Recycling Technical Assistance Project # 591

City of Philadelphia, Philadelphia County

Recycling Procurement
at
Philadelphia International Airport

Sponsored by the Pennsylvania Department of Environmental Protection through the Pennsylvania State Association of Township Supervisors

REPORT

February 2016

York, PA
(800) 679-9220
www.mswconsultants.com

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RECYCLING TECHNICAL ASSISTANCE PROJECT #591

CITY OF PHILADELPHIA, PHILADELPHIA COUNTY

RECYCLING PROCUREMENT AT PHILADELPHIA INTERNATIONAL AIRPORT

1. STATEMENT OF THE PROBLEM

The City of Philadelphia's Division of Aviation (DOA) owns and operates the Philadelphia International Airport (PHL). At PHL, DOA maintains a single-stream recycling program for airport offices, parking areas and terminals. Waste collection services are provided by a combination of DOA's Pavement & Grounds staff and Philadelphia Streets Department staff; internal recycling collection is performed by DOA staff, and recycling collection services are provided under contract with a private hauler. The existing recycling collection contract, procured through a competitive bid, will expire in 2016. PHL airlines and tenants are responsible for their own recycling collection services; they are not included in DOA's recycling collection contract.

This project was performed to assist the DOA with its development of a Scope of Work for a 2016 recycling services request for proposal (RFP) in accordance with DOA's cost reduction and increased diversion goals.

2. SUMMARY OF WORK COMPLETED

MSW Consultants (MSW) has reviewed current recycling practices at PHL, researched and compiled airport recycling best practices and reviewed and provided recommendations for DOA's Request for Proposals for Philadelphia International Airport Waste Reduction and Recycling Program Services.

2.1 CURRENT PRACTICES

PHL operates a decentralized waste and recycling system. In 2014, PHL generated 1,344 tons of solid waste and 291 tons of single stream recyclables. It achieved a 17.7% recycling rate between DOA efforts and the efforts of airlines and airport tenants.

DOA collects recyclables airside from its warehouse and maintenance shops, employee parking lots and the cell phone lot. This material ultimately ends up in two landside compactors that are collected by the airport's contracted recycling hauler. Airside, DOA collects recyclables from Envyrozone receptacles accessible to passengers in PHL terminals. Envyrozone materials are placed in airside compactors that are collected by the airport's contracted hauler.

Airport tenants include retail shops and restaurants. All retail tenant management, including recycling service procurement and education, is performed by the Philadelphia Marketplace (Marketplace), which is a division of Marketplace Development, a real estate development firm that specializes in airport retail management. Marketplace provides recycling containers within the terminals, including food court areas.

2.2 BEST PRACTICES RESEARCH

MSW researched best practices in waste and recycling systems and service procurement at U.S. airports that have sustainability plans or solid waste management plans. The following airports provided information on best practices in recycling:

- Seattle-Tacoma International Airport (Sea-Tac),
- Charlotte Douglas International Airport (CLT),
- San Diego International Airport (SAN),
- San Francisco International Airport (SFO), and
- Hartsfield-Jackson Atlanta International Airport (ATL)

Best practices include the following:

- Development and publication of sustainability plans or solid waste management plans. This includes periodic progress reports that explain recycling protocols and waste reduction and diversion goals and plans
- Single stream recycling available to passengers, tenants and sometimes airlines
- Printed and online recycling education for tenants and sometimes airlines
- Provision of recycling compactors by airports for use by airport tenants

Many airports have begun or are embarking on food waste collection and composting processes to reach diversion goals. A full report is located in Appendix A.

3. RECOMMENDATIONS FOR REQUEST FOR PROPOSALS

After review of PHL's current recycling system and best practices in recycling at other U.S. airports with sustainability plans, solid waste management plans and waste reduction goals similar to the DOA's goals, MSW recommends development of a request for proposals that includes a base proposal and mandatory alternative proposals.

3.1 BASE PROPOSAL

MSW recommends that DOA develop a base proposal that includes the current recycling services provided at PHL as well as the following:

3.1.1 CONTAMINATION PROCEDURES AND PREVENTION

MSW recommends that DOA require the contractor to provide a handling method for recycling containers containing liquid or ice. The contractor should explain how the material will be collected, where it will be taken for processing and how it will be documented that the material is recycled and not disposed.

In addition, DOA may wish to include a clause in its hauling contract that states contamination rates higher than 10% (or any percentage the DOA chooses) will result in a landfill fee and DOA's right to charge a small penalty. However, MSW recommends contamination control through education prior to enforcing a penalty provision.

3.1.2 ANNUAL WASTE AUDITS

A waste audit examines the types of material discarded, where and how discarded material is generated and waste disposal behaviors. It is usually conducted over a short period of time and does not provide a statistically representative snapshot of an entire waste and recycling system that a waste characterization study provides.

MSW recommends that beginning in the first year of the recycling collection contract, the Contractor, or a third-party approved by DOA, conducts waste audits in cooperation with DOA and tenants. The Contractor shall provide a proposal detailing how tenants will be chosen for audits, how many waste audits will be performed each year and whether tenants will be chosen by location, category, etc. Each year, the Contractor, DOA and Marketplace and other tenants will collaborate and finalize the plans and methods to be used for that year's waste audit program. MSW recommends requiring of the contractor the following:

- **Safety measures.** Provide thick gloves to sorters, and make sure all sorters are up to date on tetanus shots. Include the Contractor's safety director in planning.
- **Confidentiality.** Ensure that no documents are being read during the audit and that nothing leaves the auditing area.
- **Collection of waste.** Ensure that everything collected is clearly labeled by date and location.
- **Sorting of waste.** Sort the collected waste by type, noting paper; cardboard; recyclable and non-recyclable plastics, glass, and metals; food waste; batteries; and so on. Make sure to note recyclable materials that have not been diverted for recycling.
- **Analysis and recommendations.** Note the composition of the waste stream. Note the percentage of recyclables in the waste stream. Recommend methods to increase the recycling at PHL. Note ideas of how waste may be collected more efficiently. Note any opportunities to reduce waste generation. Note any recommendations on how DOA and Marketplace tenants may reduce costs by altering their waste management systems.

The following language may be used in the RFP to indicate that the contractor will fund annual waste audits:

The Contractor will provide annual waste audits. The waste audit program will be developed and implemented in partnership with DOA and the Contractor. The method of auditing the waste must be pre-approved by DOA. It is the Contractor's responsibility to coordinate waste audit schedules to allow for reasonable review time by DOA, as well as for any necessary revisions and coordination, and for meeting DOA deadlines.

3.1.3 ANNUAL REPORT

MSW recommends that after the first annual waste audit has been performed, the contractor shall be required to provide DOA with an annual report outlining opportunities to increase recycling at the airport.

3.1.4 RECYCLING EDUCATION

MSW recommends that DOA require the Contractor to fund recycling education and collaborate with DOA on two recycling guides: a guide for airport employees and a guide for Marketplace tenants. The recycling guides will be updated annually, and the Contractor will fund the updated copies. These guides must be able to be uploaded to DOA's website.

3.1.5 MONTHLY REPORTS

MSW recommends that on a monthly basis, the Contractor will be required to report both the waste collected and disposed and the recyclable materials collected and processed for sale. The contractor's proposal should clearly state how the materials will be measured and how the Contractor will ensure accuracy of the reports.

3.1.6 SERVICE ADDITIONS AND DELETIONS

MSW recommends that DOA require the contractor to allow "piggybacking" of Marketplace tenants, airlines and other PHL entities that wish to join the DOA recycling collection program. The following language may be used:

SERVICE ADDITIONS AND DELETIONS:

Service shall be extended to all new or additional generators in DOA, adding up to ____% of service requirements, immediately upon request for such service by DOA or by generator. The Contractor shall provide this extension for the same unit price as specified in the Agreement. The number of units specified in this Agreement may be reduced up to ____% of service requirements when it is determined by DOA that such units are no longer generating significant recycling quantities, and payment to Contractor shall be adjusted accordingly.

DOA may wish to decide the percentage of service requirements that makes sense to DOA (most likely 5 to 10%) or DOA may request that bidders fill in the percentage they are willing to allow.

3.2 ALTERNATE PROPOSALS

MSW recommends that the RFP require Alternate Proposals for each additional program the airport is interested in adding, with the incremental price for each, including the following.

3.2.1 WASTE CHARACTERIZATION STUDY

A waste characterization study is a comprehensive and statistically representative study that examines and analyzes the composition of a waste and recycling system's many streams. A waste characterization of all waste and recyclables generated at PHL should be funded and coordinated by the contractor. The proposal should include options and require pricing for a one-season sort, a two-season sort and a four-season sort.

The following requirements should be included:

- Contractor must obtain three bids for the study.
- DOA will give final approval for the vendor chosen to perform the study.

MSW recommends that after the base waste characterization study, a full waste characterization study should be performed every five to ten years.

The following language may be used in the RFP to indicate that the contractor will fund a waste characterization study:

The Contractor will provide a waste characterization study during the first year of the Agreement. The waste characterization study methods and details will be developed and implemented in partnership with DOA and the Contractor. The methods and details must be pre-approved by DOA. It is the Contractor's responsibility to allow for

reasonable review time by DOA, as well as for any necessary revisions and coordination, and for meeting DOA deadlines.

Timeline: exact date TBD by DOA

Deliverables: Draft and final versions of waste characterization study; electronic versions of data summaries and raw data spreadsheets or database tables

The Contractor will provide all equipment, resources, and labor to conduct the waste characterization study in the first year of the Agreement within the terms of this contract and contingent upon available contract budget and funding. DOA, working closely with the Contractor, will determine an appropriate schedule and scope for the waste characterization study.

The Contractor will design and conduct the study to produce statistically reliable estimates of DOA waste stream composition and quantities. Study methodology will conform to standard waste characterization protocol and material definition lists.

3.2.2 FOOD WASTE COLLECTION AND COMPOSTING (OPTIONAL)

This alternate proposal should be optional. If offering this option, the contractor must identify the composting facility where material will be delivered and explain how the food waste will be collected to prevent odors.

3.3 MISCELLANEOUS RECOMMENDATIONS

3.3.1 SCOPE OF WORK OUTLINE

In the Airport Best Practices in Recycling report in Appendix A, MSW references a scope of work from San Francisco International Airport (SFO). The following outline is based on SFO's well-organized scope of work. MSW recommends the use of this outline:

A. Definitions
B. Base Services - Develop a short, concise description of work to be performed under contract
    1. Recycling Collection and Processing Services
    2. Equipment
    3. Maintenance
    4. Waste Audits
    5. Reporting
        a. Monthly Reports
        b. Annual Reports
C. Alternate Proposals
    1. Waste Characterization Study
    2. Food Waste Collection and Composting
D. Hours and Location of Work
E. Invoicing
F. Recyclable Materials Marketing
G. Recycling Revenue

H. Term of Contract

I. Contractor Proposal Requirements

3.3.2 COORDINATE CONTRACT EXPIRATION

MSW recommends that the DOA coordinate with Marketplace to coordinate the expiration dates of each entity's recycling collection contract. It may take several contract cycles to coordinate contracts that expire on the same date. When dates are coordinated, DOA and Marketplace should explore jointly publishing a recycling collection RFP that will result in two separate contracts: a contract between the contractor and DOA and a contract between the contractor and Marketplace. This joint procurement may result in cost reduction.

APPENDIX A

AIRPORT BEST PRACTICES IN RECYCLING

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APPENDIX A

Airport Best Practices in Recycling

The Philadelphia International Airport (PHL) includes seven terminals with 30 passenger airlines responsible for 550 daily departures to 128 destination cities. Within its terminals are more than 160 retail and restaurant tenants. In 2014, PHL saw 30.7 million passengers. PHL collects recycling in parking lots, train platforms and offices landside and in Envyrozone receptacles airside. It does not collect recyclables from airport tenants and airlines, however, PHL wishes to expand recycling collection and waste diversion, which may include tenant and airline recycling opportunities.

With PHL's statistics and recycling expansion goals in mind, MSW Consultants researched best practices in waste and recycling at several US airports. Research included procurement methods for recycling, equipment maintenance and optimization, tracking and reporting, increasing diversion rates, and periodic system auditing. The following airport waste and recycling systems were examined:

- Seattle-Tacoma International Airport (Sea-Tac),
- Charlotte Douglas International Airport (CLT),
- San Diego International Airport (SAN),
- San Francisco International Airport (SFO), and
- Hartsfield-Jackson Atlanta International Airport (ATL)

In addition to specific airport research, MSW Consultants reviewed the Natural Resources Defense Council's (NRDC) 2006 report *Trash Landings* in which provides the results of a yearlong study of 30 U.S. airports' waste management systems.

1. SEATTLE-TACOMA INTERNATIONAL AIRPORT

The Airports Council International publishes an annual North American Airport Traffic Summary. The 2014 Summary reports 37.5 million passengers visited Seattle-Tacoma International Airport (Sea-Tac), just six places above PHL's 30.7 million passengers. Sea-Tac began recycling in 1993, and collected about 112 tons of recycling that year. With added security implemented in 2001, passengers began spending more time in the airport and generated more waste. In 2012, Sea-Tac increased the Terminal diversion rate to 30%. Airfield diversion has remained at about 10%.

1.1 KEY PROGRAM COMPONENTS

Since 1993, Sea-Tac has included tenants in its waste and recycling program. Today, more than 80% of its tenants participate in the recycling program. Compactors are available to terminal tenants at loading docks were they also accept deliveries. Nearly all of the airlines at Sea-Tac also participate in the recycling program. In 2010, Sea-Tac introduced waste and recycling compactors on the airfield for ease of Airline use. All recycling is provided to tenants and airlines free of charge. Sea-Tac is able to offer the no-charge service because the City of Seattle provides free recycling services to the airport. Airlines and tenants are responsible for collecting their own recycling (providing internal receptacles, etc.) and for training their employees to recycle. Sea-Tac makes waste and recycling education available to tenants through printed pieces like the recycling guide available in Attachment 1 and its online waste and recycling training video available here:

http://www.portseattle.org/Business/Airport-Tenants/Pages/Training.aspx .

Key components of Sea-Tac's recycling program are its solid waste management plan, annual waste characterization studies, tenant education and recycling in airport offices, terminals and concession areas. In its recycling system, Sea-Tac recycles beverage containers, mixed paper, cardboard, cooking oil (for conversion to biodiesel), coffee grounds, glass, batteries, printer/copier cartridges, metals, wood, pallets and plastic films. Sea-Tac reports in A Vision for 2014 and Beyond: Environmental Strategy Plan 2009, a $145,000 cost-savings to airport tenants.

1.2 DIVERSION GOALS AND PROGRESS

Sea-Tac's diversion goals are to increase the recycling rate to 50%, reduce use of hazardous materials and generation of hazardous wastes, and to increase use of green products. In 2012 (the most current data available), the airport reported 30% terminal diversion and 10% airfield diversion. The following are select initiatives cited in Sea-Tac's 2012 progress toward its goals:

- Waste characterization study of terminal waste
- Tenant recycling education and training through tenant site visits
- Addition of recycling bins to two locations.

A full 2012 progress report and 2013 actions can be viewed in Attachment 1.

In June 2014, Sea-Tac issued a Request for Qualifications for Waste Reduction and Recycling Program Support Services (available in Attachment 1). The Scope of Work includes an update for the airport's solid waste management plan and waste characterization studies with scope and focus to be determined. The budget for these tasks is $150,000. In 2015, after new recycling guidelines were released by the FAA, Sea-Tac completed an updated, FAA compliant Solid Waste Management Plan.

2. CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

Like PHL, Charlotte Douglas International Airport (CLT) has developed recycling goals including growth of its recycling and composting program. CLT has published a Sustainability Program (available in Attachment 2) with individual focus areas. Each focus area is governed by its own sustainability policy or guidelines. Many focus area policies are still under development, including an Environmental Management Plan and Sustainability Guidelines in Tenant Modification Standards.

2.1 KEY PROGRAM COMPONENTS

CLT processed waste through its Airport Recycling Center ("ARC"), which began sorting trash and processing recycling in 2012. Food, plant matter and paper towels were processed in an on-site, in-vessel digester and then fed to worms in an on-site vermicomposting program. Attachment 2 includes CTL's Sustainability Program Catalog that provides program details and achievements.

2.2 DIVERSION GOALS AND PROGRESS

CTL's goal is to achieve a 90% recycling rate by 2017. As of 2012, the airport has reached a 65% recycling rate. In July 2014, CTL issued a Request for Proposals to Manage and Oversee the Recycling Center and Solid Waste Disposal Services (available in Attachment 2) with the following goals:

- Promote sustainability
- Provide a high quality and efficient operation
- Consolidate the current operations under one company to eliminate potential duplicity
- Grow the recycling and compost program
- Minimize cost to CLT

The RFP includes a concise Statement of Work that includes collection of waste and recycling materials, dumpster provision, cleaning and maintenance, recommendations for capital equipment and premise improvements, reporting requirements, operational policies and procedures and financial incentives.

CLT awarded a contract to Flint River Recycling. The company operated ARC for less than six months before the airport terminated the contract. In a July 2015 interview with NPR radio station WFAE 90.7, Flint River Recycling's president cites high processing and disposal costs. CLT is currently under a one-year contract with Waste Management to process the airports recyclables. Waste Management is not using ARC to process material.

3. SAN DIEGO INTERNATIONAL AIRPORT

San Diego International Airport (SAN) began a single-stream recycling program in 2002 that includes airlines and tenants. This program was responsible for an increase in recycling from 107 tons in 2002 to more than 1,052 tons in fiscal year 2013 and a food waste diversion program with 100% participation of food concessioners. Though SAN is a much smaller airport with only two passenger terminals and 18.7 million passengers in 2014, it boasts a waste reduction plan and a waste reduction team similar to the team at PHL.

3.1 KEY PROGRAM COMPONENTS

The key component of SAN's recycling program, a single-stream program that includes paper, newspapers, junk mail, catalogs, magazines, phone books, cardboard, chipboard (cereal boxes, shoe boxes), aluminum cans, glass bottles and jars, plastic bottles and tin and steel cans, is the janitorial service, Flagship, that collects separated waste, recycling and food waste from all program participants. Representatives from SAN's Environmental Affairs Department and Terminal and Tenants Division meet with Flagship regularly to discuss, plan and modify waste reduction efforts as well as other Flagship efforts such as restroom cleanliness.

SAN has developed a waste reduction advisory group made up of department heads to engage airport employees and tenants in waste reduction and diversion. The group employs the same waste management hierarchy as PHL with waste reduction first in the hierarchy, reuse next, then recycling and composting, and finally, disposal. The team cites a reduction in cost as its number one driver. SAN's diversion initiatives can be viewed in its presentation included in Attachment 3.

Other key components are a C&D recycling program; a vegetative waste program in which restaurant organics and yard waste are mulched or composted, a wood pallet chipping program, e-waste collection events and universal waste collection for batteries and fluorescent bulbs. The airport educates its tenants, airlines and staff with a recycling guide and hands-on training.

3.2 DIVERSION GOALS AND PROGRESS

SAN continues to build on its progress through program evaluations and modifications and additional programs. In an annual sustainability report (available in Attachment 3), SAN reports its waste reduction and recycling progress. Highlights over the last three years include the following:

1. For the 11th time, in 2015 the Airport Authority was named Recycler of the Year by the City of San Diego.
2. In 2014, 226 tons of food waste were collected for composting from all 41 onsite restaurants and all three airline prep kitchens.
3. In fiscal year 2013, 34% of waste was recycled.
   - 1,199 tons of C&D recycling
   - 1,052 tons of single-stream recycling
   - 4,086 tons were landfilled
   - 213 tons of certified hazardous waste was disposed

4. SAN FRANCISCO INTERNATIONAL AIRPORT

In its 2014 Annual Recycling Report, PHL references San Francisco International Airport's (SFO) 80% waste minimization goal. SFO's goal is similar to the City of Philadelphia's 70% diversion goal.

4.1 KEY PROGRAM COMPONENTS

Three waste streams are generated at SFO: a mixed solid waste stream (from which recyclables and compostable materials are sorted from waste at a mixed waste processing facility), a source separated recycling stream (of mixed/single stream recyclables), and a compost stream.

In 2011, The City of San Francisco and its Airport Commission issued an invitation for bids for SFO's waste, recycling and compost hauling and processing (available in Attachment 4). The Scope of Work of the bid calls for:

1. Collection management services including collection, transport and processing of SFO's three material streams as well as an annual waste characterization of the mixed solid waste stream.
2. Maintenance, cleaning and repair of collection containers
3. Equipment including compactors, dumpsters, and carts
4. Fines for Service Failures
5. Quarterly collection reports
6. Annual reports that detail progress made toward recycling goals and plans to meet goals in the upcoming year.

SFO's Invitation for Bids and Scope of Work are attached. The Scope of Work is a concise document with an intuitive format that lists specifications. The following may be of particular interest to PHL:

1. Solid Waste Characterization and a list of specific documentation required in Section B.1.a.10.
2. Container maintenance, including a list for preventative maintenance, in Section C
3. Description of the Annual Solid Waste Report in Section M

4.2 DIVERSION GOALS AND PROGRESS

In 2012, SFO released its Climate Action Plan. Section Five of the plan is a Zero Waste Plan that includes solid waste reduction strategies including strategies for waste reduction as well as operational changes that may result in increased diversion. This section is available in Attachment 4.

5. HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT

Hartsfield-Jackson Atlanta International Airport (ATL) is home to 270 concessioners, 183 of which are food and beverage concessioners. In 2012, ATL determined that approximately 5% of airport waste was recycled from the Central Passenger Terminal Complex. In response, the airport added more than 300 recycling bins in passenger concourses to collect single stream recycling, the result of which will be available in early 2016.

5.1 KEY PROGRAM COMPONENTS

In February 2015, ATL issued a bid for building and operation of a state-of-the-art, onsite recycling and composting facility, Green Acres ATL Energy Park. The Energy Park will also process an additional 19,000 tons of yard trimmings annually from the City's Department of Public Works. A waste characterization study was completed in 2013. A summary of the study is provided in Exhibit E of the February 2015 RFP for the Green Acres ATL Energy Park available here:

http://www.atlantaga.gov/modules/showdocument.aspx?documentid=17150

In anticipation of the Energy Park, ATL is actively "precycling." Precycling, according to ATL's Senior Sustainability Manager is 1) educating airport staff and tenants about recycling and composting equipment and recyclable material, and 2) cleaning the recycling stream before recycling programs are put into place. One precycling initiative has been to add requirements for plates, utensils, cups, and packaging of prepared foods to be made from biopolymers capable of fully degrading within six months in tenant leases. The airport also discourages the use of #5 and #6 plastics commonly used by food and beverage concessioners. ATL has also preemptively required a grey water filtration system to be installed in the Energy Park's recycling processing facility to capture melted ice from recycled or composted drink vessels.

5.2 DIVERSION GOALS AND PROGRESS

Informed by its comprehensive 2013 Waste Characterization Study, ATL has a Zero Waste by 2020 goal, in which zero waste is defined as 90% diversion in the form of recycling, composting or reuse.

6. NRDC RESEARCH SUMMARY

The Natural Resources Defense Council (NRDC) conducted a survey of 10 major U.S. airports in 2006. The resulting report focuses on waste generation in public areas of terminals, retail and concession areas of terminals and airline offices and airplane waste. It reports that 47% of waste generated in airports is generated by airlines. The study suggests that centralized waste management

systems, while they require more effort on the part of airports, offer more opportunity for both diversion and cost savings.

The report details specific challenges and solutions for airport recycling, especially for airports that currently use a decentralized collection system. It recommends that airports measure and monitor recycling program progress and focus on improvements in areas where the most waste is generated.

The NRDC's full report is available here: http://www.nrdc.org/cities/recycling/airline/contents.asp

Attachment 1

SUPPORTING DOCUMENTS

SEATTLE-TACOMA INTERNATIONAL AIRPORT

Materials Use and Recycling

GOALS	STATUS	2012 PROGRESS	2013 ACTIONS
Goal 10: Recycling Sea-Tac will increase the solid waste recycling rate from the current 21% in 2008 to 50% by 2014.	●	Increased Terminal diversion rate to 30% in 2012; Airfield diversion rate remains near 10%. Completed Food Service Ware and Packaging Study to assess performance, price, and availability of suitable alternative packaging options for Airport concessionaires. Completed evaluation of food scrap collection plan to understand current performance, market conditions, and estimated impacts of planned expansion. Completed Terminal Waste Characterization Study to assess quantity and composition of Airport waste, compare progress to baseline, and evaluate future packaging impacts. Partial completion of tenant site visits to increase awareness of waste reduction and recycling program and train tenant staff. Remaining visits will be completed in 2013. Conducted passenger recycling survey. Refurbished and repurposed old trash cans into new recycling systems on Concourse B, and North Satellite.	Review progress towards current goal and begin planning future initiatives and goals Evaluate opportunity to expand post-consumer food scrap collection to Satellite food court areas. Identify and evaluate opportunities to include compostable/recyclable service ware and packaging requirements in tenant leases. Complete annual waste characterization study and develop recommendations to further reduce waste stream. Evaluate liquid drain stations at security checkpoints and passenger communication strategies to integrate with Operations/Business Development sponsored water-refill-station project.
Goal 11: Construction Debris Sea-Tac will implement Best Management Practices that reduce construction, demolition and land clearing debris generated by the airport and its contractors.	●	Reviewed draft construction waste management specification with internal stakeholders, identified issues requiring additional evaluation, and developed a plan to continue review in 2013 with the objective of adhering to 2013 master construction specifications update schedule.	Evaluate identified issues, obtain external industry group comments on proposed spec language and related procedures, and revise final construction waste management master specification.
Goal 12: Hazardous Materials and Waste Sea-Tac will continue to reduce its use of hazardous materials and the generation of hazardous wastes.	●	Reduced the amount of hazardous waste generated by almost 1,000 pounds from 2011, Evaluated the hazardous products used by AV/Maintenance, Boiler Room, Conveyor Shop, and Paint Shop, and worked with staff to find alternative products for evaluation and testing.	Identify and prioritize hazardous products with the highest volumes used at the airport. Work directly with departments using those products (e.g., AV/Maintenance; Carpenter Shop, Airfield Crew, and Auto Shop) to evaluate and find alternatives for specific hazardous products.
Goal 13: Environmentally Preferable Products Sea-Tac will increase the use of green products throughout the organization by implementing a robust environmental purchasing program.	●	Increased recycled content copy purchase to 85%, a 3% increase from 2011. Additionally, decreased overall copy paper purchased by $6,000. Decreased overall green products purchased from 41% to 39%. Evaluated purchasing data and identified 6 opportunities to increase green purchases. Developed priority actions for 2013.	Execute a "Green Office Products" contract that requires all paper purchased by the airport to contain recycled material, all cleaning supplies purchased are "green," and all office products have a "green" alternative available. Evaluate opportunities and increase green purchasing in the following priority areas: paper towels, pens, audio-visual supplies, and re-using binders. Identify and order at least one new bulk product that meets the Port's Environmental Purchasing Policy.

★ = Goal Achieved ● = Significant progress ● = Progress towards goal ● = No progress

In the Pacific Northwest,

where we are surrounded by natural beauty, environmental stewardship is part of our culture. Mirroring this value is important to Seattle-Tacoma International Airport, where visitors get their first and last impressions of our region. The Port of Seattle, which owns and operates the airport, defines itself by its commitment to sustainability. Sea-Tac aims to demonstrate environmental stewardship by reducing the impact of airport operations on the environment. To do this, we need your help.

Port of Seattle
Seattle-Tacoma International Airport
17801 International Blvd. S.
Airport Office Building
Seattle, WA 98158
www.portseattle.org/community/environment/

Questions?
Call 206-787-5525
Waste Reduction and Recycling
Aviation Environmental Programs

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Seattle-Tacoma International Airport

Guide to Recycling

Trimming Our Waste Line




Port of Seattle®

Where a sustainable world is headed.™

Why Recycle?

A key element of Sea-Tac Airport's sustainability effort is our recycling program for Port facilities and tenant operations. Collecting used materials and recycling them generates a number of financial, environmental and social returns.

Did You Know?

The Port of Seattle is known as the Green Gateway for its commitment to environmental leadership and award-winning environmental programs.

Make Seattle one of your green gateways by partnering with the airport to reduce your environmental footprint and ours! This brochure tells you how.

More information about the Port's programs and the Green Gateway can be found at:

www.portseattle.org/community/environment/

THE GREEN GATEWAY

Our Recycling Goal

In 2009, Sea-Tac Airport set a goal to recycle 50 percent of its municipal solid waste (trash) by 2015, more than doubling the 2008 recycling rate of 22 percent. This goal aligns the airport with similar goals of the communities we serve and reinforces the Port's commitment to sustainability.

How to Participate

There are many places around the airport where recyclable materials are generated. Tenants can help by placing convenient and clearly marked recycling bins in their leased areas, training staff in airport recycling procedures, setting goals for employees, and celebrating progress.

The airport maintains conveniently located recycling collection areas throughout the main terminal, satellites and airfield. To find out where and what you can recycle, see the fold-out map inside for details.

Benefits of Recycling:

- Reduces waste going to landfills or incinerators.
- Conserves energy and prevents pollution caused by manufacturing. For every ton of scrap metal recycled, we avoid mining and processing two tons of limestone, iron ore and coal.
- Decreases greenhouse gas (GHG) emissions that contribute to global climate change. According to statewide figures, recycling about 7 million tons of material prevents nearly 3 million tons of GHG emissions.
- Conserves natural resources by reducing the demand for raw materials such as timber, petroleum, water and minerals.
- Saves on disposal fees and may generate revenue from recyclable material.
- Protects and expands U.S. manufacturing and recycling industry jobs and increases U.S. competitiveness. According to the most recent data, there are about 4,500 "green" jobs in Washington state.
- Helps sustain the environment for future generations.

(Data courtesy of Washington State Department of Ecology)

Open for Recycling Locations and Guidelines

WHAT TO RECYCLE AND WHERE

CO-MINGLED RECYCLING

(For key to unlock compactor, call 206-787-6638.)

Cardboard (flattened, no wax); magazines, newspapers, mixed office paper & shredded paper (bagged); plastic jars, jugs, bottles & tubs (bagged); plastic bags & shrink wrap (bagged); and aluminum & tin cans (bagged)

TERMINAL: Blue compactors on load docks at Concourse A, North & South Satellites and in service tunnel; and in Central Terminal trash rooms (ramp level)

AIRFIELD: Blue compactors on ramp at gates A10, B4, C1, D11, N6 and S16

GLASS

Glass bottles (wine, beer, liquor & soft drink) and glass jars

TERMINAL: Dumpsters on load docks at Concourse A, in service tunnel, and on ramp at Gates C2 and N11

AIRFIELD: Concourse A load dock and on ramp at Gates C2 and N11

USED COOKING OIL

Waste cooking oil is converted to bio-diesel.

TERMINAL: Oil collection tanks on load docks at Concourse A and North & South Satellites, and in Central Terminal trash rooms (ramp level)

FOOD SCRAPS

Food soiled paper, napkins, used coffee grounds, compostable bags & service ware and other organic material

These items are sent to a local facility and processed into compost for gardens and landscaping.

TERMINAL: Compost collection bins on load docks at Concourse A, North & South Satellites & in service tunnel; and in Central Terminal trash rooms (ramp level)

AIRFIELD: Compost collection bins on ramp at Gate C2

TRASH

(For key to unlock compactor, call 206-787-6638.)

Non-recyclable material such as styrofoam, coffee cups, plastic utensils & food wrappers

TERMINAL: Tan compactors on load docks at Concourse A, North & South Satellites and in service tunnel; and in Central Terminal trash rooms (ramp level)

AIRFIELD: Tan compactors on ramp at Gates A10, B4, C1, D11, N6 and S16

WOOD (Scrap)

Pallets and untreated or non-painted dimensional lumber

AIRFIELD: Port Airfield Maintenance Shop at Air Cargo 4 and Air Cargo 2 at blast fence

SCRAP METAL

Steel, rebar, aluminum, wire or other metal items that contain a limited amount of non-metallic materials (such as a metal chair with cloth cushion)

TERMINAL: Green dumpster on service tunnel load dock

AIRFIELD: Air Cargo 2 & 4 and north snow dump area

FOOD DONATION PROGRAM

Unsold, pre-packaged food that would otherwise be thrown away can be donated to local food banks. For information, call 206-787-5525.

RECHARGEABLE BATTERY RECYCLING

FLUORESCENT LIGHT BULB RECYCLING

For information, call 206-787-5525.

ELECTRONICS & HAZARDOUS WASTE

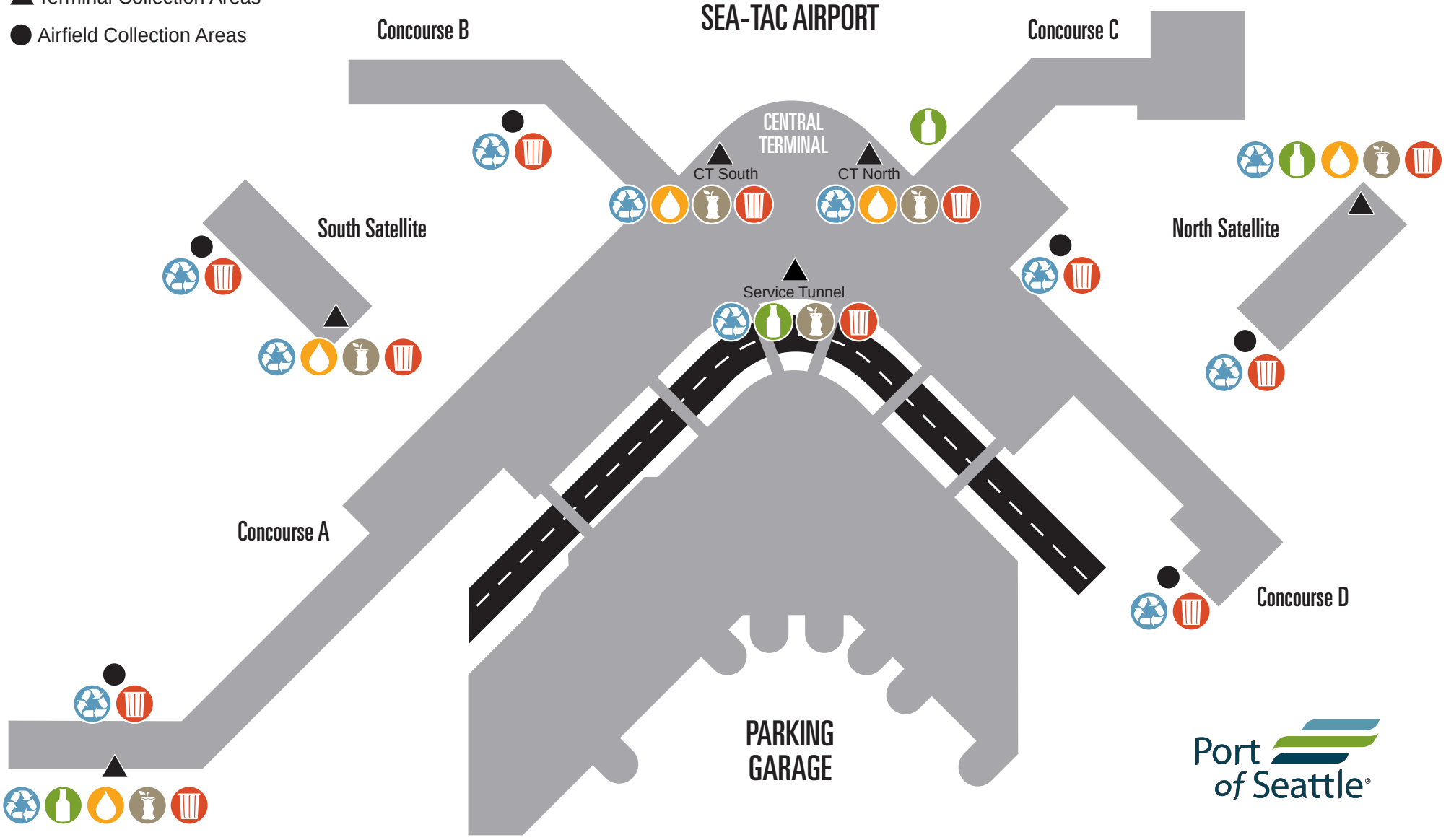
For information on recycling computers, monitors, laptops & televisions, visit E-Cycle Washington at www.ecyclewashington.org. For proper disposal of hazardous waste, check the regulations posted at www.ecy.wa.gov/programs/hwtr/business.html.

SEA-TAC RECYCLING MAP

N

▲ Terminal Collection Areas

● Airfield Collection Areas



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ATTACHMENT A
SCOPE OF WORK
Waste Reduction and Recycling Program Support Services
Seattle-Tacoma International Airport
Aviation Environmental Programs

1. Summary Scope of Project

The Port of Seattle (Port), Aviation Environmental Programs (AvEnv) requests qualifications from experienced companies to provide Waste Reduction and Recycling Program Support services for the Port Aviation Environmental Programs (AV\ENV) at Seattle-Tacoma International Airport (STIA). The scope of work for these services includes defined and currently undefined tasks, which the Port will accomplish under an Indefinite Delivery/Indefinite Quantity (IDIQ) contract. Under the IDIQ contract, the Port will authorize task-specific work by executing individual Service Directives (SD) with the Consultant. Each SD will include a task-specific scope of work consistent with the overarching contract scope, and defined level of effort, cost, timeline and deliverables.

Defined tasks under this contract are described in Section 2 (Tasks) of this Scope of Work, and will include updating the STIA's Solid Waste Management Plan (SWMP), and conducting periodic waste characterization studies. Additional tasks may be authorized via SD pending Port determination of need, budget availability, and contract duration. Additional undefined tasks that may be authorized under this contract are described in Section 2 (Tasks) of this Scope of Work. The Consultant will supply a range of services (see section 3) to accomplish defined and currently undefined tasks in support the STIA's Waste Reduction and Recycling Program.

2. Tasks

Task-specific SDs will serve as the Consultant's official notice to proceed on assigned tasks under this contract. The Port Project Manager and Consultant Project Manager will work together to develop individual SOW's for each SD prior to SD execution. Consultants must not conduct any task-related work until receiving notice to proceed through execution of a task-specific SD.

- Task 1: Update STIA's Solid Waste Management Plan (SWMP)
  Timeline: Begin immediately upon execution of SD and complete by 11/31/2014
  Deliverables: Draft and final versions of updated SWMP and all supporting raw data files

  The Consultant, working closely with the Port's Project Manager, will update STIA's current SWMP[1], originally published in 2010, to reflect current conditions and provide effective near and long term guidance for STIA waste management decisions and solid waste planning efforts. The current SWMP describes and documents STIA waste management, disposal, and diversion conditions at the time of publication. It includes a waste characterization study to estimate waste composition and quantity data, a diversion opportunity analysis across a range of industry standard diversion measures, and recommendations to reach established STIA waste diversion goals. The intent of task 1 is to update STIA's SWMP to reflect current conditions, summarize successes and challenges since the previous SWMP publication, summarize STIA solid waste generation, disposal and recycling trends, and recommend specific waste reduction and recycling initiatives to achieve new STIA waste Reduction and Recycling objectives.

  STIA is currently updating its Environmental Strategy Plan (ESP) [2] to establish future waste reduction and recycling objectives spanning the next 5, 10, and 25 year planning periods. STIA's new Waste Reduction and Recycling Program objectives are currently being developed and completion may extend beyond the initiation of task 1. The Port Project Manager will provide current and preliminary or

[1] Seattle-Tacoma International Airport Solid Waste Management Plan, December 2010, Cascadia Consulting Group, Inc.
[2] A Vision for 2014 and Beyond, Environmental Strategy Plan 2009, Seattle-Tacoma International Airport, 2009

draft objectives to the Consultant during project kick-off meetings, and the Consultant must incorporate these into the opportunity analysis effort.

In addition, the SWMP update process must incorporate Federal Aviation Administration (FAA) guidance[3] to meet recent legislative changes in the FAA Modernization and Reform Act of 2012, which require that Airport's develop a plan for recycling and minimizing the generation of airport solid waste to maintain eligibility for FAA Airfield Improvement Program grant funding. The Consultant will review FAA's specific guidance documents with Port Project Manager to determine an appropriate strategy for integrating requirements into SWMP content and layout, or developing specific materials for inclusion as an appendix. Incorporating FAA guidance will not result in development of a standalone plan separate from the SWMP.

The Port Project Manager will provide the Consultant with all relevant documents during project kick-off meetings.

- Task 2: Conduct waste characterization studies
  Timeline: exact date TBD by Port Project Manager
  Deliverables: Draft and final versions of waste characterization studies; electronic versions of data summaries and raw data spreadsheets or database tables

  The Consultant will provide all equipment, resources, and labor to conduct periodic STIA waste characterization studies beginning as early as 2015 and periodically thereafter within the term of this contract and contingent upon available contract budget and annual funding. The Port Project Manager, working closely with the Consultant, will determine an appropriate schedule and scope for waste characterization studies.

  Waste Characterization Studies may focus on a particular airport sector (terminal, airfield, etc.) or address the entire airport to accommodate program needs or evaluate particular generators or waste streams. The Consultant will design and conduct studies to produce statistically reliable estimates of STIA waste stream composition and quantities. The Consultant and Port Project Manager will determine the scope and focus of each waste characterization study during task definition and scoping phase prior to execution of an authorizing SD. Study methodology will conform to established waste characterization protocol and material definition lists established in STIAs 2010 SWMP, and further refined in subsequent STIA waste characterization studies.

  Due to limited space appropriate for waste sorting activities, security issues, and operational constraints, STIA Waste Characterization Studies typically require coordination with King County staff to obtain approval to conduct sorting activities at Bow Lake Transfer station. The Consultant should assume all waste sorting activities under this contract will occur at King County's Bow Lake Transfer station unless the Port Project Manager directs otherwise. The Consultant, in conjunction with Port Project Manager, will coordinate waste collection and sorting schedules with King County staff, STIA waste and recyclable material haulers, and STIA staff.

Additional tasks that may be assigned via SD under this IDIQ contract include:

- Conduct research studies pertaining to waste reduction and recycling policy development, program analysis, or initiative implementation, or industry trends
- Develop and conduct stakeholder surveys via email, digital, or other survey methods
- Facilitate stakeholder engagement activities
- Develop educational and outreach materials
- Other tasks related to STIA waste Reduction and Recycling programs

[3] Program Guidance Letter 12-08 section 12-08-03.b *Recycling and Environmental Management Plans*, 9/14/2012, Federal Aviation Administration: (http://www.faa.gov/airports/aip/guidance_letters/media/PGL_12_08_FAAModernization.pdf)

3. Services

The selected Consultant will provide the following services to the designated Port Project Manager, and those tenants, airlines, employees, and other STIA staff as directed by the Port Project Manager.

- Prepare and submit draft and final versions of the Solid Waste Management Plan and any additional reports, studies, survey findings, or related deliverables
- Review and incorporate project guidance documents and related materials into task specific activities and deliverables
- Review and summarize applicable local, state, and federal regulations regarding waste management, recycling, composting, and disposal.
- Inspect STIA office, terminal, airfield, and other facilities and related equipment and operations and document solid waste generators, existing waste diversion and disposal practices and conditions, and material flows
- Conduct waste characterization studies including coordination with STIA waste and recycling haulers, King County staff, and appropriate STIA staff.
- Evaluate potential diversion opportunities and develop recommendations to achieve STIA's new waste reduction and recycling objectives.
- Conduct industry research to support SWMP related waste diversion opportunity analysis
- Attend and organize meetings
- Prepare and submit task-specific cost estimates

4. Background

The Port of Seattle (Port) develops and maintains facilities for the transportation of cargo and passengers by air, water, and land through STIA and Seattle's seaport. The Port fosters a prosperous regional economy and is committed to environmental stewardship that achieves long-term benefits for the citizens of King County. The Port owns and operates STIA - the 15th busiest in the nation – handling more than 34 million passengers annually.

STIA is a recognized leader in waste reduction and recycling efforts within the aviation community, and strives to maintain that leadership position by developing and implementing innovative, effective, and sustainable waste reduction and diversion strategies. In 2009 STIA published the ESP to serve as a road map for STIA sustainability initiatives through 2014 and beyond. In that plan, the Port committed to effectively manage STIA generated waste, recyclable, compostable, and other material by implementing strategies that minimize environmental impacts, and reduce global demand for natural resources. The Port Project Manager will provide copies of all relevant documents, including STIA's ESP, during contract kick-off meetings.

5. Period of Performance

This agreement will be effective for a period of not more than 36 months from the date of execution of this Agreement. The Consultant shall consider the fully executed contract as the official Notice to Proceed, and shall promptly commence the work specified therein and complete the work within the time period prescribed, pursuant to SD authorization procedures.

6. Project Deliverables

Project deliverables will be completed by the milestone dates to be determined after contract award has been made. Task-specific SDs will include deliverable schedules.

Deliverables include:

- Draft and final versions of STIA's Solid Waste Management Plan
- Draft and final waste characterization study reports (as appendix to SWMP, or standalone report)
- Draft and final versions of other deliverables specifically identified in task-specific SD's

7. Project Schedule, Progress Reports, and Cost Controls

Project schedule will be determined during the initial kick-off meeting, and will not exceed the duration of the overarching Service Agreement under which this scope of work will be implemented.

Progress reports and cost control schedules and procedures will be similarly determined by the Port Project Manager during initial kick-off meeting.

8. Communications and Meeting Requirements

Prior to the execution of the Agreement, the Port Project Manager and the Consultant shall meet and agree on a standard communications protocol for the project including types of communications, frequency, and methods for resolving issues and disputes.

The Consultant shall attend and participate in regular meetings during the course of the Project. Additionally, the Consultant shall meet with the Port's Project Manager when requested and with other organizational representatives, tenants, and industry groups as required for the successful completion of the project. The Consultant in consultation with the Port Project Manager shall schedule all necessary conferences and meetings with the appropriate persons and organizations to obtain project information and maintain project progress.

Regular meetings that the Consultant may be required to attend include:

- Monthly Waste Reduction and Recycling Program Status Update meetings

9. Project Completion

Upon completion of the project, the Consultant will furnish the Port with all Port owned equipment, material, or media used, developed, or acquired in support of this project. All completed deliverables will be provided in hardcopy and electronic format to be determined by the designated Port Project Manager.

Attachment 2

SUPPORTING DOCUMENTS

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

CLT Sustainability Catalog- 2012

Charlotte·Douglas
INTERNATIONAL AIRPORT

moving towards a sustainable future

5501 Josh Birmingham Parkway
Charlotte, NC 28208

P.O. Box 19066
Charlotte, NC 28219

P 704.359.4000
F 704.359.4030
T 1.800.FLY.CDIA

cltairport.com

CLT Sustainability Webpage

CLT Sustainability Catalog- 2012

Charlotte·Douglas INTERNATIONAL AIRPORT

CLT's Vision Statement

We will serve as an economic engine of the Carolinas, facilitating the movement of people and goods, creating jobs and enterprise and sustaining a higher quality of life.

CLT's Mission Statement

CLT will be the preferred airport, and airline hub, by providing the highest quality product for the lowest possible cost.

CLT's Commitment to Sustainability

Identify and pursue fiscally responsible practices and strategies that minimize environmental impacts to achieve a sustainable enterprise for the benefit of the region.

moving towards a sustainable future

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Materials & Resources

Charlotte·Douglas INTERNATIONAL AIRPORT

During both the construction and operations phases, buildings generate a lot of waste and use large quantities of materials and resources. The Materials & Resources category encourages the selection of sustainably grown, harvested, produced and transported products and materials. It promotes waste reduction as well as reuse and recycling, and it particularly rewards the reduction of waste at a product's source.
– LEED 2009

| Storage & Collection of Recyclables | Solid Waste Management | Materials Reuse |
| Recycled Content | Regional Materials | Rapidly Renewable Materials | Certified Wood |
| Green Office Operations |

Coffee-Related Recycling

Charlotte·Douglas INTERNATIONAL AIRPORT

Project Overview

In 2008, CLT began a recycling effort with Starbucks Coffee. Starbucks was disposing of their coffee grounds into a landfill, and the company wanted to find a better way to dispose their coffee grounds. CLT volunteered to take the coffee grounds to a recycling facility.

- CLT began recycling coffee grounds 11/24/2008.
- Recycled grounds averaged 2,200 pounds/weekly in the winter and 800 pounds/weekly in the summer.
- CLT hauls grounds to FCR, a materials recovery facility, in Charlotte.
- FCR is owned by Mecklenburg County and operated by an independent agency.
- The program was expanded to include recycling of plastic milk and syrup containers.
- Approximately 180 one-gallon plastic milk containers and 60 syrup containers from Starbucks are recycled weekly.
- The effort was expanded to include Starbucks' plastic muffin and cake trays.
- CLT currently shreds Starbucks' cups and mixes with compost. Current wax cups are non-recyclable.
- Future plans include a possible switch to completely recyclable Starbucks' coffee cups.
- From 11/2008 - 11/2010, CLT diverted 57,300 pounds of recyclable Starbucks' waste material from the landfill.

Fast Facts

Start Date	11/24/2008
Completion Date	Ongoing
Updated	7/10/2012
Location	Terminal
Environmental Benefit	Landfill diversion

Industry Standards

LEED	Not Applicable
IgCC	Section 504.1
SAM	CT 4.1 Prerequisite 1
IECC	Not Applicable

Project Notes

Recycling Types	Coffee Grounds & Plastic Bottles
Total Weekly Pounds of Recycling	1,500
Monthly Cost	$75

Global Initiative #: 31
Focus Area: 1

Sustainable Sites
Water Efficiency
Energy
Materials & Resources
Air Quality
Innovation

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Recycled Concrete Pavement & Asphalt

Charlotte·Douglas INTERNATIONAL AIRPORT

Project Overview

CLT wanted a better method to recycle the volume of concrete without the use of landfills. Airport Engineering suggested establishing an on-site recycle and reuse operation. As a result, the Airport has been able to recycle concrete and asphalt more efficiently.

- Concrete is used for runways and taxiways. Asphalt is used for roadways, loop roads, and temporary roadways.
  - During construction of Concourse E, concrete pavement was removed around the concourse, runway, and taxiways, broken up and taken to the on-site concrete plant.
  - Different size screens, sieves mix/break up the concrete.
  - Different mix designs are tested with the recycled material to verify desired engineering properties.
  - Recycled concrete is then reused for runways and taxiways.
  - Recycled concrete was also used to construct the building pad at the former National Guard Armory (now DHL) on Yorkmont Rd.
  - Having an on-site recycle and reuse operation saved transportation costs.
  - Milled asphalt is also put back into reuse.
- Example of project cost/expense/volume of concrete:
  - Rehab of Runway 18C/36C was factored into the bid to specify for the contractor to utilize the recycled concrete as stone base, which reduced the overall project cost by 1.25 million cubic feet of concrete.
  - The rehab of 18C/36C reused 93,750 tons of concrete.
  - The reuse of asphalt vs. cost of new pavement saves an estimated $2/$3 per yard.
  - The reuse of concrete saves an estimated $3/per ton of concrete.

Fast Facts

Start Date	April 2011
Completion Date	Ongoing
Updated	9/20/2011
Location	18C/36C & shoulders
Environmental Benefit	Conservation of materials

Industry Standards

LEED	2009 NC - MR Credit 2
IgCC	Section 502.1
SAM	D&C 5.3
IECC	Not Applicable

Project Notes

Concrete Provider	Red Clay
Asphalt Providers	Blythe & Rea
Recycling Capacity	90%

Global Initiative #: 32
Focus Area: 1

Sustainable Sites
Water Efficiency
Energy
Materials & Resources
Air Quality
Innovation

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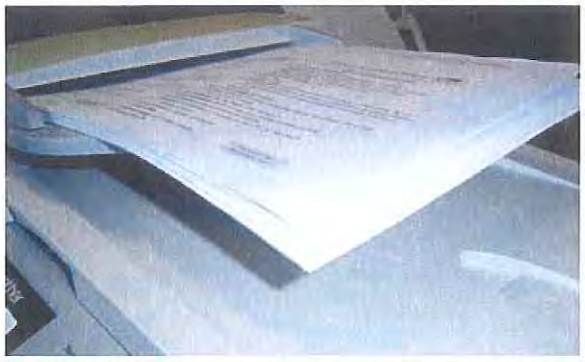
Double-Sided Printing

Charlotte·Douglas INTERNATIONAL AIRPORT



Project Overview

The Administration printer was programmeded to single-sided printing. However, once the printer was defaulted to double-sided, the Airport saved money and time. The savings come in the purchasing of less paper and fewer binders. The City is under contract with Ricoh to pay .11 per imprintment, regardless of double-sided printing or single-sided printing. The City can save additional money if the current contract is re-evaluated to state that Richo pays for the paper. In addition, if the City and/or Airport uses theoretically half as much paper as previously used, Ricoh will spend 50% less on paper for the City. If the savings were negotiated to split between the City and Ricoh (25% each), both parties win. This can be done through Ricoh reducing their imprintment charge since double-sided printing would have less overhead.

- Assuming Administration goes through 4 boxes of paper a month, this is equivalent to 4*8 = 32 reams of paper per month, since there are 8 reams of paper per box.
- It takes approximately 24 trees to make 1 ton or 2,000 pounds of paper. One tree makes 2,000/24 = 83.3 lbs of paper. Each ream of paper weighs approximately 10 pounds.
- Using simple math, the following can be calculated: 10 lbs/83.3 lbs = 0.12 trees for each ream of paper.
- Double-sided printing cuts paper usage by 50%.
- Instead of using 32 reams per month, CLT can now use only 16 reams. This brings down tree usage to ((32*50%))*0.12) = 1.92 trees per month. This saves 1.92*12 = 23 trees a year in Administration.
- Implementing this change came at zero cost and two hours of technical support time.
- This initiative was started in Administration as a test to see whether or not double-sided printing would prove beneficial.

Fast Facts

Start Date	11/1/2010
Completion Date	11/5/2010
Updated	9/8/2011
Location	Terminal
Environmental Benefit	Saves 23 trees per year

Industry Standards

LEED	Not Applicable
IgCC	Not Applicable
SAM	AP Prerequisite 2
IECC	Not Applicable

Project Notes

Area	Administration
Manufacturer	Ricoh

Global Initiative #: 37
Focus Area: 1

Sustainable Sites
Water Efficiency
Energy
Materials & Resources
Air Quality
Innovation

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Airport Recycling Center

Charlotte·Douglas INTERNATIONAL AIRPORT




Project Overview

The 27,000 S.F. Airport Recycling Center processes the airport buildings waste stream to capture all recyclable items, thereby reducing environmental impact and creating a more sustainable waste disposal program. CLT waste is transported to the Recycling Center and processed through a conveyor operation. Fifteen workers employed by Go Green are sorting all of the airports's trash and recycling materials such as aluminum, plastic and cardboard are being sold. Prices for certain materials sold to recyclers fluctuate month-to-month. Aluminum can sell for $2,000 per ton one month and $1,100 per ton a few months later.

The leftover organic matter, including food, plant matter and trash such as paper towels, is for the worms, who digest it and excrete nitrogen-rich castings. Before the worms are put to work, the organic waste is heated inside a giant rotating drum for three days at temperatures between 130 to 160 degrees. This kills microbes and starts the composting process. Then the waste is fed to the worms inside five 50-foot-long composting bins. One pound of worms can eat a half pound of food daily. The castings are then used for fertilizer on selected areas of airport property.

- The Airport disposes of 10K tons of waste each year. Approximately 6.5 tons of that waste is recycled.
- Previously, CLT's waste was transported to the City's landfill near the Charlotte Motor Speedway for an annual fee of $451,000.
- The Recycling Center has the capability to vermicompost certain non-recyclable materials, such as food waste and waxed paper products.
- 100% of the terminal's trash is sorted (65% recycled and 35% to landfill)
- All of the 65% recycled waste is put back into the marketplace, generating an approximate $200,000 annually.
- Organics are composted on site by the use of 1.9 million worms.
- CLT offers quarterly recycling center tours to educate the public
- An additional environmental savings includes an improvement to air quality from a reduction in transportation to & from the landfill.
- The recycling center has the capability to earn/gain carbon credits in a carbon market.
- Payback for the capital invested ($1,090,000) is projected to be less than 6 years.
- CLT plans to increase its recycling efforts to 90% in the next 5 years

Fast Facts

Start Date	Fall 2011
Completion Date	October 2012
Updated	6/03/2013
Location	Yorkmont Rd.
Environmental Benefit	65% landfill diversion

Industry Standards

LEED	2009 O&M
IgCC	Sections 503.1 & 504.1
SAM	O&M 4.1.1
IECC	Not Applicable

Project Notes

Project Contact	Airport Housekeeping Manager-Bob Lucas
Square Footage	27,000
Capacity	6,500 tons/year
Advantage	Earn/gain carbon credits

CLT Recycling Center

You toss. We sort.

Global Initiative #: 50
Focus Area: 6

- Sustainable Sites
- Water Efficiency
- Energy
- Materials & Resources
- Air Quality
- Innovation

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NEW REQUESTS FOR PROPOSALS
TO MANAGE AND OVERSEE THE RECYCLING CENTER AND SOLID WASTE DISPOSAL SERVICES
at
CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT
for the
CITY OF CHARLOTTE, NORTH CAROLINA

Dated July 3, 2014

SCHEDULE

ACTIVITY (All times are EST)	DATE
Issue RFP	July 3, 2014
Pre-Proposal Meeting at 1:00 p.m. (Mandatory)	July 10, 2014
Deadline for Submittal of Written Questions by 4:00 p.m. EST	July 15, 2014
Responses to Questions	July 22, 2014
Proposal Submittal by 5:00 p.m. EST	July 30, 2014
Evaluation of Proposals	July 31 – August 8
Short Listing and Proposer Interviews (if applicable)	August 13, 2014
Award Recommendation - City Council	September 8, 2014
Agreement Estimated Start Date	October 18, 2014

Responders must provide six (6) unbound three-hole punched hardcopies of their proposal by one of the methods outlined below, as well as an electronic copy included on a flash drive and submitted with the hardcopies of the proposal no later than **JULY 30, 2014 by 5PM**, according to CLT's clock.

1. Proposers may mail their submissions to Charlotte Douglas International Airport; Attn: Olivia Clark, 5601 Wilkinson Blvd.; Charlotte, NC 28208.
2. Proposers may hand deliver their submissions by **5 PM**, by CLT's clock, on **JULY 30, 2014**, at the CLT Center, located at 5601 Wilkinson Blvd. Charlotte, NC 28208. There will be a box in the lobby for submissions starting on **July 25, 2014**.

INTRODUCTION

The City of Charlotte ("City") as owner and operator of Charlotte Douglas International Airport ("CLT") requests the submissions of proposals to manage and oversee the Recycling Center and Solid Waste Disposal Services ("Services") for CLT. The goals of the Services are to (a) promote sustainability; (b) provide a high quality and efficient operation; (c) consolidate the current operations under one company to eliminate potential duplicity; (d) grow the recycling and compost program; and (e) minimize cost to CLT.

The following includes the information, requirements and forms necessary for a complete proposal. A **Mandatory Pre-Proposal Meeting** will be held on **July 10, 2014** at **1 p.m.** The name of the individual or individuals representing the proposer must be submitted to Olivia Clark at procurement@cltairport.com no later than 5 p.m. on July 8, 2014. Upon receipt of this information, meeting details will be provided. Please note that the pre-proposal should not take longer than two hours. Prior to and after the meeting, any questions concerning the RFP may also be submitted in writing to Olivia, however, no response will be provided for questions submitted after **4 PM** on **July 15, 2014**. Answers to all written questions will be provided by written Addendum. All addenda will be posted on CLT's website, cltairport.com, and it will be the responsibility of the proposer to frequently check for such additions. In case any proposer fails to acknowledge opening of any such Addenda in the space provided in **Attachment A**, its proposal will nevertheless be construed as though the addenda had been received and acknowledged, and submission of a proposal shall constitute acknowledgment of the opening of the same. Proposers may not rely upon and the Aviation Director, or his designee, will not make any oral representations.

TABLE OF CONTENTS

I. BACKGROUND

a. CLT Overview & Statistics[1]

CLT is owned and operated by the City and is one of the fastest growing airports in the country. CLT served more than 43 million passengers in Calendar Year (CY) 2013 and currently ranks as the 8th busiest airport in North America, based on passenger traffic, and sixth in aircraft movements. CLT is served by seven major air carriers, 17 regional air carriers and three foreign flag air carriers that together provide more than 700 daily departures from CLT to 150 nonstop destinations, including 40 international destinations. CLT is also the New American Airlines' second largest hub.

CLT is currently comprised of one passenger terminal with five concourses (A, B, C, D and E) totaling more than 1.7 million square feet. Our passengers create an estimated half-pound of waste each during their visit. A majority of this waste is processed through the Airport Recycling Center ("ARC"). The idea for the ARC began developing in 2011 and has resulted in approximately 2,857 tons of recyclables being pulled from the waste stream between June 2012 and May 2014. With CLT's continual increase in passengers, we expect to continue to experience an increase in waste and recyclables. For more information on the amount of materials recycled and taken to the landfill refer to **Attachments C** and **D**.

b. CLT Recycling Center and Solid Waste Disposal Services

The successful proposer will be responsible for the management of the ARC, providing dumpsters for CLT, hauling solid waste from those dumpsters to the ARC and landfill and managing CLT's compost program. By consolidating these operations CLT hopes to see an increase in efficiency and a more streamlined process.

II. SCOPE OF SERVICES

a. Operations:

ARC & Solid Waste Disposal

The successful proposer will be responsible for pick-up and hauling of all trash from the dumpsters located on CLT property to the ARC. When picking up the

[1] Additional information and statistics are available at cltairport.com.

waste from the dumpsters no bags or debris shall be left on the ramp surface or hanging from the side of the containers. Trucks provided by the successful proposer for the hauling must in be safe drivable condition and covered or closed to ensure that no debris is deposited on the airfield. ***As part of your proposal, please include an image of the trucks you plan on providing if successful.***

The ARC is located at 4401 Yorkmont Drive and an overview of the facility is included as **Attachment E**. As part of the Services all trash from the CLT terminal and other identified areas as demonstrated in **Attachment F** must be accepted. No trash is accepted from locations outside of Airport property. All trash shall be sorted into different commodities and sold at the discretion of the successful proposer. All residual trash must be sent to the landfill or disposed of in a manner authorized by State or Federal law pertaining to the handling of solid waste disposal. No trash (residual or otherwise) may be left on the ground overnight. The yard must be cleaned nightly and pressure washed twice weekly as required by the composting permit. Any damages to the building or equipment must be reported immediately by email and phone.

As part of your proposal include two operational plans, one for the management of the ARC, including the yard, and one for the solid waste disposal and hauling. This should include, without limitation, procedures, cleaning schedules, safety measures and maintenance schedules. Also, ***CLT would like to see a marketing plan*** that will outline how the successful proposer will ensure they obtain top pricing for the sale of the recyclables and compost.

<u>Equipment Maintenance</u>

The successful proposer is required to perform the regular maintenance and repairs of the City owned equipment. A list of the equipment and required maintenance schedule is listed in **Attachment H**. The successful proposer shall be responsible for keeping repair logs for each piece of equipment. The City shall have the right to conduct random inspections to ensure that the required maintenance is being completed. If equipment becomes unserviceable it must be brought to the attention of the Aviation Director, or his designee. At that time CLT will work in consultation with the successful proposer to determine the best resolution.

Dumpsters

The successful proposer will be required to provide dumpsters in the amount, locations and sizes as listed in **Attachment F**. The successful proposer will be responsible for all associated maintenance and repairs. CLT expects regular cleaning of the exterior of the dumpsters and spraying of the interiors on a monthly rotation with a sanitizer. No labels are permitted on the dumpsters unless written permission is given by the Aviation Director, or his designee. ***Further, as part of the pricing please include pricing for additional dumpsters which may be requested from time to time on a long-term or temporary basis.*** Pricing should be per unit per week of use and reflected for 30, 20 and 8 yard dumpsters.

Composting

CLT's compost operation consists of multiple worm beds that must be fed from the in-vessel digester. The successful proposer will be responsible for the safe operation of the in-vessel digester and maintaining a growing environment for the worms. The successful proposer will be held financial responsible for the loss of any worms due to its, or its agent or employees wilful or negligent acts. The compost produced by these worm beds may be sold as long as the terms and conditions of the composting permit are followed, however, upon request, CLT will be provided with any compost requested at no cost. The current permit through DENR in North Carolina and associated terms and conditions are included below in **Attachment G**. One condition is that the compost produced by the worm beds is tested every six months and the findings sent to the DENR officials. The successful proposer must complete the testing and submit the findings to CLT who will submit them to DENR.

Staffing

The successful proposer will be required to provide staffing for all aspects of the Services. This includes a manager (or assistant manager) on-site during all hours of operation, truck drivers holding a CLT issued security badge, staff to operate the ARC and forklift and skidsteer drivers that have been trained and possess an operator's certificate. Employees will be expected to wear at least one piece of clothing with the successful proposer's logo on it at all times. ***Include as part of your proposal a staffing plan including any pre-employment screening.***

Badging

The ARC is located on the non-secure side of the airfield. Employees working at the ARC will not be required to have a CLT issued security badge. However, all drivers entering the secured area for solid waste disposal must receive a CLT security badge prior to starting employment. This includes qualifying for and completing all necessary training for driving privileges associated with the security badge. The employee shall have their security badge with them at all times while inside the secured area. Employees without a badge will not be permitted to enter the secure area. The standards adopted by the Transportation Security Administration for the issuance of security badges are captured in Title 49 of the Code of Federal Regulations, Part 1542.

Capital Equipment and Premises

As part of the proposal any suggested capital equipment additions or premise improvements should be included. After the award of the Agreement, no capital equipment purchases or premise improvements may be made without first receiving the written consent of the Aviation Director or his designee.

Reporting

The successful proposer must submit to CLT a series of reports, in a format approved by CLT, which will include, without limitation, the following:

- Weekly amount of waste collected and amount deferred from waste stream to the ARC.
- Weekly checklist of required regular maintenance of City equipment
- Monthly residual trash amounts
- Monthly record of compost harvested from the worm beds
- Monthly report broken down by week of recycling sold by type, weight and price including the name of the purchaser of the recycling
- Monthly report of dumpster exterior and interior cleaning
- Monthly report of tons taken to the landfill, broken into tons taken directly from dumpsters and tons taken from ARC.
- Monthly downtime report including an explanation such as maintenance, lack materials, equipment, etc.

Building Maintenance & Utilities

CLT will provide all necessary building maintenance and pay for the water and electrical power. The successful proposer will be responsible for telephone, cable television and internet.

Janitorial Services

The successful proposer will be responsible for providing janitorial services and supplies at the ARC and within any provided office or storage space.

Policies and Procedures

The successful proposer will be requested to provide prior to the execution of the Agreement, operational policies and procedures including, but not limited to, safety manual (including at a minimum training, equipment safety and new employee safety), employee handbook and compost procedures. At a minimum a procedure to immediately notify and hand over to CLT any valuables found at the ARC and a policy notifying employees that they shall not take articles out of the ARC for their own personal use or resale must be included. The successful proposer shall provide to CLT prior to execution of the Agreement a plan to handle solid waste disposal in the event of a catastrophic failure of the ARC.

b. Contract Terms

Contract Term

The term of the agreement to provide the Services will be three years with two options for one year extensions each (the "Agreement"). Proposer will be required to sign an Agreement in a form substantially similar to **Attachment B**.

Compensation to the City

The City is considering two potential financial models for the Agreement. ***Proposers must provide pricing under both models.*** Each arrangement is described below.

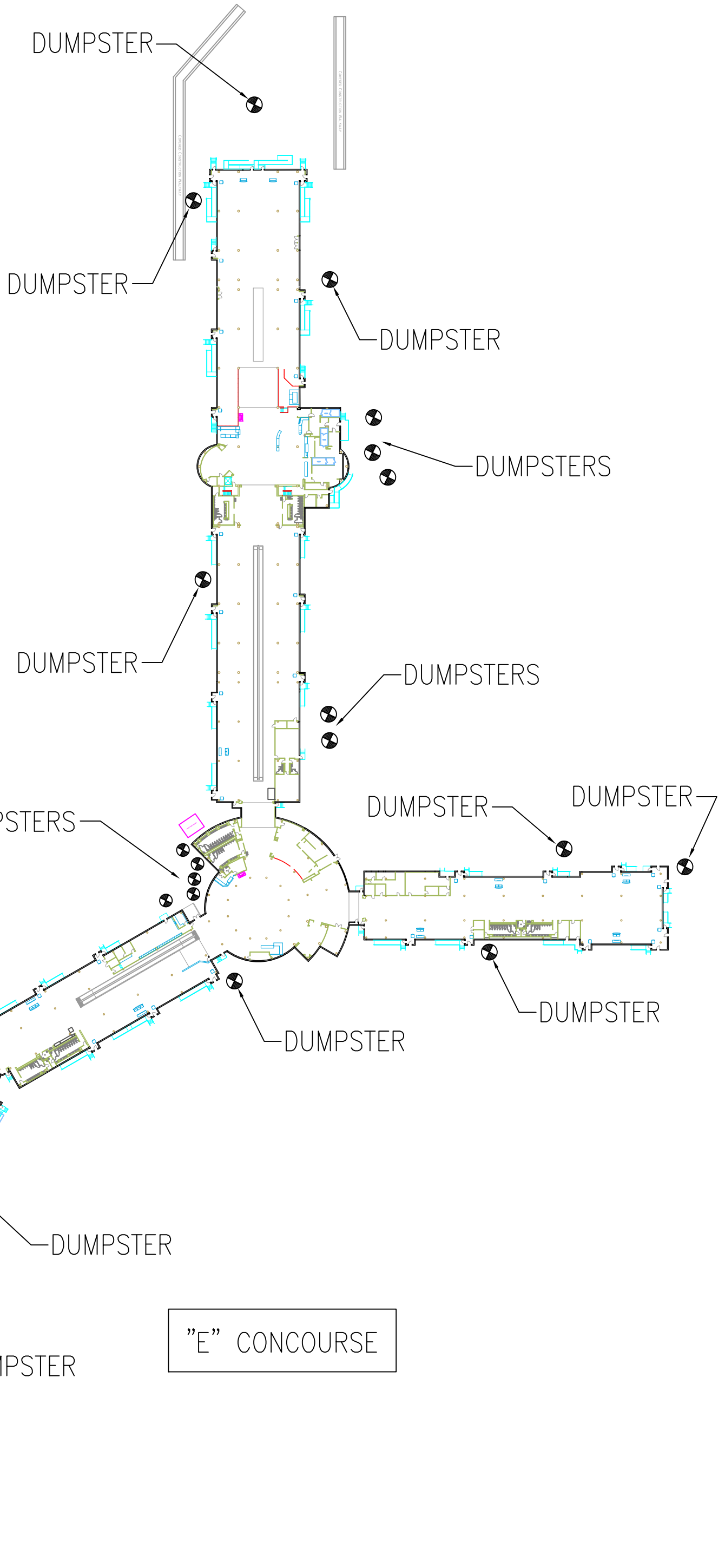
1. Flat Fee. Under this method the successful proposer will be paid a flat fee to manage the entire operation without further support from CLT. The revenues received from the recycling and the compost will be retained by the successful proposer however all cost associated with running the Services and maintaining the equipment will be the responsibility of the successful proposer. Under this model a minimum of 25 – 30% of the total solid waste will be expected to be recycled through the ARC. Failure to meet this minimum will be grounds for termination under this Agreement.

Charlotte·Douglas INTERNATIONAL AIRPORT

CDIA - Dumpster Locations

FILE NAME:	PROJECT NO.:	PRINTED: 6-12-2014	SCALE: NTS

PAGE 1



Charlotte·Douglas INTERNATIONAL AIRPORT

CDIA - Dumpster Locations

FILE NAME:	PROJECT NO.:	PRINTED: 6-12-2014	SCALE: NTS

PAGE 2

Attachment 3

SUPPORTING DOCUMENTS

SAN DIEGO INTERNATIONAL AIRPORT

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SAN ORG

San Diego International Airport

SAN WASTE REDUCTION PLAN

Engaging Employees & Tenants in the Airport's Sustainability Initiatives

NOVEMBER 2010

Paul Manasjan – Director, Environmental Affairs
San Diego County Regional Airport Authority

SAN Existing Recycling Programs

aim to sustain

Beyond Recycler of the Year

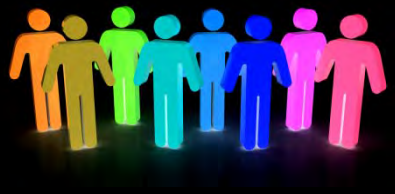
SAN.ORG
San Diego International Airport

SAN WASTE REDUCTION PLAN

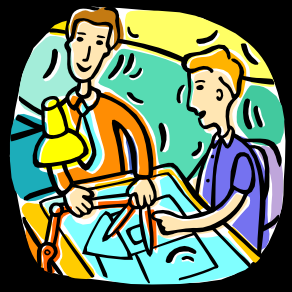
Where do we start?

① Start from where you are.

② Rally the troops.



③ Make a plan.

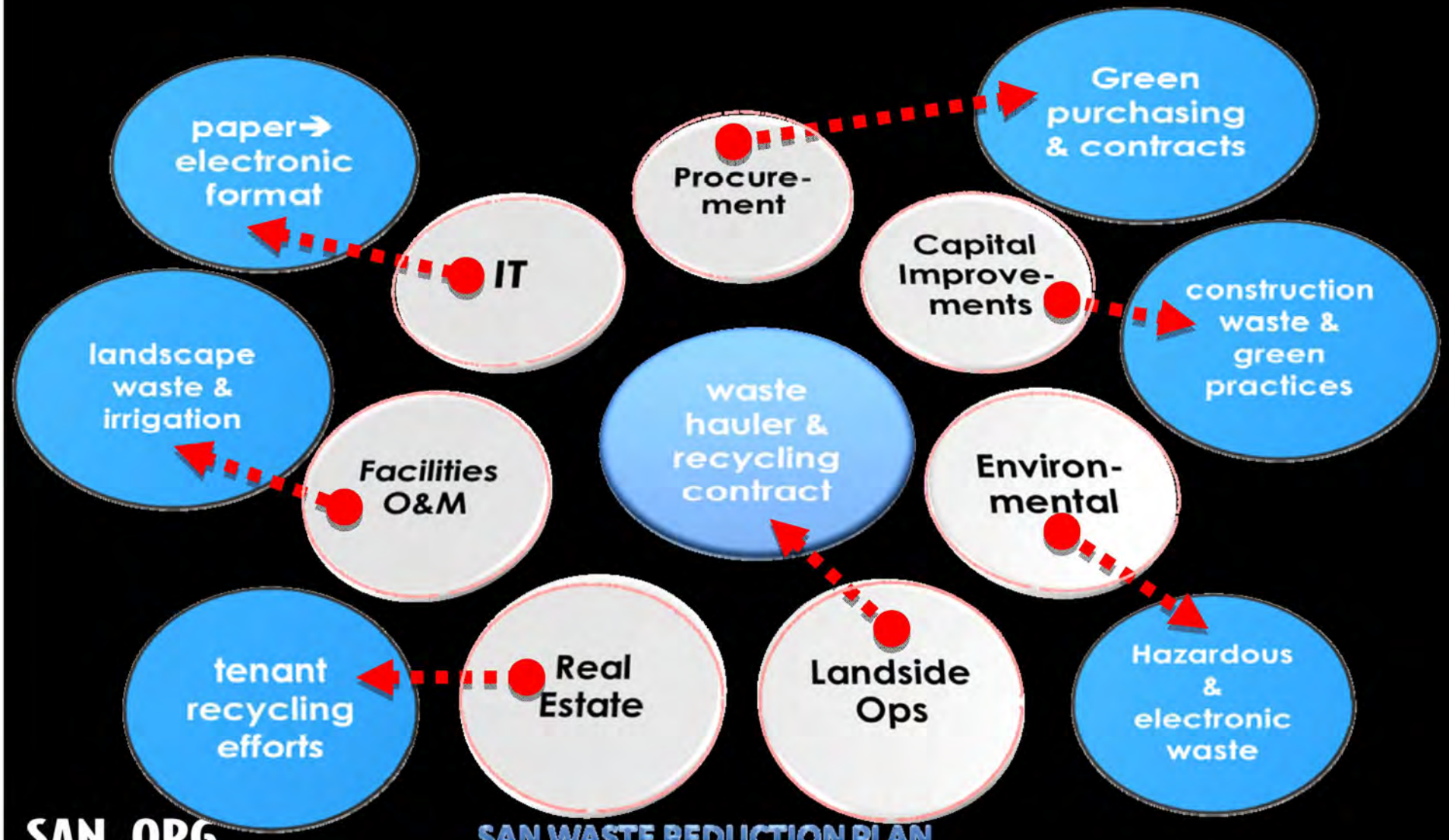


- Identify existing programs
- Establish baseline metrics

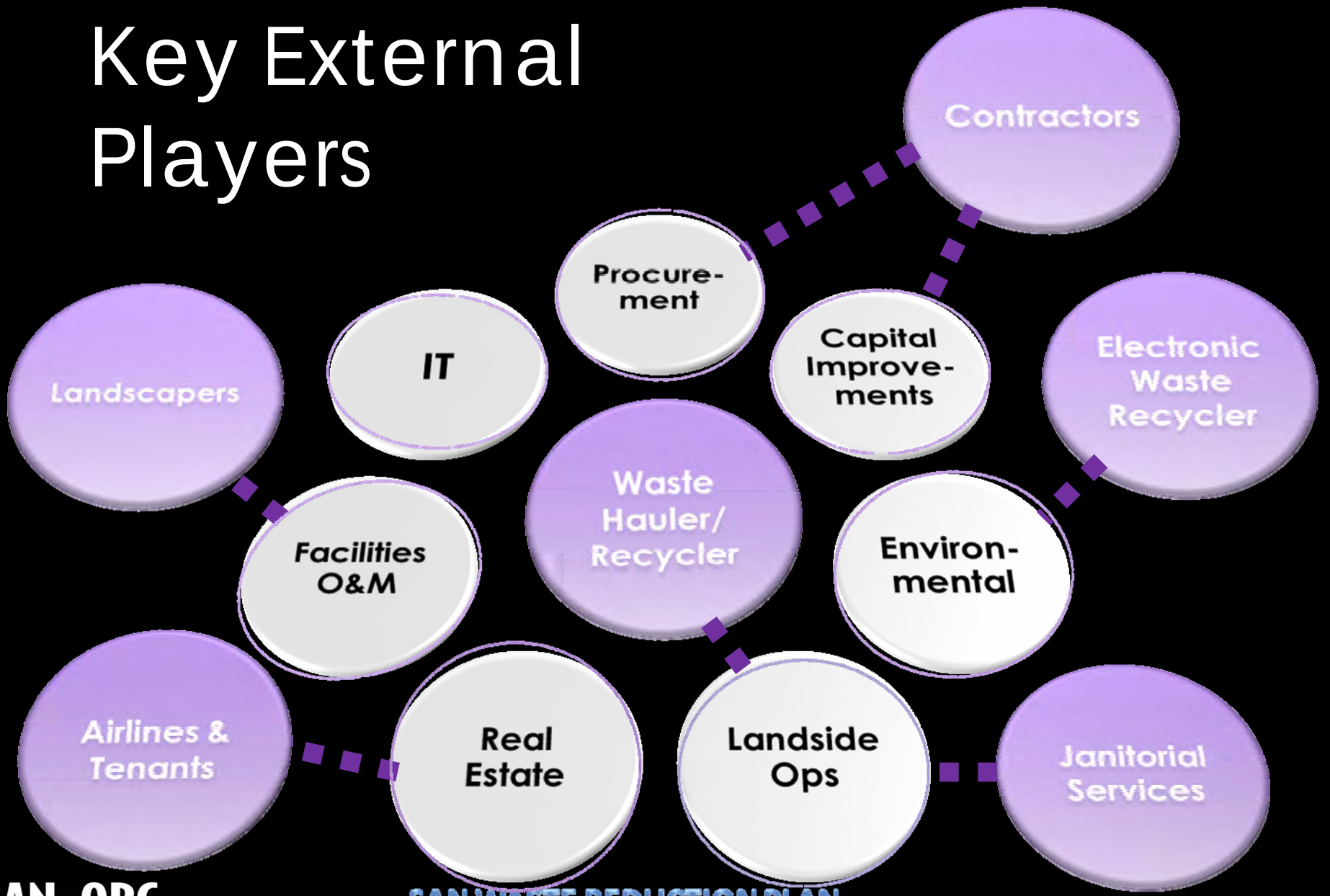
- Get management buy-in
- Identify key players
- Recruit champions to take ownership

- Set goals & metrics
- Develop a plan & implementation schedule
- Hold people accountable

Key Internal Players



Key External Players



Waste Reduction Advisory Group

Department heads charter waste reduction team

SAN WASTE REDUCTION PLAN

SAN.ORG
San Diego International Airport

Waste Reduction Team Members

Airport Departments

- Landside Operations
- Environmental Affairs
- Facilities Management
- Information Technology
- Facilities Development
- Terminal Development
- Procurement
- Real Estate Management
- Corporate Services

Contract Services

- Waste Hauler/Recycler
- Janitorial Services

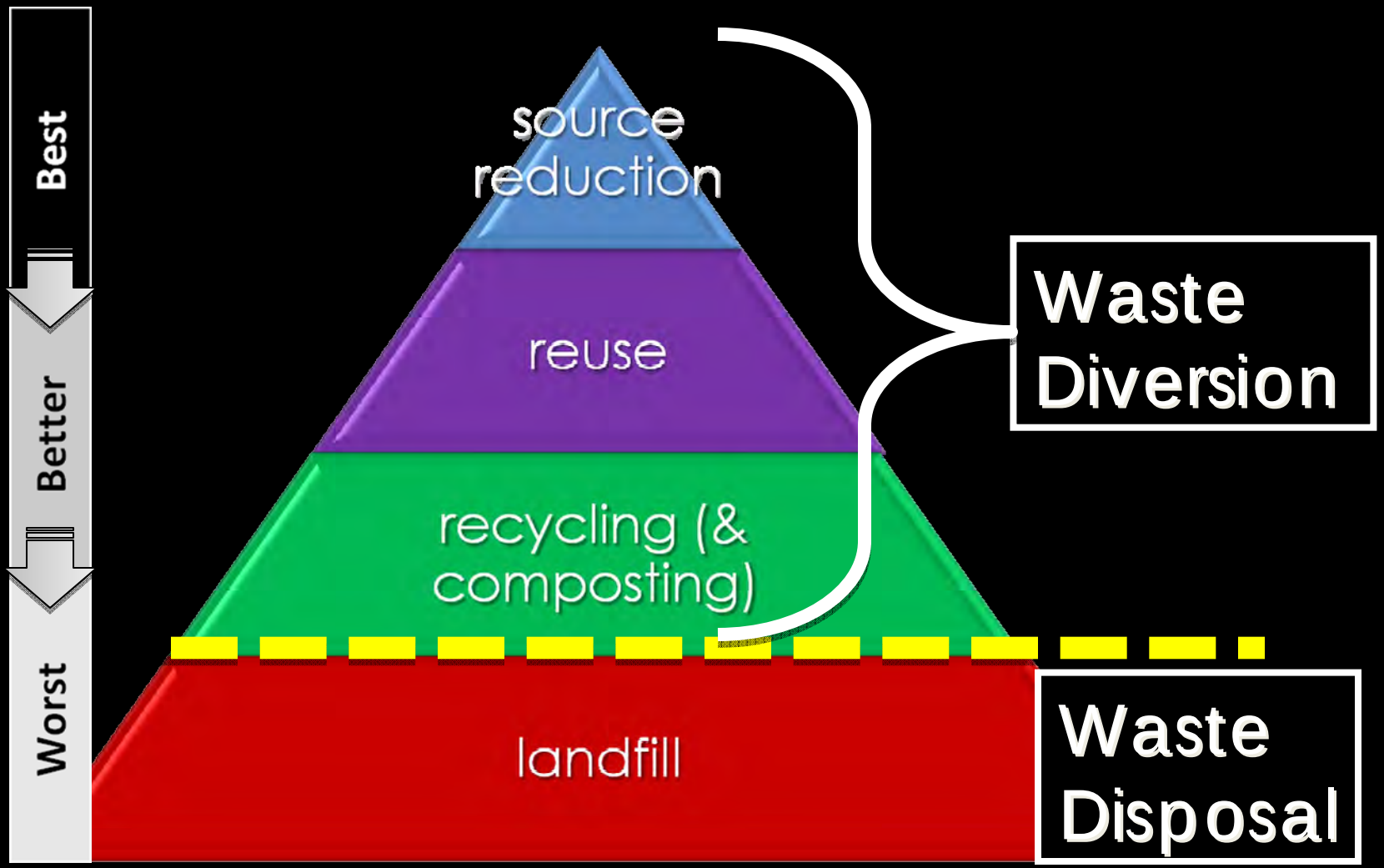
Next Phase Tenants

- Airlines
- Concessions

Project Charter

- Background
- Objectives & Benefits (Drivers)
- Scope, Assumptions, and Constraints
- Project Deliverables
- Approach, Major Tasks and Timeline
- Plan Implementation & Evaluation

Background:
Waste Management Hierarchy



Waste Reduction Drivers

Save money by reducing operating costs

Incorporate sustainable practices as per Authority's Sustainability Policy

Reduce Airport's air pollution & greenhouse gas emissions

Meet commitments under MOU with California Attorney General

Achieve ACI environmental goal for more extensive recycling programs

Support LEED certification objectives for all contraction projects

Conserve diminishing disposal capacity at our local landfills

Resulting metrics will feed into Authority's annual sustainability report

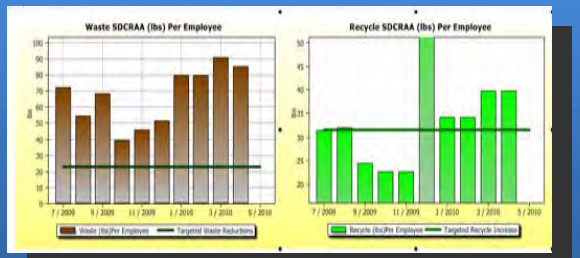
Team Scope

1. Identify waste reduction opportunities
2. Develop waste reduction goals & metrics
3. Prepare & implement Waste Reduction Plan
4. Report on progress & make improvements as needed to meet waste reduction goals
5. Provide waste reduction & recycling language for Authority's Rules & Regulations
6. Provide waste reduction guidelines to be included in Concessions RFP (Jan 2011)

Project Deliverables

Baseline Waste Reduction Metrics

1



Implementation Plan

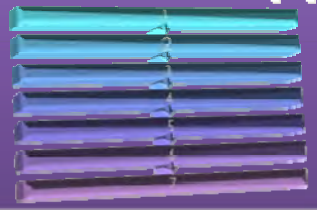
4

Step 1 Step 2 Step 3 Step 4 Step 5 Step 6 Step 7

accountability

Prioritized List of Waste Reduction Opportunities

2



Metrics Collection Plan

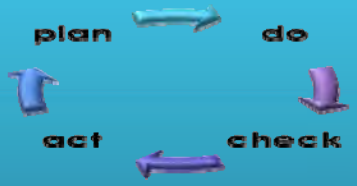
5

Waste Reduction Plan

3

Post Implementation Action Plan

6



Food Concession Recycling

- Expand food waste composting program
- Provide more grease waste containers for recycling
- Include sustainability mandates in new concessions RFP
  - Eliminate Styrofoam
  - Require 100% recyclable containers & utensils
  - Mandate recycling & disposal reporting

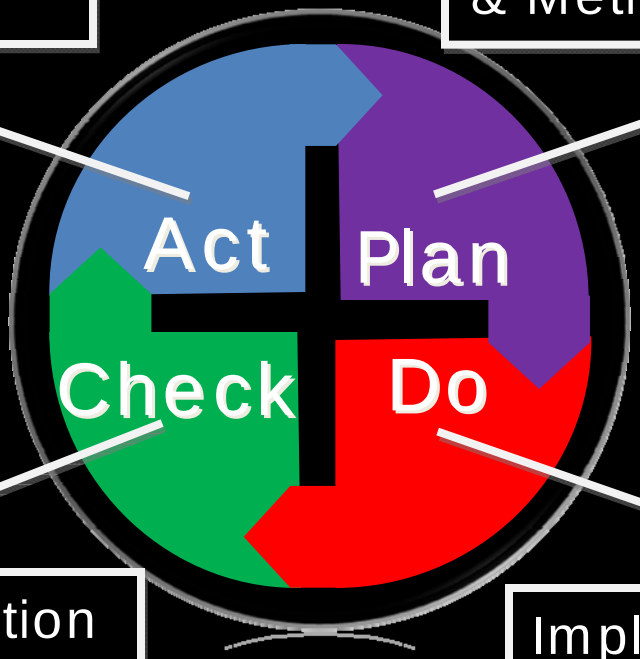
Recycling Education Program

- Create education program for:
  - Authority employees
  - Tenants & service providers
- Update recycling guide
- Provide "Green Your Office" posters for Authority & tenant areas

Waste Reduction Plan Implementation and Evaluation

Revise & implement Post Implementation Plan

Develop Implementation Plan & Metrics Collection Plan



Evaluate Implementation Plan & Metrics Collection

Implementation Plan & Metrics Collection

SAN DIEGO INTERNATIONAL AIRPORT

Annual Sustainability Report

Fiscal Year 2013 (July 1, 2012 - June 30, 2013)

2013

Mastering the Art of Airports

Our Environmental Performance

Our Goal: Operate Our Airport in a Safe, Secure, Environmentally Sound, Effective and Efficient Manner

The Airport Authority is committed to building and operating sustainably, and strives to protect the wide variety of natural resources that exist at the airport's unique location on the shores of San Diego Bay. Here we look at our efforts in several important areas concerning our natural environment:

- *Waste reduction and recycling*
- *Water conservation*
- *Energy conservation*
- *Air quality*
- *Sustainable building methods*
- *Noise considerations*

Waste Reduction and Recycling

Each day, we're making strides to reduce the amount of waste generated at the airport, while increasing what is recycled. The airport implemented a single-stream recycling program in 2002. This directly contributed to an increase in recycled waste from 107 tons in 2002 to more than 1,052 tons in fiscal year 2013.

Waste by Type

All values listed in standard tons

	FY 2011	FY 2012	FY 2013
Non-Hazardous	10,379	32,598	6,337
Hazardous*	80.2	173	213
Total	**10,819.2**	**32,771**	**6,550**

*All hazardous waste is handled by a certified hazardous waste contractor and disposed of in accordance with pertinent regulations.

Waste by Disposal Method

All values listed in standard tons

Method	FY 2011	FY 2012	FY 2013
Construction and Demolition Debris Recycling	5,150	27,276	1,199
Recycling	687	677	1,052
Landfill	4,902	4,645	4,086
Certified Hazardous Waste Disposal	80.2	173	213
Total Waste	**10,819.2**	**32,771**	**6,550**

Reducing waste has also become part of our regular business operations. For instance:

- Recycled paper is used throughout the Airport Authority offices.
- Internal newsletters and most external newsletters—previously printed and mailed by the thousands—are now produced and distributed electronically.
- Annual reports are produced electronically.

The Airport Authority was named Recycler of the Year for the ninth time by the City of San Diego at the 21st Annual Waste Reduction and Recycling Awards in fiscal year 2013.

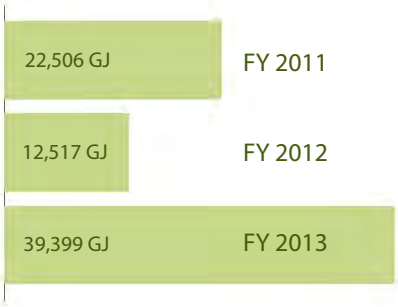
Water Conservation

Water is a precious resource, especially in arid Southern California. We've taken important steps to reduce the airport's water usage through measures including:

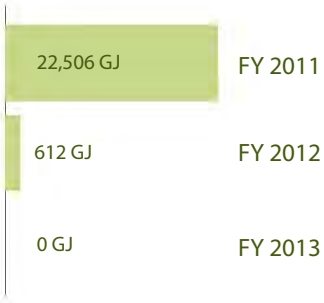
- Satellite water-tracking system – This state-of-the-art system collects and analyzes data from more than 18,000 weather stations to determine the airport's watering needs. This saves approximately nine million gallons of water each year.
- Xeriscaping – Environmentally friendly landscaping is being used at the airport, including a variety of indigenous and drought-tolerant plants, shrubs and ground cover.
- Low-flow fixtures – Replacement of 1.5-gallon-per-flush urinals with 0.125-gallon-per-flush units saves approximately 15 million gallons of water annually.

Environmental Performance

Energy Saved Due to Conservation and Efficiency Improvements

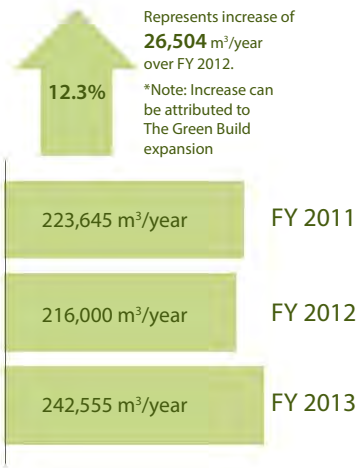


Reductions in Energy Requirements Due to Initiatives to Provide Energy-Efficient or Renewable Energy Based Products and Services



Total Water Withdrawal

Water drawn from the municipal water supply.



Habitats Protected or Restored

Values listed in hectares*

Habitat	FY 2011	FY 2012	FY 2013
Protected	8.19	8.19	8.19
Restored	0	0	0

* Hectare = 2.47 acres

Waste by Type

All values listed in standard tons

	FY 2011	FY 2012	FY 2013
Non-Hazardous	10,379	32,598	6,337
Hazardous*	80.2	173	213
Total	**10,819.2**	**32,771**	**6,550**

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Landfill	4,902	4,645	4,086
Certified Hazardous Waste Disposal	80.2	173	213
Total Waste	**10,819.2**	**32,771**	**6,550**

Significant Spills*

	FY 2011	FY 2012	FY 2013
Number	68	36	63
Volume	<47 gallons	<66 gallons	<663 gallons**

*There have been some changes in the way the Airport Authority captures spill data. Numbers for FY 2012 are only for petroleum spills. In FY 2011, "trash" and other spills were included with petroleum. Going forward, petroleum spills are the types of "significant spills" which will be monitored.
**Two separate fuel spills of 300 and 304 gallons represent 604 gallons of the total volume.

Attachment 4

SUPPORTING DOCUMENTS

SAN FRANCISCO INTERNATIONAL AIRPORT

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City and County of San Francisco

Invitation for Bids No. 9000
For

SOLID WASTE MANAGEMENT SERVICES
AT
San Francisco International Airport

Date issued:	Wednesday, January 12, 2011
Pre-Bid conference:	Wednesday, January 26, 2011, 10:00 AM
Deadline for Questions:	Friday, January 28, 2011
Bids due:	Friday, February 11, 2011 at 2:00 PM

APPENDIX A

SCOPE OF WORK

Contractor shall provide all labor, equipment, services and material necessary to meet all needed solid waste management services at the San Francisco International Airport. The following description of the required services shall be used as a general guide in conjunction and as a supplement to the bid form. All of the Contract requirements described here shall flow down to all subconsultants and/or subcontractors as appropriate.

A. COLLECTION MANAGEMENT SERVICES

1. The Contractor shall provide for the removal, off-haul, recycling, composting and disposal of solid waste generated at SFO from Airport Commission owned and designated solid waste compactors and containers, and other containers, bins, boxes, toters, etc. supplied by the Contractor (together collectively referred to as "Containers"). The estimated compactor and debris box numbers, sizes, locations and frequency of pick-ups are shown in Table A-1 Solid Waste Compactors, Recycling Bins and Debris Boxes. The frequency of service, as well as the collection locations, specified in Table A-1, Figures A-1 and A-2 is subject to change at any time. Information provided in Table A-1 and Figures A-1 and A-2 portray current conditions at the Airport. Service levels are subject to seasonal and other variations in peak travel, which may require increased frequency of collection. Actual collection time, collection days, locations, and frequency of pick up may be adjusted over the length of the contract as the Airport's needs change. Services shall be made available on a Monday through Saturday basis, including on City-observed holidays ("Holidays"). Any changes made by City to the required number of Containers will not result in any additional compensation to the Contractor, except for the purchase of any needed compactor, or any adjustment of unit bid prices. Information on monthly quantities of solid waste collected at different locations at SFO during a three month period in 2010 is provided in Table A-2. The information contained in Tables A-1 and A-2 is provided as a guide for the bidders and does not indicate any warranty that the same conditions would be encountered at any location at SFO in the future. The required frequency of container pick-up could be changed by the Airport Project Manager without additional compensation to the Contractor.

2. The Contractor shall provide adequate number of bins for temporary storage of source-separated recyclables at the Airport. Recycling bins and containers, including approximately ten 14-yard debris boxes for cardboard recycling and approximately one hundred 90-gallon wheeled toters/containers for mixed paper recycling shall be provided at no cost to the Airport.

3. Three distinct solid waste streams are generated at SFO as follows:

   a. Mixed solid waste,
   b. Source separated recyclable materials, and

c. Compostable waste materials

The estimated annual quantity of each waste type is shown for each year in the Bid Form (Attachment 2 to the IFB). However the actual quantities of waste generated during each contract year may vary from these estimated quantities and City makes no representations or guarantees regarding the quantities that will be generated during the contract term. Contractor shall not be entitled to any increase in the unit Bid prices because of changes in the waste generation rates.

4. For mixed solid waste, the Contractor shall haul the mixed solid waste from the Airport and provide sorting and recycling of recyclable and compostable materials at Contractor's offsite facilities. For source separated segregated recyclable materials, the Contractor shall also haul away the contents and arrange for the sale of such materials. For compactors and bins containing predominantly compostable materials, the Contractor shall haul the contents directly from SFO to an offsite composting facility. Recycling and composting requirements, and reporting of materials recycled and composted, are detailed in this scope of work.

5. Contractor shall not dispose of any source separated recyclable materials, recyclable materials sorted at contractor facilities, or compostable materials hauled from SFO in a landfill.

6. Contractor shall be required to perform the following as needed repair or other services after receiving a negotiated Task Order from the Project Manager:

a. Repair services for compactors,
b. Trash Chute repair,
c. AS needed rodent control

7. The Airport owns and operates one compactor truck (located at Maintenance Yard #2) that would deliver solid waste to the Contractor's facility from time to time at the unit bid price for mixed solid waste.

8. The work under this Contract does not include the handling of construction and demolition waste materials from the Airport construction projects.

9. On-call, short-term and emergency collections may be required from time to time. All on-call collections must be completed within 24 hours (or 48 hours if Sunday is included) of the request unless agreed to in advance by City. Short-term service for special projects and/or events shall be made available on a 7 day basis. Emergency service requested with City must be provided within a two (2) hour response time.

B. BID ITEMS

1. Descriptions:

a. Bid Item A - Provide solid waste removal service for compactors, bins, debris boxes, etc as described in the scope of work above. Work under this bid item includes, but is not limited to: providing all needed debris boxes, bins, and toters; steam cleaning, servicing and maintenance of compactors and debris boxes, and providing recycling and composting services for the 12 months period for Year 1 of the Agreement.

1) Bid Item A-1 - Collection, Transport, Recycling, and Disposal of Mixed Solid Waste. This Bid Item covers the cost of collection, transport, sorting, recycling, and composting of the mixed solid waste stream and disposal of the residual waste materials in a landfill for the 12 months calendar period for Year 1.

2) Bid Item A-2 - Collection, Transport, and Composting of Biodegradable Solid Waste. This Bid Item covers the cost of collection, transport, and composting of biodegradable solid waste from designated compactors and bins for the 12 months calendar period for Year 1.

3) Bid Item A-3 - Collection, Transport, and Sale of Segregated Cardboard Materials. This Bid Item covers the cost of or credit for collection, transport, and sale of recyclable cardboard materials, that are source separated at the Airport, from designated compactors and bins for the 12 months calendar period for Year 1.

4) Bid Item A-4 - Collection, Transport, and Sale of Segregated Wood Materials. This Bid Item covers the cost of or credit for collection, transport, and sale of recyclable wood materials, that are source separated at the Airport, from designated compactors and bins for the 12 months calendar period for Year 1.

5) Bid Item A-5 - Collection, Transport, and Sale of Segregated Mixed Recyclable Materials. This Bid Item covers the cost of or credit for collection, transport, and sale of mixed recyclable materials (aluminum, glass, plastics), that are source separated at the Airport, from designated compactors and bins for the 12 months calendar period for Year 1.

6) Bid Item A-6 - Collection, Transport, and Sale of Mixed Paper. This Bid Item covers the cost of or credit for collection, transport, and sale of mixed paper, that are source separated at the Airport, from designated compactors and bins for the 12 months calendar period for Year 1.

7) Bid Item A-7 - Collection, Transport, and Sale of Scrap Metals. This Bid Item covers the cost of or credit for collection, transport, and sale of scrap metals, that are source separated at the Airport, from designated compactors and bins for the 12 months calendar period for Year 1.

8) Bid Item A-8 - Collection, Transport, and Sale of Plastics. This Bid Item covers the cost of or credit for collection, transport, and sale of plastics, that are source separated at the Airport, from designated compactors and bins for the 12 months calendar period for Year 1.

9) Bid Item A-9 - Collection, Transport, and Sale of Aluminum. This Bid Item covers the cost of or credit for collection, transport, and sale of Aluminum materials, that are source separated at the Airport, from designated compactors and bins for the 12 months calendar period for Year 1.

10) Bid Item A-10- Perform Annual Solid Waste Characterization. The Contractor shall perform an annual solid waste characterization by quantifying the contents of individual compactors, boxes, and bins that are hauled directly from SFO to Contractor's facilities during the first complete week in August of each of the five contract years and documenting the following data for each individual compactor, box, and bin:

(a) Various components of the mixed solid waste as measured by the weight of these components in individual compactors and trash bins,

(b) Measured total weight and the weight of non-organic waste components in compactors and bins containing compostable materials,

(c) The recorded weight of source separated recyclable materials collected during the test week.

Contractor shall also prepare a summary report describing the methodology used and the detailed results of the waste characterization study and provide electronic spreadsheets showing the various waste components in individual compactors, bins, and boxes.

b. Bid Item B - Provide solid waste removal service for compactors, bins, debris boxes, etc as described in the scope of work above. Work under this bid item includes, but is not limited to: providing all needed debris boxes, bins, and toters; steam cleaning, servicing and maintenance of compactors and debris boxes, and providing recycling and composting services for the 12 months period for Year 2. The subcomponents of this bid item and description of the services required under each sub-item are similar to the corresponding sub-items under Bid Item A.

c. Bid Item C - Provide solid waste removal service for Compactors, bins, debris boxes, etc as described in the scope of work above. Work under this bid item includes, but is not limited to: providing all needed debris boxes, bins, and toters; steam cleaning, servicing and maintenance of compactors and debris boxes, and providing recycling and composting services for the 12 months period for Year 3. The subcomponents of this bid item and description of the services required under each sub-item are similar to the corresponding sub-items under Bid Item A.

d. Bid Item D - Provide solid waste removal service for Compactors, bins, debris boxes, etc as described in the scope of work above. Work under this bid item includes, but is not limited to: providing all needed debris boxes, bins, and toters; steam cleaning, servicing and maintenance of compactors and debris boxes, and providing recycling and composting services for the 12 months period for Year 4. The subcomponents of this bid item and description of the services required under each sub-item are similar to the corresponding sub-items under Bid Item A.

e. Bid Item E - Provide solid waste removal service for Compactors, bins, debris boxes, etc as described in the scope of work above. Work under this bid item includes, but is not limited to: providing all needed debris boxes, bins, and toters; steam cleaning, servicing and maintenance of compactors and debris boxes, and providing recycling and composting services for the 12 months period for Year 5. The subcomponents of this bid item and description of the services required under each sub-item are similar to the corresponding sub-items under Bid Item A.

f. Bid Item F - Purchase Compactors. The Contractor shall purchase and install compactors in accordance with the specifications shown in Exhibit A to the Bid Form and in the numbers shown under this Bid Item.

g. Bid Item G - Allowances – This item includes the amount set aside for unanticipated items relating to the repair of compactors, trash chute repair, and rodent control and compactor/FOD container purchase. The scope of work for any needed item under allowances shall be defined by Airport Project Manager and the fee for such services shall be negotiated with the Contractor. Such services shall be requested by City through the issuance of a written task order signed by City and Contractor, which task order shall be made a part of and incorporated into the Contract as though fully set forth herein without the need of a formal amendment to the Contract. The task order shall include a description of the as-

needed services, the deliverables, schedule for performance, cost and method and timing of payment. Airport reserves the right to procure services listed under allowances from another contractor or to perform the work with Airport crew.

C. MAINTENANCE

1. All Containers shall be cleaned as needed, both inside and out, to maintain appearance and to reduce odors to the satisfaction of City, but no less frequently than specified in this Appendix A.

2. Contractor shall perform maintenance on compactors, bins, and boxes as recommended by manufacturer or prescribed by Airport Project Manager.

3 The Contractor shall perform steam cleaning of all compactors and adjacent ground surface areas, debris boxes and the storage areas for such containers at the Airport as follows:

a. Steam Clean Compactors and adjacent ground surface areas: Minimum monthly and as needed

b. Steam Clean bins, boxes, toters, FOD containers: Minimum monthly and as needed

c. Steam clean storage areas of the above containers: Minimum monthly and as needed

4. Any damaged Containers shall be repaired or replaced to the satisfaction of City without interrupting the recycling collection and hauling service. The Contractor shall provide adequate backup equipment such that uninterrupted service shall be maintained at all times. The Contractor shall perform emergency repairs due to defective equipment, materials or workmanship, which are required to prevent damage to adjacent property or injury to persons, at Contractor's sole expense, as soon as practicable, upon notification by Airport Project Manager. If the Contractor fails to respond, or if repairs must be done before the Contractor can respond, the City shall have the right to make repairs and charge the Contractor for actual costs of necessary labor and materials.

5. During the term of this Contract, the Contractor will be required to maintain and service all solid waste Containers, including compactors, boxes, bins, toters, etc. This will include, but is not necessarily limited to repair, lubrication, cleaning, painting, etc. All Containers, including City-owned compactors, shall be kept in good working order to the sole satisfaction of City, and kept free of odor, leakage or emissions. The Contractor shall be required to maintain these Containers 24-hours a day 7-days a week, including weekends and Holidays, for the duration of this contract. The Contractor shall be available to provide maintenance no later than one (1) hour after notification from the Airport.

6. The Contractor shall perform preventative maintenance on compactors which includes:

a. Checking all machine functions and all control buttons
b. Cleaning the control cabinet
c. Greasing pivots on cylinders
d. Checking for oil leaks
e. Cleaning limit switches
f. Lubricating ram guide system with EP grease
g. Lubricating dump door hinges with EP grease

h. Checking for loose wires and repairing any
i. Cleaning the oil sight glass
j. Inspecting the 7 OSHA safety decals & replacing as needed
k. Tightening all electrical connections
l. Tightening all hydraulic hose connections
m. Adding oil as necessary
n. Checking for any obvious unsafe conditions, electrical or operator obstructions, and advising the Airport
o. Noting on the work order any major repairs that may be needed. (Contractor shall not perform any major repair work until the Project Manager is made aware & advises the Contractor on how to proceed)

7. The cost of all required maintenance shall be included in the Contractor Bid Items and no additional charges shall be made for any required maintenance.

8. Products used in maintenance of systems and equipment shall be those recommended by system or equipment manufacturer or approved equivalent.

9. Maintenance shall be performed by personnel who are qualified to maintain such system or equipment, unless otherwise approved by Project Manager.

10. Maintenance methods and tools shall be as recommended by manufacturer and specified by applicable standards under which the system or equipment was installed.

11. Cost of the required maintenance services shall be included in Bid Items A through E.

12. The Contractor shall not litter premises in the process of providing collection services or while its vehicles are on the road. The Contractor shall transport all solid waste and recyclable materials in such a manner as to prevent the spilling or blowing of such waste from Contractor's vehicles. The Contractor shall exercise all reasonable care and diligence in providing collection services so as to prevent spilling or dropping during collection activity and shall immediately, at the time of occurrence; cleanup such spilled or dropped waste materials.

D. EQUIPMENT

1. The Contractor shall provide boxes, bins, and toters with capacities and locations shown on Figure A-1 and A-2 in the numbers listed below, which number may change as required by City:

a. Cardboard Boxes: 9
b. Bottles and Cans Boxes: 2
c. Mixed Waste Boxes: 2
d. Bottles and Cans Bins: 13
e. Cardboard Bins: 19
f. Food Waste Bins: 18
g. Mixed Paper Bins: 45
h. Mixed Waste Bins: 18
i. 90 Gallon Wheeled Toters: 100

The cost of procuring and supplying the above equipment shall be included in the unit cost schedule for various bid items and Contractor shall not receive any additional compensation for supplying the listed equipment and for any additional containers that might be required beyond those listed above.

2. Twenty two (22) Airport-owned compactors and 45 Airport-owned FOD containers are to be used under this contract. The Contractor is responsible for servicing and maintaining the compactors and FOD containers, as needed, for the duration of this contract. If during the course of this contract any compactor has to be taken out of service for major maintenance, the Contractor shall supply a substitute compactor of equal capacity for the duration of the repair work, at no extra cost to the Airport.

3. Airport also owns a 20-yard compactor truck which is stationed at Maintenance Yard No. 2. This truck could be used by Airport personnel for delivering mixed solid waste to Contractor facilities from time to time. The unit charges for the waste hauled by the Airport shall be the same as those listed in the Bid Form.

4. Contractor shall purchase and install within 90 days of contract certification new compactors in the numbers shown under the Bid item and in accordance with the specifications set forth in Exhibit A to the Bid Form. All compactors purchased under this Agreement shall be the property of the City when the compactors are properly installed and operational in accordance with the specifications. Contractor shall invoice City for the new compactors upon delivery of the compactors to the designated City locations.

E. RECYCLING AND COMPOSTING PROGRAM

1. The Contractor shall transport the contents of the following compactors and waste bins to a composting facility:

Container Number	Container Location	Destination
C-1	South Terminal near gate 43	COMPOSTING
C-2F	International Terminal Courtyard 2	COMPOSTING
F-1 (H-2)	Gate 81	COMPOSTING
G-3	Gate 91	COMPOSTING
H-3	Gate 68	COMPOSTING
H-5	Gate 21	COMPOSTING
IT-1	Court yard 4	COMPOSTING
IT-3	Court yard 1	COMPOSTING
IT-4	Court yard 1	COMPOSTING
C-76	Gate 76	COMPOSTING
A-2	Gate A-2 International Terminal	COMPOSTING
Fire house 1	2 yard	COMPOSTING
Fire house 2	2 yard	COMPOSTING
Fire house 3	2 yard	COMPOSTING

2. The Contractor shall provide containers, collection and processing for the recycling of the following additional materials: cardboard, mixed paper, aluminum cans, glass bottles, and recyclable plastic containers. Other recyclable materials may be substituted or added to the above list by the Airport. The Airport will be responsible for the collection and separation of the materials and placing them in the designated containers provided by the Contractor.

3. Contractor shall provide documentation on the monthly tonnage of mixed waste, compostable materials, and recyclable materials hauled from the Airport and include the charge (credit) for these services in Contractor's monthly invoices in accordance with the applicable unit bid price shown in the Bid Form.

4. The Contractor must comply with all applicable Federal, State and City laws, regulations, ordinances, resolutions and/or guidelines governing Solid Waste Management, Recycling, Cal OSHA requirements.

5. Sorting of recyclable and compostable materials from the mixed solid waste stream hauled from SFO by Contractor is integral to this contract The Contractor is required to recycle/compost at minimum 42% of the **mixed solid waste stream** transported from the Airport during the 2011-2012 first service year and increase the recycling/composting rate for the mixed waste stream by 2% for each of the subsequent service years.

6. If the contractor is unable to meet the goals stated above, Airport may, in addition to any remedies under the contract or under law, choose to terminate the contract after the end of the service year in which Contractor fails to meet the stated goal.

7. Execution

a. Contractor shall provide documentation for the weight of various solid waste materials collected from SFO. Documentation for mixed solid waste, compostable solid waste, cardboard, food waste and all other items that are transported from SFO to Contractor's facilities must be based on the scale tapes showing the date, time, gross weight, and net weight of the trucks and the type of waste contained in the truck. For waste that is intermingled with waste collected from other customers an accurate record must be kept by the drivers showing the type of container, type of waste, date of collection, and estimated volume of waste in cubic yards. The Contractor shall provide unit conversion factors for deriving the tonnage of various wastes, collected in this manner, based on the net weight of the trucks hauling such waste to the Contractor facilities.

b. The Airport could inspect the Contractor's transfer station, recycling facilities, and composting facilities at any time during the contract period. The Contractor shall supply the weight records for a requested period of time to the Airport representative for review and verification. The Contractor shall also demonstrate to the Airport representative the process by which the amount of materials recycled, composted, and land-filled is calculated. The Contractor is entitled to all revenues from the sale of recyclables and compostable materials separated from the mixed solid waste stream that is removed from SFO.

F. WORK COORDINATION

The Commission reserves the right to perform other or additional work, within or adjacent to the limits of the work specified, at any time by the use of other forces. The Contractor shall coordinate with

the Commission and any Commission forces, or other forces, engaged by the Commission, as required by the Agreement.

1. Limit use of premises for solid waste collection and maintenance services in a manner that would not interfere with:

a. Airport and FAA operation
b. Work by other contractors and tenants.

2. The Contractor shall coordinate the use of premises and access to various sites with Severin Rizzo, Airport Custodial Supervisor.

3. The Contractor shall cooperate with contractors who may perform other work at or near the waste storage sites during the term of this contract.

4. The Contractor shall coordinate space requirements and installation of all solid waste Containers with the Airport Custodial Supervisor.

5 The Contractor shall coordinate the time and frequency of removal of all compactors and containers with the Airport Custodial Supervisor.

6. The Contractor shall work with the current solid waste Contractor to ensure an orderly transition and a start date for the new contract thirty (30) calendar days from the date of issuance of the Notice to Proceed with no disruption in solid waste collection services at the Airport. The Contractor shall be wholly responsible to provide all services as specified in the specifications thirty (30) calendar days after issuance of the Notice to Proceed.

a. Within 30 days after contract award, the Contractor shall provide a detailed implementation plan describing the Contractor's approach to facilitating a smooth transition as the new service provider. The plan should include how the proposer will meet equipment, personnel, administration, maintenance requirements. The City will review and comment on the plan, and the Contractor shall revise the plan in accordance with City comments, and resubmit the revised plan to the City for further review and comment, until the City is satisfied with the plan. The final approved plan shall be incorporated into the contract as part of Appendix A without need for a formal amendment to the Contract.

b. In the event the Contractor is not awarded a Contract to continue to provide collection management services following the expiration or early termination of this Contract, the Contractor shall cooperate fully with the City and any subsequent contractors to assure a smooth transition of services described in this Contract. Such cooperation shall include but not be limited to transfer of computer data, files and tapes, providing a complete inventory of all Containers; providing adequate labor and equipment to complete performance of all collection management services required under this Contract; providing reports and data as required by this Contract, and taking all actions necessary to effectuate a seamless transfer of services to a new contractor. The Contractor shall, at the City's request, make Contractor-owned Containers available for continued use at SFO at no cost to City for the first fourteen (14) days of transition after the contract term has expired or terminated.

H. WORK SCHEDULES AND REPORTS

1. The scheduling of Work under this Contract shall be performed by the Contractor in accordance with the requirements of this Section.

2. Upon Award of Contract and issuance of the Notice to proceed, the Contractor shall immediately develop and submit a formal schedule for solid waste collection services at least two weeks prior to the start of operations.

3. Work Schedules shall be based on demand for solid waste collection services.

4. Standard Work Periods: The standard workweek shall be 24 hours a day, six days a week (Monday through Saturday) including Holidays for the duration of the Contract.

5. Monthly Schedule updates. The Contractor shall submit updated schedules to the Project Manager for review and approval, whenever the schedule of work is significantly modified in comparison with the preceding schedule.

6. Any change in the contract schedule shall be approved and authorized by Severin Rizzo, Airport Custodial Supervisor.

I. REQUIRED TURN-AROUND TIME

1. The Contractor shall return all compactors and other containers that are removed from the Airport during solid waste collection operations in accordance with the following schedules:

a. The maximum allowable turn-around-time (TAT) at all locations around the terminals shall be 30 minutes for pick-up between 5:00 AM and 2:00 AM the next day.

b. The maximum allowable TAT at all locations around the terminals shall be 60 minutes for pick-up between 2:00 AM and 5:00 AM the same day.

c. The maximum allowable TAT at all other locations at SFO shall be 60 minutes regardless of pick-up time.

J. SCHEDULE OF FINES FOR SERVICE FAILURES

1. City may elect to impose the fines described below for Contractor's failure to provide the required services or failure to meet the specified turn-around-times in accordance with the following schedule of fines:

a. Failure to pick-up a container on the scheduled pick-up date: $100 per event

b. Failure to meet the required TAT at a given location: $100 per event

c. Failure to perform the scheduled maintenance services: $100 per event

2. If the Contractor shows a persistent tendency in failing to provide the required services, the specified fines shall be progressively increased as follows:

a. After receiving 5 failure notifications in any calendar month the fine for any subsequent failure shall increase to $500 per event.

b. After receiving 10 failure notifications in any calendar month the fine for any subsequent failure shall increase to $1,000 per event.

c. If the Contractor receives more than 10 failure notifications in any month the fine for any additional failures shall be $1,000 per event until the contractor has provided a three month failure-free service.

3. If a persistent pattern of service failure emerges during any three-month period, SFO may provide a notice of termination to the Contractor and initiate a new Contractor selection process.

4. Under the conditions described in Item 3 above, the incumbent Contractor shall continue to provide the complete range of services to SFO until a new Contractor has been fully certified by SFO.

5. City's right to impose the foregoing fines shall be in addition to and not in lieu of any and all other rights under this Agreement, in the Airport rules, or at law or in equity. City shall have no obligation to Contractor to impose fines on or otherwise take action against any other contractor at the Airport.

K. MONTHLY INVOICE

1. The Contractor shall submit a monthly invoice to the Project Manager for payment authorization.

2. No payment shall be authorized by the Project Manager in the absence of the required supporting documents.

3. Weight Tags of all containers removed from the Airport for dumping or recycling shall be included with monthly invoice. A listing of Full Load and tare weight are to be included with the invoice.

L. QUARTERLY SOLID WASTE REPORT

1. Within 30 days after the end of each calendar quarter, the Contractor shall submit a report titled “San Francisco International Airport Solid Waste and Recyclable Materials Report”. The report shall provide summary data on the complete breakdown of all materials collected during the period. This data shall include the tonnage of different types of source separated recyclable materials, compostable materials, and mixed solid waste collected at SFO, including any special pickups. The report shall also provide details on the tonnage of recyclable materials sorted at Contractor’s Facilities and the residual quantity of mixed waste that is disposed of in a landfill.

2. Each report shall also contain data on the tonnage of different solid waste materials collected at each pick up location during each month. Contractor shall submit the report electronically to the Airport Project Manager and to Custodial Services Manager. The quarterly report shall be prepared in the format shown in Exhibit A.1 to this Appendix A

M. ANNUAL SOLID WASTE REPORT

On each anniversary date of this Contract, the Contractor shall submit a report detailing the progress that the Contractor has made in meeting the established recycling goal for Contractor's transfer station and describe plans for meeting the recycling goal for the succeeding year of the Contract.

END OF APPENDIX A

San Francisco International Airport

SFO Climate Action Plan

Vision: Mitigate the Total SFO Controlled Carbon Emissions

MARCH 2012

5. Zero Waste Plan

Summary

Solid waste is generated at Airport operated facilities, aboard incoming aircraft, and by various Airport tenants. SFO provides solid waste collection facilities and disposal services in the public areas of all terminals. The Airport also provides solid waste disposal services at the terminals to various concessionaires and to most airlines. Some airlines and concessionaires at SFO maintain independent solid waste handling operations. Most recyclable materials such as cardboard, glass, aluminum, plastic bottles, etc. are collected separately at the Airport and are recycled by the contractor providing solid waste transport and disposal services to the Airport. The mixed solid waste materials collected from the Airport are sorted by the contractor at their offsite facilities where additional recyclable materials are removed from this stream. In FY 2011 SFO collected 9,309 tons of solid waste at the terminals and at other facilities. A total of 6,961 tons of this waste was recycled by the Airport contractor. On-site source separation contributed 1,413 tons (15.2%) of the recycled waste and the remainder was separated at off-site facilities of South San Francisco Scavenger Company (SSFSC). The solid waste reduction and recycling programs offset the GHG emissions at SFO by 2,619 tons in FY 2011. SFO is continuing to enhance the source separation operations having achieved the City's recycling goal of 75% in the in fiscal year 2011 and aiming for the goal of 85% recycling by 2017 and 100% recycling by 2020. In FY 2011 SFO composted 3,661 tons or 39.3%of the generated solid waste.

Waste Profile

In FY 2011 about 9,309 tons of general solid waste was generated at SFO of which 6,961 tons or 74.8 percent was recycled. No additional recycling from construction/demolition waste was recorded as no significant construction activity occurred during this period. Detailed information on the composition of the solid waste and the quantities of recycled wastes is provided in Table 5-1. These data indicate fairly consistent recycling rates during 2010 and 2011. As shown in Table 5-2 the SSFSC's quarterly offsite recycling rates, as a percentage of the total waste generated at the Airport, varied from 56.71 % to 61.78 % with an average annual recycling rate of about 59.60%. The quarterly recycling rates for the Airport's source separation operations ranged from 14.57 % to 15.72%, as a percentage of total waste, with an annual average rate of 15.18%.

Graphical representations of quarterly solid waste generation and recycling rates for calendar year 2009 are shown in Figures 5-1 and 5-2.

Table 5-1. FY 2011 Solid Waste Generation and Recycling Rates at SFO by Waste Type

Solid Waste Type	Quantity (Tons) 1st	2nd	3rd	4th	Total Quantity Recycled (Tons)
Cardboard	357	305	294	320	1,276
Wood	19	20	25	21	85
Mixed Recyclables (alluminum, glass, plastics)	65	57	46	52	220
Mixed Paper	33	21	19	21	94
Composted Waste	959	936	833	933	3,661
Newspaper	111	92	101	114	418
Magazines	82	89	97	110	378
Waste Paper	58	123	134	152	467
Glass	29	36	40	45	150
Alluminum	9	14	16	18	57
Plastics	9	4	5	5	23
Scrap Metal	10	10	10	10	40
Clippings	0	0	0	0	0
Wastewater Treatment Sludge	23	23	23	23	92
Total Recycled	1,764	1,730	1,643	1,824	6,961
Mixed Waste (landfilled)	696	567	520	565	2,348
Grand Total	2,460	2,297	2,163	2,389	9,309

Table 5-2. Quarterly Solid Waste Generation and Recycling Rates at SFO in FY 2011 (Tons)

Period	Solid Waste Generation, Tons			Offsite Recycling Rate[a]	Onsite Source Separation Rate[a]	Combined Recycling Rate[a]
	Mixed	Source Separated	Total Combined			
Third Quarter 2010	2,091	369	2,460	1,395 56.71%	369 15.00%	1,764 71.71%
Fourth Quarter 2010	1,936	361	2,297	1,369 59.60%	361 15.72%	1,730 75.32%
First Quarter 2011	1,828	335	2,163	1,308 60.47%	335 15.49%	1,643 75.96%
Second Quarter 2011	2,041	348	2,389	1,476 61.78%	348 14.57%	1,824 76.35%
Total FY 2011	7,896	1,413	9,309	5,548 59.60%	1,413 15.18%	6,961 74.78%

[a] Based on the combined tonnage of general solid waste generated at the Airport

Figure 5-1. FY 2011 Solid Waste Generation and Recycling Rates at SFO

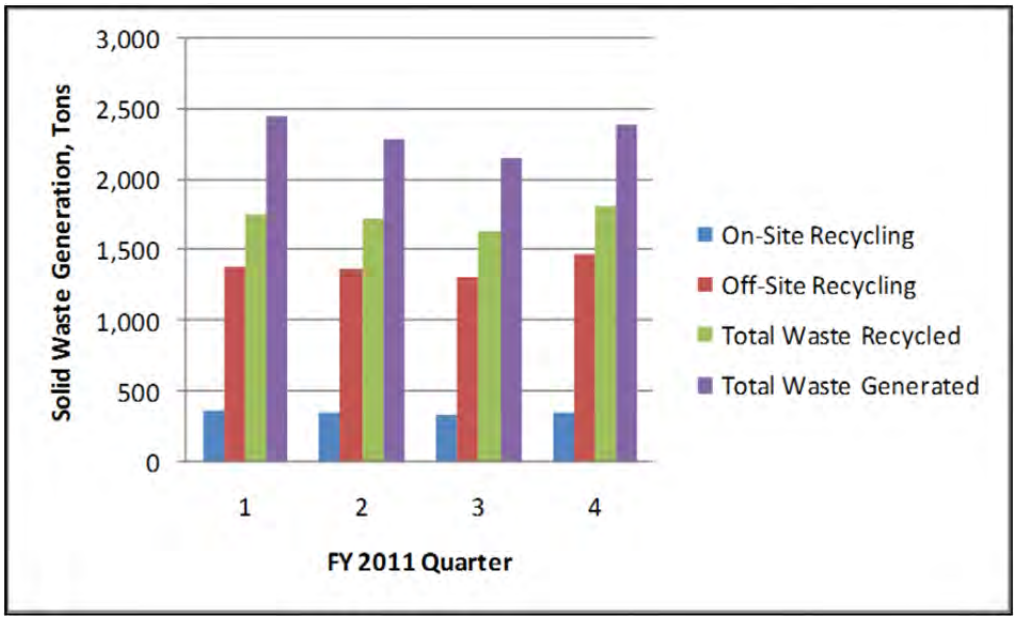
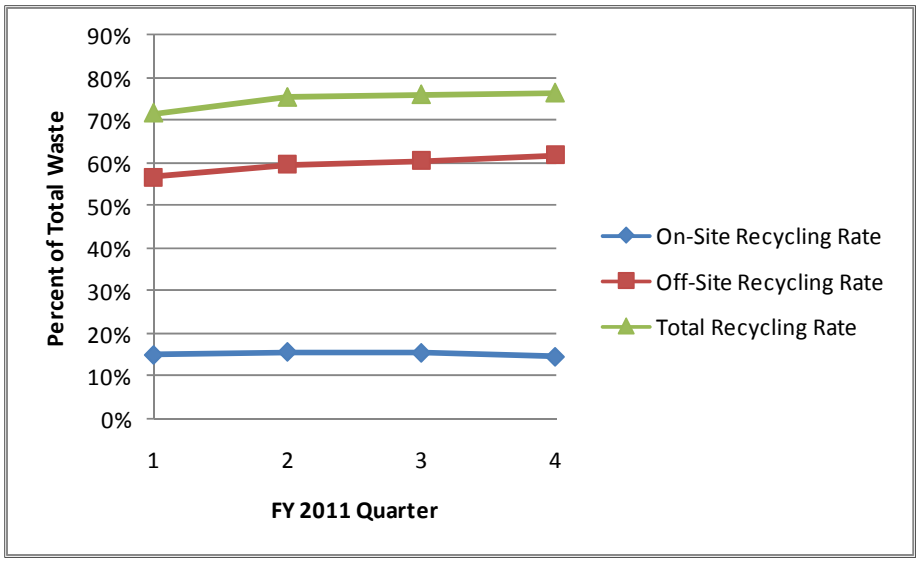


Figure 5-2. FY 2011 Quarterly Solid Waste Recycling Rates at SFO as a Percent of Total Waste



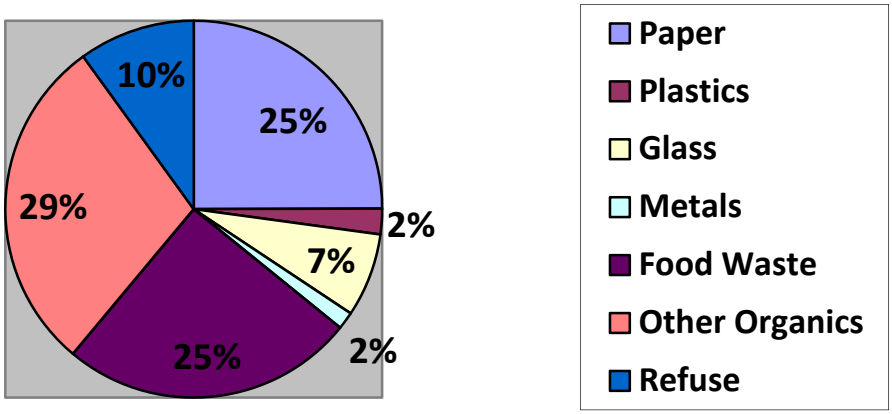
The estimated recycled tonnages for the sorting operations performed by SSFSC at their offsite facilities are based on SSFSC's service area characteristics and do not necessarily reflect the composition of the waste materials hauled off from the Airport. In August 2008 SFO performed a waste characterization study in which the contents of all 19 solid waste compactors deployed at various locations around the terminals, and at other Airport facilities, were individually examined at SSFSC recycling facilities during a one week period. In this investigation the net weight of the waste material in each compactor was obtained by weighing the trucks before and after dumping the compactor contents. The waste was then spread evenly on the ground and the volume and weight of the various components of the waste were estimated in up to three representative samples that were isolated from each compactor load. The results of this analysis are summarized in Table 5-3 and are shown graphically in Figure 5-3. These results indicate that food waste and other compostable materials comprise 55% of the waste material transported to SSFSC's recycling facilities from SFO. The non-recyclable refuse constitutes about 9.4% of the waste and the balance of 35.6% consists of recyclable materials. The contents of several compactors, however, were composed of up to 99% biodegradable materials. Based on the results of this study SSFSC increased the rate of composting of SFO solid waste from about 30 tons per quarter to over 800 tons per quarter starting in the fourth quarter of 2008. In FY 2011 SSF SC transported an average of 915 tons of SFO solid waste per quarter to a composting facility.

Table 5-3. Composition of Representative Samples of Solid Waste Hauled off from SFO[a]

Waste Component	Weight (lbs)	Percentage
Paper	41,060	25
Plastic	3,590	2.2
Glass	11,800	7.2
Metal	2,380	1.5
Food Wastes	41,420	25.3
Other Compostable Waste Materials	47,560	29
Refuse (Non-recyclable)	15,930	10
Total	163,740	100

[a] Based on visual examination of the contents of all 19 compactors deployed at SFO and transported from SFO to South San Francisco Scavenger Company's recycling facilities in a 2008 study

Figure 5-3. Estimated Composition of Solid Waste Hauled off from SFO[a]



Solid Waste Reduction Measures

SFO has undertaken a comprehensive waste reduction program including resource conservation, source separation, and composting. The objective of these reduction measures is to achieve a recycling rate of 85% by 2017 and 100% by 2020.

The goal of the resource conservation program is to educate, encourage, and persuade the Airport staff, tenants, and the general public to generate less waste in the course of their daily activities at or travel through the Airport.

This program includes the following elements:

- Paper Use Reduction. SFO staff has developed a paper use reduction program, pursuant to the Mayor's Executive Directive, by assigning a paper allocation to each Division at 80% of the previous year's consumption and requiring the submittal of a special request if the assigned allocation is prematurely exhausted.
- Double Sided Printing and Copying. All SFO printers and copiers have been programmed to produce double sided prints or copies. Signs have also been posted at all copying machines exhorting the users to save paper and avoid un-needed copying.
- Electronic Document Transfer. SFO is encouraging all staff to transmit various documents electronically.
- Paper Towel Use Reduction. SFO has experimented with the use of electric hand dryers in the Airport terminal restrooms. The results of the pilot program have been promising and plans are being made for widespread use of these hand dryers throughout the Airport. The use of electricity by the dryers is mitigated by the benefits derived from saving paper towels.
- Composting Program. In 2007 SFO initiated a program for separate collection of food waste from food vendors at the terminals. The food waste along with landscaping trimmings and wastewater treatment sludge is transported to offsite composting facilities. In 2011, SFO implemented an enhanced composting program for the waste generated in the Terminal 2 food court. SFO requires food vendors in Terminal 2 to supply biodegradable tableware, plates and containers, allowing the composting of 100% of the generated waste. SFO plans phase in this program at other terminals in the future.

Enhanced Source Separation

SFO Actions

In FY 2011 approximately 15.2 % of the solid waste generated at the Airport was separated at the source for recycling and was transported directly to the recycling facilities. Also up to 94% percent of construction demolition materials is generally sorted at the Airport and is transported to recyclers. In order to maximize the rate of source separation for the general waste SFO has deployed solid waste containers, in sets of three, throughout the Airport for depositing:

- Paper,
- Bottles & Cans, and
- General Trash

Dedicated bins have also been deployed for temporary storage of the different waste types.

Airline Actions

SFO has engaged the various airline staffs to encourage source separation of solid waste generated aboard the incoming aircrafts. The response of most airlines has been positive. Further consultation with airlines will be carried out to improve the rate of source separation aboard the aircraft.

Improved Off-Site Separation

In FY 2011 SFO's contractor achieved a recycling rate of 59.6% for mixed solid waste transported off the Airport. This value represents the average rate of recycling for the combined operation of South San Francisco Scavenger Company (SSFSC) including the offsite composting operations. In FY 2010 SSFSC completed the installation of additional mechanical equipment to improve the efficiency of solid waste sorting at their facilities. These improvements are reflected in the higher rate of recycling of the waste processed at SSFSC facilities.

Potential Additional Solid Waste Management Measures

SFO intends to increase the rate of solid waste recycling from the current level of about 74.8 % to the target level of 80% by 2015 and 85% by 2017. Using the data supplied by SFO on the composition of our waste, SSFSC has been hauling up to 959 tons per quarter of SFO's waste directly to a composting facility. SFO believes that use of biodegradable plastic tableware, cups, and containers by all food vendors would reduce the generation of non-biodegradable waste from the Terminal food courts and further enhance our solid waste composting rates. SFO has also encouraged additional source separation of waste materials at the terminals by deploying separate containers for different waste types throughout the terminals. Finally regular training and education of custodial staffs needs to be carried out to ensure that the staff would not comingle the separated wastes during the course of collecting and transporting the waste to compactors or designated bins. The potential additional solid waste management measures that are under consideration at SFO are summarized below.

Source Separation / Waste Reduction Measures

1. Use of Clear Liner Bags: Black plastic liner bags are still in use in some sections of the Airport. Black plastic bags filled with recyclable materials are likely to be dumped into the garbage compactors since custodial staff would not be able to visually identify the contents of these bags. Eliminating the use of black plastic bags and replacing them with clear bags will reduce the amount of source separated recyclables that would be sent to the offsite sorting facilities. Additionally, if compostable clear bags are used by all food vendors, then the bags of food scraps could be composted along with their contents.

2. Preventing the Dumping of Recyclables in the Compactors: Significant quantities of recyclables have been found in some of the Airport's compactor loads. Much of the observed recyclable materials had been clearly separated for recycling and then had been inappropriately placed in the compactors. Requiring SFO and tenants custodial staffs to use clear plastic bags would help alleviate this problem. Also intensive training and education of Airport and tenants custodial staffs should be carried out to ensure that the staffs are cognizant of the need and the

requirement for keeping sorted materials separate and depositing these materials in the appropriate designated bins.

3. Excessive Use of Plastic Bags: Examination of waste deposited in compactors has indicated many plastic bags that were placed in other plastic bags, with very little waste in any of the bags. It appears that empty bags are being changed out even when they do not need to be replaced. This issue should be addressed in the employee training program. Also vendors should be encouraged to keep clean film plastic wrap and other plastic packaging separate from other wastes, by bagging the film in clear plastic bags.

4. Employee Training: All custodial staffs and other employees responsible for collecting and transporting waste materials and recyclables to the appropriate bins should receive additional training on what happens to the materials once it leaves the Airport, and how to properly manage garbage and the recyclable materials.

5. Plastic Serve-Ware: Plastic serve-ware from food service vendors is a significant component of the wastes deposited in the compactors. Replacing disposable plastic serve-ware with compostable serve-ware would greatly reduce the amount of waste that has to be disposed of in a landfill. In addition to the food serve-ware provided to customers, the vendors should be required to use reusable or compostable service trays, food containers, cups, plates, etc. to enable composting of 100% of the waste generated by such vendors.

6. Discarded Ice: During visual observation of several of the waste samples from various compactors Airport consultants observed excessive amounts of water on the tipping floor. It is believed that this condition resulted from food vendors' practice of depositing surplus ice in the compactors. Providing a location where the vendors could properly dispose of the ice would reduce the weight of the waste in the compactors and eliminate the distortion introduced by water weight in the recycling calculations.

Site Specific Source Separation / Waste Reduction Measures

The following measures could be taken to reduce waste generation at specific operational areas within the airport.

1. Materials Taken off Aircrafts at SFO
Some flight crews are collecting recyclables in separate bags on board the airplanes. The sorted materials, however, are then discarded with the trash by custodial contractors. Airlines should be required to train their ground crews to keep the sorted recyclables separate from the remaining trash.
Airlines should be encouraged to discontinue or limit the offering of disposable travel kits and other giveaways (such as eye shades, sleeping socks and toothbrushes) that end up being discarded at the end of the flight without having been used.

2. Materials Collected at Security Checkpoints: SFO has started providing containers at the security checkpoints for emptying water bottles and depositing other bottles that could not be brought into the secure areas.

3. Surplus Food Items: Surplus food items are currently deposited by food vendors into the compactors. Airport could encourage the vendors to donate such food items to a food pantry. HDPE cooking oil containers inside cardboard boxes are also being discarded in the compactors. The feasibility of recycling these containers without removing them from the boxes should be explored.

4. Retail Vendors: "SFO Good to Go" plastic bags handed out by retail vendors to their customers are often discarded by passengers and end up in the compactor loads. These bags should be replaced by paper bags that could be recycled or composted when discarded.

5. Abandoned Textile and Leather Goods: Textile and leather goods constitute up to 10% of the contents of SFO compactors by weight. Most of these items appeared to be clothing, baggage, and other accessories that may have been discarded by passengers to avoid paying excess luggage charges or for other reasons. Separate collection of these items for donation to a non-profit thrift organization could reduce the quantity of waste produced at the Airport and prevent the waste of a resource.

6. Battery Recycling Containers: Some discarded batteries were observed in the compactor loads. Placing 'battery recycling' containers throughout the terminals (including in public access, private, and secure areas) should aid in recovering discarded batteries for proper disposal.