Portland could collectively accommodate 375 MW of rooftop solar, or 599,492 MWh of annual generation—a capacity that could meet 29% of all electricity needed in both cities, even with electrification of buildings! In reality, however, it would be very difficult to meet this maximum build-out: not all building owners will install solar for a variety of technical, economical, or personal reasons. Nevertheless, the GridSolar study offers proof that a significant supply of solar can be locally sourced.

The action we will take

To grow solar generating capacity on private buildings in a short period of time, Portland and South Portland will launch

a continuously evolving solar proliferation strategy. This is a direct marketing and education campaign that targets buildings suitable for solar. Residents and businesses can self-identify as interested in the solar assessment. Program staff will provide additional information to support decision-making and implementation, and will connect property owners with solar installers and financing options. The proposed solar proliferation strategy involves four phases.

Phase 1: Identify local partners and organizations.

Successfully implementing this strategy will require support from local organizations and coordination with solar installers, financing providers, marketing and outreach companies, and tenant advocacy groups. Solar installers, financing providers, and marketing and outreach companies will be important to continuing to implement the solar proliferation strategy and translating the implementation of the strategy into new solar adoption. The Cities will issue a competitive request for proposals (RFP) for a marketing and outreach company to develop a marketing campaign to directly engage with owners of identified buildings.

Phase 2: Identify target buildings. Working with project partners, the Cities will identify a subset of building rooftops with the highest solar potential. This process will draw directly from the GridSolar solar assessment completed in 2020. Primary targets for rooftop installations will include multifamily buildings, condominium buildings, small businesses, nonprofit organizations, and opportunities for residential solar co-



SOLAR ON BAYSIDE BOWL • Photo by ReVision Energy

ops. The process will likewise seek opportunities to advance more equitable access to renewable energy by prioritizing installations that benefit people who typically have lower access to solar and its economic benefits, including low income households and communities of color,¹³ as well as opportunities to install larger solar systems (e.g., community-scale solar). Additional factors in determining the subset of buildings to target will include:

- Ease of rooftop accessibility (e.g., by an aerial work platform or cherry picker);
- Capability of the building to accommodate a solar system;
- Ability of the local grid to absorb new renewable energy generating capacity and the opportunity for new technology, including microgrids (see action BE 5.4), to mitigate grid issues;
- Ability of the building to accommodate energy storage infrastructure;
- Opportunities to coordinate with upcoming construction projects to reduce installation costs; and
- Expected future lifespan of buildings and roofs.

Phase 3: Design and implement a targeted marketing campaign. This campaign will clearly and simply communicate the benefits of solar systems, explain the program being offered, and summarize available incentives and support. The Cities and marketing and outreach consultant may wish to implement a “Solar Coach” program which hires program staff to connect with residents from diverse demographics for whom solar has been traditionally inaccessible. Renters who are interested in solar can be connected with community solar programs, when available, which would allow renters who are unable to install solar on a roof to receive the financial benefits of solar installations. Messaging as part of the solar proliferation strategy will be informed by an understanding of consumer perceptions of solar systems’ pricing, value and reliability, as well as the perceived complexity and duration of the purchase, installation, and rebate process.

Phase 4: Facilitate solar installations. Program staff will implement assessments for interested building owners, and provide supporting information on payback timeframes and financing options. For all building owners that choose to move

BE 3.6 Summary - Solar Proliferation



forward with a solar installation, program staff will connect the building owners with the appropriate organizations for solar installation and financing. Program staff liaisons at the Cities will simultaneously identify mechanisms to help reduce costs of solar installations. Approaches may include offering structural incentives, such as expedited permitting and design support, or financial incentives, such as waiving permit fees. Major solar incentives, however, will likely have to come from state programs. Costs can also be reduced through a bulk buy program, as discussed in action BE 3.5.

Our next steps:

- ☐ Review existing zoning and regulation to ensure that solar installations can be maximized and streamlined.
- ☐ Begin implementation of the solar proliferation strategy by working with local stakeholders, and then drafting and issuing a request for proposals for a marketing and outreach team.

BE 3.7 Energy Efficient Rental Housing**ACTION: Require minimum energy efficiency standards for residential rental properties to decrease energy use, increase thermal comfort, and reduce energy costs paid by renters.****Where we are today**

Roughly 56% of Portland residents and 38% of South Portland residents are renters.¹⁴ Homeowners often have an incentive to invest in energy efficiency upgrades because the investments can lead to lower energy use and energy cost savings over a relatively short payback period. For most rental properties, however, renters pay for their energy use and have little influence over the energy efficiency of the building, heating and cooling systems, and appliances. Because rental property owners do not directly benefit from energy efficiency cost savings or improved thermal comfort, there tends to be a much smaller incentive for landlords to invest in energy efficiency upgrades. This “split incentive” has led to notable differences in the energy efficiency of rented versus owned homes: Across the United States, energy use per square foot tends to be 10% greater for rentals than owner-occupied homes for buildings built since 1980 and 35% greater for those built before 1940.¹⁵ Roughly 40% of all housing units in Portland and 32% of units in South Portland were built before 1940.¹⁶ Due to lower incomes on average, renters tend to pay a larger proportion of their income towards energy costs, and show greater incidences of energy insecurity than homeowners, factors that are compounded by lower energy efficiency of rental units on average.^{17, 18}

To address this challenge, Maine law (statute 6030-C) provides prospective tenants the right to request energy consumption and cost data for the past year for the given housing unit prior to renting. Landlords are also required to provide prospective tenants with an energy efficiency disclosure statement, stating

whether the rental unit meets suggested minimum energy efficiency guidelines for heating systems, insulation, windows and doors, and appliances. Disclosing this information provides greater transparency to potential renters, calls attention to ways landlords can meet minimum energy efficiency standards, and particularly in a “buyer’s market,” encourages landlords to improve the energy efficiency of the building as a competitive edge. To further improve energy efficiency in rental properties, a number of U.S. cities—such as Burlington, VT; Ann Arbor, MI; and Boulder, CO—have begun requiring (as opposed to suggesting) that rental properties meet the energy efficiency minimums. Boulder’s “SmartRegs” policy, which was adopted in 2010 and required compliance by 2018, reports that at full compliance, the city’s rental properties are expected to result in 8,300 metric tons of avoided carbon emissions and \$1,100,000 in energy bill savings, annually.

The action we will take

Portland and South Portland will expand the use and effectiveness of the State’s energy efficiency disclosure requirement for rentals in the cities, and assess the feasibility of instituting a required minimum energy efficiency standard for residential rentals. As a starting point, Portland will require submission of the State of Maine energy efficiency disclosure statement as part of its long-term residential rental unit registration. South Portland will establish a long-term rental licensing program in the city, and include the State’s disclosure statement as part of the application. Collecting



HOMES ON MAYO STREET • Photo by Holly Jacobson

this documentation will better ensure that the disclosure statements are being used in rental agreements throughout the cities—further encouraging voluntary efficiency upgrades—and will allow the Cities to collect data on the number of units that currently meet, exceed, or do not meet the State’s suggested minimum standards.

Portland and South Portland will collect data as part of the Cities’ long-term rental licensing for three years to fully institute the system and track any voluntary investments to meet minimum standards over that period. The Cities will then use this dataset to conduct an internal assessment of

the costs and benefits of implementing minimum energy efficiency standards for residential rentals, including assessing the number of rentals below the State’s minimum standards (or otherwise defined standards); the estimated energy and cost savings for renters; the total annual impact on greenhouse gas emissions; the potential cost to property owners accounting for available rebates, tax credits, or other financing mechanisms; and the approximate program costs for the Cities to implement.¹⁹

The Cities will be able to work with property owners to set minimum efficiency standards, compliance timelines, and financing mechanisms that can ensure that costs to retrofit stay within the energy cost savings created by the efficiency project.

If the potential impact generated through the program proves cost-effective, the Cities will assess and model baseline and potential energy savings for a set of prototypical properties in order to establish energy targets and payback periods. As part of this process, the Cities will work with property owners in the cities to vet efficiency standards, as well as discuss financing options, training or resource needs, and potential logistical sticking points that can be overcome through the program design. It will be important to determine the degree to which costs incurred by property owners for efficiency investments will be passed to renters through higher rents, potentially affecting housing affordability. By understanding these cost thresholds, the Cities will be able to work with property owners to set minimum efficiency standards, compliance timelines, and financing mechanisms that can ensure that any increase in rent stays within the energy cost savings for renters created by the efficiency project. For example, to address this concern Burlington, VT instituted a cost cap, whereby housing units are considered compliant if the building meets minimum standards or if the property owner has invested in efficiency upgrades up to the cost cap.

The Cities will consider implementing both a prescriptive and performance-based compliance path. The City of Boulder, for example, implemented a prescriptive path using an internally-designed checklist and a performance-based path based on the Home Energy Rating System (HERS) index. It will be important for any compliance path to encourage renewable or electric heating and cooling systems in alignment with One Climate Future goals.

Our next steps:

- ☐ Require submission of the State of Maine energy efficiency disclosure statement as part of the City’s long-term residential rental unit registration (Portland).
- ☐ Establish a long-term rental licensing program in the city, and include the State’s disclosure statement as part of the application (South Portland).
- ☐ By 2026, assess the potential impact and cost effectiveness of adopting minimum energy efficiency standards for residential rental properties, using data from the State’s energy efficiency disclosure requirement.

BE 1.4 Summary - Energy Efficient Rental Housing





BE 4

Industrial Energy Efficiency and Decarbonization

ALLAGASH PURSUES ENERGY SAVINGS THROUGH TEMPERATURE CONTROL SYSTEMS • Photo by Allagash Brewing Company

BE 4.1 Industrial Energy Efficiency Spending

ACTION: Advocate for expanded energy efficiency incentives for large industrial users.

Where we are today

The industrial sector is a major source of greenhouse gas emissions in both Portland and South Portland. In 2017, industry accounted for 25% of site energy use and 24% of emissions in South Portland and 11% of site energy use and 10% of emissions in Portland. In short, it will be impossible to achieve the One Climate Future goal of reducing greenhouse gas emissions in both cities 80% by 2050 without substantial reductions coming from the industrial sector.

Fortunately, the industrial sector can often take advantage of large, highly cost-effective opportunities for increasing energy efficiency. Nationally, the industrial sector has shown to save more energy per program dollar than other customer

classes.²⁰ Consequently, the United States has seen significant and consistent reductions in industrial energy use intensity in recent decades, decreasing 45% from 1977 through 2016. (However, increased output counterbalanced these efficiency savings in many cases.) Efficiency Maine operates a suite of custom energy efficiency programs for industrial customers. Funding levels range from a minimum of \$10,000 to a maximum of \$1 million per customer, or up to 50% of the total project costs.²¹ These programs are largely funded with money from the Regional Greenhouse Gas Initiative (RGGI), as industrial customers in Maine are automatically “opted-out” of the system benefits charges and cost recovery mechanisms that support Efficiency Maine.

The action we will take

Portland and South Portland will support expanded statewide energy efficiency programing for industrial customers by advocating that the automatic opt-out provision for industrial customers be removed. These opt-out clauses are common to several states, and are justified by the idea that industrial firms will invest in energy efficiency on their own. However, there is substantial evidence that most industrial customers leave large energy efficiency opportunities on the table, and that these opt-out programs increase inequity and do not achieve their intended goals.²² By removing the opt-out provision, industrial users will by default pay into funding streams to support Efficiency Maine programs and then in turn receive greater investment and technical support for efficiency efforts. Programs in Oregon, Rhode Island, Ohio, Vermont, Colorado,

and Wisconsin show that a well-structured energy efficiency program can achieve large savings at costs of less than 3 cents per kilowatt-hour.

As an alternative approach to fully removing the opt-out provision, the State could allow industrial users to choose to opt-out on a case-by-case basis instead of automatically, on the condition that they operate their own self-directed efficiency program subject to oversight and guidance from Efficiency Maine or another state entity.²³ A well-structured self-direct option should follow best practice guidance from the American Council for an Energy Efficient Economy. Efficiency Vermont has found success with performance-based incentives and strategic energy management approaches, using ISO 50001 Standard for Energy Management Systems, which should be explored for adoption in Maine.

It will be impossible to achieve the One Climate Future goal of reducing greenhouse gas emissions 80% by 2050 without substantial reductions coming from the industrial sector.

Our next steps

- Advocate for increased energy efficiency investment in the industrial sector, funded by the removal of the automatic industrial opt-out provision. Specific industrial programs that should be explored include pay-for-performance and ISO 50001 Strategic Energy Management.

BE 4.1 Summary - Industrial Energy Efficiency Spending



BE 4.2 Industrial Efficiency and Decarbonization Study

ACTION: Advocate for a statewide study on energy efficiency and decarbonization opportunities in the industrial sector to better target industrial combined heat and power, heat recovery, and renewable fuel oil or biogas.

Where we are today

Combined heat and power (CHP) systems, industrial heat recovery, and the use of renewable fuel oil or biogas are three primary ways that industries can increase their energy efficiency and/or decarbonize the fuel used for industrial processes. CHP systems generate electricity using natural gas and capture the waste heat to provide useful thermal energy. By using waste heat and avoiding distribution losses, CHP systems can achieve efficiencies of over 80%, compared to efficiencies around 50% for typical electricity sourcing or stand-alone electricity generation and on-site boilers for thermal loads.²⁴ Because CHP systems increase natural gas use, this approach may seem counterproductive for a decarbonization strategy. However, in situations where natural gas is already being burned for thermal energy, taking advantage of the potential to also generate electricity on site increases resilience and reduces peak and total electrical demand. In the short and medium term, the increased gas use from CHP systems can help offset declines in residential and commercial gas consumption driven by the shift to renewable electric systems. In the long term, these CHP facilities would be potential targets for transitioning to biogas (discussed in further detail below).

Industrial heat recovery likewise takes advantage of waste heat and uses it as a resource. Through the installation of heat recovery chillers and heat exchangers, waste heat from industrial processes can be recaptured to provide space heating for a building, reducing overall energy demand. Moreover, industrial heat recovery presents an opportunity

for facilities to operate as an ecosystem rather than in silos: Industrial users with heat generation and demand profiles that differ in intensity or temporally can share, sell, or purchase each other's waste heat. These relationships generate value for what was once a rejected byproduct, and allow facilities to purchase energy at lower costs than gas or electricity.

Both CHP and heat recovery serve as ways to increase the energy efficiency of industrial processes. Full decarbonization for the industrial sector, however, is much more challenging. Many industrial processes require high temperatures that are only achievable through combustion. Moreover, the energy densities of fossil fuels are difficult to compete with for industrial uses, and some industrial processes use the byproducts of fossil fuel combustion.²⁵ In the longer term, decarbonization of industry will likely rely heavily on biogas (generated from anaerobic digestion of wastewater, organic waste, waste wood, and agricultural processes), biomass (such as wood pellets), renewable fuel oil (RFO, a liquid fuel generated from wood waste among other sources), and potentially carbon sequestration.

The action we will take

Portland and South Portland will advocate for Efficiency Maine to conduct or commission an in-depth study of the energy efficiency and decarbonization potential of Maine's industrial sectors. The study would quantify current loads, project future loads, and explore a range of efficiency opportunities such

as combined heat and power systems, waste heat recapture, and conversion to biogas, biomass, or renewable fuel oil. Data about the specific efficiency opportunities for industrial sectors is closely tied to proprietary business information. Efficiency Maine has access to proprietary energy use data, which makes Efficiency Maine a suitable entity to lead such a study in collaboration with industry partners. By assessing these areas for efficiency and decarbonization, the study would help to advance the following:

● **Combined heat and power (CHP) systems.** Assessing opportunities for combined heat and power would enable Efficiency Maine and the Cities to promote CHP systems in a targeted fashion. Per Efficiency Maine guidance, a cost-effective CHP system is one where there is “a continuous, 24-hour per day electric demand that exceeds the nameplate electric output rating of the CHP unit; serviceable thermal loads and/or thermal storage capacity that allows for utilization of nearly 100% of the thermal output available from the CHP installation on a continuous basis; and an overall seasonal operating efficiency of 60% or higher.”²⁶ In the industrial context, CHP is most often installed when a facility is already generating steam or hot water for thermal loads and purchasing grid electricity, and could instead generate that electricity on site to both save money and increase resilience. It is important to note that CHP is often promoted as an efficiency strategy for large commercial and institutional customers, especially in campus settings. However, buildings do not actually require the high temperatures generated by CHP plants, and are a better fit for lower-temperature hot water distribution supported by heat recovery chillers and geo-exchange systems. Efficiency Maine offers funding for CHP feasibility studies under the Commercial and Industrial (C&I) Custom Distributed Generation program.²⁷

● **Industrial heat recovery systems.** Assessing the generation of waste heat and the geographic distribution of industrial processes would allow Efficiency Maine and industrial facilities within Portland and South Portland (as well as elsewhere in the state) to explore opportunities for industrial energy users to recapture their own waste heat and

share thermal loads to support energy needs of neighbors. For heat recovery in a single plant, the Cities will encourage Efficiency Maine’s expanded industrial programs to focus on heat recovery applications. At the larger scale, we will work with Efficiency Maine and use the results of the study to identify sites within the cities where several industrial plants in an industrial district—or the future siting of new industrial facilities—may be able to share thermal loads for mutual benefit. This first stage of building an industrial ecosystem could also lead to ways to capture other industrial waste streams (see action WR 2.2).

● **Biogas, biomass, and renewable fuel oil.** We recommend that the study assess opportunities and costs for industrial plants in using biogas, biomass (wood pellets or other wood waste), or renewable fuel oil (RFO) in place of natural gas. A primary component of that assessment entails evaluating the biogas potential of southern Maine, and comparing it to industrial gas demand. Nationwide, preliminary estimates



OAKHURST USES BIOFUELS IN ITS MILK TRUCK FLEETS • Photo by John Phelan

of biogas supply put it at 10% to 20% of total national gas demand—equivalent to the demand of the industrial sector alone, for whom it is best suited due to high temperature requirements. However, biogas is highly localized in both production and distribution. If there is enough biogas potential regionally, the State could explore allowing biogas to be fed into the natural gas supply, or delivered directly to customers. This would require regulatory updates. Based on the study’s findings and the biogas potential in Maine, the Cities would promote the opportunity among targeted industrial or large commercial/institutional entities in the cities, seeking partners interested in championing the conversion to biomass, biogas, or RFO for thermal energy use as a cutting-edge demonstration for others in the local industrial sector.

Reducing emissions from the industrial sector will require co-investment and joint planning across industrial companies, government, grid operators, and other relevant stakeholders. Nonetheless, Portland and South Portland recognize the opportunity to support efficiency and decarbonization with combined heat and power (CHP) systems, industrial heat

recovery, and renewable fuel oil or biogas. Following an in-depth study of the energy efficiency and decarbonization potential, Portland and South Portland will evaluate and revise relevant zoning regulations and incentives to enable the build-out of low-carbon industrial solutions.

Our next steps

- ☐ Advocate for Efficiency Maine to lead or commission a study of industrial energy efficiency and decarbonization potential, working in collaboration with industrial partners.
- ☐ Building on the findings of the industrial energy efficiency potential study, promote CHP in a targeted fashion to industrial users. CHP will be discouraged for building and campus projects without substantial demand for high-temperature supply of water/steam.
- ☐ Work with Efficiency Maine to ensure that the custom industrial programs are working on heat recovery applications.

BE 4.2 Summary - Industrial Efficiency and Decarbonization Study





BE 5

Clean and Renewable Energy Infrastructure and Regulatory Transformation

SOLAR ARRAY ON THE SOUTH PORTLAND LANDFILL • Photo by ReVision Energy

BE 5.1 Renewable Portfolio Standard and Community-Scale Purchasing

ACTION: Continue to advocate for full, timely, and cost-effective implementation of Maine’s renewable portfolio standard; in case it becomes necessary, advocate for municipal authority to bulk procure renewable power on behalf of residents, businesses, and municipal users.

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Where we are today

A renewable portfolio standard (RPS) is a statewide policy that requires that the state’s electricity must be increasingly generated from renewable energy sources over time. As of April 2020, thirty states, the District of Columbia, and three territories in the United States had set renewable portfolio standards.²⁸ The State of Maine adopted legislation (LD 1494) in 2019, which raised the RPS for the state to 80% renewable electricity by 2030 and 100% by 2050. As mentioned in action BE 1.1, this ambitious step towards carbon neutrality will be transformational for Maine’s electricity sector and based on our greenhouse gas emissions projections, represents the

single biggest contribution to achieving One Climate Future goals. Compared to RPS laws in other states, the Maine RPS is particularly notable because it accelerates the timeline towards carbon neutrality by allocating much of the growth in renewable electricity within the first ten years. Adherence to that trajectory, however, depends on continued support for the RPS (to prevent the law from being repealed) and support for an energy market and policy that can continue to enable and incite the build-out of renewable energy projects statewide at a pace in line with the RPS targets.

In conjunction with RPS targets, some states have granted local municipalities the authority to bulk purchase renewable energy on behalf of residents, businesses, and organizations such that municipalities can transition to 100% renewable electricity ahead of the RPS targets. There are a number of types of power purchase aggregation or third-party purchase. Under traditional programs, customers must opt into the program, which tends to result in decently high uptake for commercial customers but extremely low residential uptake. Alternatively, under opt-out models—such as community choice aggregation (CCA)—residents and businesses are automatically enrolled, and are offered the option to opt out, returning to their original utility supplier or to another third party, if available. As of 2020, under Maine state law municipalities are not authorized to procure power on behalf of their constituents, via community choice aggregation or another method.

The action we will take

Portland and South Portland will continue to advocate for full, timely, and cost-effective implementation of the Maine renewable portfolio standard as envisioned under the state legislation LD 1494. Supporting the renewable portfolio standard will likewise include continuing to advocate for strong renewable energy policy in the legislature and at the Maine Public Utilities Commission to incentivize and enable the development of solar energy projects and distributed energy resources. Currently, such efforts are in line with the intent of LD 1711 (enacted in 2019), which revised size limits of solar projects, enabled community solar development, and instituted new crediting mechanisms to reduce barriers and create stronger incentives for solar development and other distributed energy resources.

To protect against policy changes or against a situation where renewable energy generation in the state fails to keep pace with the targets outlined by the renewable portfolio standard, Portland and South Portland will advocate for state legislation that would allow municipalities to bulk purchase power for all electricity users in the cities. Two policies in particular would support this goal: 1) authorizing a Maine Energy Generation Authority to syndicate the development of renewable

To protect against policy changes or against a situation where renewable energy generation in the state fails to keep pace with the targets outlined by the renewable portfolio standard, Portland and South Portland will advocate for state legislation that would allow municipalities to bulk purchase power for all electricity users in the cities.

generation for municipalities, or 2) enabling community choice aggregation. The Cities will support the advancement of either (or both) at the state level to safeguard the option of municipal purchasing to meet (or exceed, if deemed feasible and cost-effective) the pace outlined in the RPS.

The Cities will first pursue policy that would grant municipalities the ability to bulk procure electricity through establishing a Maine Energy Generation Authority (MEGA). The MEGA would be authorized to finance, develop, and own renewable energy generation plants in order to build out the state's renewable energy resources.²⁹ Under this purview, MEGA would syndicate the development of renewable generation on behalf of municipalities that wish to provide their constituents with renewable electricity, representing another avenue for aggregating the buying power of a community. Portland and South Portland will support legislation for the establishment of a Maine Energy Generation Authority, and if implemented, would work with MEGA to acquire shares of future renewable energy projects if necessary to meet or accelerate the Cities' renewable electricity goals independent of the state's RPS.

An alternative policy, community choice aggregation, grants local governments the authority to engage in the bulk purchase of renewable electricity. As the name "community choice" implies, communities can choose whether to implement community choice aggregation programs once the policy

is enabled by the state. Portland and South Portland may advocate for state authorization of a CCA program if at any point it becomes clear that the state RPS targets may not be met. The Cities can also use a CCA program to transition to renewable electricity faster than the RPS timeline. However, because implementing a CCA is very resource intensive—and would require an ongoing assessment of whether a CCA could viably offer cost-competitive energy rates—the Cities will initially prioritize other One Climate Future actions and reassess a CCA based on the ongoing progress of the RPS.

Our next steps

- ☐ Continue to advocate for full and timely implementation of Maine’s renewable portfolio standard as envisioned by LD 1494.
- ☐ Continue to advocate for strong renewable energy policy in the legislature and at the Maine PUC to support the intent of LD 1711.
- ☐ Advocate for the establishment of a Maine Energy Generation Authority to grant municipalities the authority to bulk purchase electricity for constituents if warranted.



SOLAR ARRAY ON THE PORTLAND LANDFILL • Photo by ReVision Energy

BE 5.1 Summary - Renewable Portfolio Standard and Community-Scale Purchasing

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d (b) Expands access — to renewable energy, assuming no net increase in electricity costs	a b c d (a) Draws down carbon (b) Builds shared wealth	a b c d (a) Reduces vulnerability (d) Builds partnerships
	KEY MILESTONES Electricity to be 80% renewable by 2030 and 100% renewable by 2050	CITY STEWARD P: Sustainability Office SP: Sustainability Office	FINANCING MECHANISMS N/A (existing state law)

BE 5.2 Utility Data Access Reform

ACTION: Reform data access by pursuing legislation that would require utilities to disclose data with building owners and municipalities.

Where we are today

Access to utility data for building owners and municipalities is a necessity for implementing building performance policies, tracking greenhouse gas emissions reductions, and expanding distributed energy resources. Access to utility data has been a concrete stumbling block for Portland and South Portland's benchmarking ordinances, and for the One Climate Future project itself. Building owners need easy, online access to near-real-time consumption information to better manage their energy use; building owners with multiple separately metered tenants need access to aggregated data at a whole building level; and municipalities need to be able to access residential, commercial, and industrial consumption data aggregated to zip code or citywide level in order to track greenhouse gas emissions over time. Furthermore, better access to temporal and geographic distributions of electricity use is important for targeting and right-sizing distributed energy resources. Other jurisdictions, including the District of Columbia, California, and New York have resolved these access challenges with legislation or Public Service Commission/Public Utilities Commission rulings.

The action we will take

Portland and South Portland will work with the Maine Legislature and the Maine Public Utilities Commission to expand access to utility data. In particular, we will advocate for the following requirements for data access:

- **Downloadable data that can integrate with building energy management systems.** Commercial customers must be able to access monthly and interval electricity and gas consumption information via utility websites as well as APIs (application programming interfaces) that integrate with building energy management systems. Where smart meters have been installed, this interval data is made available in as close to real-time as possible (such as next-day), using the GreenButton *ConnectMyData* standard. While customers can currently download their data as a spreadsheet, this format does not provide the integration needed for effective advanced energy management.

- **Aggregated, anonymized, monthly whole building data.** Building owners must be able to access aggregated, anonymized, monthly whole building data upon request. U.S. Department of Energy studies show that once at least five units are aggregated, with no one unit (other than the house meters) making up more than half the load, customer privacy is protected as it becomes impossible to deduce the energy use of an individual tenant. This level of data access has been provided by many utilities around the country, but is not yet provided in Maine. Aggregated and anonymized whole-building data should be made available as quickly as possible to support the benchmarking laws of Portland and South Portland. Within a year of making whole-building data available, utilities should implement systems to allow automatic monthly upload of this aggregated data to ENERGY STAR Portfolio Manager.

● **Municipality-wide energy consumption data.**

Municipalities in Maine must be able to access monthly municipality-wide energy consumption information within 30 days of a request. The data shall be broken out into residential, commercial, and industrial sectors, including both the number of customers and total consumption. If an electric vehicle electricity rate class is introduced, this consumption should also be provided. To the extent possible, the State Energy Office shall be charged with helping tabulate fuel oil sales and reporting fuel oil sales data to local governments.

● **Individual customer data in usable formats to be used by Efficiency Maine.** Most efficiency utilities, such as Efficiency Vermont (operated by Vermont Energy Investment Corporation), have signed non-disclosure agreements with utilities to get individual customer data for better program targeting, while protecting privacy. In jurisdictions where this has not been possible due to regulatory barriers, the ability of the efficiency utility to operate is severely hampered. We will work with the state to ensure that Efficiency Maine is able to access the energy consumption and customer account

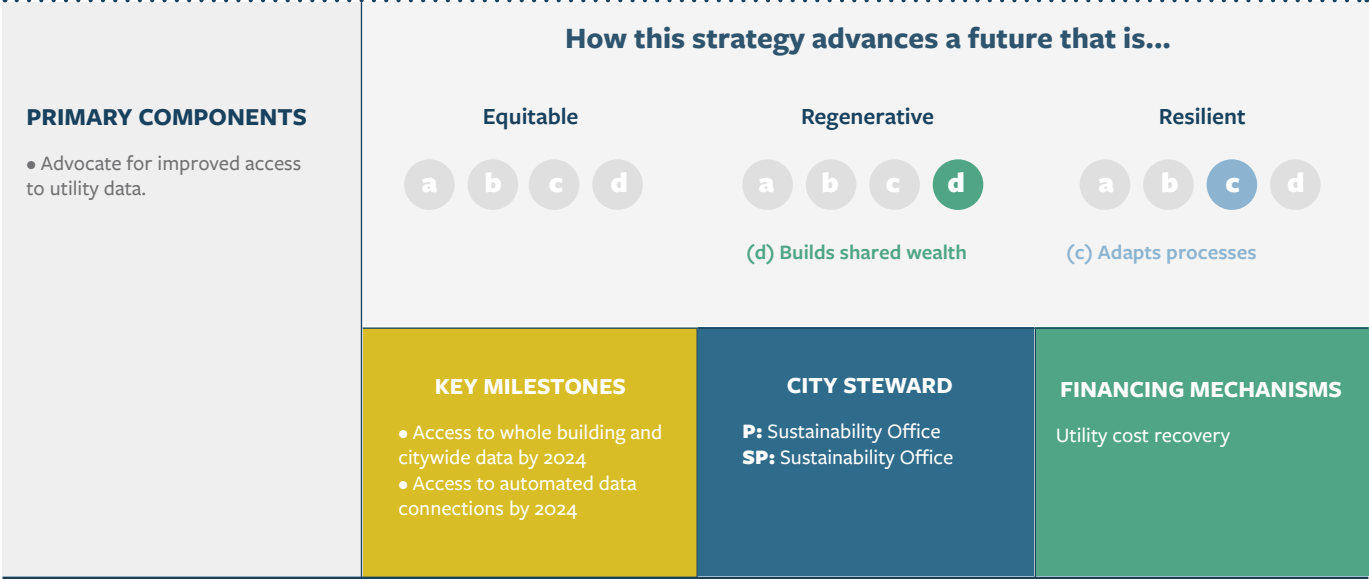
Access to quality utility data is critical for building owners and municipalities to improve building performance, track greenhouse gas emissions reductions, and expand distributed energy resources.

information needed to support its operations in formats that are usable and effective. It may be beneficial for Efficiency Maine to engage a third party under a non-disclosure agreement to provide the IT and data warehousing support.

Our next steps

- ☐ Advocate for the Maine Legislature and Public Utilities Commission to mandate that utilities provide whole building data access to property owners and Efficiency Maine with reasonable accommodations for data privacy.
- ☐ Advocate for utilities to provide citywide aggregated data annually, split out by sector and by month.

BE 5.2 Summary - Utility Data Access Reform



BE 5.3 Utility Regulatory Reform to Support Electrification

ACTION: Advocate for regulatory reforms to support state-wide electrification and the integration of distributed energy resources.

Where we are today

The past several years have seen the growing adoption of new energy technologies known as distributed energy resources (DER). The National Association of Regulatory Utility Commissioners defines DER as resources “sited close to customers that can provide all or some of their immediate electric and power needs and can also be used by the system to either reduce demand or provide supply to satisfy the energy, capacity, or ancillary service needs of the distribution grid.”³⁰ In other words, DER refer to the technologies themselves (such as solar panels and wind turbines) as well as the multiple aspects of the energy delivery system with which these technologies interact (such as smart metering). Solar, wind, fuel cells, battery storage, microgrids, demand response systems, electric vehicles, and energy efficiency at the level of the grid and consumers are all DER. Integrating DER technologies into the existing grid creates opportunities to both increase renewable energy generation and support more efficient and cost-effective management of the energy delivery system.

Because DER interact with the grid in more complex ways, integrating DER also presents new challenges. The existing grid infrastructure is based on a model of centralized, large-scale electricity generation (e.g., hydroelectric dams, natural gas-fired power plants) whereby electricity is transmitted through regional distribution networks to end-users. DER technology can be connected throughout the grid, which can impact grid performance and operation when significant DER capacity is added. For example, electricity generated at customers’ residences can affect the performance of both the distribution

network and the broader transmission network, as well as the way a centralized fleet of generators may be deployed to meet energy demand. Such interactions can lead to reliability problems—and challenge the existing utility models, regulatory structures, and decision-making processes around the design and operation of the grid. Reforming the regulatory structure that shapes the design, expansion, and operation of the grid can better enable DER integration and can modernize the way we generate and consume energy in Maine.

Providing better data to DER is also essential to help optimize the reduction of carbon emissions. Energy storage only reduces emissions if excess renewable power is stored and then discharged at peak times to displace dirtier power. However, there is no guarantee this will happen without data and regulation—sometimes the reverse might happen, leading to a net increase in emissions. In 2019, California required battery storage and discharge to use real-time greenhouse gas emissions data to optimize stored power for carbon reductions.

In addition, it is important that regulatory changes and actions help empower tenants. The energy used by tenants within their spaces can amount to up to 50% of the energy consumed in typical commercial office buildings. In many cases in Maine, residential and commercial tenants already have separate electricity bills. However, they may not have efficient access to their own consumption data in digital forms that support active energy management, as discussed in action BE 5.2. In

commercial, multi-tenant buildings with a single or master meter, tenants are typically charged on a per-square-foot basis, and have limited or no visibility on their actual energy consumption. In this latter scenario submetering these spaces and requiring building owners to inform tenants about their energy consumption gives tenants the information they need to track and reduce consumption. While submetering alone does not reduce energy consumption, it provides a window into a building's tenant- and system-level energy consumption, and allows market actors to make informed operational and capital-investment decisions. Research by commercial real estate practitioners indicates that submetering tenant spaces can contribute to reducing building energy costs by more than 20%. Residential submetering also allows residents to capture the benefits of more efficient behavior and appliances. Many jurisdictions have legalized submetering of electricity use, and a number are now requiring it for commercial properties.

The action we will take

Portland and South Portland will work in partnership with the Maine Climate Council and statewide partners to advocate for regulatory reforms to support state-wide electrification and the integration of distributed energy resources. Several regulatory structural reforms can better facilitate the integration of DER in Maine, including performance-based, incentive ratemaking; time-varying rates; and participatory distribution system planning and modification.

These new structures can often be incorporated within existing regulatory structures. However, there are also other options for transforming the governance and operation of energy systems that are being explored around the country. In the District of Columbia, for example, legislation has been introduced that would create a “Distributed Energy Resources Authority” (as discussed in action BE 5.2) to govern data sharing, system planning, and DER integration.

To better enable the integration of DER, Portland and South Portland will work with the Maine Climate Council and statewide partners to encourage the state to evaluate, and adopt as relevant, the following regulatory updates:



POWER LINES, CORNER OF MIDDLE AND EXCHANGE • Photo by Corey Templeton

- **Performance-based ratemaking.** Transition electric utility business models to performance-based ratemaking, which ties utility revenue to performance rather than capital investments. Performance would be evaluated based on specific metrics, including but not limited to greenhouse gas emissions reductions.

- **Prioritization of beneficial electrification.** Position beneficial electrification as a target priority in all utility rate decisions.

- **Time-of-use electricity pricing.** Adopt time-of-use electricity pricing, which varies electricity rates for customers based on electric demand and renewable supply. Rates are higher at times with peak demand to incentivize customers to manage loads and shift energy use to off-peak times. To be accessible to customers, successful time-of-use pricing does

not vary on an hour-by-hour, day-by-day basis, but rather establishes predictable periods of higher and lower charges. Time-of-use pricing should be piloted with commercial and industrial users first, and only later expanded to residential rate classes. The state may want to evaluate other time-of-use policies such as California’s recent reforms to battery storage discharge based on temporal greenhouse gas emissions data, so that batteries do not end up replacing clean energy with dirty energy.

- Microgrids and district energy systems.** Reform regulations around energy infrastructure and public-rights-of-way to allow the construction of microgrids and district energy systems, as discussed further in action BE 5.4.
- Distribution planning reform.** Improve distribution planning, similar to the Rhode Island Power Sector Transformation, which allows for better participation, transparency, and accountability to Integrated Resource Planning (IRP) and distribution planning.
- Distributed Energy Resources Authority.** Consider establishing a Distributed Energy Resources Authority or Maine Energy Generation Authority (see action BE 5.1), authorized

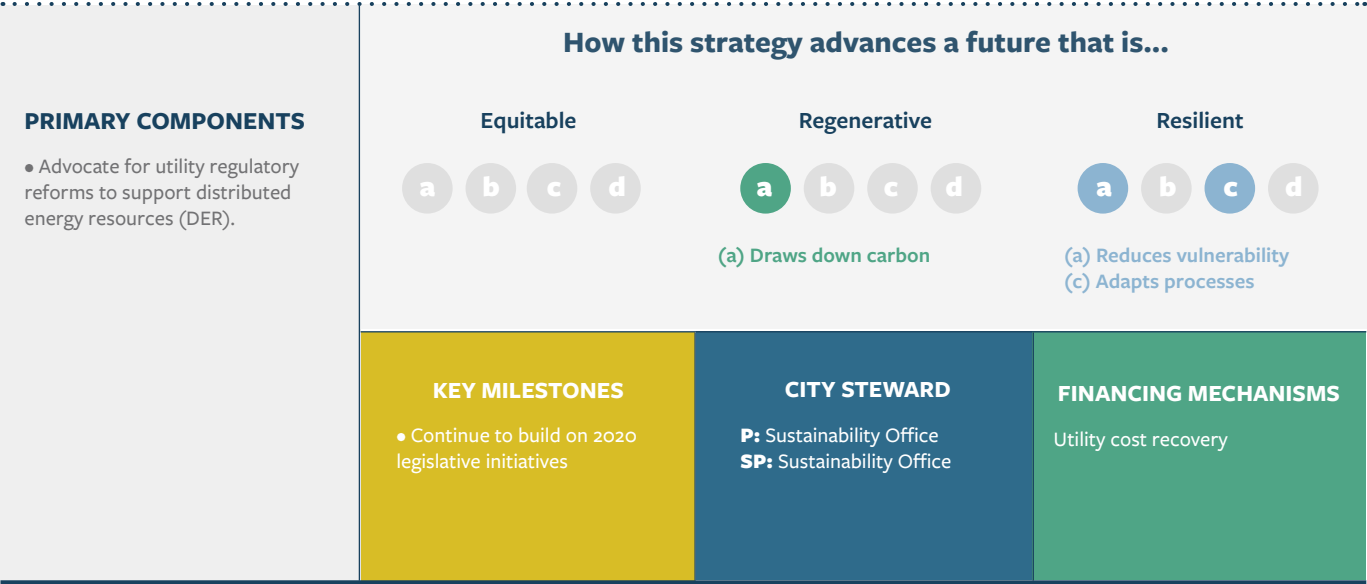
with the financing and development of renewable generation projects to advance beneficial electrification throughout the state.

- Submetering.** Remove legal barriers where they exist to submetering for commercial and residential buildings. It should be noted that this action can be particularly sensitive—and important—for affordable housing. As buildings increase in their efficiency toward net-zero energy levels of performance, developers of affordable housing must be able to provide a reduced utility allowance and proportionally increase the rent. The State should ensure that the net level of affordability for the tenant remains the same. Once submetering becomes more common, the stretch energy code should be updated to require separate metering or submetering for electricity consumption in new construction and major renovation of commercial projects (see action BE 2.1).

Our next steps

- ☐ Building on 2020 legislative initiatives, advocate for state legislation and in Public Utility Commission rate cases for the above utility regulatory reforms.

BE 5.3 Summary - Utility Regulatory Reform to Support Electrification



BE 5.4 Renewable District Energy Systems

ACTION: Identify opportunities and encourage the development of fully electric low temperature thermal district energy systems for new and existing developments and campuses.

Where we are today

District energy systems can be a cost-effective way to reduce greenhouse gas emissions and energy costs, while improving energy system resilience. A neighborhood-scale energy strategy could ensure that Portland and South Portland can capitalize on cost-effective opportunities as one component of a larger shift to low-carbon and renewable energy. Neighborhood-scale energy also has the potential to improve resilience and efficiency by centralizing neighborhood-scale modular systems. These systems, particularly microgrids, low-temperature thermal systems, and/or non-wire alternatives for meeting load growth better manage load and peak demand, lower energy costs, and can cut greenhouse gas emissions by upwards of 90%.

Campus settings provide unique opportunities for low-carbon energy systems. Traditionally, large campuses such as universities were served by district energy systems that relied on oil or gas combustion at a central plant, and steam distribution to the campus for thermal needs. However, new thermal district energy technologies provide the opportunity for full decarbonization of campuses in a cost-effective manner. While campus conditions vary, the experience has found that low-temperature hot water (LTHW) or medium-temperature hot water (MTHW) distribution systems are more efficient, and can be supplied primarily with geo-exchange / ground source heat pump (GHX/GSHP) systems. Sometimes, residual combustion is necessary for resilience or to meet peak winter demand, but even these features can be met with renewable sources such as biogas or renewable fuel oil (RFO)—the latter is being employed at Bates College.

The easiest opportunity for increasing energy efficiency is capturing waste heat from cooling equipment during periods with simultaneous heating and cooling demand. The next best opportunity for on-site low-grade thermal energy source and sink are geo-exchange systems (otherwise known as ground-source or geothermal). Geo-exchange systems consist of either “open loop” wells using groundwater in a non-consumptive manner as a heat source or sink, or a “closed loop” system typically constructed of a buried closed loop piping network. These systems are being deployed at the campus scale at some of the leading colleges and universities in the Northeast, and will provide 95%+ reductions in campus greenhouse gas emissions. Portland already has one large geo-exchange system at the Portland International Jetport.

At present, installing microgrids and other district energy systems in an urban context is largely limited by restrictions on utility connections crossing public rights-of-way. This regulatory hurdle is addressed in action BE 5.3; the following action assumes that issue has been resolved, or is not a barrier due to the district’s layout with respect to the rights-of-way.

The action we will take

Portland and South Portland will work with campuses to promote and explore opportunities for the replacement of older steam heating systems with modern geo-exchange systems. Because large district energy systems can last for 50 years or more, it is crucial to seize any opportunities to shift campuses to low-carbon alternatives.

Additionally, when new development districts are proposed and built out, we will use the development review process to encourage developers to explore the feasibility of district energy solutions. Three conditions help mixed-use district energy facilities cost-effectively reduce greenhouse gas emissions. First, a high load density is necessary to ensure enough heating and/or cooling demand is available in a small enough area to bring down the costs of installing piping and other infrastructure necessary for thermal distribution. Second, a high load diversity (users with energy demands at different times of the day) is valuable because it spreads the demand more evenly across the day, thereby increasing the overall efficiency of the energy supply system and improving its financial case. Finally, both the use of low carbon energy sources, and efficiency gains from shifting to neighborhood-scale energy, can significantly reduce greenhouse gas emissions. Once statewide regulatory barriers to the installation of microgrids and district energy systems are resolved, the Cities will require any project over 500,000 gross square feet with a zoning overlay district to evaluate district energy and microgrid opportunities in planning.

The action we will take

- ☐ Work with existing campuses to explore renewable district energy systems, especially if existing systems need replacement.
- ☐ Identify thermal energy and electricity demand opportunities based on new construction, anticipated growth, and current thermal energy demand compatible with neighborhood-scale energy.
- ☐ Add zoning guidance and amendments to the Cities’ zoning codes that encourage/incentivize developers to explore microgrids and renewable thermal energy systems.

BE 5.4 Summary - Renewable District Energy Systems

How this strategy advances a future that is...			
Equitable	Regenerative	Resilient	
a b c d	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability	
KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS	
All new development over 50,000 square feet to evaluate district energy/microgrids starting within one year of microgrid enabling legislation	P: Sustainability Office & Planning Department SP: Sustainability Office & Planning Department	For developers, costs would be built into the existing project funding; for campuses, these systems pay for themselves in utility cost savings and deferred maintenance savings	

PRIMARY COMPONENTS

- Advocate for the removal of barriers to microgrids.
- Work with existing campuses to explore microgrids / district energy.
- Adjust zoning to encourage microgrids / renewable district energy.

ACTION: Improve the efficiency and capacity of transmission and distribution networks to improve electricity supply to Portland and South Portland.

Where we are today

As we shift to driving electric vehicles and heating and cooling our buildings with electric systems, we will dramatically increase our electricity demand, as well as amplify our peak demand. At the same time, meeting the new renewable portfolio standard (RPS) targets will require massive expansion in renewable energy generation throughout the state. Wind and solar power are largely intermittent and “non-dispatchable,” meaning they cannot be ramped up in response to market needs. Currently, the battery capacity needed to temper this variability remains cost-and-resource-prohibitive. Due to these factors, we will need significant statewide upgrades to the transmission and distribution (T&D) system. These upgrades also offer the opportunity to address system inefficiencies. Current T&D line losses, for example, tend to average 4-5%, but may be higher in local areas. Additionally, certain areas of the cities—most notably the Portland peninsula—are constrained in current electricity supply and will need new feeder lines to support increased demand.

While the impact of full electrification on the regional grid has been examined by GridSolar, it will be crucial to better understand the impact that efficiency can have on shaping the load curve, and reducing overall demand. Modern heat pump systems have site efficiencies of 250% to 300% or more, as compared to the 80-95% efficiency of a gas boiler or furnace. In addition, in larger buildings and campuses, heat recovery chillers can recover rejected heat during simultaneous heating and cooling to further increase efficiency, and efficiency improvements in homes will also increase heating efficiencies.

While full electrification will increase electricity loads and likely shift the overall electricity peak demand to winter months, the impact may be less severe than anticipated, and in a scenario where all efficiency is maximized, total electricity consumption can be held close to current levels.

Where we are today

Portland and South Portland will work with relevant state-level partners, including the Maine Climate Council, Central Maine Power, and the Public Utilities Commission, to assess the extent to which DER can be accommodated on specific portions of the distribution grid, and to identify new opportunities to expand electricity supply for the cities. Specifically, the Cities will work with partners to:

- **Undertake a hosting capacity study.** A hosting capacity study will determine the level of DER integration that can be accommodated on different parts of the distribution grid without impacting the current grid infrastructure’s ability to deliver high quality and reliable electricity.
- **Update study of full electrification to incorporate efficiency.** Current projections for total electricity loads under a fully electric scenario assume the one-for-one replacement of natural gas and fuel oil with electricity; however, efficiency improvements may make this demand substantially less than has been assumed. As the state implements a new stretch building code and expansion of heat pumps, the Cities should

work with the State to continue to evaluate the projected changes in electricity demand, and the requisite needs for T&D infrastructure. The study should break the buildings into appropriate typologies and geospatially examine the decarbonization and efficiency potential across the cities. For thermal loads that require high temperatures or that cannot be electrified for another reason, the study should examine the use of biogas from anaerobic digestion of wastewater, organic waste, waste wood, and agricultural processes. As discussed in action BE 4.2, heat recovery between buildings and processes should also be examined. Campus/district systems should also be a key focus, as discussed in action BE 5.4.

● **Consider land routes for electricity supply.** To meet growing electricity needs, the Cities will work with regional and state partners to understand the political and technical feasibility, and most effectively support, increased electricity supply to Portland and South Portland along land routes. This may include actively land-banking portions of the city and supporting new substations or other grid infrastructure that may be necessary to meet the grid capacity and redundancy requirements for beneficial electrification. Where

undergrounding of wires is pursued, the City, utilities, and other critical service providers will establish a system to coordinate infrastructure upgrades.

● **Consider underwater routes for electricity supply.** The Cities will continue ongoing conversations with regional and state partners, local marine partners, and research and development teams for offshore wind to explore the feasibility of direct underwater transmission connections between the cities and offshore wind resources,

Our next steps

- ☐ Launch a hosting capacity study with regional and state-level partners to identify opportunities and constraints for electricity supply options and inform decision-making around capital infrastructure needed to support beneficial electrification in Portland and South Portland.
- ☐ By 2025, scope out the full set of needs for the electrification and thermal decarbonization study, in coordination with stakeholders, the Public Utilities Commission, and the utility Integrated Resource Plans, and support continued revaluation of projected future electricity demand.

BE 5.5 Summary - Electrical Transmission and Distribution

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability
● Undertake hosting capacity study with regional partners.	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
● Land bank and zone for expanded energy infrastructure.			
● Update full electrification study, accounting for efficiency.	● Hosting capacity study launched by 2025	P: Sustainability Office & Planning Department SP: Sustainability Office & Planning Department	Utility cost recovery

BE 5.6 Natural Gas Phase-Out

ACTION: Advocate for a state-level ban on new intrastate natural gas pipelines and any state support for interstate gas pipelines, and advocate for allowing local jurisdictions to limit new and expanded natural gas connections.

Where we are today

While it is both cost-effective and prudent to start with converting buildings using fuel oil to air source heat pumps, as discussed in action BE 3.5, the greenhouse gas modeling for this plan shows that to achieve One Climate Future goals, virtually all residential and commercial buildings—including those using natural gas—must be transitioned to renewable sources of heating and cooling by 2050. Therefore, it will be important to expand our efforts to tackle decarbonization of heating, irrespective of fuel source. As the State moves toward a 100% renewable electric grid and towards a carbon-neutral future, new natural gas infrastructure risks quickly becoming a stranded asset. In addition, natural gas hookups to new and existing buildings continue to support fossil fuel consumption, working directly against One Climate Future policy goals. Recognizing similar tensions, other jurisdictions in California and Massachusetts are banning new natural gas hookups for new construction projects.

The action we will take

Portland and South Portland will begin taking preliminary actions for phasing out natural gas in the cities over the next thirty years. This phase-out will initially entail advocating for statewide bans on the build-out of new pipelines, and discerning the Cities' legal authority to limit natural gas hookups at the city scale. Once determined (or made) legally feasible, Portland and South Portland will map out a phased approach for reducing natural gas use across the cities, starting with banning new natural gas hookups in new residential and commercial construction and substantial renovation.

To achieve One Climate Future goals, virtually all residential and commercial buildings—including those using natural gas—must be transitioned to renewable sources of heating and cooling by 2050.

Without proactive measures, transitioning fully to carbon-free heating sources and replacing fuel-based heating systems will likely incur significant costs for building owners. Simultaneously, without ensuring that a carbon-neutral future is accessible to all Portland and South Portland residents, we will not have reached our One Climate Future goals. Portland and South Portland are committed to working with state and local partners to ensure that the cost of technology and the process for transitioning to carbon-free building systems are not barriers for our residents and businesses. In the near-term the Cities will specifically advocate for the following policy changes and planning processes at the state level:

• A just plan for transitioning to clean heating resources.

Portland and South Portland will be working to eliminate barriers to accessing clean heating resources, ensuring that residents with lower incomes are not disproportionately burdened by the costs of switching and that all residents regardless of income, race, nationality, disability, or other factor are able to reap the benefits of cleaner and more efficient heating sources. As a starting point to support the



Community Spotlight

Maine Youth Climate Strikes

Young people around the world and in Maine are demonstrating for urgent climate action. On September 20th, 2019 thousands of youth participated in the Maine Youth Climate Strikes at Portland City Hall, demanding Portland and South Portland declare a Climate Emergency. This declaration called for bold policy goals, immediate financial resources, and just climate action.

Since the fall, youth-led groups and voices continue to hold municipal and state leadership accountable for aggressive and equitable climate policies. Maine Youth for Climate Justice and ME Strikes are working towards climate action, consistent with science and social justice. Maine Youth for Climate Justice is a statewide coalition, networking activists and their efforts from Bar Harbor to York, Bangor to Portland. The coalition ME Strikes is an organization campaigning for climate emergency declarations and other action steps through demands-based strikes. In recent months, ME Strikes shifted to solidarity work to support the Black Lives Matter and March 4 Black Lives movements.

Youth will play a central role in the transformational work ahead with the implementation of One Climate Future. The powerful and moving voices of young people in our cities represent our shared future and will continue to advocate for climate justice and collaborate with community leadership for fundamental change.

MAINE YOUTH CLIMATE STRIKES • Photo by [TO BE CONFIRMED]

Cities' efforts—and recognizing that this is a challenge that spans our municipal jurisdictions—we will advocate for the Maine Public Utilities Commission to develop and implement a comprehensive and just plan for transitioning the state to clean heating resources, including a phased ban on gas hook-ups, infrastructure build-out, and capacity and supply contracting.

- **Ban on new intrastate and interstate gas lines.** The Cities will advocate for a state-level ban on new intrastate gas pipelines and any Maine entity contracting for the construction or expansion of interstate gas pipelines.

- **Restrictions on new natural gas hookups.** The Cities will explore the legal authority for municipalities in Maine to unilaterally limit natural gas hookups. If possible, Portland and South Portland will adopt legislation, and if not, the Cities will advocate for municipalities to be given this authority. New ordinances would prevent natural gas hookups for new construction and major renovations. Expanded use of natural gas will be reserved only for process heat for which no reasonable substitute exists (e.g. commercial kitchens and industrialized uses).

As natural gas use declines in the region there will come a point where the need to maintain the safety of gas pipe infrastructure needs to be balanced against the need to not invest new money in stranded assets. We will continue to engage with the PUC to ensure these competing interests are properly weighed.

- ☐ Advocate for the Public Utilities Commission to launch a planning process that will outline a just strategy and pathways for transitioning to clean heating resources state-wide.
- ☐ Advocate for state legislation to restrict new intrastate and interstate gas lines.
- ☐ Determine the legal authority of Maine municipalities to unilaterally limit gas hookups.

PRIMARY COMPONENTS

- Advocate for / support a just plan for transitioning to clean heating.
- Advocate for a ban on new interstate / intrastate natural gas pipelines.
- Investigate legal authority / institute ban on natural gas hookups in new construction.

Equitable



- (a) Addresses injustice
- (b) Expands access — *via just plan for transition*

Regenerative



- (a) Draws down carbon

Resilient

KEY MILESTONES

CITY STEWARD

P: Sustainability Office & Corporation Counsel
SP: Sustainability Office

FINANCING MECHANISMS

Public Utilities Commission /
state funds (for study)

BE 5

BE 5.7 Statewide Carbon Pricing

ACTION: Continue to advocate for carbon pricing at national, regional, and statewide scales.

Where we are today

Economy-wide carbon pricing will be essential to the transition to a low-carbon or carbon-neutral future. As discussed in action BE 1.4, jurisdictions and institutions with carbon prices can and often do find they change investment outcomes and operational practices. Both Portland and South Portland have signed on in support of the Citizens Climate Lobby Carbon Fee and Dividend Policy, which advocates for a nationwide, steadily rising price on carbon with all fees from the carbon price returned to households as a monthly energy dividend. This policy forms the basis of the Energy Innovation and Carbon Dividend Act, which was introduced in the House of Representatives in 2019. Other carbon pricing proposals conceive of spending the revenues on investments in energy efficiency, renewable energy, and support for a just transition for sectors of the economy dependent of fossil fuels.

Maine is also part of the Regional Greenhouse Gas Initiative (RGGI), which is a cooperative effort across ten northeast states to drive greenhouse gas emissions reductions through a regional cap and trade system. RGGI states set a cap for the amount of carbon pollution power plants can emit each year, and pollution permits are sold up to that limit. Power plants buy the permits at quarterly auctions and the revenue supports a range of economic development, renewable energy, and energy efficiency initiatives. The cap is slated to decrease 30% over the next decade between 2021 and 2030.

Regardless of any regional or national progress, a large number of states have also made efforts to adopt statewide carbon pricing. Maine's first bill to propose a price on carbon (LD 434) was voted down in the spring of 2019 over concerns in how the revenue would be spent and whether the bill would have a regressive effect on Maine residents. As of summer 2020, no state has approved a statewide carbon fee.

The action we will take

Portland and South Portland will continue to support national, regional, and statewide efforts to implement a price on carbon. Two of the most significant challenges with establishing a carbon fee include 1) identifying an effective price point that can both drive greenhouse gas emissions reductions while still receiving the necessary political support; and 2) identifying the best use for the revenue and ways the program can be structured to mitigate regressive outcomes. The Cities will work with statewide partners to support ongoing efforts to assess a range of models for potential carbon pricing in Maine.

The action we will take

- ☐ Work with the statewide partners to advance a statewide carbon fee.

BE 5.7 Summary - Statewide Carbon Pricing

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — if funds are progressively redistributed	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d
	KEY MILESTONES Price on carbon as soon as feasible at national, regional, or statewide scale	CITY STEWARD P: Sustainability Office SP: Sustainability Office	FINANCING MECHANISMS N/A

One Climate Future Strategies

WR WASTE REDUCTION



Waste Reduction

The Waste Reduction strategies focus on improving single-stream recycling, diverting organic waste, re-using building materials, improving wastewater treatment efficiency, and enhancing a circular sharing economy. Collectively, the actions in this section account for 3% of our cumulative greenhouse gas emissions savings between now and 2050. Waste reduction strategies also play a significant role in reducing “upstream” emissions from processes that fall outside our city boundaries.

WR 1 PAGE 120

Residential and Commercial Waste

Includes single stream recycling, organics recycling, minimizing single-use plastics, and enhancing a circular sharing economy.

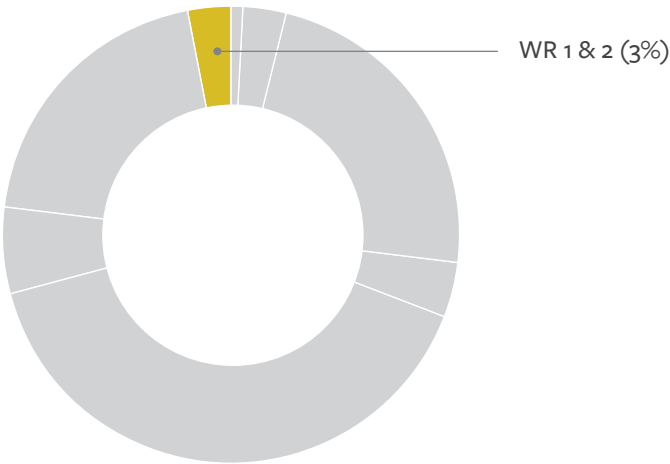
WR 2 PAGE 132

Construction, Industrial, and Municipal Waste

Includes deconstruction and reuse of building materials, facilitating industrial “by-product synergies,” reducing wastewater emissions, and adopting a municipal sustainable purchasing policy.

Cumulative greenhouse gas emissions savings attributed to each section

While waste reduction strategies play a relatively small role in reducing our cumulative emissions, it is important to note that the emissions and savings documented are based on what we track as part of the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) BASIC approach. Enhancing a circular economy where we minimize waste and use resources more efficiently can have significant upstream effects on reducing emissions outside the cities.





WR 1

Residential and Commercial Waste

COMPOST • Photo by Garbage to Garden

WR 1.1 Save-As-You-Throw

ACTION: Expand a save-as-you-throw system to South Portland.

Where we are today

Save-as-you-throw (SAYT) trash systems, also referred to as pay-as-you-throw (PAYT) or “unit-based pricing” charge households for trash service based on the amount of waste they generate, instead of using a flat fee. As a result, SAYT systems provide an economic incentive for residents to reduce trash and increase recycling, including recycling organic waste. According to a study by the Massachusetts Institute of Technology on food waste, SAYT/unit-based pricing is a powerful driver for waste reduction that can maximize the impact of curbside food waste and recycling collection programs.³¹ Studies done by Integral Group and Waste Zero for other jurisdictions show that achieving zero waste (generally

considered to be 90%+ diversion of waste from landfills or incineration) without a SAYT system to drive source reduction may not be feasible.

Portland adopted a SAYT system for waste collection in 1999 (referred to as “pay-as-you-throw” in Portland), which has had a measurable impact on reducing municipal solid waste production from residential homes. Residents buy purple bags at local retailers and trash is only collected if it is in those bags. South Portland does not yet have a SAYT program. According to a study by Waste Zero in 2018, among southern Maine jurisdictions participating in ecomaine, cities without SAYT programs generated on average 1.8 times as much trash per

capita as jurisdictions with SAYT. In 2017, Portland generated 268 lbs. of residential trash per capita and South Portland generated 491 lbs. of residential trash per capita.³²

The action we will take

South Portland will implement a save-as-you-throw system for residential waste collection, modeled on what has worked for Portland and other local municipalities. If South Portland were to match Portland’s per-capita waste output, the city could reduce its residential waste emissions by 45%, and its overall waste sector emissions by 15%.

There are two potential approaches for implementing a SAYT system: variable rates and proportional rates. Portland uses a proportional rate system, wherein residents pay per each bag of trash they fill. This rate structure creates a more direct relationship between cost and the amount of trash, and also gives residents and businesses more control on how much money they save by reducing trash. Under this system, all trash must be thrown away in trash bags that are a specific color or branded as part of the SAYT system, which can be purchased at retailers throughout the city.³³ By purchasing the bags, residents and businesses “pre-pay” for trash collection. Using fewer bags means paying less for trash collection.

Alternatively, in a variable-rate system, or container-based system, which is common in California, residents are charged for garbage collection based on their subscription, which is usually associated with a particular size of trash barrel provided by the city. For any garbage that exceeds what fits in that barrel, residents pay an additional fee. While this creates a very consistent revenue stream for the city, the administrative costs in addition to providing barrels tends to make this a more expensive option for cities. The incentive to reduce trash volume is also weaker in many cases; once a household or business is below the threshold of a single barrel, there isn’t an incentive to reduce trash further. Additionally, this model does not work as well for renters, since the size of the subscription is determined by the landlord, and tenants have no financial incentive to produce less trash.

Our next steps

- ☐ Assess SAYT models that could work with the City’s existing cart program (South Portland).
- ☐ Conduct a community outreach and educational campaign on the value of SAYT programs (South Portland).
- ☐ By 2026, present proposal to South Portland City Council for a SAYT program (South Portland).

WR 1.1 Summary - Save-As-You Throw



WR 1

WR 1.2 Single-Stream Recycling

ACTION: Mandate recycling for commercial and multifamily buildings.

Where we are today

Solid waste collected from businesses, organizations, institutions and households in Portland and South Portland goes to the state-of-the-art ecomaine waste-to-energy plant, an incinerator which burns trash to produce electricity. The plant serves over 70 communities in southern Maine and conforms to high standards of environmental performance, including ISO 14001 certification, making it much less polluting than most incinerators in the United States. The waste-to-energy plant not only prevents waste from going to a landfill (where it would contribute to higher levels of greenhouse gas emissions), but it also generates enough steam to create over 100,000 megawatt-hours of electricity annually—enough to power 15,000 homes, in addition to ecomaine’s own facilities, each year.³⁴

Despite these significant benefits, recycling materials (as opposed to burning them) has an even greater impact on reducing greenhouse gas emissions globally. Recycling materials reduces the amount of natural resources we consume, and on average requires less energy to create new products. A study by the Sound Resource Management Group—conducted in 1996 and still widely cited today—found that even accounting for the shipping of recycled material, recycling materials from municipal solid waste saves three to five times more energy on average compared to burning those materials for electricity.³⁵ For this reason, ecomaine has made recycling its top priority: It runs the largest recycling facility in Maine (processing over 40,000 tons of single-sort material each year), and continues

Even accounting for the energy used to ship recycled materials, studies show that recycling materials from municipal solid waste saves three to five times more energy on average compared to burning those materials for electricity.

to advocate for higher recycling rates in our cities. In 2019, diversion rates for Portland and South Portland were 38% and 29%, respectively.

Both Portland and South Portland provide curbside single-stream recycling to residential homes, which has played a significant role in diverting paper, plastic, and metal waste from the cities’ waste streams. However, in most large multifamily or commercial buildings, there is no curbside trash or recycling pickup; the building owner or operator is required to arrange for a private hauler to collect and dispose of the building’s waste. Absent regulations, many building owners will opt to simply provide the basic required trash pickup, and not provide building occupants the option to recycle or compost their waste. The State requires all businesses with fifteen employees or more to recycle copy paper and corrugated cardboard. In 2014, Portland expanded curbside recycling collection to small multifamily buildings, and instituted requirements that owners of larger multifamily buildings must provide recycling

to residents, and housing cooperatives and condominiums must likewise provide recycling to occupants. There are no requirements for owners of multifamily housing to provide recycling infrastructure or service to tenants in South Portland. There are also no mandates in Portland or South Portland that owners of commercial buildings provide recycling to workers or tenants, other than the state requirement.

The action we will take

By the end of 2026, Portland and South Portland will introduce and adopt legislation requiring commercial businesses to recycle cardboard, paper, glass, plastic, and metal waste. South Portland will also introduce and adopt legislation, requiring multifamily housing owners and/or managers to provide recycling for residents. In both processes, the Cities will work with commercial entities and multifamily housing owners, respectively, to vet the legislation, identify constraints and pathways for reducing constraints, and establish timelines for implementation that allow commercial entities and multifamily housing time to prepare for and implement new systems.



OPPORTUNITY FOR BETTER RECYCLING, PORTLAND • Photo by [TO BE CONFIRMED]

Our next steps

- ☐ Draft legislation to require multifamily building owners/ managers to provide recycling service and infrastructure to residents by end of 2025 (South Portland) and legislation to require recycling for commercial businesses by end of 2026 (Portland and South Portland).
- ☐ Work with commercial entities and multifamily housing owners and/or managers to vet and finalize the legislation.
- ☐ Increase education and outreach to residents and businesses about recycling and waste reduction in collaboration with ecomaine.

WR 1.2 Summary - Single-Stream Recycling

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d	a b c d	a b c d
		(a) Draws down carbon (c) Supports a circular economy	
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	• Require recycling in commercial and multifamily residential buildings by 2026	P: Sustainability Office SP: Sustainability Office	User fees, savings from reduced waste hauling, revenue from selling recycling (contingent on market)

WR 1.3 Food Waste Reduction and Organics Recycling

ACTION: Expand programs to divert food waste and increase organics recycling rates to ensure that excess food is better used to nourish people, animals, industries, and soils.

Where we are today

Because the organic waste we put in our trash is incinerated, and because much of food production occurs outside our city boundaries, the full extent of the carbon emissions that are generated by producing (and wasting) food is not captured in Portland and South Portland’s greenhouse gas inventories.³⁶ Nevertheless, organic waste—and specifically food waste—has shown to be a significant contributor to greenhouse gas emissions globally. Project Drawdown ranks reducing food waste at the global scale as the third most impactful tactic for reducing greenhouse gas emissions,³⁷ and it has been estimated that disposing one ton of edible food results in 2.5 tons of full lifecycle carbon dioxide emissions.³⁸ Based on statistics from a 2017 report by the National Resources Defense Council (NRDC),³⁹ we can roughly estimate that Portland and South Portland dispose of over 8,000 tons of food waste per year, approximately 5,600 tons of which is edible.

Diverting food waste can take many forms—many of which not only reduce emissions, but also help to better feed our communities, create sustainable energy, fertilize our soils, and sequester carbon from the atmosphere. Maine has formally adopted the Food Recovery Hierarchy, which prioritizes actions to reduce food waste based on their community benefits. The hierarchy starts with reducing the volume of surplus food (in store inventories, at events, and purchased by households), followed by directing excess food to food-insecure people, feeding animals, composting food waste or converting it to fuel, and finally disposing of food waste as a last resort. A significant number of organizations in the Greater Portland area—including food banks, pantries, kitchens/meal programs, and gleaning initiatives—work to redirect thousands of pounds of surplus food every year to the over 38,000 people who are food insecure within Cumberland County.

What is organic waste?

Organic waste is anything that was once living. Food waste is the primary source of organic waste in cities. Other sources of organic waste include food-soiled paper, as well as yard waste such as grass clippings, landscape prunings, and non-hazardous wood waste.



South Portland and Portland have also been expanding ways to better use food waste for compost, sustainable energy, and other regenerative uses. A number of private food waste haulers provide curbside compost services in the Greater Portland area. South Portland also has an opt-in food waste recycling program for all city residents, which offers free food waste bins to residents. Residents can choose to bring their food waste to any one of the six drop-off sites in the city free of charge, or hire Garbage to Garden for curbside collection for a reduced fee. The food waste collected through this program is sent to the Exeter (Maine) Agri-Energy anaerobic digester to create sustainable electricity, farm fertilizer, and animal bedding.

for dairy cows at Stonyvale Farm. Agri-Cycle and We Compost It Food Waste both also operate subscription programs to collect food waste from commercial customers throughout the region, including the Portland Public Schools.

The action we will take

Portland and South Portland will work to reduce organic waste in our trash streams by 70% by 2030. This target will be achieved through combined efforts to reduce food surplus, direct excess food to families that need it, and expand organics recycling by households, businesses, and organizations throughout our cities. To address the first objective, the Cities will collaborate with food recovery agencies to identify major sources of food waste and support existing efforts to redirect surplus food where it is most needed. This action is part of the strategy for building a resilient food system; see action CR 2.4 for further details.

To increase organics recycling, Portland and South Portland will advocate for the state to adopt mandatory organics recycling to be phased in over a period of roughly five years. This aligns with efforts already underway across New England states and in states around the country. As of April 2019, six states and seven municipalities had implemented mandatory organics recycling laws, including New England states Massachusetts, Connecticut, Rhode Island, and Vermont.⁴⁰ Generally speaking, these laws cover commercial and large-scale institutional waste generators; Vermont, along with the City of Seattle and the City of San Francisco have extended their mandatory organics recycling laws to cover individual residences. Seattle and San Francisco couple food waste collection with a save-as-you-throw (SAYT) unit-based rate structure, similar to what already exists in Portland.⁴¹

Portland and South Portland will also work with ecomaine and member communities to expand the organization's capacity for organics collection and processing in an effort to advance a regional program. A regional organics program would improve accessibility to food waste recycling across southern



FOOD WASTE DROPOFF SITE, SOUTH PORTLAND • Photo by [TO BE CONFIRMED]

Maine. With growing capacity at a regional level, and absent a mandatory state policy, the Cities will move to mandate organics recycling for commercial and institutional entities and establish curbside organics collection for residential households by 2030.

Curbside food waste collection will reduce waste tonnages and volume, and provide an opportunity to evaluate co-collection systems. Co-collection systems enable multiple waste streams to be collected on one route in the same truck, thus reducing truck miles and fossil fuel consumption. A 2013 organics feasibility study by Northern Tilth explored different types of collection scenarios, from split-bodied trucks, to “blue bag” organics collected with trash, to every-other-week source-separated collection.⁴² In the study, curbside organics collection coupled with SAYT unit-based pricing resulted in the most

efficient method and yielded a significantly greater volume of diverted organic material.

Studies on mandatory organics recycling programs also report significant social and economic benefits. A 2016 economic impact analysis of Massachusetts’ food waste ban, which was implemented in 2014, reported that the hauling, processing, and food rescue industry segments supported a 250% increase in related jobs compared to 2010 as well as \$5.4 million in tax revenue. While waste generators appear to bear the brunt of the costs, a recent study found that 99% of businesses in 17 countries (including the United States) saved money as a result of waste ban measures.⁴³ These cost savings were largely achieved through source reduction measures that result in lower purchasing and hauling costs, but savings were also achieved through tax incentives associated with food donation. In mature markets, the hauling costs for organics are often lower than for trash.

Our next steps

- ☐ Advocate for the state to adopt mandatory organic waste recycling to be phased in over a period of roughly five years.
- ☐ Continue to collaborate with ecomaine and regional partners to expand collection and processing capacity for organics.
- ☐ By 2026, if there has been no traction with statewide mandatory organic waste recycling, begin a process to institute citywide mandates for commercial and institutional recycling of food/organic waste. Provide a robust education, technical assistance, and enforcement campaign to reduce waste contamination.
- ☐ Move towards curbside collection of residential food waste in both Cities by 2030.

WR 1.3 Summary - Food Waste Reduction and Organics Recycling



WR 1

WR 1.4 Single-Use Plastics

ACTION: Ban select single-use plastics and identify partnerships to reduce plastic waste.

Where we are today

Single-use plastics include plastic straws, bags, cups, cutlery, bottles and other items that are meant to be used only once before they are thrown away or recycled. They are primarily made of petrochemicals (fossil-fuel-based chemicals), and because they are used for a very short time before disposal, single-use plastics also have a large carbon footprint. Although their usable lifespan is short, most single-use plastics take a long time to decompose—a plastic drink bottle that is used only once, for example, can take over 450 years to break down. Millions of tons of single-use plastics now leach chemicals, build up in rivers and oceans, and compromise the health of marine ecosystems. Because of these impacts, cities and states throughout the United States (and nations globally) are moving towards regulating or banning the use of certain single-use plastics. Another approach gaining traction is extended producer responsibility (EPR) laws that require manufacturers to be responsible for both reducing their packaging and waste, and taking back waste. EPR programs have been implemented for items like paint and electronic products—Maine has an existing Product Stewardship program for the takeback of electronic waste at transfer stations and electronics retailers, and a “PaintCare” program for paint recycling.

Portland and South Portland have had a 5-cent fee on plastic bags since 2015 and 2016, respectively. In 2019, the State of Maine adopted legislation to ban single-use plastic bags, Styrofoam (also known as polystyrene), as well as plastic drink stirrers, effective January 2021. The law will prohibit food establishments, including restaurants, caterers, coffee shops

The Cities will advocate in support of state legislation LD 2104, which will be the first state law to require extended producer responsibility for packaging.

and grocery stores from using these items, as they cannot be recycled in single stream recycling. In October 2019, Portland adopted an ordinance banning plastic straws. Under the ordinance, food providers may only supply a plastic beverage straw, stirrer, or splash stick on request after April 2020, and distribution of plastic beverage straws, stirrers, and splash sticks will be prohibited after January 2021.

The action we will take

Portland and South Portland will phase out single-use plastics to the greatest extent practicable by 2026. In almost all cases, implementing single-use plastic bans at the state level as opposed to the city scale will be most effective—to have a wider reach and to create consistent standards for businesses operating in neighboring jurisdictions. Portland and South Portland will support and advocate for increasing restrictions on the use of single-use plastics statewide in all cases where suitable alternatives exist and where such restrictions do not pose undue cost burdens for Portland and South Portland businesses and residents. This state advocacy effort will be coupled with ongoing assessments of options for eliminating



Community Spotlight

Taco Trio

Taco Trio serves up traditional Mexican food on the corner of Ocean Street in South Portland. Co-owners of the local restaurant made the commitment to incorporate sustainable principles into their business model from the very start. Through perseverance and experimentation, they found ways to reduce waste while also turning a profit at Taco Trio.

According to the Green Restaurant Association, the average U.S. restaurant produces 100,000 pounds of waste a year. Taco Trio was determined to buck this trend, but it took several different approaches before landing on one that worked. Reusable dishware and cutlery didn't make sense for their take-out business. Recyclables presented unique challenges in educating customers how to properly sort their waste; it was too hard to get it right. Compostable kitchenware proved to be a streamlined disposal process while also diverting solid waste. Now front-of-house waste goes into one compost bin, and customers don't have to sort their items. Behind the counter, they compost food scraps and send their used cooking oil to be converted to biofuel.

The local business continues to think outside the box to identify opportunities to reduce the environmental impact of their employees and patrons. Achieving a sustainable business model is an ongoing process, but Taco Trio is proud of their commitment and leadership in the local community.

TACO TRIO CHAMPIONS CREATIVE WASTE REDUCTION • Photo by [TO BE CONFIRMED]

single-use plastics and barriers. If further restrictions on single-use plastics are not possible at the state level, we will examine ways the Cities can take municipal measures to meet our 2026 target. Plastic to-go containers, cutlery, plates/bowls, plastic cotton bud sticks, and sticks for balloons (in addition to straws and drink stirrers) have been identified as significant sources of single-use plastic waste for which affordable alternatives exist.

While bans are an effective method for change, they are not the only approach. We'll explore a number of other complementary approaches that collectively seek to change markets, behavior, and precedents. Approaches the cities will pursue include:

- **Extended producer responsibility (EPR).** The Cities will advocate in support of state legislation LD 2104, which will be the first state law to require extended producer responsibility for packaging. The bill draws on a similar program in Quebec, Canada, calling for the creation of a product stewardship organization that packaging producers would pay into and would support local efforts to manage and recycle plastic waste.

● **Partnerships with retailers, events, and food**

establishments. The Cities will seek ways to partner with retailers and food service establishments on initiatives to reduce excessive packaging and transition to compostable or reusable products. Initiatives could include branding, marketing, or recognition for single-use plastic reduction efforts or technical assistance in identifying suppliers for compostable alternatives.

Our next steps

- ☐ Pass ordinances prohibiting the distribution of single-use plastics by 2026.
- ☐ Support LD 2104 or subsequent legislation on extended producer responsibility for packaging, and advocate for the inclusion of goals and requirements for reducing packaging, in addition to funding local recycling programs.

WR 1.4 Summary - Single-Use Plastics



WR 1.5 Circular Sharing Economy

ACTION: Foster a circular and sharing economy.

Where we are today

A “circular economy” refers to a system in which nothing is wasted. All materials are repurposed and kept in use, instead of being disposed. Through better design and consideration of a product lifecycle, and expanded repair and reuse, circular economies expand the lifespan of products, support the regeneration of natural systems, and eliminate the need for disposal. A “sharing economy” in many ways supports a circular economy by creating models for sharing resources, tools, or services between individuals and households—reducing consumption by eliminating the precedent that every individual or household must own their own items. Portland and South Portland have a large number of formal and informal organizations—including public libraries, the Maine Tool Library, South Portland Swap Shop, shared or community kitchens, thrift shops, makerspaces, community gardens, “Buy Nothing” groups, and hour exchanges, among many others—that both cultivate and continue to strengthen a circular, sharing economy locally.

The action we will take

Portland and South Portland will continue to support initiatives that foster a circular, sharing economy. Such initiatives support One Climate Future efforts to reduce greenhouse gas emissions and build the resilience of our cities by reducing both consumption and waste, saving residents and businesses money, while also creating stronger connections and support networks between community members. This action is broad

and multi-faceted, and ultimately aligns with many actions in this plan that contribute to a stronger circular economy. To support a circular, sharing economy, the cities will seek ways to:

- **Foster community spaces for sharing resources.** The Cities will support the development of new and existing shared community spaces and spaces for sharing items, including community kitchens, community centers, community gardens, makerspaces, tool libraries, or other lending libraries. This effort goes hand-in-hand with cultivating neighborhood hubs for community resilience (see action CR 2.5). The Cities will work with community partners to strengthen existing spaces and potentially identify new spaces to serve as neighborhood hubs. A small grants program can be used to support the development of hubs as well as other circular, sharing economy initiatives that support community resilience (see action CR 2.5).

- **Support ways for re-use businesses to locate or stay within the cities.** The Cities will encourage growth of businesses that reuse or repair consumer goods by removing barriers for these types of businesses to locate and stay within the cities. This could include reducing financial barriers (e.g., through rent subsidies, waived license fees, or other small business economic development support), relaxing zoning restrictions, or fostering “reuse business clusters” located in a shared commercial space.

- **Sponsor or promote fairs and workshops for reuse, rental, and repair.** The Cities will support “repair fairs” by hosting them in public spaces or promoting them on City media platforms. We will also increase public awareness of and access to opportunities for reuse, product rentals, repair, and donation.

- **Cultivate community gardens and food forests.** The Cities will continue to seek ways to expand access to public open spaces for community gardens and food forests, and support gleanings and food recovery programs to redistribute food surplus (see action CR 2.3).

- **Procure recycled and remanufactured products through municipal purchasing.** Through municipal purchasing, the Cities will support and strengthen markets for remanufactured products and products with high recycled content that are produced locally (see action WR 2.4), and foster the growth of the building material reuse marketplace for deconstructing, reusing, and recycling building materials (see action WR 2.1).

- **Facilitate by-product synergies in the industrial sector.** The Cities will work with state and regional partners to establish a regional materials marketplace to cultivate “by-product synergies” among industries in the cities whereby industrial waste streams for one product are used as source materials for another product (see action WR 2.2).

- **Recognize organizations and businesses championing a circular sharing economy.** The Cities will develop a grant, recognition, or incentive program to celebrate and encourage local businesses, organizations, or leaders who promote or exemplify a circular, sharing economy. This program would align with the One Climate Future Awards (see action BE 2.4).

Our next steps

- ☐ Utilize the findings of the One Climate Future community surveys on the types of shared resources people would use if available, along with discussions with community groups and organizations, to identify opportunities for strengthening or expanding shared community resources. (To be conducted in alignment with action CR 2.5.)

WR 1.5 Summary - Circular Sharing Economy





WR 2

Construction, Industrial, and Municipal Waste

DEMOLITION WASTE

WR 2.1 Construction and Demolition Waste

ACTION: Reduce construction and demolition waste through targeted re-use initiatives.

Where we are today

Construction and demolition (C&D) waste makes up an enormous proportion of the U.S. waste stream—548 million tons were generated in 2015 (the most recent year of data), over twice the weight of municipal solid waste.⁴⁴ The vast majority (90%) of that waste is generated during the demolition process. Deconstruction is an alternative to demolition that entails the systematic dismantling of structures—usually in reverse order from which they were built—to maximize the reuse and recyclability of materials. Deconstruction significantly reduces waste generation, reduces the environmental impacts of demolition, and reduces demand for virgin materials when items are recycled or reused. As of 2019, at least 13 states had adopted waste bans that address

materials associated with C&D waste and several cities and counties had passed ordinances that specifically regulate the deconstruction process or its outcomes. C&D waste is not tracked by either City, and so the full scope of waste and emissions from this sector is unknown.

The amount of potential material that could be recovered through deconstruction tends to be quite high, with up to 25% of materials being available for reuse, another 70% available for recycling, and only 5-15% needing to be disposed.⁴⁵ Deconstruction can be practiced along a spectrum from “soft stripping,” going after the easiest-to-capture materials for reuse and recycling, to full deconstruction, which entails piece-

The action we will take

- **Conduct baseline assessment to drive C&D waste policy development.** The Cities will assess baseline practices for managing C&D waste; establish goals and interim targets for C&D waste minimization and reuse; and conduct an inventory of existing regional markets and facilities for material reuse and recycling. In conducting the assessment and developing a subsequent policy, Portland and South Portland will work with the construction sector in both Cities to discuss policy objectives, identify current market-based or logistical constraints to deconstruction and material reuse, and identify resources and incentives that would encourage new waste management practices to support the policy's effectiveness.

- **Advocate for state-level initiatives.** The Cities will work with state-level partners and representatives from the building sector, the waste handling sector, and the environmental sector to develop statutes or rules that require building deconstruction or reuse. Portland and South Portland will also advocate for the State to assess opportunities for the expansion of reuse and recycling facilities, as the majority of materials currently directed to C&D recycling facilities in Maine continue on to a landfill.⁴⁷

PRIMARY COMPONENTS

- ### How this strategy advances a future that is...

Equitable

Regenerative

a **b** **c** **d**

- (a) Draws down carbon
- (c) Supports a circular economy

Resilient

KEY MILESTONES

CITY STEWARD

P: Sustainability Office & Public Works
SP: Sustainability Office & Public Works

FINANCING MECHANISMS

User fees, general funds (for enforcement and contractor training), state funding (for statewide program investment, facilities)

• **Support the further development of the reuse**

marketplace. Building deconstruction is most feasible when there is a robust market or “ecosystem” for material reuse and recycling, including suppliers (e.g., deconstruction contractors), sellers (e.g., reuse warehouses), and buyers (e.g., contractors, homeowners, artists). Fostering this marketplace will involve identifying and revising regulatory barriers that may restrict material reuse or recycling, as well as expanding material processing capabilities in the region for products such as gypsum. The Cities will also consider supporting markets for remanufactured materials produced locally by setting priorities in municipal purchasing (see action WR 2.4).

Our next steps

- ☐ Draft a report assessing baseline practices for C&D waste management; goals for waste reduction and reuse; and the marketplace and facilities to support material reuse and recycling to inform C&D waste ordinances.
- ☐ Engage the construction sector on steps needed to successfully implement C&D waste ordinances, and on providing continuous training and education for contractors.
- ☐ Advocate for the State to address regional needs for reuse and recycling facilities in conjunction with stronger policies for the management of C&D waste to maximize diversion from landfills.
- ☐ Introduce and adopt C&D waste ordinances in both cities.

WR 2

WR 2.2 Industrial Waste

ACTION: Work with state and regional partners to encourage “by-product synergy” with industrial waste streams.

.....

Where we are today

As with construction and demolition (C&D) waste, industrial waste is not tracked by the Cities or by ecomaine, so the full scope of waste and emissions from this sector is unknown. (This waste is likely mixed into the commercial waste stream, but a portion may also be going directly to landfills.) Nevertheless, “cradle-to-cradle” and industrial ecology approaches used in other contexts have shown opportunities for innovative waste reduction options in this sector. Cradle-to-cradle plays on the term “cradle-to-grave,” which refers to a linear lifecycle for products, transitioning from production, to use, to disposal. By contrast, cradle-to-cradle mimics “closed loop” natural processes whereby nutrients are constantly recycled. For cradle-to-cradle approaches in industry, products and processes are designed from the outset to reuse and recycle materials into new products or uses. “Industrial ecosystems” and “industrial symbiosis” are other terms for creating closed loop processes within the industrial sector where the industrial waste streams for one product can be recognized as source materials for another product. In other cities and states in the United States, so called “by-product synergy” organizations and platforms have been created by local governments and non-profits working together to organize beneficial material and waste-stream exchanges within limited regions. The Greater Portland area is an ideal scale for the implementation of such material and waste exchanges to be successful.

The action we will take

Portland and South Portland will work with state and regional partners to explore opportunities and platforms for launching

an online “materials marketplace” to facilitate by-product synergies within the industrial sector. The United States Building Council for Sustainable Development (US BCSD) Material Marketplace—with a number of regional marketplaces across the country—is one successful model.⁴⁸ Chicago’s Waste-to-Profit Network and Austin’s Material Marketplace are two of the city-based programs developed under the US BCSD platform. Ohio, Tennessee, Michigan, and Ontario have likewise launched statewide (or Province-wide) marketplaces.

Through a regional materials marketplace, industrial facilities, businesses, academic institutions, nonprofits, and entrepreneurs within the region can create a profile and share sought after or available materials to exchange. Under the US BCSD model, the marketplace is actively monitored and facilitated, and reuse partnerships are identified and recommended to companies as they emerge. The platform further serves as a learning community and information exchange for businesses and organizations seeking innovative solutions to repurposing and reusing waste, fostering a culture shift towards a circular economy.

Our next steps

- ☐ Work with state and regional partners to explore platforms for launching an online materials marketplace either statewide or regionally; obtain price quotes for various platforms that use a city- or state-sponsorship model for regional marketplaces.

WR 2.2 Summary - Industrial Waste

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d	a b c d (a) Draws down carbon (c) Supports a circular economy (d) Builds shared wealth	a b c d (d) Builds partnerships
	KEY MILESTONES Regional materials marketplace launched by 2035	CITY STEWARD P: Sustainability Office & Economic Development SP: Sustainability Office & Economic Development	FINANCING MECHANISMS Grants, public-private partnerships (for marketplace sponsorship/start-up costs), user fees

WR 2.3 Summary - Wastewater Emissions

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability
	KEY MILESTONES Engineering feasibility study commissioned by 2032	CITY STEWARD P: Sustainability Office & Water Resources SP: Sustainability Office & Water Resources Protection	FINANCING MECHANISMS ESCOs, Efficiency Maine funding, revolving loan funds (e.g., Clean Water State Revolving Loans)

WR 2

WR 2.3 Wastewater Emissions

ACTION: Investigate options for reducing emissions of wastewater treatment with anaerobic digestion.

.....

Where we are today

Anaerobic digestion is the process of breaking down organic waste, which produces a compressed and drier waste stock, along with biogas. Traditionally, anaerobic digestion was used at wastewater plants solely to make the end product easier to transport to landfills. The gas generated was not of sufficient quality to use in boilers or electricity generation, and so was burned off (flared). However, modern thermal hydrolysis and anaerobic digestion systems efficiently turn wastewater into fuel-grade gas and dry solids. These systems allow wastewater plants to reduce their need to burn natural gas or fuel oil, replacing those fossil fuels with a carbon-neutral, renewable, locally-produced fuel. The Lewiston-Auburn Water Pollution Control Authority (LAWPCA) became the first municipal wastewater treatment operation in Maine to install anaerobic digesters in 2013. The two digesters generate electricity and heat through combined heat and power (CHP); reduce total solids produced by 50%; and decrease the facility's greenhouse gas emissions by 80%—with no increase in sewer rates.

There are two wastewater treatment plants in Portland: the East End facility and the Peaks Island facility, both of which are owned and operated by the Portland Water District. The South Portland Wastewater Treatment Plant is the one facility in South Portland, owned and operated by the City. Currently, there is no anaerobic digestion of waste at Portland and South Portland's wastewater treatment plants. A 2014 Treatment Facilities Plan for South Portland concluded that the site was not big enough to support investment in an anaerobic digester.

The action we will take

Treating the cities' wastewater with anaerobic digestion and using the resulting gas as fuel could reduce greenhouse gas and

process emissions from the plants by over 25%—representing 20% of city government greenhouse gas emissions savings. However, space constraints may limit the feasibility at the current wastewater treatment plants. As discussed in action WR 1.3, food waste collected in Portland and South Portland is currently hauled to an anaerobic digester in Exeter, Maine. The weight and moisture content of the wastewater plant output do not support this sort of extended transport.

South Portland, Portland and the Portland Water District will work to commission a joint engineering feasibility study to explore local and regional options for anaerobic digestion of wastewater. The study will assess the capacity and available area for anaerobic digesters at the current wastewater treatment plant sites; lifespan of current facilities and how anaerobic digestion could align with replacement timelines; options for hauling waste a shorter distance to an in-town but off-site digester; and the management of residual sludge. The selected consultant should be experienced with modern thermal hydrolysis and anaerobic digestion systems that are more common in Europe to ensure best-in-class space, performance, and fuel output. The biogas would be used to support industrial demand, as discussed in action BE 4.2.

Our next steps

- ☐ Commission an engineering study on the capacity for on-site anaerobic digestion of wastewater; options for transporting waste to an alternative site in the cities as part of a regional model; and how options are affected by timelines for plant replacement for each of the cities. Studies will be pursued and commissioned jointly to better take advantage of options for a regional facility.

WR 2

WR 2.4 Sustainable Purchasing Policy

ACTION: Adopt a sustainable purchasing policy for municipal procurement.

Where we are today

The decisions a city makes when purchasing goods or services have a significant impact on the carbon intensity of municipal operations. Carbon embedded in the manufacturing process, delivery to market, and end-of-life treatment of a product add up.⁴⁹ When municipalities start calculating these value chain emissions, many organizations find that the carbon impact from these indirect sources are more significant than the emissions they generate from burning fuel to operate vehicles or heat buildings.⁵⁰ This accounting approach provides a more complete picture of the greenhouse gas emissions associated with a municipality's operations.

A Sustainable Purchasing Policy (or “Environmentally Preferable Purchasing Policy”) can be used to guide procurement decisions to meet established environmental, health, or social responsibility commitments. Such a policy requires organizations to evaluate procurement decisions based on “greatest value” as opposed to lowest cost by considering the environmental, health, or social impacts of a product or service, not simply the purchase price. As a part of the largest procurement group in the nation, federal, state and local governments can use buying practices to direct manufacturers toward products with a lesser or reduced effect on human health and the environment that serve the same purpose.⁵¹

For municipalities increasingly focused on reducing operational emissions, a Sustainable Purchasing Policy can prioritize the procurement of products and services from sources with

lower overall carbon footprints. These products or services may come from a local business with a short supply chain or a vendor that conserves natural resources, energy, or water. Municipalities with such policies in place consider the consumption of raw materials in a product or service; the toxicity of chemicals used in manufacturing; the quantity of recycled material used in packaging; the distance the product is transported; the lifespan of the product; the energy saved through efficiency gains; and options for product reuse, recycling, or disposal. This approach to public procurement is gaining traction as municipalities and states recognize efficiency improvements and financial savings over time, in addition to environmental and social benefits.⁵² Maine adopted an Environmentally Preferable Purchasing Policy in 2004.

Certifications and eco-labels make it possible for jurisdictions to systematically evaluate products and vet sustainability claims. The Ecolabel Index is an independent searchable database that catalogs products and ecolabels; likewise, the U.S. Environmental Protection Agency (EPA) publishes recommendations for specifications, standards, and eco-labels for federal purchasing, which are likewise referred to by state and local Sustainable Purchasing Policies.⁵³ Through adopting Sustainable Purchasing Policies, local governments can not only reduce the environmental impact of city operations, but also drive demand and strengthen the market for material reuse and environmentally preferable products, particularly those with higher recycled content (see action WR 2.1).

The action we will take

Portland and South Portland will each adopt a Sustainable Purchasing Policy to set standards for municipal procurement, and produce an accompanying Sustainable Purchasing Policy Guide to provide supporting resources and guidance for making procurement decisions. The Guide will be an online resource, broken down by sector (e.g., construction; landscaping; office supplies, etc.) and further broken down by product (e.g., concrete, carpet, vehicles). For products, the Guide will define minimum standards, “what to look for,” “what to avoid,” “end-of-life best practices,” and relevant ecolabels to use based on the product. For municipal equipment that currently uses fossil fuels (e.g., heating and cooling systems and municipal fleet vehicles), the Sustainable Purchasing Policy will set dates by which all future purchases must be electric in alignment with actions BE 1.3 and TLU 2.4.

The Cities will draw from the National Association of State Procurement Officials (NASPO) Green Purchasing Guide, which outlines guidance for drafting, implementing, marketing, and evaluating a Sustainable Purchasing Policy.

As a part of the largest procurement group in the nation, federal, state and local governments can use buying practices to direct manufacturers toward products with a reduced effect on human health and the environment.

Our next steps

- ☐ Draft Sustainable Purchasing Policies to set standards and best practices for municipal procurement.
- ☐ Develop Sustainable Purchasing Policy Guides with resources and information to support procurement decisions.

WR 2.4 Summary - Sustainable Purchasing Policy

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — with inclusion of social sustainability	a b c d (a) Draws down carbon (b) Restores ecosystems (c) Supports a circular economy (d) Builds shared wealth	a b c d
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	• Sustainable purchasing policy adopted by 2024	P: Sustainability Office & Finance Department SP: Sustainability Office & Finance Department	N/A

One Climate Future Strategies

TLU TRANSPORTATION & LAND USE



Transportation and Land Use

The Transportation and Land Use strategies focus on expanding our public transportation systems, making it easier to travel between destinations without a car, transitioning to electric vehicles, and expanding charging infrastructure—including shore power for ships and ferries. Collectively, the actions in this section account for 26% of our cumulative greenhouse gas emissions savings between now and 2050.

TLU 1 PAGE 142

Mode Shift

Includes strategies to decrease private vehicle use, such as transit-oriented development, public transportation, biking accessibility, complete streets, employer transit partnerships.

TLU 2 PAGE 172

Vehicle Electrification

Includes the expansions of electric vehicle charging infrastructure, transition of municipal and bus fleets to electric vehicles, and electric vehicle incentives.

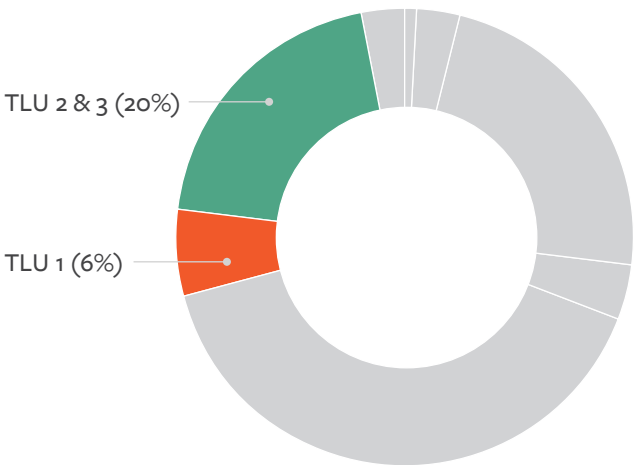
TLU 3 PAGE 188

Transportation Infrastructure

Includes strategies to reduce emissions from freight, ferries, ships, the Jetport, and through decreasing idling.

Cumulative greenhouse gas emissions savings attributed to each section

The combined effects of vehicle electrification and more efficient vehicles (driven by Corporate Average Fuel Economy Standards) are attributed to actions across both sections TLU 2 (Vehicle Electrification) and TLU (Transportation Infrastructure). Collectively, they are the third biggest area for emissions reductions. Reducing vehicle miles traveled by a private vehicle through making trips by public transit, walking, biking and other modes easier contribute an additional 6% of emissions savings, and also bring important equity and resilience benefits.





WOMAN BIKING DOWN CONGRESS STREET • Photo by John Phelan

TLU 1.1 Public Transit Networks

ACTION: Support efforts to “Make Transit Easier,” “Expand Local Connections,” and “Introduce Rapid Transit” in alignment with the Transit Tomorrow vision for the PACTS region.

Where we are today

Seven public transit agencies serve the Portland Area Comprehensive Transit System (PACTS) region, six of which provide service within Portland or South Portland. Greater Portland METRO (METRO), operated by the Greater Portland Transit District, runs nine bus routes in and around Portland and South Portland, in addition to the BREEZ, a route which runs from Portland to Brunswick—collectively giving rides to over 2 million people per year. The South Portland Bus Service (SPBS), operated by the City of South Portland, runs three bus routes primarily in South Portland with an annual ridership around 280,000. In addition to these two primary fixed route

services, the Biddeford-Saco-Old Orchard Beach (BSOOB) Transit Committee operates the Shuttlebus-Zoom (Sh-Zoom) between the “tri-cities” and South Portland and Portland, and the Regional Transportation Program (RTP) operates the Lake Region Explorer between Bridgeton and Portland as well as on-demand, door-to-door service in Cumberland County for non-ambulatory, low-income, and other qualifying riders. As the Metropolitan Planning Organization (MPO) for the region, PACTS currently divvies limited federal dollars across the seven agencies based on individual agency priorities. In addition to the region’s bus services, Casco Bay Lines (CBL), operated by the Casco Bay Island Transit District, ferries over one million

What is bus rapid transit?

Bus rapid transit (BRT) systems are fixed bus routes that aim to provide service similar to a train, while taking advantage of the costs and flexibility of a bus and avoiding the installation of light or heavy rail systems. Common features of BRT systems include simplified and consistent routes; dedicated lanes so that the buses arrive at predictable times and without getting stuck in traffic; stations where people pay prior to boarding; elevated platforms so people can board without a step and through multiple doors; high frequency arrivals; and oftentimes a separate and prominent brand identity.



passengers annually between downtown Portland and seven islands within Casco Bay, and the Amtrak Downeaster rail service, managed by Northern New England Passenger Rail Authority (NNEPRA), operates five daily trips between Portland and Boston, and three daily trips between Portland and Brunswick.

Collectively, these public transit networks cover a large territory—between neighborhoods, neighboring towns, islands, and states—and yet currently, only 3.2% of commuter trips across Portland and South Portland are completed using public transit. The One Climate Future modeling analysis targets that by 2050, 20% of all trips originating or terminating in the cities will use public transit to meet our One Climate Future goals. PACTS, in collaboration with regional partners, is currently developing a long-range transportation plan, Transit Tomorrow, that will chart a course for investments in the region's transportation system over the next thirty years. This work builds on investments that have led to increases in ridership over the past five years—including renovations to the Casco Bay Lines terminal in 2014; the automated vehicle location (AVL) systems installed by METRO, SPBS, and Casco Bay Lines in 2018 that allow riders to track buses and ferries

by a phone app; and the increases in METRO bus frequency, Sunday service, and new routes between 2014 and 2018. METRO, SPBS, and BSOOB are also in the process of rolling out a new uniform automated fare collection system that allows for quick, contact-less payment using a smart card or smart phone, universally used across the three bus systems.

Looking towards 2050, Transit Tomorrow sets an ambitious vision for increasing mobility, equity, and economic opportunity in the region while reducing carbon emissions. The plan has three focus areas that align with the intention of One Climate Future to design and connect our homes, businesses, and public spaces around an efficient transportation network:

- 1. “Make Transit Easier”** focuses on ways to increase the ease and convenience of transportation, such as through the new automated fare payment system;
- 2. “Expand Local Connections”** focuses on improving the reliability, frequency, available connections, and reach of bus routes; and
- 3. “Introduce Rapid Transit”** seeks to bring bus rapid transit to the Greater Portland region where feasible and effective. This focus area has the potential to greatly increase bus service reliability, decrease travel times, increase ridership, and decrease greenhouse gas emissions from personal automobile use.

Our vision for a connected, carbon neutral transportation sector is nothing short of transformational. There is increasing recognition that expanding public transit in the region to meet the One Climate Future vision and pathways outlined by Transit Tomorrow requires strategic, streamlined, and highly coordinated efforts.

The action we will take

To achieve the One Climate Future goal that 20% of all trips will be taken by public transit by 2050, Portland and South Portland will coordinate with the public transit agencies in the PACTS region to make public transit easier and more reliable, to develop stronger and more connected local networks, and to advance bus rapid transit in the region.



ROUTE 21, SOUTH PORTLAND BUS SERVICE • Photo by [TO BE CONFIRMED]

To meet this vision, the Cities will advocate for greater coordination and integration across transit agencies in the region. We see this as critical for two primary reasons. First, in order to “make transit easy” residents across the PACTS region must be able to plan a route and navigate fluidly between transit systems as if it were one coordinated system. Secondly, to meet these ambitious climate goals we must pursue and allocate external funding in the most tactical way possible. Under the current system, the transit agencies inadvertently compete for PACTS-administered federal funding. With greater coordination, METRO and the South Portland Bus Service could identify joint priorities that reduce competition for funding.

Greater Portland METRO and the South Portland Bus Service were one service until they split in 1983 due to concerns

about cost inequity. There are a number of pros and cons to reconsolidating the systems, many of which were discussed in early 2018 when the South Portland City Council opted to not further pursue a merger proposal initiated by METRO.

With or without administrative consolidation, the desired outcome is a highly streamlined and integrated experience for transit riders, made possible by coordinated and efficient planning, operations, and financing. The Cities see the following items as key opportunities for improving integration, some of which are already underway:

- **One payment system.** METRO, SPBS, and BSOOB are in the process of rolling out a new uniform automated fare collection system that allows for payment on any of the three bus systems using a smart card or smart phone.

Our vision for a connected, carbon neutral transportation sector is nothing short of transformational. There is increasing recognition that expanding public transit in the region to simultaneously meet our cities' transportation and climate goals requires strategic, streamlined, and highly coordinated efforts.

- **One centralized portal for information.** One portal would allow residents to see all route and fare information in one location to better assess options or map out routes on multiple services.

- **Coordinated routes and schedules.** Transit riders would be better able to switch between services if routes met at certain points and if schedules accommodated appropriate connection times.

- **Unified branding.** A unified branding would give consistent visual cues across all transit system, allowing riders to conceptually relate the systems as part of a unified network. Each system could still have its own logo, while creating better visual consistency across the systems.

- **A joint climate commitment.** METRO and South Portland Bus Service will commit to carbon neutrality by 2040—creating the potential for a region-wide commitment across public transit agencies to align around a single carbon mitigation goal.

- **Regionalized facilities.** There is the potential for operational and cost efficiencies by pursuing shared regional bus depots and maintenance facilities, particularly in the development of electric fleet charging infrastructure (see action TLU 2.3).

- **Transit mini-hubs.** Mini-hubs have more amenities than a bus stop, but are smaller than a transit station. Oftentimes they are best located at the convergence of multiple bus services (such as the Maine Mall), presenting opportunities for coordination in their development and maintenance.

Portland and South Portland will also continue to work with PACTS and regional transportation partners to provide the capital investments needed to support the three focus areas laid out in Transit Tomorrow. This work includes:

- **Continuing to upgrade transit stops so that they are safe and accessible.** PACTS Transit Stop Access Project will fund improvements at bus stops and mini-hubs for METRO, SPBS, and BSOOB in 2021-2022. To prioritize improvements, GPCOG and project consultants conducted an inventory of bus stops throughout the Greater Portland region, and catalogued needed improvements based on sidewalk quality, safety of road crossings, bus stop amenities, ADA accessibility, among other factors. The Cities will continue to collaborate with PACTS and the transit agencies to complete upgrades to make stops increasingly safe and accessible. (This step aligns with the Cities' efforts to create complete streets; see action TLU 1.3).

- **Supporting bus efficiency through roadway design.** The Cities will assess and pursue opportunities to give buses an advantage in traffic through road and infrastructure design, operations, and technology, which can make transit service more reliable, incentivize ridership, and reduce operating costs. These design advantages may include traffic signals with optimized or coordinated timing along a bus route (passive transit signal priority), traffic signals that can detect and respond to a bus approaching (active transit signal priority), dedicated transit lanes, or queue jump lanes which give buses a head-start in congested areas along significant transit corridors with traffic signals in close proximity.

- **Investing in transit-oriented nodes and corridors.** The Cities will promote transit-oriented development patterns through regulatory reform, incentives, and other measures (see TLU 1.2 for more detail).

● **Investigating a new ferry connection between Portland and South Portland.** Portland and South Portland will follow an ongoing study by PACTS to assess the economic viability and feasibility of a ferry connection between the Portland waterfront and South Portland near Bug Light Park and Southern Maine Community College. See action TLU 3.3 for further discussion.

● **Advocating for more state funding earmarked for public transportation investments.** MaineDOT is funded through the Highway Fund, and in Maine, public transportation is constitutionally and legislatively prohibited from using monies from this fund. The only source of state funding for public transportation is the Multimodal Transportation Fund (MTF), which receives funds from a portion of the sales and use tax on rental vehicles, the Aeronautical Fuel Tax, and the Railroad Company Tax. Currently this funding is very limited, which creates a challenge for securing federal funding; most federal transit money requires a 20% match or higher, which can be burdensome for local governments to cover entirely. As of June 2020, the State has charged a Joint Standing

Committee on Transportation to study reforms to the state’s transportation funding. The Cities will continue to advocate for funding reform to either increase the proportion of tax revenue from rental vehicles currently allocated to the MTF, or to identify new funding sources to capitalize the MTF, to increase local funding available for multimodal transit investments.

Our next steps

- ☐ Advocate for commitments by transit agencies to achieve carbon neutrality by 2040.
- ☐ Pursue funding to add transit signal priority capabilities at more bus system intersections (South Portland) and along priority bus routes (Portland).
- ☐ Continue participation in working meetings with PACTS and transit agencies to identify joint priorities for capital projects that would best support increases in ridership and strengthen TOD nodes and corridors (in alignment with action TLU 1.2).
- ☐ Implement upgrades to transit stops in alignment with recommendations from the Transit Stop Access Project.

TLU 1.1 Summary - Public Transit Networks

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d	a b c d	a b c d
	(a) Addresses injustice (b) Expands access	(a) Draws down carbon (d) Builds shared wealth	(a) Reduces vulnerability (c) Strengthens communities (d) Builds partnerships
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
• Advocate for and implement coordinated measures between transit agencies. • Advocate for increases in state funding for multimodal transportation. • Improve safety and accessibility of transit stops. • Invest in roadway design advantages for buses along transit routes.	• Roll-out of coordinated measures (portal, schedules, etc.) by 2025 • All specified upgrades to transit stops implemented by 2028 • METRO and SPBS achieve carbon neutrality by 2040	P: Planning Department & Public Works SP: Planning Department, Public Works, Bus Service	Bonds, TOD tax increment financing (TIF), federal/ PACTS funding, impact fees (Portland), general funds. <i>Future: infrastructure bank, expanded state funding for Multimodal Transportation Fund</i>

TLU 1.2 Complete Neighborhoods & Transit-Oriented Development

ACTION: Strengthen the cities’ transit-oriented development nodes to support travel by walking, biking, and public transportation.

Where we are today

Portland’s Plan 2030 describes complete neighborhoods as places where “all residents regardless of age, ability, or income have access to the basic necessities of daily life—high quality and affordable housing, schools and other civic functions, food, open space, other amenities and services—within a walkable, bikeable distance.” Creating these kinds of places is a cornerstone of the plan. This vision aligns with and complements the concept of transit-oriented development (TOD) that clusters these neighborhood features around public transit to improve accessibility between where people live, work, and recreate.

In TOD areas, compact development creates shorter distances between locations; pedestrian-oriented streets make walking more inviting; and connections to bus routes, rail lines, bike networks, and other mobility options make it easy to access other parts of a city. These key features help to decrease the dependence on cars, and lower the demand for parking, which in turn enable more compact development patterns. A higher density of people, jobs, and amenities helps to supply the ridership needed for a more robust transit service. In other words, the transit networks and compact development mutually support each other in a way that uses land and resources more efficiently, reduces greenhouse gas emissions, and creates vibrant and livable neighborhoods. In fact, land use policies (e.g., increasing density) and transportation policies (e.g., transit investments) when combined have shown to result in an 8.1% reduction in vehicle miles traveled over 20 years compared to a decrease of 1.1% and 0.9%, respectively, for each set of policies independently.⁵⁴

In complete neighborhoods oriented around transit, compact development creates shorter distances between locations; pedestrian-oriented streets make walking more inviting; and connections to bus routes, bike networks, and other mobility options make it easy to access other parts of the city.

GPCOG and PACTS have laid the groundwork to build on TOD opportunities throughout Greater Portland. Destination 2040, the long-range transportation plan for the PACTS region, establishes priority centers and corridors where TOD is viable, based on the original “Centers of Opportunity” identified through the Sustain Southern Maine planning initiative. Nine of these priority centers are in Portland: Downtown, West End, East End, Libbytown, USM/Bedford Street, Woodfords Corner, Rosemont, Morrill’s Corner, and North Deering. Six are in South Portland: Sunset Park, Thornton Heights, Maine Mall, Redbank, Knightville/Mill Creek, and Bug Light/SMCC.⁵⁵ Portland has further defined areas to cluster mixed-use development in *Portland’s Plan 2030* and made progress on nodal development work through ongoing transportation planning initiatives and investments. Portland has implemented two TOD tax increment financing (TIF) districts: Thompson’s Point and Downtown. In these TOD TIF districts, a portion of tax revenue generated in the districts is directed towards transit investments.

South Portland has likewise advanced planning initiatives to re-envision Mill Creek and the Maine Mall as more walkable, mixed-use, and transit-oriented centers in the *Mill Creek Masterplan* (2015) and the *Maine Mall Transit-Oriented Development Concept Plan* (2020). South Portland has also adopted a Transit TIF District throughout the community anchored at 15 transit points. The *Portland – South Portland Smart Corridor Plan* also identifies strategies to better support multimodal transit along the route from Morrill’s Corner in Portland to Southern Maine Community College in South Portland, linking a string of five priority centers across Portland and South Portland. These plans are expected to serve as the starting point for a more comprehensive TOD vision in Portland and South Portland.



COMPACT WALKABLE NEIGHBORHOOD, PORTLAND • Image by Corey Templeton

The action we will take

We will use a proactive approach to strengthening complete neighborhoods and transit-oriented development (TOD) in Portland and South Portland by focusing on a number of

“nodes” that have the potential to become more compact, mixed-use, pedestrian-oriented locations, connected to other parts of the city through multimodal transit. Over the next 5-10 years, we’ll work with residents, businesses, and the development community through a careful long-range planning effort to:

- Assess potential locations for TOD development, factoring in infrastructure capacity, development feasibility, environmental restrictions, transit functionality, capital improvement planning, and neighborhood input (South Portland);
- Conduct an assessment of barriers and available mechanisms to promote desired transit patterns and investments;
- Update comprehensive, land use, and capital improvement plans to implement TOD policies; and
- Examine needed capital investments and land use policy changes to facilitate TOD.

How will we identify the TOD nodes? We’ll build off the priority centers as a starting point, but we will look to other areas in the cities that could be best suited, based on their mix of activity, proximity to amenities or lack thereof, ability to expand affordable housing opportunity near quality transit, growth potential, and community input. Conventionally, TOD is centered around a high frequency rail line or bus station. Absent those features, we will prioritize areas where multiple modes of transportation or multiple bus routes converge. These could be opportune locations for transit mini-hubs, as envisioned in the Transit Stop Access Project.⁵⁶ In some cases, these nodes may serve as future anchors for the region’s bus rapid transit system (see action TLU 1.1). No nodes will be established in flood risk areas (see action CR 1.1), unless the development has the capacity to substantively reduce that risk.

Generally, the TOD nodes will cover a walkable area, with a quarter-mile radius from the transit service point serving as a general guideline because the average person is willing to walk 5-10 minutes—or roughly a quarter mile—to reach a transit stop. Concentrating people and jobs within that quarter mile radius is therefore more likely to generate ridership at the transit location. Likewise, establishing TOD



Community Spotlight

MAINE MALL TRANSIT-ORIENTED DEVELOPMENT

South Portland is one of Maine's fastest growing cities, expected to welcome up to 3,800 residents in the coming years. Recent sprawling development patterns distance home from job centers and services for many residents. This approach to growth has cascading effects on our quality of life and the environment.

A team of transit stakeholders, municipal staff, and the development community came together to counteract this trend. The team, led by the Greater Portland Council of Governments, sought to encourage growth in an area where jobs, housing, and services are within close proximity. As an existing transit hub with close proximity to major roadways and underutilized space, the Maine Mall area emerged as a priority center for growth.

With this priority center identified, stakeholders developed and presented a vision for the Maine Mall area in 10-20 years with compact, mixed-use development that supports and encourages transit use. This vision, known as the Maine Mall Transit-Oriented Development Concept Plan, sets a model for the region. The plan lays the groundwork for future efforts in Portland and South Portland to design and connect our homes, businesses, and public spaces around an efficient transportation network.

MAINE MALL TRANSIT-ORIENTED DEVELOPMENT • Image by GPCOG

nodes at intervals along a corridor (such as priority centers along the Smart Corridor) will further support ridership along the route because it creates destination opportunities and a network. Not all areas along a corridor have the same potential for development; there tends to be greater potential at intersections and sections with more cross-streets where there are more opportunities for buildings to have street frontage on more than one principle street.⁵⁷ By extending a TOD node several blocks around a transit point, rather than aligning it along a linear corridor, development can be clustered to create shorter walking routes between destinations, and additional opportunities may be created for public or civic spaces such as squares or plazas. In this way a TOD node becomes “a place” to encourage walking and congregating and not just a route to another destination.

To identify ways to strengthen TOD nodes, we will conduct an assessment of barriers and mechanisms to support desired transit patterns. In 2013, the Institute for Transportation and Development Policy (ITDP) developed the *TOD Standard* as a way to capture and measure the multitude of synergistic factors that play a role in creating an effective and inclusive TOD—including ways to evaluate the pedestrian realm, connection to bike networks, connectivity of streets, proximity to transit, mix of residential and non-residential uses, preservation of housing affordability, density of development,



MILL CREEK TRANSIT HUB • Image by [BEING CONFIRMED]

connectedness to the rest of the city, and the minimization of space dedicated for passenger vehicles. The 2017 (3rd) edition offers a framework for evaluating the potential of a future project to achieve TOD goals, and a way of assessing the attributes of a place based on TOD parameters.⁵⁸ While not every metric will be applicable, it offers a consistent system for assessing gaps, a starting point for developing our own system of measurement, and a mechanism for strategically identifying ways to strengthen a location to meet TOD goals.

Residential density is one critical attribute to supporting transit systems; strengthening TOD opportunities requires reaching an effective density that can support transit ridership. National research has shown that densities around 7-8 homes per gross acre support reliable and efficient local bus service, but that ideally, TOD nodes should reach 10-20 residential units per acre.⁵⁹ For context, much of Portland's East End meets the 10-20 units per acre threshold, while densities in North Deering (Portland), Sunset Park (South Portland) and Thornton Heights (South Portland) are closer to 4-6 residential units per acre. The U.S. Green Building Council LEED for Neighborhood Development rating system gives a set of targeted density

ranges for transit-oriented development, broken down by residential and non-residential uses.⁶⁰ It's important to note that these thresholds assume that the development connects to high quality transit networks, and in many cases, higher density development may be contingent on more robust bus service.

While population density drives transit use, employment or job density near transit can have an even greater effect on stimulating transit ridership,⁶¹ and a mix of uses is important to increase walkability. To drive residential and job density with a mix of activity types, South Portland will follow the TOD gap assessment with a deeper market analysis to identify ways to relieve barriers or create incentives to spur the level of investment envisioned. Through Phase II of the ReCode process, Portland will be evaluating land use patterns for walkability, housing development, and density implications citywide. Land use barriers to TOD development typically include overly restrictive standards that limit the potential for compact, infill development such as excessive parking requirements, large setbacks, restrictions on height and building form that have the effect of limiting density, and low density limits. Both Cities, but South Portland in particular, will consider leading a land use planning process for potential TOD areas to identify regulatory barriers and explore modifications to standards to address them.

We will implement TOD nodes and related transportation planning initiatives through the Cities' comprehensive plans, land use ordinances, capital investment programs related to circulation infrastructure, and the menu of development incentives offered.⁶² TOD nodes would be key locations where One Climate Future policies converge: policies related to efficient built form, energy efficient construction and renovations, affordable housing, resilience, park and food accessibility, and transit improvements all contribute to an effective and sustainable TOD model. The Cities will focus on offering density bonuses and other incentives to induce desirable TOD projects in the TOD nodes. Model land use policies include considering appropriate use of density minimums, parking maximums, and mixed-use ratio

requirements. TIF districts at TOD nodes and along connecting corridors should be explored to generate revenue to support transit system expansion and infrastructure upgrades (see action TLU 1.1).

Our Next Steps

- ☐ Work with residents, businesses, transit providers, and the development community to identify a set of transit-oriented development nodes, and conduct an assessment of TOD barriers and opportunities with the *TOD Standard* and other national best-practices as a baseline measurement framework.
- ☐ Include a focus on identifying and creating policies that support TOD development within the Comprehensive Plan Update, anticipated for a 2024 adoption; this update shall include direction for zoning and other policy amendments that would reinforce and implement TOD goals (South Portland).

- ☐ Update the geographic area of existing transit-oriented development TIF districts to align with identified transit-oriented development nodes (South Portland).
- ☐ Work to implement complete neighborhoods in residential sections of Portland as described in *Portland's Plan 2030*.
- ☐ Explore TOD tax increment financing (TIF) districts on Forest Ave, Brighton Ave, and Washington Ave (Portland).

TLU 2.2 Summary - Complete Neighborhoods and Transit-Oriented Development



TLU 1.3 Bike Accessibility

ACTION: Make biking easier through a complete network of bikeways and through building an inclusive biking culture.

Where we are today

On average, just under 2% of residents in Portland and South Portland commute to work by bike.⁶³ This small percentage is much bigger than the national average (0.6%), and yet also points to a large opportunity to expand biking as a carbon-free and affordable transportation option with a multitude of health and social benefits. Despite the weather, other cold and wintery cities have succeeded in growing biking as a transportation option. As of 2017, 5% of commuters in Minneapolis, for example, commuted by bike—an 18% increase since 2007 driven by new bike policy and infrastructure.⁶⁴ As a gold standard, over 60% of commutes within Copenhagen, Denmark are completed by bike. Cities across the nation (and globally) are dedicating investments towards separated bikeways, bike parking and storage, roadway safety features, road-sharing policies, bike-share programs, and other bike-supportive initiatives with the recognition that shifting to more active transportation modes necessitates that we invest in biking similarly to how we invest in vehicular transit.

Portland and South Portland work with GPCOG/PACTS, neighboring municipalities, Portland Trails, the Bicycle Coalition of Maine, the East Coast Greenway, and other local and regional partners to continue to make biking safer, easier, and more accessible. Over the past decade, both Cities have invested in multi-use trails and bike lanes to expand bike networks throughout the cities. Today, Portland and South Portland collectively have over 24.6 miles of bike lanes and 15.5 miles of shared use pathways, and continue to grow these numbers

annually.⁶⁵ Yet many trips within the cities start from or go to other towns. In 2018, PACTS published *Getting There from Here*, a long-range active transportation plan that sets a vision for an interconnected system of trails and bikeways for the PACTS region—including the Mountain Division Trail (Windham to Portland), the Saint Lawrence Atlantic Rail-with-Trail (Portland to Yarmouth), and the Eastern Bridge Trail (Scarborough to South Portland).

Yet, a complete network of bike lanes is only one piece of the puzzle in making biking safe, accessible, and easy. Access to bikes, increasing comfort and familiarity with bikes, and building a culture that invites everyone to bike are also integral. Organizations throughout the United States are working to expand the cycling culture—emphasizing that all races, incomes, body sizes, genders, and abilities can and do constitute the cyclists in our communities. While the Cities recognize that barriers to cycling prevent it from being an option for everyone, our goal is to relieve as many of those barriers as possible to make it a much more widespread, accessible, and inviting option for residents across the cities.

The action we will take

Portland and South Portland will continue to collaborate with partners to make biking easier by 1) building out bike-supportive infrastructure, including a complete network of bike lanes, paths, and byways, and 2) continuing to create a more prolific and inclusive biking culture. We define an inclusive biking culture as patterns and norms that make



WOMAN AND DOG BIKING ON THE BAYSIDE TRAIL • Photo by Jim Neuger

biking part of the status quo, and that are fostered by tools, resources, trainings, programs, and initiatives that make biking safer, more inviting, and more accessible to people across all demographics. This action will include the following components:

- **Develop a *Bike Master Plan (South Portland)*.** We will evaluate the existing bike network and develop a *Bike Master Plan* that will outline how we will expand the bike network through designated bike lanes, paths, and byways. Two major components of the plan include: 1) Defining targets for bike network access using total mileage, connections to specific points, quality of bikeways, or other factors; and 2) Focusing on improvements in bike networks that will advance transportation equity in the city. Using this framework, we will set targets for a phased build out, establish data and methods for measuring progress towards these goals, and identify priority projects to meet the first phase based on potential impact and alignment with existing capital projects.

While we recognize that barriers to cycling prevent it from being an option for everyone, our goal is to relieve as many of those barriers as possible to make it a much more widespread, accessible, and inviting option for residents across the cities.

- **Continue to build out bike networks.** The Cities will continue to expand our bike networks, informed by municipal plans, such as Portland’s peninsula/circumferential pathway and South Portland’s anticipated *Bike Master Plan*. Bike network design will be based on the “green transportation hierarchy,” which establishes that pedestrians and bicyclists take priority on complete street roadways (followed by public transit, and then other vehicles). In alignment with the Complete Streets



BIKING ON THE BAYSIDE TRAIL • Photo by Corey Templeton

Design Manual (see Action 1.4), we will prioritize separated and protected bikeways whenever feasible, incorporate pavement markings to facilitate safe bike movements in intersections, and adapt streetlights where appropriate either to optimize signal timing for cyclists or integrate bike traffic signals. Through this work, the Cities will convene on a semi-regular basis to identify opportunities for alignment. Portland and South Portland will pursue joint projects—including, for example, coordinated investments in the Smart Corridor running between the two cities—which can score more highly for PACTS-administered federal funding. Portland will also coordinate with regional partners to plan for the completion of the Portland portion of the Mountain Division Trail.

• **Expand bike parking and storage facilities.** The Cities will collaborate with PACTS and public transit agencies to build out bike parking and storage facilities at train, ferry, and bus stations as well as future mini hubs, in line with goals outlined in

Getting There from Here and the *Transit Stop Access Project*. The Cities will also systematically increase the availability of bike parking in the cities by conducting surveys to identify areas with additional need. South Portland will develop an online resource to show the locations of bike racks and other public bike parking facilities, and will consider ways to integrate it with Portland's map, hosted by Downtown Portland.⁶⁶ Both Cities will also leverage the development review and approval process to mandate private sector investment in bike parking and storage.

• **Foster an inclusive biking culture through resources, trainings, and programs that make biking more accessible.**

We will convene a broader community coalition, made up of youth and adult biking advocates as well as community advocates who can speak to diverse needs. The coalition will design an outreach plan for answering the question: *What would make biking your best mode of transit?* Through surveys and conversations, the coalition will assess barriers to biking and identify a set of potential initiatives for expanding resources, tools, messaging, and support systems for making biking more accessible. This project will be led in collaboration with efforts to advance transportation equity (see action CR 2.4)—and may be led by youth as part of a Gateway to Opportunity program through the Opportunity Alliance. The goal of the initiative will be to identify key needs, interested partners, and potential projects that could be pursued jointly with support from the Cities or grant funding.

• **Revisit efforts to launch a bikeshare program in the cities.**

Bikeshare programs, which deploy bikes throughout a city for residents to rent, can expand access to bikes and have shown to greatly increase bike ridership in other cities. Some bikeshare programs offer electric-assist bikes (e-bikes), which increase the distance bikers can cover, improve bike speeds to make driving near traffic easier, and help people across a broader range of physical fitnesses and ages all take advantage of biking. Portland has extensively evaluated options for introducing a bikeshare in the city, and has discussed implementation with potential partners without finding a good

fit. Within three years, Portland may reevaluate the opportunity for a bikeshare program or both Cities, together, will explore a regional model through partnerships with PACTS and other neighboring municipalities. For any bikeshare program implemented, the Cities will seek ways to provide discounted access passes to qualifying individuals and cash-payment options for residents without credit, as well as seek ways to break down digital barriers. Philadelphia, PA; Austin, TX; Seattle, WA; and Arlington, VA are some of many cities that have begun tackling these equity barriers.

● Plan for effective maintenance and snow removal.

Bikeways are only effective if they are plowed and well-maintained; bike lanes also need regular re-painting to ensure they stay visible and safe. In conjunction with further planning for the expansion of bikeway networks, City staff will outline projected maintenance needs, and plans for covering maintenance costs in capital budgets. We will also outline any design considerations for maintenance as part of the complete streets manual (see action TLU 1.4).

Our next steps

- ☐ Develop and implement plans for complete bike networks, including identifying maintenance needs and plans for covering ongoing maintenance costs.
- ☐ Integrate the *Bike Master Plan* as a chapter or appendix in future updates of the City's comprehensive plan (South Portland).
- ☐ Convene a community coalition to assess barriers to biking and opportunities for expanding access, either as a Gateway to Opportunity project, or as a separate coalition of community advocates.

TLU 1.3 Summary - Bike Accessibility



TLU 1.4 Complete Streets

ACTION: Create safer and more accessible travel for people of all ages and abilities by all modes of transportation by adopting “Vision Zero” for the PACTS region and continuing to expand complete streets.

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Where we are today

Safety and accessibility play an important role in our transportation decisions: *Do I feel safe biking on that road? Can I cross this busy intersection to access that bus stop?* The safer and easier it is move about the cities without a car—whether by walking, biking, rollerblading, pushing a stroller, rolling in a wheelchair, or taking public transit—the easier it will be to choose those options. Portland, South Portland, the Portland Area Comprehensive Transportation System (PACTS), the region’s public transit agencies, and local partners including the Maine Bicycle Coalition and Portland Trails have made significant progress and continue to champion roadway design, educational initiatives, and policy to make our city streets safer for all people.

Vision Zero is a commitment and strategic approach—adopted by cities nationally and globally—to eliminate all fatalities and serious injuries from roadway collisions, while making mobility options safer, healthier, and more equitable for everyone.⁶⁷ Rather than treating traffic fatalities as inevitable, Vision Zero efforts treat them as preventable by anticipating, planning for, and designing for human error. Vision Zero builds upon an increasingly interdisciplinary approach to planning in our cities by including public health officials, advocacy groups, and community organizations in the implementation of engineering, policy, and behavioral solutions.

To date, Portland and South Portland have been focusing on the expansion “complete streets” as one method for improving

street safety. Complete streets refers to a policy and design approach for ensuring that roadways are designed, maintained, and improved using a holistic approach that addresses the needs of all users regardless of the mode of transportation. A complete streets approach considers where and to what extent sidewalks, bicycle facilities, transit stops, and crosswalks are needed to improve accessibility throughout the community. PACTS, the Cities, and transit partners are currently collaborating on the *Transit Stop Access Project*, which focuses on improving the safety and accessibility of transit stops in Greater Portland. Likewise, both Portland and South Portland have adopted complete streets policies, which call for the integration of complete street design principles whenever practicable during road construction or upgrades. Park Ave (Portland), Anderson Street (Portland), the Deering Center Neighborhood Byway project (Portland), Main Street (South Portland), and Westbrook Street (South Portland) are some of the many recent roadway redesigns.

Next generation complete streets policies (or “green streets”) further integrate green infrastructure and ecosystem services into street design and transportation corridors. For example, on Anderson Street in Portland, features such as trees, vegetation, and healthy soils bring climate mitigation and resilience benefits by capturing stormwater, sequestering carbon, and reducing ambient temperatures on hot days, but they also serve as tools for enhancing safety along the streets. Tree canopies and vegetated neighborhood circles,



BY FOOT, BY BIKE, AND BY MOPED • Photo by Denise Michaud

for example, help to calm traffic. The complete street projects both built and underway in Portland and South Portland thus create opportunities to drive numerous climate mitigation, community resilience, and health and safety benefits. Nevertheless, between 2014 and 2018, the PACTS region saw roughly 28 fatalities and serious injuries to bicyclists and pedestrians each year,⁶⁸ illustrating the work we still have ahead of us to make our streets increasingly safe for all users.

The action we will take

Portland and South Portland will continue to work with regional partners to ensure that people of all ages and abilities can safely and comfortably navigate the cities by walking, biking, transit, and other non-vehicular modes. As a primary step, we will work with PACTS and regional transportation partners to establish a Vision Zero commitment for the PACTS region to set safety goals and define concrete metrics for tracking progress towards safer roadways. Existing asset management plans and comprehensive plans will leverage these metrics

to further prioritize projects and investments to reach safety targets, improve accessibility, and ultimately help to transition Portland and South Portland into truly multimodal cities.

At the same time, we will continue to build out our networks of complete streets, strengthen our processes and policies for integrating complete streets into roadway development and upgrades, and reconsider new approaches for maintaining accessible streets. More specifically, Portland and South Portland will take the following steps:

- **Develop a *Complete Streets Planning and Design Manual*.** We will build on initial efforts in Portland and South Portland to develop a *Complete Streets Planning and Design Manual* to aid in streamlining the planning, design, and construction of complete streets. The manual's content will draw from existing national and local resources including the PACTS Regional Bicycle and Pedestrian Facility Design Guidelines (2013). In addition to detailing best and preferred practices for safe and fluid mobility, the manual will

establish guidelines for maximizing ecosystem services along transit corridors, including stormwater infiltration, carbon sequestration, and heat mitigation through the integration of green infrastructure systems, specific tree and plant species, and maintenance standards.

• **Strengthen systems and policies for complete streets implementation.** The Cities will ensure that all infrastructure projects are incorporated into existing asset management plans to formally integrate transportation and stormwater projects for complete streets. This process will build upon existing in-house collaboration as well as annual alignment with local and state utilities. The Cities will track whether complete street projects are adequately funded and effectively implemented. We will update street design standards and road classifications

to promote complete streets throughout the cities. On state roads, the Cities will adopt a local complete streets standard and proactively negotiate with MaineDOT to integrate local complete streets standards into state improvement projects, leveraging the MaineDOT's complete streets policy and commitments.

• **Complete [street] the Smart Corridor.** The Smart Corridor is the seven-mile route running from Morrill's Corner and the University of New England (UNE) in Portland to Bug Light Park and Southern Maine Community College (SMCC) in South Portland—by way of Forest Ave, High Street/State Street, the Casco Bay Bridge, and Broadway. It's a primary multimodal corridor, heavily used by vehicles, buses, pedestrians, and bikers. And yet, as documented by the *Smart Corridor Plan* (2018), the interaction of these uses creates significant challenges, including “roadway bottlenecks and congestion, safety issues and high crash rates, intimidating pedestrian access and crossings, gaps in the bicycle network, and an unappealing streetscape and urban design in many segments.”⁶⁹ As a critical route in need of complete streets—and one that links our two cities—we will prioritize the implementation of a complete multi-modal corridor in coordination with capital improvement plans, comprehensive planning initiatives, and negotiations with PACTS and state authorities.

• **Launch an Adopt-a-Sidewalk program for clearing sidewalks of snow and ice.** The Cities snowplow sidewalks on main thoroughfares and school walking streets; the City of Portland also plows its Downtown District, and coordinates volunteers to shovel bus shelters. All property owners not along these routes are responsible for clearing the sidewalks abutting their property. In Portland, this requirement is backed by city ordinance, and residents may be charged for snow removal if they fail to comply after a warning. Despite these measures, many sidewalks throughout the cities go uncleared, obstructing accessibility and safe walking routes. Reinforcing compliance with stricter fines enhances undue challenges: older adults, people with disabilities, and many other residents may not be able to shovel the walkway, and the fines can create



CLEARED SIDEWALK, PORTLAND • Photo by FEMA

excessive financial hardship for lower income residents. To try another avenue, the Cities will launch an “Adopt-a-Sidewalk” program, which coordinates volunteers to shovel sidewalks. In Chicago, for example, the City worked with local programmers to create an online map, where during each storm, residents can flag that they need help with shoveling, claim a sidewalk to shovel, and mark that they’ve completed the shoveling.

Our next steps

- ☐ Collaborate with PACTS and regional partners to draft a Vision Zero policy statement and a set of concrete metrics for measuring the improvements over time.
- ☐ Develop a Complete Street Planning and Design Manual and align City ordinances and plans with references to the manual.
- ☐ Enhance asset management systems for complete streets with an accompanying process for reviewing and reporting on the rate at which complete streets are implemented.
- ☐ Implement an Adopt-a-Sidewalk program.

TLU 1.4 Summary - Complete Streets

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice (b) Expands access	a b c d (a) Draws down carbon (b) Restores ecosystems (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	• Complete Streets Design Manual produced by 2025	P: Planning Department, Public Works SP: Planning Department, Water Resources Protection, Public Works	TOD tax increment financing (TIF), bonds, federal/PACTS funding, developer fees, general funds; <i>Future: infrastructure bank, expanded state funding for Multimodal Transportation Fund</i>

TLU 1.5 Employer Transit Partnerships

ACTION: Partner with PACTS, GO MAINE, and large public and private employers in the cities to continue to promote more efficient or zero-emissions commuting and to establish a Transportation Management Association (TMA) for the Greater Portland region.

Where we are today

Employers can play a big role in reducing greenhouse gas emissions from transportation by influencing how their employees commute to work—strategies that are collectively known as transportation demand management (TDM). Employer-offered TDM programs create incentives or make it easier for employees to take public transit, vanpool, carpool, ride a bike, or walk to work. Generally, TDM approaches fall into three overlapping categories: 1) Strategies that increase transportation options, such as through operating commuter shuttles, coordinating rideshare programs, or providing bike storage and shower facilities; 2) Strategies that create a stronger financial incentive not to drive, such as through subsidizing transit passes, offering pre-tax transit benefits, or implementing parking cash-out programs;⁷⁰ and 3) Supportive work policies, such as allowing employees to work a condensed workweek or telecommute. As a state-funded commuter connections program, GO MAINE supports TDM initiatives throughout Maine by connecting commuters to organized vanpools and carpools, and providing a rewards program for choosing to opt out of commuting alone by private vehicle.

To supplement voluntary programs, many U.S. cities require large new development projects and/or large employers to produce a TDM plan. Portland requires TDM plans for all commercial or institutional uses with 50,000 square feet or more of floor area, or that are designed to accommodate 100 or more employees or students. All major development in

What is transportation demand management?

“Transportation demand” refers to the number of people trying to travel in a given area at a given time. Transportation demand management (TDM) is the application of policies or strategies that reduce transportation demand in order to mitigate air pollution and street congestion generated by motor vehicles. In order to target solutions that reduce greenhouse gas emissions, we are focusing on TDM approaches that reduce drive-alone trips in a passenger vehicle.



the B7 zoning district (West Bayside) must also submit a plan. As part of the plan, the developer or owner must establish a parking and trip reduction target, periodically collect data on parking and trips through an employee or a customer survey, and outline a set of educational, infrastructural, or incentive-based efforts to work towards the established target. In line with this policy, Maine Medical Center offers a suite of TDM options through their *Commuter Choice* program, for example, and the University of Southern Maine helps to fund the METRO Husky bus line and provides transit passes for employees



Community Spotlight

BIKE COMMUTERS' BIKES AT MAINE MED • Photo by Maine Medical Center

and students. South Portland does not have a formal TDM policy; however, PACTS and the City developed a TDM plan for Southern Maine Community College (SMCC) in 2013 to mitigate traffic and to provide more transportation options for commuting students.

While individual employers can create very effective TDM programs, the coordination of TDM strategies across multiple employers in an area can oftentimes take advantage of economies of scale and amplify the benefits. A formal approach to this coordination can be through the formation of a transportation management association (TMA). A TMA is a non-profit, member-controlled organization that provides commuter benefits or transportation services in an area. They usually collaborate closely with public agencies, but as nonprofits, are able to take advantage of both private and government funding. The ability to pool resources and aggregate demand for transportation benefits can allow smaller employers to also participate. Employers often benefit from improved employee satisfaction and retention, as well as lower on-site parking demand. PACTS, the City of Portland, Greater Portland METRO, the Portland Regional Chamber of Commerce, and Portland Downtown launched a process in late 2019 to map out a strategy for developing a Greater Portland TMA.

Maine Medical Center

The Maine Medical Center (“Maine Med”) was one of the first companies in the state to develop a transportation demand management (TDM) program. The program was designed to reduce the number of single-occupancy vehicle trips to and from its main campus, where the majority of the hospital’s staff (approximately 4,400 individuals) are located. Known as *Commuter Choice*, the program supports alternative commuting options such as carpool, mass transit, bicycling, and walking.

Over the years, Maine Med has added elements to strengthen the program’s offerings. In 2015, for example, the hospital installed additional bicycle parking. In 2019, Maine Med’s parent company entered into agreements with METRO and the South Portland Bus Service, allowing all of their staff to ride buses in those transit systems for free (any day, anytime, unlimited travel) using their employee badge.

Total enrollment in *Commuter Choice* continues to increase year after year, and Maine Med was designated one of 2019’s Best Workplaces for Commuters in the nation, the first workplace in Maine with the honor. Maine Med leadership will hopefully inspire other local and regional organizations in Portland and South Portland to develop TDM programs that encourage efficient or zero-emissions commuting.

The action we will take

Portland and South Portland will continue to work with PACTS and local partners to pursue the development of a Greater Portland Transportation Management Association (TMA). A TMA can provide streamlined support for many of the TDM options that individual employers provide—for example, administrative and matching support for pre-tax transit benefits, commuter shuttles between high density neighborhoods and employment hubs, and transit pass subsidies. Beyond these services, a TMA can also act as a clearinghouse for information and ideas for area-wide demand management—for example, connecting neighboring employers who may be addressing complementary problems, piloting programs that can inform practices for a number of employers, as well as collecting and aggregating data that can inform city planning and the evolution of further TDM solutions.

Large employers responsible for producing a TDM plan will participate in the TMA as part of the TDM plan's requirements. The TMA will also target area-specific solutions for parts of the cities that have high employment densities and the opportunity to become increasingly transit-oriented, specifically the Portland Peninsula and the Maine Mall area. Reducing commuter trips in single-occupancy vehicles within these two areas will support Portland's goal of reducing parking demand on the Peninsula (see action TLU 1.6) in line with the *Peninsula Parking Study* (2017), and serve in support of the vision outlined in the *Maine Mall Transit-Oriented Development Concept Plan* (2020), which aims to reduce parking, reduce single-occupancy vehicle miles traveled, and increase transportation mode shift. Based on TMAs operating nationwide, funding for the TMA could be generated through a number of complementary structures, including a district assessment tax for specific participating districts, parking revenue, direct employer contributions, and potentially government grants for specific programs.

The TMA will be tasked with producing a TDM toolkit. The TDM toolkit will provide an inventory of TDM practices, organized in tiers (such as “baseline,” “advanced,” and

“champion”) based on their relative capacity to reduce miles traveled in a single-occupancy vehicle and encourage mode shift. A baseline strategy may include providing maps and public transit information; a champion strategy may include offering fully subsidized bus passes. Each strategy will have a “dashboard” that notes their applicability for different development sizes and types. The toolkit may also include information on pre-qualified local TDM planners, and a section that champions project teams that have taken innovative or exemplary approaches. The toolkit will be a recommended resource to any developer in the cities, a framework for assessing TDM practices in site plan review, and an educational and promotional tool for increasing familiarity with TDM approaches. The toolkit will also spell out any planned changes to the TDM ordinance that will come into effect in subsequent years to prepare developers for that transition.

As a complementary approach to the implementation of a TMA, the Cities will strengthen our policies and advocacy for TDM as part of the development review process. In the near-term, this process will include:

• **Revising (Portland) or adopting (South Portland) TDM plan requirements.** Portland will revise and expand its TDM plan requirement for new developments, and South Portland will explore creating a similar, aligned requirement. The revised/new ordinances will require the following, at a minimum. Portland's ordinance already requires a, c, d, and e.

- a. Identification of a mobility coordinator to interact with the City and GO MAINE (or TMA, as applicable);
- b. Membership and active participation in a TMA (if established) or Way 2 GO MAINE program;
- c. Commitment to a TDM target for mode shift, trip, and/or parking reductions, and an outlined pathway for achieving that target, drawing from methods provided in the toolkit;
- d. Annual survey of employees/users to document progress toward defined goals, transportation choices, and experience included with submission of an annual report;
- e. Active education of employees/users on non-single-occupancy-vehicle transportation options and incentives;

- f. Priority or discounted parking for low- or zero-emission vehicles, bicycles, carpools, and vanpools;
- g. Pre-tax transit benefits offered to employees (see call-out box).

The ordinance may also require the implementation of one or more “highly recommended” strategies as part of its pathway, which could include:

- a. Formal support for telecommuting or condensed work week schedules, both in terms of company policy and in meeting information technology (IT) needs. (Note: flexible work hours will have minimal to no effect on reducing greenhouse gas emissions and are not considered to be a recommended strategy);
- b. Subsidized public transportation passes or other equivalent public transit incentives;
- c. Guaranteed ride home programs;
- d. Incentives for purchase of zero emissions vehicles (including electric cars, bicycles, and e-bikes);
- e. Cash-out parking programs where employees may forgo an employer-provided parking spot for a one-time payment;
- f. Compensation fees wherein the development may contribute to a fund that supports transit system upgrades; or
- g. Bicycle facilities, including secure bicycle parking and employee shower facilities.

Within three years of the first phase, the Cities will further advance our policy by taking the following steps:

● **Establishing targets for mode shift.** All development responsible for completing a TDM plan will be required to plan and execute a TDM approach that meets pre-defined thresholds for mode shift. While the Cities seek overall reductions in VMT, the public and private sector will use mode shift as a proxy when monitoring TDM plan targets. The Cities may collaborate with PACTS for the development of region-wide targets, defined based on the type of land use and location (accounting for proximity to transit).⁷¹ The thresholds

may start modestly, but will increase at predefined timeframes in line with public transit improvements and the Cities’ goals for VMT reduction and mode shift, defined by the One Climate Future modeling. Effectively implementing these standards will require an increase in staff capacity to support, monitor, and ensure compliance.

What are pre-tax transit benefits?

Pre-tax transit benefits are a commuter benefit that has seen a large uptake in other urban areas. Under the U.S. Internal Revenue Code section 132(a), qualified transportation benefits are one of the eight types of statutory employee benefits that are excluded from gross income in calculating federal income tax. Employees can opt to put money from their paychecks towards a transit card and not pay tax on that portion. Employers receive savings—since employees are saving tax-free money in their paychecks, employers can see decreases in the payroll tax bill up to 7.5%.⁷² Employers can make using this benefit more attractive by giving a portion of that savings back to employees as a matching contribution so that the employees’ dollars go further.

In cities like Washington, D.C., Chicago, and New York, there are additional municipal laws increasing the allowable transit benefit, but this is not needed to start the program. In New York City, Washington, D.C., Seattle, and in the state of New Jersey, employers with over twenty employees are required to offer pre-tax benefits. In the San Francisco Bay Area (a region of nine counties), employers with over fifty employees are required to offer their employees commuter benefits, one option of which is pre-tax benefits.⁷³

● **Expanding TDM plan requirements to all site plan review processes for projects in TOD nodes or corridors.**

Effective transit-oriented nodes and corridors have less space dedicated to parking and are connected to robust transit networks (see action TLU 1.2). For these reasons, TDM strategies are both integral in these areas (to reduce parking demand) and more feasible in these areas (due to greater access to transit). Consequently, we will consider mandating that all projects requiring a site plan review in transit-oriented development nodes meet the Cities’ TDM plan requirements. This approach aligns with PACTS recommendations in *Destination 2040* for Priority Centers.

Finally, the Cities also commit to leading by example. In partnering with employers around TDM strategies, the Cities will assess ways to offer commuter benefits to municipal and school employees. In particular, the global COVID-19 pandemic has allowed us to pilot more extensive options for working from home. As municipalities are public facing, we will establish a policy that allows telecommuting if public access can be maintained at the same level, promote teleservices, and more

broadly encourage a reduction in single-occupancy vehicle trips to reduce emissions from employee commutes.

Our next steps

- ☐ Build upon informal conversations to establish a formal regional Working Group that will explore the development of a transportation management association for the Greater Portland region.
- ☐ Partner with the TMA to produce a TDM Toolkit that will serve as an educational and promotional tool for development.
- ☐ By 2026, adopt (South Portland) or revise (Portland) the TMD plan requirement in City zoning ordinances to meet recommended minimum standards.
- ☐ Reduce single-occupancy vehicle trips during employee commutes through a variety of mechanisms including but not limited to telecommuting and mode shift initiatives.

TLU 1.5 Summary - Employer Transit Partnerships



TLU 1.6 Parking

ACTION: Shift existing incentives that lead to more parking demand and supply to instead facilitate and strengthen multimodal transportation options.

Where we are today

Minimum parking requirements for new development aim to satisfy an estimated peak demand for off-street parking based on the type and size of the building. These requirements originated in the 1920s with the proliferation of the automobile, became fundamental to city planning by the 1950s, and are still ingrained in nearly all city codes today—driven by the notion that sufficient parking supply is necessary to meet mobility needs, real estate market demand, and to support local businesses. In the last decade, however, there has been growing recognition among researchers and policymakers that minimum parking requirements have both led to a net surplus of parking and continue to work against a wide number of city planning goals.⁷⁴ Minimum parking requirements create constraints for development and housing affordability, and on average have shown to contribute to an estimated 17% increase in rents nationwide.⁷⁵ Paved parking lots counter climate resilience goals by exacerbating stormwater pollution, flooding, and the urban heat island effect. By contributing to lower density development, large parking lots also make public transportation networks less effective and create streetscapes that deter walking and biking—thereby reinforcing car-dependency, increasing greenhouse gas emissions, and increasing demand for more parking. In effect, the oversupply of free parking creates a significant public subsidy for private vehicle travel that is only afforded to residents who can access and drive a vehicle, and that continues to limit the financial viability of public transportation. As cities across the United States set targets for reducing traffic, reducing housing costs,

increasing transit use, and achieving carbon neutrality, there is growing sentiment that the downsides to parking minimums outweigh their benefits.

Consequently, cities are reconsidering parking policies, primarily through three approaches. Most commonly, local governments are choosing to reduce parking minimums or create greater flexibility in how developers meet parking minimums. Portland has increased its flexibility by offering developers a number of options in lieu of meeting parking minimums, including paying an in-lieu fee into the City’s Sustainable Transportation Fund, demonstrating that the development will generate lower parking demand, building off-site parking, or investing in shared parking. As a second approach, many cities have eliminated parking minimums altogether, either for specific development types (such as multifamily housing), specific districts (such as downtown or in transit-oriented areas), or citywide. Since 2017, Hartford, CT; Buffalo, NY; San Francisco, CA; and Minneapolis, MN have eliminated minimum parking requirements citywide. As a third approach, a number of cities have begun adopting parking maximums, which can be implemented either at the site level or as a citywide or district cap. Many cities use these policies simultaneously: Burlington, MA and Portland, OR use both minimums and maximums, and Vancouver Canada has applied site-level maximums as well as a total cap on the downtown area.

In 2017, Portland commissioned a parking study for downtown, the Old Port, and the Eastern Waterfront, which both addressed changing needs for parking, and recommended that the City pursue transportation demand management approaches to reduce parking demand in the study area by 700-750 vehicles within a 10-year period.⁷⁶ Currently, 22% of the area studied is used for parking. Parking pricing is a common tool for influencing travel behavior for areas with high parking demand, and cities are beginning to test demand-based pricing to further increase the efficiency of how parking is used. Portland currently has a sophisticated Parking Division that utilizes parking zones and cashless, touchless parking with apps on smartphones. South Portland has not yet needed to implement metered parking. Enabling travelers to internalize the true cost of driving can encourage use of less emissions-intensive travel modes, such as carpooling, transit, and active transportation.

The action we will take

Portland and South Portland will review and update the Cities' zoning ordinances so that our parking requirements support an ongoing shift towards more walkable, bikeable, and transit-oriented communities. These updates will be characterized by 1) loosening, or in some cases potentially eliminating, parking minimum requirements, as well as 2) considering parking maximums in specific transit-oriented areas. Approaches we will consider include:

- **Increasing flexibility in meeting parking minimums.**

South Portland will evaluate options for providing developers more flexibility in meeting parking minimums, including paying an in-lieu fee into a fund that would support public transit and complete streets investments, implementing transportation demand management approaches that reduce parking demand below the minimum, or investing in shared parking facilities—all three of which would encourage reductions in surplus parking. Portland already allows for this flexibility, but will reassess its effectiveness and consider adjusting the options as part of the ReCode process.

- **Eliminating parking minimums in commercial areas and along designated transit routes.** Portland and South Portland will consider eliminating parking minimum

requirements in commercial areas. This approach would still require off-street parking, but it allows developers and/or property owners to determine the amount of parking needed for the given development based on the market and location—which is often driven by expectations from lenders, investors, and potential tenants. These expectations can be more dynamic than prescribed parking minimums, and can respond to land use changes and investments in public transit. This approach helps to reduce surplus parking driven by meeting minimums and allows for developers to also pursue shared parking facilities, transportation demand management, and other approaches to reduce costs towards parking.

- **Establishing parking maximums in transit-oriented development nodes or district-wide caps.**

Portland and South Portland will assess whether to establish parking maximums in specific transit-oriented development nodes (see action TLU 1.2) as a means to support more compact development and to encourage multimodal transit in these areas. Parking maximums could be paired with the elimination of parking minimums or more flexible parking minimums, especially for ADUs where on-street parking is an option. Portland will continue to evaluate recommendations made in the 2017 *Peninsula Parking Study* and its recommended targets for parking build out and for reducing parking demand in the study area.

It is important to note that our ability to reduce parking demand in the cities will be improved by investments and actions outlined in other strategies that provide for transportation alternatives—including increasing the frequency, reliability, and efficiency of public transit systems (see action TLU 1.1); expanding bikeway networks (see action TLU 1.3); and increasing transportation demand management through employer transit partnerships (see action TLU 1.5), in particular. Also, see action TLU 2.1 for the Cities' actions on incorporating electric vehicle charging infrastructure in parking lots and garages.

Portland will also continue to evaluate parking pricing as a means to better incentivize use of public transportation and employer-based transportation demand management strategies. Pricing parking has also shown to reduce vehicle miles traveled by drivers circling city streets while looking

for parking—an activity that has shown to contribute to an estimated 8% of city traffic, and a significant source of greenhouse gas emissions.⁷⁷ To assess parking pricing in the city, Portland will consider the following approaches:

- Piloting adjustments to pricing recommended in the 2017 Peninsula Parking Study.** Portland will conduct pilots to evaluate 1) higher prices for on-street parking in high demand areas on the Portland peninsula, 2) expanding metered parking areas surrounding high demand areas on the Peninsula, and 3) extending on-street meter hours to 8pm citywide. Higher on-street parking prices can both encourage other transportation modes and create a greater incentive to park in lots and garages as a first decision, rather than circling for parking. At the same time, higher rates may disproportionately affect low-wage workers—a challenge that will be weighed in any decision to raise rates, and that could be addressed through a customized TNC program that would connect qualifying individuals between a place of employment and a park and ride, as discussed in the 2017 *Peninsula Parking Study*. Increased revenue from parking fees would directly contribute to streetscape and transit amenities in those neighborhoods.
- Piloting demand-based pricing and parking app.** With demand-based pricing, cities use smart parking technology to increase the price of parking on streets that have 100% occupancy, which encourages people to park on other streets,

lots, or garages with cheaper pricing. In 2017, the San Francisco Municipal Transportation Authority (SFMTA) launched SFpark, a pilot for demand-based parking pricing, which they found to be so successful that its board moved to implement the pricing mechanism citywide. SFpark demonstrated that demand-based pricing resulted in decreases in time spent and vehicle miles traveled (VMT) by drivers searching for available parking, and therefore lowered greenhouse gas emissions, especially during peak congestion times. Portland will assess the potential for demand-based pricing in certain areas of the peninsula.

While the parking pricing strategies currently primarily apply to the Portland peninsula, Portland and South Portland will consider parking pricing mechanisms as other parts of the cities see higher demand for parking.

Our next steps

- ☐ Assess the Cities' parking requirements and the potential implications of adjusting existing parking minimums for specific zoning districts. Use outcomes of the assessment to revise zoning ordinances to allow for more flexibility in parking minimums, eliminate parking minimums in commercial areas, and/or adopt parking maximums in specific transit-oriented areas.
- ☐ Develop a pilot for adjustments in parking pricing on the Portland peninsula (Portland).

TLU 1.6 Summary - Parking



TLU 1.7 Land Use for a Smaller Carbon Footprint

ACTION: Plan for future growth in our cities by committing to land use principles for a smaller carbon footprint, codified in the Cities’ comprehensive plans, zoning, and subdivision ordinances.

Where we are today

Greater Portland will likely grow over the next twenty years: projections suggest that we’ll see a 23% increase in population and a 27% increase in jobs between 2015 and 2040 across the PACTS region.⁷⁸ While increases in population, activity, and development will contribute to more greenhouse gas emissions, new growth also creates great opportunities if we plan for growth well. Research shows that people who live in denser neighborhoods drive fewer miles (Table 3); compact neighborhoods with a diversity of housing, jobs, and services nearby make vehicle trips shorter, and walking and biking between destinations easier. At the same time, greater population and job densities within close proximity to transit routes can help support a more robust transit system (see action TLU 1.2).

As we plan for new growth, it’s critical that we consider that proximity of homes to jobs has shown to have the strongest effect on reducing vehicle miles traveled when a wide range of transportation and land use factors are compared.⁷⁹ Today over 44,000 and nearly 20,000 people commute from outside the cities to Portland and South Portland, respectively, for work.⁸⁰ As a significant employment hub for the region, we recognize that our statewide and city goals to reduce carbon emissions thus further increase the importance and urgency of expanding housing in the cities. Portland, as outlined in *Portland’s Plan 2030*, has set a policy goal that all people who work in Portland should have the option to live in the city—a goal that aims to increase the number of housing units by 2,557 units by 2030.

South Portland is in the process of setting a housing goal and plans to adopt a housing strategy either as a part of the city’s comprehensive plan update or as a standalone plan. Nonetheless, both cities have room to grow in ways that align with the character of our cities and continue to support a high quality of life.

Furthermore, effective land use patterns—“filling in” as opposed to “spreading out”—can ensure that even with this growth, we preserve forests, wetlands, and healthy soils that, among many other benefits, play a critical role in sequestering and storing carbon. Forests and wetlands in the northeast are estimated to store roughly 38 and 214 tons of carbon per acre, respectively, and on average can sequester an additional 0.2 and 0.1 tons of carbon per acre per year.⁸¹ While these rates of sequestration only minimally help to counter the greenhouse gas emissions produced within Portland and South Portland currently, they will play a proportionately more significant role as we work towards carbon neutrality. More importantly, the amount of carbon stored in forests and wetlands in our cities adds a clear incentive to avoid land conversion, which—although not tracked in the Cities’ greenhouse gas inventories—contributes an additional source of greenhouse gas emissions. Through our comprehensive plans and land use ordinances, we can lay the groundwork now to ensure that new population growth contributes to the lifestyle and climate mitigation goals envisioned in *One Climate Future*.

How does density relate to how much we drive?

Research has shown that people who live in denser areas drive fewer miles, on average, resulting in lower vehicle miles traveled (VMT) per capita in areas with higher densities (persons per square mile, or ppsm). For reference, much of Portland's East End reaches densities over 10,000 ppsm, while Ferry Village (South Portland), Thornton Heights (South Portland), and North Deering (Portland) fall in the 2,000 – 3,999 ppsm range.

Table 3. Vehicle miles traveled (VMT) forecasts by Census Tract Density

Persons per Square Mile (ppsm)	Approximate dwelling units per acre	2005 VMT	VMT Compared to < 500 ppsm	2035 VMT	VMT Compared to < 500 ppsm
0-499	< 0.6	11,422	0.0%	13,798	0.0%
500-1,999	0.6-2.5	10,083	-11.7%	12,196	-11.6%
2,000-3,999	2.5-5	9,345	-18.2%	11,345	-17.8%
4,000-9,999	5-12	7,986	-30.1%	9,792	-29.1%
10,000+	> 12	4,437	-61.2%	5,651	-59.0%

Table adapted from Cambridge Systematics. (2013).⁸² Dwelling units per acre conversions are gross densities estimated at roughly 50% residential land per tract.



The action we will take

Portland and South Portland will establish four land use commitments as part of our future comprehensive planning processes that support city growth in ways that reduce vehicle miles traveled and shrink our carbon footprint: 1) Increase housing availability and affordability near jobs; 2) Collocate transportation and density; 3) Create livable street networks; and 4) Preserve carbon sinks. These four principles will guide planning over the long term, and each includes a number of ways to act on those principles today through policy initiatives and changes to zoning and subdivision ordinances.

● **Increase housing availability and affordability near jobs.** We will continue to adopt policies that increase the housing stock in our cities and in turn, the share of employees with the option of living within Portland and South Portland. In the process, we will work to expand the supply of diverse housing options that cater to everyone—meeting the needs of households regardless of income, stage of life, household size, or type. To work towards this commitment, we'll pursue the following next steps, and will revise zoning ordinances accordingly:

- Assess options for removing barriers to accessory dwelling units (ADUs), such as allowing ADUs to be constructed “by right” (without review by the Planning Board) and removing requirements for off-street parking; this process is underway in Portland as part of the ReCode process.
- Adopt a housing strategy either as a part of the city's comprehensive plan update or as a standalone plan (South Portland).
- Conduct a residential zoning and housing study to assess options and affordability implications of permitting duplexes and triplexes in single-family housing districts or portions of districts.
- Reevaluate development standards to remove inadvertent disincentives for building housing units; for example, smaller units that generate less need for parking, sewer demand, lot area, etc. may warrant a reduced calculation to allow two studio apartments on a lot designated for one single-family dwelling unit.
- Pursue strategies to remove barriers and expand the development of energy efficient and resilient affordable housing, as outlined in action CR 2.1.



• **Collocate transportation and density.** We commit to integrating transportation and development-related decisions such that all future development serves to best support efficient and reliable transportation systems, and transportation systems continue to enable compact and walkable neighborhoods. As part of our Cities’ transit-oriented development vision (see action TLU 1.2), we will focus on increasing housing and employment density along transit-oriented nodes and corridors. To work towards this commitment, we’ll pursue the following next steps, and will revise zoning ordinances accordingly:

- a. Consider minimum density requirements and parking maximums for transit-oriented development nodes, in line with actions TLU 1.2 and TLU 1.6.
- b. Consider density bonuses for high-performance buildings (e.g., net-zero energy or passive house buildings) within transit-oriented development nodes and corridors.
- c. Establish “location-efficient criteria,” such as proximity to a school, park, weekly amenities (e.g., groceries), transit, and job centers, when assessing revisions to zoning densities to collocate more compact residential development and amenities.

• **Create livable street networks.** We will create streetscapes that connect people to amenities and invite people to spend more time outside of a private vehicle—walking, biking, scootering, pushing a stroller, rolling in a wheelchair, browsing an art walk, or shopping at a farmers’ market. Our goal is both to create public places for social gathering and to ensure that all residents can travel safely, efficiently, and comfortably regardless of the mode of transportation. In addition to efforts to expand bikeways (see action TLU 1.3) and complete streets (see action TLU 1.4), we’ll pursue the following steps, and revise street standards accordingly:

- a. Review street design guidelines and standards to ensure development on urban neighborhood streets support a quality pedestrian environment, including requiring uniform build-to lines (Portland) and setback lines, requiring ground floor windows on street fronts, and requiring that parking be behind or adjacent to the building.
- b. Revise zoning to promote accessibility in neighborhoods by encouraging mixed uses within a walkable distance. Remove incentives promoting homogenous development that enable automobile travel, food deserts, and amenity

deserts. Implement Complete Neighborhoods as described in *Portland's Plan 2030* (Portland).

- c. Revise subdivision regulations to support travel by non-motorized transportation by requiring that streets contribute to an interconnected street network (e.g., a street grid), and limit cul-de-sacs and dead-end streets to the extent practicable (South Portland); these stipulations are already in Portland's code.
- d. Continue to revise subdivision regulations to further support travel by non-motorized transportation by limiting block minimums and maximums, requiring compliance with complete street standards, and requiring connection to a neighborhood bikeway to the extent practicable. Providing a paved and lighted pedestrian pathway that shortens the walking distance to adjacent destinations could be offered as a suitable alternative to above requirements.

● **Preserve carbon sinks.** We will protect and expand carbon sinks within the cities—including forests, wetlands, and healthy soils—by prioritizing infill development over greenfield development and by continuing to expand the acres of protected natural areas in line with our Open Space Plans. In addition to the actions in CR 1.3 (Resilient Open Space Planning) and CR 5.2 (Soil Health), which seek to expand the

carbon sequestration and storage capacity of the land in our cities, we will seek to preserve our cities' existing capacity by taking the following steps:

- a. Pursue legal protection for existing city open spaces and acquire new conservation land in line with the City's Open Space Plan (2020) (South Portland) and with recommendations from the Land Bank Commission (Portland).
- b. Identify and encourage sites suitable for transit-oriented infill development or redevelopment.
- c. Take stronger policy steps towards preventing loss of wetlands (see action CR 4.2 for detail).

Our next steps

- ☐ Conduct review and revisions to zoning ordinances, with accompanying studies as necessary; these steps will occur as part of the ReCode process currently underway in Portland, and as part of the upcoming comprehensive plan update in South Portland.

TLU 1.7 Summary - Land Use for a Smaller Carbon Footprint





EV RIDE AND DRIVE, BACK COVE • Photo by Ashley Krulik

TLU 2.1 Electric Vehicle Charging Infrastructure

ACTION: Expand electric vehicle (EV) charging infrastructure in public and private parking through public investments in chargers, updates to city land use codes, and EV-ready requirements in the state building code.

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Where we are today

Installing electric vehicle (EV) chargers at municipal facilities and public parking lots is one way that the Cities can lead by example. As of summer 2020, South Portland has installed three level 2 chargers for EVs at City Hall and the Community Center that are available for public use, in addition to a DC fast charger at the Community Center. The South Portland Municipal Services Department and the Planning Department also have chargers for municipal use. In Portland, the Elm Street and the Spring Street garages provide level 2 chargers, and Portland is currently installing public level 2 chargers at 5 other locations. A level 2 charger uses a higher-output power

source (e.g., 240-volts), and can charge an electric vehicle in roughly a quarter of the time that it takes a level 1 charger (at 120-volts). A DC fast charger, depending on the power source and car model, can charge a car in under an hour. Both the perceived and actual availability of chargers are critical for increasing consumer comfort with EVs. Providing high visibility public charging infrastructure on streets and in city parking lots helps to assure EV adopters that public charging is easily accessible when needed.

Nevertheless, while public charging infrastructure can support widespread adoption, more than 80% of EV charging

occurs at home or work. To achieve the level of EV adoption necessary to meet One Climate Future goals, property owners will need to provide parking spaces with charging stations. Other jurisdictions have found that it is significantly more cost-effective to install EV charging stations if the electrical infrastructure is already in place. The costs associated with modifying the electrical conduits, grid connections, and electrical rooms to accommodate charging at all parking spaces within a parking garage, for example, are much higher than pre-installing that capacity in the first place, and then adding chargers only as needed. As such, ensuring public and private building parking and electrical systems are designed to accommodate future EV charging stations will improve the overall cost-effectiveness of achieving the One Climate Future goals.

A number of cities have adopted building codes with EV requirements. Los Angeles requires that all residential buildings be equipped with either an EV charging outlet or the infrastructure necessary to install an outlet in the future. The code requires all one- and two-family residential buildings to provide at least one EV charger-ready space, while all other residential buildings and high-rise commercial buildings must ensure that 5% of parking stalls are EV charger-ready. Similarly, San Francisco's building code requires all new structures to be wired for EV charging stations, while Vancouver (Canada) requires a minimum of 20% of parking stalls in multi-family residential buildings to include a receptacle for EV charging, and that electrical rooms provide sufficient space to contain equipment needed for charging at all spaces. The Transportation and Climate Initiative (TCI) also produced a report that outlines approaches to implementing EV-ready codes for buildings.⁸³

For people to have certainty that charging infrastructure is widely available, a network of charging infrastructure that extends beyond the cities is also critical. The Transportation and Climate Initiative (TCI) of Northeast and Mid-Atlantic States is coordinating a "Northeast Electric Vehicle Network" for aligned electric vehicle infrastructure planning. Through this network, Maine is collaborating with other states in the region to support widespread deployment of charging infrastructure

at strategic locations to facilitate interstate travel, and working to remove barriers to charging infrastructure and EV adoption.⁸⁴ The Maine Clean Communities (MC2) coalition is a more local coalition of governments and industries in southern Maine focused on supporting the transition to cleaner fuels and expanded charging. It is funded by the U.S. Department of Energy, the Portland Area Comprehensive Transportation System (PACTS), and the Greater Portland Council of Governments (GPCOG).⁸⁵

The action we will take

Portland and South Portland will expand access to electric vehicle charging infrastructure throughout the cities through strategically investing in publicly accessible chargers, as well as advocating for electric vehicle charging requirements in the state building code. To increase publicly accessible EV charging infrastructure, we will start by investing in chargers in municipal parking lots and garages—aiming to have chargers available in 10% of those spaces by 2025. To support this expansion of chargers, we will adjust city codes to ensure that chargers are incorporated in the development or redevelopment of city facilities. These changes will include:

- a. Requiring that any new municipal parking lots or garages install a minimum number of EV charging stations (such as 20%).
- b. Developing policies for who can use which chargers; some chargers should be prioritized for municipal vehicles, while others should be available to members of the public. We will consider prioritizing access to DC fast chargers to taxis, livery services, and delivery vehicles.
- c. Requiring that any new municipal garages include the electrical infrastructure (e.g., conduits, outlets) necessary for the installation of future charging stations at every parking spot.
- d. Requiring that all municipal parking spaces, including existing lots and garages, install a minimum percentage of EV-ready spots.
- e. Rewarding EV ownership and utilization by locating EV charging spots at higher-demand and more convenient locations within lots and garages.

- f. Supporting EV taxis, shuttles, and short-haul delivery vehicles by investing in DC fast chargers at key sites along routes frequented by taxi drivers and short-distance haulers (see actions TLU 2.5 and TLU 3.2 for further details).



EV CHARGING AT THE SOUTH PORTLAND DAYS INN • Photo by ReVision Energy

Additionally, the Cities will outline a strategy for supporting the build-out of publicly accessible EV chargers in commercial lots and garages over the next ten years. Based on global trends in EV adoption, along with the scale of EV adoption needed to meet the One Climate Future goals for greenhouse gas emissions reductions, we expect that by 2030 nearly a third of new car sales will be electric, and approximately 10% of all cars registered in the cities will be battery-electric or plug-in electric hybrid vehicles. To serve these vehicles, we have set a target that 5% of all parking spaces in garages and lots will have level 2 EV chargers by 2030. Priority locations for EV chargers will include convenient locations near services and areas with large parking lots, such as the Portland peninsula, Morrill's Corner, the Maine Mall area, and Mill Creek, as well as transportation

centers, grocery stores, sports facilities, and other employment centers. The Cities will work with commercial entities to provide further information on technology options, costs, and incentives.

We will also update our land use and zoning codes to require the installation of EV charging infrastructure in new parking lots and garages. The level of infrastructure will vary by building use—a larger proportion of spaces with charging infrastructure is needed in lots where people park for most of a day or night, such as offices, multifamily housing, and dedicated lots that primarily serve commuters. A higher proportion of spaces with level 2 chargers is less important in lots that see mostly short-term parking, such as lots and garages that serve grocery stores, retail stores, or malls. However, in those cases, a smaller number of DC fast chargers is very desirable since customers could fully recharge their car while shopping. In addition, it is optimal for zoning codes to require that construction of a new garage make all spaces “EV-ready,” defined as running conduits to all spaces, and building a sufficiently large electrical room, so that charging pedestals, wires, and grid connections can be added/upgraded at a later date without disruptive and expensive site retrofits. Specifically, we will require that:

- a. New garages and surface parking lots, serving offices and other workplaces where most users park for much of the day, include level 2 chargers in 20% of spaces with the remaining 80% of spaces EV-ready.
- b. Multifamily garages and surface parking lots include level 2 chargers in 20% of spaces with the remaining 80% of spaces EV-ready.
- c. Retail and short-term customer parking include level 2 chargers in 20% of spaces, along with incentives for DC fast charging and capacity for expansion.

To expand charging to more buildings and support a broader charging network beyond Portland and South Portland, we will advocate for similar changes to the state building code. Building codes are established at the state level through the Maine Uniform Building and Energy Code (MUBEC). Portland and South Portland will advocate for electric vehicle charging requirements to be incorporated into either the next MUBEC, or the MUBEC voluntary stretch code (see action BE 2.1 for more information on the stretch code, and action BE 2.2 for more details on EV-ready requirements in the stretch code).

We will also continue to advocate for and collaborate with regional efforts to build a wider EV charging network in Maine and beyond. The Transportation and Climate Initiative (TCI) and Maine Clean Communities are both working to support a regional charging network. As discussed above, these initiatives provide funding and support for EV charging stations, alignment of the user experience across stations, and technical support for reducing regulatory uncertainty. In particular, we will collaborate with these entities, as well as MaineDOT and the Federal Highway Administration, on the deployment of any charging infrastructure along the I-95 or I-295 corridors as they pass through Portland and South Portland.

Finally, as electric vehicles become more widespread, we will work with the Maine Public Utilities Commission (PUC) and other stakeholders to improve electricity rate structures. Currently, EV chargers, particularly DC fast chargers which require high input power levels, have high electric rate costs, hurting their business case. Additionally, in many parts of the country users “pay” for EV charging through a higher parking fee, or receive it as a benefit from their company; however, as EV penetration increases, this is unlikely to be a scalable strategy. We will work with the PUC, State, and utilities to create more EV-supportive electricity rate structures, and to

ensure that building owners are able to meter and charge users for their vehicles’ electrical draw.

Our next steps

- ☐ Identify timeline and funding for installing new EV chargers in municipal garages or parking lots by 2025 and consider bulk purchasing to reduce costs. Increase staff resources to support advocacy and negotiations for chargers.
- ☐ Adopt new requirements in City land use codes that require minimum percentages of EV parking spaces in new parking lots and garages, preinstallation of electrical infrastructure to support chargers in all spots, and minimums for EV-ready parking spots in municipal lots.
- ☐ Advocate for requirements in the MUBEC Stretch Code for EV charging stations and EV-ready infrastructure in new and renovated buildings, aligned with the recommendations above and new requirements in the Cities’ land use code.
- ☐ Work with the Maine PUC and other stakeholders on rate design reform that currently adds substantial cost to operations of chargers.

TLU 2.1 Summary - Electric Vehicle Charging Infrastructure

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
- Integrate EV charger requirements in land use and building codes. - Work with commercial entities to expand public chargers. - Collaborate on regional efforts to build out charging networks. - Work with PUC to reform electricity rate structures (see TLU 3.3).	a b c d (a) Addresses injustice — from localized roadway air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability — from localized roadway air pollution (d) Builds partnerships
	KEY MILESTONES 20% of spaces in new garages required to have EV chargers (per land use code) by 2026 5% of parking spaces in all lots and garages in the cities have level 2 EV chargers by 2030	CITY STEWARD P: Sustainability Office, Planning Department SP: Sustainability Office, Planning Department	FINANCING MECHANISMS Efficiency Maine incentives/ VW settlement funds, demand aggregation via Climate Mayors Electric Vehicle Purchasing Collaborative, public-private partnerships

TLU 2

TLU 2.2 Electric Vehicle Incentives

ACTION: Offer excise tax exemptions for electric vehicles (EVs), and advocate for additional state EV incentives.

.....

Where we are today

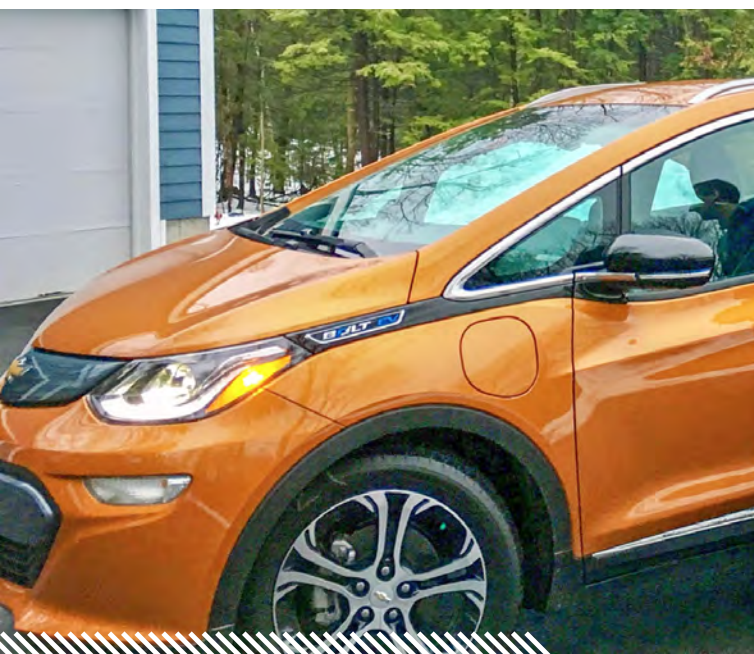
Purchase incentives that decrease the upfront cost of electric vehicles (EVs) are one of the most common tools used by states to generate EV sales. The effect of these incentives on vehicle sales varies between regions and incentive type. California has strong vehicle excise tax incentives for EVs (along with an extensive charging network) and the highest market share for EVs: 7.8% of new vehicle sales statewide and over 10% of new vehicle sales in the metro regions.⁸⁶ Massachusetts offers an EV rebate program, called MOR-EV (Massachusetts

Offers Rebates for Electric Vehicles), which has issued over \$32 million in rebates for approximately 16,000 vehicles since program implementation in 2014. Roughly 60% of the program's uptake has occurred since January 2018, which has supported an 87% increase in EV sales in the state, driving EV sales to 2.5% of new car sales.^{87, 88}

Under Maine law, local municipalities collect excise taxes at the time of vehicle registration and have broad authority to offer excise tax credits. In 2020, Efficiency Maine began offering instant rebates of \$2,000 for electric vehicles, as well as enhanced rebates (\$3,000 for eligible battery electric vehicles and \$1,500 for eligible plug-in hybrid vehicles) for qualifying low-income households.⁸⁹ Additionally, the federal government offers a tax credit of up to \$7,500 for an electric vehicle purchase.

The action we will take

Portland and South Portland will continue to encourage EV adoption both through greater promotion of existing state and federal programs, and through additional incentives to make EV purchases increasingly affordable. Specifically, the Cities will assess the financial feasibility of adopting an excise tax purchase incentive. This excise tax credit would be designed to prioritize vehicles that offer the largest greenhouse gas emissions reductions (e.g., full battery electric vehicles will receive a higher incentive than plug-in hybrid electric vehicles with a gasoline engine to back up the battery). The Cities will also continue to assess ways to scale incentives based on



CHEVY VOLT, ELIGIBLE FOR EFFICIENCY MAINE INCENTIVES • Photo by ReVision Energy

income to make electric vehicles increasingly affordable across a wider range of income levels.

In addition to assessing further incentives, Portland and South Portland will widely promote the rebates offered through Efficiency Maine and participating dealerships. The Cities will do this through online information, promotional campaigns, and other in-person events. This may include working with electric vehicle manufacturers to open an EV Showcase and Purchase Center. The Center would offer prospective EV drivers access to a wide variety of EV models from several automakers, allowing residents to consider the purchase of an EV over a longer timeframe, and increasing consumer awareness, comfort, and interest in EV technology.

Our next steps

- ☐ Work with Efficiency Maine to assess the uptake of EV purchases based on the new incentives; Review financial incentives in other jurisdictions, including incentives that vary based on income, and determine whether and how to tailor the level of financial incentive to achieve a high level of EV adoption.
- ☐ Assess the feasibility of adopting an excise tax discount for fully electric vehicles and plug-in hybrid vehicles, and work with the State to expand additional incentives for electric vehicles.
- ☐ Work with stakeholders to identify a good lead for developing and managing an EV Showcase and Purchase Center. As part of this project, determine the level of discounts that can be negotiated for new buyers.

TLU 2.2 Summary - Electric Vehicle Incentives

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d	a b c d	a b c d
	(a) Addresses injustice — from localized roadway air pollution (b) Expands access	(a) Draws down carbon	(a) Reduces vulnerability — from localized roadway air pollution (d) Builds partnerships
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	30% of new light duty vehicle sales are electric vehicles by 2030; 60% by 2040; 100% by 2050	P: Sustainability Office, Finance Department SP: Sustainability Office	Efficiency Maine incentives

TLU 2.3 Electric Public Transit Bus Fleets

ACTION: Work with Greater Portland METRO and the South Portland Bus Service to transition all bus fleets to battery-electric vehicles (BEV) by 2040.

Where we are today

The two primary bus services with local circulator routes in Portland and South Portland include the Greater Portland METRO, a quasi-municipal regional transit organization with board membership from Portland, Westbrook, and Falmouth; and the South Portland Bus Service (SPBS), a South Portland city agency. As of spring 2020, METRO runs a fleet of 44 buses, with some running on compressed natural gas (CNG) and others on diesel. The South Portland Bus Service runs a fleet of seven diesel buses. Ultimately the public bus systems that serve Portland and South Portland must transition to full electric fleets before 2050 to meet our One Climate Future goals.

Both Greater Portland METRO and the South Portland Bus Service have adopted a goal of operating a zero-emissions bus fleet by 2040. METRO and the Biddeford-Saco-Old Orchard Beach Transit Committee (which runs the ZOOM Express line between Biddeford/Saco and Portland) jointly applied for and received a Federal Transit Administration grant to purchase four 40-foot battery-electric vehicle (BEV) buses, two for each system, along with depot-charging (for METRO) and on-route-charging (for BSOOB) infrastructure. The buses will be delivered in late 2021. In the meantime, METRO is in the process of replacing thirteen 2005 35-foot CNG buses with fourteen 40-foot diesel buses that are more fuel efficient in order to meet growing public transit demand. Since buses generally have a lifespan of 15 years, this is not yet in conflict with the 2040 zero emissions goal. South Portland Bus Service will be replacing three of its seven buses in 2022, for delivery in 2023, and has not yet decided if those buses will be battery-electric.

As of 2020, the cost for an average 40-foot, low-floor, all-electric bus is still roughly 66% higher than the comparable diesel bus, with the price of a typical diesel bus around \$450,000 and a modern battery-electric bus around \$750,000. Nevertheless, prices have dropped nearly 40% since initial commercialization and are expected to continue to drop.⁹⁰ Lower maintenance and fuel costs for battery-electric buses also allow for the excess costs to be recouped over a bus lifespan: an electric bus can save over \$400,000 in fuel costs and \$125,000 in averted maintenance costs over the life of the vehicle.⁹¹ In addition to lower operating costs and significant greenhouse gas emissions reductions, battery-electric buses offer other advantages—including faster acceleration, quieter operation, and zero local pollution. With improvements in battery technology, battery-electric buses are also now capable of operating all day on a single charge.

Supported by all of these benefits, the deployment of zero-emissions buses has increased significantly in the United States within recent years, rising from an estimated 360 buses in 2017 to 1,650 zero-emissions buses in 2019.⁹² As of 2019, 46 states had received federal funding for electric transit buses through the Low- or No-Emission (Low-No) Grant program, which has provided 72% of all public funding for electric transit buses since 2011.⁹³ The VW settlement funds represent the next largest source of public funding used for electric transit bus procurement; electric transit buses are not prioritized, however, in Maine's Beneficiary Mitigation Plan for allocation of funds.⁹⁴ As the Cities expand bus service in line with action TLU 1.1, it is important that the new buses be battery-electric, so that the Cities are not stranded with diesel or natural gas buses after 2040.

The action we will take

By 2022, Portland METRO and the South Portland Bus Service will develop electric vehicle capital transition programs for all public buses. In alignment with our One Climate Future goal of reaching 100% carbon neutral municipal operations by 2040 and METRO’s goal of running a 100% zero-emissions fleet by 2040, our goal is to have all public transit buses in the cities be zero-emissions buses by 2040 or earlier. The Cities will also advocate for the Biddeford-Saco-Old Orchard Beach (BSOOB) Transit Committee and the Regional Transportation Program (RTP) to likewise commit to transitioning to all-electric fleets within the same timeframe, and will support these agencies in securing funding. (See action TLU 1.1 for discussion on aligning efforts between public transit agencies in the PACTS region.)

These capital transition programs will begin with building out initial charging infrastructure for a small pilot of EV transit buses within the next two years, evaluating the performance of those buses and the charging systems, and basing future procurement on the success of these pilots. Assuming a standard 15-year turnover, meeting the 2040 goal will mean that starting in 2025, all new buses and bus replacements must be battery-electric buses. We will also work to explore ways that the bus systems can further collaborate for electric bus

purchasing, such as through unified funding applications and procurement, and through exploring shared charging depots for buses.

Our next steps

- ☐ Proceed with the purchase, deployment, and evaluation of the two planned battery-electric buses (METRO).
- ☐ Evaluate feasibility for battery-electric bus purchases in upcoming 2022 bus procurement, and pursue partnerships for a joint multi-agency application for a federal Low-No Grant (South Portland/SPBS).
- ☐ By 2022, develop EV capital transition programs for public transit buses, with the goal of operating a zero-emissions bus fleet by 2040. Target the first EV buses to run on routes most affected by local air pollution and asthma.
- ☐ Initiate conversations with regional transit partners to advocate for a PACTS-region goal of zero-emissions bus fleets by 2040, and to establish ongoing plans for joint federal funding requests for the procurement of bus and charging infrastructure.
- ☐ Collaborate with the State on utilization of VW settlement funds to support this effort, and pursue additional state funding for vehicle electrification, including investigating vehicle-to-grid integration.

TLU 2.3 Summary - Electric Public Transit Bus Fleets

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — from localized roadway air pollution (b) Expands access	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability — from localized roadway air pollution (d) Builds partnerships
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	• All new METRO and SPBS bus purchases are electric starting in 2025 • All-electric METRO and SPBS fleets by 2040	PT: Sustainability Office, Planning Department SP: Sustainability Office, South Portland Bus Service	Federal funding/VW settlement funds (e.g., Low or No Emission Vehicle Grant Program), battery leasing

TLU 2.4 Electric and Alternative-Fuel Municipal Fleets

ACTION: Develop an electric and alternative-fuel vehicle capital transition program for municipal and school vehicles.

Where we are today

Portland and South Portland have substantial fleets of municipal vehicles to run city operations that include passenger vehicles, light-duty trucks, police vehicles, school buses, medium duty trucks, snowplows, fire trucks, refuse collection vehicles, and various specialized heavier duty vehicles. Collectively, the operations of these vehicles contribute to a notable number of vehicle miles traveled; the school buses alone for the two cities account for over 675,000 vehicle miles annually.

Municipal car fleets are an excellent and easy target for electrification, and Portland and South Portland will be able to leverage EV funding from Efficiency Maine and the second round of VW settlement funding to support this transition. Like public transit buses (see action TLU 2.3), battery-electric school buses are also becoming increasingly cost-effective, given decreasing price points, lower maintenance costs, and health and environmental benefits. Currently electric school buses cost around \$230,000, compared to \$110,000 for a diesel bus,⁹⁵ but are predicted to reach cost parity with diesel buses between 2025 and 2030 based on full lifespan costs.⁹⁶ In addition, because of their predictable schedules and the amount of time they sit idle, electric school buses show potential for vehicle-to-grid (V2G) initiatives, whereby buses can support electricity demand response by storing electricity and discharging it back to the grid.⁹⁷

While there are fewer cost-effective alternatives for light duty pickup trucks and medium- and heavy-duty municipal vehicles, electric vehicle technology for these vehicles is improving

rapidly, and will likely be ready for adoption within the next 10-15 years. Ecomaine and the City of Portland will replace diesel-powered waste haulers with electric trucks by the end of 2020. Some medium heavy-duty vehicles, such as snowplows, may be good targets for the use of alternative fuel / biofuel options, such as E85 (flex fuel), biodiesel, or renewable diesel. Given Maine's substantial timber industry, the use of biofuel options for medium and heavy-duty municipal vehicles may have regional economic development benefits in addition to reducing emissions.

Finally, decarbonization of mobile fossil fuel combustion also should include addressing small motor equipment—including gas-fired leaf blowers, lawn mowers, and other land care equipment used for municipal open space maintenance. In addition to generating greenhouse gas emissions, the two-stroke engines used by such equipment produce higher levels of criteria pollutants and particulate matter that represent a public health concern for both workers and residents, in addition to their high decibel noise levels. Other jurisdictions are moving quickly on this issue—it's estimated that over 100 U.S. cities and the District of Columbia have banned gas-powered leaf blowers.⁹⁸ California and Illinois are also considering statewide bans to phase out leaf blowers by 2022.

The action we will take

By 2022, Portland and South Portland will each create an electric vehicle capital transition program for municipal light-duty vehicle fleets and school buses. The rate of transition for each type of fleet vehicle will be largely driven by their lifespan.



SCHOOL BUSES AT THE BROWN SCHOOL • Photo by Denise Michaud

School buses have a lifespan of around 15 years, and so should be electrified on the same timetable as public buses (see action TLU 2.3), with no new diesel buses purchased after 2025. Light-duty vehicles in municipal fleets have a seven-year lifespan; all new or replacement light-duty vehicles purchased after 2032 would need to be battery-electric vehicles in order to achieve a zero-emissions fleet by 2040. The transition of each type of fleet vehicle will start with a pilot (the purchase of one or two vehicles) to test how they perform, followed by phased purchases to meet the timeline.

Heavy-duty vehicles also have long lifespans, but the replacements for those various vehicle types are either not mature or require further study. Over the next few years, we will continue to research the market landscape for battery-electric and/or alternative fuel medium- and heavy-duty electric vehicles (such as garbage trucks and snow management equipment), and local biofuel supply, and develop an electrification or alternative fuel plan for these vehicle types.

Pilot projects to test various vehicle solutions will be explored as we continue to monitor this market.

To support widespread EV use, charging depots will need to be installed at various schools and city lots, along with DC fast chargers at central locations. We will continue expanding the number of level 2 EV chargers in all city-owned parking garages (see action TLU 2.1). For school buses, we will also explore the various options for using the buses as mobile battery power banks for vehicle-to-grid (V2G) initiatives to shave electricity demand peaks, which would provide additional income streams for the schools. However, the feasibility of this in practice may vary and the timing may not align, as peak grid demand is often late in the afternoon or early evening, right when buses are either on the road or just returned.

The capital plan for municipal vehicles will also address the electrification of land care equipment wherever feasible. Portland has already prioritized a transition to electric small

motor equipment; South Portland will pursue a similar transition. We will aim to eliminate all gas-powered leaf blowers by 2023 and prioritize the electrification of other small motor equipment based on when cost-effective electric alternatives come on the market.

Our next steps

- ☐ By 2022, develop EV capital transition programs for school buses and light duty vehicles.
- ☐ Continue building out networks of charging infrastructure needed for municipal electric fleets, including buses and light duty vehicles in alignment with the capital transition program.
- ☐ Explore additional pilots for medium- and heavy-duty electric or alternative fuel vehicles.
- ☐ Collaborate with the State on the utilization of VW settlement funds to support the transition to electric municipal fleets, and pursue additional federal or state funding for vehicle electrification, including investigating vehicle-to-grid integration.
- ☐ Support training for mechanics and technicians in electric bus and vehicle maintenance.

TLU 2.4 Summary - Electric and Alternative Fuel Municipal Fleets

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — from localized roadway air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability — from localized roadway air pollution
• Create capital transition program for light-duty vehicles and school buses. • Create parallel transition program for small motor equipment. • Pursue alternatives for medium/heavy-duty vehicles when viable.	KEY MILESTONES • All new school bus purchases are electric by 2025 • All new light-duty vehicle purchases are electric by 2028 • Zero-carbon municipal fleets by 2040	CITY STEWARD P: Public Works, Sustainability Office SP: Sustainability Office, Public Works	FINANCING MECHANISMS Efficiency Maine incentives/ VW settlement funds, lease-purchasing, demand aggregation via Climate Mayors Electric Vehicle Purchasing Collaborative, bonds

TLU 2.5 Electric Shared Vehicles and Vehicles for Hire

ACTION: Expand the use of shared electric vehicles, promote electric vehicle use by taxis and other vehicle-for-hire companies, and set a requirement that by 2030 all rideshare vehicles must be electric vehicles.

Where we are today

Car-sharing helps to decrease the use of private passenger vehicles, thereby reducing congestion, greenhouse gas emissions, and local air pollution. Vehicle share programs with electric vehicles (EVs) further decrease emissions, while also helping to increase awareness and familiarity with EVs as a passenger vehicle. Between 2014 and 2019, a large number of cities implemented EV-focused car share programs, including Montreal, San Diego, Los Angeles, Chicago, and Indianapolis. Unfortunately to date, a significant number of these programs have not been successful. These failures are as tied to the difficulty of shared vehicle programs as to the specific operational challenges of using EVs in these programs.⁹⁹

Unfortunately, to date, ridesharing has not shown the same benefits for emissions reductions as car-sharing. Research finds that rideshares tend to contribute to congestion, lead to higher vehicle miles traveled (VMT) to serve the same number of people, and displace other lower-carbon types of transportation, including walking, biking, or public transit—ultimately leading to more greenhouse gas emissions.¹⁰⁰ Nevertheless, encouraging rideshares to transition to electric vehicles can greatly reduce the carbon impact of these trips. Cities have seen success in encouraging taxi operators to transition to EVs through issuing new taxi licenses preferentially to operators with EVs. However, cities must support those taxi drivers with sufficient charging infrastructure (see action TLU 2.1) for this type of program to operate.

Vehicles operated by independent ride-hailing drivers and managed by transportation network companies (TNCs) represent a significant subgroup of private vehicles transitioning to EVs in the near future. A move to electric vehicles is starting to become a stated goal of some ridesharing companies—in June 2020, Lyft announced that by 2030, all Lyft rides will be in electric vehicles.¹⁰¹ TNCs have also signaled their intentions to transition their independent driver networks to driverless fleets as soon as possible, expressed through their autonomous vehicle (AV) research and development partnerships with vehicle manufacturers; AVs are discussed further in action TLU 2.6.

The action we will take

In the immediate term, to encourage taxi companies and other vehicle-for-hire companies to adopt electric vehicles, we will assess options for offering structural incentives in the permitting and licensing process, such as increased availability or reduced cost of licenses. We will support the success of this initiative with expanded charging infrastructure, and in particular DC fast chargers, as discussed in action TLU 2.1.

By 2030, we will require that any TNCs operating ridesharing services in Portland and South Portland use all-electric fleets of vehicles, regardless of vehicle ownership.

In the meantime, we will continue to monitor efforts in other jurisdictions and by private companies to offer electric vehicle car-share services. While this market has not shown viability yet, it still holds promise for the future. Partnering to offer a car-share fleet that is predominantly EVs will remain a long-term objective of Portland and South Portland.

Our next steps

- ☐
- Offer incentives for taxi drivers and shuttle services to operate EVs through increased availability or reduced cost of licenses, and support EV use with increased DC fast charging infrastructure.

TLU 2.5 Summary - Electric Shared Vehicles and Vehicles for Hire

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — from localized roadway air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability — from localized roadway air pollution
Assess options for incentivizing EV use among taxis and hired vehicles. Reassess national market for feasibility of electric car sharing fleets by 2026. Mandate that all TNC rideshare vehicles must be EVs by 2030.	KEY MILESTONES All TNC rideshare vehicles are electric vehicles by 2030	CITY STEWARD P: Sustainability Office SP: Sustainability Office	FINANCING MECHANISMS N/A

TLU 2.6 Autonomous Vehicles

ACTION: Implement changes to curb and parking designs to incentivize shared autonomous vehicles, and advocate for state requirements that any autonomous vehicles must be electric and shared.

Where we are today

While autonomous vehicles (AVs) are unlikely to arrive en masse in the near term, they are very likely to arrive during the thirty-year timeframe of the One Climate Future plan. Unfortunately, studies of AV proliferation show that AVs will not necessarily reduce greenhouse gas emissions. If everyone uses their own AV—particularly if it drops you off, drives home, picks you up, and drives home again—it will contribute to significantly higher vehicle miles traveled, greenhouse gas emissions, and vehicle congestion.¹⁰² If AVs are electric and all electricity comes from renewable sources, then we can reduce the associated greenhouse gas emissions, but the grid impacts may be substantial. Private AVs would also continue to amplify congestion, increase parking demand, and work against our goals for more equitable transportation systems.

Thus, the two factors that will determine if AVs can effectively support our One Climate Future goals are whether they are battery-electric vehicles, and whether they are shared. If AVs are electric and shared, then they can reduce vehicle miles traveled, reduce emissions, reduce vehicle congestion, improve fluidity of traffic flow, and reduce land use for parking—contributing to more compact and transit-supportive land uses. Although rideshare services to date have been linked to higher greenhouse gas emissions, AV partnerships between TNCs and vehicle manufacturers have the potential to shift the private automobile market from an ownership model to a shared or subscription-based model.

The two factors that will determine if autonomous vehicles can effectively support our One Climate Future goals are whether they are battery-electric vehicles and whether they are shared.

Governments will play a large role in determining whether future AVs are shared and electric, even if inadvertently. This influence will come not only through direct vehicle regulations, but also through the incentives created by city land use, street planning, and parking policies. Therefore, long term climate planning must consider the multiplicity of influences on an AV future. And even if the promise of AVs never comes to fruition, the actions laid out here will also benefit the sharing of human-driven shared electric vehicles discussed in action TLU 2.5.

The action we will take

While the widespread use of autonomous vehicles may be five or ten years away at least, the steps taken now will lay the framework for a future with AVs. It is therefore important to establish, as soon as possible, expectations and requirements that AVs should be EVs, and use a shared ownership model to the greatest extent possible. At the state level, we will advocate



LIGHT TRAILS ON I-295 • Photo by Corey Templeton

for any permits for AVs to be limited to electric AVs. We will also work with the State to ensure that state and local laws pertaining to the operation of AVs necessitate that AVs adhere to laws and plans that protect people walking and bicycling in the public right-of-way—Portland has already begun to do this in pilot projects. In our cities, we will also plan for the adoption of AVs through the following approaches:

- Prioritizing space for safe and efficient drop-off and pick-up.** Road design that caters to safe and efficient passenger drop-off and pick-up is important for increasing the viability, safety, and efficiency of bus transit, rideshare services, as well as potential future AV use. Improved street and curb design that promotes drop-off and pick-up will help facilitate and incentivize a shared AV ownership model, where the AV at no point stays with the vehicle user. We will adjust the Cities' technical manuals, including the *Complete Streets Planning*

and *Design Manual* (see action TLU 1.4), to phase in allocations of more curb space for passenger loading, rather than parallel parking. On roads with bike lanes or transit service, we will amend loading zone design standards to reduce conflicts with active transportation and high-occupancy vehicles. We will also reflect these shifts in roadway design in our zoning ordinances, by increasingly prioritizing the provision of pick-up and drop-off zones for new construction. Once AVs are widely adopted, we will monitor curb space utilization by time and type of use to assess how it is currently used, and where it can be re-assigned, priced, or regulated to encourage higher occupancy motor vehicle travel, especially by AVs.

- Integrating projections for AV adoption in parking planning and policy.** The Cities will also continue to evaluate our parking policies, knowing that AVs are expected to dramatically impact both parking demand and how land

is prioritized and allocated for parking. AVs can park in much tighter spaces, leading to more efficient use of space and smaller parking lots. Furthermore, AVs would not need to park near the destination of their passengers, and shared AVs, in particular, would rarely park. These patterns would lead to large reductions in demand for surface parking lots and garages, particularly where land values are high.¹⁰³ Therefore, under a scenario with widespread AV adoption, the requirement of minimum car parking per individual property may become obsolete—a point that the Cities will keep in mind when considering parking demand management through adjustments to parking policy (see action TLU 1.6).

● **Exploring deployment of electric AV pilots as ground vehicles at the Jetport.** We will explore opportunities to deploy autonomous electric vehicle pilots at the Portland International Jetport (see action TLU 3.5) or other controlled sites with predictable routes in order to help test and increase public comfort with the new technologies.

Our next steps

- ☐ Advocate for any permits for AVs in the state be limited to electric AVs, and for policies to incentivize shared AV models.
- ☐ Advocate that the State ensures that laws for AVs protect people walking and bicycling in the right of way, and reduce conflicts with active transportation and high-occupancy vehicles.
- ☐ Adjust road design manuals and policies to phase in the repurposing of curb space for passenger loading, rather than parking, and incentivize or mandate passenger loading zones at new developments.

TLU 2.6 Summary - Autonomous Vehicles

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
- Continue to adapt curb and parking standards for safe and efficient drop-off, considering AVs. - Advocate at the state level for AV permits to be limited to electric AVs. - Work with state to ensure protections for pedestrian use of roadways.	a b c d (a) Addresses injustice — from localized roadway air pollution	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability — from localized roadway air pollution
	KEY MILESTONES State requirement that all AVs be electric in place by 2030	CITY STEWARD P: Sustainability Office SP: Sustainability Office	FINANCING MECHANISMS N/A

TLU 3

Transportation Infrastructure



CASCO BAY LINES FERRY TERMINAL • Photo by Corey Templeton

TLU 3.1 Idling Reductions

ACTION: Reduce vehicle idling through anti-idling policies, vehicle technology, and improved intersection design.

Where we are today

Gasoline-powered personal vehicles in the United States have shown to generate roughly 30 million tons of carbon dioxide annually merely by idling.¹⁰⁴ While this volume is relatively small at the scale of a single car, if all cars in the United States were to eliminate unnecessary idling, the impact would be similar to taking five million vehicles off the road. Turning off and on a vehicle can save emissions whenever the vehicle is idling for over ten seconds.¹⁰⁵

Portland and South Portland have anti-idling policies in place and have piloted anti-idling technologies in municipal vehicles. However, in both cities, the policies have not been uniformly

enforced and technologies have not led to reductions of idling in practice. In other cities, anti-idling policies, often with 3-to-5-minute limits, have become more common for private commercial vehicles. These are particularly important tools in areas where lines of private vehicles sit and wait, such as at schools, ports, other freight depots, and on the Casco Bay Bridge.

Advances in vehicle technology, including telematics, auxiliary power, vehicle calibration devices, and idle management systems, can dramatically support compliance with these policies. Increasingly, anti-idling technology has been installed in light duty vehicles to help meet federal fuel economy

standards—you may have noticed this in your own car. Municipalities have also begun adopting fleetwide policies and pilots to expand the use of anti-idling technology in older vehicles—with promising results. Washington, DC; Columbus, OH; and Santa Barbara County, CA, for example, have installed anti-idling software in their police fleets and found significant cost savings from reduced fuel consumption and returns on investment in under a year.¹⁰⁶ Clark Public Utilities in Vancouver, WA installed anti-idling technology across their fleet of man-lifts and cargo vans as an approach to additionally extend engine life and reliability. On-board electric heaters can heat vehicles like school buses more efficiently than by idling, eliminating the need for the 10-minute window in cold temperatures.

In addition to anti-idling policy and technology, roadway design and transportation infrastructure can play a role in creating more fluid transportation patterns, reducing time spent at traffic lights, stop signs, and stopped in traffic, thereby reducing vehicle idling time. Modern roundabouts—which are compact, one-way, circular intersections that direct traffic around a center island (and where all incoming traffic yields to traffic within the circle)—are now considered to be one of the safest and most efficient traffic control systems under many circumstances, and also effective at reducing vehicle idling time and fuel consumption. Neighborhood traffic calming circles, whereby vehicles are directed around a small island, are likewise an effective traffic calming technique that can reduce idling and fuel consumption compared to stop signs or speed bumps.

Adaptive signal control technology (ASCT) is an additional technology-based approach to improve the efficiency and flow of traffic. Coordinated traffic lights with ASCT can respond to traffic patterns to optimize vehicle flow in real time. Conventional traffic signals are programmed based on usual traffic patterns for the day and time. Adaptive traffic signals use cameras and sensors to gather data and can adjust signal length and timing to address real-time traffic demand. The

software also communicates with coordinated traffic signals to sync lights within a corridor. Portland is currently piloting ASCT in critical corridors—new adaptive signals were installed at Morrill’s Corner on Forest Avenue in 2018 and on Franklin Street in 2019. The Federal Highway Administration reports that ASCT generally improves travel time on average by over 10%, and at Morrill’s Corner in Portland, the signal technology has reduced travel time by 16% to 20%.¹⁰⁷ Traffic light optimization also can yield improved travel times for public buses, as discussed in action TLU 1.1. PACTS is also investing in the first phase of a Regional Traffic Management System. As of 2017, the project is in phase 3, working with Scarborough and Gorham, and funding has been allocated to evaluate 125 signals throughout the region.¹⁰⁸

While improving the flow of traffic can directly reduce emissions from vehicle idling, it is important to consider the macro effects on transportation patterns that influence net greenhouse gas emissions. As documented by researchers at Portland State University in Portland, OR, emissions saved from reduced idling and more fluid traffic patterns have shown to be offset by behavior change, particularly increased driving prompted by lower levels of congestion.¹⁰⁹ For this reason, changes in roadway design where relieving traffic is not the primary intention (such as implementing neighborhood circles as opposed to stop signs for traffic calming) will likely be most successful as a greenhouse gas mitigation tactic. From a greenhouse gas mitigation standpoint, modern roundabouts and ASCT technology may be best implemented only when there are also significant safety gains for pedestrians and bicyclists, or efficiencies in public transportation routes.

The action we will take:

Portland and South Portland will reduce vehicle idling in the cities through anti-idling policies and anti-idling vehicle technology. We will also consider the effects of idling and associated greenhouse gas emissions when updating roadway intersections. Specific elements will include:

• Anti-idling technologies and policies for public vehicles. Portland and South Portland will assess the feasibility of installing anti-idling technologies in city vehicle fleets, focusing on fleets that could benefit the greatest from such technology, such as the Cities’ patrol cars. (Anti-idling systems can automatically turn off the engine after a set time, while still leaving all auxiliary equipment running—such as two-way radios and scanners.) Based on feasibility, the Cities will launch a pilot, integrating anti-idling systems into a set number of vehicles to assess the fuel and greenhouse gas emissions savings, cost-effectiveness, and equipment performance. Based on the pilot, the Cities will determine whether to integrate anti-idling technology across city fleets. We will also investigate supplemental heating for public buses and school buses to reduce the need for idling in colder weather. It should be noted that the Cities’ transition to electric buses as well as fully electric municipal fleets will make idling in municipal vehicles no longer a concern (see action TLU 2.3), but anti-idling technologies can serve as a cost-effective strategy in the mid-term until fleets are fully electric.

• Anti-idling zones and policies for private vehicles. Portland and South Portland will continue to implement “no idling zones” at specific areas with substantial car idling, such as school drop zones and community facilities. Implementing

If all cars in the United States were to eliminate unnecessary idling, the impact would be similar to taking five million vehicles off the road.

these zones requires collaboration with facility owners and a public campaign for compliance. The Cities will adopt policy to restrict idling by heavy trucks at the Port and waterfronts. As with similar laws in California, terminal operators can implement appointment systems to reduce wait times and work with truckers to reduce lines and the need to idle, which in turn would reduce exposure to fines for idling.

• Intersection design. We will institute a policy of considering modern roundabouts and neighborhood traffic calming circles at any construction project to assess the potential implications for idling and greenhouse gas reductions, as well as pedestrian safety. Neighborhood traffic calming circles should be considered for any upgrades to low-volume neighborhood intersections, replacing four-way stops. In addition to slowing traffic, contributing to continuous traffic flow, and reducing emissions related to car idling, calming circles offer opportunities for vegetation and stormwater management.

TLU 3.1 Summary - Idling Reductions			
PRIMARY COMPONENTS • Adopt anti-idling technology and policies for public vehicles. • Adopt and enforce anti-idling zones and policies for private vehicles. • Consider anti-idling co-benefits in intersection design.	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice — from localized roadway air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability — from localized roadway air pollution
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	• Anti-idling policies to be updated (P) or adopted (SP) and enforced by 2025	P: Sustainability Office, Planning Department, & Public Works SP: Sustainability Office, Planning Department, & Public Works	Federal grants (for anti-idling technology)

Larger roundabouts should be considered for any intersection with more than two roads meeting or standard two-road intersections with no more than two lanes in each direction.

Lastly, electric vehicles do not produce direct emissions and they consume little power when idling, so all actions in TLU 2 (Vehicle Electrification) will indirectly contribute to this action.

Our next steps

- ☐ Assess the feasibility and areas for greatest impact for implementing anti-idling technology in municipal fleets; Launch a pilot with a small set of vehicles to test cost-effectiveness, fuel and emissions savings, and equipment performance.
- ☐ Increase awareness and enforcement of current municipal anti-idling policies and adopt an ordinance to expand idling limits of 3 minutes (10 minutes when temperatures are below freezing) to all private commercial vehicles (Portland); Adopt an anti-idling ordinance that applies to both municipal and private vehicles (South Portland).
- ☐ Develop workshops with peer communities to educate and help officials and staff overcome ingrained practices around idling.
- ☐ Institute policy to ensure intersection construction or expansion considers greenhouse gas emissions reductions from idling and assesses modern roundabouts, neighborhood traffic calming circles, or improved adaptive street signals in the assessment.

TLU 3.2 Freight Transit Partnerships

ACTION: Partner with large stakeholders in the freight sector to encourage development of a Sustainable Freight Action Plan.

Where we are today

Freight plans need to be updated to meet the needs of the 21st century and promote sustainability. The Maine Department of Transportation (MaineDOT) adopted its latest statewide Integrated Freight Strategy in 2017,¹¹⁰ which does not substantively address sustainability or greenhouse gas emissions. The leading example of integrating climate change and environmental impacts mitigation into freight planning is California's Sustainable Freight Action Plan, which addresses how to reduce emissions and other environmental impacts from ocean-going vessels and trucks.¹¹¹ Regional support for working on freight efficiency is also available through the "Freight Efficiency" project at the Transportation and Climate Initiative (TCI). TCI studies have shown that over 80% of freight in the region is moved through heavy trucks, and thus moving more freight to trains, improving truck efficiency, and in the longer-term, electrifying on-road freight are critical solutions.¹¹²

Given the importance of both marine- and road-based freight shipping to both Portland and South Portland, there is an important role for us in partnering with large stakeholders to develop a Sustainable Freight Action Plan to advance efforts that reduce freight emissions. The electrification of trucking is a critical component to the long-term reduction in freight emissions. Shorter-haul medium duty trucks, such as delivery trucks with frequent stops, are particularly good targets for electrification. In 2019, Washington DC adopted a law requiring any entity with 50 or more vehicles in its fleet to map out an

electrification plan and to electrify 50% of their fleets by 2030 and 100% of their fleets by 2045.¹¹³

The action we will take:

Sustainable freight planning is mostly done at the state level, but sometimes undertaken by municipalities or regional planning organizations. Portland and South Portland will advocate for and work with the State to develop a new statewide Sustainable Freight Action Plan. We will also work with GPCOG/PACTS to develop a Sustainable Freight Action Agenda for the region; this regional effort can move faster and set the example for the kinds of goals, targets, and actions needed in the state plan. As part of the Sustainable Freight Action Agenda, we will collaborate with regional transportation planning partners, the TCI Freight Efficiency Initiative, and a subset of commercial entities and freight service providers that have interest in leading the industry in sustainable freight systems.

We will also partner with delivery companies and other short-distance haulers within the cities to explore moving medium and light-duty delivery to electric vehicles, and work with the state and federal governments to seek incentives for this shift. We will support this transition by investing in DC fast charging stations for electric vehicles at key sites that would support delivery companies and other short-distance haulers (see action TLU 2.1). If there is sufficient commercial EV uptake, municipal fast charging can be reserved for commercial

vehicles at certain times or locations. (Users will still pay for the electricity, though the efficiency of electric vehicles and the relative short-term predictability of electric rates means they will see lower and more predictable costs.) In the longer term, we will consider requirements for delivery companies to have EV fleets by a date certain, such as 2040, to the extent allowed by law.

As part of the regional Sustainable Freight Action Agenda, we will also consider where higher polluting truck travel can be replaced with more efficient train travel. The International Marine Terminal (IMT) in Portland is served by rail, but most of the containers use trucks for land transport.

Our next steps

- ☐ Work with regional transportation planning and commercial freight partners to develop city and regional goals and targets for reducing emissions from freight travel as part of a Sustainable Freight Action Agenda.



I-295 • Photo by John Phelan

- ☐ Put conditions on projects for commercial and industrial users that rely on freight, to require that service contracts include anti-idling, preferred routing, and other actions to reduce freight emissions.
- ☐ Advocate for and partner with the state to develop a Sustainable Freight Action Plan for Maine.

TLU 3.2 Summary - Freight Transit Partnerships



TLU 3.3 Ferry Service

ACTION: Work with Casco Bay Lines to transition its fleet to hybrid-electric ferries, and to consider a ferry route connection between Portland and South Portland.

Where we are today

Casco Bay Island Transit District (CBITD), also known as Casco Bay Lines, operates year-round passenger, vehicle, and freight service between the Portland peninsula and the islands in Casco Bay. Ferry service operates 365 days a year, running routes to Peaks Island, Little Diamond Island, Great Diamond Island, Cliff Island, Long Island, and Chebeague Island, as well as Bailey Island in the summer—with a total annual ridership around 1.1 million.¹¹⁴ The Maine Public Utilities Commission currently allows Casco Bay Lines to have five vessels—all of which are scheduled for replacement within the timeframe of the plan.

Increasingly, ferry systems around the world are exploring hybrid-electric or fully electric ferries, to reduce pollution

and greenhouse gas emissions and to reduce fuel costs. For example, the Washington State Ferries, the second largest ferry system in the world, is planning to switch to fully electric ferries over the next decade.¹¹⁵ BC Ferries in Vancouver (the world’s third largest ferry system), has purchased new hybrid-electric ferries that will be capable of running entirely on electricity once shore power connections are complete.¹¹⁶ The United Kingdom government has said all new ferries ordered from 2025 onwards will need to be equipped with zero-emission propulsion technology.¹¹⁷

For the imminent replacement of the Machigonne II, the Casco Bay Lines Board is currently investigating funding options for purchasing a hybrid diesel-electric ferry. A fully battery-electric

Table 4. Casco Bay Lines Fleet Summary

Vessel	Routes	Operating Hours (2017)	Passenger Capacity	Vehicle Capacity	Vessel Age (2020)	Engine Age (2020)	Scheduled Replacement
Machigonne II	Peaks Island	4,453	399	12	33	11	2020
Maquoit II	Down Bay / Freight	5,000	399	3	26	16	2024
Aucocisco III		3,500	399	0	15	15	2035
Wabanaki		2,150	398	0	7	7	2045
Bay Mist	Back-up/ Charters	345	297	0	35	35	2025

Table information provided by Casco Bay Lines.¹²¹



CASCO BAY LINES FERRY AND BUG LIGHT • Photo by Denise Michaud

vessel would require an 1800 kWh system; the recommended system would be 900 kWh and use battery power for 54% of the power needs.¹¹⁸ This new ferry is estimated to be able to reduce Casco Bay Lines' greenhouse gas emissions by 800 metric tons per year. The City of Portland has worked with PACTS, the State of Maine, and the Federal Transit Administration to help secure funding for the project.¹¹⁹

The action we will take

We will work with Casco Bay Lines (CBL) to transition all future ferry purchases to hybrid-electric ferries, including continuing to support CBL in securing funding for this transition. Beginning with the Maquoit II replacement in 2024, we will advocate for all ferries to be capable of running fully on electric power. We will also support efforts to add a shore power hookup at the terminal that is capable of supporting full electric charging. See action TLU 3.4 for further discussion on shore power. We will also work with Casco Bay Lines to

understand ideal charging times, and advocate with the Public Utilities Commission for utility rates that support electric vehicle charging (as also discussed in action BE 5.3 and TLU 2.1).

Secondly, we will continue to work with Casco Bay Lines, PACTS, Southern Maine Community College (SMCC), and other stakeholders to explore a ferry service between Portland and South Portland—an idea that has garnered interest within South Portland previously based on traffic along Broadway to SMCC. Because of the large number of people a ferry can transport in one trip, ferries on average have higher fuel efficiency per person than a passenger vehicle. A hybrid-electric or electric ferry would make this difference even more significant, unless all passenger vehicles had also transitioned to EVs. The envisioned ferry route would connect downtown Portland and Bug Light Park / SMCC and make it easier to go between the two cities without the use of a car. Currently, cars can take the Casco Bay Bridge and make the same trip in 15-20 minutes; a bike ride via the Greenbelt Pathway takes roughly 20

minutes, and a bus ride on South Portland Bus Service route 21 takes 30 minutes. The ferry trip between the two cities would be most viable if it took less than 30 minutes and was relatively cost-competitive with the bus service.

This route between the two cities could be served by adding a stop on one of the existing Casco Bay Lines routes, or via a new route with a new ferry. Adding a stop on an existing route would be the most cost-efficient strategy, but its feasibility would need to consider vessel size, available docking space, and the impact on existing schedules and passenger needs. Another option would be the acquisition of a new, smaller boat optimized for quick service between the two cities, and capable of using the smaller docks available at existing marinas. If Casco Bay Lines were to offer this service, they would need authorization to purchase a sixth vessel, as their fleet is currently capped at five vessels.

In 2021-2022, as a part of the Unified Planning Work Program (UPWP), PACTS will complete Mill Creek to Cushing’s Point Priority Corridor Study, a planning project for the South

Portland waterfront. This feasibility study seeks to address existing transportation deficiencies between the Casco Bay Bridge and Cushing’s Point and accommodate new development in the Cushing’s Point and Spring Point areas of South Portland. Once complete, this work will transcend previous efforts to evaluate the priority corridor by exploring increased transit service, improve traffic signal operations, and marine transportation to and from Portland.¹²⁰

Our next steps

- ☐ Advocate for all future Casco Bay Lines vessel purchases to be hybrid-electric and capable of operating solely on electricity, and support CBL in securing funding.
- ☐ Include shore power requirements for CBL in any study of shore power (see action TLU 3.4).
- ☐ When complete, the Cities alongside Casco Bay Lines, PACTS, and additional relevant stakeholders will review proposed land and marine improvements to the Mill Creek to Cushing’s Point Priority Corridor outlined in the PACTS UPWP.

TLU 3.3 Summary - Ferry Service

PRIMARY COMPONENTS

- Support Casco Bay Lines in transitioning to electric ferries.
- Assess feasibility of ferry service between Portland and South Portland.

How this strategy advances a future that is...

Equitable

a

b

c

d

Regenerative

a

b

c

d

(a) Draws down carbon
(b) Restores ecosystems

Resilient

a

b

c

d

(a) Reduces vulnerability — from localized air pollution

KEY MILESTONES

- 60% of ferries (three ferries, based on the current fleet of five) run on all electric power by 2035

CITY STEWARD

P: Planning Department
SP: Planning Department

FINANCING MECHANISMS

Federal grants, PACTS funding, Maine Department of Transportation funding

TLU 3.4 Shore Power

ACTION: Commission an engineering study for shore power hookups to allow and eventually require docked ships to connect to electrical service.

Where we are today

We expect to see continuing increases in port activity in the coming years. The number of visiting cruise ships in the Port of Portland increased from 76 to 100 cruise ships between 2016 and 2019, and container shipping more than doubled in the five years between 2013 and 2018.¹²² In the longer term, as Arctic sea ice melts and the Northwest Passage becomes ice free in warmer months, the Port of Portland will become the closest U.S. east coast port to Asia. This proximity will likely lead to an additional increase in container shipping as some vessels that used to go through the Panama Canal to Florida or New York may instead come to the Port of Portland.

Port operations in both cities present a key opportunity for emissions reductions. Currently, ships in port idle their engines or run auxiliary engines for their power needs—producing higher levels of local air pollution (consisting of nitrogen oxides, sulfur oxides, particulate matter, as well as carbon dioxide) due to the nature of the bunker fuels used on board. Cruise ships docked at Portland generate over 4,000 tons of greenhouse gas emissions while docked in Portland, or 0.5% of Portland’s citywide emissions, and roughly equivalent to the emissions for all waste from South Portland. Data on the emissions of tankers docked in South Portland was not available. Under the methodology used for the greenhouse gas inventory, any emissions from ships while at sea beyond the borders of the cities was considered out of scope and not included.

Ports with shore power infrastructure allow marine vessels to plug into the electrical grid and turn off all auxiliary

engines while docked. Depending on the local grid’s mix of energy sources (i.e., how much of the electricity comes from renewables), shore power can reduce pollution emissions by up to 98%. A number of port cities in the United States, such as Seattle, Oakland, Los Angeles, and Brooklyn (as well as Halifax, Nova Scotia) have installed hookups to allow—or even require—docked ships to connect to onshore electrical power instead of idling their engines. In California, current requirements for docked vessels to use shore power apply to container ships, cruise ships, and refrigerated ships, and tankers will be required to connect to shore power between 2027–2029 (depending on the port). These changes have created noticeable shifts in port greenhouse gas emissions and local air quality.

The action we will take

Portland will commission an electrical engineering study of shore power requirements in order to assess the feasibility of providing shore power hookups for cruise ships, container ships, ferries, and other marine vessels. This study would assess power load requirements, including peak load impacts, as well as policy options for reducing peak load. Providing equipment to allow docked ships to hook up to electricity from the shore—and eventually requiring them to do so instead of running main or auxiliary engines—will cut Portland’s carbon emissions from docked cruise ships, in particular, by over 60%. When accounting for citywide emissions, shore power is not

a major source of emissions savings today but will become increasingly significant as we work towards carbon neutrality.

Cruise ships are only docked for a small portion of the year, but while docked, their energy draw is substantial. If two large cruise ships both connected to shore power at the same time, it is estimated that they could add up to 27 MW to the peak electrical load on the Portland peninsula. This peak load could be limited by staggering when the cruise ships connect. Nevertheless, it is highly likely that the electrical demand for all port activity would surpass the capacity of the one main electrical feeder line to the peninsula and necessitate a second feeder line. With full electrification of the building stock on the peninsula, however, (see actions BE 2.1, BE 3.4, and BE 5.6), one or more new feeders will likely be needed regardless.

As noted in action TLU 3.3, Casco Bay Lines is currently in the process of procuring its first hybrid diesel-electric ferry, and the One Climate Future plan further recommends that future additions to the fleet be capable of running solely on electricity

once sufficient charging infrastructure is in place. The Casco Bay Lines preliminary design review and battery optimization study found that to recharge the batteries during limited docking time would require a load draw of 1.2 MW. It can be assumed that not all four main ferries would need to charge at the same time, but if they did, this would result in 4.8 MW of additional demand.

The shore power feasibility assessment will assess both technical options for meeting shore power demand across waterfront uses, including required infrastructure investments to the electrical grid, as well as policy options for reducing peak load.

Our next steps

- ☐ Commission an electrical engineering study of shore power requirements for the Portland waterfront, including peak load impacts and policy options for demand management (Portland).

TLU 3.4 Summary - Shore Power

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
- Commission engineering study of shore power requirements (Portland). - Work with Casco Bay Lines to install shore power for ferries (Portland). - Work with PUC, Central Maine Power, and Port to install shore power for cruise ships (Portland).	a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability — from localized air pollution
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	- Shore power for full ferry fleet installed by 2040 - Shore power for cruise ships installed by 2040	PP Sustainability Office, Planning Department, Facilities SP Sustainability Office, Planning Department	Utility cost recovery, port user fees, VW settlement funds, federal/state grants

ACTION: Reduce greenhouse gas emissions from the Portland International Jetport through benchmarking and tracking, and through decarbonizing ground vehicles.

Where we are today

The Portland International Jetport (PWM) is already a regional leader in sustainability and has invested substantially in energy efficiency and renewable energy as part of its recent expansion. The new \$75 million terminal for the Jetport and associated parking facility includes the state's largest geoexchange/ground source heat pump (GHX) installation, and the largest solar array in the state of Maine. (See action BE 5.4 for more on GHX systems.) PWM was the first large airport in the United States to utilize GHX for heating and cooling. The system includes 120 500-foot wells, dug beneath a parking lot, and is designed to reduce the Jetport's consumption of oil by over 50,000 gallons per year. Based on these fuel savings, PWM expects to save more than \$160,000 in heating costs (in addition to further cost savings from reduced cooling loads), as well as reduce the Jetport's carbon dioxide emissions by 1,000 tons per year. Portland has also seen electrical load reductions from the solar array on top of the parking garage.

The PWM *Sustainable Airport Master Plan* reviews the suite of actions the Jetport has taken to reduce energy use, including not only the GHX and solar system, but also improving windows and insulation, installing LED lighting, and establishing better energy management practices.¹²³ Additionally, as of 2018, the airport is capturing and recycling deicing fluid, creating a closed-loop process that reduces effluent and water pollution—not only from PWM itself, but also by selling recycled deicing fluid to other airports. This is the first deicing fluid recycling operation at any U.S. airport.¹²⁴

As part of One Climate Future, Portland and South Portland completed updated greenhouse gas inventories in line with global standards under the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) BASIC framework. Under this framework, the transboundary emissions of aircraft in the air are not counted towards Portland and South Portland's emissions. To identify actions that will have a measurable impact toward the Cities' greenhouse gas reduction goals, Jetport actions focus on the decarbonization of building and ground transport energy use. These actions align with and build on many of the next steps highlighted in the PWM *Sustainable Airport Master Plan*.

The action we will take

The recommendations for this action represent steps the Jetport could take to build on past success, and further reduce emissions from buildings and ground transport, many of which are already identified in the *Sustainable Airport Master Plan*:

- **Purchasing renewable electricity in a municipal power purchase agreement (PPA).** The Jetport, which is owned by the City of Portland, is included in the City's electricity procurement, and thus will be included in any municipal bulk purchasing for renewable power (see action BE 1.1). The next bulk purchase agreement will therefore contribute to a decrease in the Jetport's greenhouse gas emissions from its electricity usage.



PORTLAND INTERNATIONAL JETPORT • Photo by AutoRentals

• **Improving the energy efficiency of the older portion of the terminal.** The *Sustainable Airport Master Plan* calls for an evaluation of methods for improving the building envelope of the older portion of the terminal and converting the older portion’s heating and cooling system to run on an expanded GHX system, as implemented in the new terminal building. The use of a GHX system could integrate with the existing radiant heat system, which currently heats nearly 50% of its space.¹²⁵ Renovating the heating and cooling for the old terminal is probably the most impactful action that can be taken at PWM, but also one of the most capital-intensive. In the short term, retrocommissioning existing systems at the old terminal is advisable.

• **Decarbonizing ground support vehicles.** Ground support vehicles and ground transportation can be decarbonized by transitioning to battery-electric or alternative biofuel sources. The PWM *Sustainable Airport Master Plan* aims to “encourage

tenants to procure alternative fuel and/or fuel efficient ground support equipment” and notes that incentives such as preferred facility locations or other financial discounts could be helpful.¹²⁶ We will aim to shift at least 50% of airport shuttles and ground support vehicles to alternative fuel vehicles by 2030, and all ground vehicles should be electric or use biofuels by 2040. As autonomous vehicles (AVs) become more feasible, they should be piloted for ground shuttles and other ground transportation—see action TLU 2.6 for more discussion on AVs.

• **Applying the “Airport Carbon Accreditation” framework.** The Jetport will explore using the “Airport Carbon Accreditation” (ACA) framework to track, optimize, and reduce facility and transportation emissions. Under this framework, the airport will track all emissions within the airport’s operational boundary, including third party operators such as ground support for individual airlines, and then set and achieve reduction targets. By 2030, the Jetport could

aim for the “optimization” or “neutrality” certification level, which involves reducing ground transport emissions, and then offsetting any remaining emissions within the airport’s control.¹²⁷

● **Increasing knowledge transfer within municipal staff.**

There is much that other City of Portland departments can learn from the work done at PWM. Increasing exchange of information between PWM and other City departments will help achieve the municipal goals set in action BE 1.3.

Our next steps

- ☐ As identified in the *Sustainable Airport Master Plan*, initiate retrocommissioning of existing HVAC equipment at the old terminal, and commission engineering analysis for converting the heating and cooling for the older portion of the terminal to use GHX, increasing the size of the GHX field, and improving the building envelope (Jetport).
- ☐ Utilize the Airport Carbon Accreditation framework to assess the full scope of airport greenhouse gas emissions and to target reductions, aiming for “optimized” or “carbon-neutral” emissions by 2030 (Jetport).
- ☐ Launch knowledge-sharing conversations around energy and sustainability between City of Portland department leadership and staff and the PWM leadership and facilities staff; ensure PWM is included as a stakeholder in the strategic energy master planning (see action BE 1.3) (Portland/Jetport).
- ☐ Introduce incentives to encourage tenants to procure electric or alternative fuel ground equipment (Jetport).

TLU 3.5 Summary - Jetport

How this strategy advances a future that is...			
Equitable	Regenerative	Resilient	
a b c d	a b c d	a b c d	
	(a) Draws down carbon	(d) Builds partnerships	
KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS	
“Neutrality” achieved by 2030 under the Airport Carbon Accreditation framework	P: Jetport SP: N/A	Airport revenue, Efficiency Maine incentives, utility cost savings	

One Climate Future Strategies

CR CLIMATE RESILIENCE



Climate Resilience

The Climate Resilience strategies focus on strengthening the ability of our communities, economies, infrastructure, and ecosystems to respond to climate hazards such as sea level rise, more extreme storms, and warming temperatures. They include approaches for incorporating climate data and resilience metrics into our planning processes, strengthening local food systems, and addressing issues such as housing affordability and transportation access to reduce vulnerability for communities in Portland and South Portland.

CR 1 PAGE 204

Resilient Buildings and Neighborhoods

Includes resilience zoning and building standards, resources for resilient building retrofits, and the integration of resilience goals in open space planning.

CR 2 PAGE 214

Strong and Healthy Communities

Includes affordable housing, resilient food systems, transportation access, neighborhood resources, and mitigating the health impacts of high heat.

CR 3 PAGE 228

Resilient Local Economy

Includes strategies to enhance the resilience of the working waterfront, strengthen employment pipelines, and support “climate-ready” businesses and industries.

CR 4 PAGE 237

Resilient Infrastructure

Includes strategies to strengthen the resilience of transportation, stormwater/sewer, green infrastructure, and energy systems.

CR 5 PAGE 249

Ecosystem Resilience

Includes strategies to build the health of marine, freshwater, and land ecosystems, as well as soil health.

For further discussion on climate hazards and vulnerability in Portland and South Portland, see pages X-X, as well as the One Climate Future vulnerability assessment at oneclimatefuture.org.

CR 1

Resilient Buildings and Neighborhoods



BACK COVE PARK • Photo by Corey Templeton

CR 1.1 Resilient New Development

ACTION: Integrate resilience standards and targets into Portland and South Portland’s land use code to minimize flood risk and promote resilient buildings and neighborhoods citywide.

Where we are today

Due to increasing precipitation and sea level rise, portions of Portland and South Portland are expected to increasingly flood over the next thirty years. If we choose to develop flood- and inundation-prone areas, our cities would likely face higher rates of property damage; greater risk to health and safety; higher costs to repair and maintain city infrastructure; and more strain on city resources. We have the opportunity now to guide future development to reduce that risk from coastal flooding.

To help manage flood risks, both Portland and South Portland currently participate in the Federal Emergency Management Agency’s (FEMA) National Flood Insurance Program (NFIP). Under the NFIP, municipalities must adopt and enforce

floodplain management ordinances that define building standards for new and existing development in zones with high flood risk (which in turn makes residents eligible to purchase NFIP flood insurance and to receive disaster assistance for flood-related damage). The Flood Rate Insurance Maps (FIRMS) for Cumberland County were updated in 2017, but adoption of the new FIRMS, and corresponding updates to the Cities’ ordinances, are still pending in both cities. While the FIRMS detail the areas that will likely be inundated in the current 1% and 0.2% annual chance floods, they do not project what those inundation areas might look like with sea level rise. Cities are legally allowed to establish their own floodplain management ordinances as long as they meet or exceed state and federal requirements.

What is zoning?

Zoning is the process of dividing land in a jurisdiction into areas with unique standards and regulations governing land use, development, investment, design, and other parameters cities use zoning to manage development, protect natural resources, promote desirable forms of community development, and create livable neighborhoods. Portland and South Portland have robust zoning ordinances that govern land use and activity throughout each city. Zoning is an essential regulatory tool for adaption to and mitigating the effects of climate change.

Cities throughout the country are also adopting resilient zoning overlays as a further zoning tool to address coastal flood risk posed by sea level rise and to guide more resilient urban development. Zoning overlays are special zoning districts that are applied on top of (i.e., in addition to) the city's existing base zoning, making it possible for cities to address certain conditions (such as flood vulnerability) across a specific area that does not necessarily align with the boundaries of the base zones. In the case of resilience zoning, overlays become a way for cities to set requirements or incentives in ways that align with the spatial extent of climate hazards. There's a tendency, however, to only focus on areas with the highest flood risk when designing resilience overlays, which misses an opportunity to use the rest of the city as part of an integrated system for increasing resilience. To collectively address coastal flooding, high heat, and storms, resilience zoning can be implemented through a set of resilience overlays, differentiated based on the relative exposure to climate hazards and respective adaptive responses required for different areas of the cities. Portland drafted an initial proposal for a Coastal Resilience Overlay in 2019, which will serve as the starting point for this strategy in Portland.

The action we will take

Portland and South Portland will update the Cities' zoning codes and development review process to ensure that all future development enhances the resilience of the cities. All new buildings and developed sites must help to minimize the collective impact of climate hazards in the cities from sea level rise, more intense storms, and higher temperatures, as well as help to protect and strengthen community and ecosystem assets that contribute to resilient cities. To meet those goals, revisions to the zoning ordinances and development review processes—as well as future updates to the Cities' comprehensive plans—will prioritize the following objectives:

- a. Incentivizing higher density construction in areas with no or low flood risk, while preventing development of hazardous, vulnerable, or incompatible uses in areas with high flood risk;
- b. Encouraging neighborhoods that cluster a diversity of housing types within walking distance to goods and services and in connection to public transportation;
- c. Preserving and expanding productive green space and green infrastructure systems on both public and private land to capture and retain stormwater and to mitigate heat;
- d. Preserving and increasing open space for food production, including community gardens, urban agriculture, food forests, and other forms; and
- e. Maintaining and enhancing stream and shore buffers and protection of critical ecosystems.

Portland and South Portland will adopt resilience zoning overlays as one mechanism to advance the above objectives. These resilience overlays would either require or incentivize all new development within the overlay to meet baseline resilience standards—to address coastal flooding, more intense storms, or higher temperatures—based on the potential climate risk exposure of the given site. At least one resilience overlay will identify areas of the cities with the highest flood risk from sea level rise and storm surge; ideally the boundary of this zone

will be defined by new modeling that looks at the combined effects of storms and sea level rise. (See Part 1 of Appendix A: “Memorandum: Resilience Zoning for Resilient Buildings and Land Use” for further details.) To allow for flexibility in how developers meet the resilience standards, the Cities will consider integrating a performance-based requirements into the development review process. Through this mechanism, new development would earn points for integrating resilience features, and projects would be required to meet certain point thresholds. New buildings in the resilience overlay with the highest flood risk would be required to specifically earn points by elevating the building, for example, while developments outside that overlay would have more flexibility in how they meet resilience targets. (See Part 2 of Appendix A: “Memorandum: Resilience Zoning for Resilient Buildings and Land Use” for further details.) The Cities will be evaluating a number of scenarios and approaches for resilience overlays. The two overlay tiers below represent one potential scenario that the Cities will evaluate:

● **Resilience Overlay Tier 1: Areas with the Highest Flood Risk.** Tier 1 would apply to areas of the cities with the highest flood risk from sea level rise and storm surge. Land use decisions within this resilience overlay would align with the following hierarchy:

Priority 1: Preserve existing open space areas as critical assets to buffer and absorb flood- and stormwater.

Priority 2: Seek opportunities to transition existing land uses to living shorelines or public parks with a primary focus on floodable open spaces in an effort to restore natural floodplains and expand coastal wetlands.

Priority 3: Encourage development of compatible land uses, as described further below.

Any new construction in these areas would be reserved for non-residential and “flood-tolerant uses” that do not fall into a list of incompatible, vulnerable, or hazardous uses, and that meet minimum resilient building design requirements. Such incompatible, vulnerable, or hazardous uses would include any building types that provide permanent or temporary shelter (e.g., houses, apartments, nursing homes, shelters, hotels,

All new buildings and developed sites must help to minimize the collective impact of climate hazards in the cities from sea level rise, more intense storms, and higher temperatures, as well as help to protect and strengthen community and ecosystem assets that contribute to resilient cities.

etc.) which amplify the need for evacuation and emergency response in a flood event; critical facilities (e.g., critical government buildings, emergency management services, hospitals, schools, etc.); and commercial and industrial uses that could create cascading repercussions if exposed to flood waters (e.g., those with hazardous chemical storage).

● **Resilience Overlay Tier 2: Areas with High to Moderate Flood Risk.** Tier 2 would apply to areas of the cities that fall outside Tier 1, but could see flooding from sea level rise and storm surge under more extreme storms and sea level rise scenarios by 2100. New construction in these zones would either be required or incentivized to demonstrate adaptation measures to future sea level rise and storm surge scenarios as part of reaching the baseline resilience point threshold.

Areas outside the first two overlays are not vulnerable to flooding from sea level rise and storm surge, but will still feel the effects of higher intensity rainstorms and higher temperatures, and can help the cities adapt to both these stresses. Requiring or incentivizing action in only the two overlay zones misses the opportunity to use the rest of the city as part of an integrated system for increasing resilience. Revised or expanded performance standards in the cities’ zoning codes will require or incentivize development and redevelopment to meet specific point requirements for stormwater retention and cooling capacity, which in many instances can be addressed simultaneously through preserving open space or integrating green infrastructure. (See Part 2 of Appendix A: “Memorandum: Resilience Zoning for Resilient Buildings and Land Use” for further details.)

Our next steps

- ☐ Partner with local, state, and federal research partners to advance the Dynamic Coastal Flood Inundation Project to develop new flood modeling projections that account for the combined effects of storms and sea level rise.
- ☐ Evaluate climate scenarios, considering how each may likely affect future development within the city, housing affordability and security, vulnerability of city infrastructure, health and safety of residents, ecological resilience, and environmental justice.
- ☐ Develop and adopt a set of resilience overlays and updated performance standards, based on that evaluation.
- ☐ Conduct a review of the Cities’ zoning codes to identify and revise current stipulations that tend to work against the resilience objectives outlined in this action.
- ☐ Become more versatile to all datums and standards NGVD29, NAD83, NAVD88, or the new modernized National Spatial Reference System (NSRS) across all levels of planning for the region and state (Portland).

CR 1.1 Summary - Resilient New Development



CR 1

CR 1.2 Resilient Existing Buildings

ACTION: Build knowledge, tools, and resources on climate risks and adaptation options for buildings and property.

Where we are today

While many Portland and South Portland residents are familiar with potential regional impacts from climate change, fewer residents feel they know the local risks for their neighborhood or property. Both Portland and South Portland are working to fill that gap. The One Climate Future Vulnerability Assessment (published in December 2019) includes citywide flood maps that show potential future inundation from sea level rise and storm surge, as well as inundation areas for hurricane categories one through four. In May 2019 as part of the Maine Silver Jackets High Water Marks initiative, Portland installed signs at four sites in the city that show the high water levels during the Blizzard of 1978—and how sea level rise by 2050 might impact those past flood levels—to raise awareness of flood risk and sea level rise. South Portland is now collaborating with the Maine Silver Jackets to install “High Water Marks” at Willard Beach, Bug Light, and along the Green Belt at Mill Creek.

Both Cities also utilize online tools to educate community members about climate hazards and facilitate flood preparedness initiatives. The City of Portland’s publicly available Hurricane Surge Inundation Dashboard supports the City’s hurricane emergency management and flood response activities. In January 2019, South Portland received a Coastal Communities Grant to create an online story map of sea level rise and storm projections for the city. This tool, aptly named “Preparing for Sea Level Rise in South Portland,” engages

Perceptions of local climate risks.

Based on a One Climate Future survey sent out in 2019, 36% of participants mentioned that they understood global climate change risks, but not climate risks at a local level. At the same time, 69% of participants voiced that they were “very concerned” that climate change would affect them personally.

the public in strengthening community resilience by building knowledge of local hazards and vulnerabilities.

The action we will take

Portland and South Portland will make it possible for every property owner in the cities to evaluate the flood risk of their property and to learn about potential short-term and long-term adaptation solutions. To do so, the Cities will continue to build knowledge, tools, and resources on flood risk, adaptation strategies, and financial resources for property owners and developers, both internally within city departments and externally with the community. Building out this capacity requires two types of action: A) Internal, proactive planning by the Cities for securing and administering emergency federal funding if and when it is needed for emergency relief, and B) Community-focused traditional and creative approaches for making information on neighborhood flood risk and adaptation solutions for buildings and properties more widely accessible. As part of this initiative, the Cities will:



HOMES ALONG WILLARD BEACH • Photo by Denise Michaud

• **Develop a suite of tools and resources for resilient building retrofits.** These resources will include online map-based tools (both existing and currently under development) for understanding flood risk at the neighborhood level. The Cities will also develop and compile information and guidelines for building and site retrofits that can be undertaken by homeowners, residential and commercial property owners, and developers to improve the resilience of their properties. The toolkit will be hosted on city websites, as well as promoted through social media, presentations, dashboards, pop-up booths, and other events.

• **Advocate for the State of Maine to adopt real estate flood risk disclosure requirements.** Unlike the majority of states in the United States (29 states as of January 2019), Maine has no statutory or regulatory requirements for sellers to disclose a property's flood risk or past flood damages to a potential buyer.¹²⁸ Disclosure requirements help to ensure that potential homebuyers are able to make smart decisions with respect to flood risk before purchase. Without flood risk disclosure, this information gap distorts market signals and fails to allow the price of the home to recalibrate with increasing

flood risk over time. Federally backed or regulated lenders require flood insurance for any properties in Special Flood Hazard Areas (areas in the 1% annual chance flood zone) as mapped by FEMA, and lenders must inform borrowers that their properties are in this area. This information, however, is often provided after buyers have put money down or otherwise committed to purchasing the property; it also does not adequately share information on past damages or the level of risk, and does not apply to properties outside Special Flood Hazard Areas.¹²⁹

• **Participate in FEMA's Community Rating System.**

The City of Portland is one of 17 municipalities in Maine that participates in FEMA's Community Rating System (CRS). The CRS is a voluntary program to mitigate flood risk that discounts flood insurance premiums when communities implement qualifying flood protection activities. These activities enhance public safety, limit floodplain development, reduce flood risk for existing development, preserve open space, and put in place preparedness systems. Through a series of completed public information and floodplain management activities, the City of Portland has already qualified for a 10% discount on

flood insurance premiums and for certain emergency financial assistance. In Portland’s recent *Portland’s Plan 2030*, the City reaffirmed a commitment to continue participation in CRS as a mechanism to develop climate resilience. The City of South Portland will explore participation in the CRS to prevent and reduce flood damage to insurable property and encourage a comprehensive approach to floodplain management.

● **Prepare for potential federal funding resources.**

Several federal grant programs can provide support for hazard mitigation, disaster relief, or home buyouts in order to ameliorate the financial burden from flooding on homeowners and cities. These programs include the HUD-administered Community Development Block Grant Disaster Recovery (CDBG-DR) funds, and the FEMA-administered Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA) Program, and the Building Resilient Infrastructure and Communities (BRIC) program—the last of which is the newly established pre-disaster hazard mitigation program as of spring 2020, which replaces the former Pre-Disaster Mitigation (PDM) program.¹³⁰ These resources require proactive planning by the Cities and coordination with the State to identify suitable projects, secure funding, and prepare for its disbursement. The Cities will begin this coordination, to outline timelines,

prerequisites, and decisions that must be made in advance of any major climate event.

Our next steps

- ☐ Launch the “Preparing for Coastal Flooding in South Portland” map and expand the scope of the project to incorporate citizen science modules.
- ☐ Expand the scope of the Hurricane Surge Inundation Dashboard to support flood response activities, citizen engagement, and to further develop impact analyses in Portland.
- ☐ Develop a webpage and/or website with links to online mapping tools, the One Climate Future Vulnerability Assessment, and information on adaptation options and financial resources for adaptation for residential property owners, commercial property owners, and developers.
- ☐ Continue participation in the FEMA Community Rating System (Portland).
- ☐ Explore steps necessary for participation in the FEMA Community Rating System (South Portland).
- ☐ Work with the Maine Climate Council and statewide partners to advocate for the development of statewide real estate flood risk disclosure requirements.

CR 1.2 Summary - Resilient Existing Buildings



CR 1.3 Resilient Open Space Planning

ACTION: Establish open space climate resilience goals and protocols for monitoring progress towards those goals in Portland and South Portland’s open space planning.

Where we are today

Portland and South Portland have strong networks of conservation land, forests, public parks, and multi-use trails. These resources currently help to sequester carbon, encourage non-vehicular transit (such as walking and biking), absorb stormwater, keep air temperatures cooler during heat waves, and help support our health and happiness. In other words, these assets are helping Portland and South Portland to be thriving, low-carbon, and resilient communities. The Cities plan for, manage, and enhance many of these assets through open space planning: Portland completed its most recent update of its Portland Open Space Vision and Implementation Plan in 2016, and South Portland completed a new update to its Open Space Plan in 2019. By integrating climate change projections and resilience goals into open space acquisition, protection, renovation, and maintenance, open space planning can become an even stronger tool for increasing the potential of our open spaces to help us address climate change.

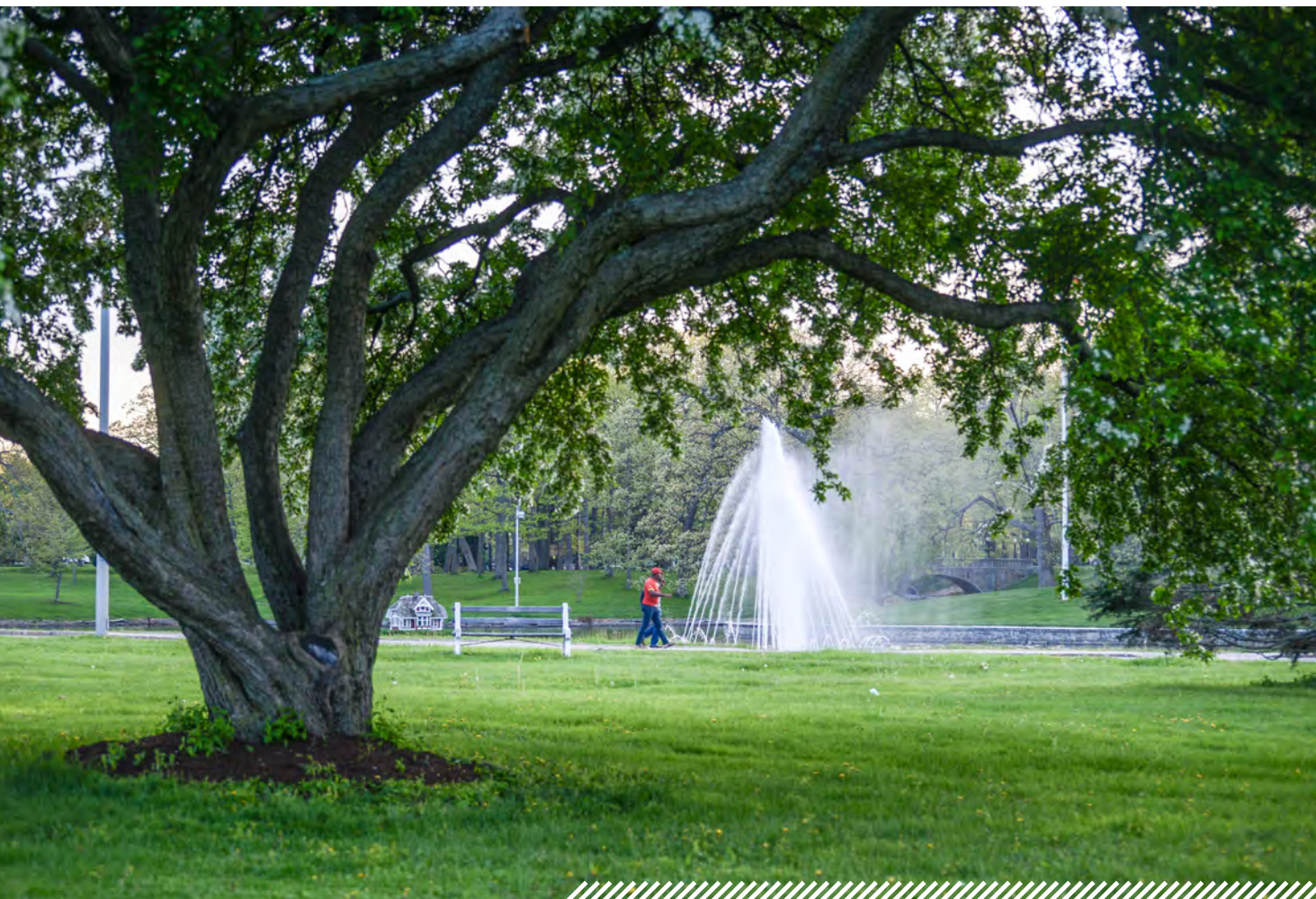
The action we will take

Between now and 2025, the Cities will identify a set of explicit open space goals for improving climate resilience across four focus areas (outlined below) and lay the groundwork for meeting those goals. This process will include establishing systems for monitoring open space resilience parameters; conducting necessary baseline studies to track change over time; continuing to expand, retrofit, or manage open spaces in ways that better help us address climate change; and adopting ongoing systems for monitoring and data collection to track

Portland and South Portland will set goals for our open space planning that will support more resilient cities. We will monitor and improve upon the capacity of our open spaces to infiltrate stormwater, sequester carbon, mitigate heat, and support healthy biodiversity.

and report on progress towards resilient open space goals in future iterations of the cities’ open space plans. The resilient open space goals will also serve as guideposts for further directing the Cities’ land acquisition and conservation efforts, and for implementing programs and policies that will earn the Cities open space planning points through the Community Rating System. The Cities will adopt this process across the following four focus areas:

- **Stormwater and flood water infiltration.** We will assess public open spaces based on water storage, stormwater runoff, and infiltration potential. Across citywide networks of open space, where could soil health be most improved to increase stormwater infiltration? Where is there capacity to capture and retain stormwater on site through blue/green/gray infrastructure? Where do open space parcels exist in flood-prone areas? The Cities will set goals for increases in stormwater infiltration and retention in public open spaces



DEERING OAKS PARK • Photo by Corey Templeton

over established timeframes. Based on those goals, we will adjust land management practices to enhance infiltration potential, and incorporate stormwater retention systems in the redesign or expansion of parks and open space.

- **Carbon sequestration.** We will assess public open spaces based on carbon sequestration capacity and potential. Across citywide networks of open space, where could soil health be most improved to increase carbon sequestration? Where are there opportunities to expand forests and wetlands, and/or opportunities to better preserve forests and wetlands in perpetuity? The Cities will set goals for increases in carbon sequestration and storage capacity. Based on those goals, we will adjust land management practices to enhance carbon

sequestration and storage, and continue to protect, restore, and expand healthy forests and wetlands where possible.

- **Heat mitigation.** We will strengthen systems for quantifying the cities' tree canopies (both street trees and forest cover) and for tracking changes to the tree canopies over time. Where are there opportunities to expand the tree canopy? Are there areas that have lost tree canopy due to disease? The Cities will set goals for maintaining or increasing the tree canopy citywide and/or by block group, including parameters for planting species that can adapt to new climate conditions. Based on those goals, we will prioritize tree planting in block groups that could most greatly benefit from increases in impervious surfaces and tree shade for heat mitigation, as well as stormwater management.

● **Biodiversity and habitat connectivity.** We will evaluate and strengthen the biodiversity and habitat connectivity within city open spaces. Which areas are degraded by overgrowth of non-native invasive species? Where are there opportunities to connect patches of habitat to enable species migration and to restore healthy ecosystem functions? The Cities will set goals to enhance biodiversity and habitat connectivity to strengthen the resilience of our ecosystems to pest outbreaks, invasive species, and new climate patterns. Based on these goals, we will adjust open space plans, comprehensive plans, and relevant design guidelines (see action CR 5.1 for more detail).

Our next steps

- ☐ Expand Land Bank (Portland) and Open Space Plan (South Portland) prioritization of land parcels to consider the following ecosystem services: stormwater and flood water infiltration capacity, carbon sequestration, heat mitigation, and biodiversity.
- ☐ Identify gaps in baseline assessments across the four focus areas. Conduct in-house baseline assessments, where feasible, and commission assessments where additional technical capacity is required.



SAWYER MARSH • Photo by Denise Michaud

- ☐ Establish goals and metrics for tracking progress towards those goals in each of the four focus areas based on the results of the baseline studies.

CR 1.3 Summary - Resilient Open Space Planning

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
	a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes
● Expand Land Bank (Portland) and Open Space (South Portland) priorities to include resilient ecosystem services. ● Set goals and measure change for stormwater and floodwater infiltration. ● Set goals and measure change for carbon sequestration and storage. ● Set goals and measure change for heat mitigation. ● Set goals and measure change for biodiversity and habitat connectivity.	KEY MILESTONES ● Benchmark ecosystem and resilience metrics for open spaces and establish performance goals by 2028	CITY STEWARD P: Planning Department; Parks Division; Sustainability Office SP: Sustainability Office, Planning Department	FINANCING MECHANISMS Impact fees (Portland), Land Bank Fund (South Portland), revolving loan funds (e.g., Clean Water State Revolving Loans), federal/state grants (e.g., Project Canopy Assistance Grants, 319 Grants, Land and Water Conservation Fund)

CR 2

Strong and Healthy Communities



BASKETBALL AT REDBANK COMMUNITY CENTER • Photo by GPCOG

CR 2.1 Housing Affordability and Resilience

ACTION: Continue to expand access to resilient and energy efficient affordable housing, contributing to diverse and inclusive communities.

Where we are today

A resilient community is one where residents of all incomes can live securely, meet their basic needs, and contribute to and reap the benefits of a local regenerative and inclusive economy. Secure, healthy, and energy efficient affordable housing is a prerequisite for becoming resilient communities.

Portland Housing Authority, South Portland Housing Authority, and a number of public and private housing development partners provide safe and affordable housing for thousands of Portland and South Portland residents, and continue to seek ways to expand affordable housing in the cities. Despite these efforts, rising property values make it less affordable to live in Portland and South Portland. A higher cost of living creates

financial insecurity, reduces households' disposable income, and makes families more vulnerable to emergencies with unexpected costs. Rising home prices may increasingly lead to community displacement: residents with strong community ties to certain neighborhoods may no longer be able to afford to live in the cities, and more of Portland and South Portland's workforce must live further outside city borders and commute longer distances. While these factors degrade our community resilience, climate change will likely intensify this trend. More extreme storms and flooding may lead to property damage and loss, thereby compounding stresses related to housing security, affordability, and quality.

Both Cities are actively engaging in efforts with affordable housing partners, as well as initiatives internally to support an equitable and diverse housing supply. The City of South Portland is in the process of developing a long-term affordable housing strategy that will identify need, opportunities for housing, housing production goals, and incentives to promote affordable housing. In Portland, a series of tools, policies, and programs outlined in the City's seminal housing plan focus on best practices in workforce and affordable housing development. These larger plans assess needs and set a vision for improvements in housing affordability that are supported by daily and ongoing city programs, such as rental assistance, that are critical for the welfare of our residents.

The action we will take

Portland and South Portland will increase the quantity of affordable housing units while reducing barriers to and supporting the development of highly energy efficient, low-carbon, and resilient affordable housing. Meeting this goal calls for many complementary actions, including revisions to zoning codes to better enable affordable housing development; addressing cost caps and financial barriers to incorporating sustainability and resilience features in affordable housing; minimizing the exposure of our cities' housing to climate hazards; and prioritizing transit-oriented development to connect affordable housing to public transportation and pedestrian networks. To facilitate and support these efforts, Portland and South Portland will:

- **Identify priority growth areas.** Portland and South Portland will conduct housing studies to identify areas of the cities that can accommodate an increase, modification, or preservation of housing to meet the needs, preferences, and financial resources of all residents. This study will begin with an inventory of current housing types and a market assessment to identify gaps. We will focus on a range of multi-unit clustered housing types compatible in scale with single-family homes that help meet the growing demand for affordable, walkable urban living. Priority growth areas will be identified based on

the ability to cluster transportation and affordable housing, supported by zoning code updates and financing incentives. The study's findings will improve existing housing affordability data and will inform ongoing efforts in both cities to strengthen livable neighborhoods around public transportation, bike networks, and pedestrian-oriented streets (see action TLU 1.1).

- **Prioritize zoning decisions that support housing affordability in the cities.** Many existing zoning regulations, such as single-family zoning districts, parking requirements, and density restrictions, for example, can create constraints for affordable housing. Portland and South Portland will revise these city zoning codes to better enable higher density development; prioritize transit-oriented development to better connect housing to transportation, jobs, and services; and facilitate mixed-use development to cluster housing, shops, and services. The Cities will also reevaluate parking requirements to mitigate parking as a barrier to affordable housing development.

- **Integrate resilience and energy efficiency goals through repositioning housing assets.** Portland Housing Authority (PHA) is in the process of repositioning the city's public housing portfolio by converting units from their original sources of HUD financing to project-based Section 8 contracts. Through this repositioning, substantial funding is made available to retrofit these properties—an opportunity that PHA is using to prioritize energy efficiency and resilient building upgrades. South Portland Housing Authority (SPHA) is looking critically at repositioning its housing portfolio to take advantage of the same opportunity.

- **Revise development fee requirements to enable more resilient and sustainable affordable housing.** The Cities will assess the feasibility of waiving or reducing impact and building permit fees for affordable housing development in order to reallocate these costs towards resilience and sustainability features. These features may include passive house design, energy efficiency investments, distributed energy systems and energy storage, higher ground floor elevations,

space for local food production, on-site community centers with services to support social resilience, among other features.

• Advocate for adjustments to state financing requirements to enable more resilient and sustainable affordable housing. MaineHousing, the designated housing credit agency for the State of Maine, sets statewide total development cost caps as part of the federally required Qualified Allocation Plan (QAP) for allocating and administering Low-Income Housing Tax Credits (LIHTC). Due to rising construction costs in southern Maine, the cost caps increasingly create constraints for affordable housing development in Portland and South Portland and often make sustainable and resilient building features cost-prohibitive, even if the attributes are economical over the long term. The Cities will work with MaineHousing on ways to eliminate these constraints. Approaches may include raising the cost cap to better align with rising construction costs; considering

variable cost caps for Greater Portland versus the rest of the state; or considering cost cap exemptions for sustainability and resilience features that bring substantial benefits despite upfront costs, such as solar installations, brownfield redevelopment, passive house design, incorporation of community centers, among other features.

• Support financing of renewable energy sources for affordable housing. Affordable housing financing often precludes renewable energy systems such as solar panels due to the upfront costs, even if the payback for the systems can cover the costs over the long term. The Cities in conjunction with the public housing authorities and private affordable housing developers will explore options for building out distributed energy with affordable housing, which may include community solar projects, power purchase agreements, or establishing a revolving loan fund to provide third-party financing to affordable housing projects to implement clean energy systems.

CR 2.1 Summary - Housing Affordability and Resilience

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
- Launch area-wide housing supply studies in both cities. - Review zoning codes and re-assess development fees to remove constraints. - Enable options for renewable energy financing for affordable housing. - Advocate for changes to state financing requirements. - Use repositioning to retrofit for resilience and energy efficiency. - Assess displacement risk and anti-displacement strategies. - Work with community partners to lead a “We are Portland/South Portland” storytelling initiative.	a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships
	KEY MILESTONES - Portland to increase housing units affordable to lower and middle income households by 10% by 2025 (from 2019 baseline) - South Portland to establish affordable housing goal through comprehensive plan or standalone process	CITY STEWARD P: Housing Office, Planning Department, Sustainability Office, Permitting & Inspections, Health & Human Services SP: Sustainability Office, Planning Department	FINANCING MECHANISMS Public housing repositioning, adjustments to Qualified Allocation Plan cost caps (for financing projects); revolving loan funds, power purchase agreements (for solar installations); private grants, community partnerships (for storytelling initiative)

• **Identify displacement prevention strategies.** The efforts listed above will help support the affordability of new housing built in the cities. At the same time, we recognize that many of the Cities’ capital projects to address climate change—from mitigating flooding to creating a more robust tree canopy—can contribute to the already increasing property values for existing homes. The Cities will work with community partners to study how housing affordability has changed in the past decade, to project how affordability may continue to be affected by new growth and city investments, and to identify neighborhoods at risk for displacement.¹³¹ Drawing on the results, the Cities and community partners will assess a number of anti-displacement strategies to incorporate into long-term housing affordability plans that support the long-term diversity and inclusivity of our neighborhoods.

• **Promote the richness of diverse and inclusive neighborhoods.** Throughout the United States, it is common for neighborhoods to be highly segregated based on race and income, driven by long patterns of prejudice, exclusionary zoning, and disinvestment. We recognize that prejudice has contributed to the stigmatization of affordable housing, which degrades our ability to create strong, diverse, and inclusive communities. We will continue to seek ways to break that pattern both through housing development (i.e., neighborhoods and buildings with mixed levels of affordability), but also in the ways we build community. Working with the Cities’ affordable housing partners, the Cities will support a storytelling initiative, designed to highlight people’s stories, backgrounds, and experiences. The emphasis of the project will be to share the idea that “we are all Portland/South Portland” and we all bring rich and unique backgrounds to this community. The Cities will identify arts-based or other community partners to support the collection and sharing of stories.

Our next steps

- ☐ Advocate for changes to state financing requirements, administered by MaineHousing, to better enable more resilient and low-carbon affordable housing.
- ☐ Launch area-wide housing studies in both cities to identify existing gaps and opportunities for growth of a more equitable and diverse housing supply.
- ☐ Conduct a review of the Cities’ zoning codes and reassess development fees to identify ways to relieve constraints on affordable housing and the integration of resilience and sustainability features.
- ☐ Begin working with community partners, including arts-based groups to lead a “We are Portland/South Portland” storytelling initiative.

CR 2.2 High Heat Mitigation

ACTION: Expand the “cooling capacity” of Portland and South Portland.

Where we are today

With climate change, Portland and South Portland are expected to see more unseasonably hot days and extended heat waves, both of which can have a significant impact on people whose bodies are less acclimated to warmer weather. Some residents, including children, elderly, people who work outside, people with limited financial means, people with certain disabilities, or people who take certain medications will face higher vulnerability to extreme heat. Because of Maine’s traditionally cold climate, air conditioning is also not as prevalent in homes, businesses, and public spaces. For all these reasons, higher temperatures in Portland and South Portland are predicted to be an increasing public health risk, and one that can exacerbate inequity. The One Climate Future Vulnerability Assessment discusses projections for increasing temperatures as well as the vulnerability and potential health concerns for Portland and South Portland communities in greater detail.

In addressing climate change, cities throughout the United States are considering how land use plays a role in decreasing or increasing ambient air temperatures. Urban areas tend to be warmer than neighboring rural areas, particularly at night—a phenomena called the “urban heat island effect.” Surfaces common in cities, including asphalt, steel, and brick absorb and retain more heat than natural and living surfaces such as grass and trees. Furthermore, trees help to keep air temperatures cooler on high heat days through transpiration (a tree’s version of sweating) and through providing shade. Retaining, expanding, and protecting the health of green space in the cities therefore becomes a very important component to mitigating the effects of higher temperatures.

The action we will take

Portland and South Portland will build out the cities’ “cooling capacity” to prepare for higher temperatures. This will entail protecting and expanding green spaces on public and private land, investing in public spaces where residents can cool off, and providing resources on building designs, retrofits, and other strategies to help keep indoor spaces cool. We will prioritize approaches that not only help us manage heat during periods with high temperatures, but that also have day-to-day benefits too—such as spaces for recreation, fostering community, supporting clean air and water, as well as increasing energy efficiency and energy cost savings. As part of this initiative, the Cities will:

- **Preserve and expand protected open space, public parks, and tree cover.** The Cities commit to protecting our existing natural resources, and expanding the tree canopy and public green space throughout our cities. In addition to continuing to invest in the maintenance and quality of our current open spaces, we will continue to expand the number and distribution of parks in the cities so that 100% of residents live within a ten-minute walk (half mile) from a public open space by 2035. We will also continue to expand our street tree canopies, prioritizing block groups that could most benefit from shade and impervious surfaces. See action CR 1.3 for how the Cities will track heat mitigation as part of our open space planning and land conservation efforts.
- **Protect and create greenspace through new development.** Using zoning updates and development ordinances, the Cities will set standards for the integration of

greenspace for new development (see action CR 1.1). Portland and South Portland will consider features such as tree canopy, shading structures, green roofs, vegetation, and paving with specified solar reflectance indices that contribute to cooling in the public realm. The Cities will weigh the contribution to cooling, co-benefits, and cost of each feature to determine appropriate standards that support high heat mitigation goals.

- Increase access to (and awareness of) places to cool off.** The Cities will collaborate with neighborhood associations and residents to map areas in Portland and South Portland where residents can go during days of high heat, and to identify potential sites for expanding access to cooling amenities—including public beaches, swimming pools, splash pads, and public spaces with air conditioning that can serve as “cooling centers.” Access will consider both physical proximity, public transportation connections, handicap accessibility, and cost (e.g., entrance fees). New amenities will be incorporated into the Cities’ capital investment plans, and residents and City staff will promote existing and new resources in order to build awareness of these amenities.
- Provide information on building retrofits to keep homes cooler.** The Cities will work with partners to provide and promote information on strategies for keeping homes cooler, which can range from improving insulation, to installing

air source heat pumps, to shading south-facing windows. The Cities will likewise provide resources, information, and incentives for passive house design in new developments, which keeps building temperatures comfortable with very little energy use. In addition to keeping homes cooler, these retrofits can help reduce energy costs. These toolkits will be incorporated with the resources for resilient building retrofits (see action CR 1.2).

Our next steps

- ☐ Launch a process with neighborhood associations and residents to map current public places residents are able to go to cool off and identify potential locations for expanding access to cooling sites.
- ☐ Establish a baseline tree inventory (South Portland) and system for monitoring changes to the tree canopy over time. Set goals (both Portland and South Portland) for maintaining or increasing the tree canopy citywide and/or by block group (to be executed in alignment with action CR 1.3).
- ☐ Through land use and open space planning, maintain or reach goal of 100% of residents living within a half mile of a public open space.
- ☐ Work with partners to develop the content, design, and marketing strategy for resilient building retrofit toolkits (to be executed in alignment with action CR 1.2).

CR 2.2 Summary - High Heat Mitigation

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
• Preserve and expand protected open space, public parks, and tree cover. • Increase access to and awareness of places to cool off. • Revise zoning codes to increase features that reduce heat island effect for new construction (see action CR 1.1). • Develop toolkit with partners that provides information on building retrofits to keep homes cooler.	a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships
	KEY MILESTONES • All residents live within a half mile of a cooling center by 2035 • All residents live within a half mile of a park or open space by 2035	CITY STEWARD P: Parks, Recreation, and Facilities; Sustainability Office; Planning Department; Health & Human Services SP: Sustainability Office; Planning Department; Parks, Recreation, and Waterfront	FINANCING MECHANISMS Impact fees (Portland), Land Bank Fund (South Portland), federal/state grants (e.g., Project Canopy Assistance Grants, Land and Water Conservation Fund), Private grants

CR 2

CR 2.3 Resilient Food Systems

ACTION: Cultivate healthy, regenerative, and just food systems.

Where we are today

The Greater Portland area has become known as a culinary hub in the last half-decade. Nearly 55% of Portland and South Portland residents work at full-service restaurants (a rate higher than nearly everywhere else in the country), and together with local farms, fishermen, specialty food producers, and grocers, this culinary scene has driven and cultivated an emphasis on local and sustainable foods. And yet, 90% of food consumed by Mainers comes from outside the state, farmland acreage and the number of farms have decreased in Maine in the past decade, and roughly 13% of people in Cumberland County are food insecure. Each of these indicators helps to highlight both an outsized reliance on global and regional food distribution, and our distance from what could eventually become a more resilient, healthy, inclusive, and regenerative local food system.

The impacts of climate change on food production, distribution, access, and affordability both locally and globally make the realization of these rights even more tenuous. At a global scale, droughts, floods, and new pests introduced by climate change are expected to bring increasing uncertainty for global food systems, with the potential to create a net rise in food prices. In Maine, agriculture and fisheries will likely be challenged by shifts in growing seasons, pest outbreaks, warming oceans, and ocean acidification. Portland's and South Portland's food systems may be most acutely affected by interruptions in regional distribution and local food access, including closures of roads, public transit, and grocery stores

due to storms and flooding. These access challenges will likely exacerbate existing inequities and food insecurity.

The action we will take

Portland and South Portland will increase our food system resilience through strengthening our local capacity to grow, harvest, and produce food. Both food and the processes to grow, harvest, produce, transport, and access food can build value and health directly within our cities, simultaneously nourishing our communities, our soils, and our economies.

Therefore, we are thinking creatively and comprehensively about “local food”—both in supporting and cultivating resources in Maine and northern New England, as well as in our backyards. By growing and producing more of our food locally, our food systems are less vulnerable to interruptions in distribution due to storms, and create fewer greenhouse gas emissions in transit. Local food production can also create jobs and economic opportunity, reduce our vulnerability to price shocks from the global market, and contribute to healthier food options, greater food security, and stronger connections to the land and water. To build our food system resilience, the Cities will:

- **Expand public land access for food production in the cities.** Portland and South Portland will prioritize the creation and organization of new community gardens, with the goal of



COMMUNITY GARDEN AT THE EASTERN PROM • Photo by Anna Ackerman

making gardens available to all neighborhoods and meeting community demand. To build just and equitable access to healthy food, the Cities will advocate for allocations of garden or agricultural plots that prioritize community members with low or no incomes, people of color, and New Mainers.

• **Establish or improve policies that help farmers and fishermen efficiently access local consumers.** Through the COVID-19 pandemic, we have seen a re-orientation of consumption patterns towards local food. The Cities will leverage this momentum to further promote existing farmers' markets and explore the replication of this model for a fisherman's market on public properties.

• **Conduct a foodshed assessment.** The Cities, in collaboration with local and regional partners, will conduct or commission a regional foodshed assessment for Portland and South Portland that focuses on both land-based and

ocean-based food systems. The goals of the assessment will be to 1) assess the foodshed based on current capacity for food production, potential capacity, and limitations for expanded capacity across nested scales, including backyard, neighborhood, city, and regional levels and 2) develop recommendations to expand food production within the cities and regionally in line with estimated potential.

• **Partner with education and job training organizations to support education, job training, and reskilling in the food production sector.** Portland and South Portland will work with higher education programs, adult education programs, high schools, and nonprofits within the cities, as opportunities arise, to identify ways to support education, job-training, and reskilling initiatives in food production and practices such as soil-building techniques. Interpretation services and educators from immigrant communities will be prioritized in program design. This action aligns with action CR 3.2.



LOBSTER TRAPS AT CUSTOM HOUSE WHARF • Photo by Russell Stone

• **Fund a growing food system.** Together, both Cities will launch a small grants program to resource and elevate solutions in our communities that build resilience (see action CR 2.5). Projects eligible to receive funding will be intentionally broad and include initiatives that cultivate a healthy, regenerative, and just food system. Efforts to support, strengthen, or expand food gleaning initiatives are one such example. In addition to a small grants program, entrepreneurs will be encouraged to participate in ongoing small business development programs offered by the Cities.

Our next steps

- ☐ Expand community garden space in Portland and South Portland.
- ☐ Assess opportunities and barriers in existing land use policies to support and expand direct consumer connections for farmers and fishermen.
- ☐ Secure funding and launch or commission the foodshed assessment with local food systems partners.
- ☐ Launch the small grants program to resource local initiatives that affect peoples' abilities to grow, harvest, produce, transport, or access food.

CR 2.3 Summary - Food System Resilience

PRIMARY COMPONENTS

- Expand public land access for food production.
- Establish or improve policies that help farmers and fishermen efficiently access local consumers.
- Support resilience and innovation in the food sector through small grants and small business development programs.
- Conduct a foodshed assessment.
- Partner to support job training and reskilling in the food production sector.

How this strategy advances a future that is...

Equitable



- (a) Addresses injustice
- (b) Expands access
- (c) Creates inclusive processes
- (d) Builds community ownership

Regenerative



- (b) Restores ecosystems
- (c) Supports a circular economy
- (d) Builds shared wealth

Resilient



- (a) Reduces vulnerability
- (b) Strengthens communities
- (d) Builds partnerships

KEY MILESTONES

- Establish small grants for food system innovators by 2025
- Secure funding to commission foodshed assessment by 2028
- Expand access to community agriculture to all neighborhoods to meet demand

CITY STEWARD

P: Sustainability Office; Parks Division; Health & Human Services
SP: Sustainability Office; Economic Development Department; Parks, Recreation, & Waterfront

FINANCING MECHANISMS

Federal grants (e.g., USDA Federal Food System Partnerships grants), Private grants (e.g., New England Food System Resilience Fund, USDN Partners for Places grants), revolving loan funds (e.g., Portland Development Corporation)

CR 2

CR 2.4 Transportation Access

ACTION: Continue to prioritize decision-making processes and transit investments that advance equity in our cities.

Where we are today

The availability, cost, and efficiency of transportation options in Portland and South Portland affect our access to resources and services that support the health and wellbeing of residents—whether that’s access to jobs, school, healthcare, a park, or the grocery store. Access to such formal resources, as well as the informal social networks fostered in gathering spaces, prove crucial to supporting the resilience of any community.

Until recently, our infrastructure decisions have mostly prioritized private vehicle use, which tends to disproportionately benefit some residents and create greater burdens for others. Residents with lower incomes often must spend a greater proportion of income and time on transportation; residents who are unable to drive due to physical or mental disabilities face greater isolation; and transportation-related pollution tends to affect lower income households more than others. Continuing to strengthen public transportation systems therefore has the power to render a vast number of benefits related to our climate action and adaptation goals. Not only do transit systems decrease transportation-based greenhouse gas emissions, reduce congestion, and improve air quality if run on clean fuel, but efficient transit networks can increase community resilience through creating more affordable and equitable access to jobs, goods, and services.

The ability of a transit system to engender greater equity, however, is largely driven by how well it can break down barriers to accessing transit, consciously address inequities,

and ensure that residents who are affected most by transportation-related decisions—and yet who have been largely underrepresented in transportation planning—play a larger role in transportation decision-making.

In 2019, the Portland Area Comprehensive Transportation System (PACTS) under the Greater Portland Council of Governments (GPCOG) launched the Community Transportation Leaders Program. The program is part of a larger ongoing effort to create platforms and pathways for people from underrepresented communities—including residents with physical and cognitive disabilities, people of color, New Mainers, and older adults—to shape the region’s transportation planning. The program convened twenty-three leaders from underrepresented communities who, with the support of training and tools, identified challenges, developed solutions, and presented approaches to address key concerns to the PACTS Executive Committee. The ultimate goals of the program were both for these community leaders to weigh in on near-term transportation planning decisions, as well as to create peer-to-peer networks and pipelines for individuals who regularly ride transit and face added barriers to become members of the committees and leadership currently making transit-related decisions.

In the coming year, PACTS will be continuing the program through two follow-up initiatives: 1) A Travel Training program, whereby the transportation leaders will help to train members of the community on how to use the region’s public transit, and



Community Spotlight

COMMUNITY TRANSPORTATION LEADERS PROGRAM

The Community Transportation Leaders Program (CTLP) is part of a larger effort by the Greater Portland Council of Governments (GPCOG) to advance the inclusion of underrepresented communities in transportation planning. The training program was co-designed by a planning group that included GPCOG staff, consultants, municipal and organizations partners, and GPCOG's Mobility Liaisons. Mobility Liaisons are volunteers with lived experience of transportation challenges.

The program is based on four goals:

- Support community members to gain the knowledge and tools needed for meaningful participation in transportation planning and decision-making.
- Provide a peer-to-peer network to assist participants in acting on the goals they set.
- Enable decision-makers to hear directly from participants about the transportation needs and experiences of underrepresented communities.
- Act as a gateway for participation in transportation decision-making

Community Transportation Leaders know the issues facing their peers and are well-placed to inform decisions about the transportation projects that directly affect their lives. Once trained, Community Transportation Leaders are now weighing in on transportation studies and plans by participating in focus groups, promoting surveys, and collecting feedback. They work on projects that advance a regional Vision Zero Campaign, ensure sensitivity training for bus operators, and provide supports to new immigrants looking to access transit.

The CTLP is an integral and critical initiative that incorporates the voices of community members that rely on public transportation into planning efforts. One Climate Future will elevate and support the work of the program as we ensure public transit is accessible, equitable, and efficient.

COMMUNITY TRANSPORTATION LEADERS
DEREK O'BRIEN AND KAREN PERRY • Photo by GPCOG

2) A Ride-with-Me program, where transit system decision-makers ride public transportation with members of the community who face barriers in using public transportation, such as mobility challenges, to witness their experiences first-hand. All three initiatives will be instrumental to breaking down barriers to transit access and in expanding who shapes transit system decision-making in Greater Portland.

The action we will take

The Cities of Portland and South Portland endorse the Community Transportation Leadership Program and will support the program's subsequent phases. As we work towards transforming our transportation system networks in the Greater Portland region towards increasingly

robust, efficient, and carbon-neutral systems, it is both paramount and integral that the transformation also advances more equitable mobility options. In the upcoming year, the Cities will:

• **Participate in the Ride-with-Me Program.** Members of the Portland and South Portland City Councils and/ or transportation planning staff will join the Ride-with-Me program to witness barriers faced by residents while accessing or riding public transit in the cities.

• **Work with transit partners and Community Transportation Leaders to review and address proposed solutions.** The Community Transportation Leaders Program generated a booklet compiling the concerns, challenges, and proposed solutions identified by participants. Some of the proposed solutions relate directly to the bus systems, while others relate to items that the Cities could address, including expanding information on the transit systems or improving sidewalk conditions. The Cities will work with PACTS, the public transportation agencies, and Community Transportation Leaders to collectively review and prioritize ways to address highlighted concerns.

• **Invite input from Community Transportation Leaders in ongoing transportation planning initiatives.** Through the implementation of One Climate Future, there will be many ongoing planning initiatives—to expand accessible transit systems, build out complete streets, develop bikeway networks, and adjust land use policy. The Cities will continue to invite the growing network of Community Transportation Leaders to participate in those decision-making processes, both to help shape the process for gathering community input and to inform the solutions.

Our next steps

- ☐ Identify City Council members and city staff to participate in the Ride-with-Me program.
- ☐ Review and address proposed solutions from the first round of the Community Transportation Leaders program.
- ☐ Collaborate with GPCOG to expand upon or launch a second phase of the Community Transportation Leaders Program.
- ☐ Invite Community Transportation Leaders to promote and participate in One Climate Future mode shift and land use planning initiatives.

CR 2.4 Summary - Transportation Access

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
- Collaborate with GPCOG to launch next phase of CTLP program. - Invite Community Transportation Leaders to participate in One Climate Future mode shift planning. - Review and implement proposed solutions from CTLP first round.	a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes	a b c d (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships
	KEY MILESTONES Address first round of proposals made by Community Transportation Leaders by 2026	CITY STEWARD P: Planning Department, Public Works, Sustainability Office SP: Sustainability Office, South Portland Bus Service	FINANCING MECHANISMS PACTS funding, private grants (e.g., USDN Partners for Places grants)

CR 2

CR 2.5 Neighborhood Resources

ACTION: Support and strengthen our existing community resources.

Where we are today

Climate change is expected to amplify the challenges residents in Portland and South Portland already face—whether that’s financial, food, or housing insecurity, or strain on physical and mental health. Many solutions are already in our communities. We have people, organizations, and community groups that are helping to build an inclusive and regenerative economy; supporting safe, stable, and affordable homes; strengthening our physical and mental health; cultivating healthy foods, soils, and ecosystems; elevating voices and civic participation; and nourishing culture and creativity. In particular, these solutions exist in the communities that have been most marginalized in the current economic system. Elevating and resourcing the people, organizations, and community groups that are already

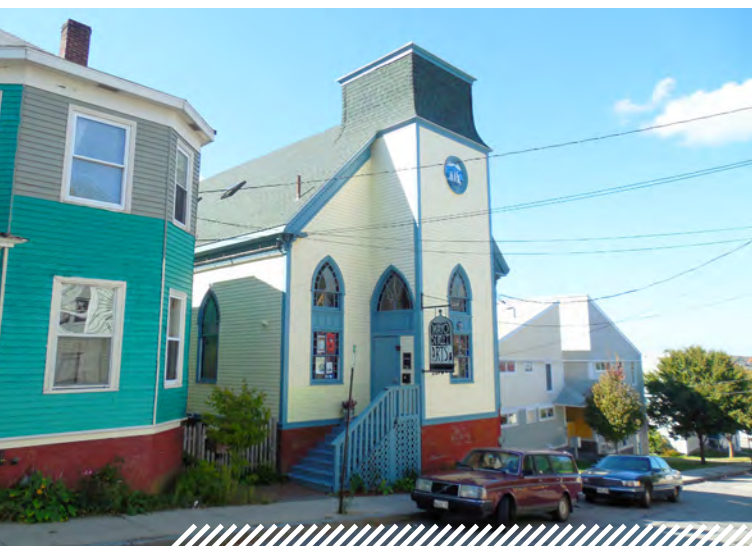
providing these solutions is necessary for a just and equitable transition to a more resilient and carbon-neutral future.

The action we will take

The Cities will partner with existing community groups and organizations to cultivate and strengthen neighborhood hubs, organize neighborhood-scale action, and expand services that will be increasingly needed as we continue to experience new stresses from climate change. This will entail working with organizations, community groups, and residents to understand gaps in access to resources or services, and to identify ways to best support and resource organizations to meet existing and growing needs. As part of this initiative, Portland and South Portland will:

- **Establish a small grants program for community organizations.** The small grants program will provide funding to community organizations, neighborhood associations, and community groups to support projects that build community strength, health, and resilience. The scope of eligible projects will be broad, with the intention of expanding capacity of existing organizations in ways that best support existing needs. Prioritization will go to projects led by and benefiting communities in Portland and South Portland that are likely to be disproportionately affected by climate change—including residents with low or no income, residents of color, New Mainers, youth, elderly, and residents living with disabilities.

- **Launch a Sustainable Neighborhood Program.** The Sustainable Neighborhood Program will decentralize some of the Cities’ climate action efforts, and give residents the



MAYO STREET ARTS • Photo by John Phelan

opportunity to become active partners in building thriving, resilient, and low-carbon communities. The program will outline a set of neighborhood-scale initiatives for each of the four focus areas of the One Climate Future plan—such as home weatherization, zero waste campaigns, community solar projects, public transportation challenges, soil health revitalization projects, rain gardens installations, or block parties designed to get to know your neighbors to increase social resilience. Neighborhoods may receive points for launching these initiatives, which accumulate towards Sustainable Neighborhood certification.

● **Cultivate neighborhood hubs.** Neighborhood hubs are spaces that bring people together to build community and to share resources. Resources may include community meeting space; shared kitchens; tool libraries; walk-in health services; or other community capital to help make neighborhoods stronger, healthier, happier, more connected, and more resilient. The Cities will explore ways to work with community partners to strengthen existing spaces and potentially identify new spaces to serve as neighborhood hubs. To inform that process, we will launch a community resource mapping project to discuss existing resources, opportunities, and needs: *What is a community resource for you? Where would you go to access that resource? What types of shared resources would you use if available?* Resourcing neighborhood hubs and developing

models for their ongoing operation could be supported through the small grants program specified above.

Our next steps

- ☐ Secure grant funding to launch the small grants program.
- ☐ Define goal areas and target initiatives for the Sustainable Neighborhoods Programs, and partner with community organizations to support participating neighborhoods.
- ☐ Launch the community resource mapping project to begin identifying locations and needs for neighborhood hubs.



NEIGHBORHOOD RESOURCES HUB • Photo by GPCOG

CR 2.5 Summary - Neighborhood Resources

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
	a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes (d) Builds community ownership	a b c d (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
- Establish a small grants program to support projects or initiatives that build resilience. - Launch Sustainable Neighborhood programs. - Work with residents and community organizations to resource neighborhood hubs.	Award the first round of community organizations or neighborhood groups with resilience grants by 2025	P: Sustainability Office SP: Sustainability Office	Private grants, revolving loan funds (e.g., Portland Development Corporation)



DOWN AT WIDGERY WARF • Photo by Corey Templeton

CR 3

Resilient Local Economy

CR 3.1 Resilient Working Waterfronts

ACTION: Create an ongoing platform for collaborative planning to ensure that Portland and South Portland’s port and waterfronts can respond, adapt, and thrive with new climate stresses.

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Where we are today

Portland and South Portland have vital working waterfronts: commercial fishing boats unload their catches at the piers, marine terminals provision the state with energy resources, ferries shuttle people to and from the islands, products flow to global markets in shipping containers, students and researchers investigate marine life, tourists disembark cruise ships and fill restaurants, residents fly kites at Bug Light Park. The mix of commercial, industrial, cultural, and recreational activity enriches the cities directly and indirectly, through both economic and noneconomic value. As sea levels and storm surge increase with climate change, the waterfronts will be at

the forefront of increasing inundation, interrupted operations, and property damage—putting this value increasingly at risk. In particular, Portland’s East Bayside, Commercial Street and Portland’s piers, along with sections of South Portland’s waterfront (including portions of Front Street, Mill Creek, Turner Island, Bug Light Park, and Willard Beach) are expected to see more frequent and significant flooding, often brought by more intense storms. Studies now document how the benefits of proactive action far outweigh the economic costs of delayed or reactive action; Responding to the aftermath of climate hazards has shown to be, on average, five times as costly as the adaptation investments.¹³² While the waterfronts

are comprised of a diverse and dynamic mix of activities, uses, and stakeholders, collective action across waterfront uses will be necessary for safeguarding the port activity and waterfronts as economic and cultural assets.

The action we will take

We will ensure the Port of Portland and our waterfronts can respond, adapt, and thrive with new climate stresses by A) Convening and collaborating with waterfront stakeholders to increase the resilience of current and future port and waterfront activity, and by B) Establishing land use policy that guides any future development towards more resilient waterfronts. To launch the first initiative, the Cities will collaboratively establish a platform for regular and ongoing resilience planning among waterfront stakeholders in both cities, in order to share information, identify opportunities for integration and coordination, and minimize duplicative efforts in resilience capital investments or planning processes. Ultimately, the goal will be for waterfront stakeholders in collaboration with city decision-makers to have a systematic way to identify, address, and reassess a set of priorities to

take advantage of cost-sharing and most strategically direct city, state, or federal funding. The Waterfront Alliance will serve as the initial convening and facilitating organization, with the option to develop into a separate federal, state, or grant-funded process moving forward. Primary topic areas for coordinated action may include:

- **Vulnerability assessment of public and private infrastructure assets.** Marine operations rely on an interdependent network of infrastructure systems, owned by a mix of private and public entities. An engineering assessment, jointly commissioned across a set of waterfront entities, could serve as a cost-effective way for individual entities to assess risks to their own assets and operations within the context of broader infrastructure networks.

- **Hazard mitigation tabletop exercises.** Tabletop scenario planning is a discussion-based exercise, usually executed by a team, to map out roles and responses during an emergency situation. Conducting a tabletop exercise following the vulnerability assessment of infrastructure assets is a way to coordinate responses across entities to potential infrastructure

CR 3.1 Summary - Resilient Working Waterfronts

PRIMARY COMPONENTS • Develop public-private partnership to access grant funding for waterfront resilience collaboration. • Convene port industries for coordinated waterfront resilience planning. • Revise land use code to guide resilient waterfront development /uses.	How this strategy advances a future that is... Equitable a b c d (d) Builds community ownership Regenerative a b c d (b) Restores ecosystems Resilient a b c d (a) Reduces vulnerability (c) Adapts processes (d) Builds partnerships		
	KEY MILESTONES • Grant funding and partnerships secured for resilient working waterfronts project by 2026	CITY STEWARD P: Economic Development, Sustainability Office SP: Sustainability Office, Economic Development, Planning Department	FINANCING MECHANISMS Federal/state grants (e.g., FEMA BRIC grants), private grants (e.g., NSF Civic Innovation Challenge), tax increment financing (TIF), special assessments, bonds



Community Spotlight

WATERFRONT ALLIANCE

The Waterfront Alliance was founded during the 1980s to protect and promote the Port of Portland and the working waterfronts of Portland and South Portland. Over the years, it has contributed to the revitalization of the Port by providing a valuable forum for its diverse membership—which includes marine associations, fishing and cruise industries, neighborhood organizations, terminal operators, environmental groups, pilots and tugboat operators, recreational boaters, marinas, and more—to discuss a variety of issues affecting the port.

Most recently, the Waterfront Alliance has served as a convener for climate action. The organization is currently working to engage waterfront property owners, both public and private, in assessing the physical vulnerabilities of the waterfront economy to rising seas and increasing storm intensity. With a data-driven understanding of these vulnerabilities, public and private entities can better coordinate resilience investments and actions that ensure our waterfront can adapt to and find opportunity in a changing climate.

The Waterfront Alliance's leadership in building resilience demonstrates a valuable and energizing model for collaborative planning. Regional solutions and collective action will be necessary to safeguard our shared natural resources, vibrant economies, and social fabric.

EIMSKIP SHIPPING • Photo by Justin Levesque

failure. There may be further opportunities to align or share hazard mitigation protocols on preventing interruptions in transportation or operations, damage to property or equipment, hazardous material containment failures, or other health and safety hazards.

• **Coordinated resilience investments.** Resilience investments that address a suite of operations, infrastructure, and shoreline systems in the waterfronts (such as pier upgrades, in coordination with road and rail connections or living shoreline creation where compatible with marine access) may be able to capitalize on state or federal funding, particularly since the port functions in Casco Bay are so vital to the economy of the state and region. City funding structures such as tax increment financing could also help to support joint resilience investments. In all cases, building consensus around a set of strategic priorities will be advantageous in advocating for those funding streams.

In addition to coordinated resilience planning and investments across waterfront stakeholders, the Cities will use land use policy to guide future development, ensuring that the growth or evolution of the port and waterfronts continue to strengthen our resilience. This will entail revising zoning codes

and the development review process to better prioritize the following:

- a. Mandating no new development of hazardous, vulnerable, or incompatible uses in areas with the highest flood risk (see action CR 1.1);
- b. Evaluating and permitting the growth of compatible, “flood-tolerant” commercial and industrial uses that are built to resilience standards (see action CR 1.1), including new and diverse industries that can support the economic prosperity of the cities (see action CR 3.3);
- c. Assessing, identifying, acquiring, and conserving land parcels along the waterfronts that could accommodate marsh migration and living shorelines—as determined by factors including environmental suitability, physical feasibility, and land ownership (see action CR 5.1);
- d. Monitoring transmission and grid planning initiatives that could connect the cities with potential ocean derived energy and offshore wind resources (see action BE 5.5)

Our next steps

- ☐ Convene port-related industries, waterfront businesses, waterfront users, landowners, utilities, non-profits, and other interested parties to characterize vulnerabilities to rising seas and storms of waterfront infrastructure, businesses, supply chains, and critical services.
- ☐ Pursue public-private partnerships to leverage grant funds and other innovative financing approaches for collaborative waterfront resilience projects.



BUG LIGHT PARK AND GULF OIL TERMINAL • Photo by Dirk Ingo Franke

CR 3

CR 3.2 Workforce for a Resilient Economy

ACTION: Attract, mentor, and build the skills of our cities’ workers to partake in quality jobs that help build a diverse, resilient, and regenerative economy.

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Where we are today

In March of 2020, states and local governments throughout the United States started instituting temporary business closures and “stay-at-home” orders for all non-essential activity as a widespread effort to curb the spread of the global COVID-19 pandemic. In April 2020, Maine’s unemployment rate rose to nearly 11% (based on preliminary estimates) as the economic ramifications hit businesses throughout the state.¹³³ Leading up to the closures, Governor Mills set a number of emergency measures in motion to secure small businesses loans for Maine businesses, support Maine workers impacted by the virus, and

make unemployment insurance more quickly available during the health crisis.¹³⁴ Nevertheless, because such a large portion of the Maine economy relies on small businesses and face-to-face interaction—including hospitality, food and beverage, and other tourism-related industries—there are significant concerns that Maine’s economy will be hit particularly hard by the effects of COVID-19 and the ensuing economic recession.

Prior to the onset of the COVID-19 health crisis, Maine’s worker shortage had become one of the most pressing challenges for employers in the state. For nearly four years, unemployment in Maine had been below 4%, and under 3% in Cumberland County, driven in part by much of Maine’s population aging out of the workforce. While low unemployment is better than high unemployment, labor shortages can also suppress Maine’s economy: Studies as of 2019 had estimated that Maine needed to employ an additional 158,000 trained workers by 2025 to maintain economic growth.¹³⁵ Critically, Maine workers also need the skills for advancement to reach higher earning potentials and to adapt to changes in the global economy.¹³⁶ Maine is thus faced with the multi-pronged challenge of putting Mainers back to work and expanding the state’s skilled workforce in the coming years.

Why does this matter for a climate action and adaptation plan?

A robust, diverse, and talented workforce is the basis for a resilient economy—one that can withstand downturns caused by stresses such as climate hazards, one that can innovate and adapt to global industry trends, and one that can drive the necessary transformation towards a carbon-neutral and



PORTLAND ARTS AND TECHNOLOGY HIGH SCHOOL • Photo by Claude David



UNIVERSITY OF SOUTHERN MAINE • Photo by Corey Templeton

resilient future. As part of this statewide effort, Portland and South Portland must attract and retain young workers; connect our cities' youth, New Mainers, and underemployed persons to meaningful employment; and strengthen skill development opportunities for higher earning potential—to not only create a more diverse, inclusive, and regenerative economy, but to build the skills and industries that will help lead our transformation to low-carbon and more resilient cities.

The action we will take

Portland and South Portland will work with education and career training partners to strengthen employment pipelines for growing and emerging industries within the cities, and specifically for industries that will support the cities' carbon mitigation and resilience goals. Employment pipelines include a diverse suite of resources and programs designed to connect potential workers with an employment opportunity, in addition to equipping them with the skills to succeed. The Cities would measure the success of these employment pipelines based on their ability to: A) Foster a diverse and inclusive workforce,

including removing barriers to workforce participation; B) Enhance upward mobility, earning potential, and thereby retention in local industries; and C) Build a workforce that can support a carbon neutral and resilient economy.

The Cities will work with partners to launch this effort through two phases. In the first phase, Portland and South Portland will work with employers, economic researchers, and industry specialists to identify growing and emerging sectors that have notable gaps in skilled labor, and that directly advance climate mitigation and adaptation in the cities. Relevant fields may include advanced building trades; distributed energy resource installation and servicing; food system fields such as urban farming or aquaculture; waste diversion fields such as composting and material reuse supply chains; ecosystem adaptive management or green infrastructure installation and maintenance; among other fields. Surveys and outreach to business sectors will help identify where employers are having trouble finding qualified candidates.

In the second phase, the Cities will work with employers in the identified sectors in collaboration with high schools, higher education institutions, and job training or career mentorship agencies and nonprofits to design, develop, adapt, or strengthen programs that meet specific industry needs for recruitment, skill development, mentorship, or retention. The task force will inventory existing programs to further support, expand, or replicate successful models wherever possible. The task force will identify funding streams both through existing program funding and additional local, state, or federal workforce development grants to support program development and implementation.

Depending on the type of industry and field, programs could include high school immersion programs, apprenticeships, paid internships, employer-tailored training programs, certification or credentialing programs and advancement pathways, or career mentorship. In some cases, initiatives may include high school or

post-secondary curriculum development in target areas such as environmental and climate science, climate mitigation and adaptation, and environmental justice. Development of these education and job-training programs will prioritize interpretation services and educators from immigrant communities to better support New Mainers entering these trades. This initiative would build on Portland Professional Connections, a program in partnership with the City of Portland's Office of Economic Opportunity that connects foreign-trained professionals with people in their field to help build professional networks.

Our next steps

- ☐ Collaborate with state and local partners, employers, economic researchers, industry specialists, and labor groups in ongoing economic development efforts to identify gaps in skilled labor for growing and emerging climate-related sectors.

CR 3.2 Summary - Workforce for a Resilient Economy



*Depending on the nature of the program

CR 3.3 Climate-Ready Industries and Innovation

ACTION: Build the capacity of the businesses and industries in our cities to bounce back, adapt, and innovate.

Where we are today

Both Portland and South Portland have vibrant and diverse economies. The cities' historic industries, such as manufacturing, marine and railway shipping, fishing, and tourism, continue to evolve and flourish, with the addition of growing and thriving biotech, healthcare, finance and insurance, retail, arts and cultural, and local food sectors. Greater Portland contributes half the economic output in the state of Maine, and the impact of economic activity in the cities reaches far beyond our city boundaries—connecting to regional farms through craft food processing and farm-to-table markets as well as to global supply chains through the International Marine Terminal. A resilient economy is one that recovers quickly from shocks, evolves to accommodate new industries, and meets the needs of a diverse range of employees. Businesses within a resilient economy are able to weather storms (literally and figuratively), and able to shift their services, operations, or business models to contend with changing conditions. Furthermore, a resilient economy is one that is able to adapt to long-term changes as markets and sectors change. As Maine, the nation, and world seeks to decarbonize sectors and industries, we seek ways for Portland and South Portland's industries to not only respond to that shift, but to lead that transformation.

The action we will take

Portland and South Portland will build the capacity of the businesses and industries in our cities to bounce back, adapt, and innovate. Doing so will involve actions across a number of nested scales: 1) Ensuring that our businesses have the

resources to respond to shocks, 2) Supporting thriving and diverse sectors that can adapt to changing markets and business conditions, and 3) Ensuring that we cultivate businesses and industries that are leading our cities' adaptation and decarbonization. Primary approaches we will pursue include:

- **Supporting business resilience through outreach, resources, and learning networks.** Through the Cities' business visitation programs, economic development staff in both Portland and South Portland regularly connect with businesses to learn about their needs, plans for growth, or other topics. In 2020, City staff have been working with businesses on marketing and other support programs in light of the extended business closures or modified hours and services due to the outbreak of the novel coronavirus. In the coming year, the Cities, in partnership with the Portland Regional Chamber of Commerce, Portland Downtown, Portland Buy Local, and other business associations, will continue this outreach to discuss business resilience, including key challenges, needed resources, or lessons learned—drawing on the direct experiences from the COVID-19 pandemic. For example, *what have been the most difficult challenges created by multi-week closures? How can businesses diversify services, or work online or remotely? What would most help in weathering downturns?* Based on the responses, the Cities and partners will identify a set of business resilience resources. These may include hosting a series of workshops on related topics; earmarking a portion of the Cities' respective small business revolving loan funds for emergency relief; launching

learning networks among peer businesses; or using the small grant program (see action CR 2.5) to support organizations already working with small businesses in this field (on product diversification, weathering storms, equipping businesses with knowledge and skills to understand business risks and mitigate impacts on operations and services, launching learning networks, or other methods).

● **Embrace a blue economy.** Portland and South Portland are rich with marine resources, active working waterfronts, and a range of marine-based industries that make up our cities’ “blue economy.” Growing these sectors, and specifically sustainable fishing, aquaculture, and associated industries, offers an important and viable way to expand access to locally-sourced food (with smaller carbon footprints than many other proteins!) and contribute to food system resilience, while strengthening the local economy. The Cities will identify barriers and opportunities for the growth of the blue economy, as well as develop or revise land use polices to support traditional and emerging marine-related industries as guided by comprehensive and ongoing waterfront initiatives. Portland and South Portland will also continue to maintain the Portland

Fish Pier and Portland Street Pier to provide opportunities for marine employment, seafood manufacturing, and aquaculture.

● **Cultivate diversified and vibrant industries.** Both Portland and South Portland will continue to cultivate diversified and vibrant industries. Through public-private partnerships and pilot projects, the Cities will focus on opportunities that build on the State’s effort to foster innovation and economic growth in industries that contribute to climate solutions such as renewable energy and biofuels, sustainable fishing and aquaculture, advanced building materials, and circular economy technologies.

Our next steps

- ☐ Continue outreach through the Cities’ economic development business visitation programs, focusing on gathering insight on business resilience needs.
- ☐ Identify barriers and opportunities for the growth of blue economy and marine-related businesses, including seafood harvesting, landing, processing, and distribution.

CR 3.3 Summary - Climate-Ready Industries and Innovation

How this strategy advances a future that is...			
PRIMARY COMPONENTS			
● Support business resilience via economic development programs. ● Identify barriers and opportunities for the growth of a blue economy. ● Drive innovation and growth in climate-ready industries such as renewable energy, sustainable fishing, advanced building materials, and circular economy technologies through public private partnerships and pilot projects.			
KEY MILESTONES			
● Revise land use policies to reduce barriers to traditional and emerging marine related industries by 2026			
CITY STEWARD			
P: Economic Development, Sustainability Office SP: Sustainability Office, Economic Development, Planning Department			
FINANCING MECHANISMS			
Revolving loan funds (e.g., Portland Development Corporation), public private partnerships, federal grants (e.g., EDA Build to Scale grants), tax increment financing			

*Depending on the nature of the program



CR 4

Resilient Infrastructure Systems

THOMAS NIGHT PARK • Photo by Denise Michaud

CR 4.1 Stormwater Systems

ACTION: Use modeling and flood data to upgrade the Cities' stormwater and sewer systems to handle future climate scenarios.

Where we are today

Portland and South Portland have invested in upgrades to the Cities' sewer and stormwater systems significantly over the past couple decades in order to better manage high volumes of stormwater, to separate combined sewer and stormwater systems, and to reduce overflows that carry pollutants into Casco Bay. South Portland recently completed an Asset Management Assessment to evaluate the likelihood of failure of all portions of the sewer (and roadway) systems, and Portland recently completed an Integrated Water Resources Management Plan to best prioritize spending with respect to wastewater and stormwater infrastructure and water quality protection. With climate change, Portland and South Portland

will likely see storms with more precipitation in shorter periods of time, which will continue to increase the strain on the Cities' stormwater systems. Sea level rise and storm surge will also add pressure to the systems in certain parts of the cities. The One Climate Future vulnerability assessment provides a preliminary geospatial analysis of the stormwater and sewer assets that fall within inundation areas from sea level rise and storm flooding. Modeling how coastal flooding and higher intensity and frequency of storms will impact the sewer and stormwater system will help the Cities target infrastructure upgrades both to manage future flooding and to reduce further detrimental impacts on the health of Casco Bay.

The action we will take

Portland and South Portland will commission the development of a citywide hydrologic/hydraulic drainage model with simulations for current and future design storm and sea level rise scenarios; expand data and reporting on the stormwater system and flood incidents; and develop a phased implementation plan for system upgrades based on this modeling and data. The hydrologic/hydraulic drainage study will evaluate whether existing storm drainage pipes have sufficient conveyance capacity, and identify areas with high flood risk due to drainage backups, capacity issues, and/or coastal and riverine flooding. In areas with high flood risk, the study will identify flood impacts to critical infrastructure and land uses (such as electrical substations, wastewater treatment facilities and pump stations, emergency services, schools, housing, commercial and industrial uses, among others) based on peak flood depths and flood duration.

In conjunction with the hydrologic/hydraulic drainage model, the Cities will improve geospatial data on stormwater system components and on the occurrence and extent of flood incidents. Specifically, this will include:

- **Filling gaps in geospatial data for the sewer and stormwater system.** For both Cities, completion of this modeling will involve collecting, compiling, and/or updating missing or outdated infrastructure attribute data, ideally in a central GIS repository. For Portland, filling these gaps will build on the *Infiltration and Inflow Study*, as well as recommendations from the *Bayside Adapts Phase 1 Stormwater and Sewer Gap Analysis*, to continually update and improve data quality.

- **Building out the protocol for consistently tracking flood incidences.** The Cities will each establish a protocol and continue to keep a geospatial record of flooding incidents, including flood extent, depth, and duration. These datasets will allow the Cities to track patterns, corroborate the drainage model, as well as identify operational deficiencies not captured by the model (such as clogging and root intrusion) that will affect stormwater system capacity. For South Portland, building out this protocol will formalize and operationalize the “Flood

Data Collection Protocol” developed in collaboration with the Southern Maine Planning and Development Commission.

- **Implementing a comprehensive asset management system.** Portland will leverage a systematic asset management framework and database for monitoring the performance of stormwater assets; South Portland will incorporate stormwater assets into an existing asset management system. Both Cities will use these systems to track maintenance and replacement needs and use predictive analytics for long-term capital planning. A goal of the databases will be to assess true costs of stormwater asset management across compliance programs over time and inform a stormwater utility or service charge. Tracking investments will also inform whether the Cities are seeing escalating maintenance costs in specific locations due to additional strain from climate change, as a comprehensive and adaptive approach to inventorying, planning, replacing, operating, and maintaining physical assets.

Using the drainage modeling, flood data, and framework for asset management, Portland and South Portland will develop a phased investment approach for capital improvement projects and maintenance, prioritizing investments based on the results of the hydrologic/hydraulic drainage model, ongoing flood incident records, and projects that have the greatest capacity to maximize health, safety, and environmental benefits. For Portland, this investment approach will be created in alignment with the priorities developed in the Integrated Water Resources Management Plan (2020). Based on information gained through the flood modeling, South Portland and the Portland Water District will establish protocols for the further long-term evaluation of flood risk to the Cities’ wastewater treatment plants and pump stations to ensure that upgrades, maintenance, or new facilities protect against flooding in line with the latest climate projections. Both Cities will continue to prioritize combined sewer separation and overflow mitigation, and will seek opportunities to use natural systems for stormwater infiltration and storage wherever possible (see action CR 4.2). For all components outlined above, the Cities will coordinate with the Portland Water District and the Maine Department of Transportation (MaineDOT), both of which manage certain portions of the Cities’ stormwater systems.

Our next steps

- ☐ Continue to work internally to fill gaps in geospatial data for the sewer and stormwater systems, and to build out a protocol for tracking flood incidents. Identify any components where additional consultant capacity is required.
- ☐ Secure funding and produce a request for proposals (RFP) to commission a hydrologic/hydraulic drainage model with simulations for current and future design storm and sea level rise scenarios.

CR 4.1 Summary - Stormwater Systems

How this strategy advances a future that is...												
PRIMARY COMPONENTS	Equitable				Regenerative				Resilient			
	a b c d				a b c d				a b c d			
									(a) Reduces vulnerability (c) Adapts processes			
KEY MILESTONES		CITY STEWARD		FINANCING MECHANISMS								
• Full geospatial data set completed for sewer and stormwater system by 2024 • Hydrologic / hydraulic drainage model completed by 2028		P: Water Resources SP: Water Resources Protection, Emergency Management		User fees (e.g., Portland stormwater service charge, South Portland Sewer User Fund), general fund								

CR 4

CR 4.2 Green Infrastructure

ACTION: Expand the use of green infrastructure systems to capture and infiltrate the first inch of stormwater in any storm.

.....

Where we are today

Roughly 32% of Portland and South Portland respectively is covered with impervious surfaces, such as buildings, parking lots, streets, driveways, alleys, and sidewalks. When it rains, stormwater runs off these surfaces, sending large volumes of water into the stormwater system, contributing to localized flooding, and transporting pollution from those urban environments into rivers and Casco Bay. Reducing and/or disconnecting impervious surfaces and expanding green infrastructure can help manage stormwater, particularly with more intense storms brought by climate change. Decreasing the extent of impervious surfaces in the cities will also keep air temperatures cooler on days with high heat and will help support ecological resilience. Currently, both Portland and South Portland look for opportunities to upgrade stormwater systems using green infrastructure, and to expand use of green infrastructure through new development. These local efforts are also promoted and led in partnership with regional programs, including the Long Creek Watershed Management District, Greener Neighborhoods Cleaner Streams, and Think Blue Maine—all of which work to protect clean water and the health of our water ecosystems through green infrastructure and reducing stormwater pollution.

The action we will take

Moving forward, Portland and South Portland will take a more proactive and aggressive approach to integrating green infrastructure in the cities by setting an explicit goal

What is green infrastructure?

Green infrastructure is a method for managing stormwater at its source in an urban environment using plants and small-scale systems to treat water such as rain gardens, street trees, green roofs, gravel wetlands, and infiltration trenches. Green infrastructure supports healthier ecosystems and helps to restore the natural hydrology of a site by allowing water to soak into the ground.



of “capturing the first inch” of rainwater citywide. In other words, Portland and South Portland will invest in nature-based systems across the cities until we can capture, infiltrate, retain, or evapotranspire the first inch of rainwater that falls on the cities in any storm event—with only the excess stormwater above one inch entering our piped stormwater system. Reaching this target will require that the Cities prioritize opportunities for green infrastructure installation in municipal capital projects; create stronger incentives or requirements for green infrastructure installation in (re)development; and encourage the conversion of impervious surfaces and the integration of green infrastructure on private land through educational tools, resources, programs, and incentives. As part of this goal, Portland and South Portland will work to “green” 15% of the current impervious area in the cities by 2050 through implementing green infrastructure systems in parking lots, public rights of way, and through green roofs.

Several studies and sets of spatial data mentioned in other One Climate Future actions will help the Cities prioritize locations for green infrastructure installation on public land, including geospatial data on the cities' tree canopy coverage (see action CR 1.3); a hydrologic/hydraulic drainage model that looks at future climate projections (see action CR 4.1); and an assessment of infiltration capacity of open spaces such as parks and athletic fields (see action CR 1.3). Updated performance standards will incentivize greater use of green infrastructure in new development to meet resilience goals (see action CR 1.1). Likewise, incorporating green infrastructure design guidelines into the Cities' complete streets design guidelines will support the integration of green infrastructure into the public right of way (see action TLU 1.4).

To encourage the expansion of green infrastructure and impervious surfaces on private land, the Cities will evaluate a number of scenarios for updating development requirements and revising (Portland) or adopting (South Portland) a stormwater service charge and credits program. Specifically, the Cities will evaluate the following options:

- **Requiring all new development to retain the first inch of rainwater on site.** Such a requirement would ensure that all new development contributes to the Cities' resilience goal of "capturing the first inch citywide." Portland and South Portland will evaluate a couple of options for this requirement, including whether the development standard would apply to all properties, or to new construction above a certain size threshold. This requirement would align with updated resilience performance standards for new development (see action CR 1.1).

- **Amending stormwater credits to better incentivize on-site stormwater management (Portland).** Portland levies a stormwater service charge and offers credit to property owners who install and maintain cisterns, dry wells, modified French drains, permeable pavers, and rain gardens. Portland will evaluate options for expanding the range of green infrastructure and low impact development (LID) strategies eligible to receive credit in order to strengthen the incentives

for on-site stormwater management. Additionally, Portland will conduct a broader marketing campaign under Think Blue Portland to raise awareness of the stormwater credits system and increase use of the model.

- **Adopting a stormwater service charge and credits program to better incentivize on-site stormwater management (South Portland).** South Portland will investigate the feasibility and effectiveness of implementing a stormwater service charge and credits program as a mechanism to further encourage on-site stormwater management on private property, and to institute a funding stream for additional public stormwater management improvements.

Portland and South Portland will further support the expansion of green infrastructure and pervious surfaces on privately owned land through educational resources, information, and incentives. Potential mechanisms that will be considered include:

- **Developing guidelines for green infrastructure design, operations, and maintenance.** Green infrastructure guidelines will allow the Cities to set standards for design, installation, operation, and maintenance to increase the effectiveness of public green infrastructure installations, and provide technical assistance to developers who otherwise would not consider green infrastructure. Pre-approving the designs and standards with relevant boards and committees (such as historic preservation) will simplify the development process for green infrastructure projects. Requiring maintenance plans as part of green infrastructure design development for city-owned projects will also help ensure effective maintenance. These green infrastructure design guidelines will be incorporated into city complete streets design guidelines (see action TLU 1.4).

- **Including stormwater infiltration initiatives in the Sustainable Neighborhoods Program.** The Sustainable Neighborhoods Program encourages residents within a neighborhood to work together to implement initiatives and

achieve Sustainable Neighborhood certification (see action CR 2.5). Climate Resilience will be one of the goal areas of the Sustainable Neighborhoods Program, with stormwater infiltration as a potential target category. In this case, residents would be able to receive points for projects that improve stormwater infiltration through rain-scaping installations such as rain gardens, downspout planters, and depaving projects.

• **Implementing a rain-scaping incentive program for residential properties.** Through a rain-scaping program, residents would be offered rebates for a range of stormwater management tools such as rain barrels, downspout planters, rain gardens, depaving projects, or permeable pavers. An online evaluation tool would help residents identify the stormwater tool that would work best for them. South Portland may also explore updating the wetlands compensation fund charter to explicitly allow for the use of funds to further incentivize green infrastructure installations on private land.

• **Supporting a public-private-partnership green infrastructure model.** Under such a model, the City would construct green infrastructure on private land at public cost. The landowner would be responsible for maintenance, based on a maintenance agreement.

• **Continuing to build education and awareness for green infrastructure with regional partnerships.** In alignment with messaging and outreach efforts through Blue Maine, Greener Neighborhoods Cleaner Streams, and the Long Creek Watershed Management District, we will continue to build out a suite of resources that share and promote information on the value of green infrastructure; methods and resources for homeowners to “rain-scape” or “bay-scape” their yard; and ways property-owners can receive stormwater credits (in Portland) through online tools and materials, tabling at events, and through social media. In Portland, these outreach efforts will continue to be expanded and collated under Blue Portland.

Our next steps

- ☐ Work with residents and the development community to update stormwater performance standards; this step will dovetail with the development of resilience point requirements (see action CR 1.1).
- ☐ Evaluate additional mechanisms to support the expansion of green infrastructure and pervious surfaces on private property.
- ☐ Explore leveraging stormwater service charge and/ or credits to better incentivize on-site stormwater management.

CR 4.2 Summary - Green Infrastructure

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
• Evaluate and adjust ordinances to increase infiltration in new development. • Explore revising (P) or adopting (SP) stormwater service charges and credits to better incentivize on-site stormwater management. • Evaluate/implement initiatives and tools to support expansion of green infrastructure and pervious surfaces on private property. • Collaborate with regional partners to build education and awareness of green infrastructure.	a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships
	KEY MILESTONES • 5% of the cities’ impervious surfaces converted to green infrastructure by 2035; 10% by 2040; and 15% by 2050	CITY STEWARD P: Water Resources SP: Planning Department, Water Resources Protection	FINANCING MECHANISMS Revolving loan funds (e.g., Clean Water State Revolving Loans), bonds, federal/state grants (e.g., 319 Grants, Community Development Block Grant funding)

CR 4

CR 4.3 Energy Systems

ACTION: Build Portland and South Portland’s energy resilience.

Where we are today

Higher temperatures, flooding, and more intense storms may compromise power systems and contribute to more frequent or longer power outages. Traditionally, cities and organizations have relied on diesel generators to provide backup power to critical facilities, prevent cascading infrastructure failure, and protect acute health and safety needs. Because diesel generators are only called on in emergencies, they sit idle most of the time and bring no day-to-day benefits for their cost. They also contribute to air and noise pollution, depend on fossil fuels, and require reliable access to diesel fuel to operate over prolonged periods of time. The air pollution risks are of particular concern for health care facilities—by code, emergency and operating rooms must have diesel backup—but those generators can also pose acute health risks to vulnerable populations suffering from compromised respiratory function.

The reliance on this form of backup generation can be mitigated both through strengthening utility infrastructure to reduce the risk of disruptions, and expanding the use of solar generation, battery storage, and microgrids to support resilience and public health. A microgrid is a localized electricity network that is connected to the broader grid but also contains enough generation resources to be self-supporting and can be “islanded” and continue to operate autonomously with no loss in function. Microgrids can be contained and used within a building or campus with a single owner, or with regulatory support, can serve larger multi-owner networks. As discussed in action BE 5.3, such systems are not currently approved in Maine. However, they have been a critical part of resilience strategies in other jurisdictions.



POWER ON, ON FORE STREET • Photo by Corey Templeton

The action we will take

Portland and South Portland will expand renewable distributed energy sources in the cities to provide reliable back-up power for critical facilities while simultaneously supporting the Cities’ climate goals. Systems such as solar power and storage will help to lower the Cities’ carbon emissions, reduce electricity consumption during periods of peak demand, generate cost savings, and enhance the stability of the local grid—in addition to providing emergency power when the main grid is disrupted. We can also further advance environmental

justice goals by ensuring that the benefits of these distributed energy sources first and foremost benefit residents who will be disproportionately impacted by climate change. Specifically, the Cities will take the following multi-pronged approach to increasing our energy resilience:

- **Develop and implement a Resilient Power Plan.** Portland and South Portland will identify a list of critical facilities in the cities that could most benefit from backup power, assess critical power loads for those facilities, and commission an engineering assessment to identify cost and technology options to meet those power needs. This review will focus primarily on municipal facilities where the Cities have full control to implement improvements, but it will also look for opportunities to cluster multiple facilities, both public and private, in microgrid systems where possible. Projects will be prioritized based on their ability to safeguard health and safety, and based on their potential to protect or benefit residents who may be most significantly impacted by climate change—including elderly residents, residents with disabilities, residents with low or no incomes, youth, New Mainers, and communities of color. The work should be aligned with the Strategic Energy Management Plan (see action BE 1.3), as energy efficiency upgrades are important for cost-effectively optimizing the capacity requirements for energy generation and storage. The Cities will work with distributed energy system developers to implement systems through third-party ownership or leasing structures.

- **Incentivize distributed energy sources in private developments.** Distributed energy resources (DER) are a key component of a resilient energy system. At both the building and district scale, efficiency, renewable power generation, and energy storage can provide “non-wires alternatives” (NWA) to traditional energy infrastructure investments at lower cost and with far greater resilience. As discussed in actions BE 3.5 and BE 3.6, Portland and South Portland will be working to increase the penetration of solar generation and battery storage throughout commercial and residential buildings. We will work with Central Maine Power and solar installers to ensure that wherever possible, buildings with DER are able to disconnect

from the grid and “island,” both automatically in the event of a power outage and on demand in response to grid stress. As discussed in action BE 5.4, Portland and South Portland will use the zoning process and other structural or financial incentives to encourage developers of new private developments to explore and install district energy systems and microgrids to the greatest extent feasible under state utility regulations.

- **Consider resilience needs in decarbonization planning.**

As Portland and South Portland move towards decarbonization and beneficial electrification, the risks to resilience must be considered. While natural gas and fuel oil boilers and furnaces contribute directly to climate change, they are also more resilient to power outages and other disruptions than electric heat pumps. These risks can be mitigated through ensuring enough on-site solar generation and storage capacity. However, these resources may not be able to cost-effectively heat and power some critical facilities for an extended period. In targeting buildings for electrification, Portland and South Portland will consider the critical facility needs of buildings, and may opt to delay full electrification of such buildings to a later date once the affordability of longer-term electricity storage improves.

- **Advocate for regulatory updates that support resilient energy systems.**

As discussed in action BE 5.3, microgrids and other district energy systems are currently not allowed to cross public rights-of-way, which greatly limits their practicality in urban contexts. Enabling microgrids and district energy systems to cross public rights-of-way and, ideally, to provide and sell power to multiple users, will greatly expand the available energy resilience options in Maine. The Cities will advocate for state legislation to enable the use of microgrids in Maine.

- **Work with the State and utility companies to ensure climate risks to existing energy infrastructure are evaluated and addressed.** Electric substations, transformers, and overhead transmission and distribution lines are used to distribute power throughout the city and are vulnerable to extreme events. The Cities will advocate for Central

Maine Power to conduct site-specific studies to evaluate and address the current and future risk to existing critical utility infrastructure from flooding and extreme heat. As necessary, the Cities will advocate for the Maine Public Utilities Commission (PUC) to mandate a statewide study for utilities to evaluate and address these risks, and for local jurisdictions to be consulted in the study. To the extent practicable, the Cities will partner in the process to inform the study and recommendations based on local planning and resilience priorities.

• **Ensure that climate risks are considered in utility rate cases for new investments.** The Cities will intervene in Maine Public Utilities Commission utility rate cases for investments in new and upgraded infrastructure to advocate for the review and mitigation of climate risks including flooding, extreme weather, and heat stress. Electric distribution equipment including but not limited to substations, switch gear, and transformers should be flood-proofed and/or elevated. Natural gas infrastructure including but not limited to pressure regulating stations, odorization equipment, tanks, controls,

and electrical components should be flood proofed and/or elevated. Climate risks should also be addressed for any new land and water routes for new electricity transmission lines, as discussed in action BE 5.5.

Our next steps

- ☐ Identify a list of critical facilities that could most benefit from backup power; assess critical power loads for those facilities; and commission an engineering assessment to identify cost and technology options to meet those power needs. Align this assessment with the Strategic Energy Management Plan (see action BE 1.3).
- ☐ Advocate with state legislature and Public Utilities Commission for revision or elimination of restrictions on microgrids and district energy systems (in alignment with action BE 3.5).
- ☐ Work with the Maine Public Utilities Commission and the electric and gas utilities to identify key energy infrastructure that is or will be vulnerable to climate impacts.

CR 4.3 Summary - Energy Systems

How this strategy advances a future that is...			
Equitable	Regenerative	Resilient	
a b c d (a) Addresses injustice (b) Expands access	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	
PRIMARY COMPONENTS - Advocate for regulatory updates to enable use of microgrids. - Advocate for site-specific vulnerability assessments of critical utility infrastructure. - Advocate for climate risks to be evaluated in future infrastructure planning. - Develop and implement a Resilient Power Plan. - Incentivize distributed energy resources in private development.	KEY MILESTONES - Development of Resilient Power Plan by 2026 (align with BE 3.5) - All new development over 50,000 square feet to evaluate district energy/microgrids starting within one year of microgrid enabling legislation	CITY STEWARD P: Sustainability Office, Emergency Management, Public Works, Facilities SP: Sustainability Office, Planning Department	FINANCING MECHANISMS Federal/state grants (for Resilient Power Plan), utility cost recovery (for site-specific assessments), REC sales, federal tax credits, power purchase agreements (for DER development); see BE 5.4 regarding district energy; <i>Future: green/infrastructure bank</i>

CR 4

CR 4.4 Transportation Systems

ACTION: Adopt a risk-based transportation asset management approach.

Where we are today

The One Climate Future Vulnerability Assessment documents how the effects of climate change, including rising temperatures, more freeze-thaw cycles, more intense precipitation, and sea level rise-induced groundwater rise are expected to bring more wear and tear on roads, sidewalks, multi-use trails, and rail lines in Portland and South Portland. Likewise, sea level rise and storm surge may inundate portions of our road networks, rail lines, and marine terminals more frequently and consistently within the next thirty years and increasingly over the course of the century. Portland and South Portland prioritize regular infrastructure maintenance and upgrades in the Cities' capital improvement plans, and coordinate with federal, state, regional, and private transportation partners for projects involving state or federal assets. As a part of Smart City & Innovation Hub initiatives in Portland, the City has begun updating asset management systems and building out a robust geospatial dataset of transportation assets. Portland recently completed an inventory of the City's sidewalks, ramps, and roads to assess for ADA compliance, pavement conditions, and estimated costs for maintenance. South Portland recently completed an Asset Management Assessment to evaluate the likelihood of failure of all portions of the roadway systems.

The action we will take

Portland and South Portland will adopt a risk-based transportation asset management approach in order to develop more advanced protocols to protect, maintain,

and adapt transit infrastructure with climate change.

Transportation asset management (TAM) is a process for using financial and engineering data and modeling to optimize how a city systematically and strategically allocates resources for operating, maintaining, upgrading, and expanding transportation assets. Risk-based transportation asset management involves incorporating external factors—and specifically climate projections—into those calculations and investment decisions.¹³⁷ The Cities will incorporate the following components as part of a risk-based TAM approach:

- **Building out robust datasets to inform risk-based transportation asset management.** The Cities will continue to build out complete geospatial inventories for transportation assets throughout the cities, including attribute data that will support risk-based assessment. This will include, for example, elevation data for transportation segments to predict and corroborate flooding at specific elevations. The Cities will log flood events on specific transportation segments in order to validate risk and resilience modeling and its relationship to maintenance needs (see action CR 4.1 for further discussion on the Cities' flood tracking protocol)—in addition to tracking maintenance, repair, and upgrade costs attributed by segment, and whether maintenance costs can be primarily attributed to one storm or flood event. The goal of the maintenance costs database will be to track investments over extended periods of time in order to make strategic decisions about re-routing, raising, or decommissioning roads as we continue to see more effects from climate change. This work will enhance and align

with recommended actions presented to Maine's Climate Council that increase the resilience of transportation infrastructure through the development of a maintenance database and resilient design standards.

• **Modeling wear and asset lifespan using consideration for climate hazards.** Adopting risk-based TAM will allow Portland and South Portland to incorporate exposure to hazards, vulnerability of the system, and the criticality of the asset or transportation segment as part of the calculation for preventative maintenance, repair, and/or upgrades. Exposure to hazards will include a ranking based on exposure to flooding from sea level rise and storm surge, and the likelihood of ponding due to lower elevations and drainage issues with higher intensity storms (to be based on the drainage study in action CR 4.1). Vulnerability of transportation segments would relate to the surface/material or design of the segment and its ability to handle higher intensity storms, flooding, or higher heat thresholds. Criticality will relate to the importance of that transportation asset for maintaining critical municipal functions, particularly in emergency situations.

• **Establish climate-resilient design guidelines and performance parameters for asset upgrades.** The Cities will leverage robust asset datasets and flood risk modeling to establish design standards for the repair and replacement of transportation infrastructure that account for climate projections. To the extent practicable, all roads should be designed for a 20-year design life under the Intermediate sea level rise scenario, in addition to compounding effects from higher intensity storms and temperatures. Rail lines and bridges should consider a 50-year and 100-year design-life, respectively. Design guidelines will address pavement structure and materials, road elevation, and adjacent drainage capacity. As part of the design and performance



HIGH TIDE FLOODING, MARGINAL WAY • Photo by Ian Johnson

parameters, the Cities will set cost and performance thresholds for preventative upgrades, as well as cost thresholds for considering road decommissioning or rerouting. Where applicable, culverts and bridges will be redesigned to support marshland migration (see action CR 5.1).

• **Develop a phased investment approach for capital investments.** Using the scenarios generated through risk-based asset management, the Cities will work across Public Works Departments and Planning Departments in coordination with Maine Department of Transportation (MaineDOT) and the Greater Portland Council of Governments (GPCOG)/Portland Area Comprehensive Transportation System (PACTS) to develop a phased approach for transportation capital investments that aligns timeframes for road upgrades with climate risk. The phased investment approach would identify immediate needs, and risk thresholds for making decisions about future investments. It would also be an opportunity to use the scenarios to support decisions around land use planning and city growth to minimize repeated damage to road infrastructure. The goal of this approach will be to plan in a proactive, coordinated way, and to pace investments in transportation infrastructure, knowing that flood risks from

sea level rise will continue to intensify. This process will likewise involve collaborating with private transportation partners (rails and ferry terminals) to discuss climate projections and timelines for infrastructure upgrades in order to coordinate connecting infrastructure.

Our next steps

- ☐ Build out geospatial inventories; when complete, incorporate these inventories into flood-risk models and impact assessments for critical infrastructure focused on resilience, risk, and vulnerability.
- ☐ With asset management and geospatial systems in place, focus on vulnerability, criticality, and risk-based analyses of transportation assets.
- ☐ In collaboration with GPCOG/PACTS, establish a regular convening between regional transportation partners to discuss concerns and priorities for transportation system adaptation.

CR 4.4 Summary - Transportation Systems

PRIMARY COMPONENTS	How this strategy advances a future that is...		
	Equitable	Regenerative	Resilient
• Build out robust geospatial data to support modeling and predictions. • Model asset lifespans with consideration for climate hazards. • Establish resilience design guidelines and performance indicators. • Develop phased investment approach, influenced by climate risk.	a b c d	a b c d	a b c d (a) Reduces vulnerability (c) Adapts processes (d) Builds partnerships
	KEY MILESTONES • Climate hazards and resilience indicators applied to all asset management decision-making by 2028	CITY STEWARD - P: Public Works - SP: Finance Department, Public Works, Transportation Department	FINANCING MECHANISMS Impact fees, general fund

CR 5

Resilient

Ecosystems

MARSH, SAWYER ROAD • Photo by Denise Michaud

CR 5.1 Ecosystem Adaptive Management

ACTION: Strengthen ecosystem resilience through enhancing connectivity, biodiversity, and healthy habitat.

Where we are today

Environmental organizations and community groups, as well as Portland and South Portland’s respective parks and recreation departments, play a significant role in supporting ecosystem health in Portland and South Portland. Individually and in collaboration, these entities monitor environmental indicators; mitigate sources of pollution through policy, advocacy, and infrastructure upgrades; and protect biodiversity and habitat on land, in rivers and streams, and in Casco Bay. Through this work, we have already begun to assess the sources of ecosystem degradation that are intensifying with climate change: greater volumes of stormwater runoff are contributing to coastal acidification; sea level rise is contributing to loss of tidal wetlands; and changes in temperatures and precipitation

are allowing new invasive species and pests to thrive, while also causing native species to migrate northward to colder climates. To ensure that Portland and South Portland’s ecosystems can flourish in a changing climate, we will need to continue to restore and strengthen our ecological connectivity, biodiversity, and healthy habitats in ways that allow our ecosystems to evolve and adapt to new stresses over time.

And in turn, healthy ecosystems are vital assets in our ability to address climate change. Wetlands, for example, restore and regenerate ecosystem resilience by not only providing nesting grounds for birds and spawning habitat for fish, but by filtering stormwater pollution. They further protect our cities’ coastal

infrastructure by buffering wave action and reducing erosion, and they help to mitigate climate change by sequestering “blue carbon.” Blue carbon refers to the carbon captured in the ocean and coastal ecosystems, specifically. Although not as common in Portland and South Portland, sand dunes and beaches also play critical roles as natural buffers, protecting inland areas from coastal hazards while maintaining habitat and ecosystem function for species. Equivalent services and benefits can be attributed to the cities’ forests and freshwater wetlands, which also cycle nutrients, purify air and water, and sequester and store carbon. Thus, strengthening ecosystem resilience becomes integral to our efforts to both mitigate and adapt to climate change.

The action we will take

The Cities will continue to work with local environmental organizations to strengthen ecological connectivity, biodiversity, and healthy habitat in order to more aggressively buffer the cities’ ecological resources against climate change stresses. Strengthening these assets requires three types of action, implemented concertedly: 1) Reducing sources of pollution or degradation caused or intensified by climate change; 2) Strengthening ecosystems to withstand new stresses from climate change; and 3) Facilitating adaptation of ecosystems, including species compositions and distribution, to ensure that the cities’ natural systems can thrive under new climate conditions. As part of an adaptive management approach, Portland and South Portland will continue to monitor changes in ecosystem health over time and adjust the Cities’ land use and open space management practices accordingly. As part of this effort, Portland and South Portland will:

- **Facilitate tidal wetland migration to protect critical marine habitat, improve coastal resilience, and sequester blue carbon.** The Casco Bay Estuary Partnership has analyzed the distribution and extent of tidal wetlands in Portland and South Portland and noted areas in the cities where roads, railroads, and other structures alter the flow of water across tidal wetlands and degrade the resilience of marsh

ecosystems. Sea level rise is expected to further constrain and degrade these ecosystems. The Cities will use this information to inform future capital planning with the goal of increasing culvert sizes at these sites in conjunction with future road and infrastructure upgrades (to be completed in alignment with action CR 4.4). Likewise, the Cities will assess the areas along the coast where tidal marshes are expected to migrate inland to identify where it may be possible to acquire and conserve specific parcels of land as a living shoreline for inland marsh migration. As part of adopting resilience zoning overlays in the cities, we will consider implementing a hierarchy of land use for areas of the cities with the most extreme flood risk, which would prioritize the preservation of existing open space and acquisition of land for more natural floodplain over more development in these specific areas (see action CR 1.1).

- **Monitor intertidal and subtidal marine systems.** The Cities will partner with local institutions and organizations to assess the long-term stability and adaptive capacity of intertidal and subtidal zones through ecosystem level indicators of environmental change. Where landward migration of wetland systems is not possible due to geomorphology or human introduced restriction, Portland and South Portland will consider beneficial sediment management to encourage vertical migration in place of critical habitats such as beaches, mudflats, and eelgrass beds.

- **Develop biodiversity and connectivity goals and guidelines.** The Cities will collaborate with land trusts and conservation groups in the two cities to develop a set of goals and guidelines for expanding, managing, and cultivating ecosystem networks along multi-use trails and public rights of way, and across conservation land, parks, and other open spaces. The goals and guidelines will specify ways in which the Cities and organizations can collaboratively increase landscape connectivity to better facilitate species migration and dispersal; incorporate plant species that can best accommodate changes in the climate; and enhance biodiversity—all aspects that will strengthen the resilience of the cities’ ecosystems to pest outbreaks, invasive species, and new climate patterns. These goals and guidelines will further inform the Cities’ open space



BACK COVE LAND AND WATER ECOSYSTEMS • Photo by Corey Templeton

planning, comprehensive planning, technical manuals, green infrastructure guidelines, and upgrades to culverts and road design (see Actions CR 1.3, 4.2, and 4.4).

• **Monitor and manage pests and invasives.** In 2018, the South Portland Parks, Recreation, and Waterfront Department completed an *Invasive Plant Assessment and Management Plan*, documenting the prevalence of invasives throughout the city. The plan recommended management techniques, as well as first steps the City has taken to remove invasive species from trails and parks—a process supported by the help of South Portland Land Trust, community volunteers, and by using goats as a biological control. Drawing on successful approaches from this first phase, South Portland will outline concerted efforts to address invasives throughout the cities’ forests and areas that risk losing much of their native vegetation, such as Hinkley Park. The Portland Parks, Recreation, and Facilities Department is at the beginning stages of mapping out a comprehensive strategy for invasives management, while testing approaches in targeted key problem areas. Portland will work towards developing a

comprehensive plan to prioritize and earmark resources as part of a long-term and ongoing strategy for invasives removal and management. Both Portland and South Portland will work with land trusts and community organizations focused on the stewardship of open spaces to develop a coordinated system for monitoring ecosystem vulnerability and adaptive management across green space in the cities. This may include assessing public open spaces for ecosystem health, removing invasive plant species, and monitoring for pest outbreaks.

• **Mitigate coastal acidification through reducing stormwater pollution.** The carbon dioxide released into the atmosphere from burning fossil fuels is increasing ocean acidity, and compromising the health of marine species. Freshwater runoff further exacerbates acidification along the coast as stormwater and streams bring excess nutrients—such as nitrogen from fertilizer, pet waste, and wastewater—into the ocean, contributing to large algal blooms that further increase acidic conditions. Portland and South Portland will continue to work with local partners, including Friends of Casco Bay, to

reduce excess nutrients and pollution carried by stormwater into Casco Bay. In particular, building on the recently adopted pesticide ordinances (see action CR 5.2), South Portland and Portland will continue processes that are underway to research, develop, and adopt fertilizer ordinances aimed at reducing fertilizer application to further protect the health of the bay. See action CR 4.1 and CR 4.2 for how the Cities will also reduce pollutant loads through continuing to improve stormwater management and green infrastructure.

● **Curtail coastal erosion with living shorelines.** Living shorelines are a green infrastructure technique that use plants and other natural materials to protect and stabilize the shoreline. This approach provides an alternative to traditional “hard” shoreline stabilization techniques that protect property but overtime can result in a loss of protected natural resources. Several communities in Maine are turning to living shorelines to curtail erosion while maintaining species habitat, and may be applicable to coastal wetland habitats in both cities. South

Portland and Portland will begin by using the Living Shorelines Decision Support Tool for Casco Bay, developed by the Maine Geological Survey, to evaluate the potential suitability of locations in both cities for natural approaches to shoreline stabilization.

Our next steps

- ☐ Finalize and adopt the drafted fertilizer ordinance (South Portland); Continue the work of the Portland Pesticide and Fertilizer Task Force to draft and adopt a fertilizer ordinance, drawing on South Portland’s model (Portland).
- ☐ Continue to implement the invasive species management plan (South Portland), and develop a comprehensive plan for long-term management (Portland), in coordination with land trusts and community environmental groups.
- ☐ Begin a study of coastal land uses to understand the feasibility of preserving or acquiring and transitioning parcels for marsh migration.

CR 5.1 Summary - Ecosystem Adaptive Management

How this strategy advances a future that is...			
PRIMARY COMPONENTS	Equitable	Regenerative	Resilient
● Monitor and manage pests and invasives. ● Mitigate coastal acidification by reducing stormwater pollution. ● Develop biodiversity and connectivity goals and guidelines (in alignment with CR 1.3). ● Facilitate tidal wetland migration. ● Curtail coastal erosion with living shorelines.	a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships
	KEY MILESTONES	CITY STEWARD	FINANCING MECHANISMS
	● Fertilizer ordinance adopted by 2022 ● No net coastal wetland loss by 2035 ● Establish biodiversity and connectivity targets by 2028	P: Parks Division; Sustainability Office; Planning Department; Water Resources SP: Sustainability Office; Water Resources Protection; Parks, Recreation, & Waterfront; Planning Department	Impact fees (Portland), Land Bank Fund (South Portland), federal/ state grants (e.g., Maine Natural Resource Conservation Program funds, Maine Stream Crossing Upgrade Grant Program, Coastal Community Grants, 319 Grants)

ACTION: Build back the health of our soils for ecological vitality, water infiltration, and carbon sequestration.

Where we are today

Soils in the cities are critical for supporting ecosystems and for helping to buffer and purify pollutants. Healthy soils also have enormous potential to help cities address climate change by infiltrating stormwater, sequestering and storing carbon, and supporting plant growth. Portland and South Portland are already making efforts to increase soil health in the cities, including recently adopting pesticide ordinances to restrict the use of synthetic pesticides (which have been shown to kill beneficial soil microbes) for all lawns, gardens, and other outdoor landscapes. Nevertheless, centuries of industrial activity, infill, development, and other human activities that degrade soil cover have led to long-term loss of soil structure, contamination from the accumulation of heavy metals and organic pollutants (such as petroleum or pesticides), loss of soil depth, as well as the loss of soil enzymes and microbial activity needed to sustain ecological functions. Degraded soil stunts plant growth, weakens root structures, and has a lower capacity to infiltrate and store rainwater, creating more runoff and carrying higher pollutant loads into nearby water bodies. For all these reasons, improving the health of our soils, including increasing soil organic matter and microbial health, has the potential to increase the resilience of our cities and our ecosystems in ways that also increase quality of life for all residents.

The action we will take

Portland and South Portland will work with public and private partners in the cities to regularly and systematically measure

the health of the cities' soils based on microbial content, soil organic matter, soil structure, nutrient levels, and the presence of heavy metals and organic pollutants; set goals for improving the health of soils; and adopt landscape management practices to improve soil health on both public and private land. The Cities will initially pilot new land management practices on a number of public sites. After documenting a methodology with the best results, the Cities will expand these practices to open spaces throughout the cities, work with large institutional landowners to adopt new land management practices for improved soil health, and launch a campaign to encourage residents to improve the soil health of their gardens and lawns. The Cities will also move towards adopting post-construction soil standards to ensure future development and redevelopment continues to support our healthy soil goals.

Soil amendments, especially organic amendments including the application of compost, are a primary way to increase soil microbial content and soil organic matter—which are key to creating living, fertile ecosystems, improving soil structure, increasing the capacity of the soil to hold water, and for increasing soil carbon content. The Cities will work with researchers to develop high quality amendments focusing on compost. Key research targets will be compost composition targets for microbial content, nutrient balance, and other quality parameters to maximize the effectiveness of compost application on city-owned properties. Using these targets, Portland and South Portland will develop sources for compost, either by working with existing facilities to augment production



POPE PRESERVE • Photo by Maggie Burns

processes as needed, or through working with companies in the food service industry to provide fodder (such as spent grains from breweries) and producing the Cities' own compost that meets the given targets. These compost-based amendments would initially be used on the pilot sites with the potential to expand as applications expand.

There are a number of ways in which this One Climate Future action dovetails with other actions. Systematically measuring and tracking improvements in carbon sequestration and stormwater infiltration potential on public land are two components of how the Cities will integrate resilience goals into our open space planning and prioritization (see action CR 1.3). Improving water infiltration through improved soil health will also advance the Cities' goal of capturing and infiltrating the first inch of stormwater in any storm (see action CR 4.1). As part of the One Climate Future Waste Reduction actions, the Cities are looking to expand programs for organics recycling

(see action WR 1.3). This could be an additional source of feed stock for microbial-rich compost to support healthy soils.

The Cities will build on the pilot projects by expanding the healthy soils land management practices to public open spaces across the cities, and by working with landowners to adopt new practices on private land. The Cities will also consider adopting post-construction soil standards to ensure that soil health is increased as properties are developed or re-developed. Specifics of these methods may include:

- **Sharing the results of the pilot projects.** The Cities will include educational signs at the pilot sites to share the process and the progress of the soil's health over time. The sites can also become hands-on learning spaces for schools, neighborhood associations, and other community groups.

● **Launching “100 Resilient Lawns.”** After building out a source for compost that meets the Cities’ targets, Portland and South Portland would launch an initiative to transform 100 lawns within the cities to sites with healthy soil. This would be done through workshops, community demonstration projects, and creative ways for residents to share that they are part of Portland’s and South Portland’s “100 resilient lawns” to create interest and momentum around soil health.

● **Including initiatives for improving soil health in the Sustainable Neighborhoods Program (Portland).** The Sustainable Neighborhoods Program encourages residents within a neighborhood to work together to implement initiatives and achieve Sustainable Neighborhood certification (see action CR 2.5). Residents will be able to receive points for improving soil health in yards and gardens throughout their neighborhood using a set of recommended techniques.

● **Adopting post-construction soil health standards through a new City ordinance or zoning amendments.** Soil requirements may include provisions for required soil depth as well as specific requirements for soil organic matter

(SOM) content to be between 5% and 10%, depending on expected cover. Other jurisdictions have seen success through this approach, including King County, Washington and Vermont. The King County Post-Construction Soil Standard requires all areas that have been cleared or graded to have a soil moisture holding capacity restored to that of the original undisturbed native soil, and that any areas that have been compromised must be amended with compost, imported topsoil, or other techniques.¹³⁸

Our next steps

- ☐ Work with local soil experts and environmental organizations to develop a protocol for measuring and tracking soil health at pilot sites.
- ☐ Gather baseline data on the soil health of the pilot sites.
- ☐ Develop partnerships for sourcing or producing compost that meets specific quality standards.
- ☐ Drawing from successful models in other jurisdictions, draft post-construction soil standards for inclusion in City ordinance or zoning amendment.

CR 5.2 Summary - Soil Health

How this strategy advances a future that is...			
Equitable		Regenerative	Resilient
a b c d		a b c d (a) Draws down carbon (b) Restores ecosystems (c) Supports a circular economy	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships
PRIMARY COMPONENTS ● Adopt post-construction soil health standards. ● Pilot and monitor healthy soil land management practices. ● Share results and launch campaign to improve soil on private lawns.		KEY MILESTONES ● Post-construction soil health standards adopted for new construction or major renovations by 2025 ● “100 Resilient Lawns” achieved across both cities by 2028	CITY STEWARD P: Sustainability Office; Parks Division SP: Sustainability Office; Water Resources Protection; Parks, Recreation, & Waterfront
		FINANCING MECHANISMS Impact fees (Portland), Land Bank Fund (South Portland), private grants	

Implementation

The implementation matrix on pages 262 - 285 summarizes the One Climate Future strategies, including the timeline for implementation, targeted milestones to track progress, financing mechanisms, and city stewards for coordinating implementation. The matrix also reports the greenhouse gas emissions savings attributed to each strategy, where applicable, as well as metrics that evaluate each strategy's ability to support equitable, regenerative, and resilient cities.

All of these features contribute to the ongoing prioritization and successful implementation of the One Climate Future strategies.

► Key to reading the matrix

Timeline

-  **READY TO GO** - The action is ready to be implemented in the designated timeframe.
-  **READY TO GO, ONGOING IMPLEMENTATION** - Entails ongoing action to ensure the strategy is fully implemented in the designated timeframe.
-  **REQUIRES STATE ACTION** - Changes at the state level enable this action to proceed or move forward most effectively in the designated timeframe (e.g., policy must be passed at the state level).
-  **REQUIRES STATE ACTION, ONGOING IMPLEMENTATION** - Following enabling changes at the state level, the strategy entails ongoing action to ensure strategy is fully implemented over the designated timeframe.

Milestones

The milestones designate targets to hit by a specific date. When applicable to greenhouse gas emissions reductions, these milestones align with the energy and emissions modeling. It will be important to hit our milestones to meet our greenhouse gas reduction goals.

Greenhouse Gas Reductions

Greenhouse gas emissions reductions are reported cumulatively (total emissions saved over the course of 2020 - 2050), and specifically for the year 2050 for comparison with the baseline year (2017). Reductions are reported for actions that could be directly quantified; in some cases, the matrix reports the combined effect of several actions.

NIQ = Not independently quantified

NA = Not assessed

Financing

The ability to finance the implementation of the actions will be critical to the success of One Climate Future. Funding the transition to more resilient and low-carbon cities entirely by local property tax payers is not an option; such an approach would be both unsustainable and inequitable. Implementing the plan will require innovative financing mechanisms and strategic investments by the public and private sectors. Many such approaches have already been piloted by the Cities for sustainability investments.

The implementation matrix identifies potential financing mechanisms for each of the actions. Each of the four focus areas in One Climate Future present unique challenges and opportunities for funding, described in more detail below.

Buildings and Energy

Actions that improve energy efficiency and reduce greenhouse gas emissions generally have a co-benefit of reducing overall energy costs. This provides opportunities for property owners to harness energy savings to finance building envelope improvements, more efficient heating and cooling systems, and renewable energy deployments. Efficiency upgrades may also be eligible for rebates from Efficiency Maine that receive funding from the Regional Greenhouse Gas Initiative (RGGI) funds and benefit charges on utility bills. The One Climate Future plan includes advocacy for legislation that can open additional financial resources for municipalities, businesses, and property owners. These include Commercial Property Assessed Clean Energy (C-PACE) financing that allows property owners to partner with local governments to leverage municipal lien authority to secure private financing for energy projects. It also includes a statewide green bank that can support financing and revolving loan programs to fund sustainability related projects. Finally, purchasers of renewable energy may benefit from utility bill savings and the potential to sell renewable energy credits (RECs) for additional revenue that could support projects designed to meet our climate goals. The City of Portland's purchase of net energy bill credits following the passage of LD 1711 in 2019 exemplifies this approach. Once the associated projects come on line, the City will benefit from over \$500,000 of annual savings and the option to monetize RECs that could generate another \$500,000 of annual revenue.

How the strategy advances a future that...

This section evaluates the strategies based on their potential to advance a future that is equitable, regenerative, or resilient. Each quality is measured based on four metrics. See page 55 for a breakdown of the metrics.

City Steward

The City Steward is the city department responsible for the implementation of the action. In many cases, state, regional, or local partners will lead the work or serve as crucial partners; the City Steward will coordinate from the city-side.

Acronyms

See page 286 for a list of acronyms used in the matrix.

Waste Reduction

One Climate Future maps a path to a circular economy that will nearly eliminate waste in our cities by conserving resources, and reusing and repurposing products and materials. Such practices generate economic activity as local businesses take advantage of the opportunity to process, recycle, and add value to items that were formerly considered waste. Examples of this include resale and repair shops or businesses that recover building and construction materials to sell back to the market. One Climate Future further imagines extending programs such as Portland's purple bag trash collection program that charges residents based on the amount of waste they produce, which covers the costs of waste collection. This incentivizes people to reduce, reuse, and recycle while discouraging waste production—also saving the Cities money on tipping fees. Finally, the plan encourages efficiency and innovation in collection programs to reduce costs. For example, seeking ways to co-collect recyclables, waste, and organics to reduce the number of vehicles required to serve the public. This could ease the financial burden of these programs and reduce emissions by eliminating trucks from the collection routes.

Transportation and Land Use

Echoing Portland's Plan 2030, One Climate Future calls for the development of complete neighborhoods that contain opportunities for residents to live, work, and play close to home. Achieving this goal will require that we prioritize funding for transportation projects that will make such places accessible on foot, by bicycle, or by transit. This will require collaboration with neighboring PACTS communities and advocacy at the Federal, State, and regional level for increased funding for transit service and for an emphasis on transit-oriented development throughout the region. Fortunately, the seeds for this growth have been planted through ongoing work with the Greater Portland Council of Governments as demonstrated by the Transit Tomorrow plan and the ongoing implementation of the Portland and South Portland "smart corridor." The Cities also have the opportunity to ask private developers to assist in the creation of a cleaner, more active transportation system. Developers could be required to install bike storage, plant street trees, install EV charging infrastructure, or participate in traffic demand management programs in order to receive the necessary approvals from

each City. Impact fees could also offset municipal costs to improve the active transportation and transit systems. The Cities could also create tax increment financing (TIF) districts to create a funding stream to support the development of transit-oriented neighborhoods.

Climate Resilience

We know that Portland and South Portland will experience higher seas and more frequent storms that will damage public infrastructure and private property. Investing now in infrastructure upgrades and mitigation strategies makes good business sense. According to the National Institute of Building Sciences, every dollar spent to mitigate the impact of future disasters saves six dollars in the future by averting costly losses and rebuilding.¹³⁹ While that's a significant return, the problem of accessing the money needed to fund the initial investment remains. Many climate resilience strategies do not call for new capital projects, but instead will take advantage of existing upcoming projects such as road improvements and water system upgrades to integrate climate risk considerations into the project design. The incremental additional cost invested will extend the life of the project while minimizing the risk of future damage. The State and Federal governments will need to be partners in building local resilience through emergency preparedness grants and FEMA funding. Portland and South Portland will need to actively seek grant opportunities and advocate strongly for funding. The Cities also have opportunities to leverage impact fees so that developers can help bear the costs of improving public infrastructure. Finally, because private property owners stand to benefit from resilient infrastructure projects there are opportunities for collaborations between local governments, private property owners, and outside funders to develop and implement mutually beneficial projects. The planned Portland Harbor dredging project exemplifies this approach. It uses municipal contributions from Portland and South Portland and investments by private pier owners to leverage significant federal grant money to fund the project to ensure the viability of piers.

Descriptions of the financing mechanisms discussed above and included in the matrix are summarized on the following page.

Financing terms and definitions

Financing Terms	Description
Auction Revenue	Revenue from auctions of allowances on carbon markets like the Regional Greenhouse Gas Initiative (RGGI).
Battery-leasing	Battery leasing lowers the upfront costs of an electric transit bus by decoupling the cost of the battery from the cost of the electric transit bus. Through battery leasing, municipalities and transit agencies can purchase a battery-electric transit bus for roughly the same price as a conventional diesel- or natural gas-powered bus. Bus operators can then use funds earmarked for fuel costs to cover the battery lease.
Bonds	Municipalities can issue bonds to investors to raise capital for projects with the promise to repay with a level of certainty over a certain time period and with a certain return; bonds may require voter approval. Bond types vary and include Lease Revenue Bonds, Social Impact Bonds, and General Obligation Bonds.
Climate Mayors Electric Vehicle Purchasing Collaborative	The Climate Mayors is a peer-to-peer network of U.S. mayors working together to demonstrate leadership on combating climate change. The Climate Mayors Electric Vehicle Purchasing Collaborative is a procurement platform for electric municipal fleet vehicles that pools the purchasing power of cities to negotiate lower prices on EVs and charging infrastructure, and to offer municipal leasing programs.
Cost Recovery (by Utility)	Utilities can recover costs through rate increases with Public Utilities Commission approval.
Customer Benefit Charges / Public Benefit Funds	Customer benefit charges are additional surcharges added to utility bills, which go into a public benefit fund that can fund energy efficiency programs or other specialized programs.
Demand Aggregation	Group purchasing allows individuals, businesses, and municipalities to greatly reduce the cost of installing clean energy capacity through collective purchasing power.
Developer Impact Fees	Developer impact fees are assessments to developers to offset the impacts of development (e.g., externalities such as traffic congestion or lack of affordable housing). Establishing impact fees requires a study; the developer can only be charged the amount related to the proportional impact of the development.
Efficiency Maine	Efficiency Maine Trust (Efficiency Maine, or EMT) is the primary administrator for statewide programs to improve energy use efficiency and reduce greenhouse gas emissions in homes and businesses throughout Maine.
Energy Efficiency Incentives	Energy efficiency incentives refer to rebates and other incentives offered by a utility company or a state-designated entity for energy efficiency measures that result in quantifiable savings. In Maine these are provided through Efficiency Maine.
ESCO (Energy Service Company)	An energy service company (ESCO) is a commercial or non-profit business providing a broad range of energy solutions including design and implementation of energy savings projects, retrofitting, energy conservation, energy supply, and risk management. The client (such as the City) continues to pay the same amount of utility costs for a set period of time, but to the ESCO instead, and the ESCO implements measures that save energy, pays the now lower utility bills, and profits from the delta.

Fine Revenue	Fine revenue is money generated from penalty fees (fines) issued by the City. Fines are often for violation of local ordinances such as parking or building code violations.
Grants, Public (Federal and State)	Federal or state grants are non-repayable funds allocated through programs to support specific goals. Oftentimes federal funding is allocated through state agencies or a Municipal Planning Organization (MPO). The Portland Area Comprehensive Transportation System (PACTS) is the MPO for the Greater Portland region. Federal funding options are likely to change substantially if a new administration is elected in 2020.
Grants, Private	Private grants are non-repayable funds allocated by grant-making institutions such as community or family foundations.
General Fund	The general fund is a government's basic operating fund. Property taxes are a primary source of revenue for the general fund.
Green Bank / Infrastructure Bank	Infrastructure banks and green banks are public (or quasi-public) financial institutions, often established at the state level, that use public funds to leverage private investment to finance infrastructure projects (e.g., via direct loans at low-interest rates, bond issuances, and credit and loan guarantees). Green banks, in particular, provide low-cost financing to advance the widespread deployment and scaling up of clean energy technologies.
Municipal Lease Purchasing	Through a municipal lease-purchase program, local governments can use general funds rather than bonds to acquire vehicles through a lease-to-own program. Interest is tax-exempt, offering Cities significant savings over a traditional lease. Municipal lease purchasing is usually facilitated through a municipal leasing company.
On-Bill Financing	On-bill financing allows for property owners to pay for clean energy upgrades through their utility. The utility incurs the cost of the clean energy upgrade, and the property owner repays the utility over time through their utility bill, offering a streamlined and simple way to pay for energy investments.
PPA (Power Purchase Agreement)	A power purchase agreement (PPA) is a contract between an energy developer or project owner and a buyer (such as the City) for the long-term purchase of electricity (typically 10-25 years). The project owner designs, permits, installs, owns, and maintains the project for the duration of the contract, and sells the electricity to the buyer at a competitive fixed rate.
PACTS (Portland Area Comprehensive Transportation System)	The Portland Area Comprehensive Transportation System (PACTS) is a federal metropolitan planning organization (MPO) that coordinates transportation planning and investment decisions for the Greater Portland area. PACTS works with the Maine Department of Transportation (MaineDOT) to allocate Federal Transit Administration and Federal Highway Administration funds in the PACTS Capital Management Area.
PACE (Property Assessed Clean Energy Financing)	Property Assessed Clean Energy (PACE) financing programs allow property owners to finance the upfront costs for sustainable energy investments and repay over time (usually 10-20 years) through property assessments, paid through their property tax bill. This financing method allows the clean energy loan to be attached to the property, and to transfer to the new owner when a property is sold. Commercial PACE (C-PACE) programs apply to commercial, industrial, and multi-family property owners; residential PACE (R-PACE) programs apply to all other residential properties.

Performance-Based Procurement	Performance-based procurement is a method for soliciting design and construction services for new City buildings or substantial retrofits that establishes a maximum budget, minimum performance targets, and ideal performance targets. This type of procurement process allows projects to achieve the highest feasible performance targets without increasing costs.
Public-Private Partnership	Public-private partnerships (PPPs) are agreements between the public and private sector for the delivery of services to the public. PPPs bring together the needs of the City with private market expertise and resources to achieve a common goal.
RGGI (Regional Greenhouse Gas Initiative)	The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort between ten northeast states, including Maine, to cap and reduce carbon dioxide emissions from the power sector. RGGI states set a regional “budget” (or cap) for greenhouse gas emissions, which gradually declines over time, and states sell allowances to emit greenhouse gases up to that cap. The proceeds from the auctions are invested in energy efficiency, renewable energy, and other consumer benefit programs.
“REC (Renewable Energy Certificates) / SREC (Solar Renewable Energy Certificates)”	Renewable energy certificates (RECs) are a financial instrument that captures the environmental value of a MWh of renewable electricity. RECs are used for accounting, tracking, and assigning ownership to the generation and use of renewable energy, and support the costs of installing those renewables. Solar renewable energy certificates (SRECs) are RECs specific to the generation of solar power, and are distinct and higher-value in some markets.
Revolving Loan	A revolving loan fund is a self-replenishing pool of money, utilizing interest and principal payments on old loans to issue new ones. It is a common gap financing measure used for development and expansion of businesses or initiatives within a particular focus area.
Settlement Funds	Settlement funds are a source of money from a legal settlement. The Volkswagen (VW) settlement, whereby VW agreed to pay \$14.7 billion to settle allegations of cheating vehicle emissions standards, are a major source of transportation funding allocated to states to support emissions-reducing transportation investments.
Special Assessments	Special assessments add (“assess”) an additional tax on property owners or businesses within a specific geographic area, or “Special Assessment District,” in order to finance public improvements within that district. Business Improvement Districts (BIDs) are a type of Special Assessment District.
Tax Credits	Tax credits are provided by federal, state, or local governments and allow residents or businesses to subtract a certain portion of tax owed in order to incentivize investments (such as the purchase of an electric vehicle).
(TIF) Tax Increment Financing	Tax increment financing (TIF) is a public financing method used to support redevelopment or public infrastructure investments, and often serves as a source of gap financing for projects. In a TIF district, municipalities use (divert) the expected future gains in property taxes spurred by a development or redevelopment project to finance the improvements that will create those increases in property value. Transit-oriented development (TOD) TIF districts use the future increases in value to fund transportation improvements and service in a specific area.
User Fees	User fees are payments to a local government (or other entity) for a service, such as waste collection.

One Climate Future IMPLEMENTATION MATRIX

The matrix below summarizes key details for implementing the One Climate Future strategies, including timeline, funding mechanisms, and milestones for hitting our climate targets. See page 256 for a key for reading the implementation matrix.

Buildings & Energy

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
BE 1 Municipal Buildings and Energy Supply						
BE 1.1	Renewable Municipal Electricity Pursue power purchase agreements (PPAs) to reach 100% renewable energy for city facilities ahead of state renewable portfolio standard (RPS) schedule.	a. Complete bulk solar power purchases currently underway.	●			● All municipal electricity use met by renewable energy by 2032
		b. Engage in further contracts to meet remaining municipal demand.		●		
BE 1.2	Net-Zero Energy New City Buildings Pursue net-zero energy (NZE) buildings for new city government buildings through performance-based procurement.	a. Use performance-based procurement for next City building.	●			● All newly constructed or gut-rehabbed city buildings to be NZE or NZE-ready starting in 2026
		b. Adopt NZE-ready (and NZE where possible) for all new City buildings.		●	●	
BE 1.3	Energy Efficiency Retrofits for City Buildings Develop a strategic energy management plan (SEMP) for all city facilities and lead by example by pursuing deep energy retrofits and electrification for large existing city buildings.	a. Benchmark and conduct annual quality control review of use data for buildings.	●	●	●	● SEMPs commissioned by 2025 ● Deep energy retrofits underway by 2026 ● All retrofits to be NZE by 2030
		b. Commission SEMPs for all city buildings.	●			
		c. Conduct deep energy retrofits for city buildings.		●	●	
BE 1.4	Internal Carbon Pricing for Municipal Construction and Operations Create either a shadow carbon price for evaluating all city decisions, and/or an internal carbon charge paid to a central climate emergency fund.	a. Conduct carbon price feasibility assessment to set appropriate price.	●			● Municipal shadow carbon price or carbon charge implemented by 2026
		b. Implement shadow carbon price or internal carbon charge.		●		

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation	
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward
Section Total	Section %	Action Total	Section Total	Action Total					
BE 1 Municipal Buildings and Energy Supply									
204,169	1%	110,421	9,102	1,930	a b c d	a b c d (a) Draws down carbon	a b c d (d) Builds partnerships	Power purchase agreements (PPA), existing electricity budget, REC/SREC value	P: Sustainability; Finance SP: Sustainability; Finance
		20,707		2,143	a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability	Performance-based procurement	P: Sustainability; Facilities SP: Sustainability; Facilities
		73,041 (includes TLU 3.5)		5,029 (includes TLU 3.5)	a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability	ESCOs, bonds, general fund, Efficiency Maine incentives	P: Sustainability; Facilities SP: Sustainability; Facilities
		NIP		NIP	a b c d (a) Addresses injustice - if implement internal carbon charge	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability (c) Adapts processes	N/A	P: Sustainability; Finance SP: Sustainability; Finance

Buildings & Energy

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
BE 2 New Construction Energy Efficiency and Decarbonization						
BE 2.1	Energy Stretch Code Advocate for an advanced energy stretch code with an optional net-zero energy compliance path, and adopt the stretch code once finalized.	a. Adopt the energy stretch code when finalized.				- Energy stretch code adopted immediately upon finalization - All new buildings to be net-zero energy starting in 2030
		b. Conduct city code review to identify conflicts with MUBEC/ stretch code.				
		c. Advocate for/adopt future stretch code with a pathway to NZE buildings.				
BE 2.2	Solar-Ready and EV-Ready Code Requirements Adopt or advocate for solar-ready and EV-ready requirements for new construction, followed by renewable energy generation building code requirements.	a. Adopt EV-ready and solar-ready requirements in land use code.				- EV-ready / solar-ready requirements to be implemented by 2028 - On-site solar requirements to be implemented by 2032
		b. Advocate for EV-ready and solar-ready requirements in MUBEC/stretch code.				
		c. Advocate for on-site solar requirements, or adopt via land use code.				
BE 2.3	Code Enforcement Ensure code compliance in all buildings through increased investment in robust code enforcement.	a. Hire (at least one) staff person or consultant to review energy models.				At least one staff person or consultant hired to review energy models by 2026
		b. Assess suitability / implement third-party code enforcement program.				
BE 2.4	Leadership and Education Partner with organizations in the building sector to develop and promote platforms for education and leadership in high-performance buildings.	a. Work with industry partners to develop /promote leadership/education platforms.				One or more platforms for high-performance building leadership and education launched by 2024
		b. Establish and award Mayor’s OCF recognition for climate leadership.				
BE 3 Existing Buildings Energy Efficiency and Decarbonization						
BE 3.1	Energy Benchmarking Expand Portland and South Portland’s energy benchmarking programs, and couple with outreach programs to turn energy savings opportunities into action.	a. Implement current benchmarking law.				80%+ compliance achieved within 2 years of utility data access challenges resolved (see BE 5.2), ideally by 2025
		b. Work with PUC/CMP to overcome limitations in data access.				
		c. Expand the program to citywide and/or to include smaller buildings.				
		d. Develop outreach and training program to further encourage retrofits.				
BE 3.2	Building Performance Standards Incorporate tune-up or performance standards into the Cities’ benchmarking programs for large buildings by 2025 to achieve carbon savings, and strengthen coordinated job-training programs to support building retrofits.	a. Conduct analysis and stakeholder process to identify GHG standards.				Performance standards identified within 2 years of fully implemented benchmarking (BE 3.1) with requirements adopted in following year
		b. Implement performance requirements for large existing buildings.				
		(+ actions to support job/skills training captured by other strategies - see text)				
BE 3.3	Energy Efficiency Spending Expand statewide and local energy efficiency spending; advocate for changes in Efficiency Maine spending that remove barriers for fuel switching.	a. Advocate for funding via Energy Efficiency Resource Standard (etc.).				By 2025, Efficiency Maine spending is equivalent to 5% of total electric sales and 2% of residential natural gas sales
		b. Advocate for fuel-neutral metrics to support beneficial electrification.				
		c. Advocate for the creation of a Maine State Green Bank.				
BE 3.4	Renewable Heating and Cooling Launch program to shift single family homes and larger multifamily and commercial buildings from fuel oil directly to all-electric heating and cooling.	a. Launch electrification incentive program, following review and research.				- Electrification incentive program launched by 2023 - Oil tanks to be code compliant or decommissioned by 2028
		b. Adopt legislation to require code compliant tanks (or decommissions).				

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation			
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward		
Section Total	Section %	Action Total	Section Total	Action Total							
BE 2 New Construction Energy Efficiency and Decarbonization											
578,672	2.9%	578,672	38,116	38,116	a b c d	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability	Codes are generally designed to be cost effective; See code enforcement for City resources to support stretch code adoption	P: Sustainability; Planning; Code Enforcement SP: Sustainability; Planning; Code Enforcement		
		See BE 3.6			See BE 3.6	a b c d	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d	VW settlement funds/ Efficiency Maine funding (EV-ready); Solar-ready can be implemented with no added cost. <i>Future: Federal funding</i>	P: Sustainability; Planning SP: Sustainability; Planning	
		NIQ			NIQ	a b c d (a) Addresses injustice - against substandard housing	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability (c) Adapts processes	Impact fees, special assessments, fine revenue, utility funding (through Efficiency Maine or utility cost recovery with EERS)	P: Permitting & Inspections SP: Code Enforcement	
		NIQ			NIQ	a b c d	a b c d (a) Draws down carbon (c) Supports a circular economy (d) Builds shared wealth	a b c d (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	Private grants, state/ federal grants, public-private partnerships	P: Sustainability SP: Sustainability	
BE 3 Existing Buildings Energy Efficiency and Decarbonization											
5,372,806	26.9%	518,541	359,635	76,026	24,310	a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability	Utility cost recovery (investments in data access); Efficiency Maine funds and/or public/private grants (retrofit accelerator)	P: Sustainability SP: Sustainability	
		1,225,917				76,026	a b c d (b) Expands access	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (c) Adapts processes	ESCOs, on-bill financing, revolving loan funds, Efficiency Maine incentives, Residential PACE <i>Future: green bank, C-PACE financing</i>	P: Sustainability SP: Sustainability
							a b c d (b) Expands access	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities	Existing utility revenue, utility cost recovery (EERS); expanded customer benefit charges	P: Sustainability SP: Sustainability
		2,800,102				204,056	a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability	State incentives, Efficiency Maine funding, Residential PACE loans <i>Future: Federal funding</i>	P: Sustainability SP: Sustainability

Buildings & Energy

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
BE 3.5	Bulk Buy Programs Launch bulk buy programs for solar power and heat pumps, paired with electric vehicles as appropriate.	a. Launch bulk buy program.				• Bulk buy program launched by 2023
BE 3.6	Solar Proliferation Strategy Continue to enhance the attractiveness of solar through a solar proliferation strategy, as well as offering financial and/or structural incentives.	a. Reduce permit times and fees for solar installations.				• Solar proliferation strategy launched by 2023 • 50 MW of solar installed in the cities by 2030 and 245 MW of solar installed by 2050
		b. Launch solar proliferation strategy.				
BE 3.7	Energy Efficient Rental Housing Require minimum energy efficiency standards for residential rental properties to decrease energy use, increase thermal comfort, and reduce energy costs paid by renters.	a. Require Maine Energy Disclosure Statement in rental registration.				• Determination of whether to proceed with a minimum energy efficiency rental standards program by 2026
		b. Assess costs/benefits of minimum energy efficiency standards.				
		c. Implement minimum energy efficiency rental standards program.				
BE 4 Industrial Energy Efficiency and Decarbonization						
BE 4.1	Industrial Energy Efficiency Spending Advocate for expanded energy efficiency incentives for large industrial users.	a. Advocate for increased industry efficiency spending.				• Automatic industrial opt-out provision removed by 2028
BE 4.2	Industrial Efficiency and Decarbonization Study Advocate for a statewide study on energy efficiency and decarbonization opportunities in the industrial sector to better target industrial combined heat and power, heat recovery, and renewable fuel oil or biogas.	a. Advocate for industrial efficiency study, led by Efficiency Maine.				• Industrial efficiency and decarbonization study completed by 2025
		b. Use study findings for targeted promotion to industrial partners.				
		c. Ensure custom industrial programs are working on heat recovery applications.				
BE 5 Clean and Renewable Energy Infrastructure and Regulatory Transformation						
BE 5.1	Renewable Portfolio Standard and Community-Scale Purchasing Continue to advocate for full, timely, and cost-effective implementation of Maine’s renewable portfolio standard; in case it becomes necessary, advocate for municipal authority to bulk procure renewable power.	a. Advocate for full, timely, and cost-effective implementation of the RPS.				• Electricity to be 80% renewable by 2030 and 100% renewable by 2050
		b. Advocate for creation of a Maine Energy Generation Authority.				
BE 5.2	Utility Data Access Reform Reform data access by pursuing legislation that would require utilities to disclose data with building owners and municipalities.	a. Advocate for improved access to utility data.				• Access to whole building and citywide data by 2024 • Access to automated data connections by 2024
BE 5.3	Utility Regulatory Reform to Support Electrification Advocate for regulatory reforms to support state-wide electrification and the integration of distributed energy resources (DER).	a. Advocate for utility regulatory reforms to support DER.				• Continue to build on 2020 legislative initiatives

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation	
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward
Section Total	Section %	Action Total	Section Total	Action Total					
(see above value)	(see above value)	NIQ	(see above value)	NIQ	a b c d (b) Expands access	a b c d (a) Draws down carbon	a b c d	Demand aggregation	P: Sustainability SP: Sustainability
		828,246 (counted within BE 5 in wedge results)		56,474 (counted within BE 5 in wedge results)	a b c d (a) Addresses injustice (b) Expands access (d) Builds community ownership	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships	Special assessments, utility-supported funding (for permitting changes); PPAs, SREC revenue, or grants (for solar proliferation strategy)	P: Sustainability; Planning SP: Sustainability; Planning
		NIQ		NIQ	a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities	General fund (for study of minimum efficiency standards)	P: Housing SP: Sustainability
BE 4 Industrial Energy Efficiency and Decarbonization									
753,726	3.8%	753,726	66,144	66,144	a b c d	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d	Customer benefit charges assessed to industrial users	P: Sustainability SP: Sustainability
		NA		NA	a b c d	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability	Customer benefit charges assessed to industrial users, utility funds	P: Sustainability SP: Sustainability
BE 5 Clean and Renewable Energy Infrastructure and Regulatory Transformation									
7,247,418	36.3%	7,247,418	333,004	333,004	a b c d (b) Expands access	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (d) Builds partnerships	N/A (existing state law)	P: Sustainability SP: Sustainability
		NIQ		NIQ	a b c d	a b c d (a) Draws down carbon	a b c d (c) Adapts processes	Utility cost recovery	P: Sustainability SP: Sustainability
		See BE 3-4		See BE 3-4	a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability (c) Adapts processes	Utility cost recovery	P: Sustainability SP: Sustainability

Buildings & Energy

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
BE 5.4	Renewable District Energy Systems Identify opportunities and encourage the development of fully electric low temperature thermal district energy systems for new and existing developments and campuses.	a. Advocate for regulatory updates to enable use of microgrids.	●			● All new development over 50,000 square feet to evaluate district energy/microgrids starting within one year of microgrid enabling legislation
		b. Work with existing campuses to explore microgrids / district energy.		●	●	
		c. Adjust zoning to encourage microgrids / renewable district energy.		●		
BE 5.5	Electrical Transmission and Distribution Improve the efficiency and capacity of transmission and distribution networks to improve electricity supply to Portland and South Portland.	a. Undertake hosting capacity study with regional partners.	●			● Hosting capacity study launched by 2025
		b. Land bank and zone for expanded energy infrastructure.		●		
		c. Update full electrification study, accounting for efficiency.		●		
BE 5.6	Natural Gas Phase-Out Advocate for a state-level ban on new intrastate natural gas pipelines and any state support for interstate gas pipelines, and advocate for allowing local jurisdictions to limit new and expanded natural gas connections.	a. Advocate for / support a just plan for transitioning to clean heating.	●	●	●	● A just plan for clean heating developed by 2025 ● Statewide restrictions on new interstate and intrastate gas pipelines in place by 2030, along with defined timeframes for phasing out natural gas
		b. Advocate for ban on new interstate / intrastate natural gas pipelines.	●			
		c. Advocate for state support in repurposing fossil fuel infrastructure.		●		
		d. Investigate legal authority / ban natural gas hookups in new construction.		●		
BE 5.7	Carbon Pricing Continue to advocate for carbon pricing at national, regional, and statewide scales.	a. Work with state partners to advance statewide carbon fee.			●	● Price on carbon as soon as feasible at national, regional, or statewide scale

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation	
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward
Section Total	Section %	Action Total	Section Total	Action Total					
(see above value)	(see above value)	NA	(see above value)	NA	a b c d	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability	For developers, costs built into the existing project funding; For campuses, systems pay for themselves in utility cost savings/maintenance savings.	P: Sustainability; Planning SP: Sustainability; Planning
		NIQ		NIQ	a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability	Utility cost recovery	P: Sustainability; Planning SP: Sustainability; Planning
		See BE 3.4		See BE 3.4	a b c d (a) Addresses injustice (b) Expands access - via just plan for transition	a b c d (a) Draws down carbon	a b c d	Public Utilities Commission / state funds (for study)	P: Sustainability; Corporation Counsel SP: Sustainability
		NIQ		NIQ	a b c d (a) Addresses injustice - if funds are progressively redistributed	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (c) Adapts processes	N/A	P: Sustainability SP: Sustainability

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
WR 1 Residential and Commercial Waste						
WR 1.1	Save-As-You-Throw Expand a save-as-you-throw system to South Portland.	a. Conduct community educational campaign on SAYT (South Portland).				● Implement SAYT program in South Portland by 2026
		b. Implement SAYT model in South Portland (South Portland).				
WR 1.2	Single-Stream Recycling Mandate recycling for commercial and multifamily buildings.	a. Increase recycling outreach/education in collaboration with ecomaine.				● Require recycling in commercial and multifamily residential buildings by 2026
		b. Adopt ordinance requiring commercial and multifamily recycling.				
WR 1.3	Food Waste Reduction and Organics Recycling Expand programs to divert food waste and increase organics recycling rates to ensure that excess food is better used to nourish people, animals, industries, and soils.	a. Advocate for statewide mandatory organics recycling.				● Reduce food waste in trash streams 70% by 2040
		b. Implement mandatory commercial/institutional organics recycling citywide.				
		c. Move toward curbside collection of residential food waste.				
WR 1.4	Single-Use Plastics Ban select single-use plastics and identify partnerships to reduce plastic waste.	a. Advocate for statewide restrictions on single-use plastics.				● Eliminate single-use plastics in the cities to the fullest extent practicable by 2026
		b. Advocate for extended producer responsibility bill in the state.				
		c. Partner with retailers and food establishments to reduce plastic use.				
WR 1.5	Circular Sharing Economy Foster a circular sharing economy.	a. Strengthen or expand community spaces for resource sharing.				● Ongoing efforts to establish new spaces, programs, or initiatives in each city that support resource sharing, re-use, or repair
		b. Support re-use, rental, and repair businesses, fairs, and workshops.				
		(+ numerous actions captured by other strategies - see text)				
WR 2 Construction, Industrial, and Municipal Waste						
WR 2.1	Construction and Demolition Waste Reduce construction and demolition waste through targeted re-use initiatives.	a. Advocate for state policy and expansion of reuse/recycling facilities.				● Adopt C&D waste reduction targets and ordinance by 2035
		b. Draft report assessing baseline waste reduction/reuse practices and goals.				
		c. Engage construction sector on development of ordinance and training.				
		d. Adopt C&D waste ordinance.				
WR 2.2	Industrial Waste Work with state and regional partners to encourage “by-product synergy” with industrial waste streams.	a. Work with state partners to explore online materials marketplace.				● Regional materials marketplace launched by 2035

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation		
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward	
Section Total	Section %	Action Total	Section Total	Action Total						
WR 1 Residential and Commercial Waste										
686,045	3.4%	686,045	42,272		a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d	User fees	P: N/A SP: Sustainability; Public Works		
					a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d			User fees, savings from reduced waste hauling, revenue from selling recycling (contingent on market)	P: Sustainability SP: Sustainability
				a b c d (b) Expands access - through excess food redistribution	a b c d (a) Draws down carbon (b) Restores ecosystems (c) Supports a circular economy (d) Builds shared wealth	a b c d (a) Reduces vulnerability (d) Builds partnerships				
		NA	NA		a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems (c) Supports a circular economy	a b c d (d) Builds partnerships	Grants or public-private partnerships (for partnerships with retailers and food establishments)	P: Sustainability SP: Sustainability	
					a b c d (b) Expands access (d) Builds community ownership	a b c d (a) Draws down carbon (c) Supports a circular economy (d) Builds shared wealth	a b c d (b) Strengthens communities (d) Builds partnerships	Grants, partnerships (see also CR 2.5)	P: Sustainability; Economic Development SP: Sustainability; Economic Development	
WR 2 Construction, Industrial, and Municipal Waste										
13,998	0.1%	NA	1,024	NA	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d	User fees, general funds (for enforcement and contractor training), State funding (for statewide program investment, facilities)	P: Sustainability; Public Works SP: Sustainability; Public Works		
		NA		NA	a b c d (a) Draws down carbon (c) Supports a circular economy (d) Builds shared wealth	a b c d (d) Builds partnerships			Grants, public-private partnerships (for marketplace sponsorship/start-up costs), user fees	P: Sustainability; Economic Development SP: Sustainability; Economic Development

Waste Reduction

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
WR 2.3	Wastewater Emissions Investigate options for reducing emissions of wastewater treatment with anaerobic digestion.	a. Commission engineering feasibility study for anaerobic digestion w/partners.				• Engineering feasibility study commissioned by 2032
WR 2.4	Sustainable Purchasing Policy Adopt a sustainable purchasing policy for municipal procurement.	a. Adopt sustainable purchasing policy and guide for City procurement.				• Sustainable purchasing policy adopted by 2024

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation	
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward
Section Total	Section %	Action Total	Section Total	Action Total					
(see above value)	(see above value)	13,998	(see above value)	1,024	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Draws down carbon (c) Supports a circular economy	a b c d (a) Reduces vulnerability	ESCOs, Efficiency Maine funding, revolving loan funds (e.g., Clean Water State Revolving Loans)	P: Sustainability; Water Resources SP: Sustainability; Water Resources Protection
		NA	(see above value)	NA	a b c d (a) Addresses injustice - with inclusion of social sustainability	a b c d (a) Draws down carbon (b) Restores ecosystems (c) Supports a circular economy (d) Builds shared wealth	a b c d	N/A	P: Sustainability; Finance SP: Sustainability; Finance

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
TLU 1 Mode Shift and Land Use						
TLU 1.1	Public Transit Networks Support efforts to “Make Transit Easier,” “Expand Local Connections,” and “Introduce Rapid Transit” in alignment with the Transit Tomorrow vision for the PACTS region.	a. Advocate for/implement coordinated measures between transit agencies.	●	●		● Roll-out of coordinated measures (portal, schedules, etc.) by 2025 ● All specified upgrades to transit stops implemented by 2028 ● METRO and SPBS achieve carbon neutrality by 2040
		b. Advocate for increases in state funding for multimodal transportation.	●	●		
		c. Improve safety and accessibility of transit stops.		●		
		d. Invest in roadway design advantages for buses along transit routes.		●		
		(+ numerous actions captured by other strategies - see text)				
TLU 1.2	Inclusive Transit-Oriented Development Strengthen the Cities’ transit-oriented development nodes to support travel by walking, biking, and public transportation.	a. Assess potential locations for TOD development (South Portland).	●			● Policy pathways for strengthening TOD nodes outlined in comprehensive plan by 2024 (South Portland) ● New/updated TOD TIF districts implemented by 2026
		b. Conduct assessment of barriers and mechanisms to promote desired transit.	●			
		c. Update comprehensive, land use, capital improvement plans w/ TOD policy.	●			
		d. Examine capital investments and land use policy changes to facilitate TOD.		●		
TLU 1.3	Bike Accessibility Make biking easier through a complete network of bikeways and through building an inclusive biking culture.	a. Develop and implement plans for complete bikeway networks.	●	●	●	● Bikeway network plan completed and implementation begun by 2026 ● 5% of all trips completed by bike by 2040
		b. Launch initiative for advancing an inclusive biking culture.	●			
		c. Expand bike parking and storage facilities.		●		
		d. Reevaluate potential for a bikeshare program.		●		
TLU 1.4	Complete Streets Create safer and more accessible travel for people of all ages and abilities by all modes of transportation by adopting “Vision Zero” for the PACTS region and continuing to expand complete streets.	a. Draft “Vision Zero” policy statement and set metrics for tracking progress.	●			● Complete streets design manual produced by 2025
		b. Develop complete streets design manual; align city ordinances and plans.	●			
		c. Launch “adopt-a-sidewalk” program.		●		
		d. Complete the build-out of complete streets along the Smart Corridor.			●	
TLU 1.5	Employer Transit Partnerships Partner with PACTS, GO MAINE, and large public and private employers in the cities to continue to promote more efficient or zero-emissions commuting and to establish a transportation management association (TMA) for the Greater Portland region.	a. Convene working group for development of a Greater Portland TMA.	●			● Working Group for TMA convened by 2024 ● TDM plans updated/ adopted by 2026
		b. Produce transportation demand management (TDM) toolkit.	●			
		c. Assess methods to reduce SOV trips made by municipal staff.	●			
		d. Update (Portland) or adopt (South Portland) TDM plan ordinance.		●		
TLU 1.6	Parking Shift existing incentives that continue to lead to more parking demand and supply to instead facilitate and strengthen multimodal transportation options.	a. Pilot adjustments to parking pricing and demand-based pricing.	●			● Zoning ordinances revised with new parking requirements by 2028.
		b. Revise zoning to provide flexibility for parking minimums / explore maximums.		●		

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation	
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward
Section Total	Section %	Action Total	Section Total	Action Total					
TLU 1 Mode Shift and Land Use									
1,151,719	5.8%	N/A	61,089	N/A	a b c d (a) Addresses injustice (b) Expands access	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships	Bonds, TOD tax increment financing (TIF), federal/PACTS funding, impact fees (Portland), general funds. <i>Future: Infrastructure bank, expanded state funding for Multimodal Transportation Fund</i>	P: Planning; Public Works SP: Planning; Public Works; South Portland Bus Service
					a b c d (b) Expands access (c) Creates inclusive processes	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (b) Strengthens communities (c) Adapts processes	TOD tax-increment financing (TIF); structural incentives (e.g., density bonuses, proactive redevelopment), federal/state grants (e.g., HUD SCRP Grants)	P: Planning; Public Works SP: Planning; Public Works
					a b c d (b) Expands access (c) Creates inclusive processes	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (b) Strengthens communities (d) Builds partnerships	TOD tax increment financing (TIF), bonds, federal funding (e.g., Recreational Trails Program). <i>Future: infrastructure bank, Multimodal Transportation Fund</i>	P: Planning; Public Works SP: Planning; Public Works; Sustainability
					a b c d (a) Addresses injustice (b) Expands access	a b c d (a) Draws down carbon (b) Restores ecosystems (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	TOD tax increment financing (TIF), bonds, federal/PACTS funding, impact fees. <i>Future: Infrastructure bank, expanded State funding for Multimodal Transportation Fund</i>	P: Planning; Public Works SP: Planning; Water Resources Protection; Public Works
					a b c d (b) Expands access	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (c) Adapts processes (d) Builds partnerships	PACTS funding, membership user fees	P: Planning; Sustainability SP: Sustainability; Planning
					a b c d (b) Expands access - through supporting housing affordability, walkability, transit	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability - from flooding, heat island, stormwater runoff	Federal/state grants (for demand-based pricing start-up costs); Fine revenue (ongoing operation of demand-based pricing)	P: Parking; Planning SP: Planning

Transportation & Land Use

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
TLU 1.7	Land Use for a Smaller Carbon Footprint Plan for future growth in our cities by committing to land use principles for a smaller carbon footprint, codified in the Cities’ comprehensive plans, zoning, and subdivision ordinances.	a. Encourage infill through proactive redevelopment.				● Housing stock meets workforce demand within the cities by 2035; Anyone working in the cities can live within the cities by 2035
		b. Revise land use code to “amplify homes near jobs.”				
		c. Revise land use code to “collocate transportation and density.”				
		d. Revise land use code to “create livable street networks.”				
		(+ actions to protect open space captured by other strategies - see text)				
TLU 2 Vehicle Electrification						
TLU 2.1	Electric Vehicle Charging Infrastructure Expand electric vehicle (EV) charging infrastructure in public and private parking through public investments in chargers, updates to city land use codes, and EV-ready requirements in the state building code.	a. Integrate EV charger requirements in land use and building codes.				● 20% of spaces in new garages required to have EV chargers (per land use code) by 2026 ● 5% of parking spaces in all lots and garages in the cities have level 2 EV chargers by 2030
		b. Work with commercial entities to expand public chargers.				
		c. Collaborate on regional efforts to build out charging networks.				
		d. Work with PUC to reform electricity rate structures (see TLU 3.3).				
TLU 2.2	Electric Vehicle Incentives Offer excise tax exemptions for electric vehicles (EVs), and advocate for additional state EV incentives.	a. Widely promote existing rebates (e.g., through Efficiency Maine).				● 30% of new light duty vehicle sales are electric vehicles by 2030; 60% by 2040; 100% by 2050
		b. Collaborate with Efficiency Maine and dealerships to promote EV ownership.				
TLU 2.3	Electric Public Transit Bus Fleets Work with Greater Portland METRO and the South Portland Bus Service to transition all bus fleets to battery-electric vehicles (BEV) by 2040.	a. Pursue Low-No Grant funding for BEV in next bus purchase (SPBS).				● All new METRO and SPBS bus purchases are electric starting in 2025 ● All-electric METRO and SPBS fleets by 2040
		b. Work with transit providers on capital transition program for bus fleets.				
TLU 2.4	Electric and Alternative-Fuel Municipal Fleets Develop an electric and alternative-fuel vehicle capital transition program for municipal and school vehicles.	a. Create capital transition program for light-duty vehicles and school buses.				● All new school bus purchases are electric by 2025 ● All new light-duty vehicle purchases are electric by 2028 ● Zero-carbon municipal fleets by 2040
		b. Create parallel transition program for small motor equipment.				
		c. Pursue alternatives for medium/heavy-duty vehicles when viable.				
TLU 2.5	Electric Shared Vehicles and Vehicles for Hire Expand the use of shared electric vehicles, promote electric vehicle use by taxis and other vehicle-for-hire companies, and set a requirement that by 2030 all rideshare vehicles must be electric vehicles.	a. Assess options for incentivizing EV use among taxis and hired vehicles.				● All TNC rideshare vehicles are electric vehicles by 2030
		b. Reassess national market for feasibility of electric car sharing fleets by 2026.				
		c. Mandate that all TNC rideshare vehicles must be EVs by 2030.				
TLU 2.6	Autonomous Vehicles Implement changes to curb and parking designs to incentivize shared autonomous vehicles, and advocate for state requirements that any autonomous vehicles must be electric and shared.	a. Continue to adapt safe/efficient curb and parking standards, considering AVs.				● State requirement that all AVs be electric in place by 2030
		b. Advocate at the state level for AV permits to be limited to electric AVs.				
		c. Work with state to ensure protections for pedestrian use of roadways.				

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation	
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward
Section Total	Section %	Action Total	Section Total	Action Total					
(see above value)	(see above value)	N/A	(see above value)	N/A	a b c d (b) Expands access	a b c d (a) Draws down carbon (b) Restores ecosystems (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities	General fund (for commissioned studies)	P: Planning SP: Planning

TLU 2 Vehicle Electrification									
3,905,203	19.6%	3,300,898 (combined effects of EV adoption and fuel economy standards)	174,142 (combined effects of EV adoption and fuel economy standards)	a b c d (a) Addresses injustice - from localized road-way air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution (d) Builds partnerships	Efficiency Maine incentives/VW settlement funds, demand aggregation via Climate Mayors Electric Vehicle Purchasing Collaborative, public-private partnerships	P: Sustainability; Planning SP: Sustainability; Planning	
		a b c d (a) Addresses injustice - from localized road-way air pollution (b) Expands access		a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution (d) Builds partnerships	Efficiency Maine incentives	P: Sustainability; Finance SP: Sustainability		
		604,305 (assumes fleet growth with mode shift)	48,866 (assumes fleet growth with mode shift)	a b c d (a) Addresses injustice - from localized road-way air pollution (b) Expands access	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution (d) Builds partnerships	Federal funding/VW settlement funds (e.g., Low or No Emission Vehicle Grant Program), battery leasing	P: Sustainability; Planning SP: Sustainability; South Portland Bus Service	
		NIQ (light-duty fleet captured in TLU 2.1-2.2)	NIQ (light-duty fleet captured in TLU 2.1-2.2)	a b c d (a) Addresses injustice - from localized road-way air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution	Efficiency Maine incentives/VW settlement funds, lease-purchasing, demand aggregation via Climate Mayors Electric Vehicle Purchasing Collaborative, bonds	P: Public Works; Sustainability SP: Sustainability; Public Works	
		NIQ (included in TLU 2.1 - 2.2)	NIQ (included in TLU 2.1 - 2.2)	a b c d (a) Addresses injustice - from localized road-way air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution	N/A	P: Sustainability SP: Sustainability	
NA	NA	a b c d (a) Addresses injustice - from localized road-way air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution	N/A	P: Sustainability SP: Sustainability			

Transportation & Land Use

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
TLU 3 Transportation Infrastructure						
TLU 3.1	Idling Reductions Reduce vehicle idling through anti-idling policies, vehicle technology, and improved intersection design.	a. Adopt anti-idling technology and policies for public vehicles.	●			● Anti-idling policies to be updated (P) or adopted (SP) and enforced by 2025
		b. Adopt and enforce anti-idling zones and policies for private vehicles.	●	●	●	
		c. Consider anti-idling co-benefits in intersection design.	●	●	●	
TLU 3.2	Freight Transit Partnerships Partner with large stakeholders in the freight sector to encourage development of a Sustainable Freight Action Plan.	a. Work with PACTS to develop a Sustainable Freight Action Agenda.			●	● Regional Sustainable Freight Action Agenda drafted by 2032 ● Statewide Sustainable Freight Action Plan developed by 2035
		b. Advocate for development of a Maine Sustainable Freight Action Plan.			●	
TLU 3.3	Ferry Service Work with Casco Bay Lines to transition its fleet to hybrid-electric ferries, and to consider a ferry route connection between Portland and South Portland.	a. Support Casco Bay Lines in transitioning to electric ferries.	●	●	●	● 60% of ferries (three ferries, based on the current fleet of five) run on all electric power by 2035
		b. Assess feasibility of ferry service between Portland and South Portland.	●	●		
TLU 3.4	Shore Power Commission an engineering study for shore power hookups to allow and eventually require docked ships to connect to electrical service.	a. Commission engineering study of shore power requirements (Portland).			●	● Shore power for full ferry fleet installed by 2040 ● Shore power for cruise ships installed by 2040
		b. Work with Casco Bay Lines to install shore power for ferries (Portland).			●	
		c. Work with PUC, CMP, Port to install shore power for cruise ships (Portland).			●	
TLU 3.5	Jetport Reduce greenhouse gas emissions from the Portland International Jetport through benchmarking and tracking, and through decarbonizing ground vehicles.	a. Decarbonize ground support vehicles (Jetport).	●	●		● “Neutrality” achieved by 2030 under the Airport Carbon Accreditation framework
		b. Consider employing Airport Carbon Accreditation framework (Jetport).	●	●		
		c. Increase knowledge transfer with municipal staff (Portland/Jetport).	●	●		
		d. Improve energy efficiency of older portion of the terminal (Jetport).		●		

Greenhouse Gas (GHG) Reductions					How this strategy advances a future that is...			Implementation	
Cumulative GHG Reduction Potential 2020-2050 (MTCO ₂ e)			2050 GHG Reduction Potential (MTCO ₂ e)		Equitable	Regenerative	Resilient	Financing Strategies	City Steward
Section Total	Section %	Action Total	Section Total	Action Total					
TLU 3 Transportation Infrastructure									
64,965	0.3%	NA	6,852	NA	a b c d (a) Addresses injustice - from localized roadway air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution	Federal grants (for anti-idling technology)	P: Sustainability; Planning; Public Works SP: Sustainability; Planning; Public Works
		NA		NA	a b c d (a) Addresses injustice - from localized roadway air pollution	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized roadway air pollution (d) Builds partnerships	Maine Department of Transportation funding, PACTS funding, public-private partnerships	P: Sustainability SP: Sustainability
		64,965		6,852	a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability - from localized air/water pollution	Federal grants (e.g., FTA Grants), PACTS funding, Maine Department of Transportation funding	P: Planning SP: Planning
					a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability - from localized air/water pollution	Utility cost recovery, port user fees, VW settlement funds, federal/state grants	P: Sustainability; Planning; Facilities SP: Sustainability; Planning
		(Efficiency upgrades included in BE 1.3; other elements not quantified)		(Efficiency upgrades included in BE 1.3; other elements not quantified)	a b c d	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability - from localized air pollution (d) Builds partnerships	Airport revenue, Efficiency Maine incentives, utility cost savings	P: Jetport SP: N/A

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
CR 1 Resilient Buildings and Neighborhoods						
CR 1.1	Resilient New Development Integrate resilience standards and targets into Portland and South Portland’s land use code to minimize flood risk and promote resilient buildings and neighborhoods citywide.	a. Work with partners to model combined storm surge and SLR for overlays.				● No new incompatible, vulnerable, or hazardous uses built in areas of highest flood risk by 2026 (with adoption of resilience overlays)
		b. Review and update land use codes to reflect resilience objectives.				
		c. Develop and use resilience zoning overlay to guide new construction.				
CR 1.2	Resilient Existing Buildings Build knowledge, tools, and resources on climate risks and adaptation options for buildings and property.	a. Prepare for securing federal funding for mitigation and/or recovery.				● All city residents have access to tools to assess future flood risk to property by 2026 ● Maine real estate flood risk disclosure required by 2026
		b. Participate in FEMA Community Rating System.				
		c. Launch suite of tools for resilient building retrofits.				
		d. Advocate that the State adopt flood risk disclosure requirements.				
CR 1.3	Resilient Open Space Planning Establish open space climate resilience goals and protocols for monitoring progress towards those goals in Portland and South Portland’s open space planning.	a. Expand Land Bank (P) / Open Space (SP) priorities to include resilience goals.				● Benchmark ecosystem and resilience metrics for open spaces and establish performance goals by 2028
		b. Set goals and measure change for stormwater and floodwater infiltration.				
		c. Set goals and measure change for carbon sequestration and storage.				
		d. Set goals and measure change for heat mitigation.				
		e. Set goals and measure change for biodiversity and ecological connectivity.				
CR 2 Strong and Healthy Communities						
CR 2.1	Housing Affordability and Resilience Continue to expand access to resilient and energy efficient affordable housing, contributing to diverse and inclusive communities.	a. Launch area-wide housing supply studies in both cities.				● Portland to increase housing units affordable to lower and middle income households by 10% by 2025 (from 2019 baseline) ● South Portland to establish affordable housing goal through comprehensive plan or standalone process
		b. Review zoning codes and re-assess development fees to remove constraints.				
		c. Enable options for renewable energy financing for affordable housing.				
		d. Advocate for changes to state financing requirements.				
		e. Use repositioning to retrofit housing for resilience and energy efficiency.				
		f. Assess displacement risk and anti-displacement strategies.				
		g. Work with community partners to lead “We are P/SP” storytelling initiative.				
CR 2.2	High Heat Mitigation Expand the “cooling capacity” of Portland and South Portland.	a. Preserve and expand protected open space, public parks, and tree cover.				● All residents live within a half mile of a cooling center by 2035. · ● All residents live within a half mile of a park or open space by 2035.
		b. Increase access to and awareness of places to cool off.				
		c. Revise zoning to increase cooling features in new construction (see CR 1.1).				
		d. Develop toolkit w/partners on retrofits to keep homes cooler (see CR 1.2).				

How this strategy advances a future that is...			Implementation	
Equitable	Regenerative	Resilient	Financing Strategies	City Steward
CR 1 Resilient Buildings and Neighborhoods				
a b c d	a b c d (b) Restores ecosystems	a b c d (a) Reduces vulnerability (c) Adapts processes	Federal/local cost sharing (e.g., USACE Planning Assistance for States)(for sea level rise / storm surge modeling)	P: Planning; Sustainability SP: Sustainability; Planning
a b c d	a b c d	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	Grant funding (e.g., Coastal Communities Grant, Federal hazard mitigation and resilience grants)	P: Emergency Management; Sustainability SP: Sustainability; Planning; Emergency Management
a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes	Impact fees (Portland), Land Bank Fund (South Portland), revolving loan funds (e.g., Clean Water State Revolving Loans), federal/state grants (e.g., Project Canopy Assistance Grants, 319 Grants, Land and Water Conservation Fund)	P: Planning; Parks; Sustainability SP: Sustainability; Parks; Planning
CR 2 Strong and Healthy Communities				
a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes	a b c d (a) Draws down carbon (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	Public housing repositioning, adjustments to QAP cost caps (for financing resilient/sustainable housing), revolving loan funds, power purchase agreements (for solar installations), private grants, community partnerships (for diverse and inclusive neighborhoods project)	P: Housing; Planning; Sustainability; Permitting & Inspections; Health & Human Services SP: Sustainability; Planning
a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	Impact fees (Portland), Land Bank Fund (South Portland), federal/state grants (e.g., Project Canopy Assistance Grants, Land and Water Conservation Fund), private grants	P: Parks; Sustainability; Planning; Health & Human Services SP: Sustainability; Planning; Parks

Climate Resilience

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
CR 2.3	Resilient Food Systems Cultivate healthy, regenerative, and just food systems.	a. Expand public land access for food production.				- Establish small grants for food system innovators by 2025 - Secure funding to commission foodshed assessment by 2028 - Expand access to community agriculture to all neighborhoods to meet demand
		b. Establish/improve policies to connect producers/harvesters and consumers.				
		c. Provide grants/business development for food system resilience/innovation.				
		d. Conduct a foodshed assessment.				
		e. Partner to support job training and reskilling in the food production sector.				
CR 2.4	Transportation Access Continue to prioritize decision-making processes and transit investments that advance equity in our cities.	a. Collaborate with GPCOG to launch next phase of CTLP program.				Address first round of proposals made by Community Transportation Leaders by 2026
		b. Invite Community Leaders to participate in OCF planning initiatives.				
		c. Review and implement proposed solutions from CTLP first round.				
CR 2.5	Neighborhood Resources Support and strengthen our existing community resources.	a. Establish a small grants program to support initiatives that build resilience.				Award the first round of community organizations or neighborhood groups with resilience grants by 2025
		b. Launch Sustainable Neighborhood programs.				
		c. Work with residents/community orgs. to resource neighborhood hubs.				
CR 3 Resilient Local Economy						
CR 3.1	Resilient Working Waterfronts Create an ongoing platform for collaborative planning to ensure that Portland and South Portland’s port and waterfronts can respond, adapt, and thrive with new climate stresses.	a. Develop PPP to access grant funding for waterfront resilience collaboration.				Grant funding and partnerships secured for resilient working waterfronts project by 2026
		b. Convene port/waterfront industries for coordinated resilience planning.				
		(+ actions on revising land use code captured by other strategies - see text)				
CR 3.2	Workforce for a Resilient Economy Attract, mentor, and build the skills of our cities’ workers to partake in quality jobs that help build a diverse, resilient, and regenerative economy.	a. Work with partners to strengthen job training and employment pipelines.				Targets set through collaboration for net increases in individuals trained in specific sustainability/resilience fields
CR 3.3	Climate-Ready Industries and Innovation Build the capacity of the businesses and industries in our cities to bounce back, adapt, and innovate.	a. Support business resilience via economic development programs.				Revise land use policies to reduce barriers to traditional and emerging marine related industries by 2026
		b. Identify barriers and opportunities for the growth of a blue economy.				
		c. Drive innovation/growth in climate-ready industries via PPPs and pilots.				
CR 4 Resilient Infrastructure Systems						
CR 4.1	Stormwater Systems Use modeling and flood data to upgrade the cities’ stormwater and sewer systems to handle future climate scenarios.	a. Fill gaps in geospatial data for the sewer and stormwater system.				- Full geospatial data set completed for sewer and stormwater system by 2024 - Hydrologic / hydraulic drainage model completed by 2028
		b. Implement comprehensive asset management system.				
		c. Build out protocol for consistently tracking flood incidences.				
		d. Commission hydrologic/hydraulic drainage model.				

How this strategy advances a future that is...			Implementation	
Equitable	Regenerative	Resilient	Financing Strategies	City Steward
a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes (d) Builds community ownership	a b c d (b) Restores ecosystems (c) Supports a circular economy (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships	Federal grants (e.g., USDA grants), Private grants (e.g., New England Food System Resilience Fund, USDN Partners for Places grants), revolving loan funds (e.g., Portland Development Corporation)	P: Sustainability; Parks; Health & Human Services SP: Sustainability; Economic Development; Parks
a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes	a b c d (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	PACTS funding, Private grants	P: Planning; Public Works; Sustainability SP: Sustainability; South Portland Bus Service
a b c d (a) Addresses injustice (b) Expands access (c) Creates inclusive processes (d) Builds community ownership	a b c d (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships	Private grants, revolving loan funds (e.g., Portland Development Corporation)	P: Sustainability SP: Sustainability
CR 3 Resilient Local Economy				
a b c d (d) Builds community ownership	a b c d (b) Restores ecosystems	a b c d (a) Reduces vulnerability (c) Adapts processes (d) Builds partnerships	Special assessments, bonds, Federal/State grants (e.g., FEMA BRIC grants), Private grants (e.g., NSF Civic Innovation Challenge)	P: Economic Development; Sustainability SP: Sustainability; Economic Development; Planning
a b c d (b) Expands access	a b c d (a) Draws down carbon * (b) Restores ecosystems* (c) Supports a circular economy * (d) Builds shared wealth	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships	Public private partnerships; Public and private grants	P: Economic Development; Sustainability SP: Sustainability; Economic Development
a b c d	a b c d (a) Draws down carbon * (b) Restores ecosystems* (c) Supports a circular economy * (d) Builds shared wealth	a b c d (b) Strengthens communities (d) Builds partnerships	Tax increment financing (TIF), revolving loan funds (e.g., Portland Development Corporation), PPPs, federal grants	P: Economic Dev.; Planning; Sustainability SP: Sustainability; Economic Dev.; Planning
CR 4 Resilient Infrastructure Systems				
a b c d	a b c d	a b c d (a) Reduces vulnerability (c) Adapts processes	User fees (e.g., Portland stormwater service charge, South Portland Sewer User Fund), general fund	P: Water Resources SP: Water Resources Protection; Emergency Management

* Depending on the program

Climate Resilience

Action			Timeline			
#	Action Description	Action Subcomponents	By 2025	2026-2030	2031-2050	Milestones
CR 4.2	Green Infrastructure Expand the use of green infrastructure systems to capture and infiltrate the first inch of stormwater in any storm.	a. Evaluate/adjust ordinances to increase infiltration in new development.				● 5% of the cities’ impervious surfaces converted to green infrastructure by 2035; 10% by 2040; and 15% by 2050
		b. Explore revising (P)/adopting (SP) stormwater service charges and credits.				
		c. Evaluate/implement initiatives and tools to expand GI on private property.				
		d. Collaborate with regional partners to build education/awareness of GI.				
CR 4.3	Energy Systems Build Portland and South Portland’s energy resilience.	a. Advocate for site-specific climate risk assessments of critical infrastructure.				● Development of Resilient Power Plan by 2024 ● All new development over 50,000 square feet to evaluate district energy/microgrids within one year of microgrid enabling legislation
		b. Advocate for evaluation of climate risks in future infrastructure planning.				
		c. Develop and implement a Resilient Power Plan.				
		(+ actions on energy resilience captured by other strategies - see text)				
CR 4.4	Transportation Systems Adopt a risk-based transportation asset management approach.	a. Build out robust geospatial data to support modeling and predictions.				● Climate hazards and resilience indicators applied to all asset management decision-making by 2028
		b. Model asset lifespans with consideration for climate hazards.				
		c. Establish resilience design guidelines and performance indicators.				
		d. Develop phased investment approach, influenced by climate risk.				
CR 5 Ecosystem Resilience						
CR 5.1	Ecosystem Adaptive Management Strengthen ecosystem resilience through enhancing connectivity, biodiversity, and healthy habitat.	a. Monitor and manage pests and invasives.				● Fertilizer ordinance adopted by 2022 ● No net coastal wetland loss by 2035 ● Establish biodiversity and connectivity targets by 2028
		b. Mitigate coastal acidification by reducing stormwater pollution.				
		c. Develop biodiversity and connectivity goals and guidelines (aligned with CR 1.3).				
		d. Facilitate tidal wetland migration.				
		e. Curtail coastal erosion with living shorelines.				
CR 5.2	Soil Health Build back the health of our soils for ecological vitality, water infiltration, and carbon sequestration.	a. Adopt post-construction soil health standards.				● Post-construction soil health standards adopted for new construction by 2025 ● “100 Resilient Lawns” achieved across both cities by 2028
		b. Pilot and monitor healthy soil land management practices.				
		c. Share results and launch campaign to improve soil on private lawns.				

How this strategy advances a future that is...			Implementation	
Equitable	Regenerative	Resilient	Financing Strategies	City Steward
a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (d) Builds partnerships	Revolving loan funds (e.g., Clean Water State Revolving Loans), bonds, federal/state grants (e.g., 319 Grants, CDBG funding)	P: Water Resources SP: Planning; Water Resources Protection
a b c d (a) Addresses injustice (b) Expands access	a b c d (a) Draws down carbon	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	Federal/state grants (e.g., FEMA BRIC (for Resilient Power Plan), REC sales, federal tax credits, PPAs (for DER), see BE 5-4 for district energy <i>Future: Federal funding, green/infrastructure bank</i>	P: Sustainability; Emergency Management; Public Works; Facilities SP: Sustainability; Planning; Water Resources Protection
a b c d	a b c d	a b c d (a) Reduces vulnerability (c) Adapts processes (d) Builds partnerships	Impact fees, general fund	P: Public Works SP: Finance; Public Works; Transportation
CR 5 Ecosystem Resilience				
a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	Impact fees (Portland), Land Bank Fund (South Portland), federal/state grants (e.g., Maine Natural Resource Conservation Program funds, Maine Stream Crossing Upgrade Grant Program, 319 grants)	P: Parks; Sustainability; Planning; Water Resources SP: Sustainability; Water Resources Protection; Parks; Planning
a b c d	a b c d (a) Draws down carbon (b) Restores ecosystems (c) Supports a circular economy	a b c d (a) Reduces vulnerability (b) Strengthens communities (c) Adapts processes (d) Builds partnerships	Impact fees (Portland), Land Bank Fund (South Portland), Private grants	P: Sustainability; Parks SP: Sustainability; Water Resources Protection; Parks; Planning

Acronyms

ASHP	Air Source Heat Pump
AV	Autonomous Vehicle
BEV	Battery Electric Vehicle
CCA	Community Choice Aggregation
CDBG	Community Development Block Grants
CMP	Central Maine Power
CTLTP	Community Transportation Leaders Program
DER	Distributed Energy Resources
EDA	US Economic Development Administration
EERS	Energy Efficiency Resource Standard
ESCO	Energy Service Company
EV	Electric Vehicle
FEMA BRIC	Federal Emergency Management Agency Building Resilient Infrastructure and Communities
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GPCOG	Greater Portland Council of Governments
HUD SCRPP	US Department of Housing and Urban Development Sustainable Communities Regional Planning
LEED	Leadership in Energy and Environmental Design
MEGA	Maine Energy Generation Authority
MUBEC	Maine Uniform Building and Energy Code
NG	Natural Gas
NSF	National Science Foundation
NZE	Net-Zero Energy
PACE	Property-Assessed Clean Energy
PACTS	Portland Area Comprehensive Transportation System
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PUC	Public Utilities Commission
REC	Renewable Energy Certificate
RPS	Renewable Portfolio Standard
SAYT	Save As You Throw
SEMP	Strategic Energy Management Plan
SLR	Sea Level Rise
SOV	Single-Occupancy Vehicle
SPBS	South Portland Bus Service
SREC	Solar Renewable Energy Certificate
TDM	Transportation Demand Management
TIF	Tax Increment Financing
TMA	Transportation Management Association
TNC	Transportation Network Company
TOD	Transit-Oriented Development
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USDN	Urban Sustainability Directors Network
VW	Volkswagen

An aerial photograph of a city, likely New Haven, Connecticut, showing a large bridge spanning a wide river. The city is densely packed with buildings and greenery. A large ship is docked at a pier on the left side of the river. The bridge is a multi-lane highway bridge with a curved design. The river is a mix of blue and brown water, indicating some sediment or pollution. The sky is clear and blue.

One Climate Future

LAUNCHING THE PLAN

We live in a rapidly changing world. Innovative technologies disrupt long standing business models, people move around the country and around the world in search of opportunity, and unforeseen events—such as the COVID-19 pandemic—completely transform the way we live our lives. In a future of climate disruptions, we should anticipate that change will be the one thing we can count on.

We understand that the strategies and timelines laid out in this plan will need to adapt to future events and conditions to achieve our overarching climate and resilience goals. One Climate Future should be considered a living document and the pathways outlined should be dynamic and adaptable to future conditions. The Cities intend to return to and update One Climate Future periodically to reflect new technologies, financial resources, staff capacity, and community ownership.



THE CITIES LINKED BY THE FORE RIVER AND CASCO BAY BRIDGE • Photo by City of South Portland

Nonetheless, the strategies that Portland and South Portland put forward today reflect the magnitude and urgency of change. We will rely on the residents, businesses, community partners, and institutions within the cities to work together to achieve our goals. Success will depend on ongoing commitments of time, resources, and collective will. Both Cities will regularly report on this progress to hold ourselves accountable for bold action.

We are not starting from scratch, but rather building upon years of clean energy and climate initiatives. This momentum across city departments, community organizations, and our social fabric positions us well to launch into immediate action that will bring transformative change.

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One Climate Future

APPENDIX

A

GHG INVENTORIES MEMO

Memorandum: Resilience Zoning for Resilient Buildings and Land Use

B

MODELING MEMO

Community Energy and Emissions Modeling Technical Methodology

C

RESILIENCE MEMO

Memorandum: Resilience Zoning for Resilient Buildings and Land Use



ONE CLIMATE FUTURE

Charting a Course *for*
Portland and South Portland

Memorandum

Greenhouse Gas Inventories

To: City of Portland, City of South Portland, and Linnean Solutions

From: Integral Group and Daybreak Climate Consulting

Date: July 2020

Re: Community Inventories of 2017 Greenhouse Gas Emissions for the Cities of Portland and South Portland

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1 Introduction

As part of the scope for developing the One Climate Future plan, the consultant team was tasked with developing baseline community greenhouse gas (GHG) inventories for Portland and South Portland, Maine. City operations inventories were not within the scope of the project, so city operational emissions are not broken out in this memorandum.

The last citywide GHG Inventory for Portland was conducted in 2010, and used a different protocol, differed in methodology in numerous areas, and included many scope 3 emissions sources. Therefore, the 2010 inventory results cannot be directly compared to this new 2017 inventory; the differences are discussed in section 4.3. The City of Portland decided that 2017 would be the new baseline for GHG emissions. South Portland has never done a community-wide GHG inventory before. The 2017 inventory represents the first baseline for GHG emissions for South Portland.

Both Inventories follow the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)¹ for compliance with the Global Covenant of Mayors for Climate and Energy and the Carbon Disclosure Project. The inventories were compiled and submitted using the City Inventory Reporting and Information System (CIRIS) tool from C40 Cities,² which is compliant with the Global Covenant of Mayors' 'Common Reporting Framework' (CRF).³

GHG inventories are generally divided into "scopes" 1, 2, and 3, as shown in Figure 1.

- **Scope 1:** All emissions within the city.
- **Scope 2:** Emissions occurring as a result of grid-supplied electricity consumed within city.
- **Scope 3:** Other emissions occurring outside the boundaries of the city as a result of activities taking place within the city.

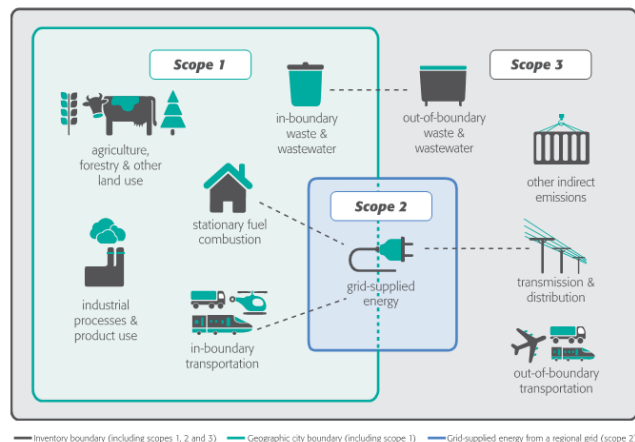


Figure 1: Inventory scopes (graphic courtesy of World Resources Institute)

¹ GHG Protocol, Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) Washington, DC: World Resources Institute. <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>

² C40 Cities. Reporting GHG emissions inventories <https://resourcecentre.c40.org/resources/reporting-ghg-emissions-inventories>

³ Global Covenant of Mayors for Climate and Energy. Global Common Reporting Framework. <https://www.globalcovenantofmayors.org/our-initiatives/data4cities/common-global-reporting-framework/>

2 Portland Inventory Results

2.1 Summary

The overall output of data from the CIRIS tool for Portland, Maine for 2017 is shown in Figure 2. Overall, Portland was responsible for 840,419 metric tons of carbon dioxide equivalents (MTCO₂e). On a per capita basis, this is 12.6 tons per resident. This compares favorably to the U.S. national average of 20.7 tons per resident, but is more emissions-intensive than many other Northeast cities. In general, this difference reflects the greater demand for heating fuel, particularly fuel oil, the greater reliance on personal cars rather than public transit, and the greater proportion of industrial energy use.

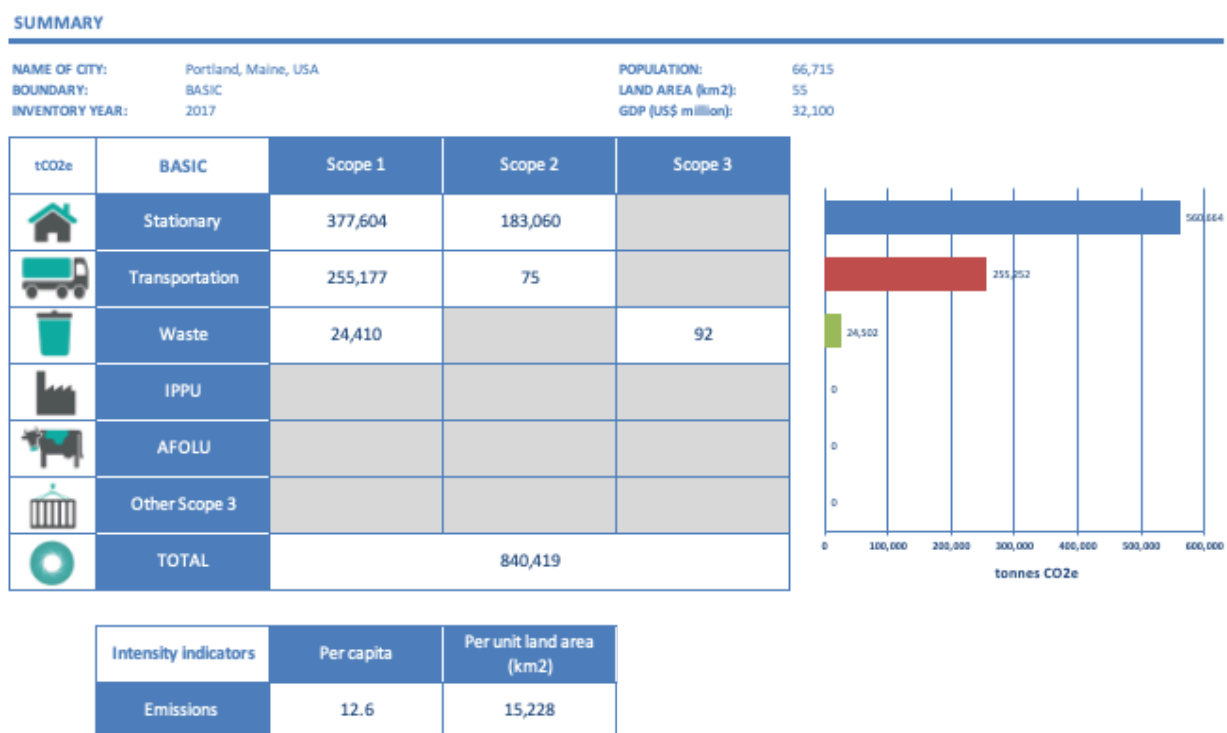


Figure 2: Portland GHG inventory summary.

Table 1: Portland emissions by scope; totals differ slightly from Figure 2 due to rounding.

Scope	CO ₂ emissions (MTCO ₂ e)	CH ₄ Emissions (MTCO ₂ e)	N ₂ O Emissions (MTCO ₂ e)	Total GHG Emissions (MTCO ₂ e)	Percent of Total Emissions
1	651,710	2,177	3,306	657,193	78%
2	181,284	819	1,033	183,136	22%
3	-	92	-	92	0%
Total	832,994	3,087	4,339	840,421	100%

Greenhouse gas emissions can be looked at by source or by sector; sources are the fuels and waste decomposition that produce greenhouse gas emissions, while sectors are different portions of the economy.

Overall, the use of electricity, natural gas, and fuel oil in buildings is the main driver of Portland's GHG footprint, with buildings being responsible for two-thirds (67%) of community-wide GHG emissions. Mobile sources within the Portland boundaries, such as cars and ships, are responsible for 30%, and the incineration of solid waste and processing of wastewater is responsible for the remaining 3%.

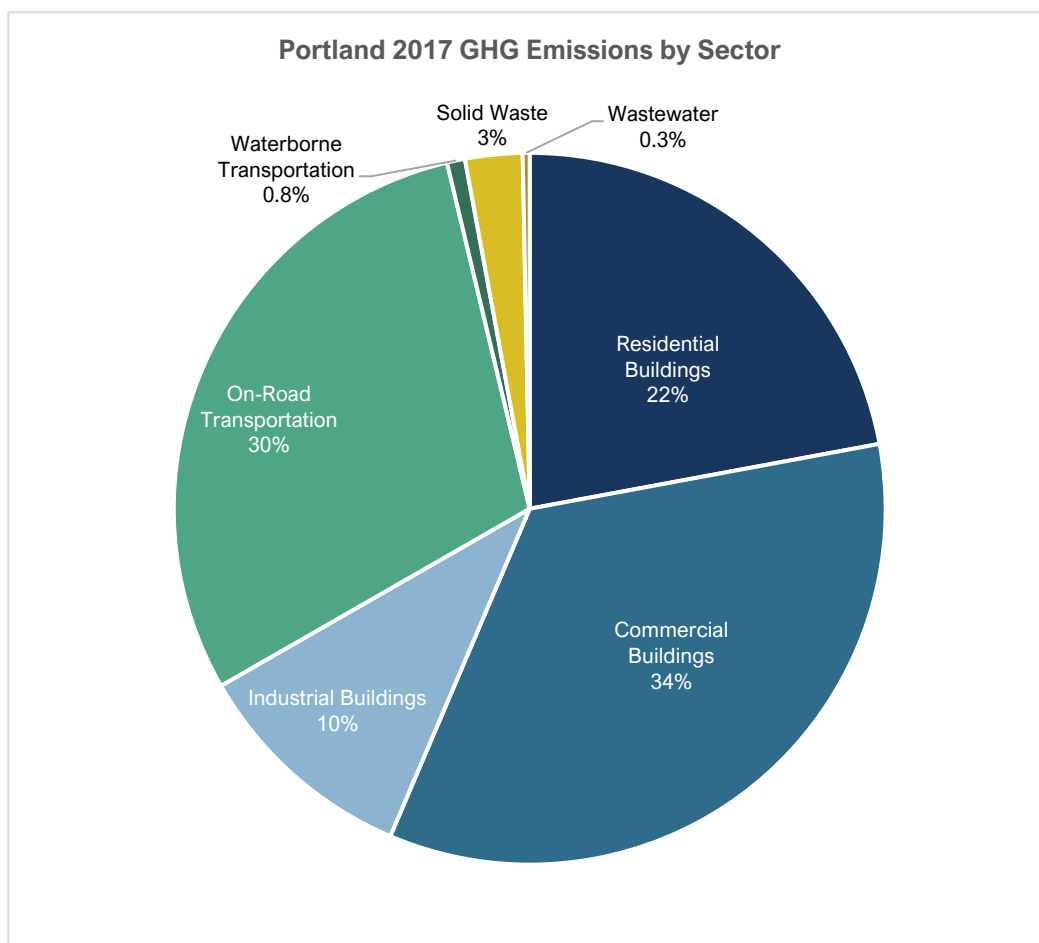


Figure 3: Portland 2017 GHG emissions by sector

Table 2: Portland 2017 energy use and GHG emissions by sector.

Sector	Energy Use (MMBTU)	% of Energy Use	GHG Emissions (MTCO ₂ e)	% of GHG Emissions
Buildings	8,357,063	70%	560,666	66.7%
Residential Buildings	2,704,261	23%	185,573	22.1%
Commercial Buildings	4,363,247	37%	288,470	34.3%
Industrial Buildings	1,289,555	11%	86,623	10.3%
Transportation	3,564,381	30%	255,252	30.4%
On-Road Transportation	3,510,068	29%	248,375	29.6%
Waterborne Transportation	54,313	0%	6,877	0.8%
Waste	-		24,502	2.9%
Solid Waste	-	0%	21,853	2.6%
Wastewater	-	0%	2,649	0.3%
Portland Total	11,921,444	100%	840,419	100%

Table 3: Portland 2017 CO₂, CH₄, and N₂O emissions by sector; total differs slightly from Figure 2 due to rounding.

Sector	CO ₂ Emissions (MTCO ₂ e)	CH ₄ Emissions (MTCO ₂ e)	N ₂ O Emissions (MTCO ₂ e)	Total GHG Emissions (MTCO ₂ e)
Buildings	557,968	1,141	1,557	560,666
Transportation	254,324	297	631	255,252
Waste	20,702	1,650	2,151	24,503
Portland Total	832,994	3,088	4,339	840,421

Within buildings, electricity, natural gas, and fuel oil are roughly equivalent sources of GHGs, with fuel oil being responsible for slightly greater amount of emissions due to its high carbon intensity. Most emissions from transportation come from gasoline.

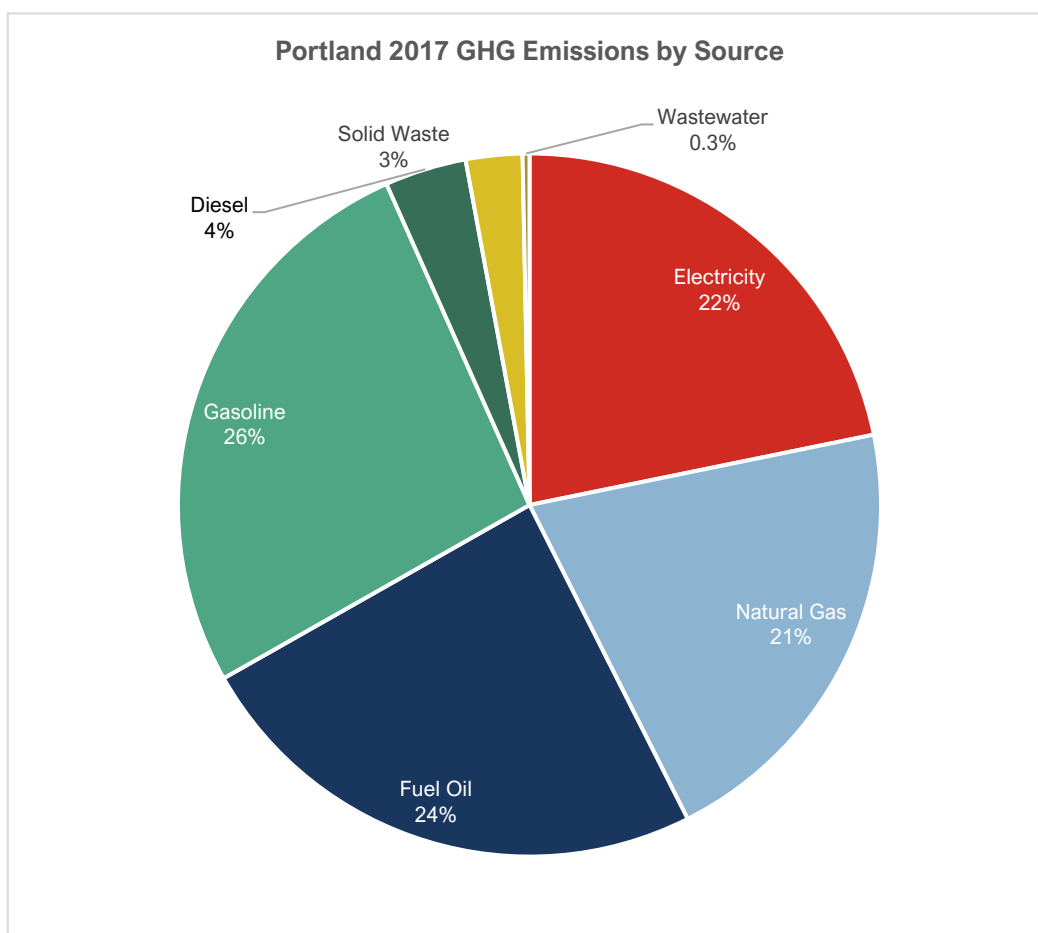


Figure 4: Portland 2017 GHG emissions by source

Table 4: Portland 2017 energy use and GHG emissions by source.

Fuel	Site Energy Consumption (MMBTU)	% of Total Site Energy	GHG Emissions (MTCO ₂ e)	% of Total GHG Emissions
Electricity	2,338,183	20%	183,136	21.8%
Natural Gas	3,287,840	28%	174,632	20.8%
Fuel Oil	2,743,837	23%	203,602	24.2%
Gasoline	3,164,909	27%	223,009	26.5%
Diesel	386,675	3%	31,540	3.8%
Solid Waste	-	0%	21,853	2.6%
Wastewater	-	0%	2,649	0.3%
Total	11,921,444	100%	840,419	100%

Table 5: Portland 2017 CO₂, CH₄, and N₂O emissions by fuel type.

Fuel	CO ₂ Emissions (MTCO ₂ e)	CH ₄ Emissions (MTCO ₂ e)	N ₂ O Emissions (MTCO ₂ e)	Total GHG Emissions (MTCO ₂ e)
Diesel	31,382	30	128	31,540
Electricity	181,284	819	1,033	183,136
Fuel Oil	202,934	231	437	203,602
Gasoline	222,240	266	503	223,009
Natural Gas	174,452	92	87	174,632
Solid Waste	20,702	563	589	21,853
Wastewater	-	1,087	1,562	2,649
Total	832,994	3,087	4,339	840,419

2.2 Buildings

Approximately 67% of Portland's GHG emissions footprint is attributable to energy use in buildings. Building GHG data was computed from actual citywide electricity and natural gas consumption information. Fuel oil use was modeled using the methodology described in Section 4.5; all fuel oil was assumed to be No. 2 fuel oil, though in practice other grades of fuel oil may also be in use.

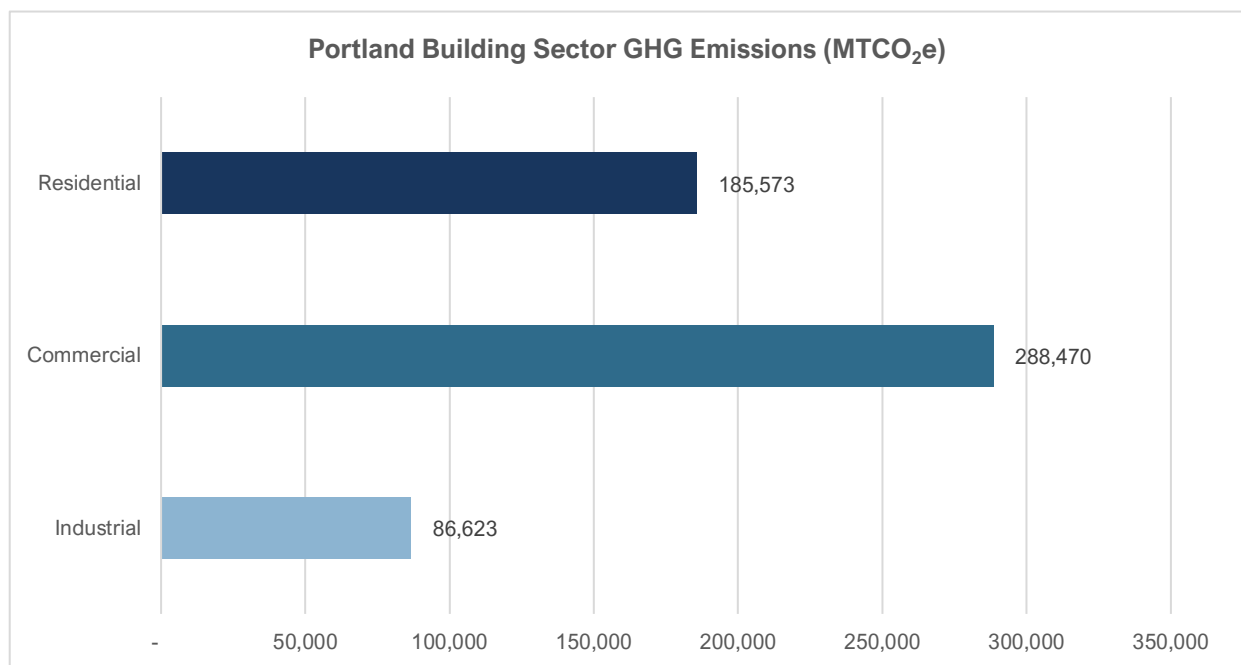


Figure 5: Portland 2017 building sector GHG emissions, MTCO₂e.

Table 6: Site and source energy use by building sector.

Sector and Energy Use	Site Energy (MMBTU)	Source Energy (MMBTU)
Residential	2,704,261	3,710,728
Electricity	528,863	1,480,816
Fuel Oil	1,356,398	1,369,962
Natural Gas	819,000	859,950
Commercial	4,363,247	7,159,128
Electricity	1,493,645	4,182,206
Fuel Oil	904,002	913,042
Natural Gas	1,965,600	2,063,880
Industrial	1,289,555	1,885,453
Electricity	314,718	881,210
Fuel Oil	483,438	488,272
Natural Gas	491,400	515,970
All Portland Buildings	8,357,063	12,755,309

2.3 Transportation

Transportation GHG emissions for Portland were estimated for all on-road and waterborne transportation occurring within the city boundaries. Data was provided by the State Department of Transportation for total vehicle miles traveled (VMT) within city boundaries, and the types and model years of vehicles registered in Portland; on-road GHG emissions were estimated from this data as described in Section 4.6.1. Gasoline and diesel fuel economies were weighted based on the makeup of vehicle types registered in Portland, as show in Figure 6.

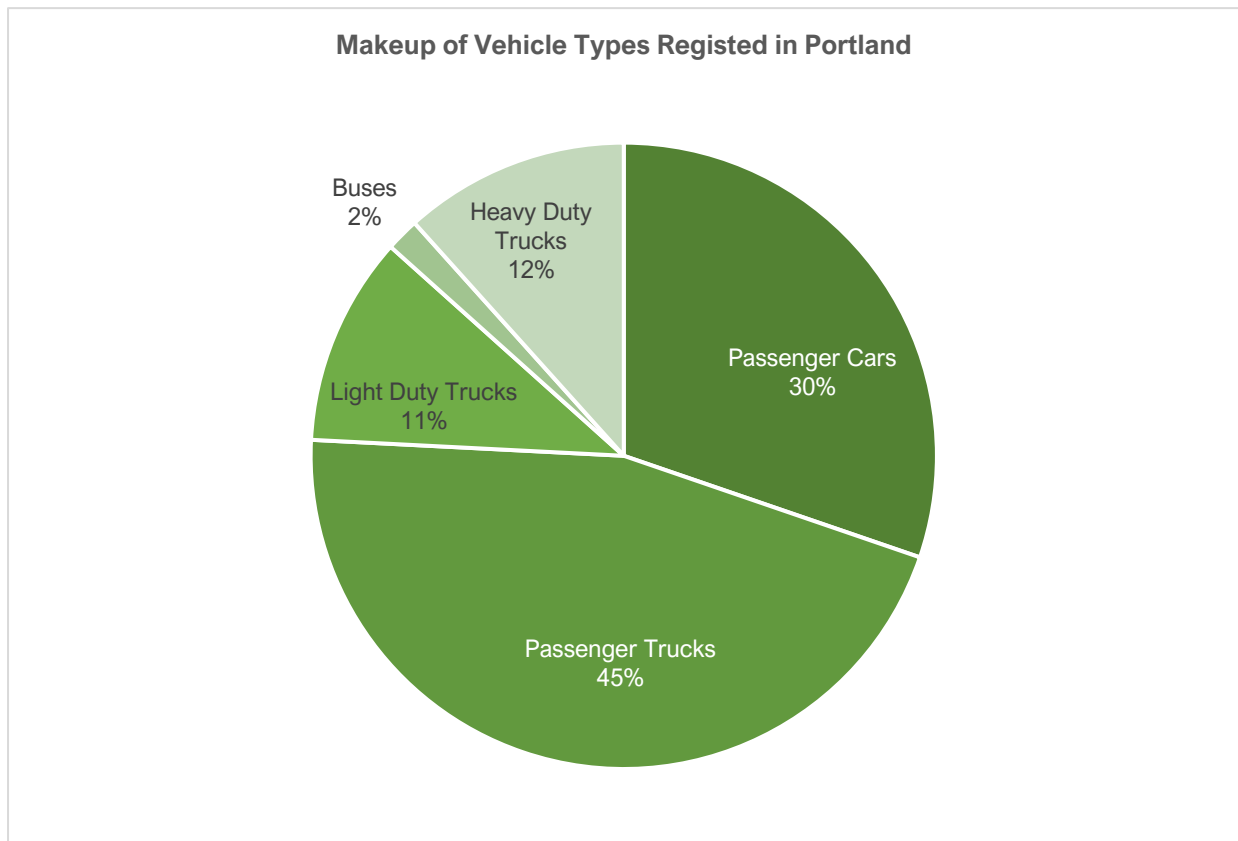


Figure 6: Registered vehicles in Portland.

Most GHGs result from the combustion of gasoline in passenger cars and light trucks. Data was not available for passenger or freight trains passing through Portland.

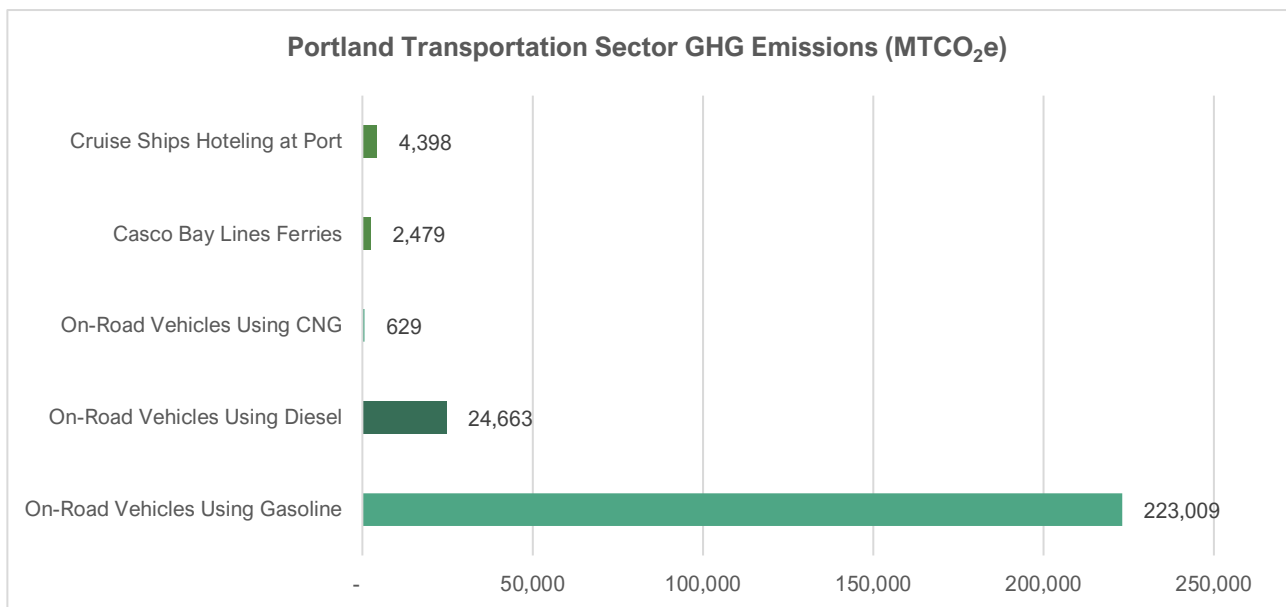


Figure 7: Portland 2017 transportation emissions, MTCO₂e.

2.4 Waste

Almost all non-recyclable waste that is collected in Portland goes to the ecomaine waste-to-energy incinerator and is burned. A small food waste pilot sends some food waste to an anaerobic digester outside of town. While ecomaine's facility is within Portland and processes waste for the region, its emissions were prorated for the waste generated by Portland residents and businesses. This avoids double-counting emissions associated with waste generated in other cities in southern Maine, but combusted in Portland. If all emissions from the ecomaine incinerator were counted in Portland's inventory, the emissions from the waste sector would increase by 174%. No emissions are attributed to landfills, because the incinerator ash that goes to landfills is inert and does not produce further emissions. Wastewater emissions listed here are estimated process emissions from the breakdown of wastewater. The energy used for processing wastewater is captured in industrial energy use.

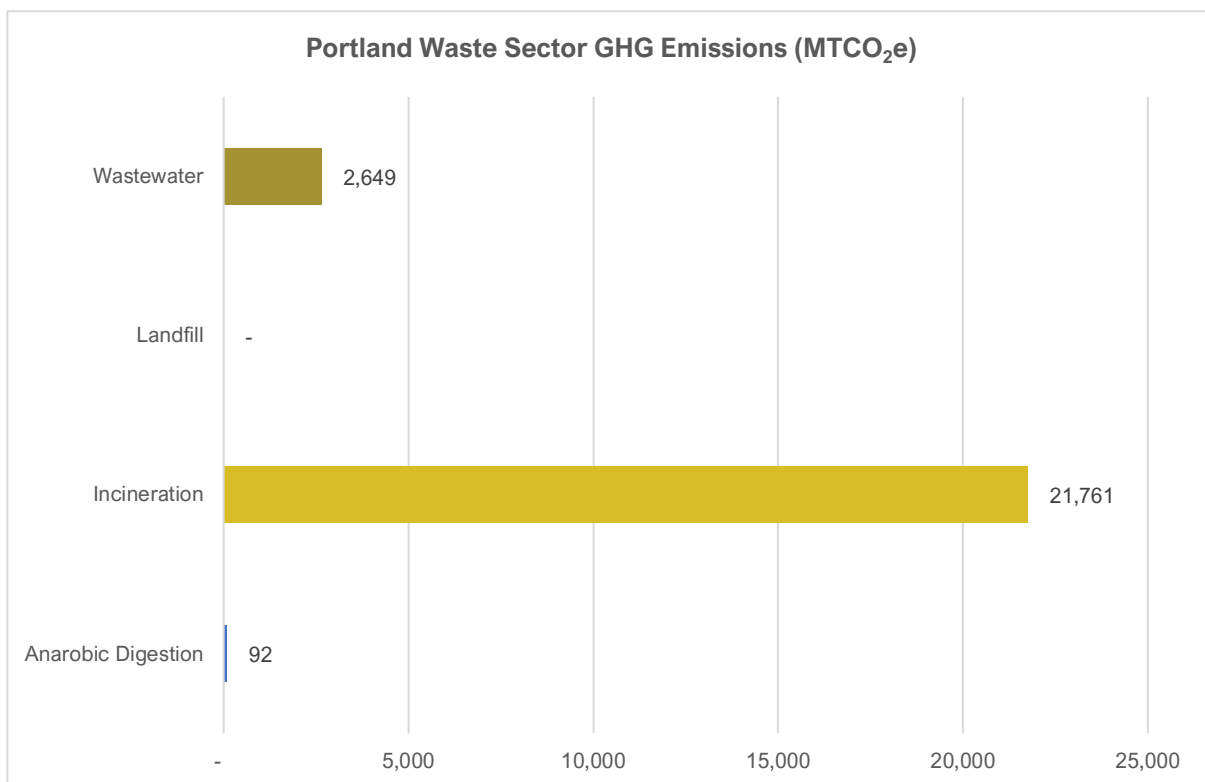


Figure 8: Portland 2017 waste sector emissions, MTCO₂e.

3 South Portland Inventory Results

3.1 Summary

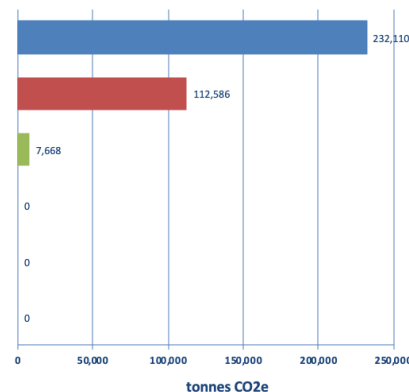
The overall output of data from the CIRIS tool for South Portland, Maine for 2017 is shown in Figure 9. Overall, South Portland was responsible for 352,264 metric tons of carbon dioxide equivalents (MTCO₂e). On a per capita basis, this is 13.8 tons per resident. This compares favorably to the U.S. national average of 20.7 tons per resident, but is more emissions-intensive than other Northeast cities, and also higher than Portland's emissions per capita at 12.6. In general, this difference from other cities is due to the greater demand for heating fuel, particularly fuel oil, the greater reliance on personal cars rather than public transit, and the greater proportion of industrial energy use. The higher per capita emissions in South Portland relative to Portland is primarily due to the larger industrial sector in South Portland, which is a significant source of emissions.

SUMMARY

NAME OF CITY: South Portland, USA
BOUNDARY: BASIC
INVENTORY YEAR: 2017

POPULATION: 25,577
LAND AREA (km²): 31
GDP (US\$ million): 32,100

tCO ₂ e	BASIC	Scope 1	Scope 2	Scope 3
	Stationary	147,407	84,703	
	Transportation	112,569	17	
	Waste	1,310		6,358
	IPPU			
	AFOLU			
	Other Scope 3			
	TOTAL	352,364		



Intensity indicators	Per capita	Per unit land area (km ²)
Emissions	13.8	11,348

Figure 9: South Portland GHG inventory summary.

Table 7: South Portland GHG emissions by scope.

Scope	CO ₂ Emissions (MTCO ₂ e)	CH ₄ Emissions (MTCO ₂ e)	N ₂ O Emissions (MTCO ₂ e)	Total GHG Emissions (MTCO ₂ e)	% of Total Emissions
1	259,260	970	1,056	261,286	74%
2	83,864	379	478	84,720	24%
3	6,047	139	172	6,358	2%
South Portland Total	349,171	1,487	1,706	352,364	100%

Greenhouse gas emissions can be looked at by source or by sector; sources are the fuels and waste decomposition that produce greenhouse gas emissions, while sectors are different portions of the economy.

Overall, the use of electricity, natural gas, and fuel oil in buildings is the main driver of South Portland's GHG footprint, with buildings being responsible for two-thirds (66%) of community-wide GHG emissions. Mobile sources (transportation) within the South Portland boundaries are responsible for 32%, and the incineration of solid waste and processing of wastewater is responsible for the remaining 2%.

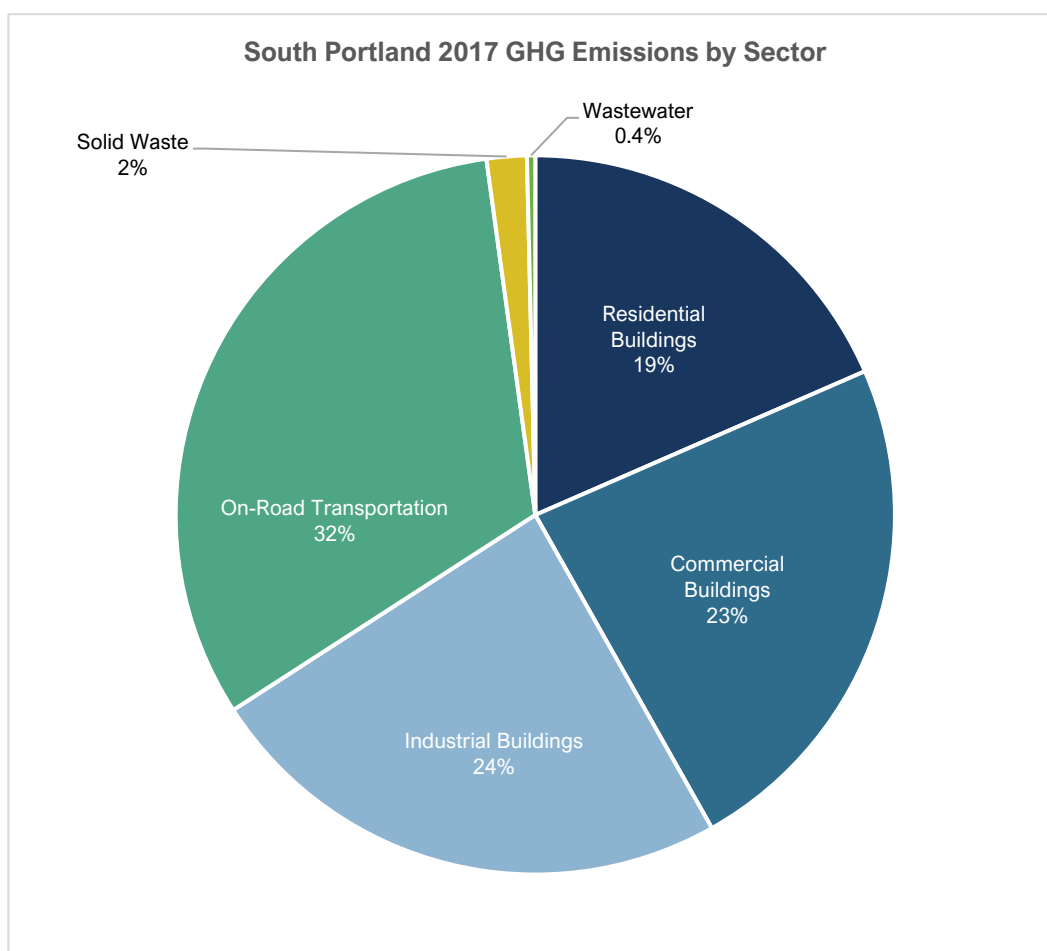


Figure 10: South Portland 2017 GHG emissions by sector.

Table 8: South Portland 2017 energy use and GHG emissions by sector.

Sector	Energy Use (MMBTU)	% of Energy Use	GHG Emissions (MTCO ₂ e)	% of GHG Emissions
Buildings	954,308	68%	232,110	65.9%
Residential Buildings	1,214,552	19%	65,035	18.5%
Commercial Buildings	1,259,998	24%	82,353	23.4%
Industrial Buildings	1,583,930	25%	84,722	24.0%
Transportation	1,583,930	32%	112,586	32.0%
On-Road Transportation	3,428,859	32%	112,586	32.0%
Waste	-	0%	7,668	2.2%
Solid Waste	-	0%	6,358	1.8%
Wastewater	-	0%	1,310	0.4%
South Portland Total	3,428,859		352,364	

Table 9: South Portland 2017 CO₂, CH₄, and N₂O emissions by sector.

Sector	CO ₂ Emissions (MTCO ₂ e)	CH ₄ Emissions (MTCO ₂ e)	N ₂ O Emissions (MTCO ₂ e)	Total GHG Emissions (MTCO ₂ e)
Buildings	230,922	505	683	232,110
Transportation	112,201	133	252	112,586
Waste	6,047	850	771	7,668
South Portland Total	349,171	1,487	1,706	352,364

Within buildings, electricity, natural gas, and fuel oil are roughly equivalent sources of GHGs, with fuel oil being responsible for a slightly greater amount of emissions due to its high carbon intensity. Most emissions from transportation come from gasoline.

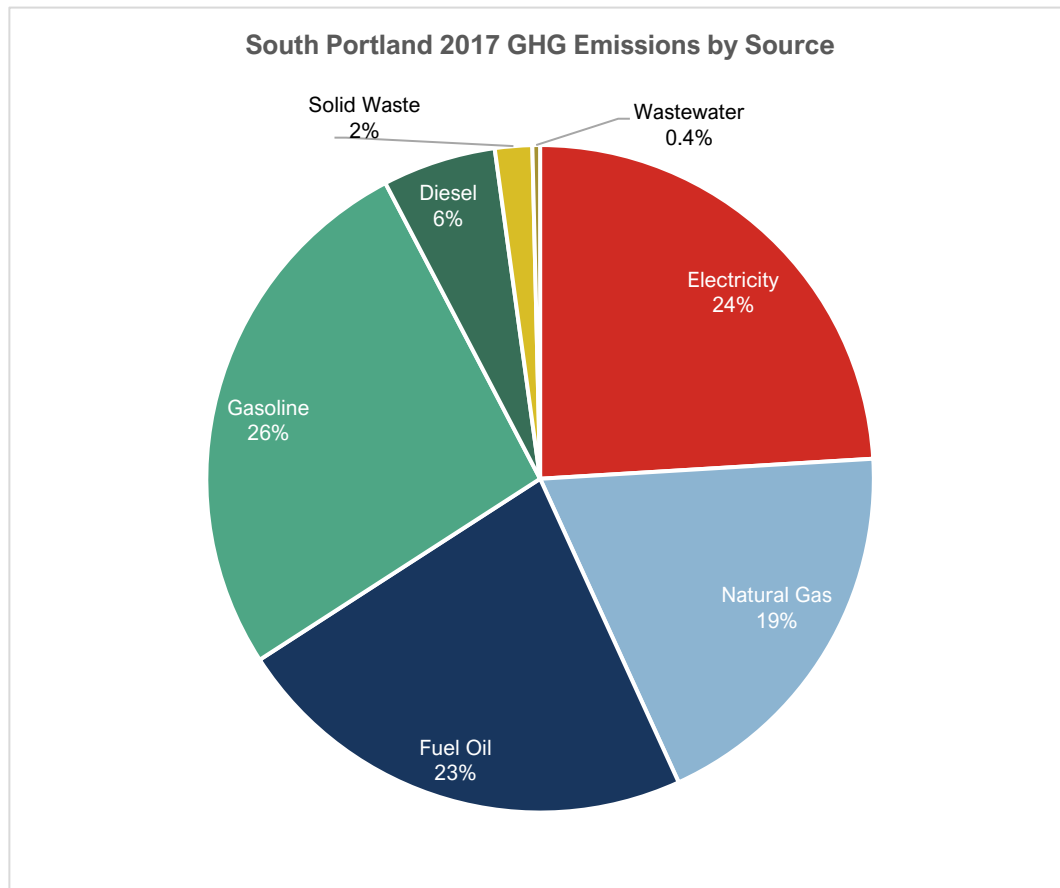


Figure 11: South Portland 2017 GHG emissions by source.

Table 10: South Portland 2017 energy use and GHG emissions by source.

Fuel	Site Energy Consumption (MMBTU)	% of Total Energy	GHG Emissions (MTCO ₂ e)	% of Total Emissions
Electricity	1,081,664	22%	84,720	24.0%
Natural Gas	1,269,800	25%	67,445	19.1%
Fuel Oil	1,077,614	21%	79,962	22.7%
Gasoline	1,322,672	26%	93,199	26.4%
Diesel	261,039	5%	19,370	5.5%
Solid Waste	-	0%	6,358	1.8%
Wastewater	-	0%	1,310	0.4%
Total	5,012,789	100%	352,364	100%

Table 11: South Portland 2017 CO₂, CH₄, and N₂O emissions by fuel type.

Fuel	CO ₂ Emissions (MTCO ₂ e)	CH ₄ Emissions (MTCO ₂ e)	N ₂ O Emissions (MTCO ₂ e)	Total GHG Emissions (MTCO ₂ e)
Diesel	19,306	22	42	19,370
Electricity	83,864	379	478	84,720
Fuel Oil	79,700	91	171	79,962
Gasoline	92,878	111	210	93,199
Natural Gas	67,376	36	34	67,445
Solid Waste	6,047	139	172	6,358
Wastewater	-	711	599	1,310
Total	349,171	1,487	1,706	352,364

3.2 Buildings

Roughly 66% of South Portland's GHG emissions footprint is attributable to energy use in buildings. Building GHG data was computed from actual citywide electricity and natural gas consumption information. Fuel oil use was modeled using the methodology described in section 4.5; all fuel oil was assumed to be No. 2 fuel oil, though in practice other grades of fuel oil may also be in use.

While in Portland, commercial buildings are the main source of building sector GHG emissions, in South Portland, the industrial sector is the largest.

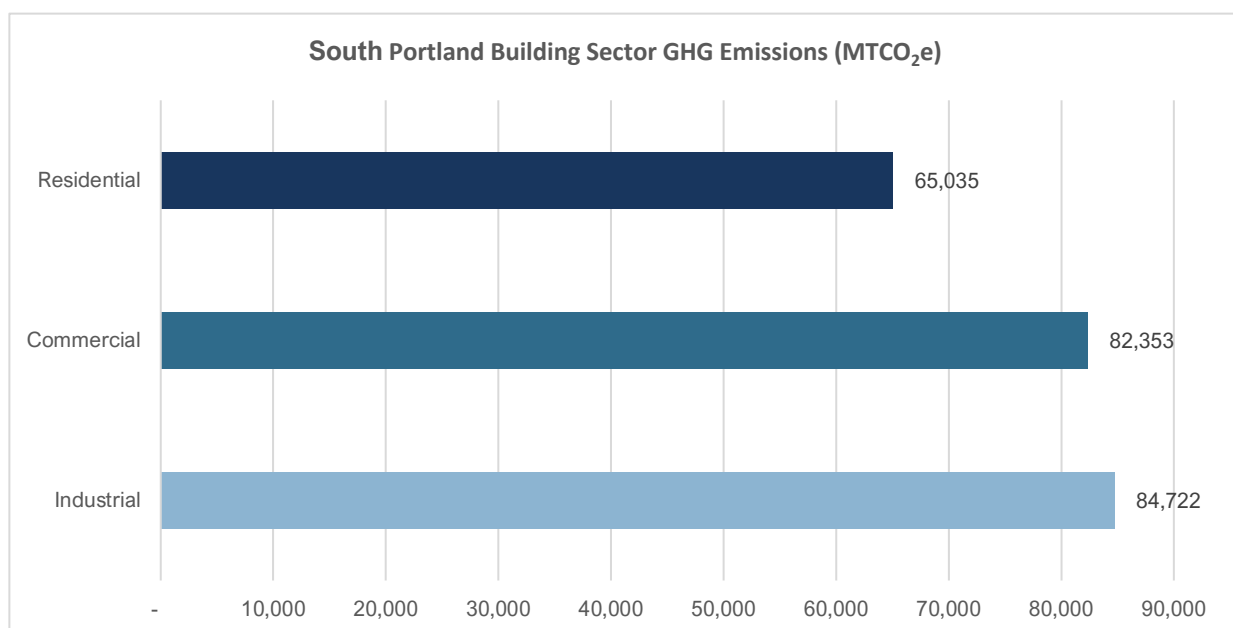


Figure 12: South Portland 2017 building sector GHG emissions, MTCO₂e.

Table 12: Site and source energy use by building sector.

Sector and Energy Use	Site Energy (MMBTU)	Source Energy (MMBTU)
Residential	954,308	1,375,052
Electricity	222,627	623,356
Fuel Oil	414,232	418,374
Natural Gas	317,450	333,323
Commercial	1,214,552	2,232,339
Electricity	551,170	1,543,276
Fuel Oil	187,207	189,079
Natural Gas	476,175	499,984
Industrial	1,259,998	1,842,335
Electricity	307,648	861,414
Fuel Oil	476,175	480,937
Natural Gas	476,175	499,984
South Portland Total	3,428,859	5,449,726

3.3 Transportation

All transportation GHGs included in the South Portland inventory were from on-road sources within the city boundaries, using the methodology described in section 4.6.1. Vehicle miles traveled were apportioned based on the registered vehicles in South Portland. Data was not available for any ships docking in South Portland, nor for passenger or freight trains passing through South Portland.

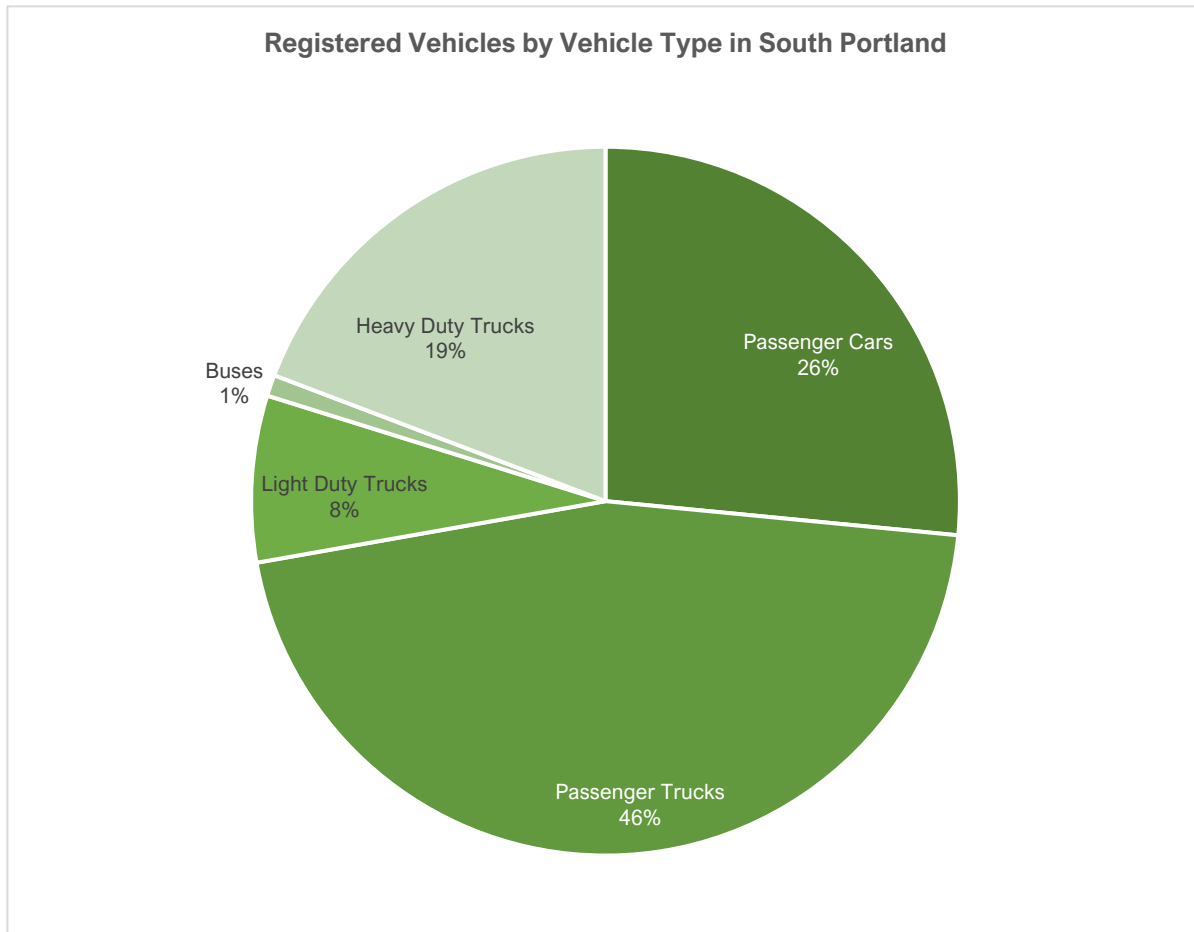


Figure 13: South Portland registered vehicles by vehicle type.

3.4 Waste

Most waste emissions in South Portland's inventory are scope 3 emissions. Almost all non-recyclable waste that is collected in South Portland goes to the ecomaine incinerator in Portland and is burned. A small food waste pilot sends some food waste to an anaerobic digester outside of town. No emissions are attributed to landfills, because ash from the incinerator that goes to landfills is inert and does not produce further emissions. Wastewater emissions listed here are estimated process emissions from the breakdown of wastewater. The energy used for processing wastewater is captured in industrial energy use.

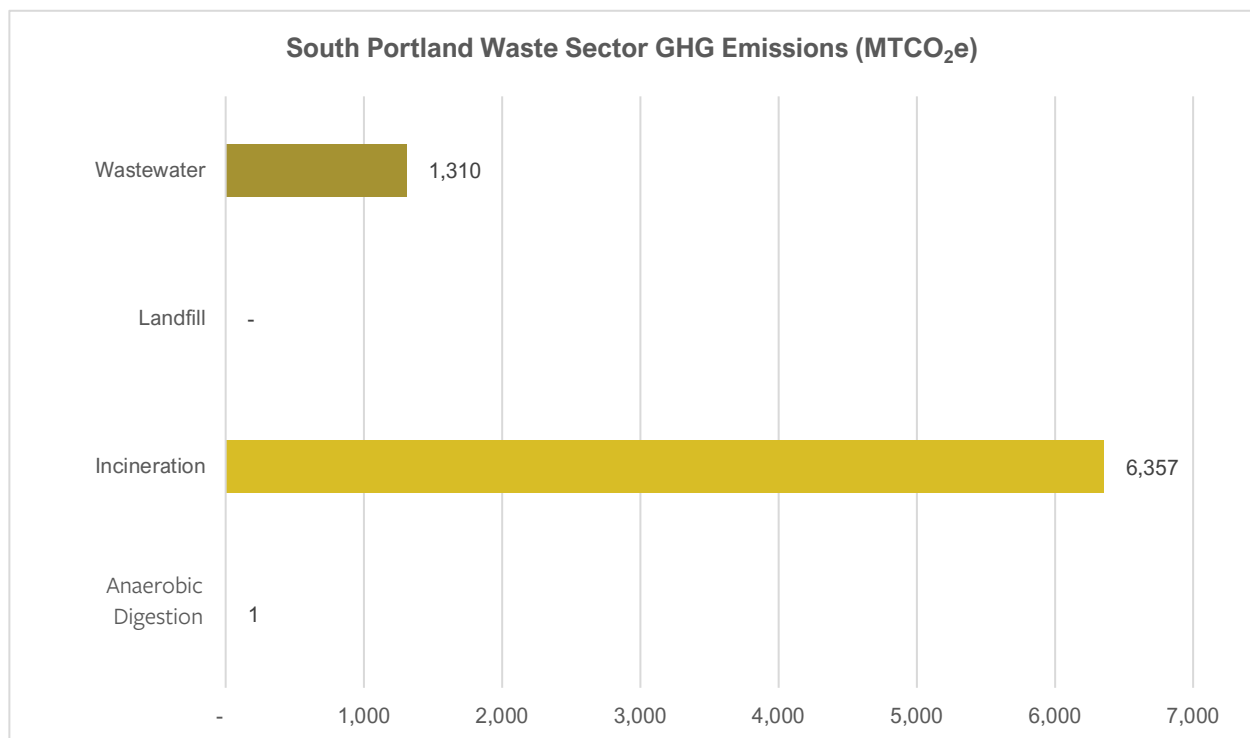


Figure 14: South Portland waste emissions, MTCO₂e.

4 Methodology

4.1 Uncertainty

The inventories are compiled using measured data, projections, models, and, where data is unavailable, best estimates. The inventories will be regularly revised as new and better data become available, as models are improved, and as international standards and guidance evolve. For these reasons, longer-term trends are likely to prove more reliable than absolute numbers or year-to-year changes.

4.2 Citywide Protocol

Both inventories follow the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)⁴ for compliance with the Global Covenant of Mayors for Climate and Energy and the Carbon Disclosure Project. The inventories were compiled and submitted using the City Inventory Reporting and Information System (CIRIS) tool from C40 Cities,⁵ which is compliant with the Global Covenant of Mayors' 'Common Reporting Framework' (CRF).⁶

It was decided by the Cities of Portland and South Portland and the consultant team to use the BASIC approach in the GPC. Compared to the GPC BASIC+ option, using the BASIC methodology aligns the inventories better with the elements the cities can control. BASIC includes all scope 1 and 2 emissions, as well as the scope 3 out-of-boundary waste and wastewater emissions. However, the BASIC methodology excludes other major scope 3 emissions sources such as emissions from leakage of natural gas, emissions from electricity that is lost in transmission, and emissions from out-of-boundary aircraft or ships.

4.3 Differences from the Portland 2010 Inventory

The use of the GPC BASIC protocol also represents a major shift from the last GHG inventory that was completed for Portland in 2010.⁷ That inventory used the ICLEI protocol, which was common at the time but has been superseded by the GPC. There are several critical differences between the 2010 Portland inventory and the 2017 Portland inventory. (These notes are not applicable to South Portland, which had no prior community-wide inventory.)

4.3.1 Heating Fuels:

The 2010 inventory estimated natural gas and fuel oil consumption based on statewide data. However, there has been a rapid expansion of natural gas hookups and the use of natural gas as a heating fuel in Portland and South Portland over the past decade. Actual natural gas data was acquired for 2017. Using the actual natural gas data, U.S. Department of Energy (DOE) data on heating energy intensity, tax data on heating fuel

⁴ GHG Protocol, Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) Washington, DC: World Resources Institute. <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>

⁵ C40 Cities. Reporting GHG emissions inventories <https://resourcecentre.c40.org/resources/reporting-ghg-emissions-inventories>

⁶ Global Covenant of Mayors for Climate and Energy. Global Common Reporting Framework. <https://www.globalcovenantofmayors.org/our-initiatives/data4cities/common-global-reporting-framework/>

⁷ City of Portland, Community Inventory of Greenhouse Gas Emissions, 2010. <https://www.portlandmaine.gov/DocumentCenter/View/6278/GHG-Inventory-2010>

type, and analysis by another consultant team, fuel oil use was estimated per building type, as described in detail in section 4.5.

4.3.2 Aircraft Emissions:

The 2010 inventory included GHG emissions from all outgoing flights from Portland International Jetport (PWM), prorated for the percentage of travelers who were Portland residents. The GPC BASIC protocol does not include these scope 3 emissions, so they were excluded from the 2017 inventory. The BASIC protocol does include emissions from intracity aircraft, such as helicopters that depart and land within the city limits, or recreational planes that depart and return to the city without landing elsewhere. However, no data on intracity helicopter or small plane traffic was available, and such emissions are likely trivial.

4.3.3 Marine Fuel Emissions:

The 2010 inventory attributed GHG emissions to all ships that came to Portland, attributing a portion of national data for marine fuel use to Portland based on the ratio between ships that docked in the city and ship traffic nationally. The GPC BASIC protocol does not include these scope 3 emissions, so they were excluded from the 2017 inventory. The BASIC protocol does include emissions from ships while docked, and ships traveling within the city boundaries (or not docking anywhere else). A portion of these emissions were able to be estimated:

- Cruise ships maintain power by running auxiliary engines while docked; as they are within the city, they are scope 1 emissions. Emissions from these cruise ships were estimated using the methodology described in section 4.6.2.
- The Casco Bay Lines ferry system travels between the Portland peninsula and Portland's islands; as these routes are within the city, they are scope 1 emissions. These emissions were estimated from an approximation of annual fuel use by Casco Bay Lines.
- Emissions from the fuel used by commercial lobster and fishing boats and recreational boats that depart from and return to Portland without docking elsewhere is within scope 1. However, no data on the total number of boats or their fuel use was available, and the emissions are unlikely to be very significant at a citywide scale.
- Emissions from any tankers and container ships that dock at Portland would be in scope, but no data on the numbers and size of these ships was available.

4.3.4 Train Travel:

The 2010 inventory estimated emissions from freight trains and passenger trains. No train data was available for the 2017 inventory, and so train emissions are missing from the inventory; again, such emissions are likely trivial.

4.3.5 Passenger Vehicle Emissions

Vehicle miles traveled (VMT) were calculated based on all trips within city borders in both cities. Vehicle emissions were modeled proportionally to the weighted average fuel economy of the registered vehicle stock in Portland.

4.3.6 Waste Incineration:

Ecomaine was able to provide a facility-specific emissions factor for their waste incinerator for 2017. The ecomaine incinerator has a relatively low emissions intensity, compared to national averages, likely related to its ISO compliance.

4.3.7 Electrical Emissions Factor:

The 2017 inventory uses the 2016 GHG intensity for the Northeast Power Coordinating Council (NPCC) New England sub-region factor from EPA's eGRID database of regional GHG intensities; this region is aligned with ISO New England. Due to increasing renewable energy generation, this emissions factor is lower than ones used in the past.

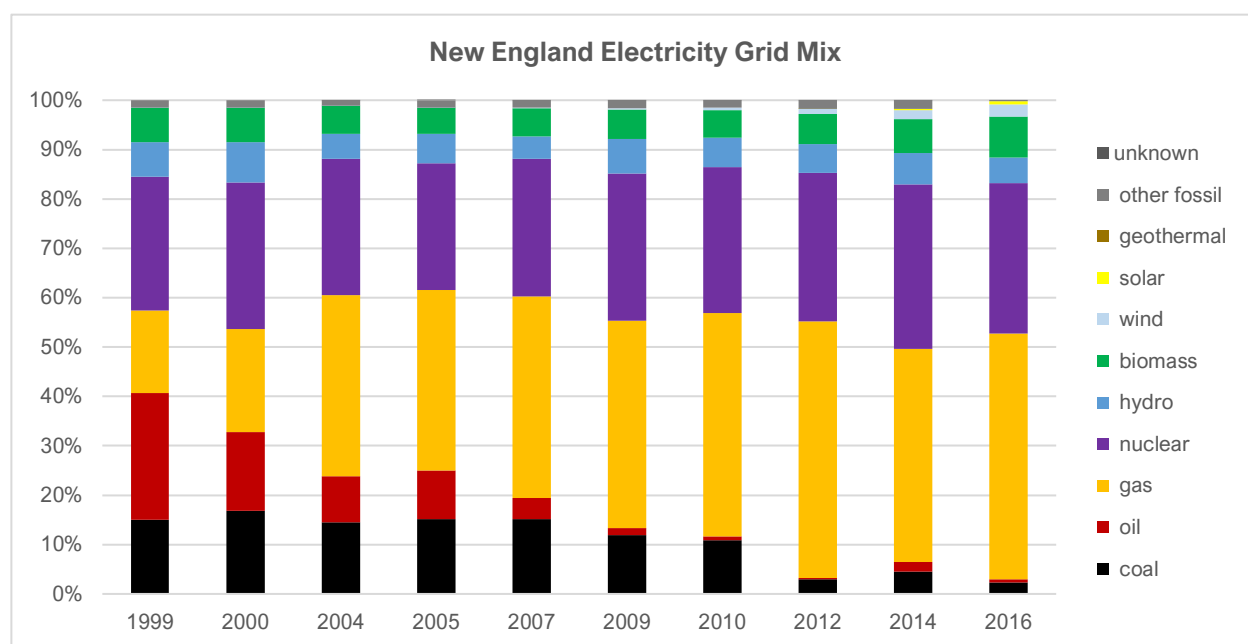


Figure 15: New England grid mix, 1999-2016.

4.3.8 Results of the differences in approach:

These changes collectively result in Portland's 2017 GHG footprint of 840,419 MTCO₂e appearing to be 26% smaller than the 1,140,875 MTCO₂e published for 2010. Most of the difference comes from mobile sources, which are 51% less in the new inventory, due mostly to the exclusion of transboundary aircraft and ships. It is possible that the actual GHG footprint of Portland has decreased some in the intervening time, but the two inventories cannot be directly compared.

4.4 Greenhouse Gases Included

The inventory quantified three of the six internationally recognized GHGs, including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). The emissions of the other three internationally recognized GHGs, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆), were considered negligible to the emissions inventory under the assumption that all refrigerators and air conditioners are disposed of properly, since the disposal of any appliances that could emit those GHGs is regulated by the State of Maine. Fugitive emissions of SF₆ were not researched. Emissions of the three measured GHGs were converted to metric tons carbon dioxide equivalent (MTCO₂e) emissions using the Global Warming Potential (GWP) coefficients of each gas developed by the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report.

4.5 Stationary Sources

4.5.1 Data Sources

Electricity consumption data for Portland and South Portland for 2017 and 2018 was provided to the Cities via email by Central Maine Power (CMP), broken out between commercial, residential, and industrial sectors, including total consumption and number of accounts.

Across the State of Maine, fuel oil is the dominant source of space heating and domestic hot water for buildings. However, natural gas use has been rapidly expanding in Portland and South Portland over the last decade, and so the Cities and the consultant team did not consider statewide data on natural gas and fuel oil use to be representative of city-specific energy use and an early priority was placed on accessing actual natural gas data for both cities. (This effort took some time, and the difficulties encountered directly inform One Climate Future action BE 5.2.) The natural gas utility Unitil provided natural gas data for the commercial and residential sectors for calendar years 2017 and 2018 to the Cities via email in October 2019.

Other than for municipal facilities, no fuel oil data was available: fuel oil is delivered by many companies, and these companies were unwilling to share data on their sales. This situation is very common across the country. In most places, statewide fuel oil sales data can be used to estimate citywide fuel oil use, but because of the recent expansion of natural gas infrastructure in Greater Portland, this was not feasible.

To develop the One Climate Future modeling, the consultant team had to develop estimates of energy use intensity (EUI), measured in kBtu/ft², for various building types, for electricity, natural gas, and fuel oil. This process also provided the fuel oil estimates for each city.

4.5.2 Energy Use Estimation and Assumptions

To allocate a specific energy consumption to various building categories, the consultant team first compiled building floor areas from city parcel data, and then developed a set of preliminary energy use intensities based on the U.S. Energy Information Administration's nationwide building energy surveys—the Commercial

Building Energy Consumption Survey (CBECS) for 2012 and the Residential Energy Consumption Survey (RECS) from 2015.^{8,9}

Electricity EUIs for commercial buildings were developed for each building type from the 2012 CBECS data for the Northeast or New England region, depending on data availability. Electricity EUIs for residential buildings were developed from the RECS data and models for the ASHRAE Climate Zone 6A.

Natural gas use and fuel oil use in residential buildings was estimated using Residential Prototype Building Models from the U.S. Department of Energy and the Pacific Northwest National Laboratory (PNNL) for the state of Maine.¹⁰ Natural gas and fuel oil use in commercial buildings used the 2012 CBECS for New England. These models were used to develop EUI estimates for heating loads by fuel type. The assignment of residential buildings to heating fuel types built on a prior analysis for both cities done by Meister Consultants Group (MCG), which was provided to the consultants by the Cities. Once floor area and unit counts had been determined for building and fuel type, EUI per square foot or per unit were assigned.

Estimated EUIs for each type were multiplied by the floor area, and the electricity and natural gas results compared to the total consumption numbers. There was only a small difference between the top-down and bottom-up energy use numbers; electric and gas EUIs were adjusted by maintaining the same energy consumption ratio seen with the preliminary EUIs and shifting the EUI to match total energy consumption. Since the residential and commercial building code data showed that the heating EUI of a building with the same equipment and efficiency is equivalent for natural gas and fuel oil, the adjustments to local EUIs made to the natural gas consumption were also applied to the fuel oil consumption.

Industrial sector electricity use was developed directly from the CMP data. Unlike CMP for electricity, Unifil does not have separate rate classes for industrial users; industrial gas use was grouped into the commercial data. To estimate industrial gas use, the commercial gas data was apportioned between commercial and industrial sectors based on the ratio of commercial and industrial electricity use in each city. Industrial fuel oil use was estimated based on the MCG data that identified industrial lots that use fuel oil, and assuming similar fuel oil energy use intensities. (This assumption would benefit from refinement in future inventories.)

⁸ US Energy Information Administration (EIA). 2012 Commercial Building Energy Consumption Survey (CBECS) Data. Retrieved from <https://www.eia.gov/consumption/commercial/data/2012/index.php?view=consumption>

⁹ US Energy Information Administration (EIA). 2015 Residential Energy Consumption Survey (RECS) Data. Retrieved from <https://www.eia.gov/consumption/residential/data/2015/>

¹⁰ US Department of Energy (DOE). Residential Prototype Building Model. Building Energy Codes Program. Retrieved from https://www.energycodes.gov/development/residential/iecc_models

Table 13: Floor area and energy use intensity (EUI) findings.

Sector	Portland Floor Area	South Portland Floor Area	Site EUI (kBtu/ft ²)	Electric EUI (kBtu/ft ²)	Natural Gas EUI (kBtu/ft ²)	Fuel Oil EUI (kBtu/ft ²)
Residential	40,453,915	13,687,137				
Single Family	19,020,191	9,421,168	64.6	12.5	10	42.1
Apt 2-4	8,445,101	1,815,991	77	17.4	30.1	29.4
Multi-family	12,988,623	2,449,978	73.5	19	36.9	17.6
Commercial	41,548,843	10,055,727				
Education and Institutional	2,295,620	435,211	107.3	30.4	53	23.4
Government - City	3,117,298	306,156	73.9	41.1	42	0.4
Government - Other	1,952,984	216,088	127.9	43.2	42	42
Office	7,687,843	2,243,666	115	43.2	46.1	23.4
Other Commercial	17,496,539	5,461,336	115.4	43.5	46.1	23.4
Healthcare	3,447,597	34,682	127.1	55.5	70.6	0
Warehouse and Storage	5,550,962	1,358,588	83.7	12.4	46.1	23.4
Parking	378,341	N/A	20	20	0	0
Industrial	3,195,487	755,973	696.0 ¹¹	208	244.9	242.8
Total	85,576,586	24,498,837				

Table 14: 2017 stationary energy use by sector, in MMBTU.

City/Sector	Electricity (MMBTU)	Natural Gas (MMBTU)	Fuel Oil (MMBTU)	Total Stationary Energy (MMBTU)
Portland Stationary Energy	2,337,226	3,276,000	2,743,837	8,357,063
Commercial	1,493,645	1,965,600	904,002	4,363,247
Industrial	314,718	491,400	483,438	1,289,555
Residential	528,863	819,000	1,356,398	2,704,261
South Portland Stationary Energy	1,081,445	1,269,800	1,077,614	3,428,859
Commercial	551,170	476,175	187,207	1,214,552
Industrial	307,648	476,175	476,175	1,259,998
Residential	222,627	317,450	414,232	954,308
Total Stationary Energy	3,418,671	4,545,800	3,821,451	11,785,922

Neither Portland or South Portland have any agriculture, forestry, or mining, so emissions reported for the stationary sector are limited to those associated with building and industrial energy use.

¹¹ Industrial energy use intensities per square foot are provided for consistency, but these are not meaningful, as the primary drivers of energy use in industrial facilities are process loads largely uncorrelated with floor area.

4.6 Mobile Sources

4.6.1 Road Traffic

The GHG emissions for vehicles were based on the vehicle miles traveled (VMT) and the GHG intensities of fuel sources. As is standard for calculating VMT and tracking transportation sector emissions, VMT numbers were based on the miles traveled within the boundaries of the cities, regardless of whether the vehicle owners reside in the cities or whether the vehicles are purchased at dealers within the city limits. Because sport utility vehicles (SUVs) and pickup trucks are a common mode of transit in Maine, passenger vehicle VMT was broken out between passenger vehicles and light duty trucks.

Maine Department of Transportation (MaineDOT) data was used to calculate the total VMT on each road segment in each city, and from this, we can estimate that a total 748,773,000 vehicle miles were traveled across the two cities in the baseline year (2017).

This extremely granular data does not tell us which vehicles traveled on which roads, however. To estimate energy use and emissions, vehicle registration data was used to look at the registered vehicle stock within each city. U.S. Department of Transportation and U.S. Energy Information Administration data for the fuel economy of vehicles sold in each class and model year was matched to the registered vehicle stock, and from this, weighted average fuel economy calculations were created for each city and each vehicle class. The resulting tables are shown below.

Table 15: Portland on-road VMT and fuels.

Vehicle Type	Fuel Type	Number of Vehicles	VMT	MPG (Weighted)	Fuel Use (MMBTU)	GHG (MTCO _{2e})
Passenger Cars	Diesel	232	2,350,594	33.3	9,810	728
	Electric	48	486,330	N/A	280,499	75
	Gasoline	23816	241,300,624	32.9	1,017,975	71,730
	Hybrid Electric	1413	14,316,333	34.1	58,328	4,110
Passenger Trucks	Diesel	108	1,094,242	17.2	8,843	656
	Gasoline	19748	200,084,176	17.2	1,616,959	113,936
	Hybrid Electric	138	1,398,198	17.2	11,299	796
Light Duty Trucks	Diesel	166	1,681,890	17.2	13,631	1,011
	Gasoline	4554	46,140,538	17.2	372,851	26,272
	Hybrid Electric	20	202,637	17.4	1,616	114
Buses	CNG	31	314,088	3.3	11,401	606
	Diesel	82	830,813	3.3	34,995	2,597
	Gasoline	38	385,011	3.3	16,217	1,143
Heavy Duty Trucks	Diesel	994	10,071,079	5.3	264,128	19,599
	Gasoline	529	5,359,759	5.3	140,567	9,905
Total	Diesel	1,582	16,028,619	6.7	331,408	24,591
	Gasoline	48,685	493,270,108	21.7	3,164,570	222,985

	Hybrid Electric	1,571	15,917,168	31.1	71,243	5,020
	CNG	33	334,352	3.4	11,700	622
	Electric	48	486,330	N/A	280,499	75

Table 16: South Portland on-road VMT and fuels.

Vehicle Type	Fuel Type	Vehicles	VMT	MPG (Weighted)	Fuel Use (MMBTU)	GHG (MTCO ₂ e)
Passenger Cars	Diesel	80	810,550	33.3	3,386	251
	Electric	11	111,451	N/A	64,281	17
	Gasoline	9441	95,654,988	32.7	406,314	28,630
	Hybrid Electric	489	4,954,485	34.2	20,125	1,418
Passenger Trucks	Diesel	58	587,648	17.2	4,749	352
	Gasoline	8936	90,538,394	17.2	731,677	51,556
	Hybrid Electric	48	486,330	17.2	3,930	277
Light Duty Trucks	Diesel	57	577,517	17.3	4,652	345
	Gasoline	1442	14,610,157	17.2	118,069	8,319
Buses	Diesel	33	334,352	3.3	14,083	1,045
	Gasoline	2	20,264	3.3	854	60
Heavy Duty Trucks	Diesel	879	8,905,914	5.3	233,570	17,332
	Gasoline	247	2,502,572	5.3	65,633	4,625
Total	Diesel	1,107	11,215,980	6.0	260,440	19,325
	Gasoline	20,068	203,326,374	21.4	1,322,546	93,191
	Hybrid Electric	539	5,461,078	31.3	24,220	1,707
	Electric	11	111,451	N/A	64,281	17

4.6.2 Off-Road Traffic

Cruise ships maintain power by running auxiliary engines while docked. As this process occurs within the city, they are scope 1 emissions. Emissions from these cruise ships were estimated by using the Cruise Ship visit schedule for 2017 from the City of Portland to calculate the number of hours each cruise ship was docked in Portland, the size of each ship, and whether more than one ship was docked at any one time.¹²

To use this data to estimate emissions from docked cruise ships, we reviewed two studies of docked ship emissions from Los Angeles (Port of Los Angeles) and Seattle, Washington (Puget Sound Maritime Air Forum).^{13,14} Cruise ships that are hoteling at dock generally run two engines—an auxiliary diesel engine and

¹² Portland Maine 2017 Cruise Schedule. Retrieved from <https://www.portlandmaine.gov/DocumentCenter/View/27428/2017-Cruise-Schedule>

¹³ Starcrest Consulting Group. 2018. "Inventory of Air Emissions for Calendar Year 2017." Port of Los Angeles. Retrieved from https://kentico.portoflosangeles.org/getmedia/880bc597-84bc-4ae6-94e2-59a2e6027f42/2017_Air_Emissions_Inventory

¹⁴ Starcrest Consulting Group. 2018. "2016 Puget Sound Maritime Emissions Inventory, Revised October 2018" Puget Sound Maritime Air Forum. Retrieved from <https://pugetsoundmaritimeairforum.files.wordpress.com/2018/10/final-2016-psei-report-19-oct-2018-scg.pdf>

an auxiliary boiler. For each ship, the auxiliary engines were assessed based on the passenger size; variable passenger size estimates were not available for backup boilers. Only hoteling emissions were included, because only those could be guaranteed to be within the scope of the inventory—while maneuvering emissions might occur within the city borders, reliable data on the length of time the ships spend maneuvering was not available. No tanker docking information was available for South Portland, so tanker hoteling emissions were not included.

Table 17: Ship hoteling energy use assumptions.

Engine	Passenger Size Class	kW Demand		
		Transit	Maneuvering	Hoteling
Cruise Ship Auxiliary Engine	<1,500	5,733	6,800	3,267
	1,500-2,000	7,000	9,000	5,613
	2,000-2,500	11,000	11,350	6,900
	2,500-3,000	9,781	8,309	6,089
	3,000-3,500	8,313	10,116	8,313
	3,500-4,000	9,934	11,764	10,600
	4,000-4,499	12,500	14,000	12,000
	4,500-4,999	13,000	14,500	13,000
Cruise Ship Boiler	<4,000	282	361	918
Tanker Boiler	N/A	N/A	145	220

The Casco Bay Lines ferry system travels between the Portland Peninsula and Portland's islands; as these routes are within the city, they are scope 1 emissions. Casco Bay Lines staff estimated that their ferries consume 240,000 gallons of marine diesel fuel per year.

Table 18: Cruise ship and ferry energy use and emissions.

Type of Vessel Energy Use	Annual Diesel Use (units variable)	Annual Energy Consumption (kBtu)	Annual GHG Emissions (MTCO ₂ e)
Cruise Ship Auxiliary Engines, Diesel	6,004,611 kWh-e	20,487,733	4,167
Cruise Ship Boilers, Diesel	250,192 kWh-e	853,656	231
Ferry Fuel Consumption, Diesel	240,000 gallons	33,120,000	2,479

Emissions from passenger and freight rail and intracity aircraft—such as helicopters that depart and land within the city limits or recreational planes that depart and return to the city without landing elsewhere—were not included due to limited data availability. It is estimated that such emissions would be negligible.

4.7 Waste and Wastewater

4.7.1 Solid Waste

Solid waste data was provided by ecomaine. All waste in Portland and South Portland is collected and processed by ecomaine. Waste that is not recycled or taken to an anaerobic digester is incinerated at the ecomaine incinerator in Portland. The emissions from the plant are prorated to only capture the portion attributable to Portland and South Portland waste streams (along with the relatively small amount of energy and emissions needed for ecomaine operations, which are attributed to Portland because of the plant's location). In accordance with the GPC protocol, emissions from the incineration of biogenic waste (e.g. paper, food waste, wood products) are considered carbon-neutral for the purposes of the inventory. The incinerator produces ash, which goes to landfills, but is inert and has no further GHG emissions.

Portland and South Portland have begun operating a small food waste pilot, which takes food waste to an anaerobic digester. A portion of the collected waste is contaminants and not suitable for digestion, and this portion was assumed to go to the incinerator.

The emissions intensity of incineration was provided by ecomaine, and applied to the total waste sent to the incinerator from each city. Emissions from the digested food waste were modeled using the "CIRIS Biological Treatment of Solid Waste Emissions Calculator."

Table 19: Solid waste volumes.

Category/Sub-Category	Tonnes
Residential Disposed Waste Total	16,400
Residential MSW	15,402
Residential Bulky	999
Commercial Disposed Waste Total	65,820
Commercial MSW	54,454
Commercial Bulky	11,365
Food Waste	5,396
Food Waste Digested	4,143
Food Waste Contaminates	1,253
Inert Ash [no GHGs]	21,979
Residential Recycling [no GHGs]	7,843
Commercial Recycling [no GHGs]	8,639
Total MSW including recycling	126,077
Total MSW producing GHGs	87,616

4.7.2 Wastewater

Wastewater energy use is included in the industrial energy use sector for the inventory, though the One Climate Future modeling broke it out using data from Portland and South Portland. Wastewater process emissions were modeled using data provided by the Portland Water District and the South Portland Water Resource Protection Department, and the “CIRIS Wastewater Emissions Calculator.” Wastewater process emissions were estimated at 3,959 MTCO₂e annually.

Memorandum

Community Energy and Emissions Modeling Technical Methodology

To: City of Portland, City of South Portland, & Linnean Solutions

From: Integral Group & Daybreak Climate Consulting

Date: August 2020

Re: Methodology for One Climate Future Community Energy and Emissions Modeling, 2017-2050

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1 Model Overview

One Climate Future sets a goal of reducing citywide greenhouse gas (GHG) emissions 80% by 2050, with an interim goal of 35% by 2030. To analyze options to achieve that goal, subconsultants Integral Group and Daybreak Climate Consulting developed an Excel-based GHG emissions model to inform and model plan actions for all quantified sources of GHG emissions in Portland and South Portland.

The model is built on, and aligned with, the 2017 GHG inventories conducted by Integral Group and Daybreak Climate Consulting that were completed for the Cities of Portland and South Portland in 2019-2020. Those inventories follow the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC).¹ Wherever possible, modeling of future emissions has been aligned with standards in the GHG inventories to allow the cities to more easily track progress over time. Because the One Climate Future plan is for both cities, the results of the two inventories were combined and input into a single model, and baseline and projected numbers will appear larger than would be expected for either city on its own. The inventories show that both the scale and distribution of emissions between different fuels and sectors are extremely similar in both cities, with a few small exceptions: the industrial sector is larger in South Portland, and Portland has more non-road transportation infrastructure (e.g., Harbor, Jetport). Overall, combining the

¹ GHG Protocol, Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) Washington, DC: World Resources Institute. Retrieved from <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>

two inventories into a single baseline and model simplifies planning while still yielding results applicable to each city.

The consultant team used the model to estimate future energy and emissions under a business-as-usual (BAU) scenario, and to quantify the potential impact various actions could have on different sectors. Actions are compared against a “no action” BAU scenario, which assumes growth in economic activity and population, but does not include energy efficiency or renewable energy policies at the city, state, or federal levels. The model is intended to inform the Cities on how they can achieve the One Climate Future 2050 climate target; it is not meant to quantify all actions or assign savings to specific actions. The team quantified specific programs and policies where actions are more directly quantifiable, such as new construction codes. In other cases, where actions are more difficult to tie to specific savings, the team focused on determining the scale of action required to achieve the climate and energy targets, looking either at feasible levels of market transformation, or achieving specific sectoral targets. All data in the model is annualized, and the model does not account for hourly or seasonal variation in energy use or emissions.

The model is not intended to be a predictive tool and does not account for costs or externalities other than GHG emissions. The intent of the One Climate Future plan is to provide the cities with a roadmap for how the two cities can achieve their GHG reduction targets. The plan provides this roadmap through a package of policy and program recommendations, with additional information and recommendations regarding the design and implementation of such actions based on available research and experiences in other leading jurisdictions. The specific design and implementation of many of these actions will take further analysis, including understanding the potential cost-effectiveness and relative feasibility of program and policy approaches and designs. The model also shows one way of achieving the goals of One Climate Future; other paths may also be feasible.

This memo is divided up into four major sectors: Energy Supply, Buildings and Industry, Transportation, and Waste. For each sector, the baseline and BAU assumptions are discussed first, and then the policy scenario assumptions. The titles of the policy scenario sections correspond to the titles in the wedge charts depicting GHG savings by policy. Table 1 shows how actions are aggregated into plan sections, and which plan actions each wedge most relates to.

Table 1: Action Grouping

Plan Section	Plan Sub-section	Wedge	Plan Actions	Methodology Memo Section
BE	BE 1: Municipal Buildings and Energy	Municipal Renewable Energy	BE 1.1	2.2.3
		Municipal Building Efficiency	BE 1.2, 1.3	3.2.4
	BE 2: New Construction Energy Efficiency & Decarbonization	New Construction Policies	BE 2.1, 2.3	3.2.1
	BE 3: Existing Buildings Energy Efficiency & Decarbonization	Existing Building Efficiency	BE 3.1, 3.2, 3.3	3.2.2
		Existing Building Decarbonization	BE 3.4, 3.5, 5.4, 5.6	3.2.3
	BE 4: Industrial Energy Efficiency & Decarbonization	Industrial Decarbonization	BE 4.1, 4.2	3.2.5
	BE 5: Clean and Renewable Energy	Renewable Portfolio Standard	BE 5.1	2.2.1
		Local Solar	BE 2.2, 3.5, 3.6, 5.1	2.2.2
TLU	TLU 1: Mode Shift & Land Use	Mode Shift and Land Use Policies	TLU 1 (all)	4.2.1
	TLU 2 & 3: Vehicle Electrification and Infrastructure	Bus Electrification	TLU 2.3	4.2.2
		Fuel Economy Standards	N/A	4.2.3
		Electric Vehicle Adoption	TLU 2.1, 2.2, 2.4, 2.5	4.2.4
		Ferry and Ship Electrification	TLU 3.3, 3.4	4.2.5
WR	WR 1 & 2: Waste Reduction	Solid Waste Reduction	WR 1 (all)	5.2.1
		Wastewater Efficiency	WR 2.3	5.2.2

2 Energy Supply and Emissions Intensities

The assessment models greenhouse gas emissions from all sectors from now through 2050, accounting for all energy use, energy sources, and emissions factors. The business-as-usual scenario assumes that the 2017 baseline emission factors all stay constant. Further, the BAU discounts the existing impact of renewable energy in order to capture the full effect of renewable energy in the policy wedge. The model then assesses the greenhouse gas emissions avoided between now and 2050, considering the implementation of a set of state and local policies for renewable electricity supply.

2.1 Baseline GHG Emissions Intensities

GHG intensity factors were applied to energy use by fuel type to calculate total GHG emissions. In the model, the GHG intensity of electricity accounted for losses from generation, but not from transmission and distribution (T&D), because T&D losses are not included in the GHG inventories. The model used the

Northeast Power Coordinating Council (NPCC) New England sub-region factor from EPA's eGRID database of regional GHG intensities for 2016; this region is aligned with ISO New England. However, in order to fully capture the impact of the renewable portfolio standard (RPS), the BAU GHG intensity of electricity was calculated by removing renewables from the BAU grid mix.

We kept the GHG intensity (tCO₂e/kBtu) of all energy types constant in the BAU scenario. This was done to capture and communicate the impact of state policy for renewable energy and carbon pricing, most notably the RPS. The BAU model does not assume additional declines due to the federal regulation or electricity generation plant closures and replacements. To avoid overly optimistic assumptions about declining electricity emissions, these external forces were assumed not to decrease the electricity emissions factor. This means deeper emissions reductions from changes in electricity supply are very likely to occur than is modeled for the BAU scenario.

Table 2: Electricity BAU GHG Intensity

	Baseline from eGRID (tCO ₂ /kBtu)	Baseline without Renewable Energy (tCO ₂ /kBtu)	Trajectory
Electricity GHG Emissions Factor	7.75E-05	9.04E-05	Declines due to renewable energy policies
Carbon dioxide factor	7.75E-05	9.04E-05	
Methane factor	3.35E-07	3.91E-07	
Nitrous oxide factor	4.23E-07	4.93E-07	

The emissions factors for natural gas, fuel oil, gasoline, and diesel are a function of their carbon content and are constant over time. For simplicity, all fuel oil use is assumed to be No. 2 Fuel Oil, and all diesel use is assumed to be standard diesel. In reality, there is likely some marginal use of Fuel Oil Nos. 1, 4, 5, & 6; however, the data collected for the inventory and the model does not allow the disaggregation of fuel oils, and the marginal differences in GHG emissions would not have a significant effect on the modeling. (The differences in criteria pollutants among fuel oils is more significant, but non-GHG air pollutants are not within the scope of the modeling.) Marine diesel does have a slightly different composition and GHG factor than the diesel fuel used in land vehicles; this difference is accounted for the inventory, but it is minor and in the interest of simplicity was not included in the modeling.

Our analysis did not include fugitive emissions from transmission and distribution of natural gas, because these losses are not included in GHG inventories, in alignment with the GPC BASIC protocol.

Table 3: Fossil fuel GHG intensities.

	Emissions Factor (tCO ₂ e/kBtu)	Trajectory
Natural Gas GHG Emissions Factor	5.31E-05	Constant over time in all scenarios
Fuel Oil No. 2 GHG Emissions Factor	7.44E-05	
Gasoline GHG Emissions Factor	7.22E-05	
Diesel GHG Emissions Factor	7.41E-05	

2.2 Avoided Energy Supply Sector Emissions Due to Policies

2.2.1 Renewable Portfolio Standard

Renewable electricity currently supplies 16% of electricity in the ISO-NE region. Maine's new renewable energy portfolio (RPS) standard calls for 80% of electricity supply to come from renewable sources by 2030, and 100% of the electricity supply to come from renewable power by 2050.

To fully show the impact of the recently updated RPS, the BAU assumes that 16% of electricity comes from renewable sources from now until 2050. The policy scenario then increases the renewable portion of electricity, beginning at 16% in 2017 (to align with the inventory), and rising to 80% by 2030 and 100% by 2050.

These GHG savings show up in the Renewable Portfolio Standard wedge. As the actions in section BE 5 of the One Climate Future plan most directly relate to the RPS and statewide renewable energy, these savings are counted towards BE 5.

Table 4: Electricity GHG intensity projections under Maine RPS, 2017-2050.

Year	% Renewable	GHG Intensity (tCO ₂ e/kBtu)
2017	16%	7.832E-05
2018	21%	7.373E-05
2019	26%	6.914E-05
2020	31%	6.455E-05
2021	36%	5.996E-05
2022	41%	5.537E-05
2023	46%	5.078E-05
2024	50%	4.619E-05
2025	55%	4.160E-05
2026	60%	3.701E-05
2027	65%	3.242E-05
2028	70%	2.783E-05
2029	75%	2.324E-05
2030	80%	1.865E-05
2031	81%	1.771E-05
2032	82%	1.678E-05
2033	83%	1.585E-05
2034	84%	1.492E-05
2035	85%	1.398E-05
2036	86%	1.305E-05

2037	87%	1.212E-05
2038	88%	1.119E-05
2039	89%	1.025E-05
2040	90%	9.321E-06
2041	91%	8.389E-06
2042	92%	7.457E-06
2043	93%	6.525E-06
2044	94%	5.593E-06
2045	95%	4.661E-06
2046	96%	3.728E-06
2047	97%	2.796E-06
2048	98%	1.864E-06
2049	99%	9.321E-07
2050	100%	0.000E+00

2.2.2 Local Solar

Locally generated solar power counts towards the state RPS, and most-to-all of the Solar Renewable Energy Credits (SRECs) generated from locally produced solar are expected to be sold to entities that have to comply with the state RPS mandates. Therefore, local solar generation in the model does not increase overall renewable power in the model, but merely reassigns energy from the RPS wedge to the local solar wedge.

Local solar is assumed to supply a negligible (effectively 0%) amount of power today and to increase linearly over time until 2050.

Analysis done by GridSolar indicates the following as the full capacity for solar within Portland and South Portland in 2050, with solar PV installed to the fullest technical and economic extent.

Table 5: Maximum local solar PV capacity (GridSolar).

City	Number of PV Panels	MWh Annual Generation	MW Capacity ²
Portland	698,895	401,699	252
South Portland	343,703	197,793	123
Both	1,042,598	599,492	375

Solar built out to this capacity would provide 29% of all electricity needed in both cities, even with electrification of buildings. In reality, not all building owners will install solar, for a variety of reasons, even if it is both technologically and economically feasible. (For example, shading, structural integrity of roof space, owner desires, property turnover, planned demolition, the ratio of solar potential to on-site electricity use, etc.

² In line with GridSolar's assumptions of 360 watts/panel.

all factor into that decision.) Rather, the GridSolar estimate for full capacity represents proof that a significant supply of solar can be locally sourced.

Based on our work in other jurisdictions and experience with what can be considered a reasonable expectation, for the modeling we assumed that 14.5% of all electricity would be met by local solar, or half as much as included in GridSolar's analysis.

Avoided GHG emissions from renewable energy generated from solar PV systems within the Cities shows up in the Local Solar wedge. The One Climate Future actions that will most increase local solar are those that will expand solar installs on existing buildings included in plan section BE 3. However, as local solar will count towards the state RPS, the amount of renewable energy needed for Portland and South Portland that the RPS needs to supply from outside the Cities decreases as more local solar is installed. Thus, the savings from the RPS and from local solar cannot be looked at independently. Therefore, the savings from local solar are grouped with the other RPS savings under BE 5.

2.2.3 Municipal Renewable Energy

The model assumes that both Portland and South Portland procure 75% of their electricity supply from renewable sources starting in 2022, and 100% by 2032. The two municipal governments make up 1.9% of electricity consumption, so this initially decreases citywide electricity emissions by almost 2%; this relative impact declines over time, however, as municipal buildings undergo energy efficiency retrofits.

The savings from municipal renewable energy procurement show up in the Municipal Renewable Energy wedge and are counted with the other municipal buildings and energy actions in BE 1.

3 Buildings and Industry

The assessment models greenhouse gas emissions for buildings and industry from now through 2050, accounting for all energy use by buildings as well as industrial process loads. The business-as-usual scenario assumes energy use intensities stay constant, while accounting for projected growth in the cities. The model then assesses the greenhouse gas emissions avoided between now and 2050 if we were to implement a set of policy scenarios that focus on buildings and industry energy efficiency and decarbonization.

3.1 Baseline and Business-as-Usual Building Assumptions

3.1.1 Building Floor Area and Growth Rate

To address the growth in buildings, the consultant team used a stock turnover model based on tax parcel data provided by both cities. Buildings were aggregated into 12 broad categories based on their use classifications in the parcel data and the classifications available from the U.S Department of Energy, as shown in Table 6.

Portland, and to a lesser extent, South Portland, are experiencing a period of rapid growth in population and buildings. The population of Portland and South Portland is expected to grow by 1.5% per year. The model accounts for this growth through a change in floor area growth by sector. Because no official city estimates for floor area growth by sector were available, average annual growth rate (AAGR) assumptions were made based on Integral Group experience with similar sized cities on similar growth trajectories. These construction rates should not be seen as indicative of any official estimate by either city government or as endorsements of any given policy goal.

Table 6: Building floor areas.

Sector/Subsector	Gross Floor Area	AAGR%
Residential	54,141,052	
Single Family	28,441,359	0.45%
2-4-unit Multi-family	10,261,092	0.62%
5+ unit Multi-family	15,438,601	0.80%
Institutional and Government	7,971,690	
Education and Institutional	4,438,537	0.20%
Government - City	1,364,081	0.05%
Government - Other	2,169,072	0.05%
Commercial	43,428,233	
Office	9,984,137	0.43%
Healthcare	3,482,279	0.17%
Warehouse and Storage	6,948,374	0.17%
Other Commercial, including hotels	23,013,443	0.17%
Industrial	3,951,460	N/A ³
Parking	770,661	0%
Total	105,540,975	

3.1.2 Energy Use Intensity of Residential and Commercial Buildings

Electricity consumption data for Portland and South Portland for 2017 and 2018 was provided by CMP, broken out between commercial, residential, and industrial sectors, including total consumption and number of accounts. Natural gas consumption data for Portland and South Portland was provided by Unitil for 2017 and 2018, broken down into residential and commercial, including both total consumption and number of units. While the GHG inventories were completed for calendar year 2017, the consultant team noted significant differences in industrial energy use between the 2017 and 2018 data and opted to use 2018 electricity and natural gas data to inform the energy use intensity assumptions for the modeling. Other than the consumption of fuel oil in city-owned buildings, fuel oil consumption data was not available. While using fuel oil for heating is very common in Maine, there is an ongoing process of converting buildings to natural

³ Forward projections for industrial loads in Southern Maine were not available, and industrial energy use is largely uncorrelated with floor area, and so no industrial floor area growth rates were developed.

gas in Portland and South Portland. Therefore, state gas consumption numbers could not be considered as a reliable reference, proportionally, for either city.

As part of conducting the GHG inventory, Integral developed estimates of electricity, natural gas, and fuel oil consumption for each building category. This then could be divided by floor area to calculate the EUI, or the total amount of energy a building uses per year divided by total building area (e.g. kBtu/ft²/yr.). To allocate a specific energy consumption to the various building categories, a set of preliminary energy use intensities were developed based on EIA's nationwide building energy surveys--the Commercial Building Energy Consumption Survey (CBECS) for 2012 and the Residential Energy Consumption Survey (RECS) from 2015.^{4,5}

Electricity EUIs for commercial buildings were developed for each building type from the 2012 CBECS data for the Northeast or New England region, depending on data availability. Electricity EUIs for residential buildings were developed from the RECS data and models for ASHRAE Climate Zone 6A. Estimated EUIs for each type were multiplied by the floor area and compared to the total consumption for that building type. EUIs were adjusted by maintaining the same energy consumption ratio seen with the preliminary EUIs and shifting the EUI to match total energy consumption; only minor adjustments were needed.

Natural gas use and fuel oil use in residential buildings were estimated using energy models from the Residential Prototype Building Models from the U.S. Department of Energy and Pacific Northwest National Laboratory (LBNL) for the state of Maine.⁶ Natural gas and fuel oil use in commercial buildings used the 2012 CBECS for New England. These models were used to develop EUI estimates for heating loads by fuel type. The assignment of residential buildings to heating fuel types built on a prior analysis for both cities done by Meister Consultants Group (MCG), which was provided to the consultant team by the Cities. Once floor area and unit counts had been determined for building and fuel type, EUI per square foot or per unit were assigned. In the case of natural gas, these values were then adjusted to true up the totals with the citywide natural gas consumption data; only minor adjustments were needed. Since the residential and commercial building code data showed that the heating EUI of a building with the same equipment and efficiency is equivalent for natural gas and fuel oil, the adjustments to local EUIs made to the natural gas consumption were also applied to the fuel oil consumption.

All analysis was done using site EUIs, that is, the energy use as consumed at the building. Source energy, which accounts for losses in generation and transmission was not included. This aligns with the data sources above, which all use site EUI, and the GPC BASIC GHG Inventory standards, which apply GHG intensities to site energy use. Electricity generation losses are captured in the GHG intensities applied to electricity. Per the BASIC inventory standards, transmission and distribution losses are not included. The final energy use and EUI assumptions for the OCF modeling are as follows:

⁴ U.S Department of Energy. 2012 CBECS Survey Data <https://www.eia.gov/consumption/commercial/data/2012/index.php?view=consumption>

⁵ U.S Department of Energy 2015 RECS Survey Data <https://www.eia.gov/consumption/residential/data/2015/>

⁶ .S Department of Energy. Residential Prototype Building Models. https://www.energycodes.gov/development/residential/iecc_models

Table 7: Energy use and energy use intensity assumptions.

Building Type	Total Site EUI (kBtu/ft ²)	Electric EUI (kBtu/ft ²)	Natural Gas EUI (kBtu/ft ²)	Fuel Oil EUI (kBtu/ft ²)	Total Energy Use (MMBtu)	Total Electricity Use (MMBtu)	Total Natural Gas Use (MMBtu)	Total Fuel Oil Use (MMBtu)
Residential					3,762,504	828,044	1,163,524	1,770,936
Single Family	64.6	12.5	10.0	42.1	1,837,317	355,519	284,906	1,196,892
Apt 2-4	77.0	17.4	30.1	29.4	789,908	178,455	309,309	302,144
Multi-family	73.5	19.0	36.9	17.6	1,135,279	294,070	569,308	271,900
Institutional/ Government					854,628	284,672	383,525	195,409
Education/ Institutional	107.3	30.4	53.0	23.4	476,443	134,968	235,242	103,862
Government - City	73.9	41.1	42.0	0.4	100,821	56,053	57,249	514
Government - Other	127.9	43.2	42.0	42.0	277,364	93,651	91,034	91,034
Commercial					4,827,479	1,711,446	2,088,353	934,735
Office	115.0	43.2	46.1	23.4	1,148,515	431,070	460,527	233,629
Other Commercial	115.4	43.5	46.1	23.4	2,654,821	1,000,980	1,061,516	538,515
Healthcare	127.1	55.5	70.6	-	442,639	193,431	245,810	0
Warehouse and Storage	83.7	12.4	46.1	23.4	581,504	85,965	320,500	162,592
Parking	20	20	0	0	15,412	15,412	0	0
Total					9,444,611	2,824,162	3,635,402	2,901,080

3.1.3 Industrial Energy Use

Both cities have substantial industrial sectors. The CMP electricity data broke out industrial use; 2018 industrial use was notably higher than in 2017, and so was used as a base for the modeling. However, Unifit does not have a separate rate classification for industrial users; industrial gas use was grouped into the commercial data. To estimate industrial gas use, the commercial gas data was apportioned between commercial and industrial sectors based on the ratio of commercial and industrial electricity use in each city. Industrial fuel oil loads were estimated using a combination of the MCG data on gas and oil service, and the ratio of industrial to commercial use found in the electricity consumption data.

The major drivers of energy use in industrial buildings are industrial process loads, which are uncorrelated with floor area. For private industry, process load data was not available, and the available data on industrial job growth projections and its relation to energy use was too inconclusive for the purposes of long-term

planning. For these reasons, industrial energy use was held flat for the baseline and BAU and does not rise with floor area. The following BAU assumptions were made for industrial energy use across the two cities.

Table 8. Private industrial energy use.

	EUI (kBtu/ft ²)	Total Energy Use (MMBtu)	Total Electricity Use (MMBtu)	Total Natural Gas Use (MMBtu)	Total Fuel Oil Use (MMBtu)
Private Industry	696	2,813,087	859,729	993,746	959,613

3.2 Avoided Buildings Sector Emissions Due to Policies

3.2.1 New Construction Policies

The model uses modeled building codes to affect the energy performance of new and rehabilitated buildings. Two sets of building codes are applied: one targeting single-family and small (2-4-unit) multifamily buildings, and another targeting commercial and large (5-unit or larger) multifamily buildings.

When a new energy code is adopted, buildings in the process of permitting and construction can be completed under the prior code, which creates a lag between code adoption and code impact. For residential buildings, the impact of new codes is modeled as occurring two years after code adoption; for commercial and large multifamily buildings, the impact of new codes is modeled as occurring three years after code adoption (e.g., a code adopted in 2021 impacts energy use of new buildings in 2024). These delays are drawn from Integral Group field experience. Each code adoption impacts building energy performance by reducing the EUI of the building type. PNNL models were used to compare the modeled EUIs under the new codes to the existing average EUIs of buildings, as listed above. Due to a low baseline efficiency of buildings, this results in the appearance of much deeper savings than the codes actually will be requiring.

Table 9: Energy code assumptions.

Adoption Year	Code	Residential	Commercial
Current/2020	IECC 2015	30% reduction in EUI	35-65% reduction in EUI, depending on building type
2023	Next Stretch Code	45% reduction in EUI 100% reduction in fuel oil use	45-75% reduction in EUI, depending on building type 100% reduction in fuel oil use
2030	Net Zero Stretch Code	65% reduction in electricity use intensity 100% reduction in natural gas and fuel oil use	65-85% reduction in electricity use intensity 100% reduction in natural gas and fuel oil use

The high-performance stretch code update for commercial and large multifamily buildings is assumed to reduce the EUI of new buildings to approximately halfway between the EUI required under the 2018 code update and the net-zero stretch code for 2030. Buildings constructed under net-zero codes are assumed to

have EUIs that would allow the building to be supplied with on-site energy. However, the specific EUI and fuel source requirements will vary by building type and size, as well as other characteristics, and the EUIs used in the model should not be seen as a “net-zero level EUI” for purposes beyond this broad modeling exercise.

The model assumes code compliance of 75% for the first two years of each code, 80% for the year after that, and 85% thereafter. Based on the structure of the model, an 85% code compliance rate means achieving 100% of the code’s energy and GHG reduction potential from 85% of the affected building square footage, and no energy or GHG reductions from the remaining 15%. In reality, the 15% non-compliant buildings would very likely still achieve some energy use and GHG reductions from partial code compliance. This means the GHG reductions attributed to new construction may be underestimated.

The savings from new construction show up in the New Construction Policies wedge and are associated with BE 2.

3.2.2 Existing Building Efficiency

For existing buildings, the model includes several overlapping programs. These programs in the model represent the impact of a suite of actions recommended in the plan and are not a one-for-one match to any specific BE action. Three policies were modeled for energy efficiency in existing buildings—benchmarking, energy efficiency retrofits, and gut-rehab renovations. Each policy is also applied to municipal buildings at differing levels, as discussed in Section 2.2.4.

3.2.2.1 Benchmarking

The model includes projected effects from expansions to the Cities’ mandatory benchmarking programs. Benchmarking is the act of tracking and publicly reporting the energy performance of buildings, usually using the ENERGY STAR Portfolio Manager platform. Benchmarking does not itself save energy, but it reveals low-cost and no-cost opportunities for savings.

Benchmarking is assumed to be fully implemented in both cities as of 2025. Based on a survey of results from other cities, we assumed a 80% compliance rate once the benchmarking programs are fully implemented, applied only to the percent of floor area for each building type that is over the size thresholds for the Cities’ current programs (but assuming, in South Portland’s case, an expansion from the current limited geography to the whole city). We estimated cumulative 10% savings per benchmarked building over 5 years, which is a composite of multiple studies that find energy savings of 7% to 14%, over periods of 3 to 5 years.^{7,8}

3.2.2.2 Energy Retrofits

The retrofits assumed in the model are intended to provide a sense of the scale of action required in the existing building sector to achieve the 2050 GHG reduction target, while being realistic enough to achieve and sustain. The scale of retrofits assumed for private buildings is equivalent to achieving a 40-50% energy

⁷ Mims, N. et. al. 2017. Evaluation of U.S. Benchmarking and Transparency Programs; Attributes, Impacts, and Best Practices. Berkley, CA: Lawrence Berkley National Laboratory. Pp 60- 62 https://emp.lbl.gov/sites/default/files/lbnl_benchmarking_final_050417_0.pdf

⁸ Meng, T., D. Hsu, and D. Han. 2016. “Measuring Energy Savings from Benchmarking Policies in New York City.” Proceedings of the 2016 ACEEE Summer Study on Energy Efficiency in Buildings. https://aceee.org/files/proceedings/2016/data/papers/9_988.pdf.

use reduction across 1% to 2% of the building stock each year (or, in practice, a lower average energy use reduction across a larger portion of existing buildings). The term retrofit in this regard is a bit of a misnomer; in reality, the modeled retrofits will include a variety of building interventions focused on reducing energy and/or emissions, ranging from lighting upgrades to full envelope and HVAC system replacements. For this retrofit program, energy reductions are applied across all fuel types in equal measure.

For municipal government buildings, the penetration rate is calculated to achieve retrofits of all municipally owned buildings by 2050, as discussed below. State and county government buildings are modeled as being retrofitted to the same energy performance, but across only 25% as much floor area. For other building types, the assumed retrofit rates are based on national and global best practices and Integral Group field experience.

Table 10: Retrofit assumptions.

Sector	Years	% EUI Reduction	Penetration Rate Per Year
Local Government	2021-2025	10%	1%
Local Government	2026-2030	30%	3%
Local Government	2031-2050	80%	3%
State/County Government	2021-2025	10%	0.25%
State/County Government	2026-2030	30%	1%
State/County Government	2031-2050	80%	1%
Single Family & Apt 2-4	2022-2030	40%	1.5%
Single Family & Apt 2-4	2031-2050	50%	1.5%
Multifamily	2022-2030	40%	1.5%
Multifamily	2031-2050	50%	1.5%
Commercial	2020-2030	40%	2%
Commercial	2030-2050	50%	2%

3.2.2.3 Gut-Rehabs

Additionally, the model assumes that a portion of existing buildings would go through a renovation each year, triggering the requirement to comply with the most recent building codes for the portion of the building undergoing a rehab. We assumed that the rehabs would result in the average building improving its energy performance by half as much as if the entire building was required to meet the latest code, because gut retrofits may not address all aspects of a building, such as building envelope; these assumptions are based on Integral Group field experience.

The savings from these three policies show up in the Existing Building Efficiency wedge and are grouped with other existing building actions in BE 3.

3.2.3 Existing Building Decarbonization

Given the high penetration of natural gas and fuel oil heating in Maine, Portland and South Portland will not be able to achieve an 80% GHG reduction—let alone carbon neutrality—without switching most residential and commercial buildings to carbon-neutral sources of heating, such as high-efficiency cold-climate air-source heat pumps (ASHP) or ground-source heat pumps (GSHP) for heating and cooling, and converting other process loads such as domestic hot water and cooking to electricity as well. Electrifying these systems will have immediate benefits for health and safety and important ripple effects in terms of GHG reductions.

Electric heat pump systems are significantly more efficient than traditional combustion-based systems. With few exceptions, the efficiency gains from using heat pumps will lead to immediate reductions in GHG emissions. Moreover, electric systems create more dispatchable load—load that can be intelligently managed and timed throughout the day to reduce peak demand on the grid or to coincide with peak periods of renewable energy generation. This alignment can help make it more beneficial and cost-effective to add more renewable energy to the grid.

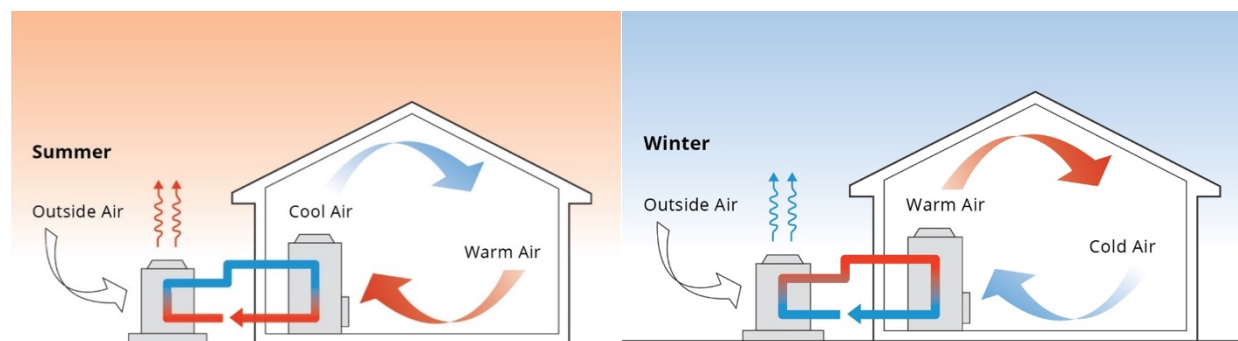


Figure 1: Heat pump diagram.

Modern cold climate air-source heat pumps are capable of supplying heating even when it is below freezing, albeit with decreasing efficiency. A study of the ASHP and GSHP potential in Portland and South Portland by Meister Consultants Group found that most buildings in Portland and South Portland are good candidates for heat pump systems.

The efficiency of a heat pump is measured using a coefficient of performance (COP), which represents the amount of usable heating or cooling produced per unit of electricity consumed. Because heat pumps move heat rather than directly generate it, most have COPs ranging from 2.0 to 3.0, which is to say they are 200% to 300% efficient. While best practice heat pumps have theoretical COPs of 3.0, in the context of cold Maine winters, a COP assumption of 2.5 is more reasonable.⁹ To make a further conservative assumption, we assumed that 20% of natural gas use would not be able to be replaced with heat pumps, though this may not remain true as technology continues to improve.

⁹ Schoenbauer, B. and M. Kushler. 2016. "Field Assessment of Cold Climate Air Source Heat Pumps." Proceedings of the 2016 ACEEE Summer Study on Energy Efficiency in Buildings. https://www.aceee.org/files/proceedings/2016/data/papers/1_700.pdf

The model makes the following assumptions for system efficiencies. The fuel switch factors are the amount of additional electricity required to make up for the removed fossil fuel. For example, a natural gas fuel switch factor of 0.377 for single-family homes means that for every unit of natural gas consumption reduced/removed, 0.377 units of electricity consumption will be added; a building that formerly used 5,000 kBtu of electricity and 10,000 kBtu of natural gas, after a fuel switch, uses 8,770 kBtu of electricity and 0 kBtu natural gas. These factors are a function of the relative efficiency assumptions, and also the distribution of fuel use in each building type

Table 11: Fuel switching assumptions for natural gas (NG) and fuel oil (FO).

Sector	Sub-Sector	Natural Gas / Fuel Oil Baseline Efficiency				New Electric System Efficiencies			NG Fuel Switch Factor	FO Fuel Switch Factor
		NG Space Heat	FO Space Heat	NG/FO DHW*	NG Cooking/ Other	Space Heat	DHW*	Cooking / Other		
Residential	Single Family	75%	75%	63%	75%	250%	200%	75%	0.377	0.438
	Apt 2-4	75%	75%	63%	75%	250%	200%	75%	0.377	0.438
	Multi-family	85%	75%	63%	75%	250%	200%	75%	0.403	0.30
Inst./Gov.	Educational Institutional	85%	75%	63%	75%	250%	200%	75%	0.410	0.360
	Gov't City	85%	75%	63%	75%	250%	200%	75%	0.437	0.346
	Gov't Other	85%	75%	63%	75%	250%	200%	75%	0.437	0.346
Commercial	Office	85%	75%	63%	75%	250%	200%	75%	0.440	0.346
	Other Commercial	85%	75%	63%	75%	250%	200%	75%	0.390	0.303
	Healthcare	85%	75%	63%	75%	250%	125%	100%	0.590	0.345
	Warehouse	85%	75%	63%	75%	250%	125%	100%	0.610	0.330

*DHW = domestic hot water

With some sectoral exceptions, the modeling assumes that 100% of all residential and commercial buildings that use natural gas or fuel oil are electrified by 2050—a rate of over 3% per year, starting in 2024. No fuel switching is assumed for healthcare and state/county government buildings; the high energy demand of healthcare facilities makes retrofits in this sector more challenging, and it is assumed that state and county buildings would not be covered by any city government retrofit programs or requirements.

The savings from these decarbonization efforts show up in the Existing Building Decarbonization wedge and are grouped with other existing building actions in BE 3.

3.2.4 Municipal Buildings Policies

All energy savings from municipal buildings are grouped under the Municipal Buildings Policies wedge. Together with savings from Municipal Renewable Energy, it provides the assumed savings for plan section BE 1. In the short-term, most of the savings under BE 1 come from Municipal Renewable Energy (see section

4.2.3) but buildings policies become the dominant source of municipal GHG savings as the municipal buildings become more energy efficient, and as the difference between the RPS and the municipal renewable energy becomes less significant after 2030. The Municipal Buildings Policies wedge has the same subcomponents as rest of the building policy actions discussed above.

New municipal buildings are assumed to be built to the same stretch energy code as other new buildings, but to reflect the Cities leading by example, new municipal buildings are assumed to follow a net-zero-energy-ready path beginning in 2026.

At the same time, all municipal buildings are modeled as undergoing retrofits to become highly energy efficient and all-electric. For municipal buildings, the penetration rate is calculated to achieve retrofits of all municipally owned buildings by 2050, at 3% per year. The municipal buildings follow the same fuel switching efficiencies as buildings owned by other governments, per the above. To avoid double-counting savings between retrofits and gut-rehabs, no municipal building energy savings are assumed from gut-rehabs.

Table 12: Municipal retrofit assumptions.

Sector	Years	% EUI Reduction	Penetration Rate Per Year
Local Government	2021-2025	10%	1%
Local Government	2026-2030	30%	3%
Local Government	2031-2050	80%	3%

3.2.5 Industrial Decarbonization

Industrial efficiency can be highly cost-effective, and in states like Maine where there has been a limited focus on industrial savings to date, large savings are reasonable to expect. At the same time, the high energy demands of industry, particularly the need for very high temperatures in many industries, make direct electrification a challenge. Three initiatives were modeled for private industry.¹⁰ These savings were assumed to begin in 2028, the timeline for the increase in industrial programs, through ending the opt-out.

First, the model assumes that almost all (90%) of industrial space would be affected by efficiency measures. Of these, we assume 60% (54% of all industrial space, or 1.86% per year) would undertake an efficiency project that reduces their energy use by 35%, based on a median efficiency savings in industrial projects nationwide for various sectors identified in studies by the American Council for an Energy Efficiency Economy.¹¹ A study would need to be commissioned to determine if these values are achievable for the industries and industrial users located in Portland and South Portland.

Secondly, we modeled that 40% of the industrial spaces that undertake any efficiency project would undertake a combined heat and power (CHP) conversion by 2050 (36% of all facilities, or 1.24% per year), to leverage excess thermal energy and offset electric demand. A CHP conversion is estimated at reducing grid-

¹⁰ Kelly, M. and E. Rodgers. 2016. Communicating the Value of Industrial Energy Efficiency Programs. Washington, DC: American Council for an Energy-Efficiency Economy. <https://www.aceee.org/sites/default/files/value-industrial-ee-programs.pdf>

¹¹ Elliot, N. 2017. Energy efficiency and industry: the national trend. Washington, DC: American Council for an Energy-Efficiency Economy. <https://www.aceee.org/blog/2017/08/energy-efficiency-and-industry>

supplied electricity use by 90% while increasing natural gas use by 54%, based on findings from the U.S. Environmental Protection Agency.¹² These are average numbers—the actual energy savings for CHP will vary greatly by facility.

Finally, we estimated that 95% of facilities that use fuel oil will convert to using natural gas or a biofuel. We estimate that 33% of facilities that use fuel oil will convert to using biofuels, such as renewable fuel oil (RFO) or biogas, 33% will electrify, and the remainder will switch to natural gas.

The savings from these three policies show up in the Industrial Decarbonization wedge and make up the savings for BE 4.

4 Transportation

The assessment models greenhouse gas emissions for all mobile transportation within the boundaries of Portland and South Portland from 2020 through 2050. For on-road transportation, the business-as-usual scenario assumes that vehicle miles traveled continues to increase at historical rates, with the current levels of vehicle fuel economy. For waterborne transportation, the business-as-usual scenario holds energy use constant. The policy scenario models GHG emissions avoided as a result of the implementation of transportation and land use policies that encourage mode shift and vehicle electrification.

4.1 Baseline and Business-as-Usual Transportation Assumptions

4.1.1 On-Road Emissions

Baseline and business-as-usual transportation demand are based on the greenhouse gas inventories that were conducted for Portland and South Portland for this project. The GHG emissions for vehicles were based on the vehicle miles traveled (VMT) and the GHG intensities of fuel sources. As is standard for calculating VMT and tracking transportation sector emissions, VMT numbers were based on the miles traveled within the boundaries of the city, regardless of whether the vehicle owners reside in either city or whether the vehicles are purchased at dealers within the city limits. Because sport utility vehicles (SUVs) and pickup trucks are a common mode of transit in Maine, passenger vehicle VMT was broken out between passenger vehicles and light-duty trucks.

Maine Department of Transportation data was used to calculate the total VMT on each road segment in each city, and from this, we can estimate that a total 748,773,000 vehicle miles were traveled across the two cities in the baseline year (2017). This extremely granular data does not tell us which vehicles traveled on which roads, however. To estimate this, vehicle registration data was used to look at the registered vehicle stock within each city. U.S. Department of Transportation and U.S. Energy Information Administration data for the fuel economy of vehicles sold in each class and model year were matched to the registered vehicle stock,

¹² U.S. Environmental Protection Agency. 2015. Fuel and Carbon Dioxide Emissions Savings Calculation Methodology for Combined Heat and Power Systems. Washington, DC: U.S. Environmental Protection Agency https://www.epa.gov/sites/production/files/2015-07/documents/fuel_and_carbon_dioxide_emissions_savings_calculation_methodology_for_combined_heat_and_power_systems.pdf

and from this, weighted average fuel economy calculations were created for each city and each vehicle class. Looking across both cities for the modeling, this data can be aggregated as follows.

Table 13. On-road energy use by fuel type.

Fuel Type	Vehicles	VMT	MPG (Weighted)	Fuel Use (MMBTU)	GHG (MTCO ₂ e)	GHG Intensity (MTCO ₂ e/VMT)
Diesel	2,689	27,244,599	6.4	591,848	43,917	1.61E-03
Gasoline	68,753	696,596,483	21.6	4,487,117	316,176	4.54E-04
Hybrid Electric	2,110	21,378,246	31.1	95,464	6,727	3.15E-04
CNG	33	334,352	3.4	11,700	622	1.86E-03
Electric	59	597,780	37.0	344,780	92	1.54E-04

Table 14. On-road emissions by vehicle type.

Vehicle Type	Baseline VMT	Baseline GHGs	Portion of VMT	Portion of GHGs from VMT
Passenger Cars	3.59E+08	1.07E+05	48.0%	29.1%
Passenger Trucks	2.94E+08	1.68E+05	39.3%	45.6%
Electric Passenger Vehicles	5.98E+05	9.21E+01	0.1%	0.0%
Buses	1.88E+06	5.45E+03	0.3%	1.5%
Other Light- & Medium- Duty Vehicles	6.32E+07	3.61E+04	8.4%	9.8%
Heavy Duty Trucks	2.68E+07	5.15E+04	3.6%	14.0%

Mode share numbers come from the Portland Comprehensive Plan (Portland's Plan 2030) and American Community Survey data on commute modes in Portland and South Portland.¹³ Because these mode share numbers come from commute data, they likely inflate the use of transit, walking, and biking, relative to all travel, but better data for all passenger trips was not available.

Preliminary modeling by PACTS and AECOM for the ongoing "Transit Tomorrow" regional analysis was shared with the consultant team, and it indicates that VMT in southern Maine can be expected to increase in the business-as-usual scenario by 16% between 2020 and 2040—which works out to 0.74% per year on average. Passenger ridership on buses is increasing faster, however. Greater Portland METRO reported in 2019 that their system has seen a 45% increase in use between 2013 and 2019—which works out to 5.45% per year.¹⁴ Limited data was available on the growth rates for walking and biking, and so a growth rate similar to the growth in overall VMT was assumed, keeping the percentage of walking/biking constant at 9%. While any shift to walking and biking from other modes is captured in the modeling as VMT reductions, the explicit

¹³ City of Portland. Portland's Plan 2030. Retrieved from <https://www.portlandmaine.gov/DocumentCenter/View/18269/Portlands-Plan-2030-with-Appendices>

¹⁴ McGuire, P. 2020. "Portland Metro got a record 2.1 million riders on the bus in 2019." Portland Press Herald. January 8, 2020. <https://www.pressherald.com/2020/01/08/portland-metro-bus-ridership-hits-record-2-1-million-in-2019/>

growth of walking and biking under a business-as-usual scenario due to population growth, for example, is not included in the modeling as those trips have no emissions.

Table 15. Passenger mode share BAU.

Mode	Baseline Mode Share	BAU Average Annual Growth Rate	2050 BAU Mode Share
Passenger Vehicle	88%	0.75%	80%
Transit Buses	3%	5.45%	10%
Walking and Biking	9%	1%	10%

Heavy-duty trucks are not included in the mode share numbers. Due to insufficient data on their growth rates, the VMT, fuel consumption, and emissions for heavy-duty vehicles (other than transit buses) are held flat over time. While the plan contains actions that will help mitigate emissions from heavy trucks, the magnitude of impact of these actions is uncertain and was not modeled.

4.1.2 Non-Road Transport Emissions

Emissions from cruise ships were estimated using the cruise ship visit schedule for 2017 from the City of Portland, and calculated based on the number of hours each cruise ship was docked in Portland, the size of each ship, and whether more than one ship was docked at any one time.¹⁵ To estimate emissions from the docked cruise ships, we reviewed two studies of docked ship emissions from Los Angeles (Port of Los Angeles) and Seattle, Washington (Puget Sound Maritime Air Forum).^{16,17} See section 4.6 of the GHG Inventory Methodology for the assumptions that went into this modeling.

The Casco Bay Lines ferry system travels between the Portland peninsula and Portland's islands; these trips are included within the GHG inventory and One Climate Future modeling, as these routes are within the City of Portland. Casco Bay Lines staff estimated that their ferries consume 240,000 gallons of marine diesel fuel every year. No increase in ferry travel was assumed over time. While cruise ship visits are increasing, the scale of the increase is difficult to forecast, and so no increase was assumed in the BAU or policy scenarios.

Table 16. Waterborne transportation BAU.

Waterborne Transportation	Annual Diesel Use (units variable)	Annual Energy Consumption (kBtu)	Annual GHG Emissions (MTCO _{2e})
Cruise Ship Auxiliary Engines	6,004,611 kWh-e	20,487,733	4,167
Cruise Ship Boilers	250,192 kWh-e	853,656	231
Casco Bay Lines Ferry	240,000 gallons	33,120,000	2,479

¹⁵ <https://www.portlandmaine.gov/DocumentCenter/View/27428/2017-Cruise-Schedule>

¹⁶ Starcrest Consulting Group. 2018. "Inventory of Air Emissions for Calendar Year 2017." Port of Los Angeles. https://kentico.portoflosangeles.org/getmedia/880bc597-84bc-4ae6-94e2-59a2e6027f42/2017_Air_Emissions_Inventory

¹⁷ Starcrest Consulting Group. 2018. "2016 Puget Sound Maritime Emissions Inventory, Revised October 2018" Puget Sound Maritime Air Forum. <https://pugetsoundmaritimeairforum.files.wordpress.com/2018/10/final-2016-psei-report-19-oct-2018-scg.pdf>

Emissions from passenger and freight rail and intracity aircraft were not included in either the inventory or the model due to limited data availability. As discussed in the GHG Inventories Memorandum, transboundary ship, train, and plane emissions are not included in the GPC BASIC protocol.

4.2 Avoided Transportation Sector Emissions Due to Policies

4.2.1 Mode Shift & Land Use Policies

Land use policies are crucial to reducing GHG emissions by encouraging a shift in travel modes away from driving passenger vehicles. However, modeling the effects of a variety of individual land use policies on mode shift and vehicle miles traveled (VMT) is a complex and intensive modeling process that was not within the scope of this project. Given that constraint, the consultant team modeled the VMT changes, and the correlated GHG emissions reductions, that result from reaching a set of mode share thresholds, defined as part of the modeling process.

As shown in Table 17, the selected mode share thresholds include: 60% of trips completed by passenger vehicles (down from 88% currently); 20% of trips completed by public transit (up from 3% currently), and 20% of trips completed by walking or biking (up from 9% currently).¹⁸ These thresholds were selected through discussions with Portland and South Portland City staff, and the Climate Planning Process Committee. These targets are informed by mode-shift targets being set in other cities with a similar current level of transit ridership (including Richmond, Virginia and Oakland, CA).¹⁹ The targets are also informed by the more aggressive mode share targets being set by cities with robust transit systems, like Boston, MA or Washington, DC, which aim to reduce trips by passenger vehicles to 25% of all trips by 2030 and 2032, respectively.^{20,21}

Table 17. Mode share targets.

Mode	Current Mode Share	BAU Annual Growth Rate	BAU 2050 mode share projection	Target Mode Share	Target Annual Growth Rate	Change in Growth Rate from BAU to Target
Passenger Vehicle	88%	0.74%	80%	60%	-0.42%	-156%
Transit Buses	3%	5.45%	10%	20%	7.43%	36%
Walking and Biking	9%	1.0%	10%	20%	3.45%	255%

While these targets may seem aggressive, they are both in line with planning efforts elsewhere and a reasonable shift from the current rates of change. Doubling walking and biking trips (9% to 20%) is well within

¹⁸ It is important to note that the current mode share breakdown is based on commuting trips, which is used as a proxy for all trips, given the lack of better mode share data.

¹⁹ City of Oakland. 2020. Oakland Equitable Climate Action Plan. <https://cao-94612.s3.amazonaws.com/documents/Oakland-ECAP-07-24.pdf>

²⁰ City of Boston. 2019. Boston Climate Action Plan https://www.boston.gov/sites/default/files/imce-uploads/2019-10/city_of_boston_2019_climate_action_plan_update_2.pdf

²¹ District of Columbia. 2019. Sustainable DC 2.0. http://www.sustainabledc.org/wp-content/uploads/2019/04/sdc-2.0-Edits-V5_web.pdf

the norm for most sustainability plans. Increasing transit ridership to 20% of trips does represent a transformation of the transit system and a more difficult challenge. However, Greater Portland METRO ridership is increasing at over 5% per year, while overall passenger VMT is increasing at 0.745% per year; at those rates, bus ridership will represent approximately 10% of passenger miles traveled by 2050. To reach the target mode share, the growth rate will need to be 7.4% per year, a 36% increase in the annual ridership growth rate relative to the recent past.

In order to model the full potential of greenhouse gas emissions reductions created due to mode shift, mode shift greenhouse gas emissions savings were calculated using the energy efficiency and emissions intensity of the current vehicle stock, prior to accounting for fuel economy standards and a transition to electric vehicles.

With transit ridership increasing, the total VMT and emissions from the bus fleet will also increase, though not in direct proportion, since some existing bus routes are under-utilized today. The modeling assumes that total VMT from buses will increase by 6.4% per year, or a six-fold increase by 2050. For the purposes of looking at savings specifically from mode shift, the model assumes the bus fleet continues to be diesel buses. (The GHG reductions from bus electrification are captured in another wedge, discussed in section 4.2.2.) Thus, the total GHG emissions savings achieved through lower passenger vehicle miles traveled are reduced by 12.8%, due to increased emissions from diesel buses.

Table 18. Mode share net emissions savings.

Action	2050 GHG Savings (MTCO ₂ e)	Cumulative GHG savings, 2020-2050 (MTCO ₂ e)
Reduced Passenger Vehicle Use	109,698	1,997,310
Increased Bus Use	-13,309	-256,831
Net Mode Shift Impact	96,388	1,742,479

To fully capture the potential for GHG savings from mode shift, the buses need to be battery electric buses, which are modeled below. The savings from this mode shift show up in the Mode Shift & Land Use Policies wedge and constitute the savings for TLU 1.

4.2.2 Bus Electrification

The transit buses of Greater Portland METRO and South Portland Bus Service (SPBS) are treated as a single fleet for modeling purposes, in line with the overall modeling approach of combining data for both cities. Based on the increases in transit ridership, we project the combined bus fleets of METRO and SPBS will need to grow by 6.4% per year, rising from 51 buses in 2019 to 350 buses by 2050. Both bus services have set a goal of having a zero-emissions bus fleet by 2040. As buses have an average 15-year lifespan, all new bus purchases must therefore be battery-electric vehicle (BEV) buses starting in 2025. For simplicity, we modeled the bus fleet as increasing in size and electrifying linearly: starting in 2026, all public transit bus retirements (3 per year) are diesel, and all new buses (14 per year) are BEV buses, reaching a fully electric fleet by 2040. The bus fleets produce no direct emissions as of 2040, and once the RPS is 100% renewable in 2050, no operational emissions at all.

The One Climate Future plan also calls for the electrification of school buses, with all new school bus purchases being BEV buses by 2030. However, insufficient data was available to estimate the savings

specifically from electrifying the school bus fleet, and so no savings for this transition are incorporated in the model. Transportation GHG savings are underestimated in this respect.

The savings from BEV transit buses show up in the Bus Electrification wedge and are grouped with other vehicle electrification actions in TLU 2 & 3.

4.2.3 Fuel Economy Standards

As the passenger vehicle stock grows, existing vehicles in the stock are retired and new vehicles are purchased each year. As a result, the average fuel efficiency of the vehicle stock and the vehicles that comprise it change. Each year, 6.67% of the existing passenger vehicle stock is replaced by new vehicles.²² New vehicles entering the stock have a higher fuel efficiency rating due to the federal Corporate Average Fuel Economy (CAFE) Standard, which results in an increase in the average fuel efficiency of the entire stock.²³ The GHG and energy use reduction impacts of the CAFE Standard were included in the analysis to make its impact explicit. Because it is a federal regulation already in place, the CAFE Standard will achieve GHG reductions regardless of actions taken in the Cities of Portland and South Portland.

The current Federal administration has proposed a rollback of the CAFE standards; however, Maine is one of the states that follows the California standards, which are aligned with the CAFE standards set under President Obama. The model assumes that that lawsuits to end California's higher standards fail to have an impact, and that California and other states (including Maine) continue to use higher fuel standards and that the auto industry does not market different cars in adjoining states. CAFE thresholds would continue to get stricter out to 2025, and then remain constant. Savings would continue to grow as older cars are replaced. Because of the current low weighted average fuel economy of the vehicle fleet in southern Maine, the impact of the CAFE Standards is significant on its own. The blended fuel economy numbers assume that 45% of passenger vehicle VMT continues to be from light trucks, as it is today, as shown in Table 19.

Table 19. Corporate Average Fuel Economy (CAFE) assumptions (kBtu/mile).

Year	Baseline (2017)	2020	2021	2022	2023	2024	2025 (and thereafter)
Conventional Passenger Car (kBtu/mi)	4.22	3.22	3.08	3.02	2.93	2.83	2.79
Conventional Passenger Light Truck (kBtu/mi)	8.08	4.75	4.46	4.25	4.07	3.88	3.86
Blended Conventional Passenger Vehicle (kBtu/mi)	6.54	4.14	3.91	3.76	3.61	3.46	3.43
Battery Electric Passenger Vehicle (kBtu/mi)	1.72	1.62	1.56	1.55	1.55	1.52	1.50

²² Based on the number of new vehicle sales versus the number of total registered vehicles in the United States over the past several years (<https://www.statista.com/statistics/185198/age-of-us-automobiles-and-trucks-since-1990/>), with approximately 70% of vehicles on the road after 15 years, and some longer (<http://www-nrd.nhtsa.dot.gov/Pubs/809952.pdf>); Total registered vehicles in 2015 - <https://www.statista.com/statistics/183505/number-of-vehicles-in-the-united-states-since-1990/>; Light vehicle retail sales: <https://www.statista.com/statistics/199983/us-vehicle-sales-since-1951/>

²³ CAFE Standard fuel efficiency values are based on modeling from the U.S. Energy Information Administration's Annual Energy Outlook 2015.

Fuel economy standards is the only policy action modeled that cannot be linked to any specific One Climate Future plan action. However, it is a crucial part of reducing GHG emissions. By joining the strong California standards, Maine has taken statewide action to ensure these GHG savings are realized, regardless of federal action. The savings from these standards show up in the Fuel Economy Standards wedge and are grouped with other vehicle electrification actions in TLU 2 & 3.

4.2.4 Electric Vehicle Adoption

Electric vehicle (EV) adoption is rapidly increasing around the world, driven by technological changes, decreasing prices, and EV-supportive policies, including EV-readiness requirements and the build-out of charging infrastructure. The model includes battery electric vehicles, powered entirely by electricity from the grid, and plug-in hybrid electric vehicles, initially powered by a battery and then by a petroleum fuel-based engine when the battery is depleted.²⁴ The model assumes the breakdown of battery electric vehicles (EVs) to plug-in hybrid electric vehicles (PHEVs) starts at 50/50, and steadily shifts towards EVs with a 60/40 breakdown in 2030, a 91/9 breakdown in 2040, and a 97/3 breakdown in 2050.

The model also assumes that the EV market share for new vehicles (the share of new vehicles sold that are electric vehicles) will increase over time. Due to continually accelerating market trends plus stronger local and/or state incentives, and increasing federal regulations, we make the assumption that EV adoption will exceed currently predicted global trends, with EVs being 60% of new car sales by 2040 and 100% by 2050 (which would happen if the U.S. were to follow the lead of the United Kingdom, France, Norway, Sweden, India, and China in restricting the sale of gasoline- and diesel-powered cars in the 2040-2050 timeframe). This projection is in line with extrapolating forward projections from Bloomberg New Energy Finance (see Figure 2).

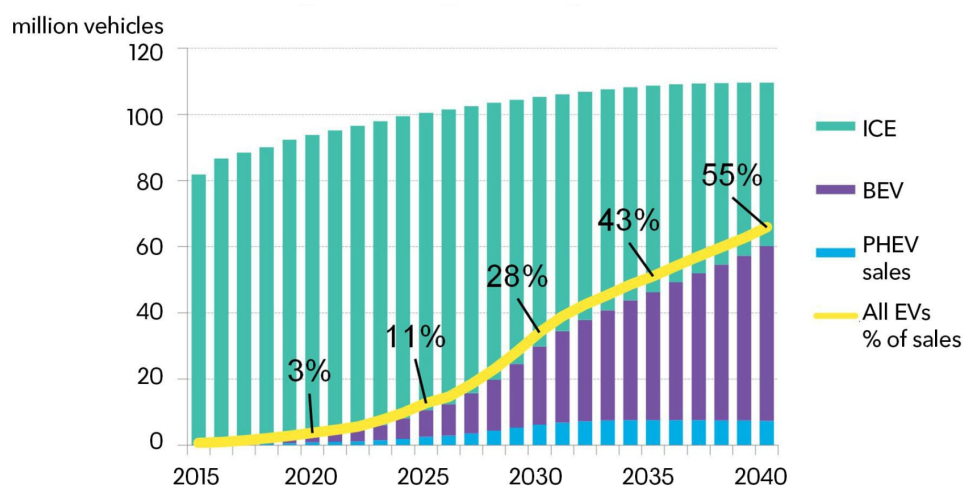


Figure 2: EV adoption projections (courtesy of Bloomberg New Energy Finance, 2019); ICE: Internal Combustion Engine, BEV: Battery Electric Vehicle, PHEV: Plug-in Hybrid Electric Vehicle, EV: Electric Vehicle

²⁴ The model assumes plug-in hybrid electric vehicles operate on electricity 66% of the time and gasoline 34% of the time, based on Marshall, B.M., Kelly, J.C., Lee, T.-K., Keoleian, G.A., Filipi, Z., 2013. Environmental assessment of plug-in hybrid electric vehicles using naturalistic drive cycles and vehicle travel patterns: A Michigan case study. *Energy Policy* 58, 358–370; Kelly, J.C., MacDonald, J.S., Keoleian, G. a., 2012. Time-dependent plug-in hybrid electric vehicle charging based on national driving patterns and demographics. *Appl. Energy* 94, 395–405.

Insufficient data was available to calculate specific savings from electrifying the light-duty fleet vehicles owned and operated by both cities. However, these vehicles are included in the total vehicle counts, and so their electrification is captured within this action (albeit on a less aggressive timeline than called for in the plan, which calls for all new municipal light-duty vehicle purchases to be EVs by 2028). The savings from private and municipal passenger EV adoption show up in the Electric Vehicle Adoption wedge and are grouped with other vehicle electrification actions in TLU 2 & 3.

4.2.5 Ferry & Ship Electrification

The model assumes that all new Casco Bay Lines ferries are hybrid-electric ferries, which will be more energy-efficient, and, once sufficient shore power resources are provided, run on 100% electric power. All ferry conversions are completed by 2045. While there will be marginal short-term emissions reductions due to the efficiency of a hybrid-electric engine even without shore power hookups, these savings are not included in the model.

In line with the One Climate Future strategy for shore power, the model includes the effects of shore power hookups installed by 2040. Cruise ship auxiliary engines and boilers are assumed to be 50% efficient, while electric power is 100% efficient, so hooking up to shore power decreases not only emissions, but also energy consumption. Once the grid is 100% renewable in 2050, the electricity provided through shore power will have no associated emissions.

Table 20. Shore power assumptions.

Type of Vessel Energy Use	Annual Energy Consumption (kBtu)	Peak Electrical Demand (MW)
BAU Cruise Ship Auxiliary Engines, Diesel	20,487,733	N/A
BAU Cruise Ship Boilers, Diesel	853,656	N/A
BAU Ferry Diesel	33,120,000	N/A
Total Shore Power Demand	27,230,694	31.8
Shore Power Demand for Cruise Ships	10,670,694	27.0
Shore Power Demand for Ferries	16,560,000	4.8

The savings from shore power show up in the Ferry & Ship Electrification wedge and are grouped with other vehicle electrification actions in TLU 2 & 3.

5 Waste

The assessment models greenhouse gas emissions from waste from now through 2050, looking at the direct emissions from breaking down waste and the energy used to process the waste. The business-as-usual scenario assumes increases in waste emissions based on population growth. The model then assesses the greenhouse gas emissions avoided between now and 2050, considering the implementation of policies to divert waste from incineration and to reduce the energy intensity of wastewater processing.

5.1 Baseline and Business-as-Usual Waste Assumptions

5.1.1 Solid Waste

All waste in Portland and South Portland is collected and processed by ecomaine. Waste that is not recycled or sent to an anaerobic digester is incinerated at the ecomaine incinerator in Portland. The emissions from the plant are prorated to only capture the portion attributable to Portland and South Portland waste streams (along with the relatively small amount of energy and emissions needed for ecomaine operations, which are attributed to Portland because of the plant's location). In accordance with the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), emissions from the incineration of biogenic waste (e.g. paper, food waste, wood products) are considered carbon-neutral—whether this is appropriate is an active political debate; however, modeling must follow current GHG inventory standards.

The BAU for waste increases proportionally to population in the model. BAU diversion rates were held at current documented levels: 32.4% for residential; 12% for commercial, institutional, and industrial waste; and 0% for drop-off. A small food waste collection program is currently operating in South Portland; 77% of the waste collected through that program goes to an anaerobic digester; the remaining 23% are contaminants that are incinerated. The quantity of construction and demolition waste is unknown and not included in the GHG inventory or modeling at this time. The emissions intensity of the incineration was calculated based on data collected and shared by ecomaine, equivalent to 0.33685 MTCO₂e/tonne of waste. The anaerobic digester has an emissions intensity of 0.02239 MTCO₂e/tonne of organic waste.

Table 21. Solid waste baseline.

Category/Sub-Category	Baseline (2017) Waste Volume (tonnes)	Baseline Emissions (MTCO ₂ e)	2050 Waste Volume (tonnes)	2050 Emissions (MTCO ₂ e)
Residential Disposed Waste Total	16,400	5,525	26,802	9,029
Residential MSW*	15,402		25,170	
Residential Bulky	999		1,632	
Commercial Disposed Waste Total	65,820	22,172	107,566	36,234
Commercial MSW*	54,454		88,993	
Commercial Bulky	11,365		18,574	
Food Waste	5,396	515	8,819	836
Food Waste Digested	4,143		6,771	
Food Waste Contaminates	1,253		2,031	

Waste not producing GHGs	38,461		62,855	
Inert Ash [no GHG]	21,979		35,919	
Residential Recycling [no GHG]	7,843		12,817	
Commercial Recycling [no GHG]	8,639		14,119	
Total MSW including recycling	126,077		206,026	
Total MSW* producing GHGs	87,616	28,211	143,188	46,099

*MSW: Municipal Solid Waste

5.1.2 Wastewater

Wastewater energy use and process emissions are assumed to increase at a rate of 1.5% per year, proportional to population growth.

Table 22. Wastewater energy use baseline.

	Wastewater EUI in kBtu/gal/day	Annual Energy Use (MMBtu)	Annual Electricity Use (MMBtu)	Annual Natural Gas Use (MMBtu)	Annual Fuel Oil Use (MMBtu)
Wastewater Treatment	1.71	29,418	20,764	8,308	346

Wastewater process emissions were modeled using data provided by the Portland Water District and the South Portland Water Resource Protection Department, and the “CIRIS Wastewater Emissions Calculator.” Wastewater process emissions for the 2017 baseline were estimated at 3,959 MTCO₂e and increase to 6,471 MTCO₂e by 2050.

5.2 Avoided Waste Emissions Due to Policies

5.2.1 Solid Waste Reduction

The modeling for solid waste reduction was oriented towards achieving “zero waste” by 2050. As some products cannot be recycled or composted, the model targets an 80%-90% reduction in waste, which is in line with common definitions for zero waste targets. Waste emissions are reduced in the model through several measures. Due to source reduction, total waste generated is reduced by 20% relative to the BAU case. However, due to population growth, total waste generated still grows by 81% relative to 2017. The model assumes that through a combination of recycling and composting, 90% of residential and commercial waste that is generated is diverted from incineration by 2050. Greenhouse gas emissions from waste decrease from 28,221 MTCO₂e in 2017 to 4,133 MTCO₂e in 2050—an 85% decrease. The savings from solid waste show up in the Solid Waste Reduction wedge and are grouped with other waste policies in WR.

5.2.2 Wastewater Efficiency

All water/wastewater actions were calculated assuming energy reductions per gallon of water/wastewater, with the quantity of water/wastewater increasing in proportion to population growth. The model assumes natural gas and fossil fuel use at the wastewater treatment plant would be met with biodigester gas, beginning implementation in 2035 and completing by 2040. We also assumed a 10% reduction in electricity consumption per gallon treated due to plant efficiency efforts. Improvements were calculated to occur over a five-year timeframe starting in 2030.

No policy interventions were assumed to reduce wastewater process emissions, as insufficient information was gathered on current process emissions to be able to recommend appropriate interventions and potential reductions.

The savings from the wastewater plants show up in the Wastewater Efficiency wedge and are grouped with other waste policies in WR.

6 Results

The following section summarizes the results of the model, including the effects on greenhouse gas emissions reductions as well as energy savings driven by the implementation of strategies in the One Climate Future plan.

6.1 Greenhouse Gas Results

6.1.1 GHG Emission Reductions from Policies

The modeling shows that Portland and South Portland can reduce citywide greenhouse gas emissions by over 81% by 2050, relative to 2017. Many of the assumptions in the model are conservative, and greater savings may well be possible with additional state and federal support.

Recognizing the scale of the global climate crisis and the need to take aggressive action, many actions have been front-loaded. Almost half of all the plan's actions occur in the next decade. The Cities are projected to achieve a 33% reduction in GHG emissions by 2030, and a 50% reduction by 2036, relative to 2017.

The following actions are some of the critical “front-loaded” actions; because they are implemented early, they make up a higher percentage of cumulative savings than 2050 savings.

- New Construction: The stretch code will require new buildings to be net-zero energy (NZE)-ready by 2030, if implemented as planned.
- Renewable Portfolio Standard: The state renewable portfolio standard will require electricity to be 80% renewable by 2030, thus achieving most of the GHG savings from electricity generation within the next ten years.

- Fuel Economy Standards: Federal fuel economy standards for cars level off after 2025, with most of the savings locked in early.
- Municipal Renewable Energy: The municipal government electricity supply will be 100% renewable by 2032.
- Municipal Building Policies: Municipal government building retrofits will be net-zero energy by 2030.
- Bus Electrification: All transit buses and school buses will be electric vehicles by 2040.

Conversely, the following actions are key actions that require ramp up or are phased in over a longer period. Consequently, these actions make up a higher percentage of 2050 annual savings than 2030 or 2040 annual savings, or cumulative savings.

- Existing Building Decarbonization: Fuel switching retrofits do not begin in earnest until 2025, because the program requires further study and will take a few years to ramp up.
- Electric Vehicle Adoption: EV adoption is limited by the rate of new vehicle purchases and the available types of electric vehicles, but is accelerating over time; the model results show most emissions savings from EV adoption coming after 2035.
- Mode Shift and Land Use Policies: Transit system expansion and land use changes require a large number of infrastructure and development projects before we begin to see the aggregated effects, primarily after 2030.
- Industrial Decarbonization: Industrial energy efficiency and decarbonization efforts are not forecast to take off until 2030, due to the need for sector-specific energy efficiency and decarbonization potential studies, regulatory changes that support greater investment in this sector, and technological innovation.

The five biggest areas of GHG emission savings in the plan modeling are as follows:

1. Renewable Portfolio Standard and Local Solar—40% of all cumulative savings.
2. Existing Building Efficiency and Existing Building Decarbonization—23% of all cumulative savings.
3. Electric Vehicle Adoption and Fuel Economy Standards—17% of all cumulative savings.
4. Mode Shift and Land Use Policies—6% of all cumulative savings.
5. Industrial Decarbonization—4% of all cumulative savings.

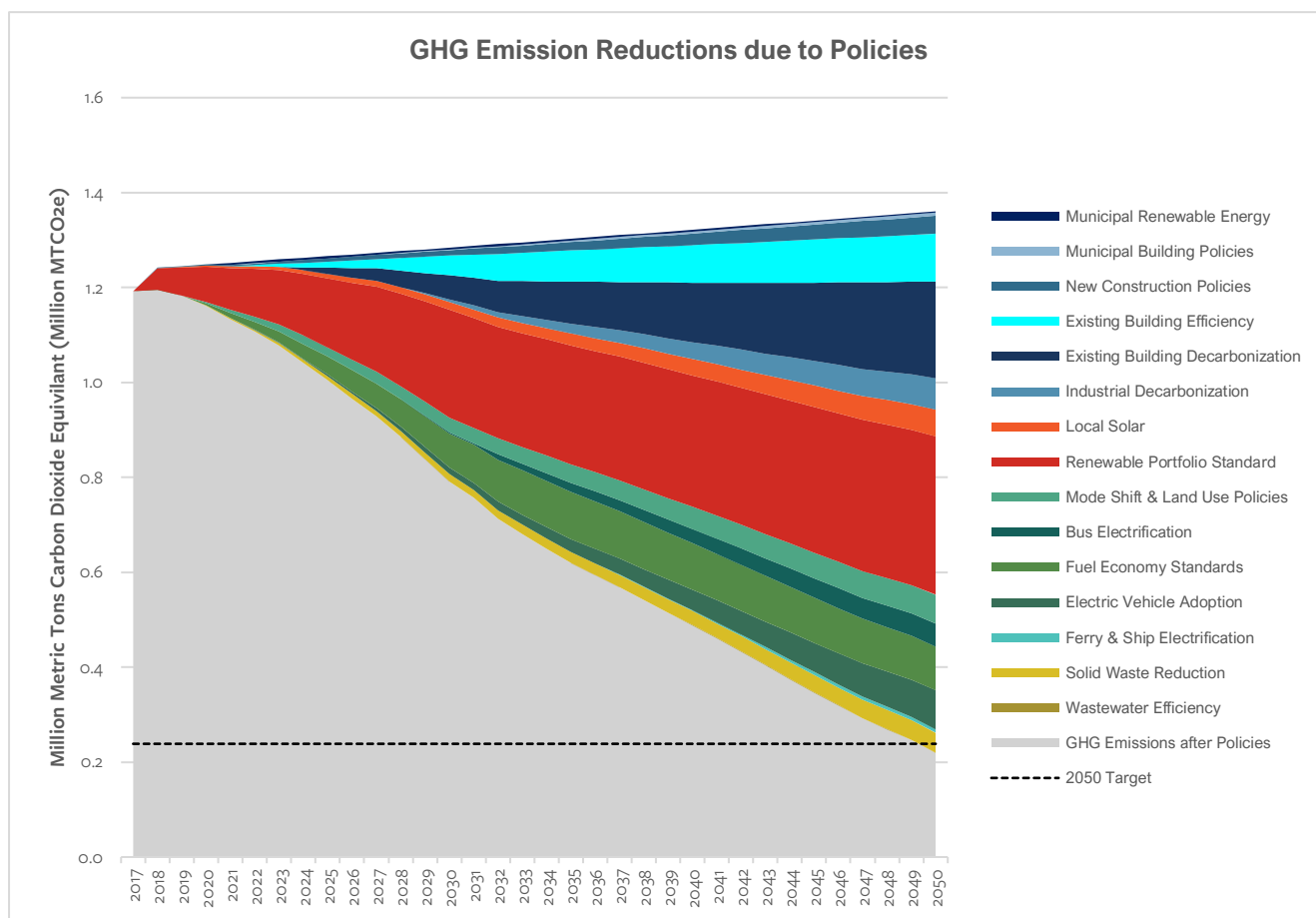


Figure 4 shows what the wedge chart looks like if we were to “take out” the two wedges related mostly to state and federal action—the Maine Renewable Portfolio Standard (RPS) and the Federal Corporate Average Fuel Economy (CAFE) Standards. By doing this, we are incorporating these policies into the “business-as-usual” scenario, and assuming that we can be relatively sure that these policies will continue to exist and be implemented as planned. By contrast, by including the RPS and CAFE Standards, Figure 3 illustrates how important these components are to achieving our carbon reduction goals.

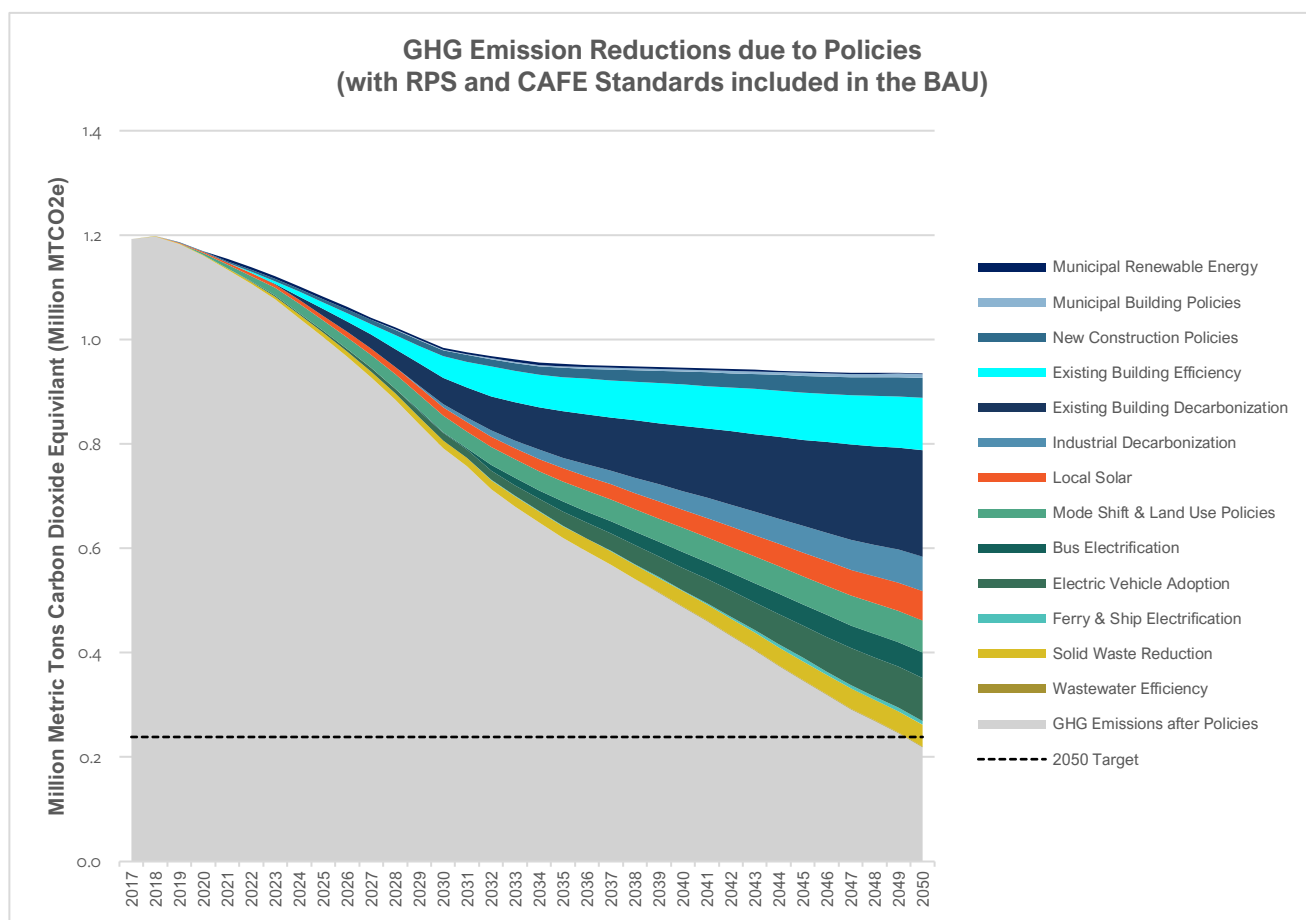


Figure 4. GHG reductions due to policies (with RPS and CAFE standards included in the BAU).

Table 23. GHG emission reductions by policy in 2030, 2040, 2050.

Absolute GHG Emissions and Reductions	GHG Reductions in Year 2030		GHG Reductions in Year 2040		GHG Reductions in Year 2050	
	MTCO ₂ e	% of reduction	MTCO ₂ e	% of reduction	MTCO ₂ e	% of reduction
Baseline (2017)	1,192,784		1,192,784		1,192,784	
BAU GHG Emissions	1,283,823		1,321,596		1,360,362	
Municipal Renewable Energy	3,567	0.7%	3,542	0.4%	1,930	0.2%
Municipal Building Policies	1,429	0.3%	4,299	0.5%	7,170	0.6%
New Construction Policies	11,797	2.4%	24,477	2.9%	38,116	3.3%
Existing Building Efficiency	41,122	8.4%	79,137	9.5%	100,336	8.8%
Existing Building Decarbonization	51,019	10.4%	125,181	15.0%	204,056	17.9%
Industrial Decarbonization	5,413	1.1%	35,779	4.3%	66,144	5.8%
Renewable Portfolio Standard	227,605	46.2%	276,951	33.2%	333,004	29.2%
Local Solar	16,598	3.4%	34,497	4.1%	56,474	4.9%
Mode Shift & Land Use Policies	30,744	6.2%	46,681	5.6%	61,089	5.4%
Bus Electrification	2,093	0.4%	29,837	3.6%	48,866	4.3%
Fuel Economy Standards	71,726	14.6%	98,559	11.8%	91,746	8.0%
Electric Vehicle Adoption	13,959	2.8%	42,853	5.1%	82,396	7.2%
Ferry & Ship Electrification	0	0.0%	1,578	0.2%	6,852	0.6%
Solid Waste Reduction	15,292	3.1%	29,292	3.5%	42,272	3.7%
Wastewater Efficiency	0	0.0%	917	0.1%	1,024	0.1%
GHG Emissions after Policies	791,459		488,017		218,887	
% Change from Baseline	-33.6%		-59.1%		-81.6%	
% Change from Default BAU	-38.4%		-63.1%		-83.9%	
% Change from a BAU that includes Renewable Portfolio Standards and Fuel Economy Standards	-23.9%		-51.7%		-75.5%	

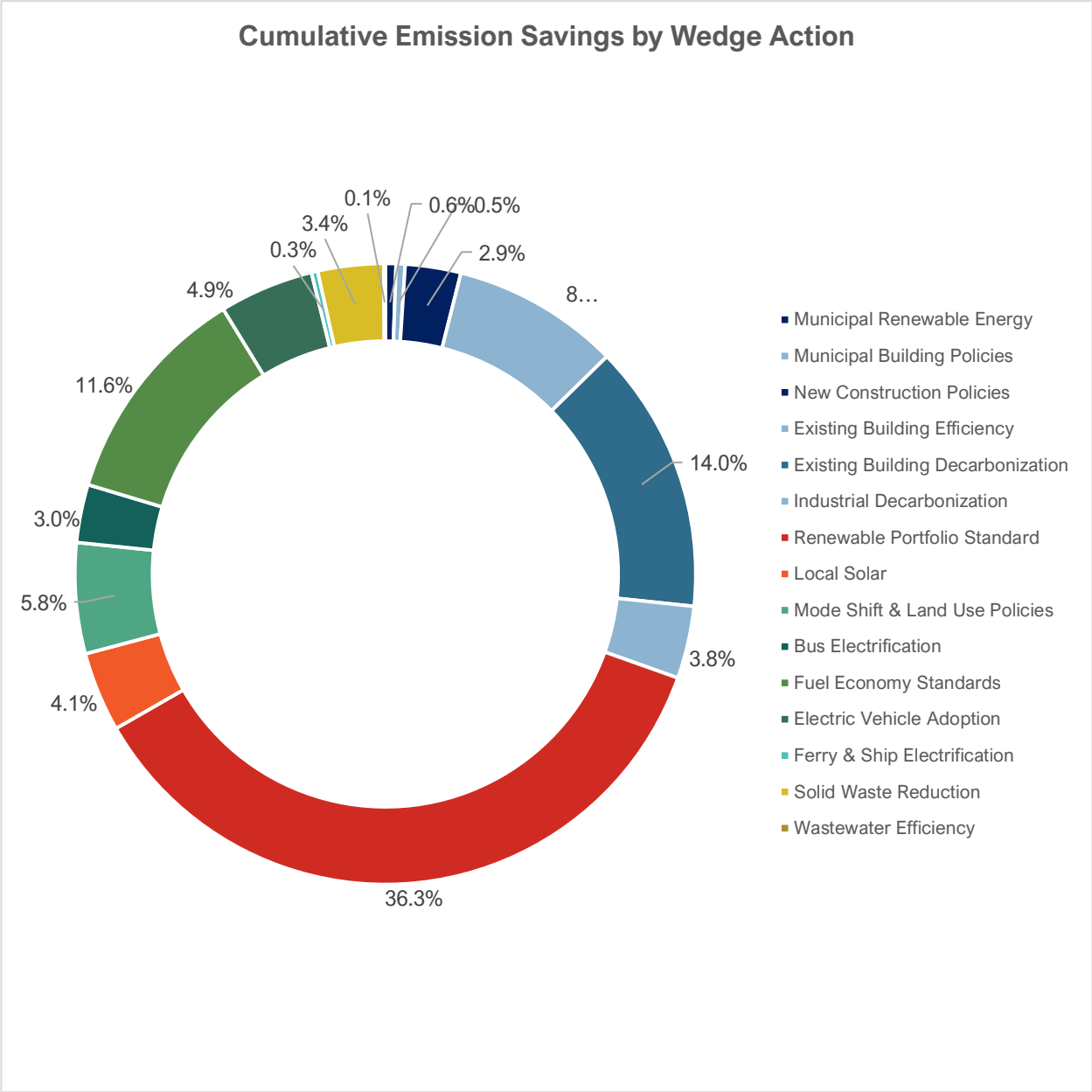


Figure 5. Cumulative emissions savings by wedge.

Table 24. Cumulative GHG emission reductions by policy.

Policy	Modeled Plan Actions	Cumulative GHG Reductions, 2020-2050	
		MTCO ₂ e	% of Reductions
Municipal Renewable Energy	BE 1.1	110,421	0.6%
Municipal Building Policies	BE 1.2, 1.3	93,748	0.5%
New Construction Policies	BE 2.1, 2.3	578,672	2.9%
Existing Building Efficiency	BE 3.1, 3.2, 3.3	1,744,458	8.7%
Existing Building Decarbonization	BE 3.4, 3.5, 5.4, 5.6	2,800,102	14.0%
Industrial Decarbonization	BE 4.1, 4.2	753,726	3.8%
Renewable Portfolio Standard	BE 5.1	7,247,418	36.3%
Local Solar	BE 2.2, 3.5, 3.6, 5.1	828,246	4.1%
Mode Shift & Land Use Policies	TLU 1 (all)	1,151,719	5.8%
Bus Electrification	TLU 2.3	604,305	3.0%
Fuel Economy Standards	N/A	2,320,100	11.6%
Electric Vehicle Adoption	TLU 2.1, 2.2, 2.4, 2.5	982,046	4.9%
Ferry & Ship Electrification	TLU 3.3, 3.4	64,965	0.3%
Solid Waste Reduction	WR 1 (all)	685,655	3.4%
Wastewater Efficiency	WR 2.3	13,998	0.1%

6.1.2 GHG Emissions by Source

Emissions reductions come from every major fuel source:

- Electricity: The Renewable Portfolio Standard, Local Solar, and Municipal Energy Purchase will reduce GHG emissions from electricity by 71% by 2030 and 100% by 2050.
- Natural Gas: Fuel Switching and Energy Efficiency in Buildings and Industry, and Energy Codes, will reduce GHG emissions from natural gas by 16% by 2030 and 70% by 2050.
- Fuel Oil: Fuel Switching and Energy Efficiency in Buildings and Industry, and Energy Codes, will reduce GHG emissions from fuel oil by 25% by 2030 and 94% by 2050.
- Gasoline: Mode Shift, Land Use Changes, Fuel Efficient Vehicles, and Vehicle Electrification will reduce unleaded gasoline use by 31% by 2030 and 74% by 2050.
- Diesel: Mode Shift, Land Use Changes, Fuel Efficient Vehicles, Electrification of Buses, Decarbonization of Municipal Vehicles, and Electric Shore Power for ferries and docked cruise vessels will reduce diesel use by 14% by 2030 and 23% by 2050.
- Solid Waste: Reduction of waste, and diversion of waste from incineration to landfills, composting, and anaerobic digestion will reduce solid waste emissions by 35% by 2030 and 89% (zero waste) by 2050.
- Wastewater: Wastewater process emissions are not affected by any plan or model actions, and so increase by 21% by 2030 and 63% by 2050.

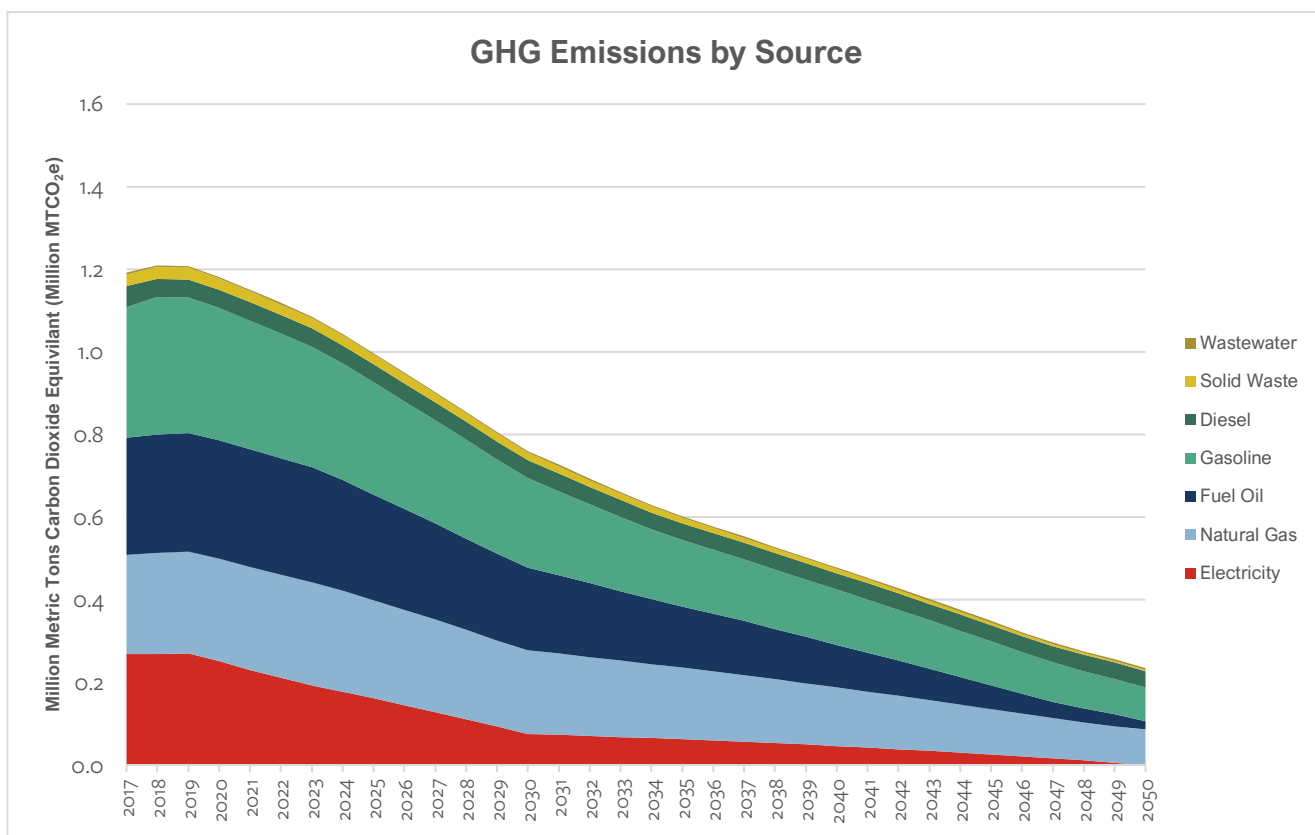


Figure 6. GHG emissions by source.

Table 25. GHG emissions by source in 2017, 2030, 2040, 2050.

Fuel	Baseline (2017)	2030		2040		2050	
	MTCO ₂ e	MTCO ₂ e	% Reduction from Baseline	MTCO ₂ e	% Reduction from Baseline	MTCO ₂ e	% Reduction from Baseline
Electricity	267,856	78,803	-71%	48,021	-82%	0	-100%
Natural Gas	241,448	203,430	-16%	134,851	-44%	66,655	-72%
Fuel Oil	283,564	212,303	-25%	107,700	-62%	17,327	-94%
Gasoline	316,208	216,925	-31%	133,955	-58%	81,691	-74%
Diesel	50,910	43,783	-14%	43,783	-14%	39,385	-23%
Solid Waste	28,211	18,316	-35%	9,711	-66%	2,990	-89%
Wastewater	3,959	4,804	21%	5,576	41%	6,471	63%
Total	1,192,784	791,459	-34%	488,017	-59%	218,887	-82%

6.1.3 Aggregated GHG Emissions Reductions

To help show the relative cumulative impact of the actions, wedges are aggregated into plan areas. The assignments were discussed in the above narrative; to review:

Table 26. Aggregated emissions groupings and associated actions.

Plan Section	Plan Sub-section	Wedge	Plan Actions	Methodology Memo Section
BE	BE 1: Municipal Buildings and Energy	Municipal Renewable Energy	BE 1.1	2.2.3
		Municipal Building Efficiency	BE 1.2, 1.3	3.2.4
	BE 2: New Construction Energy Efficiency & Decarbonization	New Construction Policies	BE 2.1, 2.3	3.2.1
	BE 3: Existing Buildings Energy Efficiency & Decarbonization	Existing Building Efficiency	BE 3.1, 3.2, 3.3	3.2.2
		Existing Building Decarbonization	BE 3.4, 3.5, 5.4, 5.6	3.2.3
	BE 4: Industrial Energy Efficiency & Decarbonization	Industrial Decarbonization	BE 4.1, 4.2	3.2.5
	BE 5: Clean and Renewable Energy	Renewable Portfolio Standard	BE 5.1	2.2.1
		Local Solar	BE 2.2, 3.5, 3.6, 5.1	2.2.2
TLU	TLU 1: Mode Shift & Land Use	Mode Shift and Land Use Policies	TLU 1 (all)	4.2.1
	TLU 2 & 3: Vehicle Electrification and Infrastructure	Bus Electrification	TLU 2.3	4.2.2
		Fuel Economy Standards	N/A	4.2.3
		Electric Vehicle Adoption	TLU 2.1, 2.2, 2.4, 2.5	4.2.4
		Ferry and Ship Electrification	TLU 3.3, 3.4	4.2.5
WR	WR 1 & 2: Waste Reduction	Solid Waste Reduction	WR 1 (all)	5.2.1
		Wastewater Efficiency	WR 2.3	5.2.2

Table 27. Cumulative emission savings by plan sector.

Name	Acronym	Cumulative GHG Reductions, 2020-2050		GHG Reductions in Year 2030		GHG Reductions in Year 2050	
		MTCO ₂ e	%	MTCO ₂ e	%	MTCO ₂ e	%
Buildings & Energy	BE	14,156,791	71%	358,550	73%	807,230	71%
Transportation & Land Use	TLU	5,123,135	26%	118,523	24%	290,948	25%
Waste Reduction	WR	699,653	4%	15,292	3%	43,297	4%
Total		19,979,579	100%	492,364	100%	1,141,475	100%

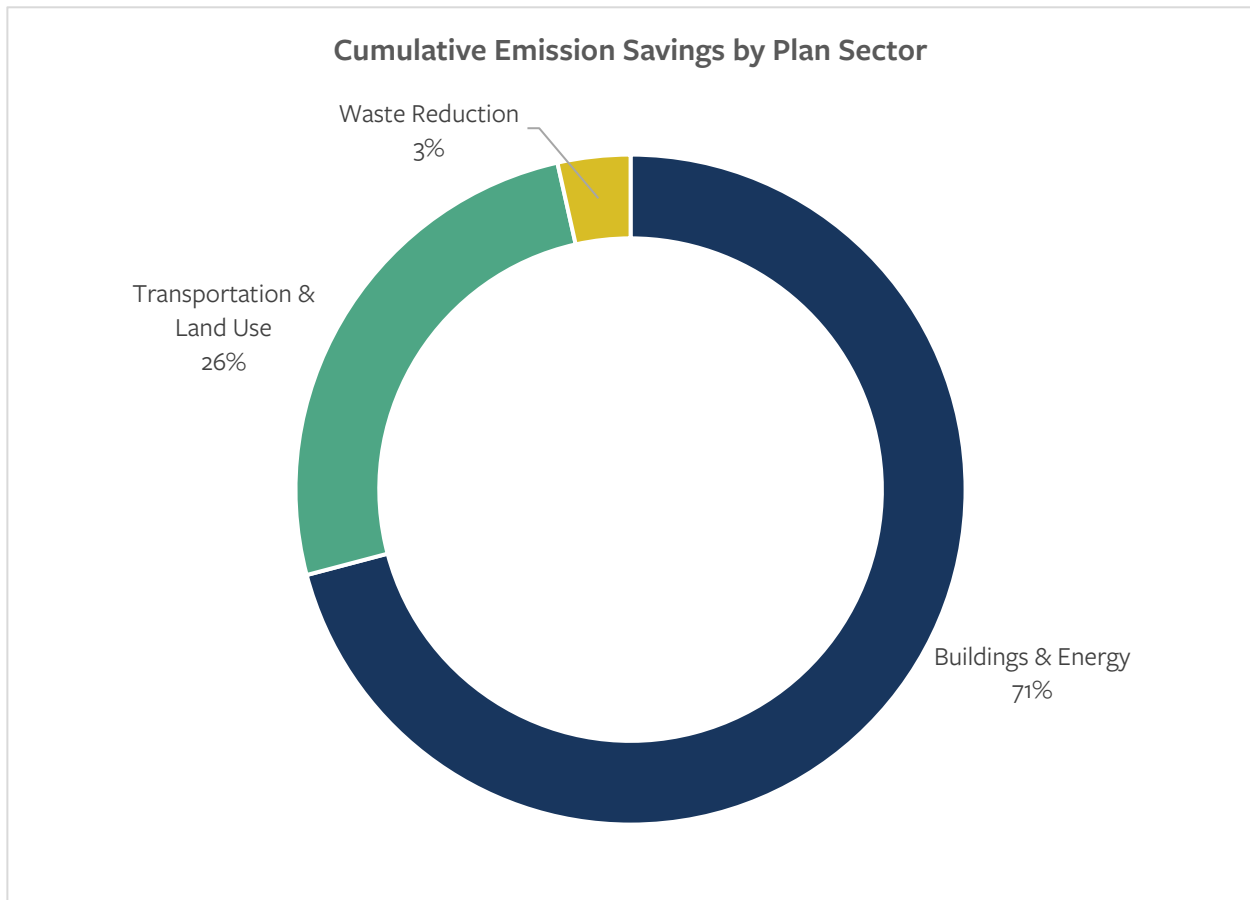


Figure 7. Cumulative emission savings by plan sector.

Table 28. Cumulative emission savings by plan sub-sector.

Name	Acronym	Cumulative GHG Reductions, 2020-2050		GHG Reductions in Year 2030		GHG Reductions in Year 2050	
		MTCO ₂ e	%	MTCO ₂ e	%	MTCO ₂ e	%
BE 1: Municipal Buildings and Energy	BE 1	204,169	1.0%	1,429	0.3%	7,170	0.6%
BE 2: New Construction Energy Efficiency & Decarbonization	BE 2	578,672	2.9%	11,797	2.4%	38,116	3.3%
BE 3: Existing Buildings Energy Efficiency & Decarbonization	BE 3	4,544,560	22.7%	92,141	18.9%	304,392	26.7%
BE 4: Industrial Energy Efficiency & Decarbonization	BE 4	753,726	3.8%	5,413	1.1%	66,144	5.8%
BE 5: Clean and Renewable Energy	BE 5	8,075,664	40.4%	244,203	50.0%	389,478	34.2%
TLU 1: Mode Shift & Land Use	TLU 1	1,151,719	5.8%	30,744	6.3%	61,089	5.4%
TLU 2 & 3: Vehicle Electrification and Infrastructure	TLU 2+3	3,971,416	19.9%	87,778	18.0%	229,860	20.2%
WR 1 & 2: Waste Reduction	WR 1+2	699,653	3.5%	15,292	3.1%	43,297	3.8%
Total		19,979,579	100.0%	488,798	100.0%	1,139,545	100.0%

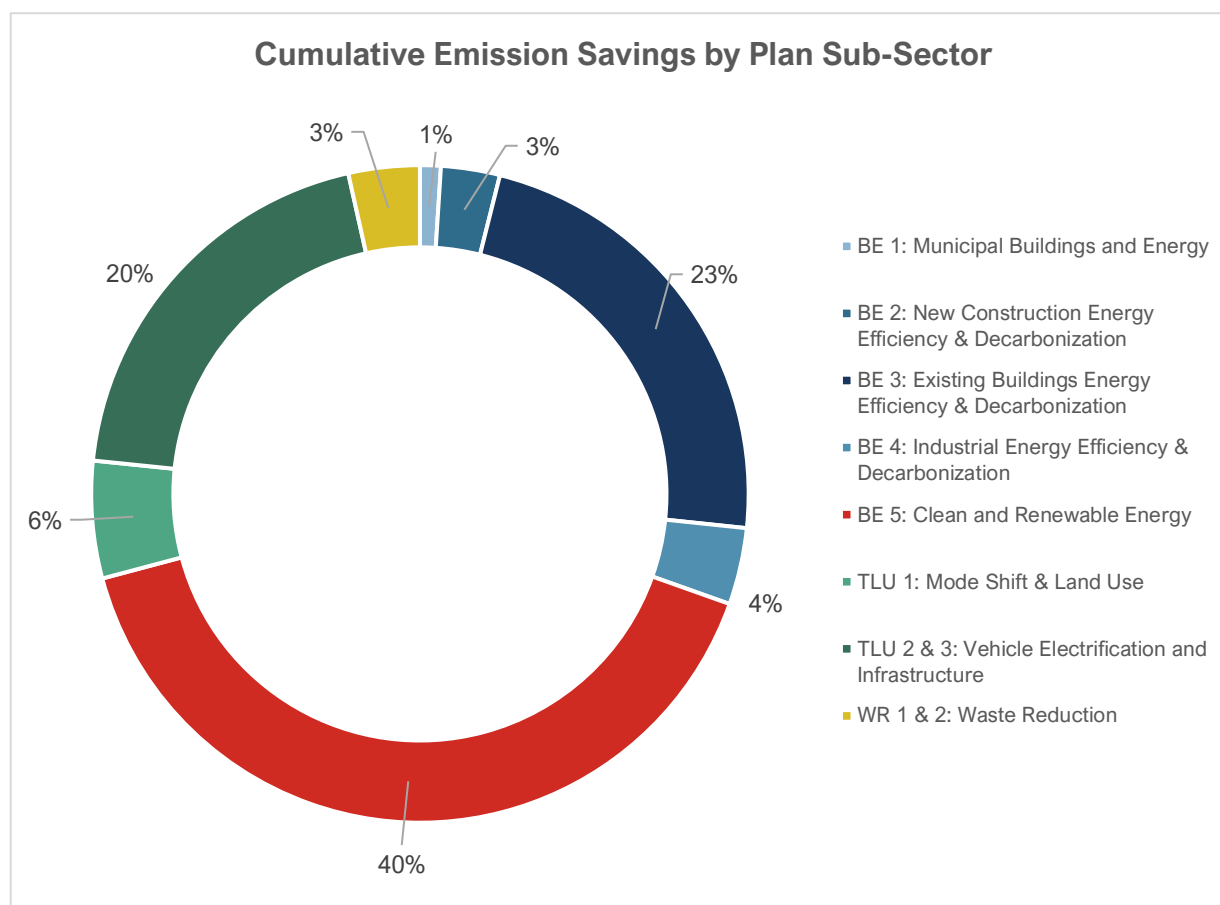


Figure 8. Cumulative emission savings by plan sub-sector.

6.2 Energy Use Results

6.2.1 Energy Use Reductions from Policies

While energy use reductions as such are not a plan goal, the prevalence of energy efficiency measures, and fuel switching to efficient electric sources, results in a total site energy savings of 45%.²⁵ Figure 9 shows energy use reductions from the policies. Renewable energy policies are excluded. All BE 3 actions have been combined for simplicity. These site energy savings are very relevant for considering total grid load as we electrify buildings and transportation; however, hourly and seasonal electricity loads were outside the scope of this modeling exercise.

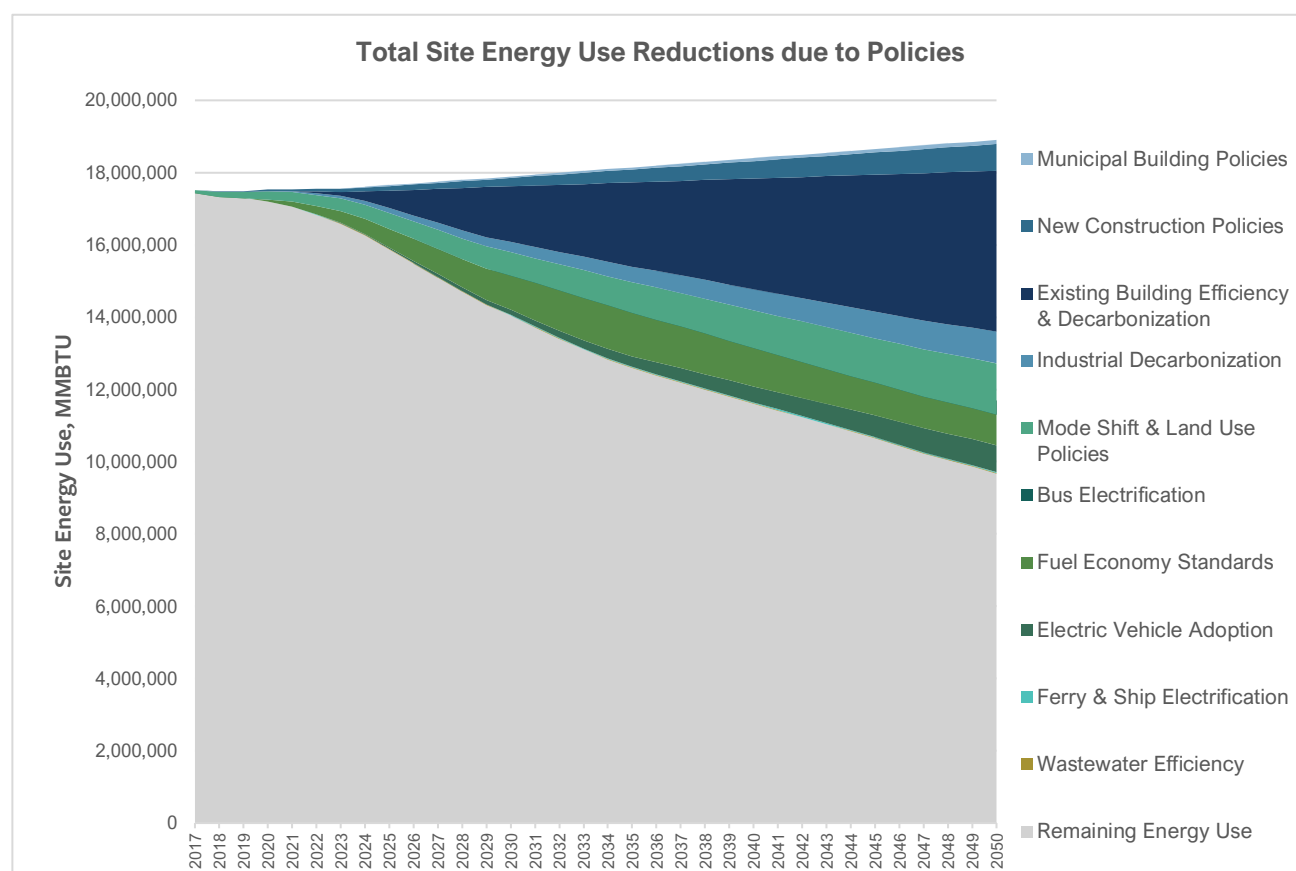


Figure 9. Total site energy use reductions due to policies.

²⁵ Source energy, which accounts for losses in generation, transmission, and distribution, only decreases by 13%—at least as measured today, with an electricity source-to-site ratio of 2.8. However, most of that ratio is the result of large losses in electricity generation using fossil fuel combustion. On-site renewable energy has a source-to-site ratio of 1.0, and off-site renewable energy has an effective source-to-site ratio of 1.05 (accounting for transmission loss). Therefore, it is expected that the source factor for electricity will decline dramatically as more renewable energy comes online, and the source energy savings in 2050 will be more comparable to the site energy savings.

Table 29. Site energy savings results.

Absolute GHG Emissions and Reductions	MMBTU Savings in Year 2030		MMBTU Savings in Year 2040		MMBTUs in Year 2050	
	MMBTU	% of Savings	MMBTU	% of Savings	MMBTU	% of Savings
Baseline (2017)	17,514,711		17,514,711		17,514,711	
BAU GHG Emissions	17,893,117		18,399,250		18,905,211	
Municipal Building Policies	22,104	1%	75,123	1%	109,340	1%
New Construction Policies	213,679	6%	473,473	7%	747,376	8%
Existing Building Efficiency & Decarbonization	1,376,502	40%	3,024,716	46%	4,418,252	48%
Industrial Decarbonization	102,974	3%	469,804	7%	836,634	9%
Mode Shift & Land Use Policies	646,627	19%	1,044,586	16%	1,421,867	16%
Bus Electrification	-24,817	-1%	-271,497	-4%	-392,484	-4%
Fuel Economy Standards	970,174	28%	1,333,104	20%	1,240,908	14%
Electric Vehicle Adoption	141,998	4%	445,586	7%	741,345	8%
Ferry & Ship Electrification	0	0%	21,291	0%	27,231	0%
Wastewater Efficiency	519	0%	15,046	0%	17,032	0%
Remaining Energy Use	14,443,358		11,768,018		9,737,710	
% Change from Baseline	-17.5%		-32.8%		-44.5%	
% Change from BAU	-19.3%		-36.0%		-48.5%	

6.2.2 Energy Use Reductions by Source

The energy use by fuel type also changes dramatically due to electrification:

- Electricity: Electricity use increases by 81% (1.81x)
- Natural Gas: Natural gas use decreases by 73%
- Fuel Oil: Fuel oil use decreases by 94%.
- Gasoline: Unleaded gasoline use decreases by 74%
- Diesel: Diesel fuel use for road and sea transportation decreases by 23%

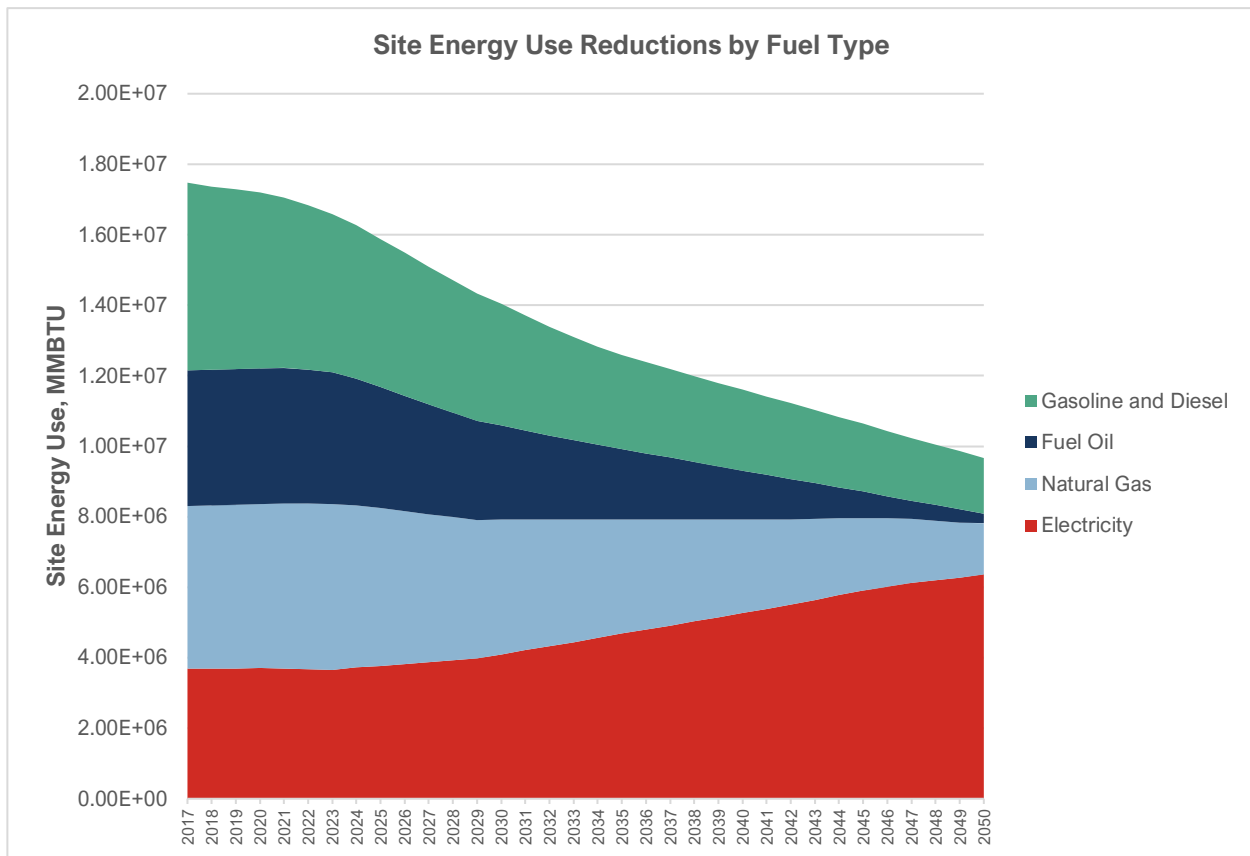


Figure 10. Site energy use by fuel type.

Table 30. Site energy use by fuel type.

	Baseline	2030		2040		2050	
	MMBTU	MMBTU	% From Baseline	MMBTU	% From Baseline	MMBTU	% From Baseline
Electricity	3,684,663	4,299,046	17%	5,477,681	49%	6,669,928	81%
Natural Gas	4,611,286	3,827,946	-17%	2,523,254	-45%	1,254,938	-73%
Fuel Oil	3,860,693	2,851,627	-26%	1,446,006	-63%	231,932	-94%
Gasoline and Diesel	5,319,825	3,464,739	-35%	2,321,077	-56%	1,580,911	-70%
Total Site Energy Use	17,476,466	14,443,358	-17%	11,768,018	-33%	9,737,710	-44%

6.2.3 Renewable Electricity

As required by the RPS, renewable electricity increases to 80% of the total by 2030 and 100% by 2050, while electricity consumption increases by 73% due to electrification of buildings and vehicles.

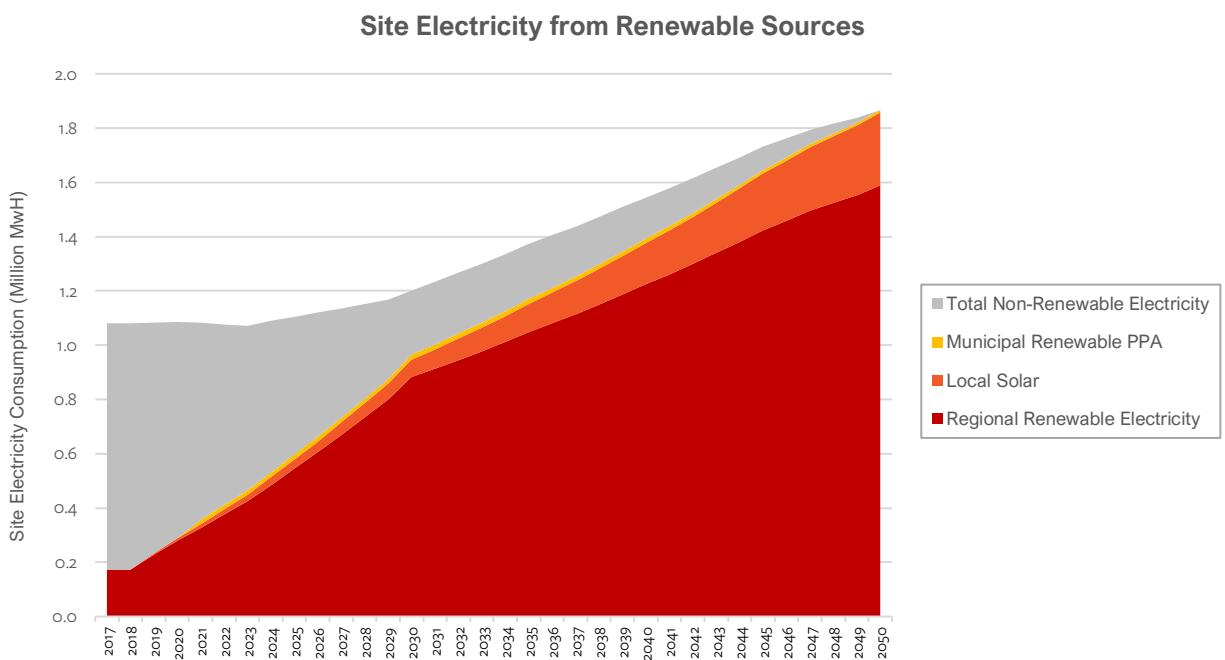


Figure 11. Site electricity from renewables.

Table 31. Site electricity from renewables.

	2017 (MWh)	2030 (MWh)	2040 (MWh)	2050 (MWh)	% of Electricity in 2050
Regional Renewable Electricity (outside the Cities)	172,786	928,057	1,271,816	1,663,150	85.1%
Local Solar Electricity	-	67,679	158,418	282,055	14.4%
Municipal Renewable Electricity Power Purchase	-	14,543	16,268	9,640	0.5%
Total Renewable Electricity	172,786	1,010,279	1,446,502	1,954,844	100%
Total Electricity Consumption	1,079,913	1,259,978	1,605,416	11,954,844	
Total Non-Renewable Electricity	907,127	249,699	158,915	0	0%
% of Electricity that is Renewable	16%	80%	90%	100%	100%

Memorandum

Resilience Zoning for Resilient Buildings and Land Use

To: Cities of Portland and South Portland

From: Linnean Solutions

Date: May 2020

Re: Supporting guidance for designing and implementing resilience-based zoning for the One Climate Future Climate Action and Adaptation Plan

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Introduction

The cities are faced with a significant opportunity now to guide all future development in ways that reduce the risk and impacts from climate hazards. Smart development patterns as well as resilient building and site design can allow cities to grow in ways that effectively adapt to the effects of sea level rise and storm surge, higher volumes of stormwater, more intense storms, higher temperatures, as well as accompanying uncertainty. In the following memo we recommend that the cities adopt a set of resilience overlays, defined

based on exposure to specific climate risks. We outline the purpose of each of these overlays, as well as offer a set of alternate approaches for delineating their boundaries—concluding that it may be in the cities’ best interest to commission a flood risk assessment that maps the boundaries of the future 1% (and 0.2%) annual chance flood, accounting for sea level rise. To address the resilience challenges across these overlay zones, we outline a set of approaches for requiring or incentivizing resilient building and site parameters, drawing from precedents down the east coast. From these options we propose one model for a resilient quotient that would both allow the cities to enforce specific resilience measures as well as encourage resilience thinking more broadly through a flexible and performance-based approach.

1. City-Scale: Resilience Zoning Overlays

Zoning overlays are special zoning districts that are applied on top of (i.e., in addition to) the city’s existing base zoning. Overlays make it possible for cities to address certain conditions (such as flood vulnerability) across a specific area that does not necessarily align with the boundaries of the base zones. In the case of resilience zoning, overlays become a way for cities to set requirements or incentives in ways that align with the spatial extent of climate hazards. While there is quite a bit of variation in how resilience overlays can be implemented—discussed in more detail below—we recommend keeping the following principles in mind.

1.1. Guiding Principles for Resilience Zoning Overlays

- A) Maintain a whole-city perspective: All parts of the city can play a role. There’s a tendency to only focus on specific at-risk areas (such as areas with the highest flood risk) when designing resilience overlays. Requiring or incentivizing action in only these areas misses the opportunity to use the rest of the city as part of an integrated system for increasing resilience. Expanding green infrastructure in higher elevation areas, for example, can reduce flooding in lower elevation areas. Likewise, choosing to restrict development in areas with the highest flood risk can be complemented by incentives to densify and cluster amenities in areas outside flood boundaries. All areas of the city will feel the effects of higher temperatures and more intense storms, and thus all areas of the cities can play a role in mitigating these hazards. For this reason, resilience zoning may be best implemented through a set of resilience overlays, differentiated based on the relative exposure to climate hazards and respective adaptive responses required for different areas of the cities. See Norfolk, VA under precedents (section 3) for an example of resilience overlays that take a whole-city approach.
- B) Allow for the overlays to be dynamic over time. There is a lot of inherent uncertainty in climate models: As a starting point, we do not know how quickly and comprehensively nations globally will be able to reduce greenhouse gas emissions. We are also unable to fully predict the potential catalytic effects of ongoing emissions—including, for example, how drastically the growing instability of the Antarctic Ice Sheet may impact sea level rise. The Maine Geological Survey’s inundation areas for sea level rise and storm surge in Portland and South Portland represent our best understanding at this point in time, but will no doubt evolve in the coming years. We recommend designing the cities’ zoning guidelines to be able to respond to new information. Aligning zoning boundaries with scenarios (such as the Intermediate sea level rise scenario for 2100 or the FEMA 0.2% annual

chance flood) allows the premise to stay consistent (i.e., planning for a certain amount of risk based on a given probability), but allows the inundation area to evolve as our projections improve. We recommend establishing designated timeframes, stipulated in the zoning code, to review the latest climate models and update the boundaries of zoning overlays based on the newest projections.

1.2. Defining the Purposes of the Resilience Overlays

All new development in Portland and South Portland can contribute to the resilience of the cities. In order to make that possible, we recommend implementing a set of resilience overlays, differentiated based on the relative exposure to climate hazards. The cities will want to determine both the number of tiers and boundaries of the tiers that would be most effective for each city; guidance on that process is included in section 1.3 below. Generally speaking, however, we recommend resilience overlays designed to meet certain objectives based on the following parameters:

- A) Areas with the Highest Flood Risk (“Tier 1 Flood Overlay”).** We recommend that one resilience overlay apply to areas of the cities with the highest flood risk from sea level rise and storm surge. The purpose of the “highest flood risk” overlay would be to guide land use decisions that a) buffer and absorb floodwaters, particularly from sea level rise and storm surge, and b) minimize the net negative impacts of sea level rise and storm surge on the cities, particularly with respect to resident health and safety, protecting public infrastructure and assets, and safeguarding municipal fiscal health. Land use decisions within this resilience overlay would follow the following hierarchy:
- **Priority 1:** Preserve existing natural open space areas as critical assets to buffer and absorb flood- and stormwater.
 - **Priority 2:** Seek opportunities to transition existing land uses to living shorelines or public parks with a primary focus on floodable natural spaces in an effort to restore natural floodplains.
 - **Priority 3:** Encourage development of compatible land uses, as described further below.

Any new construction in these areas would be reserved for low-density, non-residential, and “flood-tolerant uses” that do not fall into a list of incompatible, vulnerable, or hazardous uses, and that meet minimum resilient building design requirements. Such “incompatible, vulnerable, or hazardous uses” would include any building types that provide permanent or temporary shelter (e.g., single or multifamily homes, nursing homes, shelters, hotels, etc.) which amplify the need for evacuation and emergency response in a flood event; critical facilities¹ (e.g., critical government buildings, emergency management services, hospitals, schools, etc.); and commercial and industrial uses that

¹ National Flood Insurance Program (NFIP) Floodplain Management Regulations urge jurisdictions to build no new critical infrastructure in the 1% annual chance flood zone. Many jurisdictions require that no new critical facilities be built in the 0.2% annual chance flood zone (which receives credit through the Community Rating System). It is also worth noting that it is much more difficult to secure any Federal funding for critical facilities if they are in the 0.2% annual chance flood zone, including any recovery funding. Under Executive Order 11988, Federal agencies must complete “rigorous alternative site evaluations” before advancing a project in the 0.2% annual chance flood zone as a last resort.

could create cascading repercussions if exposed to flood waters (e.g., those with hazardous chemical storage).

While it feels counter to the cities' housing goals to restrict housing development in certain areas, it is in effect a proactive and protective measure to ensure that the cities do not lose substantial portions of their housing stock to flooding within the next 50 years. It further protects the health and safety of residents by ensuring that fewer people live within these high risk zones, and it helps to reduce the city's financial liability: the cities are on the line to invest in roads, water and sewage, and other public infrastructure to serve development in these areas, which will likely see escalating costs. It also becomes an equity issue: Homes and residential units in areas that see frequent flooding will eventually devalue and become some of the most affordable housing on the market. As a result, families with the least financial means to respond in a disaster will end up living in the most at-risk areas of the cities. To the extent practicable, seeking ways to expand the natural floodplain (which can double as public open space amenities) in these highest risk areas will create significant long-term value, both through natural amenities and loss minimization.

- B)** Areas with High to Moderate Flood Risk (“Tier 2 Flood Overlay”). It is recommended that a second overlay apply to areas of the cities that fall outside areas of highest flood risk, but that are still likely to see flooding from sea level rise and storm surge under higher sea level rise scenarios and/or under larger flood events. The primary goal for this second overlay would be to encourage new development and redevelopment in these areas to pursue adaptation measures for building and site design that address the flood risk of the given site. Resilient building and site design in this overlay could be either voluntary (incentivized) or required; The cities may consider dividing this overlay into two zones to either require or incentivize adaptation measures based on the level of risk. Again, guidance on determining these boundaries—and on where we recommend requiring building adaptation—is included in section 1.3.
- C)** Whole-City Overlay: Stormwater and Heat. Areas outside the first two overlays are not vulnerable to flooding from sea level rise and storm surge, but will still feel the effects of higher intensity rainstorms and higher temperatures, and can help the cities adapt to both these stresses. Guided by a whole-city resilience overlay, development and redevelopment could be required or incentivized to meet specific point requirements for stormwater retention and cooling capacity, which in many instances can be addressed simultaneously through preserving open space, green infrastructure, or green/blue roofs. Recommended approaches for addressing stormwater and heat could vary based on whether the site also falls into another resilience overlay.

Figure 1 illustrates a three-tier system for resilience overlays. Note that the figure is purely diagrammatic; Boundaries do not represent actual, proposed, or recommended zones.

Diagram of a Three-Tiered System for Resilience Overlays



Figure 1. Diagram showing a multi-tiered system for resilience overlays. The figure is purely diagrammatic; Boundaries do not represent actual, proposed, or recommended zones.

1.3. Defining the Boundaries of the Resilience Overlays

Storms of various magnitudes, sea level rise scenarios, and the timeframe for flood projections are all variables that can shape how we assess “flood risk” in a given area. Based on the resilience overlays suggested in section 1.2, we outline three potential approaches for defining the boundaries of the overlays given different flood risk thresholds and datasets. Again, these approaches define boundaries based on probability-based scenarios (as opposed to a specific elevation) so that the boundaries of the overlays can shift over time as flood projections change. The first two approaches rely on existing geospatial flood risk information; the third approach would require further flood risk analysis.

While we offer these recommendations as a starting point, Portland and South Portland will ultimately need to work across their respective departments to specify the flood thresholds and corresponding resilience overlay boundaries based on what will be most effective for each city. This decision is based not only on level of risk

and potential inundation area, but also implications for projected growth in the cities, administrative systems for surveying and updating zone boundaries, buy-in from city staff and residents, among other factors.

Approach 1: Sea Level Rise Scenarios.

In 2017, the National Oceanic and Atmospheric Administration (NOAA) reported a range of global and regional sea level rise projections based on the three greenhouse gas emissions scenarios.² The six global mean sea level (GMSL) rise scenarios include an extreme upper-bound (highest potential sea level rise in 2100), a lower-bound (lowest potential sea level rise in 2100), and four intermediate conditions. Table 1 summarizes these six scenarios and provides probabilities that sea levels will surpass each given height.

Global Mean Sea Level Rise Scenarios

Scenario	Global Mean Sea Level Rise	Probability of Exceedance
Low	0.3 meters (1 ft)	94 - 100%
Intermediate Low	0.5 meters (1.6 ft)	94 - 96%
Intermediate	1 meters (3.3 ft)	2 - 17%
Intermediate High	1.5 meters (4.9 ft)	0.4 - 13%
High	2 meters (6.6 ft)	0.1 - 0.3%
Extreme	2.5 meters (8.2 ft)	0.05 - 0.1%

Table 1. Global mean sea level rise scenarios for 2100 with the corresponding probability that sea level rise will exceed the given threshold. The probability is based on the RCP 2.6 to RCP 8.5 scenarios.

To support planning decisions, NOAA provides guidance on choosing planning thresholds based on the likelihood of the scenarios and the level of risk posed. Using this guidance, we can define the Intermediate scenario as “what is most likely to occur” and the extreme scenario as “how bad can it get.” This is in alignment with recommendations from Portland’s Bayside Adapts Phase 1: Stormwater and Sewer Gap Analysis (“Bayside Adapts”) report.

Table 2 summarizes the regional relative sea level rise scenarios for 2050 and 2100 for the Greater Portland area, which convert the global scenarios to local projections by taking into account a number of local geological and hydrological factors.³ Based on the guidance above, it is recommended that Portland and South Portland commit to managing the intermediate scenario (1.48 feet of relative sea level rise), but be prepared to manage the extreme scenario (3.38 feet) when considering a 2050 planning horizon.

² These three scenarios include Representative Concentration Pathways (RCP) 2.6, 4.5, and 8.5. The RCP 2.6 scenario represents significant immediate reductions in greenhouse gas emissions, resulting in “net-negative” emissions by 2100. The RCP 4.5 scenario represents moderate reductions in greenhouse gas emissions, resulting in the stabilization of global emissions by 2050 and a decrease in global emissions afterwards. The RCP 8.5 scenario represents continued intensive use of fossil fuels and emission of greenhouse gases. See the One Climate Future Vulnerability Assessment (page 10) for further details.

³ These factors include variations in the Earth’s gravitational forces, ocean circulation patterns, ice sheet and glacial melt, and vertical movement in the land.

Sea Level Rise Planning Scenarios for Portland and South Portland

Scenario	Relative Sea Level Rise (feet)	
	2050	2100
Low	0.62	1.12
Intermediate Low	0.82	1.53
Intermediate	1.48 – “Commit to manage”	3.84 – “Commit to manage”
Intermediate High	2.16	6.00
High	2.95	8.72 – “Prepare to manage”
Extreme	3.38 – “Prepare to manage”	10.79 – “Be aware of”

Table 2. Sea level rise scenarios for 2050 and 2100 for the Greater Portland region, with corresponding recommendations for city planning.

By 2100, the potential levels of sea level rise across the scenarios deviate from each other quite significantly. Bayside Adapts recommends committing to managing the intermediate scenario (3.84 feet) for a 2100 planning horizon, being prepared to manage the high scenario (8.72 feet), and being aware of and monitoring for the extreme scenario (10.79 feet). When considering the potential area of inundation under these scenarios, we recommend using the relative sea level rise on top of the highest astronomical tide (HAT).⁴

Under this approach, we recommend using the Intermediate scenario for 2100 (3.84 feet above the HAT), which corresponds with the city’s “commit to manage” threshold to delineate areas in the city with the highest flood risk. Using a 2100 timescale sets a longer course trajectory in line with infrastructure development and longer-term development patterns. The boundary for the “Tier 2” flood resilience overlay could thus be defined based on the “prepare to manage” sea level rise scenario (8.72 feet above the HAT). Again, the type of development would not be restricted within this second overlay, but buildings would be encouraged to incorporate flood-resilient building and site parameters.

Approach 2: FEMA Flood Zones.

Under the National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) conducts flood hazard analyses and produces Flood Insurance Rate Maps (FIRMs) to inform communities about flood risk. Municipalities can choose to participate in the NFIP, which involves adopting and enforcing floodplain management ordinances that define building standards for new and existing development in zones with high flood risk. Residents within participating communities are eligible to purchase NFIP flood insurance and can receive disaster assistance for flood-related damage. Both Portland and South Portland are NFIP-participating communities. The FIRMs for Cumberland County were updated in 2017; adoption of the new FIRMs is still pending in both cities.

⁴ The highest astronomical tide (HAT) represents the highest tide that can be predicted to occur in the given epoch. It is important to note, however, that meteorological forces (e.g., surge from storms or hurricanes) can make water levels exceed these thresholds.

The FIRMs delineate Special Flood Hazard Areas (SFHAs), which are areas with a 1% annual chance of flooding (often also referred to as the 100-year flood zone). Stated another way, properties in these zones have a 26% chance of flooding over the course of a 30-year mortgage. These areas include all zones designated with a V or A, including A, AO, AH, AE, VE, and V zones. FIRMs also delineate the inundation area for the 0.2% annual chance flood (often also referred to as the 500-year flood zone). Table 3 summarizes the zones that are most relevant for Portland and South Portland.

Select FEMA Flood Zones

Special Flood Hazard Areas (1% annual chance flood)	
VE	Coastal areas within the 1% annual chance zone that are also exposed to storm waves over 3 feet. Base flood elevations (BFE) are provided for VE zones.
AE	Areas within the 1% annual chance zone, and where base flood elevations (BFE) are provided. On some FIRMs, the AE zone is divided into a Coastal A zone and the (more inland) AE zone by a Limit of Moderate Wave Action (LiMWA) line. The LiMWA delineates the area that will have exposure to storm waves that are smaller than 3 feet and over 1.5 feet.
AH	Areas subject to shallow flooding (usually ponding) by the 1% annual chance flood where average depths are between 1 and 3 feet. Base flood elevations (BFEs) are shown (and derived from detailed hydraulic analyses).
A	Areas within the 1% annual chance zone, where no base flood elevations (BFE) have been determined.
Moderate Flood Risk Areas (0.2% annual chance flood)	
X (shaded)	Areas that have a 0.2% annual chance of flooding. Properties in this zone have a 6% chance of flooding over the course of a 30-year mortgage.

Table 3. Definitions for FEMA flood zones included on FIRMs for Portland and South Portland.

The FIRMs illustrate flooding associated with a particular level of storm, and a relative probability of occurrence. It is important to note that the boundaries of the FEMA flood zones are based on existing shoreline characteristics (including development and land elevation) and historic recurrence intervals for wave and storm dynamics; They do not project effects from climate change. By 2050 under an Intermediate sea level rise scenario, for example, Portland and South Portland could see water levels associated with the 1% annual chance storm ten times as frequently.

Although the FIRM flood zones do not incorporate sea level rise projections, in Portland and South Portland the 0.2% annual chance flood zone (as delineated in the 2017 preliminary FIRMs) aligns quite closely to the projected inundation area for the Intermediate sea level rise scenario for 2100 on top of the highest astronomical tide. Using the boundaries for the 0.2% annual chance flood could therefore double as a proxy

for accounting for the projected effects from sea level rise for the cities' "commit to manage" scenario. Using the FEMA delineation provides some administrative convenience: these zones are already (and recently) surveyed and mapped, and the boundaries will already have legal standing (once adopted) for floodplain regulations. Furthermore, as communities participating in the NFIP, Portland and South Portland are already required to follow NFIP floodplain management requirements in the Special Flood Hazard Areas. Designing the resilience overlay to cover Special Flood Hazard Areas as well as the 0.2% annual chance flood zone could allow for more streamlined overlap between NFIP floodplain management requirements, International Codes, and the resilience overlay.

The boundary for the Tier 2 flood risk overlay, however, would still need to be delineated by the "prepare to manage" sea level rise scenario for 2100 (8.72 feet above the HAT), as no additional threshold exists on the FIRMs.

Approach 3: Future Special Flood Hazard Areas, Accounting for Sea Level Rise.

As a third approach, the Tier 1 flood resilience overlay for the highest flood risk could be delineated based on a projection of the future 1% annual chance flood zone (i.e., the future FEMA Special Flood Hazard Area) that accounts for sea level rise. We recommend using a future date 50 years from now or longer (e.g., 2070 or 2100) and incorporating the effects of sea level rise from the Intermediate sea level rise projection (i.e., Portland and South Portland's "commit to manage threshold") or higher. This approach has significant benefits:

- It incorporates more information about flood risk than either of the other two approaches in defining the boundaries of the overlay zones, including sea level rise projections and the probability and hydrologic/hydraulic dynamics of storm events.
- It creates more consistent messaging. For example, under the NFIP floodplain management regulations, properties within the Special Flood Hazard Areas (1% annual chance flood zone) must abide by certain building regulations. The resilience overlay would outline where the 1% annual chance flood zone will likely be at a future date in order to proactively prepare for sea level rise.

It should be noted that basing the boundaries of the Tier 1 flood resilience overlay on the combined effects of sea level rise and future storms will result in a much larger boundary than the other two approaches, particularly if using the 1% annual chance storm for 2100 under the Intermediate sea level rise scenario. With the understanding that this could create significant constraints, particularly on housing development, the following approach outlined in Table 4 could be one way to tailor the overlays based on the combined effects of sea level rise and storms.

Tailoring the Resilience Overlay Scheme for Approach 3

Resilience Overlay	Basis of Boundary	Zoning Parameters
Tier 1: Highest Flood Risk	Future high tide (no storm) conditions in 2100 under the Intermediate sea level rise scenario	- Land use decisions prioritize the preservation and creation of natural spaces (based on hierarchy of land use) - Restrictions on the development of incompatible, vulnerable, or hazardous uses - All development (compatible uses) shall meet resilient building requirements
Tier 2: High Flood Risk	Future 1% annual chance storm in 2100 with the Intermediate sea level rise scenario	All development (or all development requiring development review) shall meet resilient building requirements
Tier 3: Moderate Flood Risk	Future 0.2% annual chance storm in 2100 with the Intermediate sea level rise scenario	Development is encouraged to consider resilient building parameters as part of a broader suite of resilience considerations in the whole-city overlay
Tier 4: Whole-City Overlay	Entire city	Development is either required or incentivized to meet specific point requirements for stormwater retention and cooling capacity

Table 4. Potential approach for tailoring the resilience overlay scheme based on boundaries that account for both sea level rise and storm flooding.

Ultimately, the cities' risk tolerance will inform which combinations of scenarios—sea level rise and storm levels—are used to determine the boundaries and corresponding requirements. We recommended the Intermediate scenario to align with the cities' "commit to manage scenario." A more risk averse approach could include basing the three flood resilience overlays on the Intermediate-High or High (the "prepare to manage") sea level rise scenario, keeping all other variables the same. A less risk averse (more risk tolerant) approach could include basing all boundaries on an earlier year, such as 2070, or recommending (as opposed to requiring) resilient building requirements in Tier 2.

Using both sea level rise and storm probabilities for a resilience overlay would require an additional hydrodynamic flood risk assessment to determine the inundation areas for floods at various recurrence intervals (e.g., 1%, 0.2%) at a future date, accounting for sea level rise. This study could be commissioned in tandem with the stormwater drainage assessment in Action CR 4.1. For reference, Boston has used this methodology for defining its "Coastal Flood Resilience Zoning Overlay District," based on hydrodynamic modeling by the University of Massachusetts Boston and the Woods Hole Group. (Boston defines its Resilience Zoning Overlay District based on the 1% annual chance flood for 2070, accounting for 40 inches of sea level rise or the "High" sea level rise scenario). See precedents section below for links and further details.

Summary of Approaches

Table 5 summarizes the three proposed approaches, including a subset of potential advantages and disadvantages for each. While the third approach requires additional flood modeling, it has a number of advantages that make it the recommended approach.

Approach	Approach 1. Sea Level Rise Scenarios	Approach 2. FEMA Flood Zones	Approach 3. Future SFHA, accounting for SLR
Tier 1 Boundary	Inundation area for the Intermediate sea level rise scenario for 2100	Inundation area for the present day 0.2% annual chance flood	Inundation area for future (e.g., 2075 or 2100) 1% annual chance flood under the Intermediate scenario for sea level rise (or see recommended variant)
Tier 2 Boundary	Inundation area for the High sea level rise scenario for 2100	Inundation area for the High sea level rise scenario for 2100	Inundation area for future (e.g., 2075 or 2100) 0.2% annual chance flood under the Intermediate scenario for sea level rise
Advantages	- Boundaries account for future sea level rise - Geospatial data exists (but see note below)	- Boundaries account for storm hydrodynamics and probabilities - Geospatial data exists (for Tier 1) and is already regulatorily enforceable under NFIP floodplain management regulations - The 0.2% flood zone aligns closely with inundation areas for the Intermediate sea level rise scenario so could serve as a (rough) proxy for flood risk from sea level rise	- Boundaries account for storm hydrodynamics and probabilities as well as sea level rise projections - Geospatial data would be based on hydrologic and hydraulic studies with a high level of technical credibility - Boundaries would conceptually align with flood risk boundaries used for NFIP floodplain management regulations
Disadvantages	- Currently available geospatial data is derived using methodologies that result in a lower level of precision for planning purposes; Creating overlay zones informed by this data would require significant discretion from planning departments - Inundation zones do not account for storm	- Boundaries represent present day flood risk, and do not account for sea level rise; Using the 0.2% annual chance flood zone is only a rough proxy for the effects of sea level rise - Flood zones from FEMA studies do not show an inundation zone that accounts for more worse-case projections (due to	Geospatial data does not currently exist, requiring new flood risk assessments

	probabilities or hydrodynamics Boundaries for sea level rise scenarios are less conceptually aligned with methods for delineating flood risk in existing regulations for floodplain management	sea level rise) that would be relevant for the Tier 2 overlay	
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Table 5. Summary of approaches for delineating boundaries for Tier 1 and Tier 2 resilience overlays.

2. Site-Scale: Resilient Site and Building Parameters

The cities' zoning, and specifically the resilience overlays discussed above, will set the parameters for resilient site and building design for new development and substantial redevelopment. In this section, we outline a number of the specific approaches to increasing the resilience of buildings and sites. The Cities may choose to set prescriptive or performance-based requirements, incentivize adaptive approaches, or offer voluntary guidelines. This variation will be based on the level of exposure to climate hazards, the magnitude of potential impact, and the degree to which the adaptation measure could contribute to the overall resilience of the city.

2.1. Overview of Zoning Mechanisms

Table 6 summarizes a range of zoning approaches, or mechanisms, commonly used for enforcing or guiding resilient building and site parameters.

Overview of Zoning Mechanisms

Type of Mechanism	Description	Example
Prescriptive requirements	A requirement that the building/site is built to a certain standard	Buildings must have a one-foot freeboard if in a Special Flood Hazard Area (Maine Floodplain Management Requirements)
Performance-based requirements	A requirement that the building/site performs in a certain way; One common method is to require the building/site to meet	Development must contribute to public realm cooling, the mitigation of heat island effects, and a greener city by implementing several strategies to reduce heat from a menu of options to meet a set score (the

	certain point thresholds, whereby points can be earned through achieving certain standards or incorporating certain features	“cool factor”) (Cambridge, MA “Cool Factor” Resilience Zoning) • Developers earn points for adopting resilient measures (e.g., for flood risk reduction, stormwater management, energy resilience, etc.); Developments must meet certain point thresholds based on size and type of development (Norfolk, VA Resilience Quotient System)
Standards or guidelines	A set of standards and recommendations to encourage building owners to voluntarily adopt resilience building parameters	• The Coastal Resilience Design Guidelines help residents and businesses assess their coastal flooding hazards, help in identifying design measures to reduce risks, and provide detailed and consistent standards for project reviews by BPDA and other City agencies (Boston Resilience Zoning Design Guidelines) (Note: Projects that undergo Large Project Review are required to provide planning responses for coastal flooding.)
Incentives	Developments receive some sort of benefit or concession in exchange for integrating resilience parameters; These parameters could be prescriptive, performance-based, or points-based	• A density bonus can be achieved for developments that implement any of the following actions: incorporate LID stormwater systems onsite; undertake or fund a stream restoration project within the subwatershed; achieve green building certification; construct a greenway trail with public use easement; retain at least 50% of soils in hydrologic groups A and B, as defined by USDA; protect wildlife habitat corridors of at least 100 feet wide; among other actions (James City County, VA Zoning Code).

Table 5. Summary of zoning mechanisms for enforcing or guiding resilient zoning parameters.

2.2. Resilient Building and Site Parameters

Below are three different resilience zoning models, based on precedents from other cities, that could inform Portland and South Portland’s resilience zoning approach. We envision the models as additive in contributing the resilience of the cities, and suggest a way that all three models could be combined in one framework.

Prescriptive Requirements: Building Freeboards

The NFIP requires structures within the 1% annual chance floodplain to be at or above the base flood elevation (BFE).⁵ Maine floodplain management standards require a one-foot freeboard⁶ above the BFE. Many Maine communities have chosen to exceed that standard. For example, York requires a two-foot freeboard for all development in the 1% annual chance flood zone; Saco requires a three-foot freeboard for all development in the 1% annual chance flood zone; and Damariscotta requires a three-foot freeboard in tidal areas (e.g., V and VE zones) and a two-foot freeboard in non-tidal areas (e.g., AE zones). Maine communities are able to design their own floodplain management standards as long as they meet or exceed state standards. It's recommended that Portland and South Portland implement higher freeboard standards within the current 1% annual chance flood zone (e.g., three feet), and consider extending freeboard requirements to the full area designated under the Tier 1 flood resilience overlay (areas with the highest flood risk).

Performance-Based Requirements: “Cool Factor”

The Cambridge, MA Resilience Zoning Task Force has proposed a strategy for ensuring that future development helps to mitigate the heat island effect in the city and contribute to cooling in the public realm. Under this scheme, development is required to meet a “cool factor” which is calculated based on points received for integrating features such as green roofs, cool roofs, vegetation, tree canopy, shading structures, and paving with specified solar reflectance indices. The points for each feature are calculated based on the square footage of that feature multiplied by a “multiplication factor.” The multiplication factor is based on the relative effectiveness of the strategy in contributing to cooling (e.g., shade trees have a higher factor than turf grass), as well as other co-benefits (e.g., green roofs and vegetation have higher factors because of their added stormwater management benefits). Cambridge also has added a feature that gives extra points for if and when cooling features are within twenty feet of the public right of way, thereby contributing to cooling the public realm. The total square footage of the cooling features, multiplied by the multiplication factors, is then divided by the total square footage of the site to give a consistent measurement across different sized sites. By weighting each of the strategies, the “cool factor” can contribute to a number of city resilience benefits such as preserving larger existing trees, absorbing stormwater, and shading the public realm.

Performance-Based Requirements: Resilient Quotients for Development Review

Norfolk, VA has implemented a Resilient Quotient as part of their development review process. New development and substantial redevelopments are required to meet certain point totals, based on the type and size of development. Points must be earned across three categories: Risk Reduction, Stormwater Management, and Energy Resilience, with at least one to two points (depending on the size of the project) coming from each category. Norfolk's Resilience Quotient also offers a compliance path for development of single-family homes. This points-based system accounts for the fact that there are ultimately many ways that new development can increase the resilience of their building or site, and that the best approaches will likely vary, depending on the size of the development and the type of use. Developments are encouraged to address specific resilience challenges, while allowing for flexibility in the approach.

⁵ FEMA defines the base flood elevation (BFE) as the elevation above sea level to which the flood is expected to rise during the base flood. The base flood is the 1-percent annual chance flood or 100-year flood.

⁶ FEMA defines the freeboard as a factor of safety or a buffer (of extra elevation on a building) between the predicted base flood elevation levels (BFE) and a building's lowest occupiable floor for residential uses, or dry floodproofing for non-residential uses.

Table 6 summarizes a set of resilient building and site parameters that could become part of a resilience quotient for development review. The list draws on the precedents mentioned above as well as a number of other resources, summarizing a subset of parameters that we think would be most effective at achieving resilience goals for Portland and South Portland. It should be noted that this is no means an exhaustive list, and the specifics of each parameter (as well as the points allocated) would need be crafted and vetted by city departments to ensure that it best facilitates the design, review, and construction of resilient new development.

A significant opportunity for this model is that developments could be required to earn points within specific categories based on the resilience overlay in which they are located. New development within the Tier 1 overlay (area of highest flood risk), for example, could be required to earn points by meeting one of the conditions under “Flood-resilient building form,” thereby meeting elevation requirements under the NFIP. Development in this zone could also be required to achieve the most points across the other flood resilience parameters. Development outside areas with flood risk could have much more flexibility in choosing how the project meets its resilience points threshold. The Cities may also consider offering an exemption for exemplary building performance (e.g., net zero buildings or passive house), as long as the building meets any necessary flood resilience requirements.

Resilient Building and Site Parameters

Parameter	Methods for Achieving the Parameter	Notes
Component 1: Resilience to flooding from storms and sea level rise		
Flood-resilient building form	a) Elevate on open foundation (applicable for buildings in VE or coastal A flood zones) b) Elevate on solid foundation with filled subgrade space (applicable for buildings not exposed to wave action) c) Elevate on fill (applicable for buildings not exposed to wave action) d) Wet floodproofing, which allows floodwaters to enter and exit portions of a building that are not used for living space (applicable for non-residential) e) Dry floodproofing, which inhibits water from entering a space (applicable for non-residential buildings in areas with low flood elevations and structures that can withstand hydrostatic and hydrodynamic loads from flooding)	Developments could be instructed to choose one of these options and to meet a specific elevation (e.g., 1-3 feet above BFE depending on site risk) in alignment with city design guidelines (see the Boston Resilience Design Guidelines for an example) Meeting this category could be required for areas with high flood risk, and optional for areas that are at a lower risk of flooding.
Flood-resilient critical utility systems	a) Elevate electrical and mechanical equipment on pedestals or platforms above flood elevations	See box above (Notes for flood-resilient building form).

	b) Relocate electrical and mechanical equipment to a higher floor or roof c) Protect electrical and mechanical equipment in place through anchoring and dry floodproofing (to be used only if options a and b are not feasible)	
Flood-resilient building and landscape systems	a) Include flood-damage resistant materials, based on NFIP classifications, in areas that may be exposed to floodwaters (applicable for non-residential) b) Flood-proof elevators by protecting or relocating vulnerable motors and controls, protecting the elevator cab, and providing backup power (applicable for buildings with elevators) c) Incorporate backup water management systems including sump pumps or backflow preventers d) Design flood-tolerant landscapes using materials that will not corrode with saltwater and plant species that can best withstand floods and saltwater inundation; prepare landscape maintenance plans for flushing plant-toxic salts from soils with water and soil amendments e) Secure large site objects (e.g., fuel tanks, rainwater cisterns, benches, bike racks) to prevent mobilization of debris and/or release of hazardous material	Buildings within flood-risk areas could get resilience points for meeting these conditions.
Component 2: Managing stormwater from higher intensity rain events		
Stormwater capture, infiltration, and evapotranspiration	a) Capture, infiltrate, and/or evapotranspire the first 1" of rainfall from 100% of impervious area onsite and 0.4" from all pervious surfaces, employing vegetated systems to the fullest extent practicable b) Capture, infiltrate, and/or evapotranspire the first 1.5" of rainfall from 100% of impervious area onsite and 0.4" from all pervious surfaces, employing vegetated systems to the fullest extent practicable c) Capture, infiltrate, and/or evapotranspire the first 2" of rainfall from 100% of impervious area onsite and 0.4" from all pervious surfaces, employing vegetated systems to the fullest extent practicable	Different point allocations would be awarded for the various tiers. The cities could alternatively specify infiltration based on meeting the volume of particular design storms. The primary goal would be to award points for achieving thresholds above thresholds that are required in the stormwater ordinances.
Component 3: Reducing the heat island effect and cooling the public realm		

Planting	a) Incorporate lawn or turf area with a minimum of 8" soil depth b) Incorporate small plantings with herbaceous or woody plants less than two feet tall at maturity with a minimum of 18" soil depth c) Incorporate large plantings with herbaceous or woody plants more than two feet tall at maturity with a minimum of 24" soil depth	Points could be allocated based on the percent of site area, and weighted based on relative contributions to cooling with (a) having the smallest cooling effect and (c) the largest.
Green roofs	a) Include a green roof with at least 4" of soil depth b) Include a low-intensive green roof with plants less than two feet tall at maturity with a minimum of 18" soil depth c) Include an intensive green roof with plants over two feet tall at maturity with a minimum of 24" soil depth d) Include a green roof (either a, b, or c) in addition to solar photovoltaic installation to improve the outputs and effectiveness of both systems	Points could be allocated based on the percent of site area, and weighted based on relative contributions to cooling with (a) having the smallest cooling effect and (d) the largest.
Tree canopy	a) Plant small tree species (i.e., canopy spread of 8' to 15', 1" caliper) with a minimum of 600 cu. ft. of soil per tree b) Plant medium tree species (i.e., canopy spread of 16' to 21', 2" caliper) with a minimum of 700 cu. ft. of soil per tree c) Plant large tree species (i.e., canopy spread of 25' to 30', 2.5" caliper) with a minimum of 800 cu. ft. of soil per tree d) Preserve large existing trees on site (i.e., 20' or greater in height)	Points could be allocated based on the percent of site area, and weighted based on relative contributions to cooling with (a) having the smallest cooling effect and (d) the largest.
Hardscape and structures for heat mitigation	a) Install a cool roof with solar reflectance values in line with LEED V4 requirements b) Incorporate paving with a solar reflectance index (SRI) of 39 or higher (in line with LEED V4 requirements) c) Incorporate shade structures with a solar reflectance index (SRI) of 39 or higher (in line with LEED V4 requirements)	Points could be allocated based on the percent of site area, and weighted based on relative contributions to cooling with (a) having the smallest cooling effect and (b) the largest. A cool roof should be awarded lower point values than a green roof to account for the much larger range of benefits created from a green roof.

Component 4: Soil Health		
Soil Structure and Content	Meet healthy soil standards through one of four options: a) Leave native soil and vegetation undisturbed and protect from compaction during construction. b) Amend existing site topsoil or subsoil on site. c) Remove and stockpile existing topsoil during grading, reapply, and amend in place. d) Import topsoil mix, including compost, to achieve appropriate pH and sufficient soil organic matter and depth.	Points would be allocated for achieving healthy soils through one of the four methods. Healthy soils would be based on specifications, including depth of topsoil (e.g., 6 inches), soil organic matter (e.g., greater than 5%), and achieving a pH suitable for the plantings on site.
Component 5: Resilience to storms and power outages		
Passive survivability	a) Demonstrate that the building meets passive survivability standards (in line with LEED V4 requirements; one compliance path includes passive house certification)	
Energy resilience	a) Provide reliable onsite backup power to meet critical loads (in line with LEED V4 requirements) b) Establish operating procedures for how the project will handle loss of power, transition to a backup source of power, and transition back to normal operation	Greater point values should be awarded to backup power systems that help advance the cities' carbon mitigation goals (e.g., bi-modal solar-electric systems with battery storage, combined heat and power)
Resistance to high winds	a) Design buildings and associated structures to withstand the minimum wind loads as outlined in the Maine building codes b) Secure site equipment, landscape features, awnings, and other appendages to minimize mobilization and debris	
Component 6: Community resilience		
Amenities for social resilience	a) Integrate a community room that can serve as a resilience hub (offering space for supporting social resilience; backup power for cell phone charging, medication refrigeration, and AC; and space to provide emergency information) (applicable for larger-scale developments, particularly mixed-use or residential)	

	b) Provide community garden space (which may be located as a rooftop garden) for residents and for urban gardening purposes at a ratio of 50 square feet per residential dwelling unit (applicable for mixed-use or residential)	
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Table 6. Resilient building and site parameters. Concepts drawn primarily from the Boston, MA Coastal Flood Resilience Design Guidelines (Draft 2019); the Norfolk, VA Building a Better Norfolk zoning ordinances (2020); the Cambridge, MA Resilience Zoning Task Force materials (2019); Somerville Zoning Ordinance (2019); King County, Washington Post-Construction Soil Standard (2005); and the Vermont Post Construction Soil Depth and Quality Standard (2017). See precedents below for further details.

3. Precedents

Below is a short list of precedents that have been referenced in the sections above, or that could provide further helpful reference.

Boston, MA Resilience Design Guidelines

Resource: Coastal Flood Resilience Design Guidelines⁷

Description: The Design Guidelines outline a resilience zoning overlay based on the 2070 1% annual chance flood and offer a set of design guidelines for adaptation approaches—also offering a consistent standard for the city’s development review process. Currently only projects subject to Large Project Review are required to demonstrate that they’ve met the resilience guidelines.

Boston, MA Guidelines for Public Right of Ways

Resource: Climate Resilience Design Standards and Guidelines for Protection of Public Rights of Way⁸

Description: The Standards and Guidelines are a resource for engineers and designers to serve as guidance when protecting the public right-of-way using flood barriers. Flood barriers include, for example, vegetated berms, seawalls, raised roadways, and deployable flood barriers.

Cambridge, MA Cool Points

Resource: Climate Resilience Zoning Task Force Technical Presentation on Resilient Zoning⁹

Description: This presentation summarizes a set of draft approaches for implementing resilience zoning in Cambridge, including the structure for the “Cool Points” system to address the heat island effect. With this

⁷ City of Boston, MA. (2020, draft). Coastal Flood Resilience Design Guidelines. Retrieved from <http://www.bostonplans.org/getattachment/d1114318-1b95-487c-bc36-682f8594e8b2>

⁸ City of Boston, MA (2018). Climate Resilience Design Standards and Guidelines for Protection of Public Rights of Way. Retrieved from https://www.boston.gov/sites/default/files/imce-uploads/2018-10/climate_resilient_design_standards_and_guidelines_for_protection_of_public_rights-of-way_no_appendices.pdf

⁹ City of Cambridge, MA. (2019). Climate Resilience Zoning Task Force Technical Presentation on Resilient Zoning. Retrieved from <https://www.cambridgema.gov/~media/Files/CDD/ZoningDevel/OtherProjects/resiliencetaskforce/crtzffinalpresentation20191010.pdf>

presentation (see link in footnote) are a number of other resources including a PDF showing how the Cool Points would be calculated.

Enterprise Community Partners Multifamily Building Resilience

Resource: Ready to Respond: Strategies for Multifamily Building Resilience¹⁰

Description: Offers resilience retrofit strategies for owners of multifamily buildings to make their properties more resilient against the effects of extreme weather events (along with guidance for assessing climate risk and identifying the appropriate strategy).

James City County, VA Resilience Zoning

Resource: James City County, VA County Code¹¹

Description: James City County incentivizes a number of resilience (and sustainability) parameters—including stormwater management, stream restoration, habitat preservation, green building certification—in exchange for density bonuses.

King County, Washington Soil Standards

Resource: Achieving the Post-Construction Soil Standard

Description: King County requires new construction to meet post-construction soil standards with respect to topsoil depth, soil organic matter, pH, and amendment practices. This resource is the guidebook for how to meet the county's standards.

Norfolk, VA Resilience Zoning

Resource: Building a Better Norfolk: A Zoning Ordinance for the 21st Century¹²

Description: The Norfolk, VA zoning code includes a whole-city approach for resilience zoning through a “coastal resilience overlay” and an “upland resilience overlay.” The Norfolk zoning code also implements a Resilience Quotient for encouraging resilient building and site design.

Somerville Green Score

Resource: Somerville Zoning Ordinance¹³

Description: The updated Somerville, MA zoning code (adopted in 2019) requires new construction to meet a baseline “Green Score” that is measured as a combined weighted value of a number of urban landscape elements that help to manage stormwater, filter pollutants, reduce the urban heat island effect, sequester carbon dioxide, and improve air quality.

Vermont Post-Construction Soil Standards

¹⁰ Enterprise Community Partners. (2015). Ready to Respond: Strategies for Multifamily Building Resilience. Retrieved from <https://www.enterprisecommunity.org/resources/ready-respond-strategies-multifamily-building-resilience-13356>

¹¹ City of James City County. County Code. Retrieved from https://library.municode.com/va/james_city_county/codes/code_of_ordinances?nodeId=CD_ORD_CH24ZO_ARTVDI_DIV14PLUNDEDIP_U

¹² City of Norfolk, VA. (2020). Building a Better Norfolk: A Zoning Ordinance for the 21st Century. Retrieved from <https://www.norfolk.gov/DocumentCenter/View/35581/Adopted-Zoning-Ordinance?bidId=>

¹³ See page 447 of City of Somerville (2019). Somerville Zoning Ordinance. Retrieved from <https://www.somervillezoning.com/>

Resource: Vermont Post-Construction Soil Depth and Quality Standard¹⁴

Description: The State of Vermont requires post construction soil standards for topsoil depth, minimizing compaction, and retaining soil organic matter. This resource in the worksheet that must be submitted with new construction projects.

¹⁴ Vermont Post Construction Soil Depth and Quality Standard (2017). Retrieved from <https://anrweb.vt.gov/PubDocs/DEC/ENB/STORM/2498-Attachment%203%20-%20Worksheets.pdf>