REQUEST FOR INFORMATION
for
MIXED WASTE PROCESSING FACILITY
for
THE CITY OF PHILADELPHIA

Issued by:
THE CITY OF PHILADELPHIA (“City”)
PHILADELPHIA INTERNATIONAL AIRPORT (“Airport”)

Responses must be received no later than 5:00 p.m. Philadelphia, PA, local time, on October 13, 2016

Questions must be received no later than 5:00 p.m. Philadelphia, PA, local time, on September 20, 2016

James F. Kenney, Mayor
Rochelle L. Cameron, Chief Executive Officer, Philadelphia International Airport
Table of Contents

I. Response Timeline ........................................................................................................... 3

II. Contact Information ........................................................................................................ 3

III. Statement of Purpose .................................................................................................. 3

IV. Background .................................................................................................................. 3

V. Submission Requirements ............................................................................................. 6

VI. Use of Responses ......................................................................................................... 8

VII. Confidentiality and Public Disclosure ......................................................................... 9

VIII. Rights and Options Reserved .................................................................................... 9

Appendices

Appendix A 2010 Landside Waste Stream Composition 11

Appendix B Compactor Locations 12

Appendix C 2015 Annual Recycling Report 13

Appendix D Philadelphia International Airport Waste Flow Diagram 47
I. Response Timeline

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFI Posted</td>
<td>September 6, 2016</td>
</tr>
<tr>
<td>Respondent Questions Due</td>
<td>September 20, 2016 no later than 5:00 p.m.</td>
</tr>
<tr>
<td>Responses Due</td>
<td>October 13, 2016 no later than 5:00 p.m.</td>
</tr>
</tbody>
</table>

II. Contact Information

All questions concerning this Request for Information ("RFI") must be submitted via email no later than 5:00 p.m. Philadelphia, PA, local time on September 20, 2016 and directed to:

Alec Gever  
Purchasing Administration Unit  
Philadelphia International Airport  
Alec.Gever@phl.org

Responses to such questions and requests shall be at the City’s sole discretion and nothing in the RFI shall create an obligation on the City to respond to the submitting party or at all. In the City’s sole discretion, responses may be posted on the City’s website without formal notification to prospective Respondents.

The City may, in its sole discretion, issue addenda to this RFI containing responses to questions and requests for information, clarifications of the RFI, revisions to the RFI or any other matters that the City deems appropriate. Addenda will be posted on the City’s website at http://www.phila.gov/rfp/Pages/default.aspx ("Additional Opportunities"). It is the Respondent’s responsibility to monitor the Additional Opportunities site for addenda and to comply with their terms.

Oral responses by any City employee or agent of the City are not binding and shall not in any way be considered as a commitment by the City.

III. Statement of Purpose

The City of Philadelphia ("City"), Department of Commerce, Division of Aviation ("Aviation") seeks to evaluate the overall benefits of establishing an onsite Mixed Waste Processing (MWP) facility at the Philadelphia International Airport ("Airport" or "PHL") for sorting unsegregated solid waste from tenant and Aviation sources. Aviation desires to increase PHL’s recycling rate and reduce the amount of material being sent to a landfill, to reduce operating costs associated with separate waste and recycling collection systems, and to move toward a more centralized waste management program. The benefit to this program includes handling specialized waste such as, but not limited to, security checkpoint waste, containers that contain large quantities of liquids, food waste from concessions, or aircraft and office waste. Waste produced by these sources consists mainly of materials that are easily recyclable such as magazines, cups, beverage containers, and other easily recyclable materials.

IV. Background
Philadelphia International Airport

PHL is the only major airport serving the 6th largest metropolitan area in the United States. The Airport is classified by the Federal Aviation Administration (“FAA”) as a large air traffic hub. A large hub is defined by the FAA as a community that enplanes 1.0% or more of the total passengers enplaned on certificated airlines in the United States. According to data reported by Airports Council International – North America, PHL was ranked the nineteenth busiest airport in the United States, serving 31.4 million passengers in Calendar Year 2015, and was ranked the fourteenth busiest in the nation based on aircraft operations (take-offs and landings). General information may be viewed at the Airport website www.phl.org.

During July 2016, PHL’s peak season, an average of 24 airlines served the airport and provided more than 520 daily nonstop departures to 131 destinations, including over 50 nonstop daily departures to 36 international destinations.

The Airport serves residents and visitors from a broad geographic area that includes eleven (11) counties within four (4) states: Pennsylvania, New Jersey, Delaware and Maryland. The Airport is easily accessible by car and public transportation. The Airport is directly linked to ramps from Interstates 95 and 76 and the SEPTA Airport Rail Line provides direct service to and from Center City Philadelphia, from stations located at all terminals.

Philadelphia International Airport consists of the following:

1. Land: Approximately 2,410 acres located partly in the Southwestern section of the City and partly in the Northeastern section of Delaware County, about 7.2 miles from Center City Philadelphia.


3. Terminal Buildings: The Airport consists of approximately 3.3 million square feet between Terminals A-West, A-East, B, C, D, E and F. Terminal buildings principally include: ticketing areas, passenger hold rooms, baggage claim areas and approximately 170 food, beverage, retail, and service establishments.

4. Other Buildings and Areas: The Airport is host to six (6) active cargo facilities, an American Airlines aircraft maintenance hangar, and a former United States Postal Service building located at the Western end of the Airport.

5. Outside Terminal Area: The Airport is host to a 400-room hotel, seven (7) rental car facilities, a 150-vehicle cell-phone lot, two (2) employee parking lots containing 4,200 spaces, and five (5) parking garages and surface lots offering a total of 18,940 vehicle spaces, separately operated by the Philadelphia Parking Authority.

Recycling Program

Aviation’s Planning Unit began tracking recycling and publishing annual reports in 2007 and hired a Recycling Coordinator in 2009 to expand and improve the program. Aviation’s Custodial Unit currently collects single-stream recyclables, including newspaper, cardboard, mixed paper, plastics #1 through #7 (excluding styrofoam), aluminum and steel food and beverage cans, glass bottles and jars, and aseptic packaging. The materials collected are based on what the current contractor accepts. Based on a waste audit conducted in 2010 for portions of the
Airport’s waste stream, the estimated composition of Aviation’s recyclable materials stream from landside areas is detailed in Appendix A.

Landside collected materials must remain on the non-secure side of the facility and airside collected materials must be collected within secure side containers. Existing recycling compactors and dumpsters are located at the following nine (9) locations on the landside (non-secure) and airside (secure) areas of the facility:

<table>
<thead>
<tr>
<th>Location</th>
<th>Size</th>
<th>Materials Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Loading Dock (Terminal A West)</td>
<td>34 cy</td>
<td>Single Stream Recyclables</td>
</tr>
<tr>
<td>Aviation Warehouse at 1 Escort Avenue (corner of Escort and Island Ave)</td>
<td>39 cy</td>
<td>Single Stream Recyclables</td>
</tr>
<tr>
<td>Aviation Electrical Shop (Island Ave)*</td>
<td>8 cy dumpster</td>
<td>Old Corrugated Cardboard (&quot;OCC&quot;)</td>
</tr>
<tr>
<td>Gate A-1</td>
<td>34 cy</td>
<td>Single Stream Recyclables</td>
</tr>
<tr>
<td>Gate A-15</td>
<td>39 cy</td>
<td>Single Stream Recyclables</td>
</tr>
<tr>
<td>B/C Connector</td>
<td>15 cy</td>
<td>OCC</td>
</tr>
<tr>
<td>Gate D-2</td>
<td>15 cy</td>
<td>Single Stream Recyclables</td>
</tr>
<tr>
<td>Gate E-4</td>
<td>34 cy</td>
<td>Single Stream Recyclables</td>
</tr>
<tr>
<td>Gate F-15</td>
<td>34 cy</td>
<td>Single Stream Recyclables</td>
</tr>
</tbody>
</table>

*Added in 2015

See Appendix B for location map of existing compactors.

See Appendix C for PHL’s 2015 Annual Recycling Report, which includes solid waste and recycling quantities.

Aviation’s Pavement and Grounds (“P&G”) staff collect solid waste from public areas as well as Aviation offices and shop areas. Aviation owns three (3) compactor trucks that are used to collect and deliver solid waste from Airport facilities, excluding tenant waste.

Aviation also tracks special cleanup waste. Special cleanup waste is generated from non-routine sources and includes materials like tree stumps, concrete cinder blocks, street sweeper debris, and other materials collected from maintenance and capital improvement projects. Due to the inconsistent nature of this element of the waste stream, special cleanup waste is tracked separately from the regular waste.

Both regular solid waste and special cleanup waste are collected and transported by Aviation’s P&G staff to the 58th Street Transfer Station within the City for disposal. The City of Philadelphia Streets Department then transports materials to a waste-to-energy (“WTE”) facility. See Appendix D for an overview of PHL’s existing solid waste and recycling flow diagram.

The estimated total waste generated at PHL is as follows:

<table>
<thead>
<tr>
<th>Generator</th>
<th>Weight (TPY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviation</td>
<td>2,000</td>
</tr>
<tr>
<td>Airlines</td>
<td>7,300</td>
</tr>
<tr>
<td>Concessions</td>
<td>5,500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,800</strong></td>
</tr>
</tbody>
</table>
V. Submission Requirements

A virus-free, fully functioning flash drive with the Response to this RFI must be received no later than 5:00 p.m. Philadelphia, PA, local time on October 13, 2016 and mailed to:

Alec Gever  
Purchasing Administration Unit  
Philadelphia International Airport  
Terminals D-E, 3rd Floor  
Philadelphia, PA 19153

Respondents to this RFI must have a minimum of five (5) years of experience in the operation of MWP facilities and have experience implementing MWP facilities for waste generators similar to an airport facility with numerous source (e.g. tenants) of waste generation. Each Respondent who submits a Response to this RFI shall include the following information in the order listed:

1. Primary Contact for the Respondent
   Include the name, mailing address, email address and telephone number for the Primary Contact for the Respondent

2. References
   For each reference, include the name of the contact, company, mailing address, email address and telephone number.

3. General Operating Plan
   Describe the general operating plan for collection, sorting, processing, storage, and transport off site of the recommended MWP facility. Non-hazardous wastes generated by Aviation, commercial airlines and other airport businesses at PHL would be handled at a centralized facility located on Airport property. Please describe the daily operations and process of how recyclable materials will be separated from the waste stream, in addition to the process for handling unmarketable materials and bulk items. Liquid wastes and other contamination need to be treated and diverted from landfill to the greatest extent possible. Describe how recovered recyclables and organics will be processed, separated, and marketed or, where applicable, diverted for reuse (e.g., pallets), including storage times on site. Wastes that are not recyclable or reusable will need to be hauled to an approved solid waste disposal site.

4. Origin and Composition of Waste
   Describe the origin and composition of wastes to be sorted, treated and recycled or otherwise disposed. The wastes delivered to and processed at the separation facility would mainly originate from airlines operating at PHL and from businesses and administrative offices within airport property boundaries. It is not anticipated that the facility would accept wastes from international flights or waste not associated with the Airport at this time.

The co-mingled wastes available to be processed are expected to have the following composition:
• paper products (primarily newspapers, cardboard, magazines and office paper)
• plastics (primarily in the form of cups and bottles)
• aluminum (primarily in the form of beverage cans)
• other metals (primarily steel and tin, including abandoned/end of life items)
• glass
• liquids (primarily unconsumed beverages)
• organic wastes (primarily unconsumed foods from terminal areas)
• bulk items such as wood pallets, packaging materials, plastic film, etc.
• “other” (minor amounts of other materials)

5. Weight or Volumes Required (tons or cubic yards)

Please note that waste quantities will vary at different times of the year as passenger activity fluctuates. Describe average and peak waste loading rates (tons per day) needed or anticipated, as well as anticipated diversion rates. Estimated maximum generation of solid waste at PHL (inclusive of tenant waste) is approximately 15,000 tons per year (see Section IV for background information).


Describe the separation and sorting process to be used and the size, type, capacity and general specifications for all equipment proposed to be used for handling, sorting, processing, storage, and transport of materials.

7. Method of Waste Measurement/Characterization

Describe how all waste entering the facility will be characterized by type, quantity, and source (if available), including collection of data on moisture content of waste. Describe the process to be established for reporting metrics to meet recycling goals and targets established by Aviation, and providing raw data to Aviation staff as requested.

8. Unaccepted Waste

Describe how wastes will be prevented from being accepted at the facility and enforcement methods, including handling of occasional radioactive waste. The users of any future recycling facility at PHL will be informed of which materials are approved for processing at the facility and which materials must be disposed of in another approved manner. Adhering to the list of approved and disapproved materials will be a legally binding condition of participating in the program.

9. Capacity and Area (Size) Needed for Proposed Operation/Facility

Describe physical needs for proposed facility, including, but not limited to, building footprint (sf), interior dimensions, egress/access needs, utility connections, energy and water demand, and other physical or financial requirements needed to establish an economically feasible operation.

10. Expected Life of Facility

11. Plan for Alternative Waste Handling/Disposal
Describe plan for an alternative waste handling system or disposal system during periods when the proposed facility is not in operation, including procedures to be followed in case of equipment breakdown.

12. Staffing and Training Plan

The contractor would be required to apply equal opportunity employment and also meet applicable state, local and federal safety requirements, including OSHA standards, airport security checks of employees working within the security perimeter of the Aircraft Operating Area ("AOA"), and commercial drivers licensing for employees hired to haul waste or recovered recyclables using heavy vehicles.

13. Operating Hours

14. Regulatory Compliance

Describe how the installation and operation of this facility will be consistent with the requirements of PA Act 1988-101 (Municipal Waste Planning, Recycling, and Waste Reduction Act) and other applicable local, state and federal regulations.

15. Health, Safety, and Emergency Plans

Describe plan for operational safety, fire prevention and emergency response that will adequately protect workers and patrons of the facility, prepared by an expert in the field of industrial hygiene and safety.

16. Cost Estimate and Life Cycle Analysis

Provide cost estimates for design, construction and annual operation of MWP facility, including a Life Cycle Cost Analysis. Design should consider incorporation of sustainable features such as renewable energy, water and energy saving devices, stormwater best management practices, etc. The City of Philadelphia has a requirement for new or renovated facilities greater than 10,000 sf to meet Leadership in Energy and Environmental Design (LEED) Silver standards if City funding is involved (refer to Section 17-111 of the Philadelphia Code). All local, state, and federal codes and regulations shall be addressed and incorporated into final design.

17. Additional Information (Optional)

Include additional information the Respondent believes is relevant to the subject matter of this RFI.

VI. Use of Responses

Responses to this RFI are considered non-binding and are used to assist Aviation to gather information and for planning purposes. **This RFI will not result in a contract to provide any services to the City.** The information provided may be used to develop a scope of work in the future for an MWP facility. A Response to this RFI is not a requirement to propose on a future notice of contracting opportunity if issued by the City. If a future contract is awarded, the successful Applicant will work in coordination with any existing vendors or providers of waste processing, sorting, and handling services to maximize efficiency and improve recycling diversion rates at PHL.
Aviation may, in its sole discretion, contact Respondents for further discussions and request demonstrations of recommended services and solutions. Any costs associated with presentations, including travel, are the sole responsibility of the Respondent. The City is not obligated to conduct subsequent discussions with any Respondent to this RFI, and reserves the right to conduct discussions regarding its subject matter with firms that do not respond to this RFI.

VII. Confidentiality and Public Disclosure

Respondents shall treat all information obtained from the City which is not generally available to the public as confidential and/or proprietary to the City. Respondents shall exercise all reasonable precautions to prevent any information derived from such sources from being disclosed to any other person. No other party, including any Respondent, is intended to be granted any rights hereunder. Respondents agree to indemnify and hold harmless the City, its officials and employees, from and against all liability, demands, claims, suits, losses, damages, causes of action, fines and judgments (including attorney’s fees) resulting from any use or disclosure of such confidential and/or proprietary information by any Respondent or any person acquiring such information, directly or indirectly, from the any Respondent.

VIII. Rights and Options Reserved

In addition to the rights reserved elsewhere in this RFI, the City reserves and may, in its sole discretion, exercise any or more of the following rights and options with respect to this RFI if the City determines that doing so is in the best interest of the City:

1. to decline to consider any response to this RFI (“Response”); to cancel the RFI at any time; to elect to proceed or not to proceed with discussions or presentations regarding its subject matter with any Respondent and with firms that do not respond to the RFI; or to reissue the RFI or to issue a new RFI (with the same, similar or different terms),

2. to waive, for any Response, any defect, deficiency or failure to comply with the RFI if, in the City’s sole judgment, such defect is not material to the Response,

3. to extend the Submission Date/Time and/or to supplement, amend, substitute or otherwise modify the RFI at any time prior to the Submission Date/Time, by posting notice thereof on the City web page(s) where the RFI is posted,

4. to require, permit or reject amendments (including, without limitation, submitting information omitted), modifications, clarifying information, and/or corrections to Responses by some or all Respondents at any time before or after the Submission Date/Time,

5. to require, request or permit, in discussion with any Respondent, any information relating to the subject matter of this RFI that the City deems appropriate, whether or not it was described in the Response to this RFI,

6. at any time determined by the City, to discontinue discussions with any Respondent or all Respondents regarding the subject matter of this RFI, and/or initiate discussions with any other Respondent or with vendors that did not respond to the RFI, and/or
7. to do any of the foregoing without notice to Respondents or others, except such notice as the City, in its sole discretion, may elect to post on the City web page(s) where this RFI is posted.

This RFI and the process described are proprietary to the City and are for exclusive benefit of the City. Upon submission, Responses to this RFI shall become the property of the City, which shall have unrestricted use thereof. Responses may be subject to public disclosure under the Pennsylvania Right-to-Know Law. However, a “record that constitutes or reveals a trade secret or confidential proprietary information” is exempt from access by a requester under that law. Ultimate determination of the application of that exemption cannot be assured, but Respondents are advised to mark clearly any portion(s) of any submittal believed to qualify for that exemption. By submitting its Response, the Respondent agrees to the terms.
## Appendix A – 2010 Landside Waste Stream Composition

<table>
<thead>
<tr>
<th>Categories</th>
<th>Arrivals Road</th>
<th>Departures Road</th>
<th>SEPTA Platforms</th>
<th>Employee Parking Lot</th>
<th>South Commercial Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Paper</td>
<td>19.91% (includes 0.79% OCC)</td>
<td>5.35% (includes 0.75% OCC)</td>
<td>10.72% (includes 0% OCC)</td>
<td>11.37% (includes 0.27% OCC)</td>
<td>8.80% (includes 1.47% OCC)</td>
</tr>
<tr>
<td>Steel/ A1 UBC</td>
<td>0.63%</td>
<td>0.91%</td>
<td>0.12%</td>
<td>3.65%</td>
<td>1.47%</td>
</tr>
<tr>
<td>Glass Bottles</td>
<td>4.42%</td>
<td>2.62%</td>
<td>4.99%</td>
<td>3.25%</td>
<td>4.99%</td>
</tr>
<tr>
<td>Plastic Containers #1-7</td>
<td>11.06%</td>
<td>10.82%</td>
<td>7.55%</td>
<td>11.77%</td>
<td>12.02%</td>
</tr>
<tr>
<td>% Available for Recycling</td>
<td>36%</td>
<td>19%</td>
<td>24%</td>
<td>30%</td>
<td>27%</td>
</tr>
<tr>
<td>Organics</td>
<td>22.12%</td>
<td>16.45%</td>
<td>26.80%</td>
<td>22.06%</td>
<td>19.35%</td>
</tr>
<tr>
<td>Liquid</td>
<td>7.11%</td>
<td>26.99%</td>
<td>18.27%</td>
<td>10.15%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Film Plastics</td>
<td>19.12%</td>
<td>11.95%</td>
<td>16.44%</td>
<td>16.64%</td>
<td>23.75%</td>
</tr>
<tr>
<td>Other Materials</td>
<td>15.64%</td>
<td>24.90%</td>
<td>15.10%</td>
<td>21.11%</td>
<td>29.62%</td>
</tr>
<tr>
<td>% To Be Disposed</td>
<td>64%</td>
<td>81%</td>
<td>76%</td>
<td>70%</td>
<td>73%</td>
</tr>
</tbody>
</table>

Source: PHL Landside Waste Sort Analysis, September 2010
Moved compactor from F-11 to F-15
added compactor at Electrical Shop
1/11/16

APPENDIX B
COMPACTOR LOCATIONS

LEGEND

8 CUBIC YARD DUMPSTER
15 CUBIC YARD COMPACTOR
34 CUBIC YARD COMPACTOR
39 CUBIC YARD COMPACTOR

DUMPSTER
COMPACTOR
ALD/MFR LOADING DOCK
DOA ELECTRICAL SHOP
DOA MAINTENANCE SUPPORT
DOA WAREHOUSE

DOA WAREHOUSE

APPENDIX B
COMPACTOR LOCATIONS

(End of Document)
Appendix C
2015 Annual Recycling Report

City of Philadelphia
Division of Aviation
August 2016
This Page Intentionally Left Blank
# Table of Contents

**EXECUTIVE SUMMARY** .................................................................................................................. v

I. **Introduction** ................................................................................................................................... 1
   Environmental Stewardship and Recycling ............................................................................. 1
   Environmental Policy Statement ......................................................................................... 2

II. **2015 Environmental Accomplishments** ................................................................................. 4
    Recycling and Solid Waste ................................................................................................. 4
        DOA Recycling ........................................................................................................ 4
        Contamination ........................................................................................................ 6
        Construction and Demolition (C&D) Recycling ......................................................... 7
        DOA Solid Waste .................................................................................................... 8
        DOA Waste and Recycling Goals ............................................................................. 8
    Hazardous Waste ........................................................................................................... 10
    Public Outreach and Education ...................................................................................... 11
        Earth Day 2015 ...................................................................................................... 11
        America Recycles Day 2015 .................................................................................. 13
        Messaging on Shuttle Buses ................................................................................. 14
    Recycling Committee .................................................................................................... 15
    Coordination with the City of Philadelphia Recycling Office ......................................... 15

III. **Tenant Recycling** ................................................................................................................... 16
    American Airlines (US Airways) ....................................................................................... 16
    MarketPlace Philadelphia Management (MPM) ............................................................. 17
    Tenant Pilot Compactor Program .................................................................................... 19

IV. **Future Goals and Objectives** ................................................................................................. 20
    Contamination .............................................................................................................. 20
    Waste and Recycling Receptacle Placement and Messaging ......................................... 20
    Feasibility of Mixed Waste Processing Facility ............................................................. 21
    Overall Program Reassessment ...................................................................................... 21

V. **Conclusion** .............................................................................................................................. 22

Appendix A  Environmental Policy Statement
Appendix B  2015 Earth Day Award Recipients
GLOSSARY OF TERMS

ARD: America Recycles Day, a holiday established by the National Recycling Coalition in 1997, is held on November 15 to promote recycling across the country.

BigBelly®: a trademarked two-component system made up of a recycling receptacle and a compacting trash receptacle for external use. The solar-powered and software controlled components send a message when a receptacle is reaching capacity, thereby saving money through reduced waste collections.

Construction and Demolition (C & D) Waste: discarded materials generally considered to be not water soluble and non-hazardous in nature, including but not limited to steel, glass, brick, concrete, asphalt material, pipe, gypsum wallboard, and lumber, from the construction or destruction of a structure as part of a construction or demolition project, or from the renovation of a structure.

Contaminated Recycling: Recycling load that has been picked up by hauler and taken to a Materials Recovery Facility (MRF) and has been rejected due to a large portion of the load being made up of materials or liquids that are not recyclable.

Diversion Rate: the percentage of material diverted from landfill through recycling or waste-to-energy (WTE). It is calculated by dividing the total weight of recyclable and WTE material by the total weight of all waste streams (solid waste, recycling, and WTE material).

Envyrozones®: commonly used to describe the Hazelton product line of Envyrozone, Inc., which is a trademarked, interior multiple collection receptacle for trash, paper, bottles and cans. There are 56 “Envyrozones” located throughout PHL’s terminals.

Hauling: the transport of waste materials or recyclables in accordance with local environmental guidelines or laws.

Hazardous Waste: waste that is dangerous or potentially harmful to our health or the environment. Hazardous wastes can be liquids, solids, gases, or sludge. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes.¹

LEED: Acronym for Leadership in Energy and Environmental Design. A rating system developed by the U.S. Green Building Council for the design, construction and operation of high performance green buildings, homes and neighborhoods.

¹ Source: http://www.epa.gov/osw/hazard/
Marketplace Philadelphia Management (MPM): as part of Development, Inc. (a retail development firm that partners with airports and businesses to develop, lease, and manage retail programs), Marketplace Philadelphia handles the development, management and leasing of all retail, food and beverage concessions throughout the seven domestic and international terminals at PHL.

Materials Recovery Facility (MRF): Specialized facility that receives, separates, and prepares recyclables for marketing to end-user manufacturers. Materials have typically been previously separated from other waste streams through single-stream recycling programs or other methods.

MTCO2e: Metric Tons of Carbon Dioxide Equivalent. This unit of measurement represents an amount of a greenhouse gas whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide.

OCC: an acronym that stands for Old Corrugated Cardboard (OCC). OCC is a paper-based material that is widely used in the manufacture of corrugated boxes and shipping containers.


Recyclables: Existing waste materials and goods that are able to be reprocessed and reused. At PHL these items consist of recyclable plastics (#1-7), glass, aluminum, shredded paper, corrugated cardboard, C & D waste, tires, and scrap metal.

Recycling Rate: the percentage of material recycled (diverted) from the total waste stream rather than disposed of in a landfill or waste-to-energy (WTE) facility. It is calculated by dividing the total weight of recyclable material by the total weight of all waste streams generated (i.e. weight of regular/solid waste plus the weight of recyclable materials).

Regular Waste: (or waste) material that is not considered recyclable or special cleanups that are disposed of in a landfill. Also called “solid waste.”

SEPTA: Southeastern Pennsylvania Transportation Authority whose rail, bus, and trolley lines serve Chester, Delaware, Bucks, Montgomery and Philadelphia counties.

Single Stream Recycling: a system in which all recyclable paper, plastics, metal, and glass are disposed in the same container and commingled instead of remaining separate during the waste collection and hauling process. In single stream, both the collection and processing systems are designed to handle this fully commingled mixture of recyclables, with materials being separated for reuse at a materials recovery facility.
Special Cleanups: waste that is generated through specific projects and often consists of, but is not limited to, tree stumps, concrete cinder blocks, street sweeper dirt and other materials not considered regular waste and is disposed of in a landfill.

Transportation Security Administration (TSA): a federal agency established to protect the nation's transportation systems to ensure freedom of movement for people and commerce.

Total Generated Tonnage: the amount of regular waste tonnage plus the amount of recyclables tonnage.

Waste Stream: the aggregate flow of trash from generation, to handling and transport, to final disposition.

Waste-to-Energy (WTE): the process of generating fuel or energy from the incineration of waste. Since 2013, all City-collected solid waste has been delivered to waste-to-energy plants as part of its effort to divert trash from landfills. The Waste Management Spec Fuel Plant began processing 100 to 400 tons per day of City-collected trash in May 2014.
EXECUTIVE SUMMARY

This report provides a summary and analysis of 2015 waste data tracked by the Philadelphia Division of Aviation (DOA). In 2015, DOA processed recycling and waste including solid waste, single stream recycling, hazardous and non-hazardous waste, universal waste, special cleanup material and construction and demolition (C&D) debris.

Figure 1: Waste and Recycling Materials at PHL

![Waste and Recycling Materials at PHL](image)

As Figure 2 below shows, the recycling rate was 7.8% in 2015. This drop from 17.8% in 2014 and 21.6% in 2013 is due primarily to the consistent contamination of recycling materials from TSA security checkpoints. In 2015, loads from contaminated compactors were processed as trash. Without such contamination, DOA estimates that its recycling rate would be roughly 21%, which is similar to the recycling rate from 2011 through 2013.

Several remedies for improving the recycling rate are proposed in this report, including technology upgrades, closer coordination with haulers, and additional education and outreach to DOA staff and the traveling public. In early 2016, DOA released an RFP for recycling services with the goal of identifying a contractor that will support the planning
unit’s contamination-elimination efforts. Figure 2 below identifies trends since 2007, when recycling data was first tracked. More detailed analysis is presented in Section II.

Figure 2: Annual Total Solid Waste and Recycling Quantities

This report also incorporates tenant recycling programs that are operated by Philadelphia Marketplace Management and American Airlines (formerly US Airways), which, along with the DOA recycling program, accounts for the majority of solid waste and recycling generated at PHL. Tenant recycling is summarized in Section III of this report. It is estimated that DOA, Marketplace, and American Airlines’ combined recycling and waste diversion efforts in 2015 reduced greenhouse gas emissions by approximately 4,850 MTCO2e, which is equivalent to removing annual emissions from more than 1,000 passenger vehicles.2

In the short-term, there are opportunities to improve PHL’s recycling rate through equipment investment, expanded collection, and education efforts. In 2016, DOA is planning to request expressions of interests to assess the feasibility of partnering with or establishing a mixed waste processing facility, which would separate recyclables from a mixed solid waste stream. DOA is also in the process of updating the recycling advocacy posters in shuttle buses with a message targeting employees and airport customers.

I. Introduction

This report provides a summary and analysis of 2015 waste and recycling data tracked by the DOA, which includes solid waste, recycling, hazardous waste, universal waste, and construction and demolition (C&D) debris.

Environmental Stewardship and Recycling

Environmental Stewardship is the careful and responsible management of natural and cultural resources for the benefit of present and future generations. Philadelphia International Airport (PHL) is committed to operating its facilities and future developments in an environmentally responsible manner so as to conserve the existing resources unique to the Airport and its environs, and to produce a better environment for neighboring communities, for the public at large, and also for PHL's customers, tenants and staff. In defining and applying sustainable design principles, PHL strives to address environmental issues early in the planning process.

PHL’s Environmental Stewardship Plan encompasses many green initiatives to reduce the Airport’s impact on the surrounding environment. Over the years, the recycling program has served as a cornerstone in the DOA’s efforts to improve the sustainability of its operations at PHL. As one of the three key tenets (reduce, reuse, recycle) of sustainable waste and resource management, recycling reduces the amount of waste that is landfilled or incinerated, and provides cost savings for PHL’s tenants and airlines. PHL is committed to continuing to facilitate the expansion of recycling programs throughout the Airport to maximize its recycling rate.

Regional Goals

The City of Philadelphia’s Greenworks Plan set a goal of diverting 70% of the City’s municipal solid waste, which was exceeded in 2013 by including waste-to-energy in the diversion rate. The Plan had a timeframe of 2009 to 2015; therefore, new goals and initiatives will be set for the next planning period. Pennsylvania also has a goal of achieving 35% diversion rate state-wide. Along with waste reduction and recycling, Waste-to-Energy (WTE) is an important component of the City of Philadelphia’s overall waste management program. Waste that is not recycled at a Materials Recovery Facility (MRF) is transported to a transfer station and then to a WTE facility, which produces energy or fuel. This results in all regular/solid waste and single-stream recycling being diverted from a landfill. Recycling, however, is preferable over WTE as the recycling
process saves more energy and produces significantly fewer greenhouse gas emissions. In the effort to further improve upon this strategy, DOA is committed to continuing to find new ways to improve the collection, sorting, and diverting of all streams of recyclable materials, before considering WTE as an option.

**Capital Improvements**

The City of Philadelphia requires U.S. Green Building Council LEED Silver certification for all new construction or major renovations greater than 10,000 square feet. DOA will apply the mandatory credit of supplying storage and collection of materials for recycling to all projects designed according to LEED standards.

American Airlines’ new Terminal F baggage claim building has obtained LEED Gold certification and will offer recycling to the public and employees. The project also diverted over 80% of non-hazardous construction and demolition waste from landfills or incineration, and achieved 17% recycled content of the total materials value.

![The Terminal F Baggage Claim Building nearing completion](image)

**Environmental Policy Statement**

The City of Philadelphia Division of Aviation issued its Environmental Policy Statement in 2006, which applies to both airports in the Philadelphia Airport System, PHL and Northeast Philadelphia Airport (PNE). This important policy statement, presented in Appendix A, provides the framework and direction that DOA uses to guide its environmental commitment. In this policy statement, PHL focused on four key areas, including **Compliance and Monitoring** of both facilities to ensure conformance with all applicable environmental laws and regulations and striving to exceed legal and regulatory
standards that are consistent with the transportation and economic development mission of the Airports.

Other components of the policy statement are **Sustainability** and **Environmental Stewardship**, which speak to PHL’s efforts to reduce the impact of operations and activities in order to preserve and protect surrounding natural resources, which includes recycling and waste reduction. In addition, one of the goals in this section is to ensure that current Airport operations and activities will be improved by incorporating sustainable business practices.

**Communications** is the fourth focus area of the environmental policy, which includes a goal of distributing the policy to all Airport city employees so they can be aware of and active in implementing this policy. The policy serves as a way to promote open discussions among employees about the environmental aspects of daily operations and activities. Involving and communicating with employees will hopefully lead to more informed choices and employees assisting in the accomplishment of the environmental goals.
II. 2015 Environmental Accomplishments

Recycling and Solid Waste

The Division of Aviation’s (DOA) recycling program at Philadelphia International Airport (PHL) has made great progress since its inception in 1999. In 2015, however, due to ongoing challenges with contamination, the recycling rate dropped to 7.8%. Improved coordination between PHL and its haulers, as well as a significant reduction or elimination of contamination, is expected to provide an opportunity to return to continued growth in the recycling rate in 2016.

Highlights of the DOA’s 2015 recycling program include:

- 121.5 tons of **single stream recycling** materials
- 2.8 additional tons of recycled **C&D** materials (mostly concrete and steel)
- A **recycling rate of 7.8%**, a decrease from 17.8% in 2014
- By diverting material from the regular waste stream, recycling at PHL provided a **cost savings of approximately $3,600** to the Division of Aviation.

DOA Recycling

Recycling materials are collected from terminal public spaces, DOA offices and shop areas and through seasonal projects and construction activity. For accuracy and consistency over time, DOA measures the recycling rate using the weights measured for single stream materials (mixed paper, OCC, glass, metal, plastics #1 through #7), shredded office paper and corrugated cardboard. Weights for recycled concrete, scrap metal, woody debris, electronics, batteries and the disposal of hazardous waste are included in this report, but are not included in the calculation of the recycling rate.

The total amount of single-stream recyclable materials equaled 121 tons in 2015; a 58% decrease from the 290.9 tons collected in 2014. This significant drop is due to compactor
contamination caused by liquid discarded at security checkpoints (see Contamination below).

Single-stream recycling is collected from the Envyrozones in the terminals, SEPTA platforms, BigBelly receptacles located in the cell phone lot and employee parking lot, and DOA offices and shops. This brings the DOA’s recycling rate to 7.8% for 2015, a significant reduction from a rate of 17.8% in 2014.

DOA recycling and waste hauls are tracked on a continuous basis. Recycling rates are calculated by dividing: (the recycling tonnage) by (the total generated tonnage of waste and recycling, excluding special cleanups). While the annual recycling rate was 7.8%, the monthly recycling rates ranged from a low of 0.05% in January and March to a high of 17.3% in April (see Figure 3). This increase in recycling was due to a large collection of OCC during the month of April.

**Figure 3: 2015 Monthly DOA Solid Waste and Recycling Quantities**

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trash (Tons)</td>
<td>101.68</td>
<td>90.42</td>
<td>109.62</td>
<td>118.48</td>
<td>110.49</td>
<td>139.45</td>
<td>140.87</td>
<td>132.17</td>
<td>120.29</td>
<td>135.07</td>
<td>102.09</td>
</tr>
<tr>
<td>Single Stream Recycling (Tons)</td>
<td>0.54</td>
<td>16.68</td>
<td>0.58</td>
<td>24.81</td>
<td>11.42</td>
<td>5.25</td>
<td>13.42</td>
<td>4.79</td>
<td>21.21</td>
<td>3.17</td>
<td>7.79</td>
</tr>
<tr>
<td>% Waste Diverted</td>
<td>0.5%</td>
<td>15.6%</td>
<td>0.5%</td>
<td>17.3%</td>
<td>9.4%</td>
<td>3.6%</td>
<td>8.7%</td>
<td>3.5%</td>
<td>15.0%</td>
<td>2.3%</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

In 2015, the DOA’s recycling program provided approximately $3,600 in cost savings through avoided landfill fees and recycling rebates. As Figure 4 shows, overall program savings have decreased since 2012 due mainly to the declining price of single stream material within global markets. Recycling provided a rebate of over $60 per ton at the end of 2011, but in 2015, DOA has paid between approximately $23 and $31 to haul recycling.
(note, this fee is still lower than the hauling fee for trash), with the exception of separated corrugated cardboard.

While the waste reduction and recycling programs significantly exceeded expectations in 2009, 2010, and 2011, in the past few years, the recycling rate appears to be leveling-off or in decline, due to increased contamination issues.

**Contamination**

In 2015, contamination continued to be an issue and recycling rates decreased from 17.8% to 7.8% due to the diversion of security checkpoint recycling to trash. In the previous year, there were 19 recycling loads that became contaminated with liquid attributed to TSA security checkpoints, which resulted in DOA sending all materials collected from these areas directly to trash compactors. While there were no contaminated loads rejected by our single stream hauler in 2015, recycling loads not realized from security checkpoints significantly reduced the amount of diverted materials. In 2016, DOA is looking to identify an appropriate liquid-removal technology to crush or shred containers, remove liquid, and render all processed materials recyclable. This technology will help eliminate contamination and reduce the weight of recycling and waste loads, which makes collection and hauling cumbersome.
Construction and Demolition (C&D) Recycling

As mentioned above, in addition to single stream, shredded paper and corrugated cardboard, DOA processes other re-usable materials, including woody/landscaping debris, scrap metal, concrete and other construction & demolition debris.

Several renovation and demolition projects occurred in 2015 where the debris was collected and recycled. The DOA Maintenance offices were renovated and approximately 2.8 tons of materials were hauled away for recycling. During the ongoing restroom renovations within the terminal complex, DOA Building Maintenance staff salvaged parts and accessories for reuse during future repairs or replacements needed.

Two deteriorating, vacant buildings on airport property were demolished in 2015, resulting in over 17 tons of hazardous materials being transported and disposed of in a proper manner. Additionally, 478 tons of asbestos containing materials (ACM) were removed. A large portion of the concrete and brick debris was separated during the building demolition process and were either reused on site as fill or recycled off site and properly disposed of. The total Construction and Demolition tonnage collected from the project was approximately 3,290 tons, of which 40% was recycled (excluding ACM).

Figure 5: 2015 Recyclables Breakdown
DOA Solid Waste

Total solid waste generation for 2015 was 1,431.1 tons, a 6.5% increase from 1,343.6 tons in 2014. As mentioned previously, much of this increase is due to the hauler’s changes in policies related to contamination and having to direct all materials from contaminated recycling sources to the waste stream.

DOA hauled 93.7 tons of special cleanup waste in 2015, down from 245.2 tons 2014. This waste is generated from non-routine sources, such as seasonal projects and construction activity. It includes tree stumps, street sweeper material, concrete cinder blocks, and other miscellaneous debris. Due to the inconsistent nature of this element of the waste stream, special cleanup waste is tracked separately from regular waste, which allows the DOA to more precisely monitor the overall trends in the waste stream and recycling rate. Both regular and special cleanup wastes are transported to WTE facilities.

DOA Waste and Recycling Goals

The DOA’s annual goals and observed solid waste and recycling totals from 2007-2015 are illustrated by Figures 6 and 7. While the solid waste generation was higher in 2015, the total quantity did fall below of the target ceiling of 1,494 tons by 62.9 tons. Including C&D recycling, however, DOA fell short of the recycling goal to divert 462 tons of material by a difference of 337.7 tons. The program goals and strategies will be revisited in 2016 and new goals are to be established moving forward.
Figure 6: Annual Solid (Landfilled) Waste Quantities 2007-2015

![Graph showing annual solid waste quantities from 2007 to 2015.]

- **DOA Special Cleanups (Tons)**: 263.9, 700.9, 219.3, 184.0, 162.2, 245.2, 93.7
- **Trash (Tons)**: 2,252.2, 1,594.2, 1,535.0, 1,242.2, 1,175.5, 1,116.1, 1,124.9, 1,343.6, 1,431.1
- **Trash (Target)**: 2,252, 2,139, 2,032, 1,931, 1,834, 1,743, 1,655, 1,573, 1,494

Figure 7: Annual Recycling Quantities 2007-2015

![Graph showing annual recycling quantities from 2007 to 2015.]

- **C&D (tons)**: 0, 0, 0, 0, 0, 93.1, 0.4, 47.6, 2.8
- **Single Stream Recycling (Tons)**: 62.0, 105.9, 267.5, 301.2, 320.4, 304.7, 310.1, 290.9, 121.5
- **Recycling (Target)**: 62, 112, 162, 212, 262, 312, 362, 412, 462
Hazardous Waste

The Philadelphia International Airport facility is classified as a Small Quantity Generator under the Resource Conservation and Recovery Act (RCRA), which limits on site hazardous waste generation to less than 1,000 kg (2,200 lbs) per month. A total of 550 lbs of hazardous waste was generated in 2015, a decrease of 71% from 1,880 lbs in 2014 (see Figure 8).

Figure 8 also depicts “Other” materials, which consists of materials collected, disposed, and tracked separately relating to the demolition of two vacant buildings described earlier in the section on C&D Recycling. Over 70,000 pounds of material was disposed of in 2015, including ACM, hazardous materials, and other C&D materials.

Figure 8: Annual Regulated Waste Reduction

In 2015, DOA managed a total of approximately 20,000 pounds (10 tons) of universal waste, which included batteries and lamps (fluorescent, compact fluorescent and other types of bulbs). In addition to the universal waste captured in Figure 8, approximately 3,500 pounds of electronics³ were recycled. As with C&D waste and special cleanups,

³ Estimated based on equipment descriptions on disposal records.
universal waste is collected intermittently as needed, and is usually associated with capital improvements or ongoing maintenance.

**Public Outreach and Education**

DOA organizes and hosts two environmentally themed educational events each year: Earth Day and America Recycles Day (ARD). The purpose of these information fairs is to advocate for sustainable living and demonstrate innovative green practices to employees and the traveling public.

**Earth Day 2015**

The Division of Aviation marked Earth Day 2015 with its annual celebration at the event space near the B/C food court. Approximately 400 attendees learned about composting, local and international wildlife preservation, energy and water conservation, recycling, and more from the DOA and 11 other local organizations. The Planning Unit led the planning and implementation of the event, with assistance from: Building Maintenance, Custodial, Finance, Occupational Safety, Pavement & Grounds, and Public Affairs.

DOA’s Planning Unit operated two tables. The first delivered general information about sustainability efforts at PHL and provided entertaining sustainability education through the “Trivia Wheel” game (with giveaways). The second table offered the “Recycle Toss” game, which taught the rules of trash and single-stream separation in Philadelphia and offered an official City of Philadelphia Streets Department recycling bin as a prize. The recycling bin giveaway generated significant interest; the Recycle Toss game “sold out” of all 87 bins by 12:00 pm. Sixteen (16) employees and contractors volunteered to assist in setting up and running the event.
During the event, Mr. Diego Rincón A.A.E., Deputy Director of Aviation - Capital Development, honored the two recipients Michael Venuto (American Airlines) and John Brewer (DOA) of the 2015 PHL Earth Day Appreciation Award.

More detailed descriptions of each recipient are provided in Appendix B.

Eleven (11) exhibitors, listed below, participated in the event, offering information, educational games, and environmentally themed giveaways:

- Clean Air Council
- Delaware County Transportation Management Association (DCTMA)
- John Heinz National Wildlife Refuge at Tinicum
- Marketplace Vendors (Marketplace staff and Paradies Shops staff)
- Pennsylvania Resources Council (for PGW)
- Penn State Extension Master Gardener Program
- Philadelphia Electric Company (PECO) Smart Ideas Program
- Philadelphia Prisons
- Philadelphia Streets Department (provided free recycling bins and literature)
- Philadelphia Zoo
- Sustainable Choices, LLC, for Philadelphia Water Department

As part of “Earth Week,” DOA held its annual paper-shredding “Clean Out Your Files” contest. The Custodial Unit won for recycling 1,296 pounds of paper. Overall, five DOA units competed and 2,539 pounds of paper were recycled.
America Recycles Day 2015

The 2015 America Recycles Day (ARD) celebration, held on Thursday, November 12, provided a showcase for highlighting PHL’s recycling program and demonstrating how airport users can help the program succeed. The event also provided resources for helping/encouraging attendees to recycle more effectively at home. It is estimated that over 300 visitors attended America Recycles Day 2015.

Twelve (12) employees and contractors volunteered to assist in setting up and running the event. In addition to the Division of Aviation, eight (8) exhibitors participated:

- Paradies Shops
- Partnership for the Delaware Estuary
- PECO Smart Ideas
- Philadelphia Department of Streets and Street & Walkways Education and Enforcement (SWEEP) Program
- Philadelphia Marketplace
- Philadelphia Prisons (food waste composting program)
- Revolution Recovery and Recycled-Artist-in-Residency (RAIR)
- Waste Oil Recyclers
The most consistently popular exhibitor at PHL Earth Day and ARD events is the City of Philadelphia Department of Streets’ Recycle Bank table. They bring knowledgeable SWEEP (Street & Walkways Education and Enforcement Program) officers to explain the city’s single-stream recycling program. For this event, they gave away 80 large blue recycling bins for residential use. The City of Philadelphia Recycling Office has provided the Airport with a magnetic educational recycling game for use at future events.

**Messaging on Shuttle Buses**

The DOA has implemented educational posters on employee and parking shuttle busses, to inform employees and travelers about environmental programs at PHL and alternative methods of transportation. In 2016, DOA is refreshing these advocacy posters to show greater variety and communicate action-oriented messages on recycling, transportation, and safety, targeted to customers and airport employees.
Recycling Committee

The Recycling Committee is comprised of staff members that represent each of DOA’s departmental units. The committee meets periodically to discuss the progress of the recycling program, identify future initiatives, and coordinate activities such as the annual Earth Day and America Recycles Day events. The Recycling Committee continues to work towards identifying ways to reduce overall waste within the DOA and tenants, while acting as a liaison to bring current recycling information and protocol to their respective units.

Meetings were held in 2015 on January 21, March 19, and October 20. Committee members are active volunteers for the annual Earth Day and America Recycles Day events.

Coordination with the City of Philadelphia Recycling Office

Since June 2015, the Planning Unit has been coordinating closely with the City of Philadelphia Recycling Office. The City’s Recycling Director has provided expertise and context for strategic development of the program at PHL. In summer and fall, the Streets Department helped DOA secure a $7,500 PA Department of Environmental Protection Technical Assistance grant for strategic planning and procurement. The grant resulted in MSW Consultants preparing a Recycling Best Practices Report that helped us to define future program needs.

The PHL Recycling Coordinator also participates in regular meetings of the Philadelphia Solid Waste and Recycling Advisory Committee (SWRAC).
III. Tenant Recycling

American Airlines (US Airways)

American Airlines (AA), PHL’s largest air carrier, recycled 394 tons out of 4,158 tons of total waste in 2015 and received approximately $12,000 in recycling rebates, reaching a diversion rate of 9.5%.

**Figure 9: 2011-2015 American Airlines Solid Waste & Recycling**

<table>
<thead>
<tr>
<th>Material</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Waste (tons)</td>
<td>4,598</td>
<td>4,016</td>
<td>3,873</td>
<td>4,635</td>
<td>3,764</td>
</tr>
<tr>
<td>Single Stream Recycling (tons)</td>
<td>1,048</td>
<td>723</td>
<td>936</td>
<td>1,098</td>
<td>394</td>
</tr>
<tr>
<td>Total (tons)</td>
<td>5,646</td>
<td>4,739</td>
<td>4,809</td>
<td>5,733</td>
<td>4,158</td>
</tr>
<tr>
<td>Diversion Rate</td>
<td>18.6%</td>
<td>15.3%</td>
<td>19.5%</td>
<td>19.2%</td>
<td>9.5%</td>
</tr>
</tbody>
</table>

In addition to this single stream diversion, AA also recycles tires, scrap metal, motor oil, toner cartridges and universal waste items including fluorescent light bulbs and used batteries.

**Figure 10: American Airlines 2015 Total Solid Waste and Recycling**

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Waste</td>
<td>3,764 tons</td>
</tr>
<tr>
<td>Single Stream</td>
<td>394 tons</td>
</tr>
<tr>
<td>Rubber</td>
<td>1,592 tires</td>
</tr>
<tr>
<td>Scrap Metal</td>
<td>70 tons</td>
</tr>
</tbody>
</table>
MarketPlace Philadelphia Management (MPM)

MarketPlace PHL, LLC is the private partner with the City of Philadelphia in the redevelopment of the food and retail program throughout Philadelphia International Airport. Marketplace Philadelphia Management saw a change in its diversion rate from 22.4% in 2012, 17.5% in 2013, and 12.8% in 2014 to 19.6% in 2015.

As with the DOA, MPM also saw an increase in loads rejected for contamination by their hauler starting in 2013. They have rebounded by using improved signage (right) that reminds customers to separate liquids and other non-recyclable material. See Figure 11 below.
# Figure 11: 2011-2015 Marketplace Recycling and Energy Milestones

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single Stream Recycling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total tons of disposal (trash + recycling):</td>
<td>3,107</td>
<td>3,030</td>
<td>3,133</td>
<td>3,272</td>
<td>3,220</td>
</tr>
<tr>
<td>Total tons of trash:</td>
<td>2,440</td>
<td>2,350</td>
<td>2,586</td>
<td>2,854</td>
<td>2,589</td>
</tr>
<tr>
<td>Total tons of recycling</td>
<td>667</td>
<td>680</td>
<td>547</td>
<td>418</td>
<td>631</td>
</tr>
<tr>
<td>Diversion rate:</td>
<td>21.5%</td>
<td>22.4%</td>
<td>17.5%</td>
<td>12.8%</td>
<td>19.6%</td>
</tr>
<tr>
<td>Savings from trash disposal:</td>
<td>$39,558</td>
<td>$42,284</td>
<td>$35,455</td>
<td>$27,241</td>
<td>$42,963</td>
</tr>
<tr>
<td>Rebates from recycler</td>
<td>$45,341</td>
<td>$27,005</td>
<td>$16,305</td>
<td>$8,676</td>
<td>$9,350</td>
</tr>
<tr>
<td>Total value from single stream recycling:</td>
<td>$84,899</td>
<td>$69,289</td>
<td>$51,760</td>
<td>$35,917</td>
<td>$52,313</td>
</tr>
<tr>
<td><strong>Fryer Oil Recycling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total gallons of fryer oil removed:</td>
<td>10,500</td>
<td>11,525</td>
<td>15,745</td>
<td>20,380</td>
<td></td>
</tr>
<tr>
<td>Total gallons of bio-diesel produced:</td>
<td>7,350</td>
<td>8,068</td>
<td>11,022</td>
<td>14,266</td>
<td></td>
</tr>
<tr>
<td>Savings from disposal:</td>
<td>$21,150</td>
<td>$21,150</td>
<td>$21,150</td>
<td>$21,150</td>
<td></td>
</tr>
<tr>
<td>Rebates from recycler</td>
<td>$1,920</td>
<td>$8,829</td>
<td>$12,061</td>
<td>$13,211</td>
<td></td>
</tr>
<tr>
<td>Total value from fryer oil recycling:</td>
<td>$23,070</td>
<td>$29,979</td>
<td>$33,211</td>
<td>$34,361</td>
<td></td>
</tr>
<tr>
<td><strong>Electronic Waste Recycling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic recycled, pounds</td>
<td>900</td>
<td>450</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td><strong>Metal Waste Recycling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal waste collected and recycled, pounds (estimate)</td>
<td>2,000</td>
<td>4,000</td>
<td>6,000</td>
<td>7,000</td>
<td>7,000</td>
</tr>
<tr>
<td><strong>LED Light Bulb Replacements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>“Blade Sign” LED Light Bulb Replacements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of Blade Sign LED light bulbs operating:</td>
<td>399</td>
<td>425</td>
<td>425</td>
<td>425</td>
<td>425</td>
</tr>
<tr>
<td>Watts saved per bulb per hour</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Total annual savings from Blade Sign LED bulbs</td>
<td>$8,200</td>
<td>$8,713</td>
<td>$8,713</td>
<td>$8,713</td>
<td>$8,713</td>
</tr>
<tr>
<td><strong>RMU Cart LED Light Bulbs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of RMU LED light bulbs operating:</td>
<td>---</td>
<td>---</td>
<td>198</td>
<td>198</td>
<td>198</td>
</tr>
<tr>
<td>Watts saved per bulb per hour</td>
<td>---</td>
<td>---</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Total annual savings from RMU Cart LED bulbs</td>
<td>---</td>
<td>---</td>
<td>$7,805</td>
<td>$7,805</td>
<td>$7,805</td>
</tr>
<tr>
<td><strong>B/C Food Court Ceiling Lights LED Light Bulbs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of Food Court LED light bulbs operating:</td>
<td>---</td>
<td>---</td>
<td>93</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>Watts saved per bulb per hour</td>
<td>---</td>
<td>---</td>
<td>66</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Total annual savings from B/C Food Court LED bulbs</td>
<td>---</td>
<td>---</td>
<td>$8,695</td>
<td>$8,695</td>
<td>$8,695</td>
</tr>
<tr>
<td><strong>D/E Soffit Lights LED Light Bulb Replacements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of D/E Soffit LED light bulbs operating</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>106</td>
<td>106</td>
</tr>
<tr>
<td>Watts saved per bulb per hour</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Total annual savings from D/E soffit LED bulbs</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>$5,507</td>
<td>$5,507</td>
</tr>
<tr>
<td><strong>TOTAL ELECTRICITY SAVINGS FROM LEDS</strong></td>
<td>$8,200</td>
<td>$8,713</td>
<td>$25,213</td>
<td>$30,720</td>
<td>$30,720</td>
</tr>
<tr>
<td><strong>COMBINED VALUE OF ALL PROGRAMS</strong></td>
<td>$116,169</td>
<td>$107,981</td>
<td>$110,184</td>
<td>$100,998</td>
<td>$117,033</td>
</tr>
</tbody>
</table>
Tenant Pilot Compactor Program
The DOA is continually looking for ways to collaborate with more airlines and other airport vendors and businesses. By cooperatively tracking waste and recycling tonnage with its PHL partners, DOA can implement policies that reduce costs and improve diversion and recycling for the entire airport.

To this end, the recycling program was expanded in 2012-13 by offering compactor services to two tenants in a pilot tenant recycling program. JetBlue is using one compactor and TSA’s recycling contractor is using another compactor out of the eight DOA compactors on site for recycling. This arrangement benefits the tenants by minimizing costs associated with waste management and benefits the DOA by reducing the number of dumpsters and compactors necessary on the apron area.
IV. Future Goals and Objectives

DOA is committed to renewing its successes in recycling by finding new ways to improve the collection, sorting, and diverting of every possible type of recyclable material. Below is a list of long and short-term strategies that the DOA will employ.

Contamination

DOA is investigating multiple training and technology-oriented interventions for selection and implementation in 2016, to significantly reduce the amount of liquid contamination. Remedies include research on best practices and technology, closer coordination with haulers, and additional education and outreach.

DOA is in the process of identifying a contractor that will support the Planning Unit’s contamination-elimination efforts. This includes the incorporation of liquid-removing equipment or systems to be used in conjunction with the compactor that receives all TSA checkpoint recyclable materials. We are researching systems that can process single-stream materials such as glass, plastic, paper, aluminum and other standard single-stream containers and material while eliminating liquid contamination.

DOA is planning to assess the feasibility of partnering with or establishing a mixed waste processing facility, which would separate recyclables from a mixed solid waste stream.

DOA is in the process of updating the recycling advocacy posters placed in shuttle buses as part of a long-term campaign to educate employees and airport customers about recycling and other sustainability messages.

In the short-term, DOA is redirecting recyclable materials sourced from the security checkpoints from trash back to the recycling stream with the intent of reducing contamination through improved public outreach, signage, and communications and coordination with Custodial staff and tenants.

Waste and Recycling Receptacle Placement and Messaging

In 2016, PHL will attempt to raise recycling awareness and compliance through an updated branding and slogan campaign. The new messages will be located on shuttle buses that serve employees and the traveling public. Public Affairs, the Art Image Director, and the Planning Unit are working together to develop concepts and explore ideas for this initiative.
New receptacles that provide both waste and recycling disposal are also being explored. The Envyrozones that DOA purchased more than five years ago handle several streams of recycling and are outdated now that PHL has switched from 2-3 streams to single-stream recycling. Numerous sources recommend the placement of recycling bins in close proximity to waste receptacles. Additional receptacles and better-placed containers can increase recycling in several locations throughout the airport that are currently underserved.

Feasibility of Mixed Waste Processing Facility
DOA is evaluating the feasibility of building a mixed waste processing facility, which could collect and sort materials (recyclables, trash, and organics) sourced from PHL’s tenants. This process simplifies collection and has the potential to increase the recycling rate. The Planning Unit will be moving this initiative forward in 2016.

Overall Program Reassessment
The DOA has a goal of increasing the recycling rate through program expansion and/or improvements. New recycling receptacles are planned for the LEED certified Terminal F Baggage Claim building; however, expanding the program to additional areas of the terminal complex has challenges due to financial, personnel, and operational limitations. The DOA will be reassessing the program in 2016 to determine how issues such as liquid contamination, receptacle placement/type, staffing, and general equipment needs can be amended to improve the efficiency of the program overall.
V. Conclusion

While there have been changes in recycling market forces and hauling procedures, the recycling program at PHL has continued to make significant improvements over the past six years. The recycling rate peaked near 21.5% from 2011-2013 but has dropped to 8.0% in 2015. DOA is assessing how to maximize collection of recyclables from public, DOA, and tenant waste streams while reducing contamination.

Ongoing research into best recycling practices within the aviation industry is yielding opportunities to improve PHL’s recycling rate. DOA will focus on the following objectives/approaches in 2016:

1) Revisit existing goals and strategies and develop short- and long-term action plan for the recycling program.

2) Actively engage and coordinate with DOA staff on a more regular basis that have direct and indirect impacts on recycling program.

3) Establish a partnership with a recycling vendor that can provide the necessary technical assistance to reduce contamination and improve reporting and tracking methods. Addressing contamination issues may include procurement of liquid-removing systems to be deployed with one or more compactors.

4) Examine the feasibility of a mixed waste processing facility at PHL.

5) Update recycling messaging and signage for educating airport passengers and employees.

6) Support Marketplace in the development of an airport-wide organics waste recycling program, including ongoing discussions with the Philadelphia Water Department and other potential end users of food waste.

7) Expand partnering opportunities to identify new stakeholders and partners to continue to broaden recycling efforts at PHL.

8) Reduce overall program costs, where possible.

By continuing to reach out to and work with airlines and other tenants, the DOA continues to explore recycling initiatives that will help protect the environment and improve and streamline waste management efforts in the most cost-effective manner.
APPENDIX A

Environmental Policy Statement
Philadelphia International Airport

Environmental Policy Statement

The many natural resources that surround the Philadelphia International Airport and Philadelphia Northeast Airport, which comprise the Philadelphia Airport System (Airports) have helped shape the region’s rich history and their use has led to the region’s prosperity. The Airport will focus on protection and restoration to reduce resource use.

The Airports transportation and economic mission will be achieved in a manner that demonstrates responsible environmental stewardship. The implementation of proactive environmental management systems will contribute to the economic, social, and environmental well being of the City of Philadelphia and the metropolitan region.

The Airports will comply with all applicable regulations and other requirements, while striving to continually improve environmental performance, prevent pollution, and reduce the potential impact of their activities. This commitment will be tracked through the establishing, implementing, and reviewing of relevant environmental objectives and targets for Airport operations and activities.

Philadelphia Airport System will actively seek resolutions to environmental issues by striving to achieve the following goals:

**Compliance and Monitoring:** The Airports will fully comply with all applicable environmental laws, regulations and other requirements, and strive to exceed legal and regulatory standards where doing so is consistent with the transportation and economic development mission of the Airports. Using innovative technologies and best management practices, the airport will develop, monitor, and regularly review specific targets for activities and programs that help achieve compliance and improve environmental performance. The Airports will hold tenants responsible for compliance with all the applicable laws and statutes regulating their activities.

**Sustainability:** The Airports will strive to reduce the impacts of operations and activities to preserve and protect surrounding natural resources through cost-effective energy use, recycling water conservation, waste reduction pollution prevention activities, and procurement of green materials. Airport facilities, where possible will be designed, constructed, and rehabilitated to make use of sustainable materials and green building techniques.

**Communications:** The Airports will distribute the environmental policy to all on-Airport city employees so they can be aware of and active in implementing this policy. This policy will serve as an impetus to promoting open discussions among all employees about the environmental aspects of their operations and activities and the environmental management system so that they may make informed choices and assist in the accomplishment of the environmental goals. The airports will require all tenants to communicate to their employees the requirements of the environmental management system.

**Environmental Stewardship:** Current Airport operations and activities will be modified and improved by incorporating sustainable business practices to minimize or avoid impacts to natural resources to the greatest extent possible. The Airports will participate in activities that assist in enhancing the natural environment with a focus on sustaining resources that are vital to local stakeholders. The Airport will improve overall environmental quality through clean up and restoration efforts focused on areas affected by past Airport operations and activities.

July 31, 2006
APPENDIX B

2015 Earth Day Award Recipients
Michael Venuto, Facilities Manager, American Airlines

Mr. Venuto is the Facilities Manager for American Airlines and is the recipient of the 2015 Tenant Employee Earth Day Award. Mike has made great strides toward improving the recycling program for American Airlines. In 2014, more than 1,000 tons of waste was recycled, which is approximately 19% of waste generated by American Airlines and its merged partner US Airways. In addition, American recycles light bulbs, batteries, tires, waste oil, antifreeze, scrap metal, and other recyclable equipment. Mike is paramount to maintaining the recycling program as well as making sure debris collected from the FOD walks held every year is also recycled.

John Brewer, PNE Airport Manager

Mr. Brewer, currently the Northeast Philadelphia Airport (PNE) Manager, is the recipient of the 2015 DOA Employee Earth Day Award. John received this Year’s award based on his exemplary performance for complying with environmental regulations at PNE.

Over the last 4 years, John has provided focused guidance and direction to both DOA PNE employees and tenants that have allowed for a remarkable unblemished record of compliance with environmental regulations at Pennsylvania’s 6th busiest airport. Over the course of the last three years, PNE has had no identified Resource Conservation and Recovery Act (RCRA) compliance issues based on the results of over 18 exacting bimonthly inspections. John has inspired PNE tenants to develop and maintain an unblemished record of compliance over the last 18 months. John has also provided a strong focus and effort to develop green infrastructure and practices at PNE’s largest tenant, Agusta Westland, during the rapid expansion of their facilities.
Philadelphia International Airport Waste Flow Diagram
2015

DOA – LANDSIDE
- Roadways (TRASH ONLY)
- Security Checkpoints
- SEPTA Train Platforms
- DOA Offices
- Communications Center
- International Plaza
- Employee Parking Lots
- Cell Phone Lot
- DOA Warehouse/Shops
  - Shredded paper
  - Universal Waste
  - Hazardous Waste

DOA – AIRSIDE
- Terminals A-F
- Airfield (FOD – TRASH)
- DOA Shops

TENANTS (LANDSIDE & AIRSIDE)
- Airlines*
- Philadelphia Marketplace
- Federal Agencies (TSA*, FAA, etc.)
- Fuel Providers
- Rental Car Agencies
- Hotel (Marriott)
- Cargo City Tenants
- Atlantic Aviation (GA)
- Philadelphia Parking Authority

Diagram Key:
- Flow of Recycling
- Flow of Trash/Solid Waste
- Flow of Special Cleanup Waste and Other Waste Streams

* NOTE: TSA and one air carrier use DOA recycling compactor through an MOU