

1. 5:00 P.M. Master Plan

Documents: [MASTER PLAN.PDF](#)

2. 5:00 P.M. Agenda

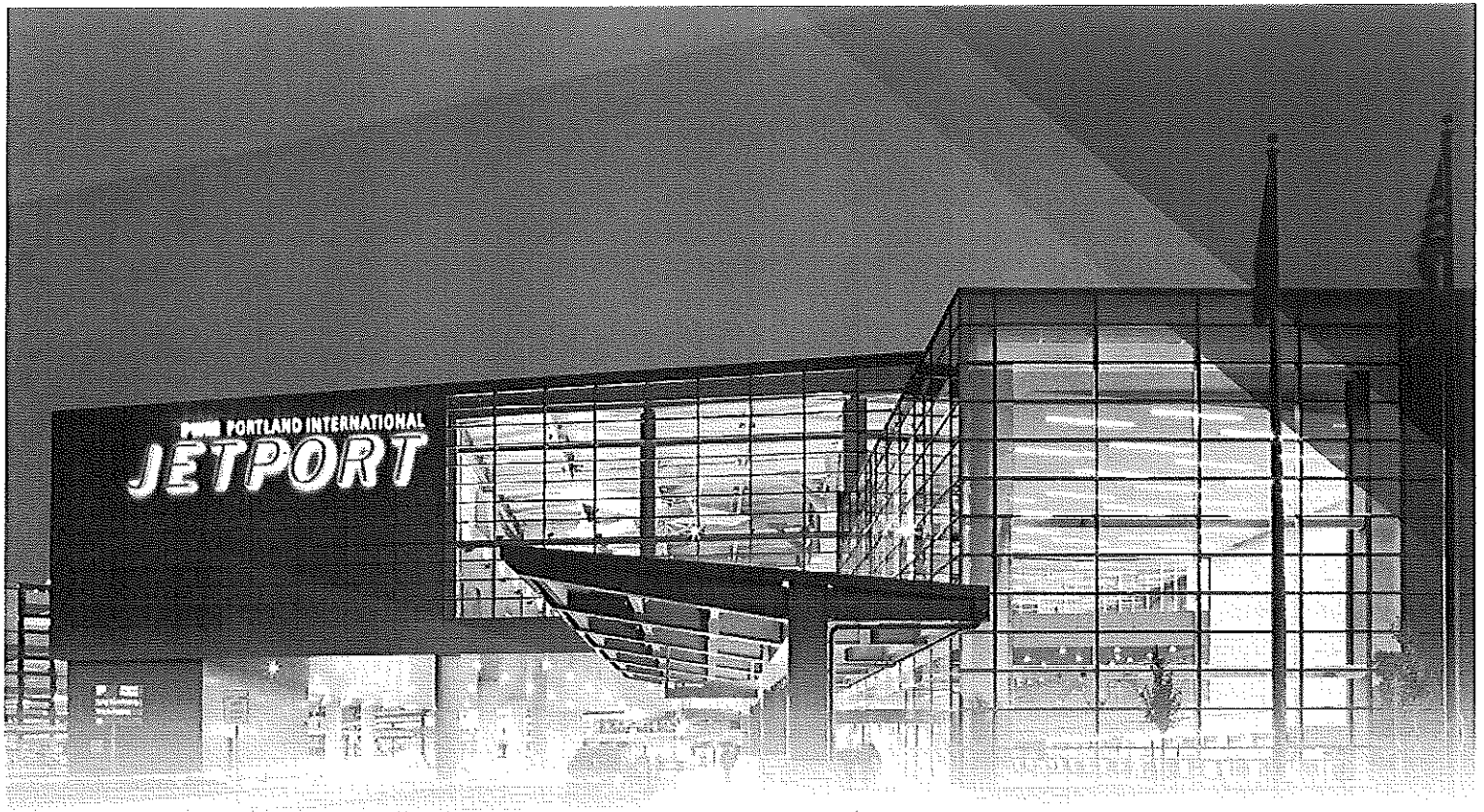
Documents: [AGENDA.PDF](#)

3. 5:00 P.M. Memo For Solid Wase Workshop

Documents: [MEMO FOR SOLID WASTE WORKSHOP \(3\).PDF](#)

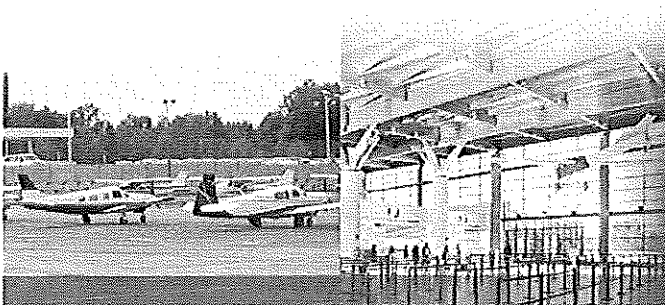
4. 5:00 P.M. Overview Spreadsheet

Documents: [OVERVIEW SPREADSHEET.V2 \(1\).XLSX](#)

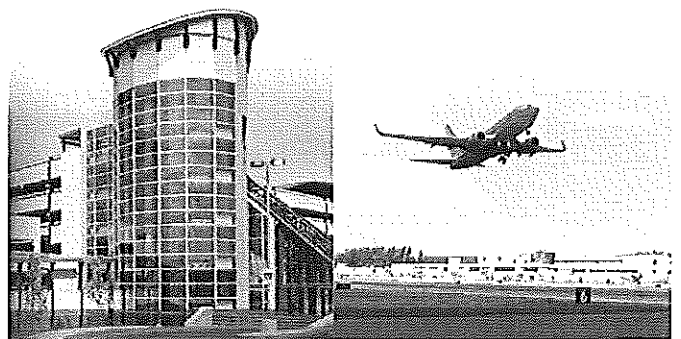


SUSTAINABLE AIRPORT MASTER PLAN

Executive Summary



Best Airport



**SUSTAINABLE AIRPORT MASTER PLAN
EXECUTIVE SUMMARY**

For

**PORTLAND INTERNATIONAL JETPORT
Portland, Maine**

Prepared for the

CITY OF PORTLAND

By

Stantec

In Association with

Coffman Associates, VHB, and MAC Consulting

April 2016

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SUSTAINABLE AIRPORT MASTER PLAN
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EXECUTIVE SUMMARY

Portland International Jetport (PWM) is a thriving small hub, commercial service airport serving the aviation demands of the greater Portland region and much of the State of Maine. In fact, the Jetport's Vision is to ***"Be the Airport of Choice for Maine!"***. From this vision, the Jetport has adopted the following as its Mission Statement:

"The Portland International Jetport commits to be a premier New England Airport. We will provide a convenient, safe, and environmentally conscious gateway that exceeds our travelers' expectations while reflecting the essence of the Maine experience."

This airport master plan update has been undertaken to assist in carrying out the Jetport's mission statement. The master plan update evaluates the airport's capabilities and role, reviews forecasts of future aviation demand, and plans for the timely improvement of facilities that may best meet that demand while maintaining compatibility with the surrounding environment. In general, an airport master plan provides systematic guidelines for the airport's overall development, maintenance, and operation for the next 20 years.

The master plan is intended to be a proactive document which identifies and then plans for future facility needs well in advance of the actual need for the improvements. This is done to ensure that the City of Portland and airport administration can coordinate environmental reviews, project approvals, design, financing, and construction to minimize the detrimental effects of maintaining and operating inadequate or inefficient facilities.



The City of Portland considers sustainability an integral part of the community. Accordingly, it commissioned an airport master plan update that incorporates sustainability and commits the Jetport to a long-term, comprehensive, and integrated approach that considers economic viability, operational efficiency, social responsibility, and natural resource conservation. Through this approach, the Jetport is also embracing a leadership role within the region and the airport industry to promote sustainability and improve related performance.

In recent years, the Jetport has demonstrated its commitment to sustainability through various activities. These notably include a terminal expansion that achieved Leadership in Energy and Environmental Design (LEED®) Gold certification, the installation of a geo-thermal heating and cooling system, the establishment of a deicing fluid recycling program to treat onsite and offsite spent glycol, wildlife deterrent and relocation efforts, and the creation of an exemplary customer service program.

In recognition of its historical and ongoing commitment to sustainability, the Jetport received a grant through the Federal Aviation Administration's Sustainable Master Plan Pilot Program to prepare this Sustainable Airport Master Plan (SAMP). With its first official sustainable master plan, the Jetport is taking the next step toward full sustainability integration and is recognizing the potential to improve its overall operating efficiency in an environmentally, economically, and socially responsible manner.

THE MASTER PLAN AND THE SUSTAINABLE PLANNING PROCESS

Making sustainability a part of the core objective of the planning process promotes design, project implementation, and financial decisions that identify ways to reduce energy consumption, environmental impacts, and the Jetport's carbon footprint. By incorporating sustainability issues into the master planning process, the airport can become a more environmentally friendly business place and neighbor. The plan will benefit all residents of the area by providing a single comprehensive plan which supports and balances aviation activities and the environmental preservation of the surrounding environs.

Sustainability, as part of an organizational strategy, has demonstrated measurable benefits at airports around the world. Some of these benefits include:

- Improved passenger experience;
- Better use of assets;
- Reduced development and/or operations and maintenance costs;
- Reduced environmental/ecological footprint;
- Facilitation of environmental approvals/permitting;
- Improved relationships within communities;
- Enhancement of regional economies;
- Creation of an engaged and enriched place to work; and
- Creation and utilization of new technologies through increased demand and investment in technologies that facilitate sustainable solutions.

As a result of incorporating sustainability issues into the master planning process, the airport can become a more environmentally friendly business place and neighbor. The plan will benefit all residents of the area by providing a single comprehensive plan which supports and balances aviation activities and the environmental preservation of the surrounding environs.

The sustainable airport master planning process integrates sustainability planning elements into the traditional airport master plan process (see **Figure A**). Combined, the sustainability and standard master planning processes provide the flexibility necessary to consider the Jetport's operational and financial constraints. They also provide a powerful planning tool to create a long-term development vision for the Jetport that considers sustainability performance measures. The combined PWM SAMP planning process began in the summer of 2014 with the purpose of the unified approach to:

- Ensure goals and initiatives developed as part of the sustainability planning process were used to drive the recommendations of the master plan; and
- Ensure standalone sustainability strategies are not at odds with the recommendations of the master planning process.

The Portland International Jetport Sustainable Airport Master Plan is of interest to many within the region. This includes local citizens, community organizations, airport users, airport tenants, area-wide planning agencies, and aviation organizations. As the Jetport is a strategic component of the regional, state, and national aviation systems, the Jetport Master Plan is of importance to both state and federal agencies responsible for overseeing air transportation.

To assist in the development of the SAMP, the City identified a group of community members and aviation interest groups (i.e., the Planning Advisory Committee [PAC]) to act in an advisory role in the development of the SAMP. To assist in the review process, draft working papers were prepared at various milestones in the planning process. The working paper process allowed for timely input and review during each step of the Airport Master Plan process to ensure that all planning issues were fully addressed as the recommended program developed. Members of the PAC were given ample opportunity to review draft working papers and provide comments throughout the process to ensure that a realistic, viable, and collaborative plan was developed.

The sustainability planning process incorporated input from three main stakeholder groups:

1. City and Jetport leadership
2. The study's PAC was composed of 24 members, including representatives from local municipalities, tenants and pilot organizations, the FAA and MDOT, and regional tourism organizations, among others (a list of the PAC members is included at the beginning of this document)
3. Jetport tenants, such as airlines, concessionaires, and fixed base operators (FBOs)



Figure A: Integration of sustainability into the master planning process

A series of public information workshops were also held as part of the coordination effort. The public information workshops were designed to allow any and all interested persons to become informed and provide input concerning the Sustainable Airport Master Plan process. Notices of meeting times and locations were advertised through local media as well as social media outlets. The draft working papers were also made available to the public through a project dedicated website: www.thejetport.airportstudy.com.

AIRPORT'S ECONOMIC BENEFITS

The Jetport is the primary aviation gateway for the State of Maine, welcoming commerce and visitors, while providing residents with access for outward travel to national and intercontinental destinations. The Jetport creates significant benefits that extend beyond the aviation community to impact economic growth and development as well as the quality of life of Maine residents. The availability of air transport is invariably listed by business executives as a key criterion for business location and expansion. Public safety and national security objectives are supported by aviation operations of police officers and government agencies. Medical transport, search and rescue, aerial mapping, air cargo, and express delivery services are all essential functions provided at Portland International Jetport every day of the year.

The Jetport creates significant benefits that extend beyond the aviation community to impact economic growth as well as the quality of life of Maine residents.

Airline travelers from across the nation or around the globe come to Maine to conduct business, meet with clients and suppliers, and place orders for goods and services produced in the state. Even greater numbers come for personal reasons, to visit friends and relatives, or to hike, fish, hunt, or simply vacation in the midst of world class scenery and recreation opportunities. General avi-

ation flyers based at PWM enjoy the benefits of on-demand flight schedules to destinations within the state or any of the nearly 3,000 general aviation airports that provide access to large and small communities across the country.

Although qualitative advantages created by an airport are important, they are also challenging to measure. In studying the economic benefits of airports and aviation, regional analysts have emphasized economic benefits that can be quantified:

- **Employment** is the number of jobs supported by economic activity created by the presence of the Portland International Jetport.
- **Payroll** includes income to workers as employee compensation (the dollar value of payments received by workers as wages and benefits) and proprietor's income to business owners.
- **Output** is the value of the production of private firms and public agencies. For a private firm, output is equal to the annual value of revenue or gross sales at producer prices (before addition of further margins or transportation costs), including sales or excise taxes. Output, revenue, and sales are interchangeable synonymous terms used throughout this study and, in turn, these are equal to spending or expenditures from the perspective of the buyer. For government units, the agency budget is used as the measure of output.

The total annual economic benefits of the Portland International Jetport include 8,261 jobs with payroll of \$269.6 million and output of \$1.0 billion, incorporating all multiplier or secondary benefits. The secondary and total economic benefits flowing from the initial direct benefits of on-airport commercial service and general aviation activity are set out in **Table 1**.

TABLE 1
Summary of Economic Benefits
Portland International Jetport

SOURCE	EMPLOYMENT	PAYROLL	OUTPUT
Direct Economic Benefits			
On-Airport Direct Benefits: <i>Private Firms, Government Agencies & Capital Improvement Projects</i>	1,329	\$54,061,000	\$287,999,000
Air Visitor Direct Benefits: <i>Commercial Service and General Aviation Travelers</i>	3,929	92,960,000	351,702,000
Direct Benefits	5,258	147,021,000	639,701,000
Secondary Economic Benefits			
Indirect Benefits: <i>Activity by Suppliers & Vendors</i>	1,571	65,877,000	225,311,000
Induced Benefits: <i>Activity by Workers as Consumers</i>	1,432	56,667,000	178,129,000
Secondary Benefits	3,003	122,544,000	403,440,000
Total Economic Benefits			
Total Benefits	8,261	\$269,565,000	\$1,043,141,000

Note: On-airport spending for auto rental is included as on-airport benefits and not included as air visitor spending off-airport. Secondary benefits are computed from the IMPLAN input-output model with Maine coefficients. Figures are in 2015 dollars.

JETPORT SETTING

Portland International Jetport is located in the southeastern portion of Cumberland County, approximately three miles from downtown Portland. The Jetport is uniquely situated on the corporate boundaries of Portland, South Portland, and Westbrook. In fact, portions of the 769-acre property abut or are located within both Portland and South Portland.

The Greater Portland area is located on the beautiful Maine coastline, but is also within close proximity of the State's rugged interior. While the City of Portland is situated on a peninsula that juts out into Casco Bay, the mountains of Western Maine are located



within a short 45-minute drive to the west. The region offers an appealing mix of activities associated with mountainous locales, including hiking and skiing, as well as coastal activities associated with the beach and watercraft. The regional setting is ideal for supporting tourism as well as local resident lifestyles.

With a combined population of approximately 91,600 residents, Portland and South Portland rank as the state's most populated locale. Cumberland County boasts a population of three times that amount, with nearly 300,000 residents. The Portland-South Portland Metropolitan Statistical Area (MSA), identified as Cumberland, Sagadahoc, and York Counties, contains a resident population of approximately 533,000 people. Larger regional population centers are situated relatively close and include Boston, MA 102 miles south and New York City, NY 277 miles southwest.

The City of Portland, as owner and operator of the Jetport, has an elected mayor and city council form of government. A standing three-person transportation committee oversees the city-wide infrastructure for the council. A full-time airport director, who reports to the City Manager, runs the facility, with the help of 51 total employed staff members.

AIRFIELD FACILITIES

Airfield facilities are those which facilitate aircraft movements between the air and ground. Generally, these facilities include runways, taxiways, airport lighting and markings, and navigational aids. **Exhibit 1** summarizes and depicts airfield facility information.

Portland International Jetport is served by two runways which intersect. Runway 11-29 is the airport's primary runway, and Runway 18-36 is the crosswind runway. Both runways are capable and certified to accommodate air carrier aircraft operations; however, air carrier operations are primarily conducted on Runway 11-29. The crosswind runway is used primarily during periods of high northerly/southerly winds, or when the primary runway is closed for any reason.

LANDSIDE FACILITIES

Landside facilities support the aircraft and pilot/passenger transition between air and ground. Typical landside facilities include the passenger terminal complex, general aviation facilities, and support facilities, such as fuel storage, automobile parking, roadway access, snow removal facilities, and aircraft rescue and firefighting. The landside facilities at Portland International Jetport are depicted on **Exhibit 2**.

PASSENGER TERMINAL COMPLEX

The passenger terminal is centrally located on the airfield along the north side of Runway 11-29 and west of Runway 18-36. The terminal complex has experienced several upgrades, with the most significant

TAXIWAYS				
Taxiway Designations	Service	Width (in feet)	Type	Strength (in 1,000 lbs.)
Taxiway A	All Commercial/GA	75	Parallel	1105/1540/1900T
Taxiway B	Limited Commercial/GA	60	Exit	1875/1640/1670T
Taxiway C - North of J	Limited Commercial/GA	50	~Parallel	585/640/75DT
Taxiway C - South of J	Limited Commercial/GA	60	~Parallel	1875/1640/1670T
Taxiway D	All Commercial/GA	75	Exit	1105/1840/1900T
Taxiway E	All Commercial/GA	75	Exit	1105/1840/1900T
Taxiway F	All Commercial/GA	75	Exit	1105/1260/1900T
Taxiway G - West of Runway 18-36	All Commercial/GA	75	Exit/Connector	1105/1840/1900T
Taxiway G - East of Runway 18-36	All Commercial/GA	75	Exit/Connector	1905/1665/1900T
Taxiway J	Limited Commercial/GA	60	Exit	957/1840/1900T

WEATHER AND NAVIGATIONAL AIDS

Airport Beacon
4 Lighted Wind Cones
Automated Surface Observation System (ASOS) - (207) 874-7914
Airport Traffic Control Tower (ATCT) - 120.9 MHz (5:45 am - 1200 am)
Automated Terminal Information System (ATIS) - 119.05 MHz or (207) 775-1039
Common Communication Frequency (UNICOM) - 122.95 MHz
Common Traffic Advisory Frequency (CTAF) - 120.95 MHz

VISUAL AND INSTRUMENT APPROACH AIDS				
	Runway 26	Runway 18	Runway 29	Runway 27
	Yes (CAT I/II/III)	Yes (CAT I/II/III)	Yes (CAT I/II/III)	Yes (CAT I/II/III)
Instrument Landing System (ILS) Glideslope and Localizer				
Global Positioning System (GPS)				
Types)				
Circling				
Approach Lighting System (ALS)				
Runway Visual Range Equipment (RVR)				
Visual Glide Slope Indicator (VGS)				
Type				
Visual Glide Angle				
Runway End Identification Lights (REIL)				

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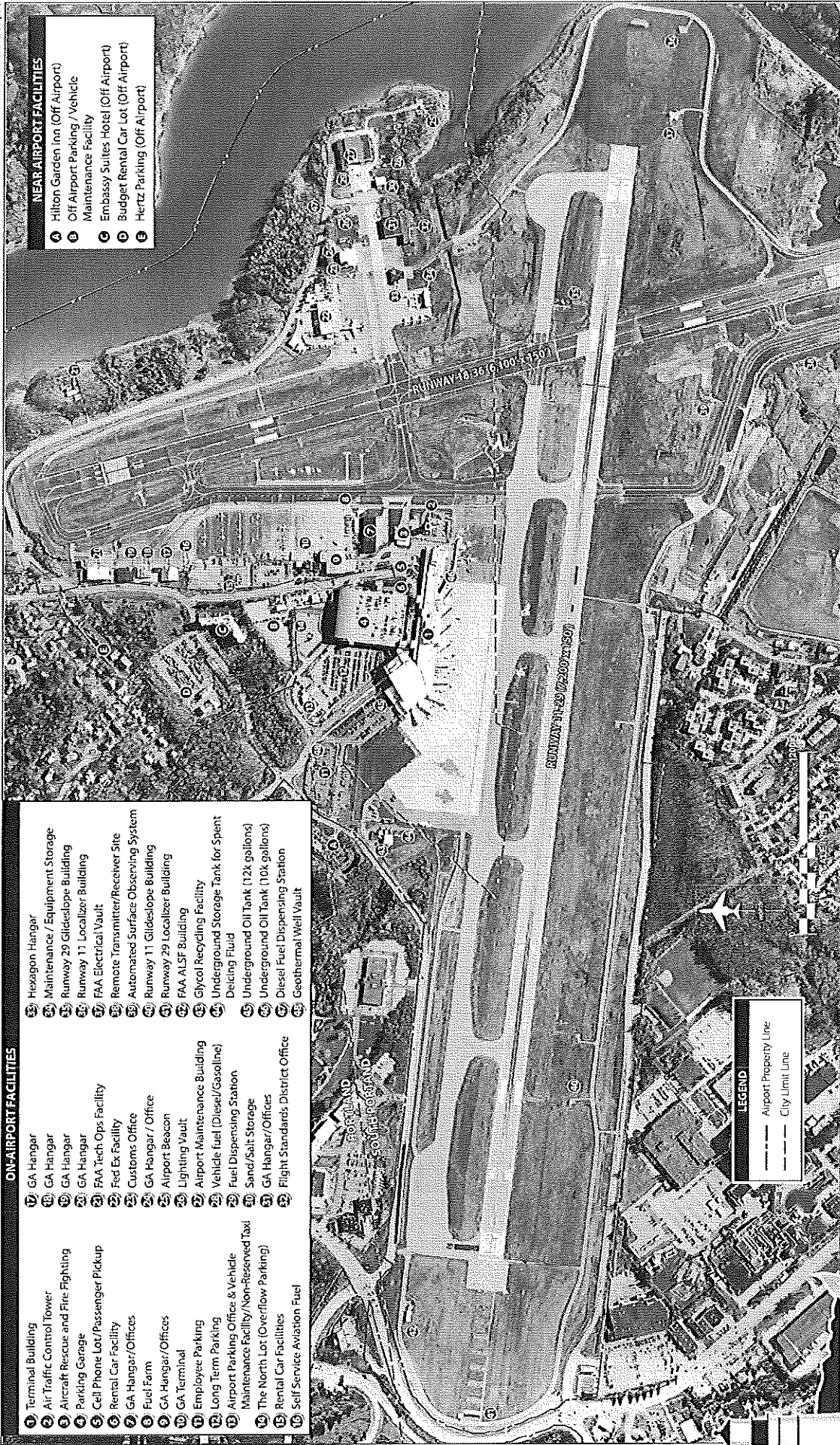
- ▶ ALF-2 becomes SSALR when ATCT is closed

Executive Summary

Source: Airport Records; GCR, FAA Form 5010; AirNav

Exhibit 1

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- NEAR AIRPORT FACILITIES**
- A Hilton Garden Inn (Off Airport)
 - B Off Airport Parking / Vehicle Maintenance Facility
 - C Embassy Suites Hotel (Off Airport)
 - D Budget Rental Car Lot (Off Airport)
 - E Hertz Parking (Off Airport)

- ON-AIRPORT FACILITIES**
- 1 Terminal Building
 - 2 Air Traffic Control Tower
 - 3 Aircraft Rescue and Fire Fighting
 - 4 Parking Garage
 - 5 Cell Phone Lot/Passenger Pickup
 - 6 Rental Car Facility
 - 7 GA Hangar/Offices
 - 8 Fuel Farm
 - 9 GA Hangar/Offices
 - 10 GA Terminal
 - 11 Employee Parking
 - 12 Long Term Parking
 - 13 Airport Parking Office & Vehicle Maintenance Facility/Non-Reserved Taxi
 - 14 The North Lot (Overflow Parking)
 - 15 Rental Car Facilities
 - 16 Self Service Aviation Fuel
 - 17 GA Hangar
 - 18 GA Hangar
 - 19 GA Hangar
 - 20 FAA Tech Ops Facility
 - 21 Fed Ex Facility
 - 22 Customs Office
 - 23 GA Hangar / Office
 - 24 Airport Beacon
 - 25 Lighting Vault
 - 26 Airport Maintenance Building
 - 27 Vehicle fuel (Diesel/Gasoline)
 - 28 Fuel Dispensing Station
 - 29 Sand/Salt Storage
 - 30 GA Hangar/Offices
 - 31 Flight Standards District Office
 - 32 GA Hangar
 - 33 Maintenance / Equipment Storage
 - 34 Runway 29 Glideslope Building
 - 35 Runway 11 Localizer Building
 - 36 FAA Electrical Vault
 - 37 Remote Transmitter/Receiver Site
 - 38 Automated Surface Observing System
 - 39 Runway 11 Glideslope Building
 - 40 Runway 29 Localizer Building
 - 41 FAA ALSF Building
 - 42 Glycerol Recycling Facility
 - 43 Underground Storage Tank for Spent Deicing Fluid
 - 44 Underground Oil Tank (12k gallons)
 - 45 Underground Oil Tank (10k gallons)
 - 46 Diesel Fuel Dispensing Station
 - 47 Geothermal Well Vault

LEGEND

- Airport Property Line
- City Limit Line

completed in 2012. The latest renovation completes the phased terminal complex renovation and expansion project which began in 1995. Over that period, improvements have included:

- Expansion of the building by approximately 145,000 square feet;
- Renovation of main existing building;
- Addition of five passenger gates;
- State-of-the-art in-line checked bag screening system
- New security screening checkpoint;
- Renovated and expanded baggage claim facilities;
- Addition of elevators and escalators (from ticket counter lobby to screening);
- Revised inbound/outbound passenger circulation;
- Enclosed elevated walkway from parking garage to third level (near screening area);
- New food court;
- Increased retail spaces; and
- Increased surface parking lots

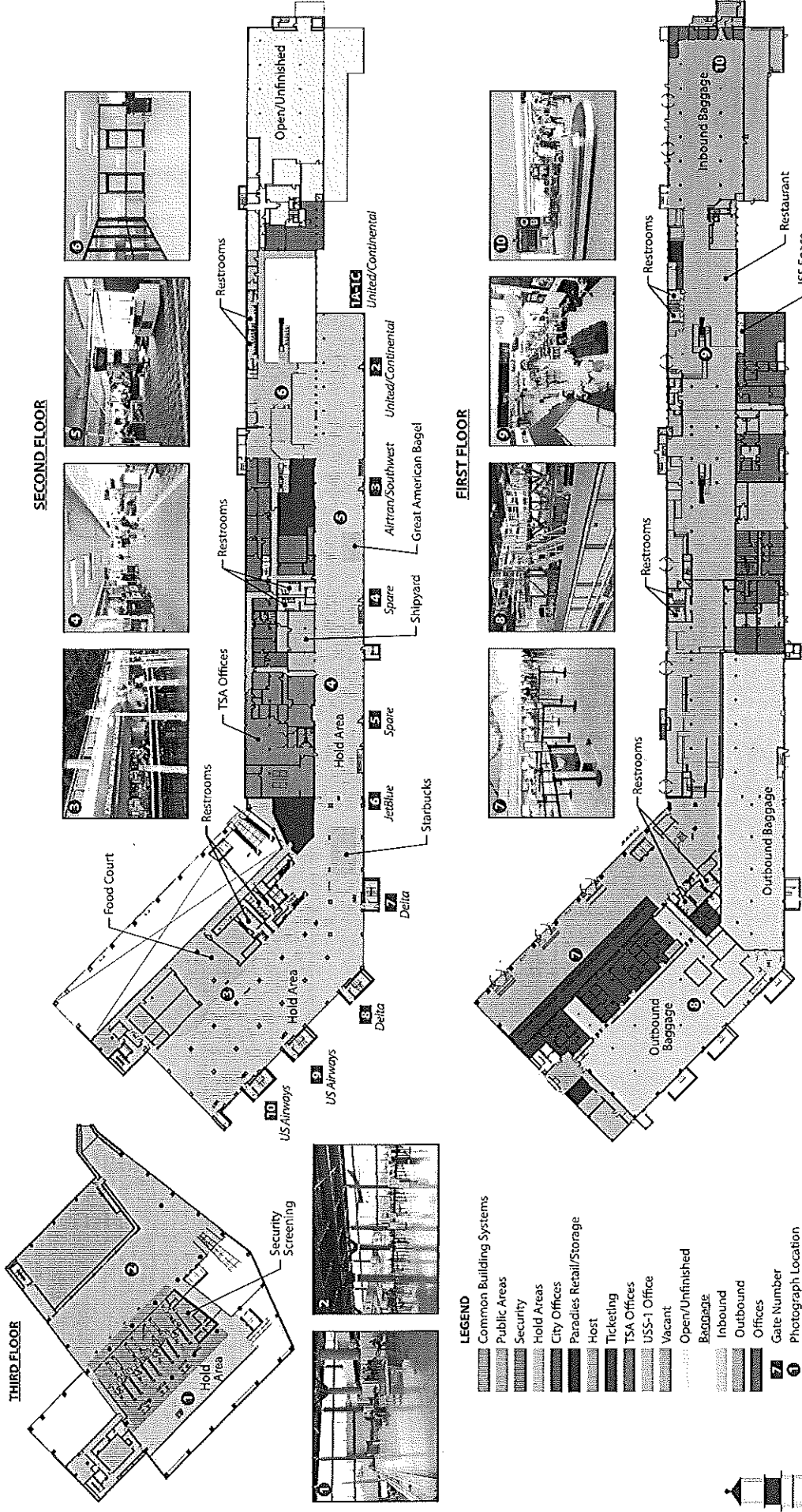
The terminal complex has experienced several upgrades with the most significant recently completed in 2012. The latest renovation completes the phased terminal complex renovation and expansion project which began in 1995.

Terminal Building

The terminal is a three-level linear design structure. Departing passengers enter the terminal on ground level, generally through the west end of the terminal where all airline ticket counters are located. Passenger security processing is on the third level and is accessed east of the ticket counters via stairs, escalator, or elevator. Once through screening, passengers can proceed down to the secure second level concourse area where there are 10 aircraft gates, as well as restaurants and retail concessionaires.

Arriving passengers exit the secured area via automated security doors designed to prevent re-entry. Once outside security, arriving passengers transition back to the first floor, then east to the baggage claim area. At the foot of the escalator serving arriving passengers is a restaurant that serves passengers, greeters, and airport employees outside the secure area. Rental car customers proceed to the east end of the new parking garage, lower level. Exhibit 3 illustrates the existing terminal building layout, including the first and second levels.





Access and Parking

The terminal can be accessed from two entrances. In the late 1990s, the access off Congress Street (Maine Route 9) was relocated from Westbrook Street to International Parkway. This entrance was developed to shift airport traffic from driving through the adjacent Stroudwater neighborhood. The Westbrook Street access is now blocked by a gate accessible only by emergency vehicles. Traffic approaching the airport from the east typically utilizes the International Parkway entrance. Traffic from the west and Interstate 95/295 will typically use the Jetport Boulevard entrance off Johnson Road. Both feed into the Jetport Access Road, which becomes a one-way loop around the parking lots, garage area, and terminal building entrances.

This entrance was developed to shift airport traffic from driving through the adjacent Stroudwater neighborhood. The Westbrook Street access is now blocked by a gate accessible only by emergency vehicles.

The passenger terminal complex is served by several parking areas including the six-level parking garage. This structure has five public levels of parking with short term parking spaces available on the ground level. An underground level is utilized for rental car pick-up and drop-off only. There are 180 public short term spaces located on the first level of the original

garage, closest to the terminal building. The sub-level of the garage includes 238 spaces for rental car ready and return. The garage also offers a total of 1,982 long term spaces. A surface long term parking lot immediately west of the parking garage offers 343 spaces. A cell phone lot is located immediately north of the garage and offers 96 spaces. A discount parking lot offers 459 public spaces. Overall, the airport's lots provide a total parking capacity of 3,778 automobiles, including 63 handicap spaces.

AIR CARGO

The air cargo facility is located east of Runway 18-36. FedEx operates from an 8,000 square-foot air cargo building and an adjacent 6,600 square-yard aircraft ramp.

GENERAL AVIATION

A fixed base operator (FBO), Northeast Airmotive (Air), operates on the field, providing typical general aviation services. There are also two specialized aviation service operators (SASOs), Maine Aviation and Maine Aviation Sales, at the Jetport. The main offices of Northeast Air and Maine Aviation are located on the north general aviation ramp, west of Runway 18-36 and north of Runway 11-29, off Taxiway C. Public access to both businesses is off Westbrook Street. The primary offices for Maine Aviation Sales are located in a facility adjacent to the Jetport's FSDO ramp, which is situated at the end of Taxiway G, east of Runway 18-36. Public access to this business is off Yellowbird Road. Maine Aviation will be relocating to the general aviation area on the south side of the airport in the future.

AREA LAND USE

Portland International Jetport is located in a mature area with most of the surrounding communities fully developed. Not unlike other urban airports in the United States, area land use surrounding PWM can have a significant impact on airport operations and growth. **Exhibit 4** illustrates the generalized land uses in the vicinity of the airport. By understanding the land use issues surrounding the airport, a better balance can be achieved through appropriate recommendations for the future of the airport.

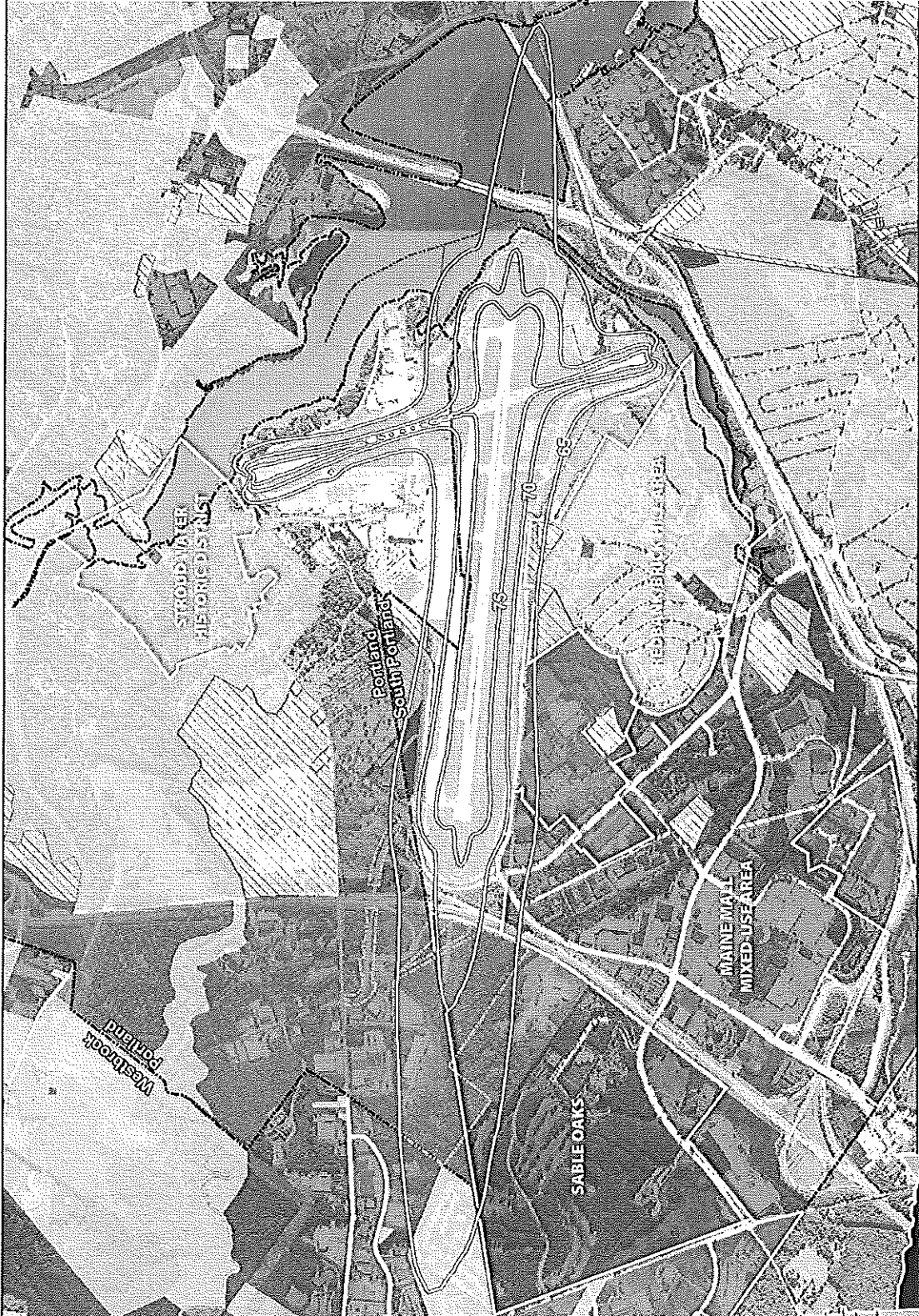
Land surrounding the Jetport falls primarily under two jurisdictions: Portland and South Portland. Westbrook is located to the northwest of PWM. A large majority of property adjacent to the north and northeast of the airport is in residential use. This includes the neighboring Stroudwater Historic District. Smaller pockets of residential areas are also located to the east and south/southeast. Commercial land uses are heaviest to the west and southwest, with smaller pockets to the east and southeast. Industrial uses dot the airport vicinity with a large area immediately west/northwest of the airport. Coastal and other environmentally sensitive areas are indicated as "Resource Protection" on the exhibit.

An airport's compatibility with surrounding land uses is usually associated with the extent of the airport's noise impacts. Airport projects, such as those needed to accommodate fleet mix changes, an increase in operations at the airport, or air traffic changes, are examples of activities which can alter noise impacts and affect surrounding land uses. The FAA established noise thresholds for the evaluation of potential impacts associated with proposed development projects at airports. Additionally, the FAA provides funding through the 14 CFR Part 150 Airport Noise Compatibility Planning program. The Jetport has participated in this program, most recently updating its Noise Compatibility Program in 2006. Through continued noise abatement efforts, the Jetport has established a noise hotline and a system for receiving complaints. Additionally, the airport has established a Noise Advisory Committee by order of the Portland City Council. The Noise Advisory Committee reviews feedback on noise abatement projects and provides an overview for implementation of the Jetport's noise abatement programs. The Jetport also encourages airport operators to use voluntary flight procedures to reduce noise impacts within the vicinity of the airport.

The SAMP 2035 long term operational projections do not reach the 2017 operational levels used to generate the noise contours depicted on Exhibit 4.

The most recent noise exposure contours generated for the Jetport were prepared the 2009 *Environmental Assessment (EA) for Airfield and Terminal Improvements*. **Exhibit 4** presents the noise contours from the EA for the plan year 2017. The contours were based upon forecasted operations at the time. The 2009 EA's forecast of total aircraft operations was

82,421 for 2017, 48,906 of which were projected to be by air carrier aircraft. It is important to point out that the total actual aircraft operational count for 2015 was 48,898 for PWM, with only 27,920 air carrier operations. Moreover, the SAMP 2035 long term operational projections do not reach the 2017 operational levels used to generate the noise contours depicted on **Exhibit 4**. Thus, the contours depicted are likely a very conservative estimation with actual noise levels lower than shown. It is anticipated that an



Legend

- Airport Property Line
- Municipal Boundary

Portland Land Use

- Commercial
- Industrial
- Mixed Use
- Cemetery
- Open Space
- Resource Protection
- Residential
- Municipal

DNL Noise Contours

- 2017 Forecast for
- 2009 EA Proposed
- Action

Data for this exhibit provided by the City of Portland GIS department, the City of South Portland and the City of Westbrook. Coffman Associates analysis modified the data as needed to depict land use.

Stroudwater Historic District boundary provided by the City of Portland GIS Department, South Portland land use districts from the 2012 South Portland Comprehensive Plan Update.



environmental assessment required prior to construction of certain improvements will include an update to the noise contours.

AVIATION DEMAND FORECASTS

The definition of demand that may reasonably be expected to occur during the useful life of an airport's key components (e.g., runways, taxiways, terminal buildings, etc.) is an important factor in facility planning. In airport master planning, this involves projecting potential aviation activity for at least a 20-year timeframe. Aviation demand forecasting for Portland International Jetport must consider commercial passenger service, air cargo, based aircraft, and aircraft operational activity forecasts.

Because of the cyclical nature of the economy, it is virtually impossible to predict with certainty year-to-year fluctuations in activity when looking five, ten, and twenty years into the future. Cost-effective, efficient, and orderly development of an airport should rely more upon actual demand at an airport than on a time-based forecast figure. In order to develop a master plan that is demand-based rather than time-based, a series of planning horizon milestones have been established that take into consideration the reasonable range of aviation demand projections. The planning horizons will be segmented as the Short Term (approximately years 1-6), the Intermediate Term (approximately years 7-11), and the Long Term (years 12-20 and possibly beyond).

It is important to consider that actual activity at the airport may be higher or lower than what the annualized forecast portrays. By planning according to activity milestones, the resultant plan can accommodate unexpected shifts or changes in the area's aviation demand. It is important for the plan to accommodate these changes so that airport officials can respond to unexpected changes in a timely fashion.

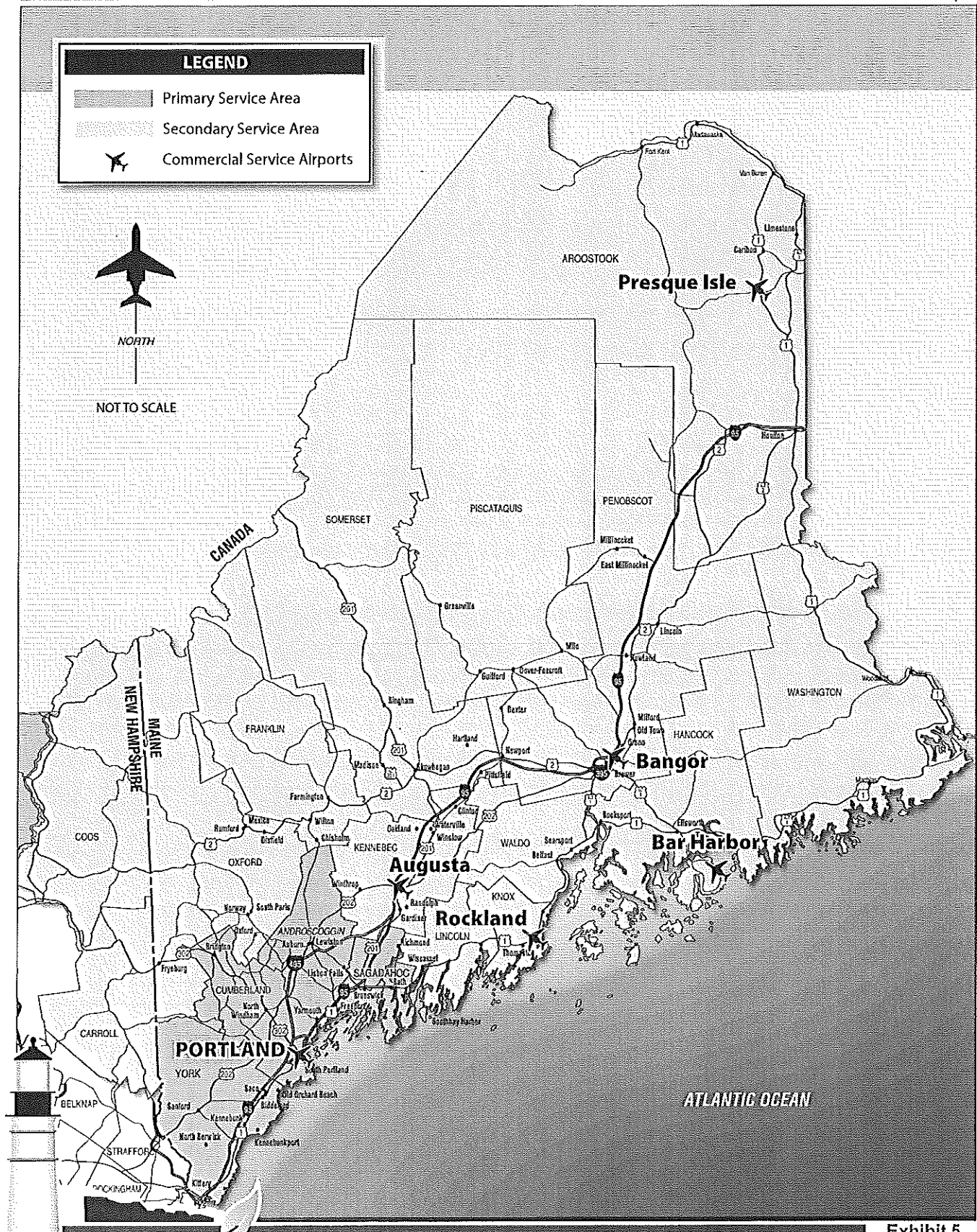
The service area of an airport is defined by its proximity to other airports providing similar service. The Jetport is currently one of six commercial service airports located in Maine, but the only one classified by the FAA at a primary hub service level. In addition to these airports, there are several more that serve only general aviation.

The primary commercial service area, as shown on **Exhibit 5**, is the area where air travelers would most likely choose the Jetport for air service, given available service from other airports. The secondary service area is an expanded area where the Jetport is likely to draw additional passengers, given that the

The primary service area consists of Cumberland, York, Androscoggin, and Sagadahoc Counties.

Jetport has a higher level of service than other airports that may serve that area. The primary service area consists of Cumberland, York, Androscoggin, and Sagadahoc Counties. The secondary area includes the remainder of Maine, plus Coos and Carroll Counties in New Hampshire.

This does not mean that the Jetport would capture all air travelers from either service area. The fact is that other airports will draw some users from the same service area, especially those airports such as



Boston and Manchester that provide more flights and destinations. This is commonly referred to as leakage.

Exhibit 6 presents a summary of the aviation forecasts selected in this study. The 2013 FAA *Terminal Area Forecasts* form the basis for many of the demand elements presented. The only variations are those of the air carrier, air cargo, and other air taxi operations which constitute the air carrier and commuter plus air taxi forecasts in the TAF. The variation has to do with the Master Plan evaluation of the aircraft mix, boarding load factors, and those that can be expected in the future. This results in a lower operational forecast than the TAF.

Airline passenger activity is anticipated to grow at an annual average rate of 1.5 percent. Small turbo-props and 50-seat or less regional jets are no longer being produced, so they can be expected to transition out of the commercial service fleet over the coming years. Thus, a larger average seat capacity will result in slower growth in operations.

Air cargo activity can be expected to grow slowly in volume, possibly not even attaining previous highs when multiple cargo carriers operated at the airport. Other air taxi operations can be expected to continue to grow with increased use of fractional and for-hire aircraft. Military activity is expected to continue to be a small part of the mix at Portland International Jetport.

Based aircraft at PWM are expected to see some growth over the planning period. Business and corporate aircraft will spur most general aviation growth. The growth in smaller piston aircraft will be more limited.

SUSTAINABILITY BASELINE ASSESSMENT

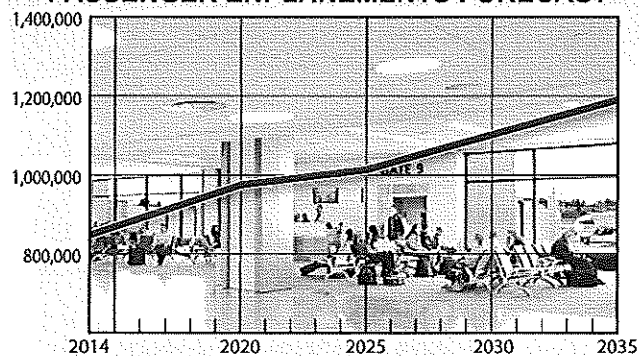
The purpose of the Baseline Assessment was to provide a look into the Jetport's current sustainability performance as determined by its related activities, policies, and procedures. This evaluation was an important first step in the development of the Jetport's long-term sustainability strategy to enable the Jetport to focus its future sustainability work on areas that are of importance and interest to the Jetport and the City, thereby ensuring the efficient use of limited resources. It will also enable the Jetport to measure, through existing and new metrics, its overall sustainability performance over time as well as the impact of individual initiatives.

To determine the focus areas for this sustainability plan, the Project Team first worked with the Jetport and its stakeholders to develop six priority categories for the PWM SAMP. These priority categories were those considered areas of primary importance that possess the greatest potential for improvement to the Jetport and its stakeholders. The Baseline Assessment then evaluated the Jetport's performance related to these categories, which include:

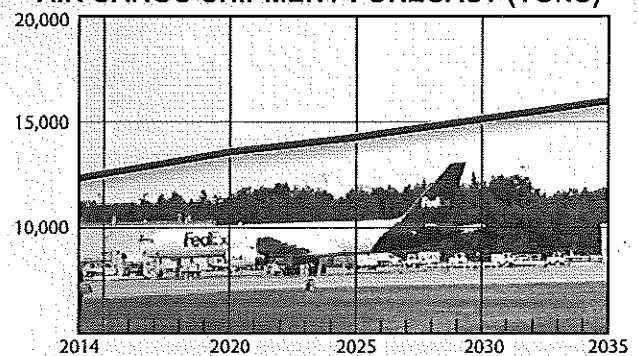
- Greenhouse Gas Emissions;
- Energy;
- Waste Management and Recycling;

	Base Year	2020	2025	2035
COMMERCIAL AIRLINE BOARDINGS				
PASSENGER ENPLANEMENTS	843,944	971,324	1,010,139	1,187,969
AIR CARGO SHIPMENTS				
Enplaned (Tons)	4,865	5,700	6,000	6,700
Deplaned (Tons)	7,396	7,800	8,200	9,200
TOTAL AIR CARGO SHIPPED	12,261	13,500	14,200	15,900
ANNUAL AIRCRAFT OPERATIONS				
ITINERANT OPERATIONS				
Air Carrier	26,068	28,800	29,800	32,000
Air Cargo	3,162	3,300	3,400	3,700
Other Air Taxi	5,299	5,900	6,900	9,000
General Aviation	15,173	17,400	18,400	20,500
Military	464	500	500	500
TOTAL ITINERANT OPERATIONS	50,166	55,900	59,000	65,700
LOCAL OPERATIONS				
General Aviation	1,890	3,400	3,400	3,500
Military	34	100	100	100
Total Local Operations	1,924	3,500	3,500	3,600
TOTAL OPERATIONS	52,090	59,400	62,500	69,300
BASED AIRCRAFT	50	56	62	76

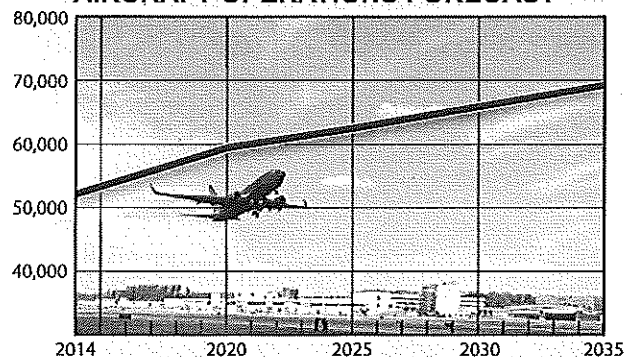
PASSENGER ENPLANEMENTS FORECAST



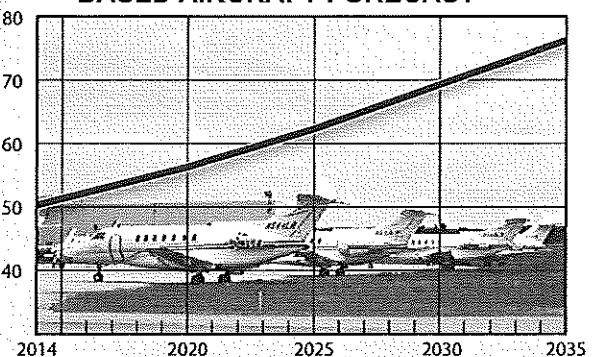
AIR CARGO SHIPMENT FORECAST (TONS)



AIRCRAFT OPERATIONS FORECAST



BASED AIRCRAFT FORECAST



- Ground Access and Transportation;
- Social Responsibility; and
- Governance.

While noise and water quality remain areas of importance, the Jetport already performs well with respect to water quality (deicing recycling, use of water quality filters and a large water quality pond) and noise (standing Noise Advisory Committee and separate evaluation process available through *14 CFR Part 150 – Airport Noise Compatibility*). Therefore, they were not included to allow a greater focus on the other six categories. This does not mean that improvements will not be made to water quality and noise going forward. In fact, the recommendations within this master plan consider both.

A baseline assessment was conducted for each priority category to benchmark its sustainability performance, as determined by past and current activities, policies, and procedures. Through this process, along with feedback obtained from stakeholder groups, the Jetport established sustainability goals and objectives to reflect the unique operating conditions of the Jetport and align with the environmental priorities of the City of Portland, State of Maine, and larger airport industry. The following highlights the Jetport's goals for each priority sustainability category:

Greenhouse Gas Emissions – Become a national airport leader in climate change mitigation by supporting the reduction of greenhouse gas emissions generated from Jetport-controlled and influenced sources.

Energy - Become a national airport leader in energy conservation while considering opportunities for on-site renewable energy.

Waste Management and Recycling – Augment the Jetport's existing waste management practices to reduce waste generation and land disposal, and continuously improve its exemplary deicing fluid recovery and recycling program.

Ground Transportation and Access – Enhance the efficiency of regional and local access to and from the Jetport with an emphasis on high-occupancy modes of transportation and parking infrastructure that meets the needs of Jetport users.

Social Responsibility – Promote the well-being of the Jetport's employees and customers, while reflecting and supporting the social, economic, and cultural assets of the local community and greater region.

Governance – Integrate sustainability throughout the Jetport's organizational framework.

PROPOSED AIRPORT IMPROVEMENTS

The short term recommendations of the 2008 Master Plan led to the improvements that have occurred at the Jetport over the last several years. The major airfield improvements were the Runway 18-36

improvements and the construction of the east extended runway safety area on Runway 11-29. The terminal building and apron were expanded along with the parking garage. In addition, the south general aviation apron and access road were developed, setting the stage for a second fixed base operator (Maine Aviation).

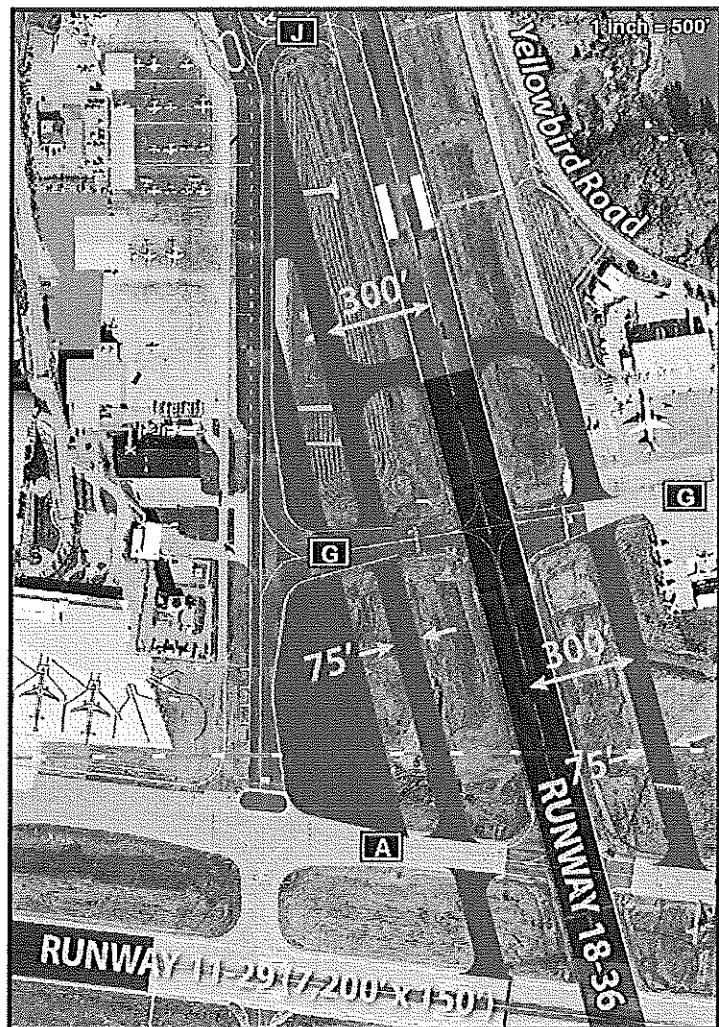
The updated concept ensures that the Jetport can maintain its vision to “Be the Airport of Choice for Maine” and is driven by its mission statement: “The Portland International Jetport commits to be a premier New England airport. We will provide a convenient, safe, and environmentally conscious gateway that exceeds our travelers’ expectations while reflecting the essence of the Maine experience.” The recommended master plan concept, as shown on **Exhibit 7**, presents a long term configuration for the airport which preserves and enhances the role of the airport while meeting FAA design standards.

AIRFIELD IMPROVEMENTS

Improvements undertaken from the previous two master plans have essentially taken care of the physical requirements of the two runways, including their safety areas. **Exhibit 8** outlines the basic needs of the airfield through the planning period

Runway Length - Based on existing and projected uses, both runways are adequately sized to meet existing and long term demand. Moreover, both provide adequate safety areas to meet FAA design criteria. The long term plan maintains both runway pavements at their current lengths and widths.

Runway Pavement Strength - The existing pavement strength rating for Runway 11-29 is adequate to accommodate existing demand; however, it may need to be increased to meet future commercial airline operations. Three aircraft models that could serve the Jetport passenger market have a higher loading than the current pavement design. The Airbus 321, Boeing 737-800 and -900 models have maximum take-off weights up to 205,000 pounds on dual wheel gear (D). FedEx could also potentially shift to a Boeing 767-200 or the Airbus 300, and 310 models which have dual tandem wheel gear (DT) rating up to 375,000 pounds. Therefore, future planning includes increasing the Runway 11-29 pavement strength up to 205,000 pounds D and/or 375,000 pounds DT.



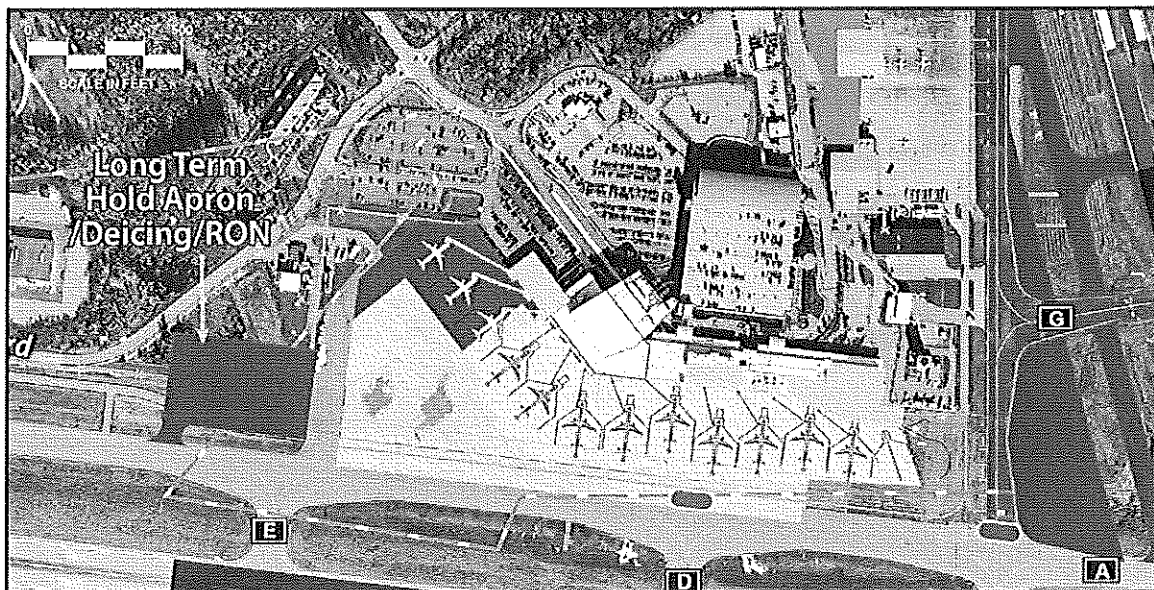


CATEGORY	EXISTING		RECOMMENDED IMPROVEMENTS OVER PLANNING PERIOD	
RUNWAYS	Runway 11-29	Runway 18-36	Runway 11-29	Runway 18-36
RDC	RDC C/D-IV-1200	RDC B-III-5000	Same	Same
Length x Width (in feet)	7,200 x 150	6,100 x 150	Same	Same
<i>Pavement Strength (in pounds)</i>				
Single Wheel Loading (S)	75,000	75,000	Same	Same
Dual Wheel Loading (D)	169,000	165,000	Increase up to 205,000	Same
Dual Tandem Wheel Loading (DT)	300,000	300,000	Increase up to 375,000	Same
<i>Runway Protection Zones</i>				
Owned/Airspace Control Incompatible Uses	Mostly Existing Public Roads	Mostly Residential/ Public Road	Acquire if Feasible Non - if possible	
TAXIWAYS SERVING	Runway 11-29	Runway 18-36	Runway 11-29	Runway 18-36
TDG	5	3	Same	Same
Parallel Taxiway	Full Length	Full Length	Same	Same
Number of Entrance/Exits	Six	Four	Same	Same
Taxiway Widths (in feet)	75	50, 60, and 75	Same	Same
AIRFIELD GEOMETRY	Runway 11-29	Runway 18-36	Runway 11-29	Runway 18-36
Hot Spots Identified	Yes (Taxiway A & C Intersection)	Yes (Taxiway A & C Intersection)	Continue Runway Guard Lighting (RGL) and Enhanced Centerline Marking	
High Energy Runway Crossings	No	Yes (Taxiway A, G)	Consider Alternatives to Mitigate	
Direct Access Runway/Apron	Yes (Taxiway D)	Yes (Taxiway G)	Consider Alternatives to Mitigate	
NAVIGATION AND WEATHER AIDS	ASOS/ATIS, Four Lighted Wincones, Runway Visual Range (RVR) Equipment, Beacon		Same	
INSTRUMENT APPROACH PROCEDURES	Runway 11-29	Runway 18-36	Runway 11-29	Runway 18-36
ILS	CAT I, II, III (11); CAT I, II (29)	No	Same	Same
GPS LNAV	Yes	Yes	Same	Yes
GPS VNAV	Yes	No	Same	Same
GPS LPV	Yes	LP only (No Vertical Component)	Same	Same
Other	None	None	Next Gen Approaches	Next Gen Approaches
LIGHTING AND MARKING	Runway 11-29	Runway 18-36	Runway 11-29	Runway 18-36
Runway Lighting	HIRL	MIRL	Same	Same
Centerline Lighting	Yes	No	Same	Same
Touchdown Zone Lights	Yes (11 Only)	No	Same	Same
Runway Marking	Precision	Non-precision	Same	Same
Taxiway Lighting	MITL	MITL	Same	Same
Approach Lighting System	ALSF-2 (11); MALSR (29)	REIL	Same	Same
Visual Approach Aids	PAPI-4R	PAPI-4L	Same	Same



Taxiway Improvements – Several airfield taxiway projects have been identified to satisfy FAA airfield geometrical standards. Proposed taxiway improvements shown on Exhibit 7 include:

- Reconfigure the eastern portion of Taxiway A;
- Realignment of parallel Taxiway C to be fully parallel to Runway 18-36;
- Construction of a partial parallel taxiway on the east side of Runway 18-36 linking the cargo apron with parallel Taxiway A;
- Construction of a new connector taxiway linking Taxiway B to Runway 29 and a new aircraft run-up apron; and
- Closure of the Runway 11 hold apron to be replaced by a by-pass taxiway and enlarged long term holding/deicing apron

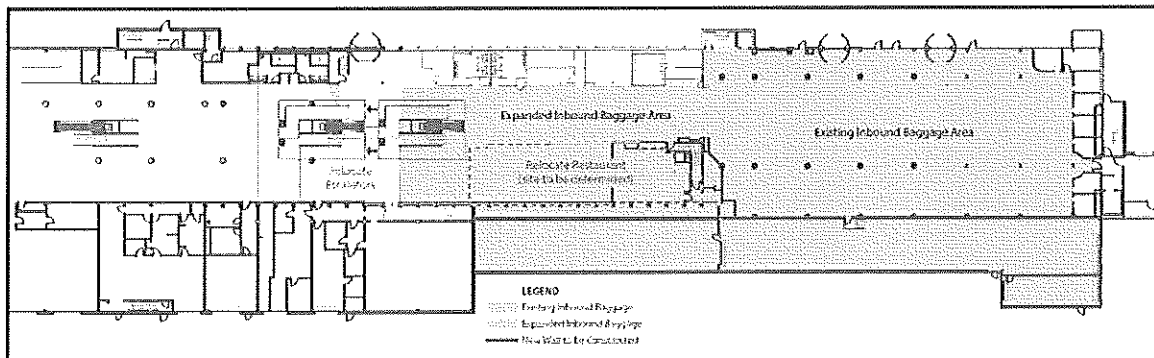


LANDSIDE IMPROVEMENTS

The primary goal of landside facility planning is to provide adequate space to meet reasonably anticipated passenger, cargo, and general aviation needs, while also optimizing operational efficiency and land use. Achieving these goals yields a development scheme which segregates functional uses while maximizing the airport's revenue potential. Exhibit 7 presents a large scale view of the planned landside development for the airport.

Commercial Passenger Terminal Building – In accordance with previous terminal planning, the recommended plan shows an additional three gates to the northwest. The plan also provides for an easterly extension of the second level concourse to ultimately replace the Gate 1 boarding bridge structure. This would be practical if Taxiway C is reconfigured as proposed, thereby allowing for larger aircraft parking at Gate 1.

Three other terminal building modifications are also proposed: 1) Add baggage claim to the west into the current restaurant location to meet existing and long term needs; 2) Realign the existing aircraft gates to provide for the increased wingspans of the airline fleet, primarily due to increasing use of winglets to improve aircraft fuel efficiency. This change will only involve moving the loading bridges and applying new markings for aircraft parking positions. No internal building changes would be required; 3) Provide for the secure U.S. Border Protection and Customs space that would be needed for scheduled non-stop international flights at PWM. The plan would allow for international air service out of gate areas 4 and/or 5 and secured arrival passage to facilities on the main floor beneath the gate areas.



Automobile Parking Garage – The existing parking garage includes both public parking as well as rental car ready/return. The long term plan proposes the expansion of the garage to better serve rental car needs as well as provide additional public parking spaces. Consideration is also given to improving pedestrian access between the rental car ready/return and the terminal building.

Commercial Aircraft Apron - The commercial terminal apron is planned to be reconfigured to provide more parking width at all gates. The plan also includes an increased apron area adjacent to Gate 1 that would be feasible only if Taxiway C is reconfigured as proposed. The larger apron would be sufficient for Gate 1 to serve the full range of passenger aircraft operating or projected to operate at the Jetport. Ultimately, the plan considers the northwesterly expansion of the commercial ramp to serve future need for more gates. Again, the northwesterly growth would only occur as a response to increased demand generating a need for the gates and space.

Deicing Apron - The commercial terminal apron currently supports two deicing positions. These positions are generally adequate but do not meet demand during peak morning departures. The ultimate plan is for the apron to be equipped for “at-gate” de-icing and fluid recapture. This will be installed over time when pavement reconstruction is necessary. In the near term, additional deicing positions are planned to the west of the existing deicing area. As proposed, the apron would allow for two additional deicing positions, as well as serve long term holding and aircraft that remain overnight (RON).

Runway 11 Holding Apron - The existing configuration of the Runway 11 holding apron no longer conforms to FAA design standards and does not leave sufficient clearance for a perimeter roadway outside the aircraft movement area. This will become more critical when the fixed base operator opens on the south side of the airport. A by-pass taxiway would be installed to replace the holding apron.

Commercial Air Cargo - The recommended plan for future air cargo development is similar to the previous plan. As proposed, the plan provides for cargo apron fronting two future buildings. If the plan is followed, the existing air cargo building currently utilized by FedEx could be repurposed for airport maintenance.



General Aviation - The bulk of the Jetport's general aviation facilities are currently located on the north general aviation ramp, with some facilities on the cargo, or FSDO ramp. Recently, the airport approved a leasehold development for general aviation facility development south of Runway 11-29, as shown on Exhibit 7. Some additional general aviation needs can also be accommodated on the north ramp. These areas should be more than adequate to accommodate projected general aviation aircraft and associated facility needs.

SUSTAINABILITY MANAGEMENT PLAN

Through the stakeholder engagement process, the Jetport developed a list of potential sustainability actions that would improve its sustainability performance relative to its goals and objectives. Input was solicited from stakeholders to develop this list, which was then

evaluated using the custom-built *Sustainability Action Evaluation Tool* to assess the estimated benefits of the actions (e.g., GHG emissions reductions, increases in energy conservation) relative to their estimated costs (i.e., initial capital costs, operations and maintenance, staffing hours, and return on investment). Exhibit 9 identifies a select list of potential sustainability actions by category.

This *Sustainable Airport Master Plan* includes sustainability targets that will assist the Jetport in understanding the level of success it is achieving through the implementation of its sustainability program. In developing its sustainability targets, the Jetport considered its current performance and the potential effects of its identified sustainability actions, among other factors.

The Jetport is committed to report on its sustainability program on an annual basis. Through annual reporting, the Jetport will enhance transparency, promote accountability, build stakeholder trust, and convey its leadership in sustainability within its region and the larger airport industry.

GOALS	OBJECTIVES	ACTIONS	TARGETS
GREENHOUSE GAS EMISSIONS • Become a national airport leader in climate change mitigation by supporting the reduction of greenhouse gas emissions generated from Jetport-controlled and influenced sources	1. Reduce greenhouse gas emissions associated with Jetport-operated mobile and stationary sources on a per enplanement basis 2. Encourage greenhouse gas emission reduction strategies among the Jetport's employees, tenants, and customers	• Provide pre-conditioned air (PCA) at all commercial service aircraft gates • Encourage tenants to procure alternative fuel and/or fuel-efficient ground support equipment • Install public charging stations in the garage to accommodate electric vehicles • Prepare an annual Jetport-wide greenhouse gas emissions inventory, and voluntarily report the Jetport's carbon performance	• Install pre-conditioned air at 100 percent of all loading bridges by 2018 • Scope 1 and 2: To be determined • Scope 3: To be determined
ENERGY • Become a national airport leader in energy conservation, while considering opportunities for on-site renewable energy generation	1. Reduce the energy intensity of Jetport-owned facilities 2. Pursue on-site generation of renewable energy, where feasible	• Upgrade the building envelope of the Old Terminal • Continue to upgrade lighting within the parking garage to LEDs • Install a pilot-controlled airfield lighting system • Retro-commission the building systems at the Old Terminal	• Begin to measure percent of energy generated from renewable sources by 2018 • Energy Consumption: To be determined
WASTE MANAGEMENT AND RECYCLING • Augment the Jetport's existing waste management practices to reduce waste generation and land disposal, and continuously improve its exemplary recycling recovery and recycling program	1. Reduce the amount of Jetport-generated municipal solid waste on a per enplanement basis 2. Increase the percentage of Jetport-generated municipal solid waste diverted from regional landfills 3. Continue to recycle and reuse construction and demolition waste to the greatest extent practicable 4. Prioritize the purchase and use of environmentally preferable products and materials in both Jetport and tenant operations 5. Provide the resources necessary to support continuous improvement of tenant waste management practices	• Design and implement a recycling awareness campaign for employees and passengers • Make permanent the existing composting pilot program, and expand it beyond the Jetport's back-of-house food preparation to include the passenger/public organic waste stream • Increase the number of recycling bins and strategically co-locate them with standard trash receptacles throughout the Jetport's facilities and exterior spaces to maximize use	• Begin to measure the Jetport's composting rate by 2017 • Increase the Jetport's municipal solid waste recycling rate to 30 percent by 2020 • Continuously divert at least 90 percent of construction and demolition waste from landfills • Recapture and recycle at least 75 percent of deicing fluid • Reduce deicing fluid recycling operations cost
GROUND ACCESS AND TRANSPORTATION • Enhance the efficiency of regional and local access to and from the Jetport with an emphasis on high occupancy modes of transportation and parking infrastructure that meets the needs of the Jetport's users	1. Provide choice to the Jetport's passengers by encouraging high-occupancy modes of transportation and the provision of adequate parking 2. Encourage the use of high-occupancy modes of transport among employees commuting to and from the Jetport 3. Leverage regional partners to enhance and promote bicycle, pedestrian, and high-occupancy modes of transportation available to Jetport employees, customers, and visitors	• Promote ridesharing for employee commutes • Administer an employee transportation survey • Continue to work with regional entities to enhance/expand public transportation service to the Jetport, and establish connections to local points of interest	• Appoint a transportation coordinator by 2017 • Identify the mode distribution of Jetport employees by 2018 • Identify the mode distribution of Jetport passengers by 2020
SOCIAL RESPONSIBILITY • Promote the well-being of the Jetport's employees and customers, while reflecting and supporting the social, economic, and cultural assets of the local community and greater region	1. Expand or enhance existing programs that support employee health and satisfaction 2. Continuously improve the Jetport's customer service experience 3. Foster a 'sense of place' by incorporating regional representative elements into the Jetport's public-facing facilities 4. Increase opportunities for employee, customer, and community engagement 5. Continue the Jetport's support of the regional economy, and promote its economic impact	• Increase local collaborations by participating in local and regional partnerships and working groups • Create indoor landscaped areas that celebrate and display flora of Maine • Conduct regular employee satisfaction surveys	• Increase the number of Jetport employees participating in Jetport-sponsored health and wellness programs to 80 percent by 2020 • Hold three employee appreciation events per year beginning in 2016 • Continuously improve Airport Service Quality rankings, as applicable and where possible
GOVERNANCE • Integrate sustainability throughout the Jetport's organizational framework	1. Integrate sustainability criteria into the Jetport's decision-making processes 2. Promote sustainability considerations in the daily activities of Jetport employees 3. Drive accountability throughout all levels of the organization 4. Enhance internal and external transparency of operations	• Include a requirement on all capital improvement applications to identify a proposed project's sustainability elements and any known alternatives that serve the same purpose with greater efficiency and/or environmental/social performance • Incorporate sustainability guidelines into future tenant and vendor contracts, and provide training on these guidelines, as needed • Publish an annual "scorecard" to report on the Jetport's ongoing sustainability performance	• Present two sustainability-based employee recognition awards per year beginning in 2016 • Establish an Internal Sustainability Working Group by 2017 • Ensure that 100 percent of capital projects are evaluated using sustainability criteria by 2017 • Engage three local organizations per year on the Jetport's sustainability program beginning 2017 • Participate in or establish a regional task force focused on sustainability by 2018

CAPITAL IMPROVEMENT PLAN AND COST SUMMARIES

From the specific needs and improvements that have been established for the Jetport, a realistic schedule and the associated costs for implementing the plan can be determined. The implementation plan considers the interrelationships among the projects in the recommended alternative in order to determine a logistics sequence to minimize conflicts and establish a master schedule.

This section will examine the overall cost of each item in the recommended development alternative and present a development schedule. The implementation plan covers the same years as the forecasts in the planning effort. A CIP, programmed by years, has been developed to cover the first six years of the plan. The remaining projects will be grouped into intermediate (years 7-11) and long (years 12-20) term planning horizons. More detailed information is provided for the five-year horizon, with less detail for the longer planning periods. By utilizing planning horizons instead of specific years for intermediate and long term development, the Jetport will have greater flexibility to adjust capital needs as demand dictates.

A key aspect of this planning document is the use of demand-based planning milestones. The short term planning horizon contains items of highest need and/or priority. These items should be considered for development based on actual demand levels within the next five years. As short term horizon activity levels are reached, it will then be time to program for the intermediate term based upon the next activity milestones. Similarly, when the intermediate term milestones are reached, it will be time to program for the long term activity milestones.

Several development items included in the recommended alternative will need to follow demand indicators which essentially establish triggers for key improvements. For example, the recommended concept includes construction of new hangar aprons and taxilanes. Based aircraft will be an indicator for additional hangar needs. If based aircraft growth occurs as projected, additional hangars and associated aprons will likely need to be constructed to meet the demand. If growth slows or does not occur as projected, hangar pavement projects could be delayed. As a result, capital expenditures will be undertaken as needed, which leads to a responsible use of capital assets. Some development items do not depend on demand, such as pavement maintenance. These types of projects typically are associated with day-to-day operations and should be monitored and identified by Jetport management.

All airports receiving federal Airport Improvement Program (AIP) funding are required to maintain a current CIP with the FAA, which identifies projects to be undertaken at an airport over a specified period of time. The Jetport's CIP includes the projects recommended as part of this Sustainable Airport Master Plan (SAMP) from FY 2017 through FY 2036. **Table 2** presents the recommended CIP and its corresponding cost estimates, which are based on a planning level of detail. While accurate for master planning purposes, actual project costs will likely vary from these planning estimates once project design and engineering estimates are developed. The cost estimates presented in the table are in 2016 dollars, inflated at 2.7 percent annually and also include contingencies, design costs, and construction management costs. As shown in the table, the CIP is estimated at approximately \$193.3 million in 2016 dollars

and approximately \$271.8 million in inflated dollars. This amount, combined with other capital equipment and maintenance projects, brings total capital investment to \$224.1 million in 2016 dollar and approximately \$312.3 million in inflated dollars.

Exhibit 10 graphically presents the staging of master plan projects on an aerial photograph of the Jetport. The projects are color-coded by short term, intermediate, and long term planning horizons. A detailed financial evaluation was also completed. The analysis factored all proposed capital and operation/maintenance costs against proposed incomes. The result indicated that the Jetport is fully capable of generating sufficient revenues to offset future expenditures without the need for financial assistance from City of Portland taxing resources. The airport is currently and projected to remain financially self-sufficient.

TABLE 2
CIP Project Costs and Funding Sources
Portland International Jetport
(in \$000's)

(in \$000's)

Proj. No.	Description	Project Costs		Funding Sources			
		2016 \$	Inflated	AIP Grants	State	Local PFCs	Jetport
FISCAL YEAR 2017							
1	Terminal Apron Expansion Northwest End - Phase 1	\$3,290	\$3,379	\$3,041	\$169	\$0	\$169
2	Environmental Assessment and Permitting for Airport Improvements	750	770	693	39	0	39
Subtotal 2017		\$4,040	\$4,149	\$3,734	\$207	\$0	\$207
FISCAL YEAR 2018							
3	Gate 1 Apron Reconstruction and Construct TW C Snow Shoulders North	\$4,089	\$4,320	\$3,888	\$216	\$0	\$216
4	Runway Incursion Warning System	125	132	119	7	0	7
5	3rd Floor Bypass Auto Exit Portals	450	475	0	0	475	0
6	Gate 1 - 6 Rehabilitation & Vertical Circulation Improvement	2,000	2,110	0	0	0	2,110
7	Pre Conditioned Air/Lifts for Loading Bridges	900	949	854	0	0	95
8	Gate 1 Additional Loading Bridges	650	686	0	0	686	0
9	Central Air Handling Units	220	232	0	0	232	0
Subtotal 2018		\$8,434	\$8,903	\$4,861	\$223	\$1,392	\$2,427
FISCAL YEAR 2019							
10	Terminal Apron Expansion Northwest End - Phase 2	\$2,085	\$2,225	\$2,003	\$111	\$0	\$111
11	Environmental Assessment Mitigation Measures	1,000	1,083	975	54	0	54
12	ARFF Vehicle	1,000	1,083	975	54	0	54
13	Snow Removal Tractor for Airfield Lights/Signs	350	379	341	19	0	19
14	Maintenance Building Generator and Enclosure	250	271	244	14	0	14
15	Click to Activate Runway Lights	50	54	49	3	0	3
16	Admin Offices above Bag Claim - East End	1,500	1,625	0	0	244	1,381
17	Additional Loading Bridges for Gate 11	650	704	0	0	704	0
Subtotal 2019		\$6,885	\$7,424	\$4,586	\$255	\$948	\$1,636
FISCAL YEAR 2020							
18	Long Term Hold/Deicing/RON Apron - Phase 1	\$3,918	\$4,220	\$3,798	\$211	\$0	\$211
19	FIS Facility	7,000	7,787	0	0	7,398	389
Subtotal 2020		\$10,918	\$12,007	\$3,798	\$211	\$7,398	\$600

TABLE 2 (Continued)

FISCAL YEAR 2021							
20	Snow Melt Equipment for Contaminated Snow	\$300	\$343	\$308	\$17	\$0	\$17
21	Long Term Hold/Deicing/RON Apron - Phase 2	2,400	2,600	2,340	130	0	130
22	Runway 11 Taxiway Bypass and Perimeter Service Road Realignment	1,028	1,100	990	55	0	55
23	Tree Removal for GQS on Runway 36 End	50	57	51	3	0	3
24	Expand Baggage Claim - Phase 2	10,000	11,425	0	0	10,854	571
25	Loading Bridge	515	588	0	0	588	0
Subtotal 2021		\$14,293	\$16,113	\$3,690	\$205	\$11,442	\$776
FISCAL YEAR 2022							
26	Construct Air Cargo Taxiway - Phase 1 TW G to TW A	\$3,660	\$4,200	\$3,780	\$210	\$0	\$210
27	Rehabilitate Cargo Apron	2,440	2,863	2,577	143	0	143
28	Displacement Plows	750	880	792	44	0	44
29	Airport Security Fence and Gate Upgrades (North East Area)	245	288	259	14	0	14
Subtotal 2022		\$7,095	\$8,230	\$7,407	\$412	\$0	\$412
TOTAL SHORT TERM		\$51,665	\$56,827	\$28,076	\$1,512	\$21,180	\$6,058
INTERMEDIATE TERM							
1	Construct Taxiway C Realignment - Phase 1	\$6,080	\$7,524	\$6,772	\$376	\$0	\$376
2	Loading Bridge	538	666	0	0	666	0
3	Land Acquisition	1,948	2,476	2,228	124	0	124
4	Construct Air Cargo Taxiway - Phase 2	2,400	3,050	2,745	153	0	153
5	Loading Bridges	2,186	2,778	0	0	2,778	0
6	Replace Regional Boarding Ramps at Gate 1B and C	350	445	0	0	445	0
7	Relocate Taxiway A East of Runway 18-36	5,200	6,788	6,109	339	0	339
8	Construct Taxiway C Realignment - Phase 2	3,000	4,022	3,619	201	0	201
9	Relocate Service Access Road East of Cargo	600	804	724	40	0	40
10	Parking Garage Expansion Phase 3	15,000	20,108	0	0	0	20,108
TOTAL INTERMEDIATE TERM		\$37,302	\$48,661	\$22,197	\$1,233	\$3,889	\$21,341
LONG TERM							
1	Construct Air Cargo Apron Phase II (North)	\$4,300	\$5,920	\$5,328	\$296	\$0	\$296
2	Construct Air Cargo Apron Phase I (South)	3,000	4,130	3,717	207	0	207
3	ARFF Vehicle	1,500	2,065	1,859	103	0	103
4	Construct Taxiway B Runway 36 to 29	2,800	3,959	3,563	198	0	198
5	Extend Cargo Apron East Interport Location	1,900	2,686	2,418	134	0	134
6	Rotary Snowplow 5000 TPH	550	778	700	39	0	39
7	Expand Maintenance Building	3,750	5,445	4,901	272	0	272
8	Construct Aircraft Engine run-Up Pad	1,600	2,323	2,091	116	0	116
9	SRE 18' FRT MTD Broom	950	1,379	1,241	69	0	69
10	Strengthen/Rehab Runway 11-29	8,200	12,228	11,006	611	0	611
11	Displacement Plows/Spreaders	650	969	872	48	0	48
12	Strengthen/Rehab Taxiways A, D, E, & F	5,900	9,036	8,132	452	0	452
13	2000 Gallon Liquid Spreader	250	383	345	19	0	19
14	ARFF Vehicle	125	191	172	10	0	10
15	Construct South Apron Taxiway	2,830	4,451	4,006	223	0	223
16	Construct South General Aviation Apron - Phase 1	2,300	3,618	3,256	181	0	181
17	Construct South General Aviation Apron - Phase 2	2,300	3,715	3,344	186	0	186
18	Terminal Westerly Expansion	16,000	25,846	0	0	24,553	1,292
19	Rehabilitate Runway 18-36, Taxiway B and J	3,600	5,972	5,375	299	0	299
20	Construct South General Aviation Apron - Phase 3	3,000	4,977	4,479	249	0	249
21	Ramp Expansion East of Air Traffic Control Tower	7,200	12,267	11,040	613	0	613
22	Snow Plows	650	1,107	997	55	0	55
23	Parking Garage Expansion Phase 4	20,000	34,075	0	0	0	34,075
24	Terminal Easterly Expansion/Renovation	11,000	18,741	0	0	17,804	937
TOTAL LONG TERM		\$104,355	\$166,264	\$78,842	\$4,380	\$42,358	\$40,685
TOTAL CIP		\$193,322	\$271,752	\$129,116	\$7,126	\$67,426	\$68,084
PLUS: CAPITAL OUTLAY		\$30,738	\$40,498	\$0	\$0	\$0	\$40,498
TOTAL CIP AND CAPITAL OUTLAY		\$224,059	\$312,250	\$129,116	\$7,126	\$67,426	\$108,582

SHORT TERM DEVELOPMENT

- (1) Terminal Apron Expansion Northwest End - Phase 1
- (2) Environmental Assessment and Permitting for Airport Improvements - NS
- (3) Gate 1 Apron Reconstruction and Construct TW C Snow Shoulders North
- (4) Runway Incurison Warning System
- (5) 3rd Floor Bypass Auto Exit Portals
- (6) Gate 1 - 6 Rehabilitation Vertical Circulation Improvement
- (7) Pre-Conditioned Air/Units for Loading Bridges
- (8) Gates 1 Additional Loading Bridges
- (9) Central Air Handling Units
- (10) Terminal Apron Expansion Northwest End - Phase 2
- (11) Environmental Assessment Mitigation Measures - NS
- (12) ARFF Vehicle
- (13) Snow Removal Tractor for Airfield Lights/Signs
- (14) Maintenance Building Generator and Enclosure
- (15) Click to Activate Runway Lights
- (16) Admin Offices above Bag Claim - East End
- (17) Additional Loading Bridges for Gate 11
- (18) Long Term Hold/Deicing/RON Apron - Phase 1
- (19) FS Facility
- (20) Snow Melt Equipment for Contaminated Snow - SRE/Maintenance
- (21) Long Term Hold/Deicing/RON Apron - Phase 2
- (22) Runway 11 Taxiway Bypass and Perimeter Service Road Realignment
- (23) Tree Removal for GOS on Runway 36 End
- (24) Expand Baggage Claim - Phase 2
- (25) Loading Bridge
- (26) Construct Air Cargo Taxiway - Phase 1
- (27) Rehabilitate Cargo Apron
- (28) Displacement Plovs
- (29) Airport Security Fence and Gate Upgrades (North East Area)

NS - Not Shown

LEGEND

- Airport Property Line
- City Limit Line
- Airport Fence Line
- Runway Protection Zone (RPZ)
- Short Term Development
- Intermediate Term Development
- Long Term Development
- Third Party Tenant Development
- Sustainable Projects

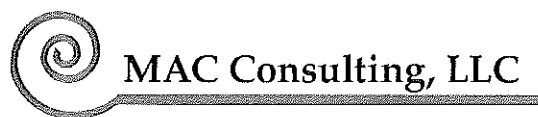


LONG TERM DEVELOPMENT

- (1) Construct Air Cargo Apron Phase I (North)
- (2) Construct Air Cargo Apron Phase II (South)
- (3) ARFF Vehicle
- (4) Construct South Apron Taxiway
- (5) Construct South General Aviation Apron - Phase 1
- (6) Construct South General Aviation Apron - Phase 2
- (7) Terminal Western Expansion
- (8) Rehabilitate Runway 18-36, Taxiway B and J
- (9) Construct South General Aviation Apron - Phase 3
- (10) Ramp Expansion East of Air Traffic Control Tower
- (11) Snow Plovs
- (12) Parking Garage Expansion Phase 4
- (13) 2000 Gallon Liquid Spreader
- (14) ARFF Vehicle
- (15) Construct South Apron Taxiway
- (16) Construct South General Aviation Apron - Phase 1
- (17) Construct South General Aviation Apron - Phase 2
- (18) Terminal Western Expansion
- (19) Rehabilitate Runway 18-36, Taxiway B and J
- (20) Construct South General Aviation Apron - Phase 3
- (21) Ramp Expansion East of Air Traffic Control Tower
- (22) Snow Plovs
- (23) Parking Garage Expansion Phase 4
- (24) Terminal Eastern Expansion/Renovation

INTERMEDIATE TERM DEVELOPMENT

- (1) Construct Taxiway C Realignment - Phase 1
- (2) Loading Bridge
- (3) Land Acquisition
- (4) Construct Air Cargo Taxiway - Phase 2
- (5) Loading Bridges
- (6) Replace Regional Boarding Ramps at Gate 1B and C
- (7) Relocate Taxiway A East of Runway 18-36
- (8) Construct Taxiway C Realignment - Phase 2
- (9) Relocate Service Access Road East of Cargo
- (10) Parking Garage Expansion Phase 3





CITY OF PORTLAND, MAINE

CITY COUNCIL WORKSHOP

**Monday,
5:00 p.m.**

City Hall – City Council Chambers

AGENDA

- 1) Jetport Master Plan
(No backup information distributed prior to the Council Meeting)
- 2) Improvements to Solid Waste and Recycling Program



Gregory A. Mitchell
Director, Economic Development Department

Executive Department
Jon P. Jennings, City Manager

To: Mayor Strimling and Members of the Portland City Council
From: Troy Moon, Sustainability Coordinator
Mike Murray, Assistant to the City Manager
Re: Improvements to the Solid Waste and Recycling Program
Date: June 9, 2016

CC: Jon Jennings, City Manager
Anita LaChance, Assistant City Manager
Chris Branch, Director of Public Works

During the past several years, the City has been looking at the way we handle residential waste and recycling. Notable efforts in this area include the creation of the Solid Waste Task Force in 2011, which was chaired by Councilors Cheryl Leeman and John Anton. This group reviewed progress made by the City since the establishment of curbside recycling and recommended a series of policy and program goals designed to increase waste diversion and recycling. In 2015 the City hired Kessler Consulting to review the performance of the City's solid waste performance and make recommendations for improvements and efficiencies. This year the City Council established a goal to implement many of the ideas and recommendations contained in the previous studies. Toward that end, City staff has prepared a recommended approach that could be incorporated into the FY 2018 budget and deployed in July, 2017.

Program Background:

The City's recycling program has relied on 16 - 18 gallon recycling bins as the primary container for curbside recycling since the program began in July, 1999. At that time, the program required residents to sort their paper products from their containers. In doing so, they packed their bins carefully, which reduced opportunities for the wind to blow materials into the street. In 2007, the City adopted single stream recycling. This encouraged participation and made collection more efficient but resulted in loosely packed bins with paper and other light items easily accessible to the elements. Portland residents fully embrace recycling and many households set out multiple bins on recycling day. While this helps the City achieve relatively high recycling rates, it presents more opportunities for wind to scatter items from the open top bins.

The Solid Waste Task Force, which issued a report in 2011, identified the small, open top bins as a barrier to increased recycling. They recommended adopting a cart based recycling program to encourage and enable residents to recycle more::

The Solid Waste Task Force believes that the 18-gallon bins currently used by the City's recycling program are too small to hold a week's worth of recyclables for most households. Many residents are putting out multiple bins but others may be putting recyclables in the trash once their bin is full. The City should switch to a cart based collection system in order to provide residents with a covered container that can hold more recyclables. (Solid Waste Task Force Report, p.30)

They also recommended a cart based approach as a way to reduce street litter:

The City has provided residents with a 16- or 18- gallon open-top bin for collecting recyclable.. The comprehensive nature of the recycling program allows residents to set out a large range of items for collection. The result is that most bins are very full, with items protruding over the top and exposed to the elements. The bins are also prone to tipping over and spilling their contents onto the street and sidewalk. A windy day coupled with loose recyclables adds considerably to the litter on the street. To alleviate this problem, the City should offer large wheeled carts with covers to residents for their recyclables. The carts offer much more recycling capacity than the traditional bins and cover their contents to protect them from the elements. (pp. 37-38)

In 2015, the City commissioned Kessler Consulting to undertake a review of the solid waste program and to offer recommendations for improvement. They identified moving to a cart based recycling program to increase recycling rates and reduce litter -- just as the Solid Waste Task Force had previously. Kessler went further, however, and noted that a cart based program could increase operational efficiency by reducing the number of trips collectors made back and forth to the curb. In the current program, residents put out multiple bins of various sizes. These include the bins issued by the City as well as homeowner provided bins. A collection crew can empty a single cart and return it to the curb more quickly than multiple bins. (Kessler Report, p.34)

Recommended approach:

Based on the work of the Solid Waste Task Force, Kessler Consulting, interviews with solid waste professionals in greater Portland and across the country, City staff recommends the following approach to improve the City's solid waste program:

Cart based recycling

- Deploy 64 gallon recycling carts for most participants in the City recycling program
- Deploy 96 gallon carts for multi-family units to allow storage and reduce the number of carts at the curb

Semi-automated collection (if financials support in house collection)

- Purchase three semi-automated, side loading collection vehicles
- Retain flexibility to easily service one way streets, dead end streets, and streets with dense parking
- Issue an RFP for private collection to ensure competitiveness

Retain the current bag based Pay As You Throw program

- Widespread familiarity with this approach

- Provides the most effective financial incentive to reduce waste and recycle
- Low administrative costs and overhead

Advantages of Proposed Method:

- **Manageable start-up costs:**

Purchasing carts is one of the largest costs associated with implementing a new solid waste program. Deploying just recycling carts will require an outlay of approximately \$1.25 million as opposed to \$2.5 million if we choose to move forward with carts for both trash and recycling. Carts are not appropriate items for the capital improvement budget so this expense would be carried by the operating budget. Staff has searched for grants to help defray the costs of recycling carts and has identified funders to which we could apply. We have not identified any possible funding sources for trash carts. If we choose to maintain an in-house service, replacing collection vehicles is also a significant expense. Moving forward with recycling only would allow us to replace only three vehicles during the upcoming CIP. Replacement vehicles for the remaining fleet could be programed into future years.

- **No impact on winter operations (in house option):**

Solid waste staff participates in winter operations as plow truck drivers. In our recommended option, we retain staff and avoid the cost of hiring equipment operators to assist with winter operations. A fully privatized waste collection program would add \$133,000 of annual costs to winter operations.

- **Opportunity to grow a cart program strategically:**

There are a number of areas in Portland that could prove challenging to a cart based collection program. On the peninsula there are many narrow streets with parking on both sides. During the winter months the streets become further narrowed by snow banks, making it difficult to navigate trucks and challenging for the staff to access the curb. In the most densely populated neighborhoods there is limited space on the esplanade for residents to place their trash and recycling. Adopting cart based recycling provides an opportunity to understand and overcome the challenges this presents before adding a second cart for trash. We may find it necessary to take measures such as changing parking restrictions will be necessary to expand the program to include trash carts. An incremental approach will allow us to make significant improvements to the program and take a thoughtful approach to future improvements.

- **Addresses the cause of litter from the program:**

In the summer of 2015, Dr. Travis Wagner of the University of Southern Maine conducted a study to quantify the extent to which the open top recycling bins contribute to street litter in the City of Portland. Over the course of six weeks, researchers went into two recycling routes -- one on the peninsula and one off the peninsula -- and collected all litter larger than 1" that could be attributed to recycling bins. Each week they collected over 20,000 pieces of litter per 1,000 households. This amount of litter detracts from the appearance of City neighborhoods, creates additional work for

crews assigned to collect it, and impacts the environment. It also undermines the efforts of the residents who separated their material expecting it to be recycled. Providing a wheeled cart with a lid addresses all of these concerns. Birds, rodents and other animals do attack trash bags set at the curb but the amount of litter attributable to this is much smaller than from the open top recycling bins.

Why semi-automated collection? (in house option)

- **Ability to Handle All City Streets**

City staff recommends semi-automated recycling collection using trucks that can load from either side. This approach allows the truck crews to access and dump carts on either side of dense urban streets, on one way streets, and on dead end streets. Fully automated trucks struggle in these situations because in dense neighborhoods with on street parking carts may not be accessible to the arm. Further, automated collection requires that residents set their carts out with two or three feet between carts so the automated arm can reach each cart. In certain neighborhoods there may not be enough room on the esplanade to allow this. On one way streets, automated trucks are only able to pick up carts on one side of the street. This necessitates a pass by a second truck, such as a rear loader or a dual side loader, to collect the carts the automated truck can't reach. The same holds for dead end streets that do not have turn-arounds. Portland has many streets like this that require the crew to back down. As with one way streets, fully automated trucks are only able to access one side of one way streets.

- **Fleet Flexibility**

Our current collection program relies on rear loading rubbish packers. The trucks that collect recyclables are identical to the ones that collect trash. This allows a great deal of flexibility in the program. If a truck collecting trash breaks down, a truck normally assigned to recycling can come back after dumping its load and finish the trash route. The semi-automated side loading truck allows the operation to retain this flexibility while improving efficiency. Workers are able to tip carts but they can also load bagged trash and many bulky household items. In an emergency response situation, the semi-automated side loaders could be dispatched to clean up debris along with the rear loaders. Fully automated trucks can only collect carts.

- **Crew efficiency**

Under the recommended scenario, we would specify trucks with low entry cabs similar to the ones we currently operate. With side loading trucks, the loading hopper sits directly behind the cab. The truck driver can stop the truck, step out of the cab to load the truck, and get back in the cab very quickly. This would allow the vehicle to operate with a single crew member in low density neighborhoods. In dense neighborhoods a second crew member could come along to assist. Being able to operate with a single crew member would allow the City to reduce the use of temporary help. With the existing rear load trucks, collection requires two person crews as it is not practical for the driver of the truck to walk to the rear of the vehicle at each stop. The Public Works Department used side loading recycling trucks with one person crews for several years before the adoption of single stream recycling and found them to be effective.

Discussion of Pay As You Throw Options

During previous meetings, City Councilors have requested information about the various types of Pay As You Throw Programs used by cities across the country. Several models exist and each has advantages and disadvantages. Most charge residents based on the volume of waste they dispose. Weight based programs are rare.

- **Bag based collections**

The City of Portland has had this type of program since establishing pay as you throw in 1999. Residents purchase official trash bags at a variety of retail stores. By doing so, they are pre-paying for the cost of waste disposal by purchasing the trash bag. The City receives the funds by invoicing the retailers who sell the bags. There are relatively few retail accounts to invoice, which reduces the administrative burden on the City. Revenue collection is also straightforward because the retailers have proven credit worthy. Collection crews can easily identify non-compliant households and only pick up trash set at the curb in the correct trash bags. This ensures that only those who have paid the fee receive service. Currently, City staff manages the inventory of City trash bags, distribute them to retailers and handle the accounting. There are now vendors who handle these roles. Staff recommends working with one of these vendors in order to allow the solid waste supervisory staff to focus on the waste and recycling collection operation instead of bag distribution.

- **Multiple Cart Sizes**

In this type of program, the municipality provides residents with the opportunity to select a trash cart of a certain size based on the amount of trash they think they will generate. Typically, the choices are approximately 32 gallon, 64 gallon, and 96 gallon in size. Cities use a variety of methods to invoice program participants based on the cart they choose.

Annual billing -- Some communities charge an annual fee to each property owner based on the size of the cart(s) used by the residents who live at the property, often as a line item on a tax bill. This type of program provides the weakest form of pay as you throw because the fee is not directly associated with the amount of waste set out each week. It also only provides an opportunity to adjust container size once per year. The administrative burden, however, is relatively low.

Monthly Billing -- In this type of program, residents select a cart and pay a monthly fee based on its size. This provides more opportunity to adjust cart size than with an annual billing but it still does not provide as much incentive to reduce waste as a bag based program. The administrative burden and for a monthly billing is high as staff or a third party would need to issue thousands of bills per month and process the returning payments. There would also be a need to pursue delinquent accounts.

Charge Per Tip -- A few cities have begun to institute a cart based program that charges residents only when they set their cart out for collection. This program uses “smart” RFID technology and truck mounted computers to monitor when residents set their cart(s) are and charges them appropriately. This type of program offers a strong incentive to reduce waste because residents pay for collection service only when they use it. Cities with this type of program often require residents to pre-pay for their waste collection. Residents pay using a credit card on a dedicated website. The computer on board the truck reads the account information from each cart before tipping it to confirm

payment. If the resident's account lacks sufficient balance to cover the fee, the tipping arm will not activate to dump the cart. The City of Grand Rapids, Michigan is well known for this type of program.

Programs offering residents multiple cart sizes must maintain inventories of the various sizes in order to respond to requests for a different cart size or to replace lost and damaged carts. They must also have staff resources available to respond to the request.

- **Weight Based PAYT -- Cart Based**

There are currently very few examples of weight based pay as you throw programs in the United States. Some cities, including Minneapolis and Seattle have conducted pilot programs with this type of program but chose not to move forward with full scale deployment. The City of Milwaukee also looked careful at a weight based program but chose not to move forward with it. Weight based programs offer a number of challenges that make them difficult to implement. The program requires a cart based program incorporating RFID data gathering as well as scales attached to the cart lifter on the truck. Per conversations with a local hauler, the scales available for fully automated collection may not offer a satisfactory level of accuracy. Scales attached to tippers on semi-automated trucks offer a higher level of accuracy. However, requiring the scale to register a weight reading before tipping slows down the collection offering operation. In our program adding an additional 5 seconds per tip would add well over an hour to each collection route. Equipping trucks with scales also increases upfront purchase costs and adds a potentially expensive ongoing maintenance cost to regularly service and maintain the scales to ensure accurate readings. Weight based programs present administrative hurdles as well. Each collection cart must be assigned to a distinct account with accurate billing information for the user. City staff or a contracted 3rd party administrator must track weights recorded for each tip. They must then issue an invoice to the account for the amount owed. They must also track receipts and work to collect the funds. Unlike a bag based program, where the City only invoices a small number of retailers, a weight based program would involve servicing thousands of individual accounts.

Recommendation: Based on our analysis of the various forms of pay as you throw programs, staff recommends retaining the existing bag based system. It strongly incentivizes waste reduction and recycling, residents are very familiar with it, and the administrative costs to administer it are lower than other options.

Conclusion:

The City of Portland has operated a successful solid waste program for many years. Our residential recycling rate is amongst the highest in the ecomaine region and residents have fully embraced recycling. We have opportunities, however, to improve the program in ways that can move our recycling rate from its current level of 37% to 50% and beyond. We also have opportunities to improve the environmental performance of our program by eliminating the litter that spills from our small, open top recycling bins. We are pleased to offer our recommendations for program improvement to the City Council and look forward to discussion and feedback.

Solid Waste Program Scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
	In House T w/carts	Contract T w/ carts	In house T w/bags	In house T w/bags	Contract T&R with Carts (off pen)
Annual Operational Costs	In house R w/ carts	Contract R w/ carts	In house R w/carts	Contract R w/carts	In House T&R as is (on pen)
Budget Line	Amount	Amount	Amount	Amount	Amount
01-10 (Wages)	\$660,369	\$206,740	\$660,369	\$429,940	\$399,873
01-40 (OT)	\$47,199	\$18,349	\$47,199	\$32,774	\$34,505
02-71 (Uniforms)	\$9,485	\$4,700	\$9,485	\$7,265	\$6,410
20-00 (Admin)	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
20-20 (Admin)	\$1,030	\$1,030	\$1,030	\$1,030	\$1,030
20-40 (Admin)	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
35-00 (Contracts)	\$79,000	\$3,304,000	\$79,000	\$1,604,000	\$1,242,000
35-10 (Recruitment)	\$500	\$500	\$500	\$500	\$500
35-15 (ecomaine)	\$687,375	\$687,375	\$687,375	\$687,375	\$687,375
35-60 (Printing)	\$3,300	\$3,300	\$3,300	\$3,300	\$3,300
35-70 (Temp Help)	\$25,000	\$5,000	\$25,000	\$15,000	\$68,200
40-10 (Building Repair)	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
55-20 (Supplies -bags)	\$130,870	\$130,870	\$130,870	\$130,870	\$130,870
55-50 (1st Aid supplies)	\$200	\$200	\$200	\$200	\$200
55-60 (minor equipment)	\$13,900	\$13,900	\$13,900	\$13,900	\$13,900
55-70 (Office supplies)	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
63-35 (Stormwater at RRF)	\$2,646	\$2,646	\$2,646	\$2,646	\$2,646
63-41 (Cell Phones)	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200
Operation Cost	\$1,671,574	\$4,389,310	\$1,671,574	\$2,939,500	\$2,601,509
Added Cost to Winter	\$0	\$133,200	\$0	\$59,200	\$74,000
Riverside Recycling (est)	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
Total Cost	\$2,171,574	\$5,022,510	\$2,171,574	\$3,498,700	\$3,175,509
PAYT Revenue	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000
Net Operational Cost	\$271,574	\$3,122,510	\$271,574	\$1,598,700	\$1,275,509
Equipment Costs					
Capital (Truck Purchase)	\$1,680,000	0	\$840,000	\$280,000	\$280,000

1 x Cart Purchase	\$2,325,000		\$1,075,000		
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