

Erie International Airport, Tom Ridge Field  
2015 Sustainability Baseline Assessment  
Technical Memorandum

Appendix C

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# 1. INTRODUCTION

The purpose of this baseline assessment is to characterize the current sustainability performance of Erie International Airport, Tom Ridge Field (the “Airport”) within its four identified priority sustainability categories: energy and GHG (GHG) emissions, waste management, water conservation, and customer satisfaction. This baseline assessment aims to identify and discuss the Airport’s past and current sustainability-related actions/initiatives, in addition to its historical and existing sustainability performance, which together, may reveal performance improvement opportunities. This baseline assessment will also provide the foundation from which the Airport will build its sustainability framework, including its sustainability goals, objectives, metrics, and performance targets.

The Airport seeks a holistic approach to sustainability that recognizes the Airport Council International’s (ACI’s) widely accepted definition of airport sustainability that addresses **Economic viability**, **Operational efficiency**, **Natural resource conservation**, and **Social responsibility** or EONS (Error! Reference source not found.).<sup>1</sup> To apply this comprehensive definition of sustainability, the Airport adopted a sustainability policy statement. The policy formalizes and defines sustainability to reflect the unique circumstances and operating characteristics at the Airport. This policy is consistent with the Airport’s existing policies, as well as clarifies the sustainability priorities and objectives for its employees and other stakeholders.

**Figure C-1: EONS Approach to Sustainability**



In December 2015, Airport staff, a representative from the Federal Aviation Administration (FAA), and members of the Consultant Team participated in an interactive exercise. Participants reviewed a list of over 30 sustainability concepts and prioritized the ones they felt most accurately reflected the Airport’s needs and values. From the prioritized concepts, the Airport crafted and adopted the following sustainability policy statement:

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Erie International Airport is committed to being an exemplar of sustainable operations through the development of world-class facilities and services that promote environmental, social, and economic integrity.

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<sup>1</sup> *Airport Sustainability: A Holistic Approach to Effective Airport Management*. (2016). ACI-NA. Retrieved 23 June 2016, from [www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf](http://www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf)

## IDENTIFICATION OF PRIORITY SUSTAINABILITY CATEGORIES

This sustainability baseline assessment focuses on four priority sustainability categories: energy and GHG emissions, waste management, water conservation, and customer satisfaction. Energy and GHG emissions, waste management, and water conservation were predetermined during initial scoping discussions between the Airport, FAA, and the Airport's Consultant Team. With regard to energy and GHG emissions and waste management, FAA encourages airports to assess these categories in their master plans:

- The FAA Modernization and Reform Act of 2012<sup>2</sup> discusses increasing the energy efficiency of airport power sources and reducing the generation of airport solid waste,
- Draft Advisory Circular 150/5070-6B<sup>3</sup> identifies the inclusion of energy and waste management in master plans as an emerging trend, and
- In September 2014, FAA issued guidance on including airport recycling, reuse, and waste reduction plans in master plans and other airport planning documentation.<sup>4</sup>

The Airport chose water conservation as a sustainability category because of the wide range of current opportunities for enhanced water consumption efficiency coupled with the lack of existing on-Airport water conservation initiatives.

During the kick-off of the Master Plan Update, Airport staff reached consensus and chose people as the fourth priority sustainability category. This was later refined to focus on customer satisfaction, including passenger conveniences, customer engagement, and ground access and transportation. The customer satisfaction category fulfills the social responsibility element of the Airport's holistic approach to sustainability, as the EONS framework presents.

## BASELINE ASSESSMENT APPROACH

This sustainability baseline assessment presents information and data that predominantly derive from the Airport. The Consultant Team worked closely with Airport staff to verify this information. Category discussions reference additional sources of information, as applicable. The baseline year is 2015, as it is the year for which the most recent complete set of data is available; however, the following sections present information from other years to provide additional context (for example, seasonal adjustments), where appropriate.

Where information and data were unavailable, the Consultant Team used assumptions and approximations, as appropriate. The sections below and/or their associated appendices identify and explain these assumptions in detail. This sustainability baseline assessment lists unavailable

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<sup>2</sup> FAA. (2012). *FAA Modernization and Reform Act of 2012*. Retrieved 20 June 2016, from <https://www.gpo.gov/fdsys/pkg/CRPT-112hrpt381/pdf/CRPT-112hrpt381.pdf>

<sup>3</sup> FAA. (2013). *Draft Change 2 to AC 150/5070-6B, Airport Master Plans*. Retrieved 23 June 2016, from [http://www.faa.gov/documentLibrary/media/Advisory\\_Circular/draft\\_150\\_5070\\_6b\\_Chg2.pdf](http://www.faa.gov/documentLibrary/media/Advisory_Circular/draft_150_5070_6b_Chg2.pdf)

<sup>4</sup> FAA. (2014). *Guidance on Airport, Recycling, Reuse, and Waste Reduction Plans*. Retrieved 23 June 2016, from <http://www.faa.gov/airports/environmental/media/airport-recycling-reuse-waste-reduction-plans-guidance.pdf>

data under *Data Management and Gaps*, along with a rationale as to why the Airport should collect them.

This technical appendix provides a high-level profile of the Airport (**Section 2**), including its governance structure, discusses the four priority sustainability categories (**Sections 3 through 6**), and concludes with a presentation of next steps and an initial list of opportunities to enhance the Airport’s sustainability performance (**Section 7**). Discussions of the priority sustainability categories cover the following:

- Category Overview - provides context for the priority category as it relates to sustainability,
- Regulatory Context - addresses applicable rules and regulations, including those that provide guidance on reporting,
- Methodology - describes the approach and any assumptions in data or process,
- Management Practices and Performance - presents a summary of baseline results, and
- Data Management and Gaps - identifies unavailable data, including those that the Airport may want to consider collecting in the future, and data discrepancies, if any.

## 2. AIRPORT PROFILE

Erie International Airport, Tom Ridge Field is a public-use commercial service airport that comprises approximately 415 acres and is located approximately five miles southwest of Erie, Pennsylvania in Millcreek Township.<sup>5</sup> The Erie Regional Airport Authority (ERAA), a Pennsylvania Municipal Corporation, owns and operates the Airport. A nine-member Board of Directors (the Board) governs the ERAA; the Erie City Council appoints five members and Erie County Council appoints four.<sup>6</sup> The Executive Director, who the Board of Directors appoints, oversees the day-to-day operations of the Airport. The Airport’s other 32 employees assist the Executive Director, and have the following departmental distribution:

- Administrative staff (five persons),
- Equipment specialist (one),
- Electrician (one),
- Airfield operations/aircraft rescue and firefighting (seven),
- Building maintenance (one),
- Landside (one),
- Custodians (four), and
- Public safety (12).<sup>7</sup>

The Board and the Airport’s employees are subject to the Pennsylvania Public Official and Employee Ethics Act, Act 170 of 1978<sup>8</sup> and associated regulations (51 Pa. Code §11.1, et seq.).<sup>9</sup> These rules and regulations, which the Pennsylvania State Ethics Commission enforces, guide the Airport’s code of conduct and ethics. This includes a list of restricted activities such as conflicts of interest and accepting anything of monetary value in exchange for influence.

### Activity Levels

The Airport’s service area includes all of Erie County as well as the western region of Pennsylvania, western New York State, and northeast Ohio.<sup>10</sup> Major airlines operating out of the Airport include American Airlines (formerly US Airways), Delta Air Lines, and United Airlines. These airlines provide non-stop flights to three cities (i.e., Philadelphia, Pennsylvania; Detroit, Michigan; and Chicago, Illinois), and offer connections to more than 1,100 other destinations.<sup>11</sup>

<sup>5</sup> Google. (2016). *Google Maps*. Retrieved 1 June 2016, from [maps.google.com](http://maps.google.com)

<sup>6</sup> Erie International Airport. (2016). *Board of Directors*. Retrieved 1 May 2016, from [http://www.erieairport.org/board\\_directors.html](http://www.erieairport.org/board_directors.html)

<sup>7</sup> Erie International Airport. (2016). *Airport Staff*. Retrieved 1 May 2016, from [http://www.erieairport.org/airport\\_staff.html](http://www.erieairport.org/airport_staff.html)

<sup>8</sup> Pennsylvania State Ethics Commission. (1978). *Ethics Standards and Financial Disclosure*. Retrieved 15 June 2016, from <http://www.ethics.pa.gov/Ethics-Act/Ethics-Act/Pages/default.aspx>

<sup>9</sup> Pennsylvania State Ethics Commission. (1993). *The Ethics Regulations*. Retrieved 15 June 2016, from <http://www.ethics.pa.gov/Ethics-Act/Ethics-Regulations/Pages/default.aspx>

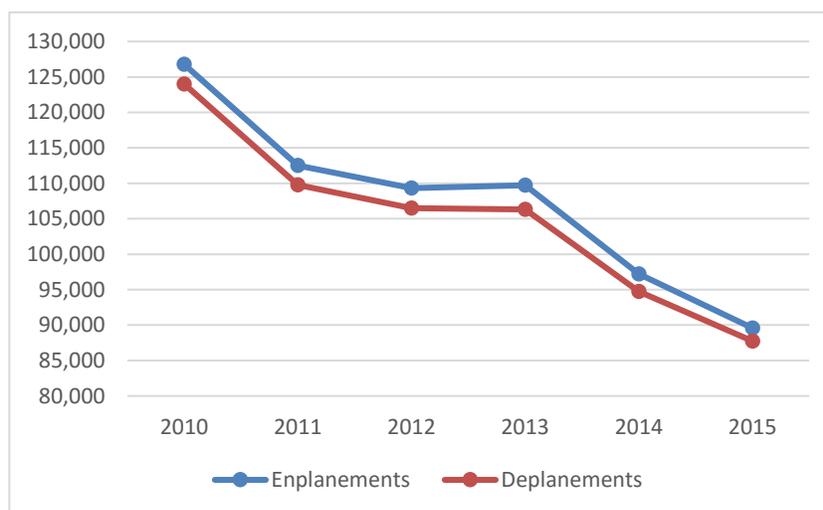
<sup>10</sup> C&S Companies. (2002). *Erie International Airport Master Plan - Final Report*. Retrieved 23 June 2016, from [http://www.erieairport.org/master\\_plan.html](http://www.erieairport.org/master_plan.html)

<sup>11</sup> Erie International Airport. (2016d). *Airlines*. Retrieved 19 April 2016, from <http://www.erieairport.org/airlines.html>

North Coast Air, the Airport’s fixed-base operator (FBO), offers charter flights as well as aeronautical services such as aircraft maintenance, hangar leasing, and ground support services (e.g., aircraft fueling and de-icing). North Coast Air also provides flight instruction at the Airport.

In 2015, the Airport saw 89,587 enplanements (i.e., passenger boardings) and 87,744 deplanements.<sup>12</sup> This represents decreases from 2014 of 7.9 percent and 7.4 percent in enplanements and deplanements, respectively. Overall, the Airport has been experiencing a downward trend of passenger activity since 2010 (**Figure C-2**), which is due, in part, to a declining local population.<sup>13</sup>

Figure C-2: Passenger Activity (2010 - 2015)



Source: ERAA

In 2015, 21,287 aircraft operations took place at the Airport, which represents an increase of 10.6 percent from 2014.<sup>14</sup> Among the Airport’s 2015 aircraft operations, general aviation comprised the largest percentage (36.6 percent) followed by local operations (e.g., flight school, touch-and-go) at 30.1 percent, major commercial carriers and cargo operations at 28.5 percent, and military operations at 4.2 percent. Charter operations comprised less than 1 percent of total aircraft operations at the Airport in 2015.<sup>15</sup>

<sup>12</sup> Erie International Airport. (2016c). *Airport Traffic Statistics Report - 2015*. Retrieved 23 June 2016, from <http://www.erieairport.org/statistics.html>

<sup>13</sup> Weiss, G. (2016). *Erie’s Population Falls Below 100,000 Again*. *GoErie.com – Erie, PA*. Retrieved 23 June 2016, from <http://www.goerie.com/article/20160519/NEWS02/305199943/eries-population-falls-below-100000-again>

<sup>14</sup> Erie International Airport. (2016c). *Airport Traffic Statistics Report - 2015*. Retrieved 23 June 2016, from <http://www.erieairport.org/statistics.html>

<sup>15</sup> *Ibid.*

## Facilities

The Airport has airside and landside facilities. The Airport’s airside facilities primarily include two runways (6-24 and 2-20), a taxiway system, and navigation aids. The Airport extended Runway 6-24, its primary runway, by 1,900 feet in 2012. Aircraft use Runway 6-24 approximately 70 percent of the time.<sup>16</sup> The Airport’s landside facilities largely consist of a passenger terminal that has one concourse and seven gates, support buildings and storage hangars, and a terminal apron and general aviation aircraft parking apron.<sup>17</sup>

To encourage the sustainable design of the above and future facilities, the Airport could adopt sustainable design guidelines or specifications to manage major renovations and new construction. It could also develop guidelines to encourage the sustainable operation and maintenance of these facilities (e.g., green cleaning).

## Tenant Information

Several tenants have entered into operating agreements with ERAA to conduct business at the Airport. These tenants largely include:

- Airlines (American Airlines, Delta Air Lines, and United Airlines) and their partners,
- Car rental companies (Enterprise/National/Alamo, Avis/Budget, and Hertz),
- An FBO (North Coast Air),
- Concessionaires (ERI Café and Gift Shop),
- Government agencies (FAA, Transportation Security Administration, and U.S. Customs and Border Protection),
- A parking operator (Republic Parking), and
- Aviation support services (Erie Aviation).

The Airport’s tenants may have implemented, are in the process of implementing, or are planning to implement sustainable practices; however, the Airport does not currently track this information.

The Airport should work closely with its tenants to plan, implement, and support sustainable practices. This may include procedural support, as well as financial and non-financial incentives. Examples of non-financial incentives include the recognition of achievement and friendly competition.

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<sup>16</sup> Erie International Airport. (2016c). *Airport Traffic Statistics Report - 2015*. Retrieved 23 June 2016, from <http://www.erieairport.org/statistics.html>

<sup>17</sup> C&S Companies. (2002). *Erie International Airport Master Plan - Final Report*. Retrieved 23 June 2016, from [http://www.erieairport.org/master\\_plan.html](http://www.erieairport.org/master_plan.html)

## Airport Planning and Financials

The Airport published its most recent master plan in 2000, which provided a 20-year development program for the Airport along with a financial plan to support associated capital improvement decisions through 2020.<sup>18</sup> The *2000 Master Plan* is not a sustainable master plan, as sustainability did not become an emerging trend in airport master planning until the initiation of the FAA Pilot Sustainability Planning Program in 2009.<sup>19</sup>

In 2002, the Airport completed a *Drainage Master Plan* to support the then proposed 1,900-foot extension of Runway 6-24.<sup>20</sup> The Airport completed an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) for this extension in October 2005,<sup>21</sup> and FAA issued its Finding of No Significant Impact (FONSI)/Record of Decision (ROD) in December 2005.<sup>22</sup> FAA issued a supplemental FONSI/ROD after a reevaluation of the 2005 EA in 2009.<sup>23</sup> The Airport began construction of this project in 2010, and completed it in 2012.

The Airport's Capital Improvement Plan (CIP) for fiscal year (FY) 2015 through FY 2020 includes nearly \$22 million for capital projects across the Airport.<sup>24</sup> The Airport anticipates that funding for these projects will come from federal, state, and local sources, with the majority coming from federal entitlement and discretionary funds. Projects that comprise the Airport's CIP include the maintenance or replacement of equipment (e.g., snow removal, security, ARFF), the design and construction of a new Airport Maintenance/ARFF facility, the realignment and/or rehabilitation of runways and taxiways, and the installation of a wildlife deterrent fence.

The Airport conducts an annual internal review to prioritize capital projects, and discusses priority projects with its Airports District Office (ADO) in Harrisburg, Pennsylvania at yearly Airports Capital Improvement Plan (ACIP) meetings. The Airport uses safety and compliance with federal regulations as its primary prioritization criteria. The ADO approves projects according to the National Priority Rating and funding availability.

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<sup>18</sup> C&S Companies. (2002). *Erie International Airport Master Plan - Final Report*. Retrieved 23 June 2016, from [http://www.erieairport.org/master\\_plan.html](http://www.erieairport.org/master_plan.html)

<sup>19</sup> FAA. (2010). *Airport Sustainable Master Plan Pilot Program*. Retrieved 1 June 2016, from [https://www.faa.gov/airports/environmental/sustainability/media/interim\\_guidance\\_sustainable\\_master\\_plan\\_pilot.pdf](https://www.faa.gov/airports/environmental/sustainability/media/interim_guidance_sustainable_master_plan_pilot.pdf)

<sup>20</sup> Erie International Airport. (2002). *Final Report, Airport Drainage Master Plan*. Retrieved 1 June 2016, from <http://www.erieairport.org/assets/pdfs/DrainageMPFinal.pdf>

<sup>21</sup> Erie International Airport. (2005). *Environmental Assessment for the Proposed Extension of Runway 6-24*. Retrieved 20 June 2016, from [http://www.erieairport.org/assets/pdfs/new\\_pdfs/Errata.pdf](http://www.erieairport.org/assets/pdfs/new_pdfs/Errata.pdf)

<sup>22</sup> FAA. (2006). *Notice of Availability of Finding of No Significant Impact/Record of Decision (FONSI/ROD) and Department of Transportation Act Section 4(f) Determination for the Final Environmental Assessment, Erie International Airport, Erie, PA*. Retrieved 20 June 2016, from <https://www.federalregister.gov/articles/2006/01/03/05-24700/notice-of-availability-of-finding-of-no-significant-impactrecord-of-decision-fonsirod-and-department>

<sup>23</sup> FAA. (2009). *Reevaluation of the Environmental Assessment Dated October 2005 with Respect to New Information Concerning Section 4(f) Mitigation Measures for Runway 6-24 Extension Project at Erie International Airport, Erie, Pennsylvania*. Retrieved 20 June 2016, from <http://www.erieairport.org/assets/pdfs/Supplemental%20FONSI%20ROD-Golf%20Course.pdf>

<sup>24</sup> Erie Regional Airport Authority. (2014). *Airport Capital Improvement Plan*. Retrieved 20 June 2016, from <http://www.erieairport.org/assets/pdfs/Airport%20Capital%20Improvement%20Plan.pdf>

ERAA commissions an *Auditor's Report and Financial Statements* that details the Airport's financial performance on an annual basis. During FY 2014, the Airport's net assets amounted to \$93,563,904, an increase of \$2,043,192 (2.2 percent) from the year prior. Its operating revenues decreased from \$4,204,863 in 2013 to \$4,145,989 in 2014, a difference of \$58,874. Among its 2014 operating revenue, non-aeronautical revenue accounted for 3.4 percent.<sup>25</sup>

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<sup>25</sup> Erie Regional Airport Authority. (2014). *Auditor's Report and Financial Statements*.

### 3. ENERGY AND GHG EMISSIONS

#### OVERVIEW

The Airport is a significant consumer of energy, particularly electricity and natural gas. Penelec, a First Energy Corporation, provides electricity service to the Airport, while National Fuel provides natural gas service.

The Airport's primary sources of energy consumption are associated with heating, ventilation, and air conditioning (HVAC) and lighting systems at its facilities, including the passenger terminal, U.S. Customs and Border Protection building, airfield maintenance and fire station building, and electrical vault (providing electrical infrastructure for airfield lighting). As portions of these facilities date to the 1950s, energy efficiency and conservation initiatives would be particularly effective. Such initiatives may offer significant economic and environmental benefits, including the reduction of GHG emissions, improved local air quality, and lower utility costs. The

The use of renewable energy at the Airport would reduce its dependence on fossil fuels and yield other benefits such as lower long-term operating costs and a visible demonstration of the Airport's commitment to sustainability (in cases such as on-site solar photovoltaics).

Airport's water consumption is also a significant contributor to the Airport's energy consumption.

Directly related to the consumption of energy is the emission of GHGs. Airport-controlled GHGs primarily derive from the combustion of fossil fuels at

stationary sources such as boilers and back-up generators as well as mobile sources such as ground access vehicles and ground support equipment. GHGs, particularly carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases such as hydrofluorocarbons (HFC) and perfluorocarbons (PFC), trap heat in the earth's atmosphere, which contributes to the general warming of the earth's climate. Such a systemic change can have serious repercussions at a global scale, including increased competition for scarce resources and greater incidence and magnitude of extreme weather events.<sup>26</sup>

At the organizational level, measuring and managing GHG emissions can have benefits beyond mitigating global concerns. By addressing its GHG emissions, an organization can:

- Save time and money through the efficient use of resources,
- Prepare for potential government regulations,
- Develop the information and data necessary to discuss and respond to a growing customer concern, and
- Protect and build its brand and reputation.

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<sup>26</sup> U.S. Environmental Protection Agency. (2016). *Causes of Climate Change*. Retrieved 6 June 2016, from <https://www3.epa.gov/climatechange/science/causes.html#greenhouseeffect>

Airports do not control the largest source of GHG emissions at their facilities - aircraft operations. **Section 3.5** of this technical appendix provides more information on this source of GHG emissions at the Airport.

## REGULATORY CONTEXT

The following presents a discussion of regulations applicable to energy and GHG emissions at the federal, state, and local levels.

### Federal Regulations

Currently, federal regulations do not restrict the amount or manner by which the Airport consumes energy, nor do they require the Airport to reduce its GHG emissions. The U.S. Environmental Protection Agency (EPA), through the *Clean Air Act*, has the authority to regulate GHG emissions from all source types. EPA, however, has only established regulations for the largest sources of stationary emissions (greater than 25,000 tons of CO<sub>2</sub>e per year) such as power plants.<sup>27</sup>

EPA released the final *Clean Power Plan* (CPP) in August 2015, which sets CO<sub>2</sub> standards for power plants, as well as establishes state-specific goals to reduce carbon dioxide.<sup>28</sup> Each state is required to develop a state-specific compliance plan to meet the individual state targets or be subject to the Federal Plan,<sup>29</sup> and Pennsylvania intends to draft a state plan to comply with the CPP.<sup>30</sup> Associated with the CPP, EPA initiated the Clean Energy Incentive Program (CEIP) that incentivizes wind and solar energy generation measures, as well as demand-side energy efficiency measures.<sup>31</sup> The CPP and CEIP are reasons, in part, why Erie County is currently reviewing options for solar farm development; the Airport has been asked to participate in related conversations.<sup>32</sup>

Although there are no federal regulations that directly control the Airport's generation of GHG emissions, FAA issued guidance that requires consideration of climate change during project reviews conducted under NEPA. FAA Order 1050.1F – *Environmental Impacts: Policies and*

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<sup>27</sup> U.S. Environmental Protection Agency. (2009). *40 CFR Parts 86, 87, 89 et al. Mandatory Reporting of Greenhouse Gases; Final Rule*. Retrieved 23 June 2016, from <https://www.epa.gov/sites/production/files/2015-06/documents/ghg-mrr-finalpreamble.pdf>

<sup>28</sup> Pennsylvania Department of Environmental Protection. (2016). *Climate Change*. Retrieved 23 June 2016, from <http://www.dep.pa.gov/Business/Air/BAQ/ClimateChange/Pages/default.aspx>

<sup>29</sup> U.S. Environment Protection Agency. (2015). *Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units*. Retrieved 23 June 2016, from <https://www.gpo.gov/fdsys/pkg/FR-2015-10-23/pdf/2015-22848.pdf>

<sup>30</sup> *Ibid.*, 28.

<sup>31</sup> U.S. Environmental Protection Agency. (2016). *Clean Energy Incentive Program*. Retrieved 23 June 2016, from <https://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-ceip.pdf>

<sup>32</sup> Rogers, C. (2016). *Renewables for Erie County*.

*Procedures*, citing the contribution of the aviation industry to global GHG emissions,<sup>33</sup> requires a review of a project's potential effect on climate change.<sup>34</sup>

### State and Local Regulations

Act 213 of 2004 established the Pennsylvania Alternative Energy Portfolio Standard Program, which requires electric utilities (generators and distribution companies) to source 18 percent of the energy they sell to retail customers from alternative energy resources.<sup>35</sup> This act does not directly affect Airport operations; however, the Airport can support it through the installation of its own renewable energy generation facility, the execution of renewable power-purchase agreements, and/or the purchase of renewable energy credits.

There are no regulations at the state or local level that limit the generation of GHG emissions at the Airport. Pennsylvania introduced the Pennsylvania Climate Change Act (Act 70 of 2008), which requires the Department of Environmental Protection (DEP) to prepare a Climate Change Action Plan and to provide an update to that plan every three years. The DEP published the latest update to the *Pennsylvania Climate Change Action Plan* in December 2013; however, this document does not include a measurable goal to reduce GHG emissions.<sup>36</sup>

### METHODOLOGY AND ASSESSMENT

The information on the Airport's energy consumption and conservation activities that this section presents derive from facility walkthroughs, conversations with Airport personnel, and monthly utility data. **Appendix D - Energy Baseline Assessment** provides additional details on this methodology, as well as the Airport's energy consuming facilities with a focus on their electrical and mechanical systems.

Information on the Airport's GHG emissions derives from a GHG Inventory that the Airport commissioned in association with the Master Plan Update. The GHG Inventory presents the Airport's scope 1 (direct) emissions and scope 2 (indirect) emissions at the facilities where the Airport has the ability to implement actions to reduce GHG emissions, and where data were readily available. It also calculates the Airport's scope 3 emissions relative to one scope 3 category: employee commuting. Scope 3 emissions are those that the Airport has no control over, but may have the ability to influence.

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<sup>33</sup> Council on Environmental Quality. (2014). *Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews*, 79 Fed. Reg. 77802. Retrieved 23 June 2016, from [https://ceq.doe.gov/current\\_developments/docs/nepa\\_revised\\_draft\\_ghg\\_guidance\\_searchable.pdf](https://ceq.doe.gov/current_developments/docs/nepa_revised_draft_ghg_guidance_searchable.pdf)

<sup>34</sup> FAA. (2015). *1050.1F Desk Reference*. Retrieved 23 June 2016, from

[http://www.faa.gov/about/office\\_org/headquarters\\_offices/apl/enviro\\_policy\\_guidance/policy/faa\\_nepa\\_order/desk\\_ref/j/desk-ref.pdf](http://www.faa.gov/about/office_org/headquarters_offices/apl/enviro_policy_guidance/policy/faa_nepa_order/desk_ref/j/desk-ref.pdf)

<sup>35</sup> Pennsylvania Department of Environmental Protection. (2013). *Pennsylvania Climate Change Action Plan Update*. Retrieved 23 June 2016, from [http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/Final\\_Climate\\_Change\\_Action\\_Plan\\_Update.pdf](http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/Final_Climate_Change_Action_Plan_Update.pdf)

<sup>36</sup> Pennsylvania Department of Environmental Protection. (2013). *Pennsylvania Climate Change Action Plan Update*. Retrieved 23 June 2016, from [http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/Final\\_Climate\\_Change\\_Action\\_Plan\\_Update.pdf](http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/Final_Climate_Change_Action_Plan_Update.pdf)

The Airport’s scope 1 emissions include the direct combustion of fossil fuel in stationary sources (e.g., natural gas-powered building heating systems) and mobile sources (e.g., fleet vehicles and equipment, emergency back-up generators) as well as emissions associated with chemical processes (e.g., glycol use on pavement surfaces) and fugitive releases (e.g., refrigerant releases, fire training exercises). Though the Airport has four diesel-powered emergency back-up generators, it did not use this equipment in 2015; therefore, there are no associated emissions to report for this year. With regard to glycol use on pavement surfaces and refrigerant releases, the Airport does not have sufficient data available to calculate associated emissions. The Airport’s scope 2 emissions include purchased electricity.

The GHG Inventory utilizes emission factors from the Climate Registry and EPA. To calculate GHG emissions from purchased electricity, the GHG Inventory referred to region-specific emission factors from EPA’s eGrid database. According to eGrid, the Airport is within the ReliabilityFirst Corporation (RFC) East eGrid subregion (RFCE), an area where the electricity derives from nuclear (40.9 percent), natural gas (30.8 percent), coal (23.9 percent), renewables (3.4 percent), and oil (< 1 percent) sources.<sup>37</sup>

The emissions inventory is consistent with the reporting requirements of *The Greenhouse Gas Protocol*,<sup>38</sup> and refers to *The Greenhouse Gas Protocol for the U.S. Public Sector*<sup>39</sup> and Airport Cooperative Research Program’s *Report 11, Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*<sup>40</sup> for supplementary guidance.

For more information on the methodology of the GHG inventory, see **Appendix F - GHG Inventory**.

**MANAGEMENT PRACTICES AND PERFORMANCE - ENERGY**

This section examines energy use by facility, including the existing passenger terminal, U.S. Customs and Border Protection building, airfield maintenance and fire station building, and electrical vault. The Consultant Team, guided by Airport staff, performed a walkthrough of the sand/salt building; however, this is an unheated shell space (concrete foundation walls, membrane-covered rigid-steel-frame structure) with minimal electrical loads, and consequently, the Consultant Team did not identify energy conservation recommendations for this facility.

For additional details on the Airport’s energy consumption and conservation efforts, see **Appendix D**.

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<sup>37</sup> U.S. Environmental Protection Agency. (2015b). *Power Profiler*. Retrieved 19 April 2016, from [https://oaspub.epa.gov/powpro/ept\\_pack.charts](https://oaspub.epa.gov/powpro/ept_pack.charts)

<sup>38</sup> World Business Council for Sustainable Development and World Resources Institute. (2004). *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard - Revised Edition*. Retrieved 23 June 2016, from <http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf>

<sup>39</sup> World Business Council for Sustainable Development and World Resources Institute. (2010). *The Greenhouse Gas Protocol for the U.S. Public Sector*. Retrieved 23 June 2016, from [http://www.wri.org/sites/default/files/pdf/ghg\\_protocol\\_for\\_the\\_us\\_public\\_sector.pdf](http://www.wri.org/sites/default/files/pdf/ghg_protocol_for_the_us_public_sector.pdf)

<sup>40</sup> Airport Cooperative Research Program. (2009). *Report 11, Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*. Retrieved 23 June 2016, from [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_011.pdf](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_011.pdf)

### Passenger Terminal

The passenger terminal building dates to circa 1956. Since its construction, this building has received several additions and undergone numerous renovation projects. It is a steel frame, concrete block and face brick construction building with primarily double pane windows and skylights and a flat ethylene propylene diene terpolymer (EPDM), gravel ballast roof.

#### *Electrical Systems*

The Airport upgraded much of the lighting within this building from T12 linear fluorescent lamps to more energy efficient T8 and T5 lamps, and from incandescent lamps to compact fluorescents. However, some areas such as the front and back-of-the-house spaces (e.g., kitchen, baggage handling, airline supply spaces, offices, stairwells) still have incandescent and T12 lamps. All lighting in the terminal is controlled through manual switches, with exception to the two restrooms in the secure side of the terminal, which are controlled with motion sensors with timers.

Exterior lighting is a mix of pole metal halide downlights, building mounted metal halide, and pole mounted metal halide and high-pressure sodium. There are no exterior light-emitting diode (LED) light fixtures.

#### *Mechanical Systems*

A combination of low-pressure steam boiler (Weil-McLain Model 88) and one hot water boiler (Weil-McLain Model Ultra 310) provide heat to the passenger terminal building. Both boilers are in the basement of the terminal, and use natural gas as the primary energy source. A third, older boiler (Weil-McLain Model LGB-9) has been abandoned in place. The Airport is planning to replace the low-pressure steam boiler with a more efficient alternative as part of the Terminal Boiler Replacement Project, which the Airport put out to bid in November 2016.

The energy management system consists of a combination of electric controls (within FAA's terminal offices) and pneumatic controls. The air compressor for the pneumatic controls and the electric controls terminal are located in the basement mechanical room. There is a wide assortment of thermostats throughout the facility characteristic of the era that they were installed, ranging from programmable thermostats to temperature sensors and traditional mercury type thermostats.

If the Airport were to implement a regular maintenance schedule, including the training of maintenance personnel, it could achieve greater efficiencies and extended life expectancies in existing and new mechanical system equipment.

A number of roof top units (RTUs) that provide heating and cooling serve the main floor of the terminal building. In select areas, unit heaters, cabinet unit heaters, air curtains, low intensity gas fired infrared heaters, unit ventilators, and window air conditioning units supplement these units.

The RTUs serving the original 1956 portion of the building provide heat by means of steam coils. Several RTUs have been added as part of addition/renovation projects. Either hot water heating coils or natural gas furnaces provide heat from these units. All RTUs provide cooling via packed direct expansion cooling coils. Most of the RTUs have far exceeded their useful life expectancy. The Airport anticipates replacing these RTUs with newer, more efficient units on a schedule in 2017. Funding for this project, as well as the Terminal Boiler Replacement Project, derives in part from the state’s Multimodal Transportation Fund, which the state awarded to the Airport in November 2015.

There are several, natural gas fired, domestic water heaters spread out throughout the terminal building to serve the facility’s domestic hot water needs.

There are several air curtains at the passenger departure/arrival gates intended to reduce energy loss through the open doors during these times that passengers are boarding or exiting the aircrafts. All of the air curtains either are out of order or have been disabled for various reasons.

Interviews with facility staff revealed that due to maintenance issues, a number of steam traps get stuck in either the open or the closed position. This results in either condensate backing up when the trap is stuck closed, which inhibits the transfer of latent heat, or steam blowing through the trap when it is stuck open, leading to heating issues and waste of energy. A stuck or failed open steam trap can also cause issues with the remainder of the steam traps in the system, as it may pressurize the condensate return line, which would prevent condensate from the other traps from draining properly. Facility staff also indicated that the Airport does not implement regular maintenance for its building systems.

**U.S. Customs and Border Protection**

The U.S. Customs and Border Protection building is an approximately 2,200 square foot masonry/face brick construction building, with double pane windows and a flat EPDM roof. The Airport constructed this facility in 1991.

*Electrical Systems*

Most of the light fixtures in the U.S. Customs and Border Protection building are T12, recessed light fixtures (2x4 and 2x2), T12 surface wraparound (bathrooms), with a few metal halide recessed downlights. Light fixtures are all manual control with single pole light switches.

*Mechanical Systems*

The building is conditioned by a pair of gas fired RTUs and miscellaneous electric terminal units, and window air conditioning units. Programmable wall mounted thermostats control the RTUs, which are past their useful life expectancy.

A Bradford White Model MI40T6FBN, 40-gallon, 40,000 British thermal units per hour natural gas fired water heater generates domestic hot water. There are manual flush valves for toilets and urinals. The lavatory faucets are in fair shape and do not appear to be the low flow type.

The facility walkthrough of this building observed some disintegrated caulking at the west and south exposure, as well as signs of some water leakage within the exterior block walls, possibly from water pooling on the roof.

### Airfield Maintenance and Fire Station

The airfield maintenance and fire station building is a 16,500-square foot steel structure with a concrete block and brick facade and a flat built-up roof construction. The Airport constructed the original portion at the same time as the passenger terminal building (1956); it has since seen two additions. A three-vehicle bay addition was constructed in 1988 on the south end of the building to accommodate the Airport’s ARFF vehicles, and two vehicle bays were constructed on the north end of the building to house maintenance equipment.

### Electrical Systems

The airfield maintenance and fire station building has T8 recessed troffers in the office area, T12 linear lamps in the truck and maintenance bays, and 400-watt metal halide light fixtures in the former salt storage area, which is now used as a two-bay truck area. The exterior of the building has 250-watt and 400-watt high-pressure sodium fixtures. Manual switches control all interior lighting, while photocell (i.e., ambient light levels) controls exterior lighting.

### Mechanical Systems

The airfield maintenance and fire station building is primarily served by multiple low-intensity, gas-fired infrared heaters, which are typical for this type of building. A gas-fired RTU serves the office area and employee spaces. Programmable wall mounted thermostats control the infrared heaters and RTU.

Multiple exhaust fans controlled by wall-mounted switches also serve the vehicle storage bays; they exhaust heat in the warm summer months. A 40-gallon, 40,000 British thermal units per hour natural gas fired water heater (Whirlpool Model M40T91-403) provides the domestic hot water for the facility.

The Airport could reduce the energy consumption associated with the use of its facilities by replacing all incandescent, T12, and T8 lamps with more efficient alternatives such as LEDs and T5 lamps.

### Electrical Vault

The electrical vault houses all of the constant current regulators for the airfield lighting. The Airport upgraded airfield lighting in certain areas, while original lighting is present in other areas. Runway 6-24 has all new incandescent lighting, new cable, new conduit, and new transformers and cans. Runway 2-20 is all original equipment. Taxiway A edge lighting are LED for the extended part of the taxiway, completed in 2012 and 2013. The

balance of Taxiway A's lighting is original (transformers, cans, cable, conduit). Taxiway C lighting between Taxiway A and Runway 2-20 is new LED and transformer utilizing original cable and cans. Taxiway D lighting between Runway 6-24 and Runway 2-20 is new LED and transformer utilizing original cable and cans. The Airport is currently changing out signage on the airside to LED with exception to 23 signs. The light fixtures in the vault building utilize T8 lamps.

### Airport-wide Energy Consumption

According to EPA's ENERGY STAR Portfolio Manager, an online energy-tracking tool, the Airport's energy consumption per square foot is more than five-times that of other facilities of similar size and function.<sup>41</sup> The site Energy Use Intensity (EUI) of the Airport is 256.4 thousand British thermal units per square foot (kBtu/ft<sup>2</sup>), while comparable buildings have a site EUI of 44.7 kBtu/ft<sup>2</sup>. Taking into consideration raw fuel consumption, including energy losses from activities such as production, transmission, delivery/transport, and storage, the Airport's source EUI is 488.5 kBtu/ft<sup>2</sup>; comparable buildings have a source EUI of 85.1 kBtu/ft<sup>2</sup>. These differentials are due in part to the age of the Airport's facilities and the inefficiency of their electrical and mechanical systems. Higher energy consumption at the Airport is also attributable to the terminal's unique energy loads (e.g., baggage handling systems).

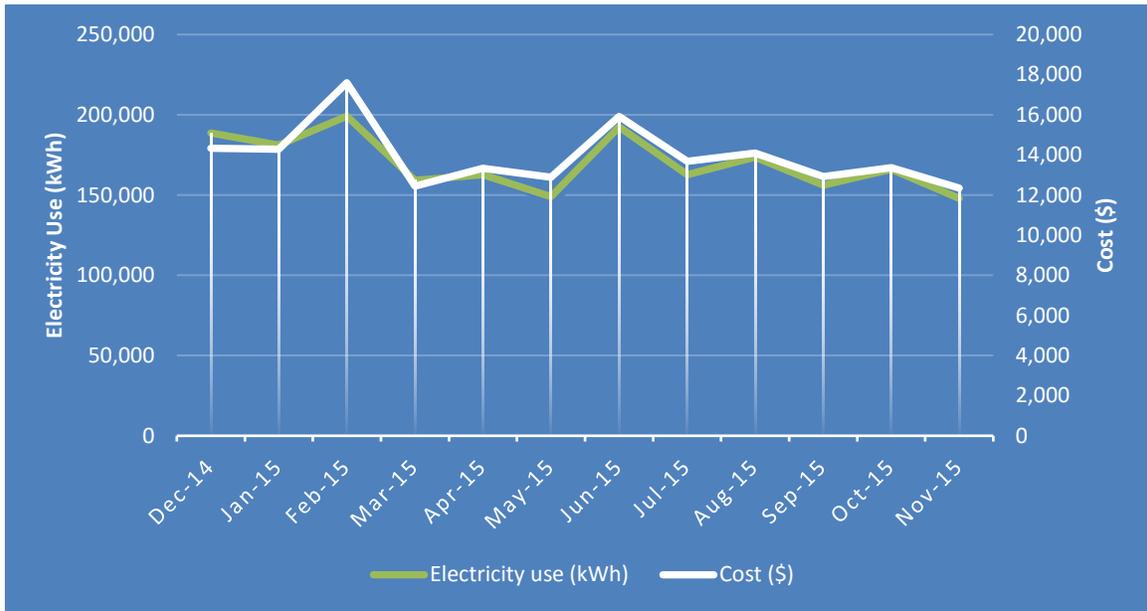
An integrated building automation system would allow the Airport to realize the full potential of a properly implemented control system.

**Figure C-3** presents the Airport's monthly electricity consumption between December 2014 and November 2015. During this time, the Airport site consumed 2,039.4 megawatt-hours (MWh) of electricity with a total cost of \$167,184. This includes the Airport's car rental facilities and other leased spaces, but does not include the nearby International Trade Center (ITC), portions of which the Airport uses for administrative offices and warehousing. The International Trade

Center also houses a number of commercial leases with companies such as Erie Indemnity (Erie Insurance Exchange) and Precision Polymers. In 2015, the ITC consumed an average of 17.8 MWh of electricity per month.

<sup>41</sup> ENERGY STAR's Portfolio Manager defines property types for comparison purposes. This assessment identified the Airport as a Transportation Terminal/Station, a property type that also includes train stations, bus stations, and seaports.

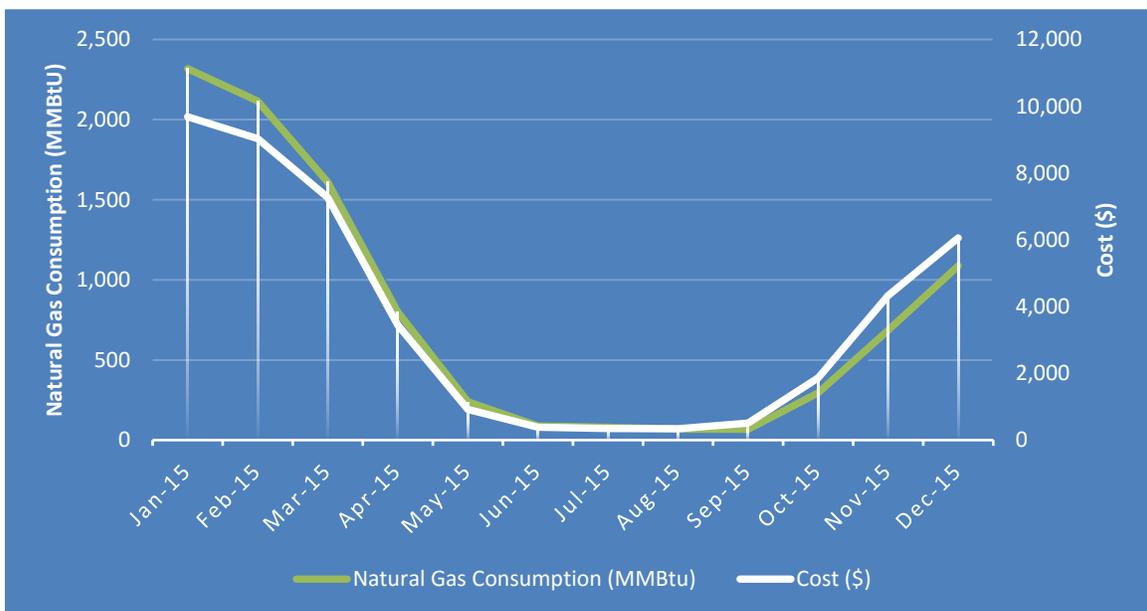
Figure C-3: Monthly Electricity Consumption and Cost



Source: ERAA, Penelec/FirstEnergy Corp.

Figure C-4 presents the Airport’s monthly natural gas consumption in 2015. During this time, the Airport consumed 9,450 million British thermal units (MMBtu) of natural gas with a total cost of \$44,187. This figure includes the ITC, but does not include the car rental building, as the car rental companies at the Airport pay for their individual usage.

Figure C-4: Monthly Natural Gas Consumption and Cost



Source: ERAA, National Fuel Resources, Inc.

MANAGEMENT PRACTICES AND PERFORMANCE - GREENHOUSE GAS EMISSIONS

**Table C-1** provides the Airport’s GHG emissions by scope and category. Considering only the categories of emissions that the GHG Inventory (see **Appendix F**) provides calculations for, purchased electricity is the Airport’s largest emission contributor at 58.1 percent. As **Appendix D** presents, the Airport has many opportunities to improve the energy efficiency of its facilities and operations; therefore, this area presents the greatest leverage for the Airport to reduce its GHG emissions. The combustion of natural gas in the Airport’s building heating systems (28.7 percent) and the combustion of fossil fuels in its fleet (10.6 percent) are also significant contributors. The Airport’s smallest emission contributor is fire training at less than 1 percent.

**Table C-1: Scope 1, 2, and 3 Emissions by Category**

Scope/Category	Total (Metric tons CO <sub>2e</sub> )	Percent of total (CO <sub>2e</sub> )
<b>Scope 1</b>	<b>696.5</b>	<b>39.8</b>
Natural Gas	501.9	28.7
Fleet Vehicles and Equipment	184.9	10.6
Fire Training	9.7	0.6
<b>Scope 2</b>	<b>1,015.6</b>	<b>58.1</b>
Purchased Electricity	1,015.6	58.1
<b>Scope 3</b>	<b>37.2</b>	<b>2.1</b>
Employee Commuting*	37.2	2.1
<b>Total</b>	<b>1,749.3</b>	<b>100.0</b>

\* *Employee commuting is outside of the Airport’s direct control*

The GHG inventory does not include calculations for the breadth of the Airport’s scope 3 emissions. Similar to many other organizations, these indirect emissions likely represent the Airport’s largest source of emissions,<sup>42</sup> and among these emissions, aircraft operations likely represent the majority. Aircraft account for roughly 11 percent of the GHG emissions attributable to the U.S. transportation sector and 3 percent of total U.S. GHG emissions.<sup>43</sup>

In 2010, to reduce GHG emissions from aircraft at its facility, the Airport installed pre-conditioned air (PCA) units at three passenger-boarding bridges (Gates 1, 5, and 7). Funding for this project derived, in part, from the Pennsylvania DEP’s Alternate Fuels Incentive Grant Program. The Airport also received funding through FAA’s Voluntary Airport Low Emissions Program (VALE).

<sup>42</sup> World Resources Institute. (2011). *Corporate Value Chain (Scope 3) Accounting and Reporting Standard: Supplement to the GHG Protocol Corporate Accounting and Reporting Standard*. Retrieved 23 June 2016, from [http://www.ghgprotocol.org/files/ghgp/public/Corporate-Value-Chain-Accounting-Reporting-Standard\\_041613.pdf](http://www.ghgprotocol.org/files/ghgp/public/Corporate-Value-Chain-Accounting-Reporting-Standard_041613.pdf)

<sup>43</sup> U.S. Environmental Protection Agency. (2015c). *EPA Takes First Steps to Address GHG Emissions from Aircraft Engines*. Retrieved 23 June 2016, from <https://www3.epa.gov/otaq/documents/aviation/420f15023.pdf>

PCA reduces the need for aircraft to use auxiliary power units that power on-board air conditioning and heating. This replacement reduces GHG emissions, as well as criteria air pollutants, as PCA relies on electricity, which has a lower emissions factor than the jet fuel that powers auxiliary power units.

While PCA decreases the Airport’s scope 3 emissions associated with aircraft activity, it increases the Airport’s scope 2 emissions, as PCA demands electricity that the Airport would otherwise not consume. It does, however, have overall GHG emissions reduction and air quality benefits.

### Climate Adaptation

In addition to climate mitigation (i.e., managing/reducing the generation of GHG emissions), airports around the world are focusing on climate adaptation. They are recognizing the potential effects that climate change may have on their operations, and the risks associated with not preparing for them. Damage to capital assets, service disruptions, and increased business costs are just some of the potential effects that climate change can have on airports. Accordingly, many airports are undertaking vulnerability assessments (i.e., understanding the sensitivity, adaptive capacity, and vulnerability of critical assets) and preparing climate adaptation plans to improve their resilience in the long-term.

A climate vulnerability assessment and climate adaptation plan would lay the foundation for increased resiliency at the Airport, and limit the effects of climate change.

### DATA MANAGEMENT AND GAPS

The following data gaps are specific to the Airport’s energy consumption and generation of GHG emissions. If the Airport were to collect this information, it would provide for greater accuracy in determining baseline conditions. This additional information could also present new opportunities for energy conservation and the reduction of GHG emissions.

- Approximate amounts of glycol the Airport uses to de-ice pavement surfaces,
- Refrigerant releases (i.e., in air conditioning equipment, refrigeration, and vehicles), and
- Additional airport-managed fleet data (i.e., control technology, model year, annual mileage, and fuel consumption by vehicle).

## 4. WASTE MANAGEMENT

### OVERVIEW

Airports generate varying types and amounts of waste that primarily include municipal solid waste (MSW) such as construction and demolition debris, compostable waste, and deplaned waste (i.e., removed from passenger aircraft), as well as hazardous waste, universal waste (i.e., batteries, fluorescent bulbs, electronics), and industrial waste. Accordingly, waste management is an important aspect of airport operations, not only because of its direct effects on landfill capacity and other environmental resources, but also because of the associated costs of collection and removal. The scope of a waste management program at an airport can and should be specific to the airport’s specific circumstances such as its size and location, as well as other factors such as facility layout and logistics and the availability of local recycling infrastructure.

### REGULATORY CONTEXT

FAA requires that airports that have or are planning to have a master plan, and which are in receipt of Airport Improvement Program (AIP) funding, address airport waste management and recycling. An FAA memorandum issued September 30, 2014 provides guidance on airport recycling, reuse, and waste reduction plans as an element of a master plan or a master plan update.<sup>44</sup> The memorandum also notes two changes to the AIP from the FAA Modernization and Reform Act of 2012, which amended Title 49, United States Code (U.S.C.):

- Section 132 (b) of the FAA Modernization and Reform Act of 2012 expanded the definition of airport planning to include “developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of waste audit.”
- Section 133 of the FAA Modernization and Reform Act of 2012 added a provision requiring airports that have or plan to prepare a master plan, and that receive AIP funding for an eligible project, to ensure that the new or updated master plan addresses issues relating to solid waste recycling at the airport.

Local regulations require the Airport to have trash and recycling services in place. Millcreek Township ordinance number 2006-11 enacted under Pennsylvania Law Act 101 of 1988 identifies the types of material that must be recycled: paper (office, newsprint, cardboard, magazines), plastic (numbers one and two), glass (clear, green, brown), and organic (leaf, yard waste).<sup>45</sup> As a commercial establishment, the Airport exercises its option to contract with an independent waste hauler.

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<sup>44</sup> Federal Aviation Administration. (2014) *Guidance on Airport Recycling, Reuse, and Waste Reductions Plans*.

<sup>45</sup> Millcreek Township. (2006). *Municipal Waste and Recycling (Ordinance 2006-11)*. Retrieved 1 June 2016, from [http://www.millcreektownship.com/Portals/0/pdf/ordinances/ord\\_06\\_11.pdf](http://www.millcreektownship.com/Portals/0/pdf/ordinances/ord_06_11.pdf)

The *Airport Rules and Regulations*<sup>46</sup> provide limited direction on the handling, storage, and disposal of waste. The Rules and Regulations provide that all waste and debris must be stored in approved containers, with oily waste, rags, and flammable materials stored only in metal receptacles fitted with airtight covers.

### METHODOLOGY AND ASSESSMENT

To support this assessment of the Airport’s waste management practices and performance, a waste management audit was conducted on December 18, 2016. This included the collection of available information on the Airport’ waste management program such as service contracts and costs, collection and storage practices, and the amount of waste generated and diverted from local landfills. Interviews with key Airport staff supported this audit.

**Appendix E - Waste Management & Recycling Baseline Assessment** provides further information on the waste management audit and its findings.

### MANAGEMENT PRACTICES AND PERFORMANCE

The following sections review the Airport’s contracts, waste generating sources, and waste generation and recycling statistics.

#### Airport Waste Contracts

The Airport’s current waste and recycling contracted hauler is Pro Waste Services Inc. (Pro Waste). Pro Waste handles the Airport’s general solid waste and recyclable materials. The company offers single-stream recycling commercial service for cardboard, paper, metals, plastics, and glass. Single-stream recycling allows for the combination of different types of recyclable materials in a single container. This convenience avoids the need for material sorting, a process that can increase user confusion and frustration.

The Airport utilizes Great Lakes Disposal and Recycling for the disposal of old paint material, and Airport staff transport scrap metal (e.g., old auto parts) approximately three times a year to Lincoln Recycling, a full-service recycling center that processes and purchases non-hazardous recyclable materials.

Environmental Products and Services of Vermont (EPS) provides hazardous material disposal services for the Airport. The Airport holds an as-needed contract with this specialty provider for the disposal of materials that recycling centers and landfills do not accept. Chapter 3-Environmental Overview of the Master Plan Update provides more information on hazardous materials at the Airport.

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<sup>46</sup> Erie Regional Airport Authority. (Revised 2008). *Rules and Regulations Governing Aeronautical, Vehicular, and Pedestrian Activities at Erie International Airport, Section 13.03.*

## Waste Sources and Management Structure

Erie International Airport consists of a combination of airport-controlled and leased facilities; the waste disposal practices for various facilities differ based on the Airport’s level of control and the leasing agreement. The following sections discuss waste-generating sources at the Airport, including:

- Terminal Public Areas and Terminal and Tenant Operations,
- Aircraft,
- Other Airport Businesses, and
- Airport Construction.

### *Terminal Public Areas and Terminal and Tenant Operations*

The Airport is responsible for the disposal of waste generated in the public areas of the terminal as well as areas associated with terminal and tenant operations, with the exception of grease waste from ERI Café. ERI Café is independently responsible for the disposal of spent frying oil stored in a grease container that is serviced on an as-needed basis.

In summer 2015, the Airport replaced its single trash containers that did not separate landfill waste from recyclables with combination bins. Until this point, the terminal building had no containers designated for recycling. Although the new combination bins separate landfill waste from recyclable materials, they do not have accompanying educational signage to assist users with the recycling process.

The Airport currently allocates approximately 15 hours per week for staff to collect waste and recyclable materials from these containers. These staff manually collect and sort the waste into assigned dumpsters. Cardboard is the primary recyclable material generated in these areas. The Airport treats food waste generated from ERI Café as general solid waste, and comingles it with other Airport waste that is disposed of under the Airport’s waste disposal contract with Pro Waste.

The Airport disposes hazardous materials and bulk waste on an as-needed basis based on total accumulation. It stores scrap metals and hazardous materials in the ITC until collection and disposal under the Airport’s hazardous waste contract with EPS.

### *Aircraft Waste*

The Airport comingles aircraft waste with the non-recyclable waste from the public areas of the terminal, as well as from terminal operations and tenants. This waste is disposed of as general solid waste under the Airport’s contract with Pro Waste. Aircraft operators (commercial and general aviation) are not required to sort or separate recyclable material.

In coordination with its commercial airlines and ERI Café, the Airport could collect unopened prepared food that would otherwise go to waste, and donate it to a local food bank. This would decrease the Airport’s generation of waste, as well as address a social need.

*Other Airport Businesses*

North Coast Air and Erie Aviation each hold individual waste removal and recycling contracts separately from that of the Airport. The waste hauling contractors for these businesses use dumpsters located within their respective leased facilities.

Independent facilities occupied by Federal Inspection Service, U.S. Customs and Border Protection, FAA, the National Weather Service, along with the rental car wash facility have waste and recycling included in their lease agreements. Airport staff is responsible for the collection and sorting of waste and recyclables from these facilities.

*Airport Construction*

In all construction contracts, the Airport designates the construction contractor as the responsible party for the collection and disposal of construction and demolition waste. The Airport does not currently specify disposal processes or targeted diversion rates, and does not require tracking or reporting on construction waste disposal.

**Airport-Controlled Waste Generation and Disposal**

The Airport does not currently require waste hauling contractors to report on the volume or weight of the waste or recycled materials they collect. The Airport’s waste disposal and recycling contract provides for two on-site dumpsters designated for general solid waste, two on-site dumpsters designated for recyclable materials, and one small solid waste dumpster at the International Trade Center. The cost of servicing these containers is \$8,900 per year. Airport staff report that these receptacles are typically 75 to 100 percent full prior to collection. The Airport’s hazardous waste contract with EPS typically requires one annual collection at a cost of approximately \$4,700, though this cost varies from year-to-year.

The Airport could reduce the amount of waste it generates by adopting an Environmentally Preferable Purchasing (EPP) policy, which could prescribe limits on the packaging associated with the Airport’s purchases, among other environmental benefits.

Error! Reference source not found. provides an overview of the current waste collection practices under the Airport’s Pro Waste contract, and estimates the waste and recycling volumes under current operating conditions.

Table C-2: ERI Baseline Annual Waste and Recycling Volume and Weight Estimates

Type	Container Capacity (Cubic Feet [CY])	Pick-Ups/Week	Weight/Volume	Annual Volume	Annual Weight	Percent of Total
Airport Solid Waste	(2) 6 CY Total: 12 CY	3	75 Pounds (LBS)/CY	1,591 CY	59.7 Tons	73%
Airport Recyclables	(2) 6 CY Total: 12 CY	2	35 LBS/CY	1,061 CY	18.6 Tons	23%
International Trade Center Solid Waste	(1) 2 CY	1	75 LBS/CY	88 CY	3.3 Tons	4%
Totals				2,740 CY	81.6 Tons	

Source: McFarland Johnson, Inc. Estimate; Pro Waste Inc.

Note: Containers estimated at 85 percent of capacity with industry standard of 70-80 pounds/cubic yard for waste and 30-40 pounds/cubic yard for recyclable materials

Based on this estimate of current waste management practices, recyclable materials represent approximately 23 percent of all waste handled under the Airport’s Pro Waste contract. This volume does not consider hazardous waste or waste not generated by the Airport.

The Airport could increase its recycling rate by training its staff, tenants, and vendors on its recycling practices. Further, it can promote recycling in public and employee spaces through the provision of clear signage, posters, and the distribution of educational material.

#### DATA MANAGEMENT AND GAPS

The Airport collects sufficient data to understand the facility’s general waste generation and recycling characteristics at a summary level; however, adopting additional data management practices may allow the Airport to improve the accuracy and detail of the waste management program and fill information gaps. With detailed information on actual waste tonnage, hazardous material type and tonnage, recycled material type and tonnage, and landfill or disposal site characteristics, the Airport would be able to develop a more comprehensive understanding of the waste program and evaluate the costs and impacts of new waste management programs.

National and international organizations and airports track basic waste management indicators as part of their sustainability programs. International sustainability reporting protocols such as the Global Reporting Initiative<sup>47</sup> consistently require participants to evaluate progress using such

<sup>47</sup> The Global Reporting Initiative (GRI) publishes the G4 Sustainability Reporting Guidelines for organizations seeking to report on their critical impacts to the environment, society, and the economy. [www.globalreporting.org](http://www.globalreporting.org)

indicators. These indicators can also be used to evaluate the strength of an organization’s waste management program and identify areas in which to improve. As the Airport begins to assess opportunities to expand the recycling program to develop recommendations, the following indicators should be considered:

- Total weight of waste by type and disposal method,
- Weight of transported, imported, exported, and treated hazardous waste, and
- Policies and practices to enhance waste reduction, material reuse, and recycling.

# 5. WATER CONSERVATION

## OVERVIEW

Airports consume potable water for many uses that include, but are not limited to, fixtures in terminal and office buildings (e.g., sinks and toilets), HVAC, landscaping, fire training and firefighting, and pavement cleaning. Airport tenants such as airlines, concessionaires, and car rental companies also require potable water supply for various uses (for example, aircraft de-icing, food preparation, and vehicle washing).

The City of Erie’s potable water source is Lake Erie, which the municipal water authority system, Erie Water Works, processes. The Town of Millcreek, where the Airport resides, receives its potable water from Erie Water Works. While the Airport has access to an abundant supply of potable water resources,<sup>48</sup> it consumes a large amount of water in a system that supports approximately 11 million people.<sup>49</sup> It also pays for the water it consumes, and there is a significant amount of energy associated with such consumption (see **Appendix D**). Accordingly, the Airport should strive to reduce its water consumption by adopting sensible water conservation strategies.

Chapter 3-Environmental Overview of the Master Plan Update presents information on local water resources, including wetlands, surface waters, wild and scenic rivers, floodplains, and groundwater. It also discusses water quality protection with a focus on pollution prevention.

## REGULATORY CONTEXT

There are no significant federal or state regulatory constraints specific to water conservation that are applicable to the Airport and its operations. For Erie Water Works customers, including the Airport, there are no water use restrictions of any kind in effect or anticipated.

## METHODOLOGY AND ASSESSMENT

In the development of this assessment of the Airport’s water conservation practices and performance, water consumption data was reviewed, as revealed through the Airport’s water utility invoices (Erie Water Works). The Airport receives quarterly water bills for the FAA System Support Center (SSC) and the ITC, and monthly water bills for the remaining three meters. To assess monthly trends, this assessment averaged data from the quarterly meters over the three previous months.

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<sup>48</sup> Erie Water Works. (2015). *Water Quality Report for the Year 2015*. Retrieved 2 June 2016, from <http://eriewater.org/wqr/2015wqr.erie.pdf>

<sup>49</sup> Lake Erie Waterkeeper. (2016). *Facts - Lake Erie Description by ODNR*. (2016). *Lakeeriewaterkeeper.org*. Retrieved 23 June 2016, from <http://www.lakeeriewaterkeeper.org/lake-erie/facts/>

The Consultant Team inventoried the Airport’s current water conservation practices through interviews with Airport staff.

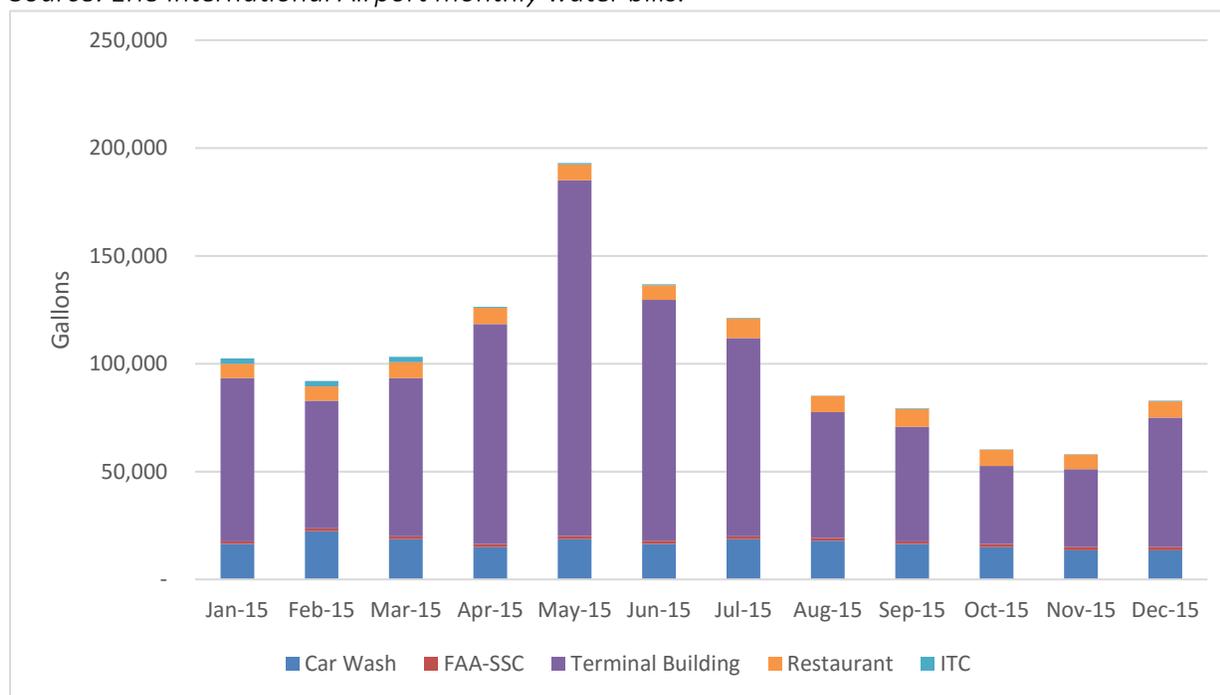
**MANAGEMENT PRACTICES AND PERFORMANCE**

The Airport has meters at the terminal building with a separate meter for the ERI Café, FAA SSC, rental car wash facility, and ITC. It does not currently sub-meter individual processes such as restrooms and irrigation.

In 2015, the Airport used a total of 1,241,018 gallons of potable water. As Error! Reference source not found. shows, water use at the Airport is seasonally dependent. The Airport had the highest water consumption in May (192,997 gallons) and the least in November (58,099 gallons).

By installing sub-meters at critical water use areas, the Airport would be better able to monitor and manage associated water consumption. Sub-meters would also provide the benefit of allowing the Airport to quickly find and correct leaks.

*Source: Erie International Airport monthly water bills.*

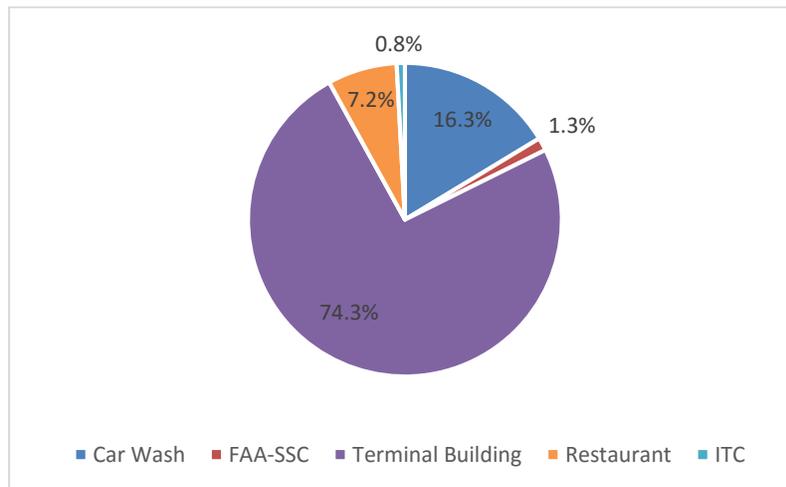


**Figure C-5: 2015 Monthly Water Use by Meter**

*Note: Quarterly water bills (FAA-SSC and ITC) are averaged by month.*

In 2015, the terminal building (main meter) accounted for the highest percentage (74.3 percent) of total water consumption, followed by the rental car wash facility at 16.3 percent and ERI Café at 7.2 percent (see Figure C-6).

Figure C-6: 2015 Water Use by Meter



Source: Erie International Airport monthly water bills.

In an effort to conserve water, the Airport installed motion sensors on the faucets, toilets, and urinals in the terminal building’s public bathrooms between 1997 and 2010. However, it is unclear as to whether this investment has reduced the Airport’s water consumption, as studies have shown that such systems actually *increase* total water consumption versus conventionally controlled systems.<sup>50</sup> Despite this uncertainty, motion sensor-equipped fixtures have the added benefit of enhancing the experience for persons with mobility constraints.

Existing fixture specifications at the Airport are unknown; however, it is likely that the Airport can significantly reduce its water consumption by simply installing low-flow aerators, which reduce associated water use by an average of 50 percent, on all lavatory faucets.

In addition, the Airport could replace its other water-consuming fixtures with WaterSense® certified products such as showerheads, urinals, toilets, landscape irrigation controllers, and pre-rinse spray valves.

The Airport can limit its consumption of potable water by recycling non-potable water for on-site uses such as landscape irrigation, urinal/toilet flushing, custodial uses, and fire training.

The Airport does not currently reclaim graywater or capture rainwater to meet or supplement its non-potable needs. It also has not implemented sustainable landscaping practices such as the use of drought-resistant plants, indigenous plants, and low-maintenance grass, and the application of seasonally adjusted irrigation.

<sup>50</sup> California Energy Commission. (2010). *Sensor-Operated Plumbing Fixtures – Do They Save Water?* Retrieved 23 June 2016, from [http://www.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water\\_Appliances\\_12-AAER-2C/Sensor-Operated\\_Fixtures\\_Final\\_Report\\_March\\_2010\\_2013-06-03\\_TN-71101.pdf](http://www.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water_Appliances_12-AAER-2C/Sensor-Operated_Fixtures_Final_Report_March_2010_2013-06-03_TN-71101.pdf)

**DATA MANAGEMENT AND GAPS**

The Airport does not collect information on water use for individual processes and activities (sub-metered data), and it does not have an inventory of fixture specifications (i.e., types, flow rates). With such information, the Airport would better position itself to monitor and manage its water consumption.

## 6. Customer Satisfaction

### OVERVIEW

The Airport's brand and reputation depends on every passenger's satisfaction when arriving at and/or departing from its facilities. Various factors influence passenger satisfaction including, but not limited to, ease of flight check-in, security lines, availability of amenities and services, terminal cleanliness, wayfinding, and accessibility. The Airport views these aspects of its operations as part of its social responsibility, which is a component of the EONS framework of sustainability.

For reference, ACI benchmarks customer satisfaction at airports internationally through its Airport Service Quality program. ACI provides details on this program at <http://www.aci.aero/Airport-Service-Quality/ASQ-Benefits>.

### REGULATORY CONTEXT

Other than federal laws pertinent to user accessibility (i.e., the Americans with Disabilities Act), there are no significant regulatory constraints related to customer satisfaction that are applicable to the Airport and its operations.

### METHODOLOGY AND ASSESSMENT

In the development of this assessment of customer satisfaction at the Airport, the Consultant Team inventoried the Airport's passenger conveniences, reviewed relevant documentation available on the Airport's website, and identified additional information through communications with Airport staff.

### MANAGEMENT PRACTICES AND PERFORMANCE

The Airport's administration and staff are intent on promoting a positive customer experience for its commercial air passengers with a specific focus on providing passenger conveniences, customer engagement, and improving ground access and transportation.

#### *Passenger Conveniences*

To build passenger satisfaction, the Airport offers a variety of conveniences, including complimentary wireless internet access, opportunities to shop at its Gift Shop and to dine in the ERI Café, and complimentary access to eBooks through its website. It also staffs an information kiosk to assist passengers with directions and to provide them with details on local attractions.

To advance customer service provided by its tenants, the Airport could establish a tenant recognition program that highlights tenant activities that go above and beyond expectations as well as innovative customer service practices.

The Airport also enhances its passengers’ experience through the Art in the Airport Program, which includes a ¼-scale replica of the Wright Flyer (donated by the Blair Corporation), a painted mural of the region’s landmarks such as the Warner Theatre (Artist Jodi Sindelar), and paintings of famous Erie aviators - civilian and military (also by Artist Jodi Sindelar).<sup>51</sup> In addition to providing passengers with a pleasant distraction during wait times, the Art in the Airport Program enhances the Airport’s aesthetics and fosters a sense of place with local ties.

**Customer Engagement**

The Airport recognizes the importance of incorporating customer feedback into its day-to-day decision-making, and invites customers to comment on their experiences at its facilities. Customers can contact the Airport with their compliments or complaints through postal mail, by phone, or by email ([info@erieairport.org](mailto:info@erieairport.org)). The Executive Director is responsible for responding to all passenger comments and complaints; the Airport does not track the ratio of compliments to complaints.

To gain additional insight into how passengers perceive its facilities and services, the Airport could administer a passenger satisfaction survey. If it were to conduct this survey on a regular basis, it could then use the results to track changes in performance in addition to how passengers’ perceptions change over time, and adjust its approach accordingly.

**Ground Transportation and Access**

Passengers, as well as employees, value the ability to access airports easily; this improves their experience and increases their level of satisfaction. To make accessing the Airport as fluid as possible, the Airport posts information on getting to and from, as well as around its facilities on its website (<http://www.erieairport.org>). This includes road directions, and information on car rentals, public transit, hotel shuttles, taxi service, and private transport such as limousines. The Airport’s website also provides security and flight status updates.

A passenger transportation survey would provide the Airport with information on how people regularly access its facilities. The results of this survey would provide insight on how the Airport can improve access, as well as potentially increase the use of alternative modes of transportation, which would improve regional air quality and reduce associated GHG emissions.

Two public bus lines, part of the Erie Metropolitan Transit Authority (EMTA), provide access to the Airport.<sup>52</sup> EMTA Routes 31 and 32 provide weekday service; Route 31 also provides Saturday and Sunday service. These bus routes begin and end in downtown Erie. Connections to other bus routes provide service to areas throughout the City of Erie and in surrounding Erie County suburbs.

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<sup>51</sup> Erie International Airport. (2016). *Art in the Airport Program*. [erieairport.org](http://www.erieairport.org). Retrieved 23 June 2016, from <http://www.erieairport.org/art.html>  
<sup>52</sup> Erie Metropolitan Transit Authority. (2016). *E System Map for Urbanized Area – Erie, Pennsylvania*. [Ride-the-e.com](http://www.ride-the-e.com). Retrieved 23 June 2016, from <http://www.ride-the-e.com/maps/>

There are no bike paths providing a direct connection to the Airport; W 12<sup>th</sup> Street does not have dedicated bike lanes. There are plans for several regional bike trails near the Airport, including the Industrial Heartland Trail and Erie-to-Pittsburgh Trail.<sup>53</sup> The Airport does not provide bicycle infrastructure such as storage racks that would promote bicycle usage.

The provision of bicycle storage racks would present incentive for the Airport's passengers (as well as employees) to bike to the facility instead of using polluting modes of transport. This would decrease related GHG emissions and improving local air quality.

The Airport provides vehicular visitors with short- and long-term commercial parking. Rates range from no monetary charge for stays under 20 minutes to \$66 for a week.<sup>54</sup> Republic Parking operates these lots.

The Airport does not track the distribution of transportation modes among employees and passengers.

#### DATA MANAGEMENT AND GAPS

The Airport does not collect the following items related to its social responsibility, or they were not readily available for inclusion in this baseline assessment:

- Ratio of passenger/public compliments to complaints,
- Rate of passenger/public comment resolution, and
- Transportation mode distribution of employees and passengers.

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<sup>53</sup> Industrial Heartland Trails Coalition. (2015). *Map – Conceptual Map. I HEART TRAILS*. Retrieved 23 June 2016, from <http://ihearttrails.org/about/maps/>

<sup>54</sup> Erie International Airport. (2016) *Parking Rates*. *Erieairport.org*. Retrieved 23 June 2016, from [http://www.erieairport.org/parking\\_rates.html](http://www.erieairport.org/parking_rates.html)

## 7. SUMMARY AND NEXT STEPS

This sustainability baseline assessment reviewed the Airport’s historical and existing conditions relative to its priority sustainability categories (i.e., energy and greenhouse gas emissions, waste management, water conservation, and customer satisfaction). **Table C-3** presents a quantitative summary of the Airport’s sustainability performance. This table has its basis in sustainability metrics that the Airport currently measures or was otherwise readily available. The Airport will carry these metrics forward to measure and compare its performance over time. As appropriate, and as the Airport expands its monitoring and measurement capacity, other metrics will be added.

**Table C-3: Sustainability Performance Summary**

Metric	Performance (2015)
<b>Energy and GHG Emissions</b>	
Site EUI (kBtu/square foot)	256.4
Source EUI (kBtu/square foot)	488.5
Scope 1 Emissions (Metric tons CO <sub>2e</sub> )	696.5
Scope 2 Emissions (Metric tons CO <sub>2e</sub> )	1,015.6
<b>Waste Management</b>	
Solid Waste Generated (tons)	81.6
Diversion Rate (percent)	23
<b>Water Conservation</b>	
Annual Water Consumption (gallons)	1.24 million

*Source: ERRA; VHB; McFarland Johnson, Inc. Estimate; Pro Waste Inc.; Pennsylvania Department of Transportation Bureau of Aviation*

This review of the Airport’s sustainability management practices and performance revealed opportunities for performance improvement. The Consultant Team, in coordination with Airport staff and the Airport’s stakeholders, will use this information to develop and screen a list of potential sustainability actions/initiatives. The screening process will consider the feasibility of these actions within the context of the Airport’s operating and regulatory environments. This process will also consider the estimated costs and overall value of these actions to assist in their prioritization. **Table C-4** summarizes an initial list of sustainability actions, not including recommendations to fill data gaps, as this sustainability baseline assessment has identified.

**Table C-4: Preliminary Sustainability Actions/Initiatives**

Sustainability Category	Action/Initiative	Sustainability Benefit
Cross-cutting*	Adopt sustainable design guidelines or specifications for major renovations and new construction projects	Enhances the sustainability performance of the Airport's facilities
Cross-cutting*	Develop guidelines to encourage the sustainable operation and maintenance of the Airport's facilities	Enhances the sustainability performance of the Airport's facilities
Cross-cutting*	Work closely with Airport tenants to plan, implement, and support sustainable practices	Promotes sustainability among the Airport's tenants, which can improve the Airport's own sustainability performance
Energy and GHG Emissions	Identify ways to source renewable energy	Reduces the Airport's reliance on fossil fuels and provides for long-term stability in energy costs
Energy and GHG Emissions	Implement a regular maintenance schedule, and provide associated training to maintenance staff	Increase the efficiency and longevity of existing and new building system equipment
Energy and GHG Emissions	Replace all incandescent, T12, and T8 lamps with more efficient alternatives such as LEDs and T5 lamps, where practicable	Reduces energy consumption and scope 2 GHG emissions
Energy and GHG Emissions	Develop an integrated building automation system	Reduces energy consumption and GHG emissions under the Airport's control
Energy and GHG Emissions	Conduct a climate vulnerability assessment	Provides an understanding of the Airport's sensitivities and adaptive capacities, as well as the vulnerability of its critical assets
Waste Management	Collect and donate unopened prepared food from aircraft and the ERI Café to local food banks	Reduces the Airport's generation of waste and addresses a social need
Waste Management	Adopt an Environmentally Preferable Purchasing policy	Prescribes limits on the packaging associated with the Airport's purchases to reduce its waste generation
Waste Management	Train staff, tenants, and vendors on the Airport's recycling practices	Increases the Airport's recycling rate

Sustainability Category	Action/Initiative	Sustainability Benefit
Waste Management	Post clear signage and educational materials in public and employee spaces to promote recycling	Increases the Airport’s recycling rate
Water Conservation	Install sub-meters at critical water use areas	Enhances the Airport’s ability to monitor and manage its water consumption
Water Conservation	Install low-flow aerators on all lavatory faucets	Reduces the Airport’s water consumption
Water Conservation	Replace water-consuming fixtures with WaterSense® certified products, where appropriate	Reduces the Airport’s water consumption
Water Conservation	Recycle non-potable water for on-site uses	Reduces the Airport’s consumption of potable water
Water Conservation	Collect rainwater for landscape irrigation	Reduces the Airport’s consumption of potable water
Customer Satisfaction	Create a tenant recognition program	Supports customer satisfaction by recognizing and rewarding outstanding and innovative tenant customer service practices
Customer Satisfaction	Administer a passenger satisfaction survey	Provides insight into how passengers perceive and experience the Airport’s facilities and services
Customer Satisfaction	Administer a passenger transportation survey	Lays the foundation for ground access improvements and increased use of alternative modes of transportation
Customer Satisfaction	Provide accommodations for bicycles such as storage racks	Provides incentive for the Airport’s passengers to bike to the facility instead of using polluting modes of transport, decreases GHG emissions and improving local air quality

\* A category of “Cross-cutting” indicates that the action/initiative is applicable to all of the Airport’s priority sustainability categories.

Source: VHB

The Consultant Team, in coordination with Airport staff and the Airport’s stakeholders, will then use the findings of this sustainability baseline assessment, along with the sustainability actions, to craft goals, objectives, and targets for the Airport’s ongoing sustainability program. This framework will inform the creation of screening criteria for the alternatives analysis of this Master Plan Update, which will ensure that sustainability principles will be a primary consideration in the Airport’s future development. The Airport’s sustainability framework will also guide its ongoing operations and decision-making.

Moving forward, the Airport will use the findings of this sustainability baseline assessment as a reference point, against which it will measure its future performance. This will require enhancements to the Airport's existing monitoring and reporting processes. The Consultant Team will assist the Airport in identifying the appropriate metrics based on the Airport's sustainability goals, objectives, and targets.