INTRODUCTION AND SUMMARY

Portland International Jetport (PWM) is a thriving small hub, commercial service airport serving the aviation demand 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 evaluate the airport’s capabilities and role, to review forecasts of future aviation demand, and to plan for the timely improvement of facilities that may best meet that demand and maintain compatibility with the environs. The airport master plan will provide 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.

This study will follow a systematic approach outlined by the Federal Aviation Administration (FAA) to identify existing and future airport needs. The intended result is a recommended development concept.
which outlines the proposed uses for all areas of airport property, including areas which may be required for environmental mitigation/preservation. This master plan update will differ from those before in that the analysis will include airport sustainability measures. The sustainability analysis will include a baseline assessment outlining historical and current sustainability achievements, as well as integration of proposed sustainability goals and objectives into future airport plans.

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.

**MASTER PLAN GOALS AND OBJECTIVES**

The primary objective of the sustainable airport master plan (SAMP) is to provide the community, City of Portland and its airport administration with proper guidance for future improvements and processes that incorporate sustainability principles in addressing aviation demand and airport operations in a manner that is wholly compatible with the environment. Making sustainability a part of the core objective of the planning process will promote design, project implementation, and financial decisions that will help the airport identify ways to reduce energy consumption, environmental impacts, and carbon footprint. 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

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. This includes but is not limited to the immediately adjacent neighborhoods of historic Stroudwater in Portland and Redbank in South Portland.
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. This includes but is not limited to the immediately adjacent neighborhoods of historic Stroudwater in Portland and Redbank in South Portland.

Accomplishing this objective requires an evaluation of the existing airport so as to make a determination of what actions should be taken to maintain an adequate, safe, and reliable airport facility. The completed airport master plan will produce a development plan which will provide airport officials with a program for future capital needs to aid in planning, scheduling, and budgeting.

An airport master plan must be developed according to FAA requirements; however, the airport master plan can also be prepared in a manner which makes it useful in strategic planning for the airport. The FAA requires specific components within a master plan. The components, to be detailed in the following section, are guidelines which allow for a systematic and technical approach to reach the final recommended plan.

This sustainable master plan will provide a vision for the airport covering the next 20 years and, in some cases, beyond. With this vision, the City of Portland will have advance notice of potential future airport funding needs so that appropriate steps can be taken to ensure that adequate funds are budgeted and planned.

The specific objectives to be considered in the airport master plan include:

- To review or develop a written sustainability policy mission statement;
- To define sustainability categories at the airport and conduct a baseline inventory and assessment;
- To research and evaluate transportation industry and socioeconomic factors likely to affect the airport transportation demand in the region;
- To determine the projected needs of airport users through the year 2035;
- To establish measurable goals to minimize the impact on consumption, and to identify specific sustainability initiatives to help in achieving each goal;
- To recommend improvements that will enhance the airport’s safety, efficiency, and capability to serve the community’s aviation needs;
- To establish a schedule of priorities and a financial plan for the improvements proposed by this master planning effort;
- To determine the required level of environmental documentation to move forward with each recommendation of the master plan;
- To prepare an updated Airport Layout Plan in accordance with FAA guidelines, and incorporating GIS databases; and
- To incorporate an active and productive public involvement and community outreach throughout the sustainable master planning process.
INTRODUCTION TO SUSTAINABILITY

The City of Portland, Maine, which owns and operates the Jetport, considers sustainability an integral part of the Airport’s organization. Accordingly, it has commissioned a master plan update that integrates sustainability and commits PWM to a long-term, comprehensive, and integrated approach that considers economic viability, operational efficiency, social responsibility, and natural resource conservation. Through this approach, PWM is also embracing a leadership role within its region and the airport industry to promote sustainability and improve related performance.

WHAT IS SUSTAINABILITY?

Consideration of sustainability is helping to reshape the values and criteria for measuring organizational success across the world by offering the means to address the resource areas where an organization has impact. These resource areas are often referred to as “the three responsibilities” or “the triple bottom line,” and include economic, social, and environmental performance measures (see Figure A). First referenced in 1994 and according to The Economist article entitled, “Triple Bottom Line,” the “triple bottom line” approach has been used for over two decades as the defining principle of sustainability, and is a practical way to optimize economic, social, and environmental capital.

The Brundtland Commission, also known as the World Commission on Environment and Development, put forth one of the earliest and widely accepted definitions of sustainability:
“Development that meets the needs of current generations without compromising the ability of future generations to meet their own needs.”

The Jetport is adopting a tailored view of sustainability, one that considers its unique circumstances as an airport. The Airport Cooperative Research Program (ACRP) in ACRP Synthesis 10: Project 11-03, Topic S02-02 has defined sustainability as: “A broad term that encompasses a wide variety of practices applicable to the management of airports.” Alongside this definition, ACRP preserves the essential elements of the “triple bottom line” approach by compelling airports to maintain high and stable levels of economic growth and employment, ensure social progress that recognizes the needs of all stakeholders, and protect the environment, including the conservation of natural resources.

The Airports Council International-North America (ACI-NA) builds upon ACRP’s airport-specific approach in its publication, Airport Sustainability: A Holistic Approach to Effective Airport Management. According to the report, ACI-NA defines sustainability as: “A holistic approach to managing an airport so as to ensure the integrity of the Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility [EONS] of the airport.” In addition to the traditional “triple bottom line,” ACI-NA
includes the operational aspects of an airport, such as its management structure and ability to leverage operations and maintenance monies to promote sustainability (see Figure B).

A fundamental principle of sustainability is recognizing that addressing one resource area does not necessarily come at the expense of another. Optimally, evaluating a project or activity based on environmental and social concerns would spur innovation that ultimately reduces costs and enhances benefits over the life of the project.

Sustainability, as part of an organizational strategy, has demonstrated measurable benefits at airports across 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.

SUSTAINABILITY AND THE FEDERAL AVIATION ADMINISTRATION

In recognition of the Jetport’s commitment to sustainability, the Airport received a grant through the Federal Aviation Administration’s (FAA’s) Sustainable Master Plan Pilot Program to prepare a Sustainable Master Plan. Through this program, FAA provides funding for the development of sustainable master plans or sustainable management plans, which are standalone documents that integrate sustainability principles into the airport planning process. Sustainable master and management plans make sustainability a central focus in the planning process, which generates strategies to achieve economic benefits, enhance operational efficiency, increase community involvement, and reduce negative environmental impacts. Further information on the FAA’s Sustainable Master Plan Pilot Program can be accessed at: http://www.faa.gov/airports/environmental/sustainability/.
THE MASTER PLAN AND THE SUSTAINABILITY PLANNING PROCESS

The sustainability airport master planning process integrates sustainability planning elements into the traditional airport master plan process (see Figure C). When combined, the sustainability and master planning processes provide the flexibility necessary to consider the Jetport’s operational and financial constraints. They also provide a powerful planning tool that will create a long-term development vision for the Jetport that considers sustainability performance measures. The purpose of the unified approach is to:

- Ensure goals and initiatives developed as part of the sustainability planning process are 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 sustainability planning process incorporates input from three main stakeholder groups: 1) City and Jetport leadership, 2) the study’s Planning Advisory Committee (PAC), and 3) Jetport tenants, such as airlines, concessionaires, and fixed base operators (FBOs). The PAC is composed of 24 members, includ-
ing representatives from local municipalities, tenants and pilot organizations, and regional tourism organizations, among others.

The combined PWM SAMP planning process began in the summer of 2014 and is expected to conclude in the spring of 2016.

PUBLIC PARTICIPATION

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 Airport 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 PAC) to act in an advisory role in the development of the Sustainable Airport Master Plan. To assist in review, draft working papers were prepared at various milestones in the planning process. The working papers allowed for timely input and review during each step of the SAMP process to ensure that all planning issues were fully addressed as the recommended program developed. Members of the PAC reviewed draft working papers and provided comments throughout the process to help ensure that a realistic, viable plan was developed.

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. Notices of meeting times and locations were advertised through local media as well as social media outlets. The draft working papers were made available to the public through an Airport Master Plan link on the Jetport’s website and directly at www.thejetport.airportstudy.com.

SUMMARY AND RECOMMENDATIONS

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).

Exhibit A 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.

SUSTAINABILITY GOALS

The Baseline Assessment in Chapter Three provided 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 consultants 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;
- Ground Access and Transportation;
- Social Responsibility; and
- Governance.
## Sustainable Airport Master Plan

### Forecast Summary

<table>
<thead>
<tr>
<th></th>
<th>Baseline 2013</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
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<tr>
<td><strong>Passenger Enplanements</strong></td>
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<tr>
<td>Enplaned (Tons)</td>
<td>4,865</td>
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<td>5,700</td>
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<td>Deplaned (Tons)</td>
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<td>8,021</td>
<td>7,800</td>
<td>8,200</td>
<td>9,200</td>
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<tr>
<td><strong>Total Air Cargo Shipped</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12,261</td>
<td>12,910</td>
<td>13,500</td>
<td>14,200</td>
<td>15,900</td>
</tr>
</tbody>
</table>

| **Annual Aircraft Operations** | | | | | |
| **Itinerant Operations**      | | | | | |
| Air Carrier                   | 26,068        | 24,848 | 28,800 | 29,800 | 32,000 |
| Air Cargo                     | 3,162         | 3,092  | 3,300  | 3,400  | 3,700  |
| Other Air Taxi                | 5,299         | 2,475  | 5,900  | 6,900  | 9,000  |
| General Aviation              | 15,173        | 15,233 | 17,400 | 18,400 | 20,500 |
| Military                      | 464           | 551    | 500    | 500    | 500    |
| **Total Itinerant Operations**| 50,166        | 46,199 | 55,900 | 59,000 | 65,700 |
| **Local Operations**          |               |        |        |        |        |
| General Aviation              | 1,890         | 2,683  | 3,400  | 3,400  | 3,500  |
| Military                      | 34            | 16     | 100    | 100    | 100    |
| **Total Local Operations**    | 1,924         | 2,699  | 3,500  | 3,500  | 3,600  |
| **Total Operations**          | 52,090        | 48,898 | 59,400 | 62,500 | 69,300 |

| **Based Aircraft**           | 50            | 50     | 56     | 62     | 76     |

---

**Exhibit A**

### Introduction and Summary - DRAFT

**Forecast Summary**

- **Passenger Enplanements**
  - Baseline 2013: 843,944
  - 2015: 869,710
  - 2020: 971,324
  - 2025: 1,010,139
  - 2035: 1,187,969

- **Air Cargo Shipments**
  - Enplaned (Tons): 4,865
  - 2015: 4,889
  - 2020: 5,700
  - 2025: 6,000
  - 2035: 6,700

- **Total Air Cargo Shipped**
  - Baseline 2013: 12,261
  - 2015: 12,910
  - 2020: 13,500
  - 2025: 14,200
  - 2035: 15,900

- **Annual Aircraft Operations**
  - **Itinerant Operations**
    - Air Carrier: 26,068
    - Air Cargo: 3,162
    - Other Air Taxi: 5,299
    - General Aviation: 15,173
    - Military: 464
    - **Total Itinerant Operations**: 50,166
  - **Local Operations**
    - General Aviation: 1,890
    - Military: 34
    - **Total Local Operations**: 1,924
  - **Total Operations**: 52,090

- **Based Aircraft**
  - Baseline 2013: 50
  - 2015: 50
  - 2020: 56
  - 2025: 62
  - 2035: 76
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 MASTER PLAN CONCEPT**

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 full-service 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 B, 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. Chapter Four outlines the basic needs of the airfield through the planning period.

**Runways** - 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.

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. The Airbus 321 and Boeing 737-800 and -900 models have maximum take-off weights above the current airport design strength. FedEx could utilize a Boeing 767-200 or the Airbus 300 and 310 more.

**Taxiways** – Several taxiway projects have been identified to satisfy FAA’s airfield geometrical standards as well as improve airfield efficiency. Proposed taxiway improvements shown on Exhibit B include:

- Realign the eastern portion of Taxiway A outside the glide slope critical area;
- 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 B also presents the planned landside development for the Jetport.
**Commercial Passenger Terminal Building** – In accordance with previous terminal planning, the recommended plan provides for an additional three gates to the northwest. The plan also includes an easterly extension of the second level concourse to ultimately replace the Gate 1 boarding bridge structure.

Other terminal building modifications proposed include: 1) Add baggage claim to the west into the current first level 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 that 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
**Sustainable Airport Master Plan**

**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 Incursion Warning System
5. 3rd Floor Bypass Auto Exit Portals
6. Gate 1 Additional Loading Bridges
7. Central Air Handling Units
8. Terminal Apron Expansion Northwest End - Phase 2
9. Environmental Assessment Mitigation Measures - NS
10. ARFF Vehicle
11. Snow Removal Tractor for Airfield Lights/Signs
12. Maintenance Building Generator and Enclosure
13. Click to Activate Runway Lights

**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 Roading 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 Parking
10. Parking Garage Expansion Phase 3

**LONG TERM DEVELOPMENT**

1. Construct Air Cargo Apron Phase I (North)
2. ARFF Vehicle
3. Construct Taxiway B Runway 36 to 29
4. Extend Cargo Apron East Interport Location
5. Rotary Snowplow 5000 TPH
6. Expand Maintenance Building
7. Construct Aircraft Engine run-Up Pad
8. SRE 18' PRT MTD Broom
9. Strength/Rehab Runway 11-29
10. Displacement Plows/Spreaders
11. Strength/Rehab Taxiways A, D, E, & F
12. 2000 Gallon Liquid Spreader
13. ARFF Vehicle
14. Construct South Apron Taxiway
15. Construct South General Aviation Apron - Phase 1
16. Construct South General Aviation Apron - Phase 2
17. Terminal Westerly Expansion
18. Rehabilitate Runway 18-36, Taxiway B and J
19. Construct South General Aviation Apron - Phase 3
20. Ramp Expansion East of Air Traffic Control Tower
21. Snow Plows
22. Parking Garage Expansion Phase 4
23. Terminal Easterly Expansion/Renovation

**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

**Exhibit B**

**CAPITAL IMPROVEMENT PLAN**
a leasehold development for general aviation facility development south of Runway 11-29, as shown on Exhibit B. 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 initiatives 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).

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 the sustainability targets presented on Table A, the Jetport considered its current performance and the potential effects of its identified sustainability actions, among other factors.

<table>
<thead>
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<th>TABLE A</th>
<th>Sustainability Targets</th>
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<tr>
<td>Portland International Jetport</td>
<td><strong>Sustainability Targets</strong></td>
</tr>
<tr>
<td><strong>Sustainability Category</strong></td>
<td><strong>Sustainability Targets</strong></td>
</tr>
</tbody>
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| Greenhouse Gas (GHG) Emissions | • Install pre-conditioned air at 100 percent of all loading bridges by 2018  
• Reduce Jetport-owned and controlled GHG emissions  
• Work with tenants to develop a baseline of the Jetport’s scope 3 GHG emissions by 2018 |
| Energy | • Begin to measure percent of energy generated from renewable sources by 2018  
• Reduce the Jetport’s energy use intensity below 2013 levels five percent by 2025 and 15 percent by 2025. |
| Waste Management and Recycling | • 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 70 percent of deicing fluid  
• Reduce deicing fluid recycling operations cost |
| Ground Access and Transportation | • 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 | • 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 | • 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 |
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.

**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 were determined. The implementation plan considers the interrelationships among the projects in the recommended plan in order to determine a logistics sequence to minimize conflicts and establish a master schedule.

The capital improvement plan (CIP) covers the same years as the forecasts in the planning effort. The Short Term is programmed annually through the first six years of the plan. The remaining projects are grouped into Intermediate (years 7-11) and Long (years 12-20) Term planning horizons. 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. Exhibit B also presents the staging of the master plan projects color-coded by short term, intermediate, and long term planning horizons.

The CIP was reviewed from a sustainability perspective, identifying opportunities where sustainability practices could improve the economic, environmental, and social performance of included projects. As these projects move forward, the Jetport will consider the identified sustainability enhancements for potential inclusion into project specifications. Some of these enhancements include pervious and permeable pavements to improve stormwater management; incorporating resiliency measures to protect the Jetport’s investments and minimize future operational disruptions; incorporating material reuse and recyclables in infrastructure construction; and designing for deconstruction. Exhibit B includes the CIP projects and denotes those projects where potential sustainability enhancements were identified. The Jetport will also consider sustainable alternatives and life cycle costing in future CIP projects and other Jetport purchasing.

A detailed financial evaluation was also completed. **Table B** presents the recommended CIP and its corresponding cost estimates 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.

The master plan’s financial 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.

*The airport is currently and projected to remain financially self-sufficient.*
**TABLE B**  
Jetport Capital Improvement Program (CIP)  
Portland International Jetport

<table>
<thead>
<tr>
<th>Planning Horizons</th>
<th>Total CIP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short</td>
</tr>
<tr>
<td>Project Costs (Million$)</td>
<td></td>
</tr>
<tr>
<td>2016 Dollars</td>
<td>$51,665</td>
</tr>
<tr>
<td>Inflated</td>
<td>$56,827</td>
</tr>
<tr>
<td>Funding Sources (Million$)</td>
<td></td>
</tr>
<tr>
<td>FAA AIP Grants</td>
<td>$28,076</td>
</tr>
<tr>
<td>MDOT Grants</td>
<td>$1,512</td>
</tr>
<tr>
<td>PFC's</td>
<td>$21,180</td>
</tr>
<tr>
<td>Jetport Revenues</td>
<td>$6,058</td>
</tr>
</tbody>
</table>

**THE JETPORT’S ECONOMIC BENEFIT**

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.

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 aviation 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 C**.

### Table C
**Summary of Economic Benefits**
Portland International Jetport

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

**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.