

Appendix 24

Tulsa Airports Improvement Trust

Tulsa International Airport (TUL)

Tulsa, Oklahoma

Tulsa Airport Improvements Trust is committed to minimizing environmental impacts at Tulsa International Airport (TUL). The Trust's Green Initiatives Program Missions Statement includes reference to "advancing recycling and waste reduction throughout the Airport" and the program goal is "to promote waste reduction and recycle of marketable materials generated at the Airport." The facility maintains a recycling program which is focused mainly on paper, plastic and aluminum, and cardboard generated in the passenger terminal and Airport employee offices and work areas.

TUL's Environmental Compliance Manager is responsible for the overall program, including coordination with the custodial contractor. The efforts of the Environmental Compliance Manager are supported by the Airport's Green Team, which is made up of representatives from several departments and the custodial contractor. The Trust's Engineering and Facilities Department is responsible for the program's containers and managing the custodial contractor. The custodial contractor subcontracts with a third party to collect waste and recyclables from TUL; this contractor provides the dumpsters, compactors, and other equipment needed for the program.

Passengers in the terminal can dispose of items in recycling stations and garbage cans throughout the building (Figure 1). Information about recycling is presented to passengers through labeling of the containers. TUL's website also features information about the program.

Recycling and waste containers for Airport employee and tenant use are located in the service corridors below the terminal's concourses. TUL reuses green waste as mulch, ceramic coffee mugs and other reusable dishes, packing materials, office supplies, towels/rags, and furniture where possible. Airport employees use double sided printing, email and internal websites, shared drives, electronic faxing, print preview and PDF printing, electronic signature, and other strategies to reduce paper usage. TUL's cargo operator is required to consider participating in Airport "programs designed to improve environmental conditions, including... solid waste and recycling." The other tenants' leases do not explicitly require participation in the TUL's program.

As of this writing, TUL was undergoing a transition of custodial contractors. TUL advertised an Invitation for Bids for janitorial services in the spring of 2017; a copy of the Invitation is included at the end of this case example. This Invitation was designed with the input of TUL environmental staff, who researched janitorial contracting approaches utilized at or recommended by other airports and organizations, including Denver International Airport (DIA), San Jose International Airport (SJC), Tucson International Airport (TUS), and Alameda County, California.

The contracting process also resulted in the transition of the company providing waste and recycling hauling because these services are included in the new custodial contract. This transition represents a change in the administration of waste management contracting at TUL. The previous waste contract required modifications to arrange for specific services. The Request for Bids issued by the Trust to procure the new

janitorial contract outlined performance criteria for waste and recycling collection services. It was up to the firms submitting bids for the janitorial services to negotiate with haulers. Structuring the contract in this manner provided the opportunity for a financial incentive (through rebates or cost savings) for janitorial support of the TUL's program.

This transition also represents a paradigm shift in the way waste materials generated at TUL are handled. The outgoing collection contractor transported the majority of airport waste materials to an Energy from Waste facility and recycled about three percent of the stream. The incoming collection company, American Waste Control, Inc., operates a Material Recovery Facility, prioritizes recycling, offers single stream collection, and can handle bagged materials, a copy of the contractor's Trash Removal and Waste Recycling Proposal is included at the end of this case example. Prioritizing recycling over Energy from Waste is environmentally preferred (according to the EPA Solid Waste Management Hierarchy). Accepting bagged, single stream materials increases convenience to janitorial staff and reduces the number of dumpsters required on site. TUL does not currently have access to a commercial composting facility in the area.

The new janitorial contract will be managed by the Trust's Building Services/Facilities Department in keeping with their concentration on the daily upkeep of the facility. The Environmental Compliance Manager will concentrate on evaluating and documenting the waste and recycling metrics and conducting outreach, education, and training in coordination with the new hauling contractor. To aid in progress tracking, the new contract requires that TUL receive information about the quantities of waste and recyclables generated at the facility. The new hauler is planning to conduct an initial analysis to determine the composition of TUL's recycling stream. This information will be used to estimate the monthly quantities of materials recycled by the facility.

In the future, TUL is planning to work with the airlines to recycle deplaned materials and is considering additional strategies outlined in its Airport Recycling, Reuse, and Waste Reduction Plan developed during its recent Master Plan project (see attachment at end of this case example).



Figure 1: Terminal recycling stations, courtesy of Tulsa International Airport

Tulsa Airports Improvement Trust (TAIT)

Invitation for Sealed Bids

Airline Terminal Building
Suite A-217

7777 East Apache Street
Tulsa, Oklahoma, 74115

Bid No:

FY17-046-02

Bid Title:

Janitorial Services

Date Advertised:

March 23, 2017 - May 10, 2017

Bid also posted at www.tulsaairports.com



Irrevocable Offer Period. Bidder understands and acknowledges that the offer submitted as the Bid is firm and irrevocable from the Tulsa Airports Improvement Trust's close of business on the Bid Submission Date until **365** days after the Bid Opening Date.

- One (1) six (6) yard trash cart.
Emptied two (2) times weekly. (Present location - Field Maintenance).
- One (1) four (4) yard trash cart. (Present location - Cargo Road).
Remains on the Compactor dock dumper at all times.
- One (1) four (4) yard trash cart.
Emptied as needed (Present location – Cargo Road - Floater).
- Note: One forty-two (42) yard compactor equals four (4) - thirty (30) yard open top containers.

1.16 **SOLID WASTE RECYCLING SERVICE**

1. The Contractor shall include with their bid, a written, detailed, Solid Waste Recycling Service Proposal. The Contractor, at Contractors expense, shall be totally responsible for establishing a full service, all-inclusive Solid Waste Recycling Service for the Tulsa International Airport and Outlying Buildings.
2. The Contractor shall designate a Solid Waste Recycling contact that will maintain responsibility for the coordinated efforts of the entire program and is required to work with TAIT's Airport Representative, the City and County of Tulsa, local waste removal firms, airlines and all other tenants located throughout Tulsa International Airport and Outlying Buildings.
3. The Contractor shall be responsible for all services required, including, but not limited to, scheduling, personnel, equipment, supplies, recycle disposal containers, outside collection hauling containers, haul fees, recycling cost, disposal fees and all other associated cost and fees. This program shall include, but is not limited to, all trash, cardboard, aluminum, plastic products, office paper, telephone books, paper towels, Styrofoam products, magazines and newspapers. The Contractor shall provide desk side recycling containers for all TAIT office employees and designated voluntary participating Airport tenants. All recycling containers utilized in public areas will be provided by TAIT. The Contractor is responsible for monitoring all containers on a daily basis, removing collected items from all areas cleaned by the Contractor. Recycled paper, plastic and aluminum shall be removed replacing trash bag in container, relocating recycled material to the Contractors provided designated container location for scheduled pick up by a local waste company. Recycle materials collection and disposal containers shall be pre-approved and are at the sole discretion of the Airport Representative
4. Contractor shall be responsible for emptying all recycling materials collection and disposal containers. Materials shall be collected, kept separate and removed from the TAIT facilities daily, if receptacle is full or upon request. Contractor shall deliver collected material to appropriate centrally located larger collection bins, disposal containers, outside collection hauling containers, collection compactors or whatever collection containers Contractor provides for collection processes. All collection bins, disposal containers, outside collection hauling containers, collection compactors or whatever collection containers Contractor provides for collection processes shall be pre-approved and are at the sole discretion of the Airport Representative.

5. Contractor shall maintain, clean and keep any and all recycling collection and disposal and/or collection containers and surrounding areas free of dirt, soil, debris and trash. Papers may not need to be picked up as frequently as wet recyclables, such as bottles and/or cans. Contractor shall breakdown, flatten and place all cardboard in cardboard recycling collection bins and outside collection hauling containers.
6. Contractor shall modify trash and recycling collection procedures as directed by Airport Representative upon request. Those requested changes shall be made in coordination with the janitorial service, the trash and recycling collection service. Any necessary revised trash or recycling schedule, including, but not limited to, disposals, containers, location for loading and unloading, sorting and/or other trash or recycling collection procedures shall be pre-approved and are at the sole discretion of, and determined by, the Airport Representative.
7. Contractor shall be responsible for placing segregated waste materials into the proper receptacles. This includes all current and future waste streams and recycling waste streams. Contractor will handle segregated materials in a manner to ensure that recycling receptacles are not used for inappropriate materials.
8. Contractor's employees shall be responsible for picking up and transporting recycle material to the appropriate receptacle, ANY recyclable material they encounter at any time during their work. Contractor shall be responsible for supporting any future recycling efforts or program enhancements that TAIT implements during the Contract term. Contractor will be constructive in their efforts to comply with TAIT's requested and/or approved recycling and waste management programs. The Contractor shall coordinate all recycling efforts with TAIT'S Airport Representative and TAIT'S Environmental Coordinator.
9. The Contractor shall agree the entire full service, all-inclusive Solid Waste/Recycling Service including, but not limited to, product to be recycled, collection and disposal containers, changes in the recycling materials, segregation approach, locations, types of receptacles, volume of materials generated and future waste streams shall be pre-approved and are at the sole discretion of the Airport Representative.
10. The Contractor shall agree that all services shall be completed as specified within the Contract. Contractor shall agree the scope of this work shall be pre-approved and is at the sole discretion of the Airport Representative.

NOTE: PRESENT RECYCLING PROGRAM

- The present Contractor's Recycling Program is an All-Inclusive Solid Waste Recycling Service. The present Contractor recycles trash by utilizing Covanta Energy Corporation, Energy-from-Waste. Energy-from-Waste is a process that converts municipal solid waste into renewable electricity. The Contractor utilizes a local waste company to haul the compactor to Covanta Energy Corporation, Energy-from-Waste for the recycling process. The compactor is scheduled to be hauled two (2) times a week, or as necessary. The thirty (30) yard open top has not been included into the process. The Contractor is responsible for all scheduling, haul fees, recycling cost and disposal fees.

- The Contractor is presently separately recycling paper, plastic, aluminum and cardboard from all service areas. Utilizing recycling bins, desk side recycling containers and paper shredders, these items are separated and recycled. Plastic, aluminum and cardboard is collected, taken to outside bin locations, for scheduled pick up by Waste Management. Paper is collected, taken to another location, emptied into larger containers, for scheduled pick up by National Recycling, at no charge to the Contractor.

1.17 SOLID WASTE DISPOSAL FEE

1. Contractor shall be responsible for any and all cost and/or fees.

1.18 OFFICE SPACE/STORAGE SPACE

1. Contractor shall maintain an office on Airport premises at all times. TAIT will provide an office for the use of the Contractor. Size and location will be at the sole discretion of the Airport Representative. Contractor shall agree to maintain and keep this area clean and neat at all times. Contractor agrees and shall abide by and remain in accordance with all applicable safety and fire regulations, subject to inspection. The location of the provided office space will be on a space available basis and at the sole discretion and approval of the Airport Representative.
2. Contractor shall be provided storage space to store materials, equipment, chemicals, supplies and tools covered under this contract. All materials, equipment, chemicals, supplies and tools stored are at the sole discretion and approval of the Airport Representative. Contractor shall agree and shall abide by and remain in accordance with all applicable safety and fire regulations, subject to inspection. The location of the storage facility shall be on a space available basis, pre-approved and designed by and at the sole discretion and approval of the Airport Representative. No surplus equipment shall litter any storage area at any time.
3. Work carts and supplies shall remain with Contractor or Contractor's employees at all times. Work carts and supplies shall be labeled and stored safely while janitorial work is being performed. Work carts and supplies shall be returned to storage areas at the completion of each shift.
4. The Contractor shall agree that the provided assigned areas shall be utilized exclusively for Airport Business. The Contractor shall understand and agree that, at any given time, upon the request and at the sole discretion of the Airport Representative, the Contractor shall move from the assigned areas. Available areas shall be assigned and are at the sole discretion of the Airport Representative.
5. All storage areas made available to the Contractor shall be maintained and kept in a clean and orderly condition at all times. Contractor shall agree that all storage areas shall remain in a condition that is in accordance with all applicable Fire and Safety Rules and Regulations, understanding the storage areas are subject to random inspection at all times. Lights are to be turned out when room is not in use.
6. Contractor's equipment and tools shall be safe, clean and in satisfactory working condition at all times, capable of performing the contract specifications. Contractor shall be required to remove all equipment or tools from the immediate work area, if deemed by the Airport Representative to be

2.52 FLOOR GRAPHIC

1. At the time of installation, Contractor shall wax over, all installed Floor Graphics and at the request of the Airport Representative, remove the floor graphics, restoring the floor to the original surrounding floor, i.e. dust mop, scrub, buff and re-coat. All Floor Graphic procedures shall be pre-approved and are at the sole discretion of the Airport Representative.

2.53 AIRPORT SECURITY THREAT

1. Upon the request from Airport Security, due to an Airport Security Threat, Contractor and Contractors employees shall be responsible for and respond immediately, assisting Airport Security in the removal of trash from all Airport trash containers. This response shall only be requested after the K-9 Officers have swept and inspected the entire area.

2.54 WASTE REMOVAL

1. All waste/trash collected by the Contractor and/or Contractor's employees shall be removed by and during the time frame set forth in the specifications of the Contract. Contractor shall remove any and all waste/trash and replace container with liner. This shall include but is not limited to; waste, trash, recycled paper, plastic, aluminum and cardboard from all service areas. Contractor shall collect waste from trash cans, recycle bins, cardboard bins, desk side recycle containers and paper shredders from all service areas cleaned by the Contractor.
2. Recycled paper shall be removed, bagged, replacing trash bag and taken to provided large recycling containers, for scheduled pick up by National Recycling.
3. The Contractor is required to schedule and provide training for Bio-hazardous and Bloodborne Pathogens for all Contractor's employees involved in handling waste. All waste removal procedures shall be pre-approved and are at the sole discretion of the Airport Representative

2.55 RECYCLING SUPPORT

1. The Contractor shall be required to fully support any recycling program set in place by ensuring that segregated materials are placed in the correct containers for recycling. All recycling containers utilized in public areas will be provided by TAIT. All janitorial support staff that is responsible for waste disposal activities shall be made aware of TAIT'S recycling program as the success of the program depends greatly on the support of the successful Contractor.

2.56 EXTERIOR SIGNAGE AND DIRECTORIES

1. Remove soil, dirt, debris and foreign objects from exterior signage and directories utilizing a rag, brush, broom or vacuum. Use a pressure washer and detergent solution to completely clean the sign. Exercise extreme caution to prevent damage to the sign. Clean glass with glass cleaner solution, thoroughly rinsing and drying. Use metal cleaner to clean and polish signage.

Trash Removal and Waste Recycle Proposal

1 containers (10)b– Four (4) cu. yd. containers with empty twice daily, 7 days a week

1 containers – Six (6) cu. yd. containers with empty twice a week

1 open top containers – Four (30) cu. yd. containers with empty twice week

All waste collected in any other container will be disposed of at Tulsa Recycle and Transfer, Oklahoma's only licensed Hybrid Material Recovery Facility or "MRF". At Tulsa Recycle and Transfer they can recover cardboard, paper of any type, plastics #1, 2, and 4, and metals of any type. Typically, 40 to 45 percent of a commercial waste stream will be recyclable. Once the waste is delivered to Tulsa Recycle and Transfer, using a combination of manual and automated processes the waste and recyclables will be sorted, the recyclables will be recovered and the remaining waste will be reloaded into transfer trucks and shipped to the American Waste to Energy Landfill (rev. Oct. 11, 2017). According to the EPA hierarchy of waste disposal of Reduce, Reuse, Recycle, Recover, Dispose, recycling is a step above recovery of energy from waste and is a more environmentally friendly way to handle waste. By utilizing this recycling program, we will be able to utilize the two friendliest methods (recycle and recovery) of waste disposal available.

Additionally, we will continue to use the office paper recycling program currently provided by National Waste.

Master Plan Update

Recycling, Reuse and Waste Reduction Plan

Final July 2017



Tulsa

International Airport

Mead
& Hunt

Table of Contents

Table of Contents.....	i
Executive Summary.....	1
1. Introduction	3
A. Regulatory Background and Project Purpose	3
B. Airport Description	4
C. Waste Definitions and Plan Focus	6
D. Key Airport Buildings and Plan Scope	7
2. Existing Program	14
A. Drivers	14
B. Alignment with City of Tulsa Program.....	15
C. Infrastructure	15
D. Operation and Maintenance Requirements	22
E. Current Recycling, Reuse, and Waste Reduction Efforts	24
F. Tracking and Performance	27
3. Waste Audit	29
A. Quantity and Sources	29
B. Composition	30
C. Purchases.....	32
4. Review of Waste Management Contracts	34
A. Housekeeping and Waste Hauling Contracts.....	34
B. Tenant Leases and Service Contracts	34
C. Expiring Leases and Contracts	35
D. Funding.....	36
5. Recycling Feasibility	37
A. Commitment and Support.....	37
B. Technical and Economic Factors	38
C. Guidelines and Policies.....	41
D. Other Incentives	46

Recycling, Reuse, and Waste Reduction Plan
Table of Contents

6.	Cost Savings and Revenue Generation	47
7.	Recommendations	48
A.	Objectives and Targets	48
B.	Tracking and Reporting	49
C.	Reduce and Reuse	49
D.	Recycle and Compost	52
E.	Energy-from-Waste	55
F.	Education and Outreach.....	55
G.	Containers and Bins.....	56
H.	Signage and Labeling	57
I.	Other Recommendations	58
J.	Continuous Improvement	60
K.	Recommendations Summary	61
8.	Conclusion.....	63
9.	References	64
A.	Airport Case Studies	64
B.	Recycling Signage Research.....	64
C.	Food Waste Information	64
10.	Appendices	

Tables

Table 1: Key Statistics about Tulsa International Airport 4

Table 2: Estimated Waste Generation at TUL by Area/Activity..... 30

Table 3: Tulsa International Airport Waste by Area and Material 31

Table 4: Materials Accepted for Residential Curbside Recycling in the City of Tulsa..... 39

Table 5: Recommendations Summary 62

Figures

Figure 1: Existing Airport Recycling and Waste Storage Areas..... 11

Figure 2: Existing Passenger Terminal Building Trash/Recycle Bins & Storage (Upper Level) 12

Figure 3: Existing Passenger Terminal Building Trash/Recycle Bins & Storage (Lower Level) 13

Figure 4: Existing Passenger Terminal Area Trash & Recycle Storage Facilities 21

Figure 5: Existing Tulsa County Permitted Landfill, Energy-from-Waste,
and Recycling Facilities 23

Executive Summary

Tulsa Airport Improvements Trust, operator of Tulsa International Airport (TUL or Airport) is committed to environmentally responsible operations. The Airport is undergoing a master planning update effort and, per *Federal Aviation Administration (FAA) Modernization and Reform Act of 2012* requirements, this effort must include planning for solid waste. The purpose of this task was to evaluate the Airport's existing waste and recycling program and provide recommendations to increase landfill diversion through waste reduction, reuse, and recycling.

As of spring 2016, the majority of waste generated at the Airport was sent to an Energy-from-Waste facility (75 percent), except a limited portion of paper, plastics and aluminum, and cardboard which were recycled (three percent) and a portion of waste material which was landfilled (22 percent).

A facility walk-through as well as informal interviews with representatives of Tulsa Airport Improvements Trust (TAIT) and the Airport's housekeeping contractor were conducted to develop a baseline and identify areas of opportunity for increasing recycling participation and compliance in order to better divert waste from the landfill. The baseline information and identified opportunities were the basis for recommendations, including liquid collection and improved signage, appropriate for the Airport's waste stream.

Highlights of these recommendations include:

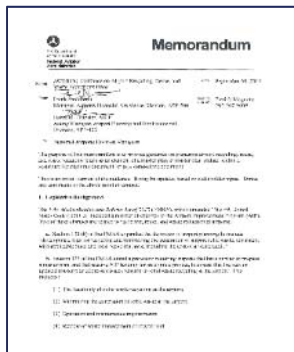
- Establish goals and objectives
- Report regularly on progress
- Install a liquid collection station at security checkpoint
- Collect and donate food, beverages, and toiletries
- Reuse materials and items where possible
- Continue paper, plastic, aluminum, and cardboard recycling and expand to other areas, including deplaned waste
- Improve education and outreach for passengers, employees, tenants and contractors
- Right size, standardize, supplement, and co-locate recycling stations and garbage cans
- Expand and improve signage, specifically at security checkpoint
- Evaluate updates to contracts/leases, Minimum Standards, and purchasing policy
- Maintain and improve recycling program according to Plan Do Check Act cycle

This range of recommendations will allow TAIT the flexibility to implement those which are compatible with changing conditions and available resources, while providing the opportunity to position TUL to increase landfill diversion and recycling over time through a phased, comprehensive program.

1. Introduction

A. Regulatory Background and Project Purpose

Section 132(b) of the *FAA Modernization and Reform Act of 2010* (FMRA) expanded the definition of airport planning to include “developing a plan for recycling and minimizing the generation of airport solid waste”. FMRA Section 133 added a requirement that airports that have or plan to prepare or update a master plan, and that receive Airport Improvement Program (AIP) funding for an eligible project, ensure that new or updated master plans address issues related to solid waste recycling. These issues include 1) the feasibility of solid waste recycling, 2) minimizing the generation of solid waste, 3) operation and maintenance requirements, 4) review of waste management contracts, and 5) the potential for cost savings or revenue generation.



*FAA Recycling, Reuse, and
Waste Reduction Guidance
Memo*

In September 2014, the FAA released a memorandum titled “Guidance on Airport Recycling, Reuse, and Waste Reduction Plans”. This memo provides guidance on preparing airport recycling, reuse, and waste reduction plans. This guidance is applicable to Federally-obligated airports that are preparing or updating a master plan or other planning efforts.

The scope and nature of an airport’s waste and recycling program and documented plan are dependent on several factors including the size, location and layout of the airport; the amount and type of waste generated; markets for recyclable commodities; costs for recycling; available local infrastructure; and the willingness of an airport and its tenants to implement recycling and other strategies.

In compliance with FMRA and in accordance with the FAA’s guidance memo, this airport recycling, reuse, and waste reduction plan was developed for Tulsa International Airport (TUL or Airport) as part of the Airport Master Plan Update. The purpose of this plan is to document and assess the Airport’s existing waste and recycling program based on the factors and variables listed above and provide recommendations for improvement. The content of this plan was governed by the extent and accuracy of available information.

B. Airport Description

The Airport is a regional center for aviation activity and a major contributor to the Tulsa, Oklahoma regional economy. The Airport is located approximately five miles northeast of downtown Tulsa. The City, the second largest in the state, is located in northeastern Oklahoma. The Airport provides facilities, services and infrastructure for aviation and non-aeronautical activities which are important to the area.

The Airport is owned by the City of Tulsa and leased to the Tulsa Airport Improvement Trust (TAIT), a public trust with “the purpose to operate, maintain, construct, improve and/or lease airport facilities serving the City.” The Airport is operated, managed and administered by TAIT with the mission “to provide a safe, efficient, self-supporting airport system.” TAIT is governed by a five member board. The Airports’ CEO is responsible for Airport operations and maintenance and serves as the Airport’s public relations representative.

The Airport is a FAA Part 139 certified public-use facility supporting commercial airline, cargo, general aviation and military activities. The FAA National Plan of Integrated Airport Systems (NPIAS) classifies TUL as a ‘small-hub primary commercial service airport’ and the State of Oklahoma Aeronautics Commission classifies TUL as a ‘primary commercial service’ airport.

The Airport services an area encompassing 64 counties in four different states and five airlines provide commercial service to 19 destinations from TUL. The Airport encompasses 4,400 acres, employs 13,000 people and serves more than 2 million passengers each year. The following table summarizes other key statistics about the Airport.

Table 1: Key Statistics about Tulsa International Airport

Element	Data	
Based Aircraft ¹	Single Engine	52
	Jet	62
	Multi-Engine	31
	Helicopter	2
	Other	22
	Total	169
Number and Type of Operations ¹	Air Carrier	28,156
	Air Taxi	24,300
	Itinerant GA	23,105

Table 1: Key Statistics about Tulsa International Airport

Element	Data	
	Local Civil	5,246
	Itinerant Military	8,611
	Local Military	6,487
	Total	95,905
Commercial Air Carriers ²	Allegiant Air, American Airlines, Delta, Southwest, and United	
Enplaned Passengers ¹	Air Carrier	865,430
	Commuter	448,289
	US Flag	203
	Total	1,313,922
Sources:		
¹ Federal Aviation Administration Terminal Area Forecast 2014 – for year 2013		
² Tulsa International Airport Airlines website www.tulsaairports.com/airline-information/		

TUL is home to American Airlines Maintenance and Engineering Center, Spirit AeroSystems, Lufthansa and L-3 Aeromet as well as the 138th Fighter Wing and the Army Aviation Support Facility #2 of the Oklahoma Air National Guard. The Airport also features six fixed base operators (FBOs) that serve the general aviation users of TUL.

Additional information regarding Airport operations and activities is contained in the TUL Airport Master Plan and is available through the Airport’s website via www.tulsaairports.com.

C. Waste Definitions and Plan Focus

Municipal Solid Waste (MSW) consists of everyday items that are used and then discarded. There are five primary types of MSW generated at airports:

- a. General MSW consists of common inorganic waste, such as product packaging, disposable utensils, plates and cups, bottles, and newspaper. Less common items, such as furniture and clothing, are also considered general MSW.
- b. Food waste is either food that is not consumed or the waste generated and discarded during food preparation activities. Food waste and green waste make up waste known as “compostable”.
- c. Green waste consists of tree, shrub and grass clippings, leaves, weeds, small branches, seeds, pods and similar debris generated by landscape maintenance activities. Green waste and food waste together may be referred to as “compostables.”
- d. Deplaned waste is a specific type of MSW that is removed from passenger aircraft. These materials include bottles and cans, newspaper and mixed paper, plastic cups, and service ware, food waste, food soiled paper, and paper towels.
- e. Construction and Demolition Waste (C&D) is generally categorized as MSW and is any non-hazardous solid waste from land clearing, excavation, and/or the construction, demolition, renovation or repair of structures, roads, and utilities. C&D waste commonly includes concrete, wood, metals, drywall, carpet, plastic, pipes, land clearing debris, cardboard, and salvaged building components.

This plan focuses on the management of municipal solid waste and other materials that can be recycled or disposed of in a landfill. This plan does not address the management of other types of waste, specifically hazardous waste, universal waste, industrial waste, or waste from international flights as the handling, recycling, and disposal of these materials are regulated by Federal, state, and local laws. Construction and demolition debris that is subject to special requirements and requires special handling is not included in this plan.

D. Key Airport Buildings and Plan Scope

The Airport's landside infrastructure is comprised of several facilities, including: a passenger terminal building, a parking structure and surface parking lots, two hotels, air cargo facilities, general aviation facilities, a museum, two fire stations, customs facilities, and maintenance facilities.

The passenger terminal building has two levels and two pier-design concourses. Departing passengers return rental cars to the second level of the parking structure or park in the parking structure and walk to or are dropped off at the departures curb on the lower level of the terminal building. Airline ticketing, the ticketing lobby, and baggage drops are found inside the lower level of the terminal building. Behind the ticket counters, the TSA and each airline have space for outbound baggage screening and handling. The lower level of the terminal is connected to the upper level by escalators, elevators, and stairs.

Airport Administration and Airport Operations areas are located on the upper level of the terminal. The upper level of the terminal building also has pre-security restaurants and shops and a centralized security screening area. Through security, a centralized concession boulevard connects the main terminal area and the terminal's two concourses. This area features restrooms and shops and restaurants, including a food court area.

Each concourse has eleven active gates, seven jet loading bridges and a commuter gate position with ramp-level loading. Concourse A houses gates leased by Allegiant Air, American Airlines, and Delta Airlines. Concourse B houses gates leased by Southwest, and United Airlines. Each concourse also houses restrooms, restaurants and shops, and a business center. The lower level of each concourse houses airline and tenant back of house operations.

Arriving passengers exit the sterile area via two passenger exit lanes located at either end of the terminal building on the upper level. At the end of each exit lane is public "meeter/greeter" space which have waiting areas, restrooms and vending machines. The upper level of the terminal also houses in-bound airline baggage operations. The "meeter/greeter" areas at the end of the exit lanes are connected to the baggage claim areas.

The rental car counters are centrally located on the upper level of the terminal and this area also provides passage to the baggage claim areas. Ground transportation providers operate out of the baggage claim areas. The curbside on the upper level is intended for passenger pick-up and has direct access to the upper level of the parking structure.

The parking structure has three levels and houses hourly parking as well as some rental car functions, specifically rental car returns. Surface lots provide public economy parking, parking for employees, and cell phone lot parking (for vehicles waiting to collect an arriving passenger at the curb). Parking at the Airport is managed by a third party (currently American Parking).

There are two hotels located within the terminal complex area. The Clarion Inn and Hilton Garden Inn provide accommodations and meeting/banquet space.

There are two air cargo facilities at the Airport. The first, adjacent to the terminal building, is comprised of five buildings and supports cargo operations for United Parcel Service (UPS) as well as airline belly freight cargo. The Airport is planning to construct one additional building in this area. The second cargo area is a single building located across a runway from the first area and is utilized exclusively by FedEx.

The Airport's Aircraft Rescue and Fire Fighting (ARFF) Facilities are located at City of Tulsa Fire Station 51 and supplemented by Air National Guard and City of Tulsa Fire Station 31 on Airport property. The Airport Traffic Control Tower (ATCT) is operated by FAA personnel 24 hours a day. Federal Inspection Services (FIS) are provided by U.S. Customs Service, including clearance of aircraft arriving into the US and supported from their office located on airport property. The Airport's maintenance facility development area houses storage facilities and yard areas for equipment and materials as well as fuel storage and dispensing. The Airport leases warehouse and office space to businesses that would like airfield access. The Tulsa Air and Space Museum is also located at TUL.

The Airport is also home to:

- Aircraft Maintenance, Repair and Overhaul (MRO) operations conducted by American Airlines Maintenance Base at the American Airlines Maintenance and Engineering Center,
- Original Equipment Manufacturing (OEM) operations conducted by Spirit AeroSystems in two areas (one of which is outside the Airport boundary),
- services to maintain commercial aircraft components conducted by Lufthansa Technik Component Services (LTCS) in the commercial general aviation development area,
- operations conducted by L-3 Aeromet in two hangars and an office building at the Airport,
- two Oklahoma National Guard Units utilizing aircraft storage and maintenance hangars, administrative buildings, industrial/service buildings, and base support facilities,

- commercial and corporate general aviation activities such as fueling, maintenance, storage, and charter services conducted by six full service FBOs including Atlantic Aviation, BizJet, Legacy Jet Center, Sparks Aviation, Tulsair, and United States Aviation,
- operations of several Aviation Service Operators offering specialty aviation services, and
- numerous corporate aircraft operators' hangar and flight department facilities.

The facilities described above include buildings and areas in which TAIT has direct control of waste management and others in which TAIT has influence but not direct control. Per FAA guidance, areas over which the Airport Sponsor has direct control or influence should be included in the recycling, reuse, and waste reduction plan; areas outside Airport Sponsor control or influence may be excluded.

TAIT has direct control over Airport operations and activities pertaining to waste management in the passenger terminal building, Airport Administration offices, Airport Operations areas, and the Airport maintenance facilities.

In addition, TAIT can influence the management of waste and recyclables in tenant spaces including parking operations, airline areas (including ticketing counters, offices, breakrooms, deplaned waste, etc.), rental car areas, restaurants and shops, and tenant areas (including cargo and warehouse tenants) through lease agreements and contracts.

TAIT does not have control or influence over waste management in areas controlled by the TSA or U.S. Customs, the hotels, the City of Tulsa Fire Stations, the Airport Traffic Control Tower, the Tulsa Air and Space Museum, the activities of American Airlines Maintenance Base, Spirit AeroSystems, Lufthansa Technik Component Services, L-3 Aeromet, the Oklahoma National Guard Units, the six FBOs, the Aviation Service Operators, or the corporate flight departments. These tenants and facilities contract independently for housekeeping and waste collection services; therefore, they are excluded from this plan.

In summary, this plan covers the following buildings/facilities/areas, which are also identified on the following three figures:

- Passenger Terminal Building
 - o Public passenger areas
 - o Arrival and departure curbs, ticketing lobby, restrooms, security screening queuing area, sterile gate areas, business centers, public "meeter/greeter" spaces, and baggage claim areas

- Airline areas (including offices, ticketing counters, gate stations, breakrooms, underwing services and deplaned waste)
- Rental Car areas (including offices, counters, return areas, and service areas)
- Restaurant, retail and vending areas and activities (Including the food court)
- Airport Administration and Operations offices
- Airport Property (specifically landscaping activities)
- Airport maintenance and operation activities on Airport property
- Other Airport employee work areas
- Other tenant spaces and activities
 - Offices, parking operations, cargo areas, warehouse areas, leased hangars

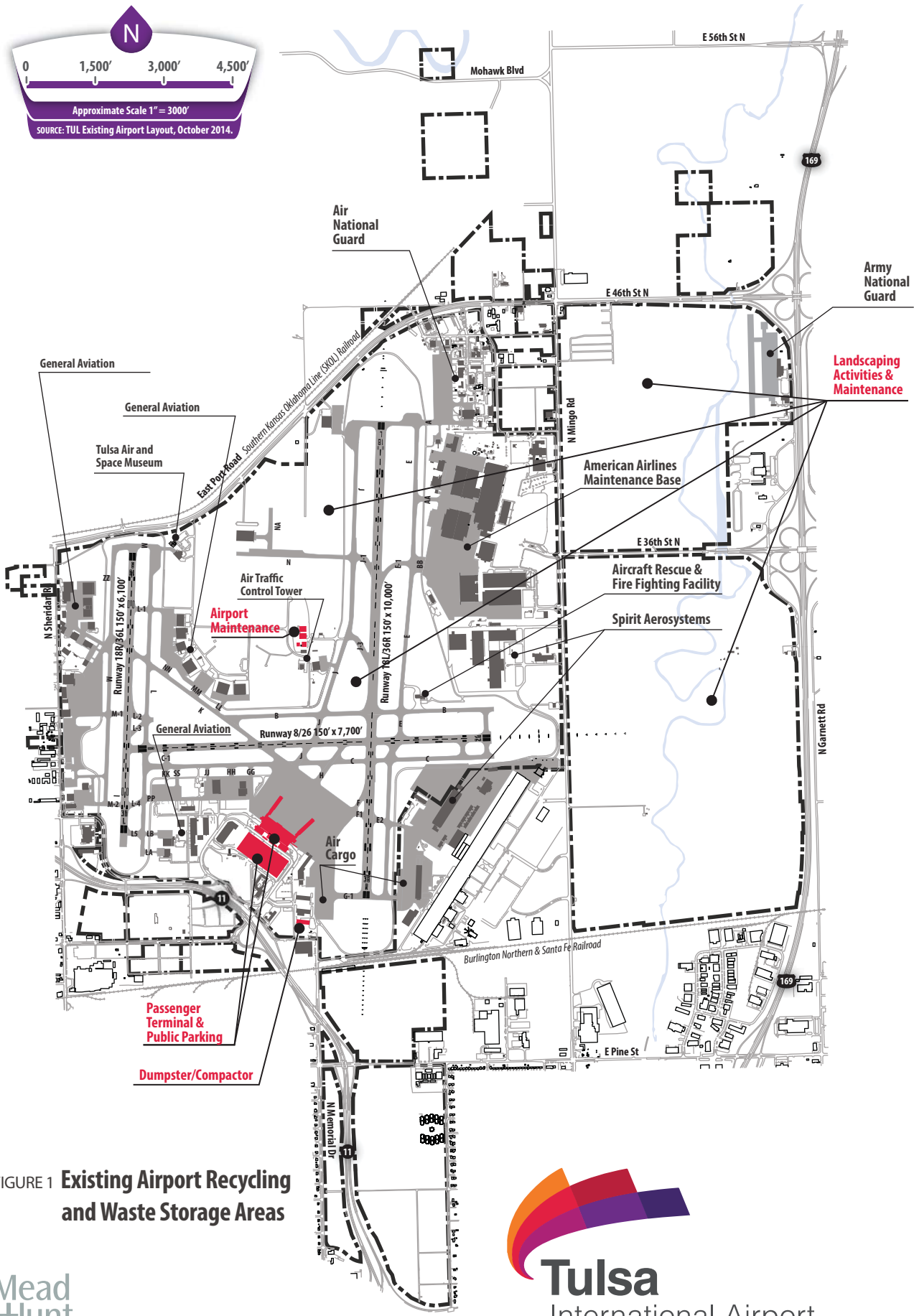
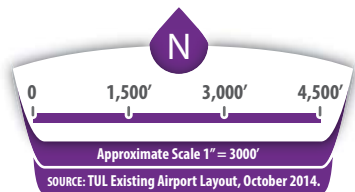


FIGURE 1 Existing Airport Recycling and Waste Storage Areas

Recycling, Reuse and Waste Reduction Plan

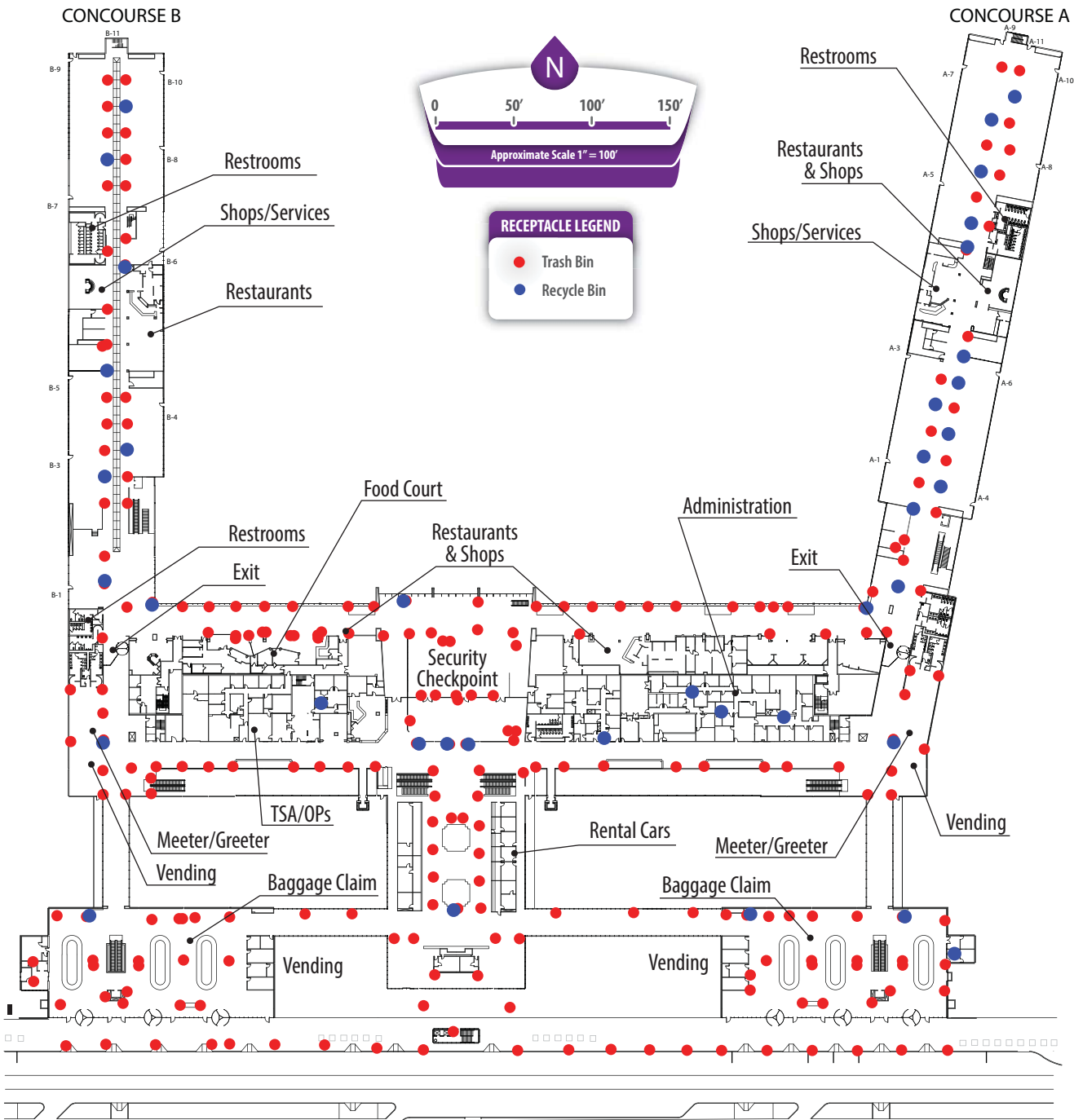


FIGURE 2 Existing Passenger Terminal Building
Trash/Recycle Bins & Storage (Upper Level)

Recycling, Reuse and Waste Reduction Plan

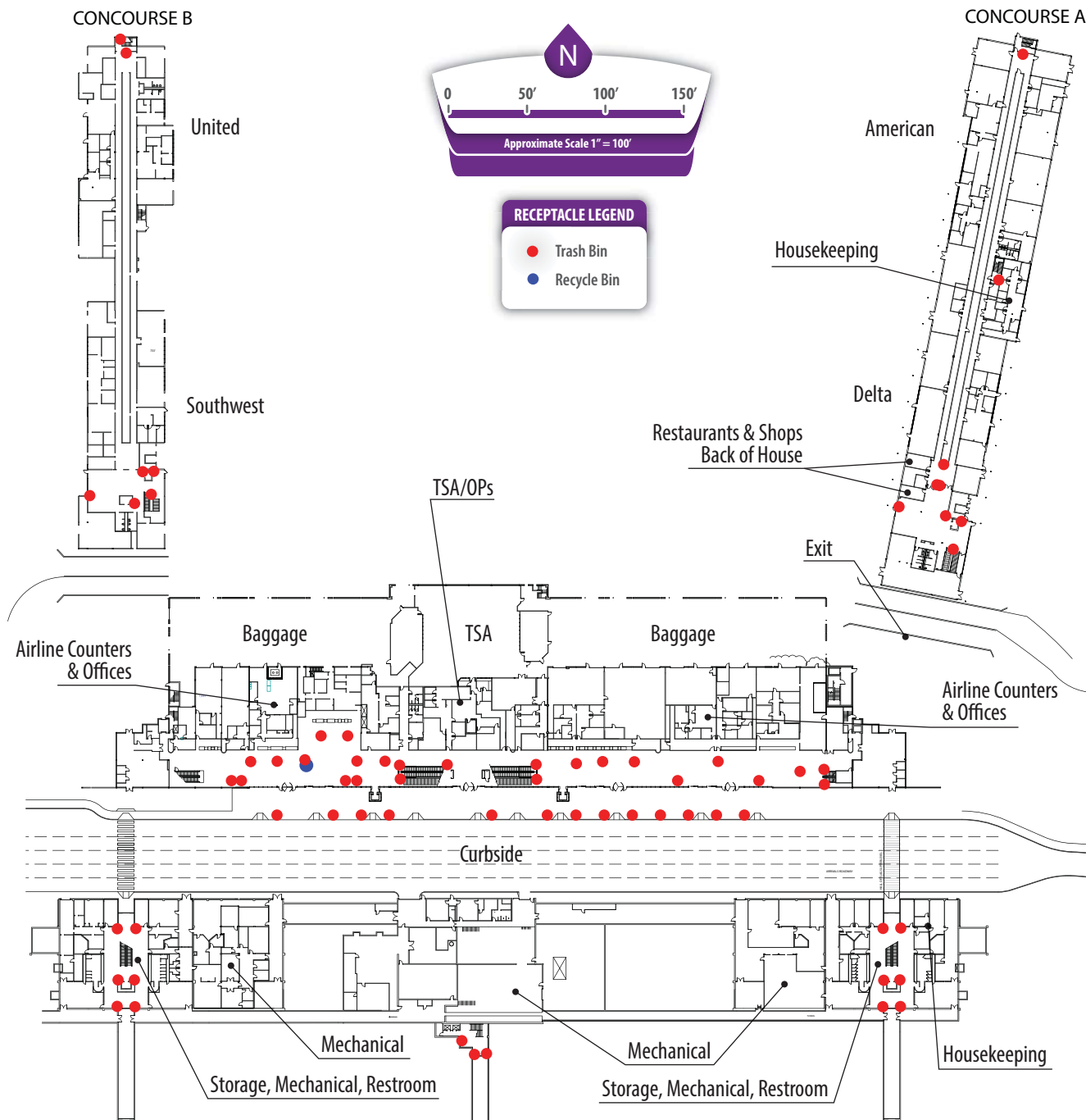


FIGURE 3 Existing Passenger Terminal Building
Trash/Recycle Bins & Storage (Lower Level)

2. Existing Program

The Airport has an existing recycling program which is maintained, in large part, by the facility's custodial contractor. The following section describes various elements of this program.

A. Drivers

According to the Airport's website, TAIT takes its responsibility of minimizing environmental impacts seriously. In order to reduce the Airport's environmental footprint, TAIT initiated office paper recycling in 2010. In an effort to further reduce the facility's impacts, the program was expanded in 2012 to include plastics, aluminum, and cardboard in addition to paper. Diversion of waste to a local Energy-from-Waste facility was also implemented in 2012 to reduce the volume of waste disposed of in a local landfill.

In May 2016, TAIT established a mission statement for the Green Initiatives Program and a related goal. The Green Initiatives Program Mission Statement reads (emphasis added)

"The mission of Tulsa International Airport's (TUL) Green Initiative Program is to conserve resources by advancing recycling and waste reduction throughout the airport."

The program goal is stated as (emphasis added)

"The overall goal of the TUL Green Initiatives Program is to promote waste reduction and recycle of marketable materials generated at the airport. Members of the TUL Green Initiatives Team recognize that recycling and waste management: Reduces the weight, volume, and cost of materials introduced into the landfills; Supports local industries; Creates jobs and business opportunities; Allows employees, tenants, and customers to contribute to environmental solutions; and Improves the quality of life in Tulsa and the surrounding communities."

The purpose of this mission statement and goal are to act as a driver for decisions and actions related to green initiatives, specifically waste and recycling.

As the program is facilitated in large part by the custodial contractor, it is also driven by the contractor's commitment "to protecting the environment."

B. Alignment with City of Tulsa Program

As described in Section 1B, the Airport is a separate entity independent of the City of Tulsa; therefore, it operates independently from any City waste requirements or plans. The City provides waste and recycling services to City residents. In general, the Airport's program aligns with the City's efforts; the City collects an additional material (glass) which is not currently recycled at the Airport.

C. Infrastructure

Employees, tenants and passengers have access to a network of trash cans and recycling stations in the terminal. In general, there are many trash cans (approximately 290 total) throughout and recycling stations in specific locations (approximately 34 total). The recycling stations and the garbage cans are lined/fitted with bags.

There are several garbage cans in the terminal parking areas. At the curbside entrances to and exits from the terminal, there are there are large concrete garbage cans that have lids with large round openings. In the ticketing lobby and airline counter area, there are tall garbage cans with round openings in the lids. One recycling station, a conjoined unit with two compartments, and one garbage can are positioned at the entry to screening checkpoint queuing and through security on the sterile side. There is also a garbage can in the passenger redress area.



Terminal Garbage Cans and Recycling Stations - (left to right) Curbside garbage cans, ticketing lobby garbage can, security entrance garbage can and recycling station, sterile side garbage can and recycling station

Recycling, Reuse, and Waste Reduction Plan
Existing Program

In the hall connecting the two concourses, tall round garbage cans with large round openings are located at approximately regular intervals across from the restaurants; these bins are also located between the restaurants and retail storefronts in some places, for example, tall square containers with open sided caps near the entrance/exit of the food court.



*Terminal Garbage Cans and Recycling Stations - (left to right)
Garbage can in hallway connecting concourses and garbage can adjacent to retail storefront*



*Concourse Garbage Cans and Recycling Stations - (left to right)
Recycling station and trash cans in concourse, garbage cans at entrance to restaurants/food court*

On the upper level of Concourse A there are tall garbage cans with large round openings throughout the gate areas. Recycling stations, conjoined units with two compartments, are located at approximately every fourth garbage can or so. Some of the restaurant and retail areas in the concourse have garbage cans at their entrance/exit while others do not. The upper level of Concourse B has a similar setup.

In the terminal restrooms, garbage cans are positioned below the paper towel dispensers and small bins are located in each toilet stall. Drinking fountains are available near the restrooms throughout the terminal; TUL does not have any water bottle refill stations at this time.



Terminal Features – (left to right) Terminal restroom paper towel dispenser and waste bin, drinking fountains outside terminal restroom

Recycling, Reuse, and Waste Reduction Plan
Existing Program



Back of House Cardboard Recycling Cart

Below the concourses, the restaurants and shops have room for their back of house operations. The lower levels of the concourses have a variety of containers for Airport employee and tenant use. Some carts for cardboard and trash are stationed in the hallways of this area.



Baggage Claim Area Recycling Station and Garbage Can

There are garbage cans in the exit hallways leading from the sterile area to the non-sterile area. There are garbage cans in the non-sterile "meeter/greeter" waiting areas. Tall round garbage cans with large round openings and recycling stations with two openings are available in the baggage claim area. Sometimes these containers are paired; in some cases the garbage bins are found separately.

In the Airport's Administration and Operations offices there are low wide recycling bins in the copy room and file cabinet area. The copy room also has two small paper shredders. Garbage cans of various size/shape/design are available in the breakroom/kitchenette and in the front lobby area. Each employee has a garbage can at their desk.

Administration Office Garbage Cans and Recycling Bin – (left to right) Recycling bin, garbage cans in breakroom/kitchenette



Messaging about and instructions related to recycling are primarily conveyed via the labels on recycling stations in the terminal and on the bins in the Administration offices. The recycling stations in the terminal are labeled for paper and plastic with graphics depicting a newspaper and crumpled paper and plastic bottles, respectively. The bins are not labeled for aluminum. The Airport does not have additional signage, posters, announcements, etc. regarding the existing program in place at this time. The TUL website also has some basic information about the Airport's recycling program.

Tulsa International Airport

#Flytulsa

Flights

Airlines

Airport

Cargo

Community Programs

Easy Miles Rewards Program

Give Us Feedback

Green Initiatives

Hotels

Industrial Development Areas

Information A-Z

Military Lounge

Passengers with Disabilities

Security

Terminal Map

TSA Pre/®

Parking

To and From TUL

General Aviation

Select Language

search

f t

©2016 Tulsa Airports. All Rights Reserved. R.L. Jones, Jr. Airport | Tulsa Airports Improvement Trust | News | Jobs | Contact Us | Site Map

Green Initiatives

Tulsa International Airport and R.L. Jones, Jr. Airport employees, engineers, and designers have implemented environmentally sound operational initiatives since 1978. These initiatives have resulted in reduced energy consumption, lower operational costs, and lowered usage of natural resources. Efforts include (but are not limited to):

- Paper, plastic, and aluminum can recycling in all public areas;
- Paper recycling in all administrative offices;
- Post-consumer paper products in all restrooms;
- Limited thermostat controls to +/- 3 degrees;
- Automated energy controls to adjust the interior lighting based on the level of natural light in the terminal;
- Incandescent runway, taxiway, and guidance sign lights at Tulsa International Airport and R.L. Jones, Jr. Airport are being replaced with LED lighting, reducing the amount of electricity both airports use to light the airfields at night; and
- When TUL's main runway was under reconstruction the material removed was crushed and used to level areas of airport land for future development instead of going to a landfill. This approach resulted in 170,000 tons of concrete being diverted from area landfills.

Tulsa International Airport initiated an office paper recycling campaign in March 2010 and started aggressively working with tenants and vendors to promote sustainable activities where feasible. In November 2012, as a result of this collaboration, the Airport took another great stride to decrease our environmental footprint by recycling paper, plastics, aluminum cans, and cardboard generated by customers, staff, and tenants. The Airport also started diverting trash generated at the terminal and some satellite facilities to the "Energy from Waste" plant. Through calendar year 2015, the measurable Green Initiatives recycling efforts have rerouted over 2,198 tons (79%) of reusable materials away from the landfills.

We take our responsibility of minimizing our environmental impact seriously, and have assembled a team of airport employees to research best practices and identify new opportunities for green initiatives. The Green Team reviews the performance of current programs and discusses upcoming opportunities. If you have an idea for a green initiative that would work at TUL or RVS, we'd like to hear from you. Email us at TAWEB@tulsaairports.com or find us at www.facebook.com/tulsaairports.

Tulsa International Airport Green Initiatives webpage

In the Airport maintenance shop, there are vending machines as well as several trash cans. Styrofoam cups are provided for water and coffee. In the janitorial area, there are vending machines for employee and contractor use; the custodial contractor's carts and other supplies and equipment are stored here.

In various locations outside of the terminal building, there are carts and dumpsters as well as a compactor for the collection of waste and recyclables. Several rolling carts (“gondolas”), which are located outside each concourse, are used to temporarily store waste and recyclables collected from the terminal. The custodial contractor uses a truck they own to tow the gondolas from the terminal area to the cargo area for transfer to the dumpsters and compactor.



Gondolas at Tulsa International Airport

In addition, to minimize issues related to Foreign Object Debris (FOD), which can be a hazard for aircraft, large dumpsters for cardboard and plastic and the large compactor for waste are located in the cargo area adjacent to the terminal (see photographs and figure depicting the location of these facilities at the Airport on the following pages). The dumpsters and compactor are used to consolidate and store material until it is collected by the waste hauling contractor. These containers are provided by the waste hauler and are not locked.

The Airport does not currently have bins for compost/organic materials, equipment or procedures for sorting waste, or on-site scales for measuring waste.

Recycling, Reuse, and Waste Reduction Plan
Existing Program



Dumpsters and Compactor at Tulsa International Airport

The waste hauling contractor uses its own vehicles to collect the waste and recyclable materials from the Airport and transfer them for processing, disposal, or conversion to energy on a scheduled basis.

Recycling, Reuse and Waste Reduction Plan

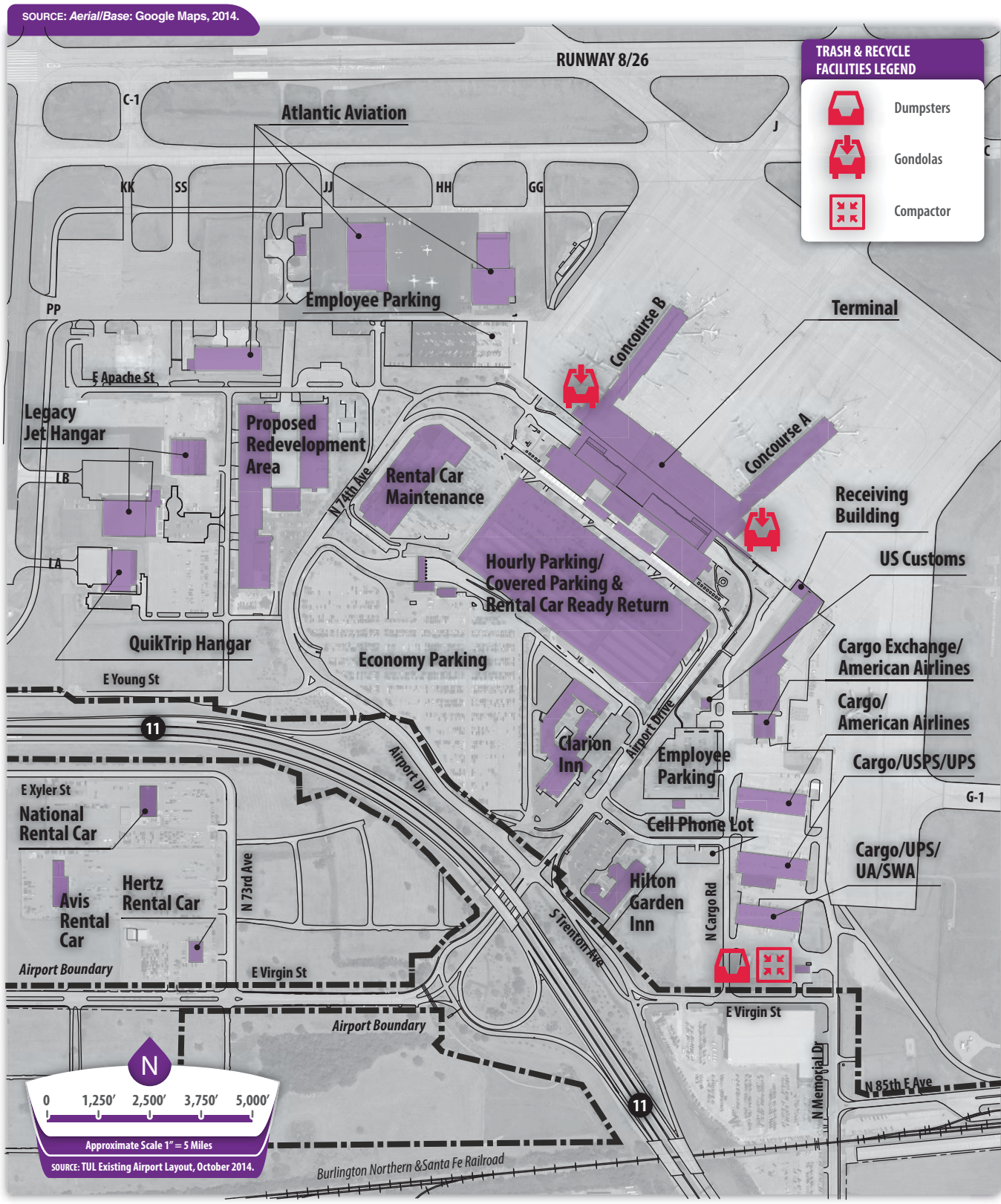


FIGURE 4 Existing Passenger Terminal Area Trash & Recycle Storage Facilities

The recyclable materials (paper, aluminum and plastic, and cardboard) are transported to a recycling facility (i.e., the Tulsa Recycle & Transfer, Inc.) where they are sorted, compressed into bales, marketed, and sold.

Waste materials (organics and other MSW) are transported to the Covanta Walter B. Hall Resource Recovery Facility (“Covanta Tulsa Energy-from-Waste Facility”) located in southwest Tulsa. At this facility, the wastes are processed to generate steam, which powers a turbine generator that produces energy. If the Covanta Tulsa Energy-from-Waste Facility is non-operational (for example due to maintenance shutdowns), the waste materials are transported to the Waste Management Quarry Landfill located east of the Airport. The Tulsa Energy-from-Waste Facility, along with the various landfills and recycle/transfer facilities in Tulsa County are depicted in Figure 5: *Existing Tulsa County Permitted Landfill, Energy-from-Waste, and Recycling Facilities*.

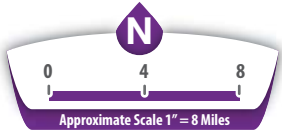
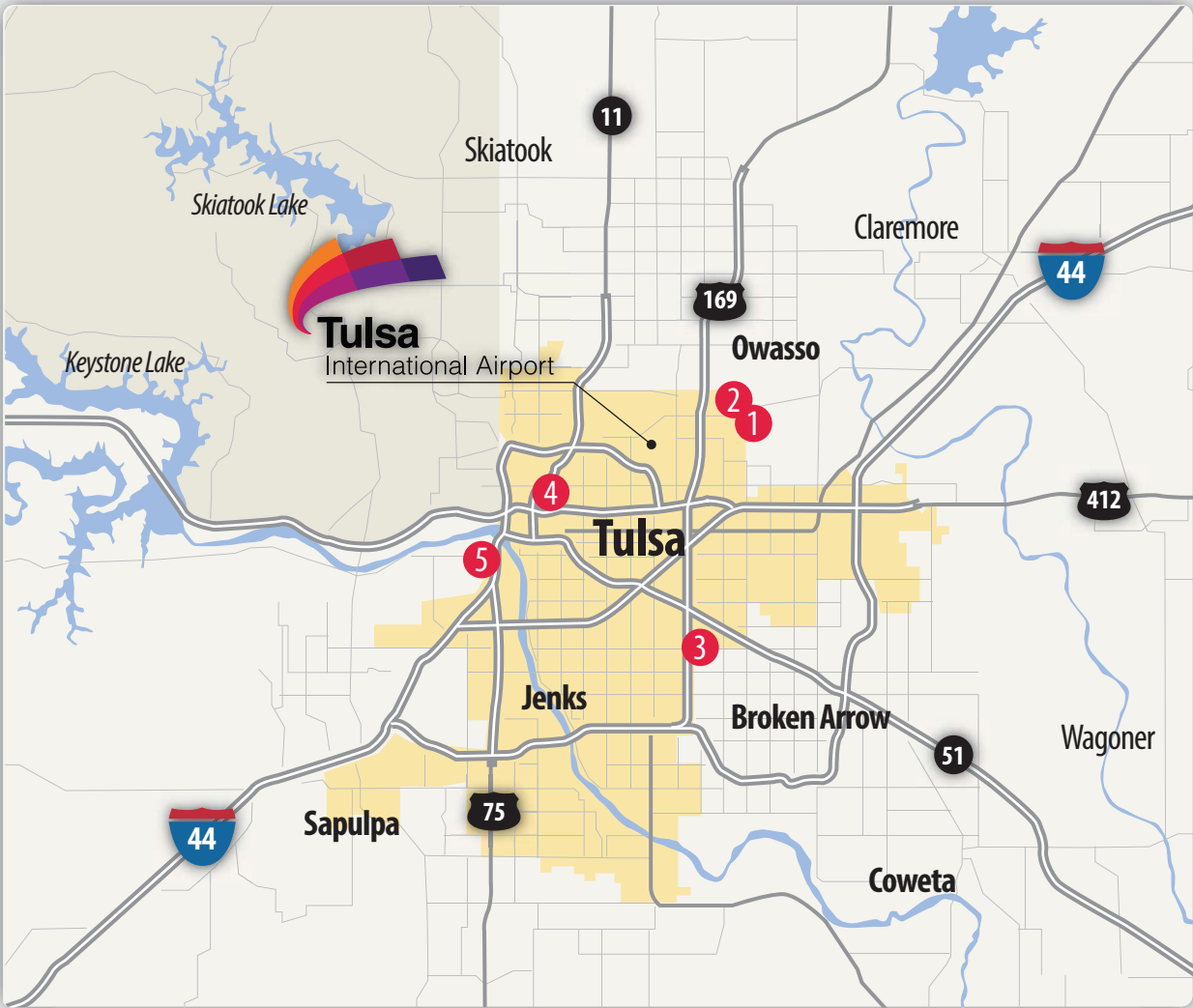
D. Operation and Maintenance Requirements

The recycling program at TUL is maintained through the cooperative efforts of several departments and contractors. The roles and responsibilities of each party support the program’s continuation and improvement.

The Airport’s Environmental Coordinator is responsible for the overall recycling program, including coordinating with the custodial contractor to obtain related invoices, material weight scale tickets, and estimates from the waste hauling contractor, as well as tracking the program’s performance.

The efforts of the Environmental Coordinator are supported by TUL’s Green Team, which meets on an as needed basis to maintain the program. According to the Airport’s website and a representative from TAIT, the Green team reviews the progress of existing green initiatives and identifies opportunities to implement new programs.

The Green Team is made up of representatives from several internal departments, including Operations, Marketing and Community Relations, Engineering and Facilities, Human Resources, Legal, Administration and Finance, and Information Technology (IT) as well as the housekeeping contractor. The Green Team does not currently include representatives from the community, traveling public, or other external stakeholders (for example the waste hauling contractor or recycling facility or Energy-from-Waste facility representative).



FACILITIES LEGEND	
1	Waste Management Quarry Landfill <i>(Municipal Solid Waste Landfill)</i>
2	APAC - East Quarry Landfill <i>(Construction and Demolition Waste Landfill)</i>
3	Construction and Demolition Waste Transfer Station <i>(Harley Hollan)</i>
4	Tulsa Recycle & Transfer <i>(Recycling Transfer Station)</i>
5	Covanta Walter B. Hall Resource Facility <i>(Municipal Solid Waste Combustor)</i>

FIGURE 5 Existing Tulsa County Permitted Landfill, Energy-from-Waste and Recycling Facilities

The TAIT Engineering and Facilities Department is responsible for the procurement and maintenance of containers as well as contracting with and management of a housekeeping contractor for the terminal, Administration Offices and other Airport-controlled areas.

TAIT contracts with a custodial contractor for housekeeping services at the Airport. With regard to waste, the contractor collects the trash and recyclables generated in the Administration and Operations offices, the public passenger areas (sterile and non-sterile), American Parking facilities, the maintenance shop, and other Airport spaces. Contractor staff collect the materials from these areas and take them to the gondola outside the building. When these are full, contractor staff pull them to the dumpster and compactor area.

The custodial contractor subcontracts with a third party, currently Republic Services (formerly Allied Waste), to collect the waste and recyclables from the dumpsters and compactors and transport these materials for processing, conversion or disposal. The waste hauling contractor is responsible for providing and maintaining the waste and recycling gondolas, dumpsters and compactor.

The various tenants are responsible for securing their own containers and housekeeping and waste services; in some cases, the tenants contract with the same housekeeping provider as the Airport.

E. Current Recycling, Reuse, and Waste Reduction Efforts

Recycling

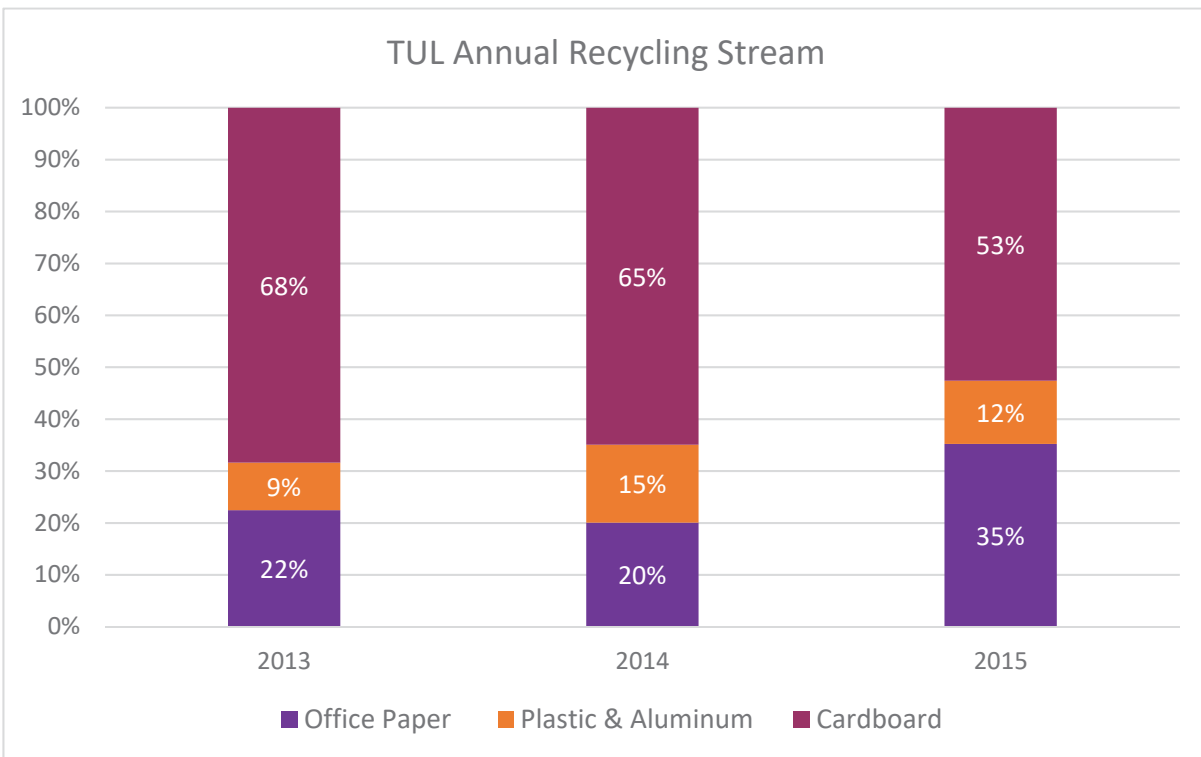
Utilizing the infrastructure and resources described above, the Airport currently recycles three streams: office paper, comingled plastic and aluminum, and cardboard. The Airport's recycling stream is primarily made up of cardboard with lesser amounts of office paper and plastic and aluminum.

The Airport has recycled office paper since 2010. This stream includes printer paper, mail, envelopes, and other paper from the Airport Administration offices as well as paper items, such as newspapers and magazines, collected in the public areas of the passenger terminal. Based on data from 2013 through 2015, the Airport recycled on average approximately 7.5 tons (15,000 pounds) of office paper on an annual basis. This represents approximately 0.8 percent of the Airport's overall waste generation and 26 percent of the Airport's recycling stream.

The Airport has recycled plastic and aluminum since 2012. This stream includes plastic and aluminum, primarily in the form of beverage containers, collected from the public areas of the passenger terminal as well as the administration offices. Based on information from 2013 through 2015, the Airport recycles approximately 3.4 tons (6,800 pounds) of plastic and aluminum on an annual basis. This represents approximately 0.4 percent of the Airport’s overall waste generation and 12 percent of the Airport’s recycling stream.

The Airport has also recycled cardboard since 2012. This stream includes cardboard, primarily in the form of shipping boxes, collected from the terminal tenants. Based on information for the time period between 2013 and 2015, the Airport recycles approximately 17 tons (34,000 pounds) of cardboard on an annual basis. This represents approximately 1.9 percent of the Airport’s overall waste generation and 62 percent of the Airport’s recycling stream.

The following graph shows the breakdown of the Airport’s recycling stream by material for recent years.



TAIT also “closes the loop” by purchasing bathroom paper products made from post-consumer recycled content.

Energy-from-Waste

The Airport sends the majority of its waste to an Energy-from-Waste (EfW) facility for conversion into energy. This stream includes all materials which are not segregated for recycling; this practice is the standard unless the EfW facility is non-operational (in this event, the waste is landfilled). Based on information from 2013 to 2015, this practice was utilized for approximately 670 tons (1,340,000 pounds) on average or 75 percent on average of the Airport's overall waste stream.

Reuse

In a waste management context, reuse refers to utilizing materials and items more than once and as many times as possible before disposal. Reuse can include using items and materials for the original purpose or repurposing something for a different use. Reuse can require purchasing durable materials and items instead of disposable or single use options.

The Airport currently reuses:

- Green waste (grass clippings) as mulch
- Ceramic coffee mugs and durable silverware, plates, bowls, and cups (instead of plastic, paper, or styrofoam) in Administration breakroom(s)
- Scrap paper as scratch pads
- Packing materials
- Office supplies, including inter-office envelopes
- Towels/rags in maintenance areas (laundered by third party)
- Office furniture

Waste Reduction

Also called "waste minimization," waste reduction refers to reducing the volume of waste produced at its source. This can be accomplished through changing habits and practices, such as printing and purchasing. The Airport currently employs the following practices to reduce the total amount of waste generated at TUL:

- Restricted purchasing
- Double sided printing in Administration Offices
- Email and internal websites for inter-office communication
- Shared drives for storage of documents
- Computer software to receive fax messages
- On-screen print preview and PDF printer or other electronic printing

- Electronic signature software
- Unsubscribing from duplicate hard copy magazines, newsletters, etc.
and sharing one copy
- Outsourcing large print jobs

Green Waste; Construction and Demolition; and Other Programs

The Airport utilizes mulching lawnmowers for landscaping, which do not create green waste/yard waste in the form of grass clippings. Leaves are burned in an on-site burn pile and branches/sticks are processed in an on-site wood chipper.

During construction and renovation projects, contractors reuse asphalt millings and other materials where ever possible. Dirt and gravel excavated during construction projects is reused on-site to fill low areas. Contractors remove demolished concrete off-site, but they may recycle it as aggregate for other projects. During reconstruction of TUL's main runway, 170,000 tons of concrete were diverted from area landfills through reuse on Airport property.

TAIT also collects hazardous waste; used oil and filters; batteries; paint, painting, and paint stripping waste; baghouse dust; used tires; and scrap metal for beneficial reuse, recycling, or return to supplier programs.

Tenant Efforts

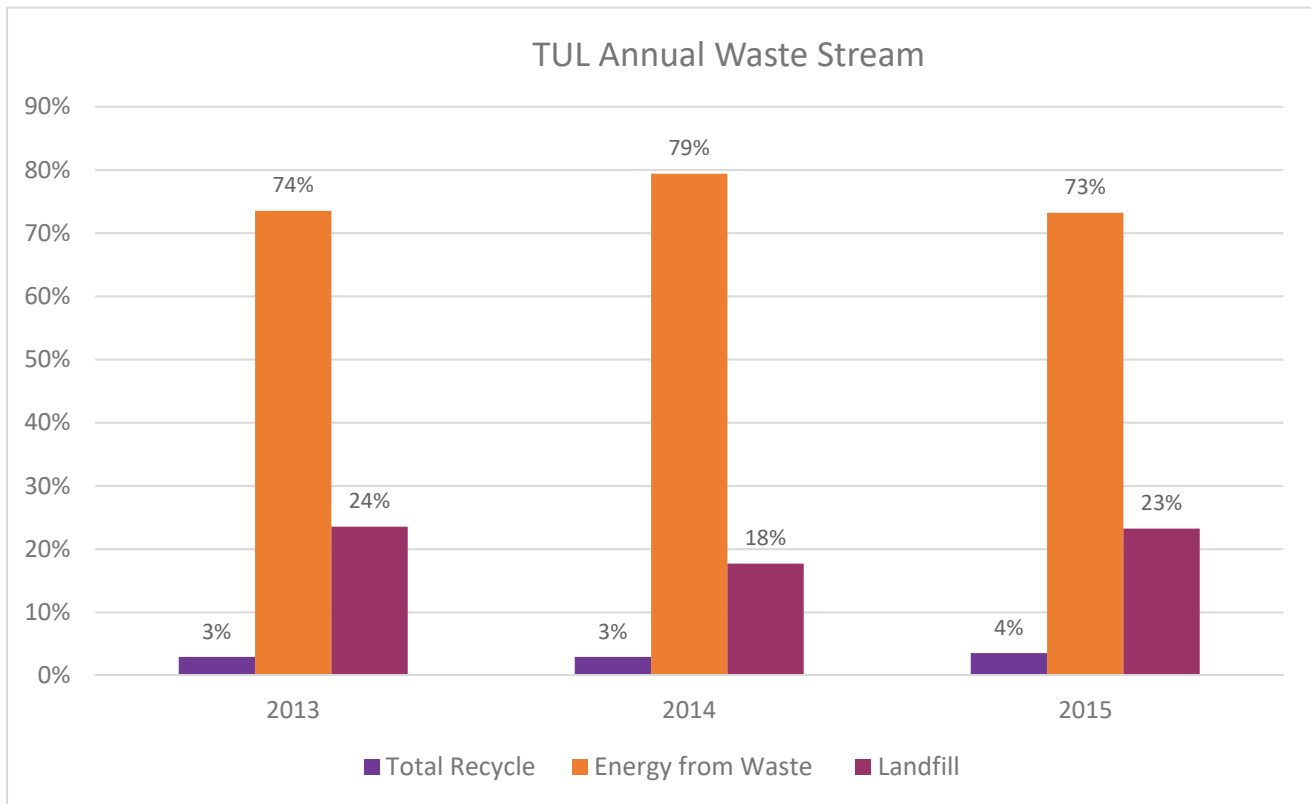
In addition to the recycling program operated by TAIT with the custodial contractor, tenants at TUL may contract with the same contractor for housekeeping services, be recycling on their own, or both. In some instances, these tenants may be using the Airport's bins and gondolas, specifically in the case of cardboard.

F. Tracking and Performance

TAIT tracks the amount of office paper, plastic and aluminum, and cardboard sent for recycling as well as the amount of material sent to the Energy-from-Waste facility and to the landfill. The data that is tracked is based on the invoices, scale tickets, and estimates from the waste hauling contractor provided to the Airport by the housekeeping contractor. The waste hauling contractor provides scale tickets for loads of waste collected from the Airport. For the materials that cannot be weighed due to mixed loads (recyclables collected from several facilities), the hauling contractor estimates the volume/weight of material based on a formula. The scale tickets and estimates are the basis of the fees and rates charged to the housekeeping contractor on the invoices.

Based on this information, over the last three years (2013-2015) the Airport recycled approximately three percent of its waste, sent 75 percent to the EfW facility, and landfilled approximately 21 percent. The graph on the next page shows the percentage of waste generated at the Airport that was recycled, converted to energy, and landfilled over the last three years.

As noted previously, the Airport has an environmental policy which guides its actions, including sustainable waste management. TAIT does not currently have any specific waste or recycling objectives, targets, or goals. TAIT does not currently track waste generated per passenger, recycling by area, contamination or other performance indicators.



3. Waste Audit

The Airport provided information about the facility, areas of the Airport that generate waste, the types of waste generated in each area, the quantity of waste generated at the facility, and the materials that can be recycled under the current program. Airport and custodial contractor staff have informally observed passenger and employee waste and recycling related behaviors and, for the purpose of this report, described generally how waste flows through the Airport. Airport and custodial contractor staff also described waste and recyclable collection and hauling practices and described where waste goes once it leaves the Airport.

A common method to obtain supplemental quantitative information about an Airport's waste stream is to conduct a waste audit or material sort, which involves the collection and analysis of waste produced at the Airport to measure the quantity and types of waste generated. A physical waste sort was not completed for this project. Instead, Airport information and records and aviation industry waste and recycling trends were evaluated to identify the source, composition, and quantity of waste generated at the Airport. This evaluation included areas under direct control or influence of the Airport. This information was then used to identify opportunities to improve and monitor program effectiveness.

A. Quantity and Sources

Based on information provided by Airport and custodial contractor staff, the Airport generates approximately 890 tons (1,780,000 pounds) of waste on an annual basis. This data is based on information provided by the waste hauling contractor via the housekeeping contractor. It does not include construction and demolition debris. See Appendix 1 for more specific details about these waste generation calculations.

In general, all of the activities and areas at TUL generate waste, including those areas and activities under the Airport's control or influence. Based on information provided by the Airport, the list of activities and areas included in the scope of this plan, as discussed in Section 1D, contribute to the overall waste generation at the Airport.

Based on industry averages, the breakdown of the overall waste volume generated at the Airport can be estimated as follows.

Table 2 : Estimated Waste Generation at TUL by Area/Activity

TUL Area/Activity	Estimated Percent	Estimated Volume (Tons)
Deplaned	20%	178
Other Airline	24%	213
Administration	3%	27
Public Areas	35%	311
Concessions	18%	160
<i>Total</i>	<i>100%</i>	<i>890</i>

A physical waste sort could provide more detailed information about the amount and proportion of waste generated in total and by each area, activity, tenant, etc.

B. Composition

Based on the activities conducted at TUL, a complex and varied waste stream can be expected. Based on case studies and other projects, an airport’s waste stream is approximately 40 percent recyclable, 35 percent compostable, and 25% waste that cannot be recycled or composted based on current technologies and therefore is appropriate for landfill disposal.

According to information provided by the Airport and the custodial contractor, each area “under Airport control or influence” are sources of waste and recyclable materials. Table 3 lists each area included in this plan and the type of waste likely generated there.

A physical waste sort could provide more detailed information about the specific composition of waste at TUL. This information may include the types of items included in each general category, the contamination rate of the recycling stream (items that are not recyclable in the recycling bins), and the recovery rate for recycling (the proportion of recyclable items that are segregated properly). The data from a waste audit can also be used to identify opportunities to improve the composition of the waste stream (by item substitution, by improving recycling to reduce the volume of waste, etc.).

Table 3: Tulsa International Airport Waste by Area and Material

Area Material	Area															
	Paper (including office, newspapers, and magazines)	Plastic	Aluminum	Cardboard	Glass	Food Waste	Paper Products	Liquids	Toiletries	Packaging	Styrofoam	Metals	Green / Yard Waste	Deplaned Waste	Construction and Demolition Waste	Other Waste
Airport Property (landscaping)													X			X
Passenger Terminal Building																
Public passenger areas Curbs, ticketing lobby, restrooms, security screening queuing area, gate areas, business centers, "meeter/greeter" spaces, baggage claim areas	X	X	X			X	X	X	X	X	X					X
Airline areas Offices, ticketing counters, gate stations, breakrooms, underwing services and deplaned waste	X	X	X	X		X	X	X		X				X		X
Rental Car areas Offices, counters, returns, servicing	X	X	X			X	X	X								X
Restaurant, retail and vending areas Including the food court	X	X	X	X	X	X	X	X		X	X					X
Airport Administration and Operations offices	X	X	X	X		X	X	X		X	X					X
Airport maintenance and operation activities								X					X		X	X
Other Airport employee work areas	X	X	X	X		X	X	X		X	X	X				X
Other tenant spaces and activities Offices, parking operations, cargo areas, warehouse areas, leased hangars	X	X	X	X		X	X	X		X	X	X				X

The following sections describe in more detail some of the waste and recyclable materials generated at an airport like TUL: toiletries, food and beverages at security screening and liquids throughout the facility.

Toiletries, Food, and Beverages - TSA Restrictions

The TSA restricts the volume of liquids, gels and aerosols that can be carried onto an aircraft. Passengers are allowed to bring three ounce containers of toiletries in one one-quart baggie (3-1-1) in their carry-on luggage. Even though these restrictions have been in place for nearly 15 years, toiletries, beverages, and food items that do not meet the requirements are regularly found in passenger luggage during security screening.

When these items are found, the TSA gives passengers three options: pack the item in a checked bag, give the item to a non-traveling family member or friend, or forfeit the item. By law, the TSA cannot retain any items removed from passenger luggage, so items that are not repacked or handed off end up in the trash. In addition, when a restricted item is discovered in a passenger's carry-on or bag, the passenger may be subject to additional screening which requires extra time and can interrupt the flow at a security screening checkpoint.

Some problematic items that end up in the trash at security checkpoints include: bottled water, other bottled or canned beverages, toothpaste (larger than travel size), shampoo and/or conditioner (larger than three ounces), sunscreen and aloe gel. Some other unallowable items that are less obvious include peanut butter, yogurt, applesauce and maple syrup.

Liquids

Liquids contaminate and degrade other materials within the recycling stream and add weight to recycling or waste streams where they are found. In some cases, liquids are thrown away in their containers, which means the recyclable material found in water bottles, aluminum soda cans, and plastic beverage containers is not captured for recycling.

C. Purchases

In support of this project, the Airport provided information about its annual purchases, specifically disposable items. This information provided insight on some of the materials coming into the Airport which will go back out as waste (other materials are brought on-site by passengers, employees, and vendors).

The purchase information provide by TAIT included item descriptions and year-to-date quantity purchased (in number of units, for example, boxes or cases) and was analyzed for trends and other useful information. In doing so, it was calculated that the Airport will purchase an estimated 60,000 bi-fold paper towels; 5,090 rolls of paper towel; 261,000 sheets of paper, 790 bottles of water and 84,500 foam cups between July 1, 2015 and June 30, 2016. These quantities equate to, in part, approximately 1,000 miles of rolled paper towel and 55 miles or 1.5 tons of paper.

The purchase list included some items that have reusable or recyclable alternatives (foam cups), some items which could be eliminated (by converting paper forms to digital to reduce paper waste generated), and some which indicate scale of the activity at the Airport (paper towel).

Waste bin liners / garbage bags are purchased by the custodial contractor; information about the quantity of garbage bags utilized at the Airport was not provided for this project. Information about items purchased by tenants was not provided for this project.

4. Review of Waste Management Contracts

As noted in Section 1B, FMRA lists the review of waste management contracts as an element of addressing solid waste recycling at an airport. The FAA memorandum titled “Guidance on Airport Recycling, Reuse, and Waste Reduction Plans” explains that the purpose of reviewing these contracts is to “identify opportunities for improving [recycling] program scope and efficiency, as well as identify constraints” and notes that “this information can signal the airport’s next opportunity to add recycling, reuse, and waste reduction objectives to existing leases and contracts.”

In general, the Airport’s contracts and leases address housekeeping requirements and related expectations for managing trash and provide limited information about recycling. These contract and leases do not necessarily impede recycling or other waste management strategies; however, they do not explicitly require conformance with or support of the Airport’s recycling and related efforts. The following sections describe the content of various Airport contracts which is related to waste and recycling.

A. Housekeeping and Waste Hauling Contracts

As noted previously, the TAIT contracts with a custodial contractor for housekeeping services at the Airport. At the time of this writing, the custodial contract was not provided for review under this project. The custodial contractor contracts directly with Republic Services (formerly Allied Waste) for waste hauling services at the Airport. Due to a confidentiality clause, the hauling contract was not provided for review under this project. Future review of these contracts is recommended to determine whether improvements can be made to support the Airport’s recycling program and objectives.

B. Tenant Leases and Service Contracts

The City of Tulsa *Airports and Aircraft Ordinance* states, in Section 209 Maintenance and Usage, “A. No person (who leases Airport Property from TAIT) shall... 5. Allow the accumulation of rubbish, trash, or other waste material on Airport Property.” The Airport has individual leases with each of its tenants and, in general, these agreements, in combination with the City Ordinance, require proper handling of waste. Sample hangar tenant/FBO (Omni Air Transport Services Corp), food vendor (Anton Airfood of Tulsa), and cargo operator (UPS) leases were provided by the Airport for review under this project. These leases are included in Appendix 2; the clauses related to waste and recycling are highlighted in each.

In short, the food vendor lease require the concessionaire to keep their area free of trash and provide for sanitary disposal of all trash, including providing for timely removal of trash from the leased space to the central collection point provided by TAIT. This lease also states that TAIT is responsible for handling and removal of trash from the public areas and that the concessionaire cannot use any containers except those designated for its use. The lease stipulates that fees and charges included in the lease of space may include services such as trash removal based on the Airport's rates, fees and charges for facilities. Violation of these requirements can result in sanctions, per the lease agreement.

The tenant/FBO lease agreement states "lessee shall not permit accumulation of any rubbish, trash or other waste material." This aligns with the *Airports and Aircraft Ordinance*. This lease does not include information about recycling.

The cargo operator lease also includes the language from the *Airports and Aircraft Ordinance* and the tenant/FBO lease regarding the accumulation of rubbish, trash or other waste. However, the cargo lease also requires that the Lessee agree to undertake a good faith review and consider participating in any "voluntary programs designed to improve environmental conditions, including... solid waste recycling programs." The lease goes on to state that "should any such programs be mandated by any federal or state governmental agency, Lessee agrees to comply with such mandates" to the extent required by law, however reserves the right to challenge such mandates. Planning for solid waste management, including recycling, is required by the FAA of airports under-going the master planning process, including TUL. This lease provides some incentive for the cargo operator to support the Airport's recycling efforts.

Based on communication with TAIT, inclusion of language related to recycling in tenant leases is more likely the exception rather than the standard. The sample cargo operator lease described above can provide some inspiration for future lease clauses and improvements.

C. Expiring Leases and Contracts

Specific information regarding the expiration, extension and/or renewal dates of the Airport's numerous leases was not reviewed under this project. As outlined in the FAA guidance memo, "this information can signal the Airport's next opportunity to add recycling, reuse, and waste reduction objectives to existing leases and contracts."

D. Funding

Waste handling and recycling are paid for by the custodial contractor. The Airport pays for the services of the custodial contractor out of its annual budget. Neither the custodial contractor nor the Airport currently receives payment or a rebate for recyclable materials.

5. Recycling Feasibility

There are many factors which impact the feasibility of recycling at TUL; some of these factors are universal and others are specific to the Airport. The following sections describe the more influential of these factors.

A. Commitment and Support

The willingness of TAIT and its tenants and contractors to commit to and support the facility's recycling program are a major factor in the success of such a program. Without the commitment of resources such as funding, labor and time, space, and access to secure areas, a recycling program will struggle.

Airport Policy and Dedication

The Airport's Environmental Coordinator is dedicated to maintaining an appropriately scaled recycling program at TUL and explained that TAIT and the Airport "want to be good stewards of the [resources] we have [available]." The Airport's Green Team has strongly supported the recycling program in the past and it is expected that their time and attention to the program will continue on an as-needed basis. The Airport's Green Initiatives Program mission statement and goal were developed by the Environmental Coordinator and are relatively new. Based on the authority granted to the Environmental Coordinator and the Green Team and resources allocated to the Green Initiatives Program, TAIT management and its governing board appear to generally support recycling and other sustainability initiatives.

Custodial Contractor Commitment

As noted in Section 2A: Drivers, the custodial contractor has committed as a company to protecting the environment. The contractor's commitment and willingness to support TAIT in maintaining and improving waste management and recycling at TUL was echoed in communications conducted under this project. Representatives from the contractor indicated that they and their staff are "here to help" and are "committed to helping TUL go green."

Airline policies

The Airport's current recycling program does not include waste deplaned from commercial service flights. However, four of the five airlines operating at TUL have some form of a formal corporate responsibility plan/sustainability plan/environmental commitment which can be found on their respective websites. These documents outline the airlines' sustainability goals, including waste reduction and recycling initiatives and demonstrate their commitment to reducing the environmental impacts of their activities.

American Airlines is working to recycle in the air as well as on land in their offices, maintenance, and other operation centers. Delta maintains an in-flight recycling program, employee recycling at the Atlanta Headquarters campus and provides waste materials such as safety vests, life vests, carpet, and leather seat covers for upcycling (taking materials at the end of their life and turning them into new products). Southwest has also provided leather seat covers for upcycling and practices recycling on its aircraft and on the ground in their offices and operations. United has recycling programs on its flights and within its facilities and has provided banners for upcycling.

Since these four airlines have publicly stated recycling/waste goals and programs to recycle in-flight, they may be supportive of and willing to participate in expansion of the program to deplaned waste and their leased spaces (offices, breakrooms, baggage handling, underwing, crew lounges, etc.). In addition, Southwest has approached TAIT regarding ways they can recycle at TUL.

B. Technical and Economic Factors

Local Markets and Infrastructure

Markets for recycled materials fluctuate widely based on a number of factors and interactions. Local waste haulers typically accept materials which can be recycled cost-effectively in the area. Manufacturers purchasing recycled material want it to be predictable and ready for use; therefore, recycling facilities are particular about what materials they accept and prefer materials that are of high value and clean and easy to separate.

The materials listed in Table 4 are accepted under the City of Tulsa's residential recycling program; as noted above, inclusion in such programs typically indicates that the market and/or infrastructure for these materials is strong. The Airport currently recycles those materials highlighted in orange.

Table 4 : Materials Accepted for Residential Curbside Recycling in the City of Tulsa

Recyclable Materials – City of Tulsa Residential Program	
Glass (clear, brown and green including bottles and containers)	Cardboard
Metal (food cans and lids, aluminum cans , empty aerosol cans)	Plastic (#1-7 including bottles, containers, tubs, jars, vials, cups)
Paper (mail and envelopes, catalogs, magazines and phone books, newspapers, colored and white office paper, paperback books, wrapping paper)	Boxboard (cereal boxes, dry food boxes, frozen food boxes)
<i>Source: City of Tulsa Refuse and Recycling Services website</i> www.cityoftulsa.org/city-services/refuse-and-recycling/recycling/what-can-be-recycled.aspx Key: Items recycled at TUL are shown in orange	

Based on data provided on the State of Oklahoma Department of Environmental Quality (DEQ) website, there is one Municipal Solid Waste landfill (Waste Management Quarry Landfill), one Construction and Demolition Waste landfill (APAC-East Quarry Landfill), one Construction and Demolition Waste transfer station (Harley Hollan), one recycling transfer station (Tulsa Recycle & Transfer), and one Municipal Solid Waste combustor (Covanta Walter B. Hall Resource Recovery Facility) permitted for operation in Tulsa County. There are additional landfills and transfer stations in neighboring Osage, Wagoner, Okmulgee, and Creek counties. Additional information posted by the DEQ lists over 30 other “recyclers” in Tulsa County, including drop-off sites, collection companies, and charitable organizations like Goodwill Industries and Habitat for Humanity. According to publically available information, there are not any local composting facilities permitted in the County.

Logistical Considerations and Constraints

In order to maintain a recycling program at TUL, certain elements must be in place. This includes a proactive and engaged housekeeping contractor, a willing and affordable hauling contractor, space for bins, gondolas, dumpsters, and compactors, and access to secure areas of the Airport (including airside ramps and sterile terminal areas). At this time, these elements are unconstrained; it is anticipated that additional resources including housekeeping and waste hauling services, space, and airport access would be available to support the continuation and/or expansion of the recycling program at TUL.

Contractual Issues (janitorial, airline consortiums, etc.)

A detailed evaluation of the Airport's contracts is included in Section 4. It is not anticipated that there are any major contractual issues with maintaining and improving the recycling program at TUL. The subcontracting of the waste hauling contractor by the custodial contractor does pose some challenges; TAIT, the contractor and the hauler need to work cooperatively to support the Airport's recycling program.

Recycling, Landfill, and Energy-from-Waste Facility Requirements

The recycling facility, landfill, and EfW facilities that accept waste from the Airport have specific acceptance criteria and requirements. Adherence to these specifications protects the safety of employees handling these materials; the integrity and operation of the equipment and infrastructure used to transfer, sort, and convert these materials; and the value of the recyclable stream.

Some items generated at the Airport may be comprised of components that seem recyclable (plastic, glass or metal parts); however, the recycling facility has specific material standards so it is important that non-recyclable items are not included in the Airport's recycling stream.

Waste items that may be generated at the Airport, but are prohibited at the recycling facility include:

aluminum foil and trays	cords	light bulbs
ashes	diapers	medical waste
batteries	electrical cords	metal
bubble wrap	flammable waste	napkins, paper towels, and tissues
carpet and pads	fluorescent lights	packing peanuts
ceramic cups and plates	food waste and food-soiled containers	paint thinner, stain and varnish
cigarette butts	hazardous chemicals	(continued on next page)
clothes and shoes	paint cans and lids	
construction material		

plastic bags	styrofoam	wires
plastic or wax-coated boxes	shoes	wood
plastic silverware	tires	
rope	wax-coated paper products	
spray paint		

Waste material that may be generated at the Airport but is prohibited by the Municipal Solid Waste landfill includes hazardous waste, radioactive waste, large batteries, paint, and Construction and Demolition waste.

Some waste items cannot be recycled or landfilled, for example hazardous waste and chemicals; paint; batteries; and Construction and Demolition waste. These items must be managed through hazardous waste or universal waste programs or disposed of at a Construction and Debris Waste landfill.

The EfW facility has strict acceptance criteria based on the facility's capabilities and if material is found unacceptable from an operational, environmental, or health and safety perspective, it can be rejected by the facility.

Costs

Tulsa International Airport strives to be as self-sustaining as feasible; therefore, it is imperative that programs implemented and maintained at the Airport, including recycling, are as cost-effective as possible. An important consideration when evaluating the costs of various waste management strategies is the local cost differential between landfilling, EfW, and recycling.

C. Guidelines and Policies

In order to evaluate the Airport's existing recycling plan in the context of local, state, and national requirements, Federal, State of Oklahoma, and local waste and recycling regulations and policies/factors were reviewed.

Federal

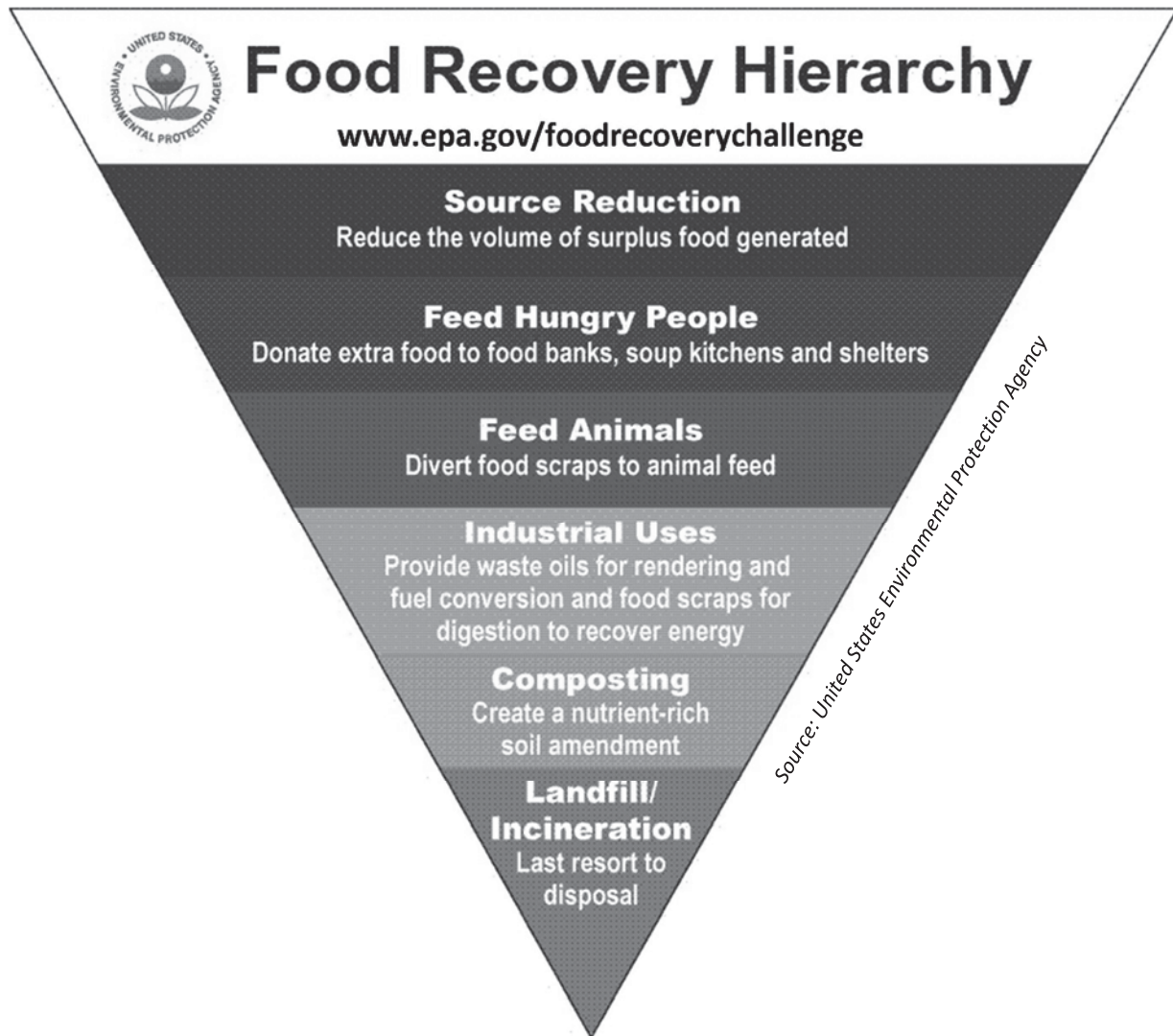
At the Federal level, the United States Environmental Protection Agency (EPA) is responsible for developing a solid waste management program under the Resource Conservation and Recovery Act (RCRA) and related policies and guidance. RCRA provides the framework for management of hazardous and non-hazardous waste. All generators of hazardous waste, including airports, are required to comply with RCRA and all other Federal waste laws and regulations.

As described in Section 1A, the FAA’s definition of ‘airport planning’ was updated in 2010 through FMRA to include planning for recycling and waste minimization. The Airport is required to address solid waste as part of conducting an airport master planning project. The FAA provides guidance on airport waste and recycling in the September 2014 memo on the topic as well as in a synthesis document prepared in 2013 (both available on the Administration’s website).

The EPA has developed a hierarchy of waste management strategies. This hierarchy, shown below, ranks these strategies from most- to least-environmentally preferred and places emphasis on reducing, reusing, and recycling.



In addition to the general waste management hierarchy, the EPA has also developed a preference ranking of management strategies for food waste, as shown below.



State

At the state level, the State of Oklahoma Department of Environmental Quality (DEQ) Land Protection Division oversees waste management and recycling. The Oklahoma Solid Waste Management Act (“Act”), 27A OK Stat § 27A-2-10-205 (A), outlines the State’s recycling program including:

- A. The States’ recognition and declaration of the necessity to encourage and promote recycling and reuse of materials “for the public interest, health and economic welfare”; the State’s understanding that recycling and reuse reduce disposal costs and solid waste disposed of in solid waste sites; the State’s desire to preserve, expand and encourage economic growth; and the State’s understanding that recycling and reuse will create employment, support manufacturing, and upgrade the State’s natural resources.
- B. The State’s recognition that the energy efficiency achieved through recovery and reuse by energy-intensive industries (information technology, manufacturing, and food processing) is a priority and encouraged by other State agencies.
- C. The State’s declaration of the Oklahoma Recycling Initiative – a goal that each municipality greater than five thousand in population develop and operate a recycling program, as well as the State’s requirement that such programs include the collection of paper due to the importance of the paper industry in Oklahoma. Also includes five elements that municipalities may consider in implementing a recycling program pursuant to the Initiative (overall waste collection system and management including generation, recycling and disposal; municipality-wide goals for reducing waste through recycling; alternative methods for achieving the Initiative through municipality-wide systems or integrated management on a regional basis; comprehensive and sustained public information and education programs; and other information recommended by the DEQ).
- D. The State’s statement of a goal of recycling ten percent of the waste produced in the state by December 31, 2011 and instruction that the DEQ shall coordinate this effort with the Oklahoma Recycling Association and other interested parties.

Municipalities working to comply with the Recycling Initiative are eligible to apply for reimbursement from the State for costs associated with equipment required to implement their recycling plans. These funds are encumbered by agreements from the municipality to operate the project for at least three years and to provide assistance to other units of government considering similar projects.

In the *Recycling in Oklahoma: A Report to the Oklahoma Legislature* dated December 31, 2011, the DEQ described the legislative background of the Act, the State's (then) existing recycling system, and provide recommendations including compost organic materials ("significant fraction of municipal solid waste"), measuring recycling efforts ("no comprehensive data on quantities of materials recycled in Oklahoma"), and public outreach. The report also listed next steps including developing a *Recycling Priorities Plan* and submitting it for review by the Oklahoma Solid Waste Management Advisory Council.

According to online minutes of the Oklahoma Recycling Association, a draft of the *Oklahoma Recycling Priorities Plan* was shared with this group in December of 2011. In addition, a survey effort was conducted in February 2012 to support this plan. Information about or a final copy of the plan could not be located online.

The State of Oklahoma does not appear to have any recycling requirements or landfill bans beyond the Oklahoma Recycling Initiative.

Local

City of Tulsa Ordinances

TAIT has adopted Rules and Regulations which have been approved by the Tulsa City Council and the Mayor of the City of Tulsa; these Rules and Regulations are called "Title 1 – Airports and Aircraft." Section 206, Disposition of Waste Material, of the Rules and Regulations states "Garbage, trash, paper, refuse, and other waste material at the Airports shall be placed in receptacles provided for that purpose."

Community Culture

Almost all of passengers using the Airport originate or terminal at TUL. For the time period between August 2013 and September 2014, Origin and Destination (O&D) Passengers accounted for 95 percent of the enplaned passengers at the Airport. This may indicate a strong base of passengers that live in or near the Tulsa area.

Residents in the City of Tulsa are issued one recycling and one refuse curbside cart. The City offers "pay-as-you-throw" (PAYT) refuse (garbage) plans which allow residents to select a cart size appropriate for their needs and pay a corresponding fee (smaller bins have smaller fees). Extra capacity in residents' trash carts can be used for bagged yard waste. Recycling by residents is not mandatory, only encouraged, but it is included in all residential refuse rates.

The City's recycling program was launched in 2012 and has seen the number of residents participating and the volume of material recycled increase. However, the City has also seen an increase in contamination (items placed in the curbside carts that cannot be recycled through the City's program) to 26.82 percent. The target contamination rate is 15 percent or less. In order to combat contamination, the City launched a program to simplify recycling and "focus on the four" following materials: aluminum and steel cans; paper and cardboard; plastic (numbers 1 through 7); and glass jars and bottles.

The City of Tulsa does not provide recycling services for businesses; businesses in the City contract directly with a waste hauling company for their waste and recycling services

With the City's curbside recycling program and recycling offered in other facilities, residents of the Tulsa area have many opportunities to recycle and are familiar with general recycling practices. This includes residents who fly via or work at TUL.

D. Other Incentives

As noted in Section 5A, the majority of the airlines serving TUL have recycling programs and targets. Aligning the TUL program with the airlines' practices provides the opportunity for a win-win scenario whereby TAIT can reduce its environmental impact and, by helping the airlines reduce their impacts, generate goodwill with the carriers.

A representative from TAIT indicated that employees and passengers that have traveled through other major airports have inquired about enhancing sustainability at TUL. This may indicate employee and passenger interest in programs like recycling at the Airport.

6. Cost Savings and Revenue Generation

The costs associated with a recycling program are dependent on available infrastructure, material markets, and the type of waste generated at a facility. These costs sometimes include capital costs for containers, landfill tipping fees, EfW fees, hauling costs, material rebates, and labor. An evaluation of the potential cost savings and revenue generation opportunities is required for an Airport Recycling, Reuse, and Waste Reduction Plan according to FMRA.

Cost information was not provided for review under this project. In the absence of specific cost data, it is difficult to determine the cost differential between landfilling, EfW, and recycling in the Tulsa area or the cost savings resulting from reductions in waste generation or improvements in recycling.

After supplementing the information compiled and analyzed in this document, the TAIT can make informed solid waste management decisions over time. Using the information provided in this plan and cost information available to TAIT, TAIT can begin to analyze the program's financials, evaluate costs, and determine if enhancements should be implemented. If recycling is not technically or economically feasible at this time, this information will help the Airport determine when increased recycling might be feasible.

7. Recommendations

This section documents recommendations for the Airport, including waste reduction, reuse, and recycling strategies, based on the information presented in previous sections of this document, specifically the waste audit and feasibility discussion.

A. Objectives and Targets

It is strongly recommended that the Airport set specific, measurable, achievable, realistic, and time-bound (SMART) goals for its waste and recycling program. Having an established set of objectives and targets provides a basis and foundation for subsequent activities and actions. Progress toward such goals does require tracking, but can also provide information on progress and improvements, which can be a valuable marketing and education tool.

The waste source, quantity and composition information provided in Section 3 provides baseline data for establishing objectives and targets and Section 5C describes the goal and target established by the State of Oklahoma; these can be used to calculate target levels for TUL. A physical material sort would further inform goal-setting efforts.

The following is a list of potential objectives and targets TAIT might adopt or use as inspiration for other goals.

- Recycle 10% of waste stream by 2023
(based on State of Oklahoma goal, current rate is approximately 3%, 1% improvement each year 2016 to 2023)
- Hold annual meetings with Green Team to evaluate and improve recycling program
- Install one liquid collection station at the security checkpoint
(more details in Section 7C)
- 100% of tenants recycling at least one material
- 100% of TAIT employees completed simple training on recycling program
(more details in Section 7F)

In the absence of established specific objectives and targets, the following sections present general, universal recommendations for increasing recycling and reducing waste generation at an airport like TUL.

B. Tracking and Reporting

As described in section 2F, the Airport currently tracks the volume of waste sent to the landfill, to the EfW facility, and for recycling. It is recommended that the Airport continue to track this information and expand the tracking spreadsheet to include calculations of recycling rate (percent of waste stream recycled) and to display on-going trends in waste generation, recycling and Energy-from-Waste. An example tracking spreadsheet with these modifications is provide in Appendix 3.

The Airport's waste and recycling performance is reported to interested parties on an as-needed basis. It is recommended that the Airport consider establishing a regular reporting schedule and provide this information proactively to management, employees, tenants, the housekeeping contractor and interested external stakeholders. The frequency of reporting is up to the Airport, but it is recommended it be completed at least annually. The purpose of this reporting is to remind management employees, tenants, and contractors about the recycling program, to communicate the Airport's commitment to its recycling program and its broader commitment to sustainability and to solicit feedback and suggestions for improving the recycling program.

As the program is adjusted and improved, it is recommended that the Airport update the tracking spreadsheet to accommodate additional material streams or new sources of data. The reporting schedule should also be updated as needed to accommodate changes to the program; it is expected that the reporting schedule would initially increase in frequency as the program evolves and new strategies are implemented and then potentially return to a lesser frequency as the program is maintained.

C. Reduce and Reuse

In order to reduce the facility's environmental impacts, TAIT should focus on moving materials up the waste management hierarchy. Waste reduction is the most environmentally preferred waste management strategy as determined by the EPA. Waste reduction can be accomplished in many ways, including reusing items.

It is recommended that the Airport evaluate the following reduction and reuse strategies to determine which, if any, are feasible and prudent for implantation at TUL.

- Installing a liquid collection station and encouraging reuse of water bottles and refilling at the Airport's drinking fountains

- Collecting and donating unopened food, beverage, and toiletry items subject to TSA restrictions
- Reusing as many items and materials as possible
- Encourage reuse by passengers, tenants, and contractors

Liquids

It is expected that the garbage can located in the security queuing area receives a fair amount of liquids and beverage containers due to TSA restrictions. Unfortunately, with only a single recycling station and garbage can in this area, these materials end up in the waste stream where the liquids are difficult to manage and the containers cannot be recycled. Liquids add significant weight to the waste stream, contaminate other materials like paper, and may be rejected by a recycler, which will result in them being landfilled.

To capture the liquids that are discarded in the security checkpoint area, it is recommended that TAIT install one liquid collection station at the checkpoint next to the recycling station for the disposal of liquids prior to screening.

The deployment of a liquid collection station would reduce the weight of the waste stream generated in this area and protect recyclable materials. The collection and recycling of other materials in the waste stream can be enhanced with availability of a designated place to empty water bottles and other beverage containers prior to them being deposited in the recycling bins. These stations also encourage passengers to empty their reusable and disposable water bottles and refill them in the sterile area after clearing screening. The stations should also be co-located with recycling bins so passengers can recycle the plastic bottles, aluminum cans and other containers they do not wish to retain and refill.

Liquid collection stations are available from various manufacturers and can also be fabricated in-house. These stations require maintenance and servicing, specifically emptying into a designated drain. These stations should include signage indicating that passengers can empty their beverage containers and keep them to refill after they pass through security (drinking fountains are already located throughout the terminal near the restrooms).

The use of liquid collection stations would require custodial staff and contractor time to empty these containers on a regular basis and deal with any issues, such as spills. Case studies from other airports show that the time required of staff to empty these stations is offset by the reduction in time dealing with liquids in the trash bags (which can contribute greatly to their weight).

It will be important to locate the stations within the security screening queuing areas / patterns and with designated access to custodial stations with floor drains to allow for them to be emptied easily and quickly.

Liquid collection stations also provide a benefit to housekeeping staff. Diverting liquids to a collection station from the waste or recycling stream can reduce the overall weight of waste and recycling bags, which can reduce the frequency at which bags need to be emptied in order not to exceed comfortable or safe handling weights. Diverting the liquids will also reduce the need to reinforce the bags (double bag) due to leaks.

Donation of Food, Beverages, and Toiletries

It is recommended that TAIT investigate the feasibility of collecting unopened bottles of water, other beverages, food and toiletries that are restricted from carry-on luggage and donating them to a local charity or other organization. These items can be very heavy and add weight to the waste stream.

In compliance with TSA requirements, these items may need to be collected prior to the security checkpoint queuing area. Collection of these items would require a container at the security checkpoint and management by TAIT or the custodial contractor to store the items until the receiving organization could collect them. In order to implement this recommendation, coordination between TAIT, and the designated receiving organization would be needed. Additionally, information from a TSA representative may be required. An example of an Airport with such a program is McCarran International Airport (LAS) in Las Vegas, Nevada.



Example Donation Collection at McCarran International Airport (LAS)

D. Recycle and Compost

Recycling is the second preferred waste management strategy, according to the EPA, after waste reduction. Recycling allows waste items to be processed into raw materials to make new products. The FAA guidance expects an Airport's recycling, reuse, and waste reduction plan to document, at a minimum, the facility's existing program to recycle paper, plastic bottles, aluminum cans, and plastic cups. The Airport recycles these materials and also collects cardboard.

Paper

The Airport is currently recycling paper collected from the Administration Office as well as from the terminal. Paper, including newspapers and magazines, are collected and managed separately from plastic, aluminum and cardboard; this protects the value of the paper stream by minimizing contamination of the paper by the liquids found in beverage containers and the greases in food waste. It is recommended that the Airport expand the program to additional areas and encourage increased recycling of paper by employees, tenants, and passengers as doing so reduces the environmental impacts associated with landfilling this material and manufacturing virgin paper.

Waste magazines and newspapers are also generated aboard commercial flights; it is recommended that the Airport collaborate and coordinate with the airlines serving TUL to evaluate adding paper items from deplaned waste to this program.

Plastic Bottles

The Airport is currently recycling plastic bottles (including water bottles) collected in the terminal building. Plastics are comingled with aluminum cans and collected and managed separately from paper products. It is recommended that the Airport expand the program to additional areas and encourage increased recycling of plastic bottles by employees, tenants, and passengers as doing so reduces the environmental impacts associated with landfilling this material and manufacturing virgin plastic.

Plastic bottles are also generated aboard commercial flights; it is recommended that the Airport collaborate and coordinate with the airlines serving TUL to evaluate adding plastic bottles from deplaned waste to this program.

Aluminum Cans

The Airport is currently recycling aluminum cans collected in the terminal building. The cans are comingled with the plastic stream described above. It is recommended that TAIT expand the program to additional areas and encourage increased recycling of aluminum cans by employees, tenants and passengers as this material can be recycled infinitely and doing so reduces environmental impacts associated with landfilling this material and manufacturing virgin aluminum.

Aluminum cans are also generated aboard commercial flights; it is recommended that the Airport collaborate and coordinate with the airlines serving TUL to evaluate adding aluminum cans from deplaned waste to this program.

Plastic Cups

The Airport is currently recycling plastic cups with other plastics in the program described above. Plastic cups are also generated aboard commercial flights; it is recommended that the Airport collaborate and coordinate with the airlines serving TUL to evaluate adding plastic cups from deplaned waste to this program.

Cardboard

The Airport currently recycles cardboard collected from the terminal tenants. This material is collected and managed separately from the plastic, aluminum or paper streams; this protects the value of the cardboard material by creating a single material stream (more desirable because it requires less processing after collection). It is recommended that the Airport continue to recycle cardboard. It is also recommended that TAIT provide feedback to the tenants on the progress and performance of this program and solicit their feedback regarding improvements that could be made to increase or support their participation. Marketing this program to all of the terminal tenants could result in additional participants and remind existing participants of the program's specific requirements.

Other Recyclables

The Airport does not currently recycle glass. Based on information provided by the Airport, this is due to a low quantity of glass generated at TUL. It is recommended that the Airport collaborate with the terminal tenants, specifically the restaurants, as well as the custodial and waste hauling contractors to determine the quantity of glass generated at the Airport (typically from bar service) and identify possible management strategies.

As other recyclable materials are identified in TUL's waste stream, the Airport should work with the custodial and waste hauling contractors to design and implement strategies to separate, collect, and process these materials.

Food Waste

According to industry case studies, food waste is typically a major component of the waste stream at an Airport (on average, 35 percent). As described in Section 5C, the EPA's food recovery hierarchy assigns priority to composting of food waste over landfill of this material. Composting is the process of decomposing food and other waste into a nutritious soil additive.

Composting of food waste at TUL is largely dependent on the availability of a local composting facility interested in accepting this material. As noted in Section 2C, there does not appear to be a commercial composting facility in the area.

If a composting facility is found or established in the Tulsa area, TAIT should evaluate implementing composting at the Airport. In a terminal, pre-consumer food waste (waste generated by food preparation activities) is generally easier to compost because restaurant employees are at a facility more frequently and on a more regular basis than passengers so they are easier to train and educate on composting practices and requirements. The specific items accepted by a composting facility are dependent on that facility's design and the process used to break down the waste; some facilities accept all food waste (including meat and bones and breads) while others accept only vegetables and fruit.

One option for easing into composting gradually is to first implement a composting program for coffee grounds generated by restaurants in the terminal. Coffee grounds have a pleasant odor, are easily identifiable (therefore easy to separate), are typically uncontaminated by other materials, and are generated in a predictable manner and quantity. Once tenants are comfortable composting coffee grounds, other materials can be added by name (banana peels, apple cores, etc.) and/or by type (fruits, vegetables, etc.) until all food waste appropriate for composting is included.

Paper Products

Once a commercial composting facility is available in the area, the Airport may wish to collect paper towels and other paper products (napkins and tissues) for composting. Composting is environmentally preferred over landfilling this material.

Because the Airport's restrooms are equipped with paper towel dispensers and nearby garbage cans, the waste stream collected in these cans will primarily consist of paper towel. This stream can be expected to contain low contamination and a steady volume of material, making it an attractive material for composting.

No modifications to the paper towel dispensers or garbage bins would be needed to implement paper towel composting; alternative bins would need to be conveniently located and clearly labeled to accept other waste generated in the restrooms that is not paper towel and the bins reserved for paper towel should be labeled "Paper Towel Only – Collected for Composting" or similar to instruct use and explain how this material is managed. The Airport would also need a dedicated cart for this material and a procedure to collect and store it separately until it was collected by the waste hauling contractor for delivery to the composting facility.

E. Energy-from-Waste

Converting waste into energy is environmentally preferred over landfilling, according to the EPA. It is recommended that TAIT continue to utilize the EfW facility for all waste materials that cannot be reused, donated, recycled, or composted and track this stream.

F. Education and Outreach

Under the existing program, education of and outreach to Airport employees, tenants, contractors and passengers is primarily accomplished through container signage in the terminal and information on the Airport's website.

To supplement these efforts, it is recommended that TAIT improve the in-terminal messaging for passengers and provide brief, clear instructions for recycling at TUL. Providing clear instructional signage at the recycling stations or recycling bins can improve passenger participation and reduce contamination. See Section 7H below for information about signage.

It is also recommended that TAIT provide simple on-going training for employees, tenants, and contractors which explains the recycling program, including its purpose and requirements. Such a training program will promote program participation and compliance, resulting in increased recycling and reduced contamination. In addition, training can designate a contact and a mechanism to receive feedback and ideas for improvement.

The format of employee training could take any number of forms, including emails, meetings, posters, etc. The content of such training should include:

- reminders about the materials that are accepted for recycling at the Airport and the location of the containers to be used for the program,
- information about purchasing requirements, and
- information about the positive effect the program is having on TUL's environmental impact.

Information from the waste collection contractor should also be incorporated into the training program. In addition, different stakeholders and organizations involved in collection, housekeeping, recycling, composting, and other waste activities could also be asked to provide content or to present during meetings.

It is recommended that the Airport include a brief overview of the recycling program during employee on-boarding training and recurrent refresher training at regular intervals. In order to use employee time as effectively as possible, waste training could be combined with other trainings or meetings.

TAIT should consider providing introductory level information to new tenants and contractors and provide training materials such as postings, postcards, etc. to existing tenants and contractors for use with their employees. As some airport tenants and contractors may experience significant employee turnover, providing this information on a regular basis (for example, annually) will help keep everyone up to date on the program.

Once a training and education program is implemented, it is recommended that TAIT actively maintain such a program to facilitate its continued success. The content of trainings should be updated as the program changes and grows.

G. Containers and Bins

The existing recycling stations in the terminal are conjoined units with two compartments, top facing signage and restrictive lids; no changes to the design of the containers are recommended at this time. Conjoined containers ensure a consistent format at every recycling station location; top facing signage and restrictive lids have also been shown to educate and instruct passengers to separate materials appropriately.

The recycling containers in other areas at the Airport are typically blue in color and vary in size and design. No major changes are recommended to the design of these bins other than to ensure they and their service schedule are rightsized for the existing and future volume of material collected under the program and future improvements. The design of the garbage cans varies by location; as these containers are retired or replaced, the Airport may want to consider standardizing the shape and color of the containers to aid in recognition.

It is recommended that TAIT install additional recycling bins in the terminal areas and in other areas as they are added to the program and resources allow.

Co-location of recycling containers with garbage bins has been shown to decrease contamination and increase recycling participation. In general, the recycling stations in the terminal are typically paired with a garbage can. TAIT should move a garbage can next to any recycling station that does not currently have one (as space allows).

In addition, TAIT should consider removing some of the stand-alone garbage cans inside the public areas of the terminal. There are many garbage cans in the terminal and are typically closer/more available than a recycling station; therefore, in many cases, it is more convenient for passengers, employees, and tenants to locate and use a garbage can for all materials than to find and utilize a recycling station. These containers could be repurposed as recycling containers in spaces with single stream recyclables (in offices for paper, in breakrooms for bottles and cans, etc.)

Because the custodial contractor conducts the day to day waste activities, their insight is valuable in improving and maintaining the recycling program at TUL. Based on communication with a representative from the custodial contractor during this project, there may be a need for additional waste and recycling bins in the food court area. According to this representative, this area is a major generator of waste and recyclables and the existing bins are serviced (emptied) several times each day.

H. Signage and Labeling

The Airport's recycling signage could be expanded and improved. The recycling stations in the terminal are well labeled for paper and plastics and the recycling bins in other areas are color-coded and are marked with the recycling symbol, but TAIT should consider providing additional signage which elaborates on the Airport's program and provides direction for passengers adjacent to recycling containers.

New signage should make use of color, images, and short, clear text to help improve understanding of which items are recyclable and which should be thrown away.

A key location for additional signage is in the security checkpoint queuing area in the terminal. As described in Section 3B, the TSA restrictions compel the generation of waste and items discovered in passenger luggage must be disposed in accordance with the agency's policies. In addition, restricted items discovered in passenger luggage by TSA can prompt additional security screening, increasing congestion and wait times in the security line. Clear signage in this area would help educate passengers on the restrictions as well as their options to comply with the restrictions in order to reduce wait times and without throwing these items away.

I. Other Recommendations

In addition to the strategies recommended above, the following strategies are recommended for Tulsa International Airport's waste and recycling program.

Contracts and Leases

As described in Section 4, contracts are a vehicle through which the Airport can influence tenant behavior, including recycling. As contracts and leases expire, extend, or renew, the Airport may wish to revise the new contract language to include waste management requirements or preferences, for example, support of the recycling program. This could be a general clause stating a preference that tenants reduce, reuse, and recycle where practicable or specific information about recycling, reuse, or waste reduction objectives and requirements.

Another approach is to update the Airport's *Schedule of Minimum Standards and Requirements to Conduct Commercial Aeronautical Service and Activities at the Tulsa International Airport – Tulsa, Oklahoma* ("Minimum Standards") to include such requirements and preferences and ensure each contract or lease requires adherence to these policies.

The contracts and leases could be improved by formalizing which, if any, of the Airport's bins, carts, dumpsters, or the compactor are available for tenant use as it is a little unclear whether tenants are currently using this infrastructure (and therefore, unclear whether the waste data from the hauling contractor includes the waste they generate). If TAIT is open to managing waste and recyclables on behalf of its tenants (for a fee in lease rates), contracts and leases are the proper vehicle to clearly document this intent. Centralizing waste management at TUL through contracts and leases and/or the Minimum Standards may increase tenant participation in and conformance with the program.

Purchasing Policies and Requirements

The Airport's existing purchases which create waste are discussed in Section 3C. The Airport may wish to draft and adopt a purchasing policy which prioritizes items which are durable (versus disposable), reusable, recyclable, compostable, and/or made from recycled content. Establishment of such a policy would require the collaboration of several departments, including Engineering and Facilities and Administration and Finance. Once established, this policy could be shared with the Airport's tenants to encourage their own adoption of sustainability-minded purchasing practices. The Airport already purchases some bathroom paper products with recycled content; it is recommended that this practice continue.

Additional Facilities and New Development

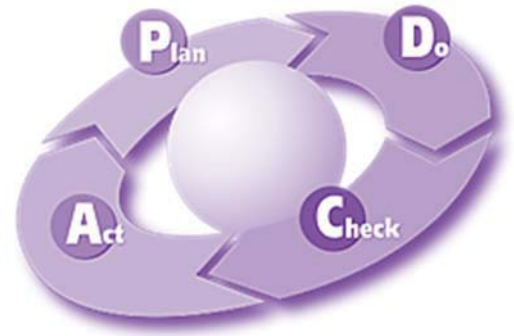
The Airport may wish to consider expanding the recycling program to additional areas, for example, in the buildings and activities which were excluded from this plan, especially to areas that are serviced by the custodial contractor. Expanding recycling and waste reduction to areas outside the Airport's control or influence will require cooperation and collaboration with the operators of those areas as well as with their housekeeping and waste hauling contractors. It may work best to expand to facilities and areas that express proactive interest in recycling and those that have simpler operations or are smaller in size, for example, the Air and Space Museum. Expansion could be as simple as encouraging these areas to recycle and acting as a resource for their questions and as complex as assisting these areas with an evaluation of their facility and/or container selection and signage design.

As the Airport grows and changes, recycling and waste management should be considered as a part of designing and constructing new development projects. This could be accomplished by establishing construction specifications which outline waste management requirements or preferences for Airport projects (for example, any landfill diversion rate requirements or recycled-content material preferences) and involving the Green Team in the design and planning of new facilities. The operation and maintenance of new facilities under the control or influence of TAIT, once constructed, should be included in the Airport's recycling program (for example a new ATCT or general aviation hangar development).

Any expansions of the existing program should be designed with care to maintain consistency and compatibility with the program in the terminal, Administration Offices and other established areas.

J. Continuous Improvement

It is recommended that the maintenance of and implementation of improvements to the recycling program at TUL follow the Plan Do Check Act (PDCA) cycle methodology.



Plan

The recommended strategies and supporting references make up the “plan” portion of the process. Defining success (for example, something like 10 percent recycling by 2023), establishing materials and areas of focus, collecting baseline information (waste audit, surveys, etc.), identifying sub-goals, and identifying strategies are all a portion of the planning aspect. In the future, additional areas of focus, baseline measurements, and goals will likely be needed.

Do

Implementation of strategies included in this plan represents the “do” portion of the process. This involves implementing the recommendations in this plan and making progress toward achieving the goals. In “doing,” the Airport will continue developing a culture of awareness for waste management and will begin to shape the practices and processes for improving and optimizing its activities associated with reduction, reuse, recycling, composting, and other waste management elements at the facility.

Check

After implementing the strategies, the “check” portion of the process involves the reporting aspect of the implementation process. As strategies are implemented, this step requires regularly tracking and checking the progress toward meeting the goals. The Airport has finite resources (financial, staffing, capital, etc.), therefore, the management and tracking of the plan must not be unnecessarily arduous. If tracking and checking become too difficult or time consuming, the entire plan may suffer. Checking may require the development and use of tools for measuring success and identifying areas for improvement, including a mechanism for feedback and process for reviewing suggestions.

The following scenarios may trigger re-evaluation of the program and/or the constraints described in this report:

- New state recycling laws, requirements, or goals
- New TAIT programs or goals

- New City of Tulsa programs or goals
- New local infrastructure, for example, composting facility
- Changes within or expiration of contract with housekeeping contractor or waste hauling contractor

Act

The “act” portion of the process encompasses taking what has been learned in the previous stages and acting in response. It can be helpful to ask “what did we learn” and “how can we do better next time?” By re-evaluating the strategies, activities, goals, and metrics, adjustments can be identified and put into action.

It is recommended that meetings of the Green Team be held on a regular basis to drive the continuous improvement cycle (review the recycling program and plan and implement improvements/adjustments). It is further recommended that the Green Team be expanded to include a representative from each of the following areas to serve as a liaison between the Green Team and their company/area: the waste hauling company, the EfW facility, the airlines serving TUL, a restaurant tenant, other terminal tenants, a hangar tenant, the Tulsa community, and the traveling public. It is recommended that participation on the Green Team by these representatives be on a voluntary basis initially.

K. Recommendations Summary

The recommendations outlined in this report do not require major capital improvements (as listed in the Airport’s Capital Improvement Program) and were designed to be compatible with the Airport’s existing plans and programs including the in-progress master plan, the Minimum Standards, and the existing recycling program.

Table 5 summarizes recommendations for the Tulsa International Airport waste and recycling program as described in this report.

Table 5: Recommendations Summary

TUL Waste and Recycling Program Recommendations
<p>Objectives and Targets</p> <ul style="list-style-type: none"> • Establish SMART goals (see Section 7A) <p>Tracking and Reporting</p> <ul style="list-style-type: none"> • Continue tracking volume to landfill, EFW and recycling; expand tracking to include recycling rate; expand tracking to trends in generation, recycling, and EFW • Establish regular reporting schedule; proactively provide information about program <p>Reduce</p> <ul style="list-style-type: none"> • Install liquid collection station at security checkpoint; encourage reuse of water bottles and refilling at drinking fountains • Collect and donate unopened food, beverage and toiletry items <p>Reuse</p> <ul style="list-style-type: none"> • Reuse as many items and materials as possible; encourage reuse by passengers, tenants, and contractors <p>Paper</p> <ul style="list-style-type: none"> • Continue recycling office paper from Administration Offices and terminal; expand to additional areas; encourage increased recycling of paper • Expand program to include deplaned paper <p>Plastic</p> <ul style="list-style-type: none"> • Continue recycling plastic bottles and cups; expand to additional areas; encourage increased recycling of plastic • Expand program to include deplaned plastic <p>Aluminum</p> <ul style="list-style-type: none"> • Continue recycling; aluminum cans; expand to additional areas; encourage increased recycling of aluminum • Expand program to include deplaned aluminum <p>Cardboard</p> <ul style="list-style-type: none"> • Continue to recycle cardboard • Provide feedback on performance of program; solicit feedback <p>Glass</p> <ul style="list-style-type: none"> • Collaborate with tenants, custodial contractor, and waste hauling contractor to determine quantity and identify strategies <p>Other Recyclable Materials</p> <ul style="list-style-type: none"> • Work with the custodial and waste hauling contractors to identify, design, and implement strategies <p>Food Waste</p> <ul style="list-style-type: none"> • If composting facility is established in area, evaluate composting at TUL (start with coffee grounds, then other pre-consumer food waste) <p>Paper Products</p> <ul style="list-style-type: none"> • If composting facility is established in area, evaluate paper towel and paper products composting <p>Energy – from – Waste</p> <ul style="list-style-type: none"> • Utilize EFW facility for non-reusable, non-recyclable, or non-compostable items; track stream <p>Education and Outreach</p> <ul style="list-style-type: none"> • Improve messaging for passengers • Implement simple employee training program • Implement simple tenant/contractor education program <p>Containers and Bins</p> <ul style="list-style-type: none"> • Right size recycling containers and service schedule • Standardize garbage cans when replaced • Install additional recycling bins in terminal and other areas • Co-locate recycling stations and garbage cans, as space allows • Consider removing some of the stand-alone garbage cans; purpose for other use (single material recycling) • Evaluate and improve containers available at food court <p>Signage and Labeling</p> <ul style="list-style-type: none"> • Expand and improve signage; elaborate on program and provide direction; use color, images, and short, clear text • Improve signage at security checkpoint queuing area <p>Contracts and Leases</p> <ul style="list-style-type: none"> • Revise contract language to include recycling requirements or preferences • Evaluate updating Minimum Standards <p>Purchasing Policies and Requirements</p> <ul style="list-style-type: none"> • Consider a purchasing policy with waste reduction elements <p>Additional Facilities and New Development</p> <ul style="list-style-type: none"> • Expand recycling program to additional areas • Consider recycling when designing and constructing new projects <p>Continuous Improvement</p> <ul style="list-style-type: none"> • Maintain and improve the recycling program according to the Plan Do Check Act cycle

8. Conclusion

Tulsa International Airport currently has a simple recycling program in place that has been well-received by the airport users, and has the potential to be expanded in phases to further reduce the facility's environmental impact. This report has described the existing program and outlined recommended improvements that will allow the Airport to potentially increase both landfill diversion and recycling volumes. In addition, this plan documents and supports the Airport's compliance with the *FAA Modernization and Reform Act of 2010* and FAA guidance on the topic of recycling, reuse, and waste reduction.

9. References

A. Airport Case Studies

Atkin, Peter. *How Airlines and Airports Can Clean Up Their Recycling Programs*. Rep. Natural Resources Defense Council, Dec. 2006. Web.

Mehta, Sam. "San Francisco International Airport Passenger Food Waste Composting Program." 22 Dec. 2015. Telephone interview.

Ralston, Phil. "PDX Waste Management." Airports Going Green Conference. Chicago, IL. 6 Aug. 2009. Presentation.

Recycling, Reuse and Waste Reduction at Airports. A Synthesis Document. Federal Aviation Administration Office of Airports, 24 Apr. 2013. Web.

Seattle Tacoma International Airport Guide to Recycling. Port of Seattle, 2010. Web.

B. Recycling Signage Research

Katzev, R. & Mishima, H.R. (1992). *The use of posted feedback to promote recycling*. Psychological Reports, 71(1), 259-264.

Werner, C.M., Stoll, R., Birch, P., & White, P.H. (2002). *Clinical validation and cognitive elaboration: signs that encourage sustained recycling*. Basic and Applied Social Psychology, 24, 185-203.

C. Food Waste Information

"Sustainable Management of Food." EPA. Environmental Protection Agency, n.d. Web.

10. *Appendices*

Appendix 1: Waste Generation Calculations

Table A1-1: TUL Annual Waste Generation and Management (tons) 2013 to 2015

	<i>Recycle</i>			Total Recycle	Energy from Waste	Landfill	Total
	<i>Office Paper</i>	<i>Plastic & Aluminum</i>	<i>Cardboard</i>				
2013	5.5	2.2	16.7	24	613	196	834
2014	5.2	3.9	16.7	26	700	156	881
2015	11.9	4.1	17.7	34	698	221	953
2016							
2017							
2018							
2019							
2020							
	<i>Average</i>			28	670	191	889

Appendix 2: Sample Leases

Excerpt from:
SUBLEASE AGREEMENT

by and between

TULSA AIRPORTS IMPROVEMENT TRUST

AND

OMNI AIR TRANSPORT SERVICES CORP.

Section 6.8 Accord and Satisfaction. No payment by Lessee or receipt by TAIT of a lesser amount than the rentals, percentage fees and/or charges or payment(s) due to be made by Lessee hereunder shall be deemed to be other than a payment on "account" of the rent, percentage fees and/or charges due, and no endorsement or statement on any check or in any letter accompanying any check or payment as rent fees and/or charges shall be deemed in accord and satisfaction, and TAIT may accept such check or payment without prejudice to TAIT's right to recover the balance of such rent percentage fees and/or charges or to pursue any other remedy provided in this Agreement.

Section 6.9 Utility Service. At its own expense, Lessee shall be responsible for the installation, relocation, modification and maintenance of all utility services on the Leased Premises. This shall include any janitorial services, power, gas, telephone, electricity, heating, water, sewer and all other utility services not specifically enumerated. Lessee shall pay as the same becomes due, all utility and other charges incurred in the operation, maintenance, use, occupancy, repair and upkeep of the Leased Premises and the improvements located thereon.

ARTICLE VII

Maintenance and Care of Leased Premises

Section 7.1 Maintenance and Care of Leased Premises. (a) Lessee shall perform all maintenance, including but not limited to, all repairs relative to heating, electrical, plumbing and air conditioning systems; roofs; walls; structure; structural improvements; paving; and the ramp on the Leased Premises. Lessee also shall perform mowing of, and snow removal from, the Leased Premises. Lessee, at all times, shall keep in a clean and orderly condition and appearance all the Leased Premises and all of Lessee's fixtures, equipment and personal property which are located thereon. Unless otherwise specifically provided for in this Agreement, or with the express written permission of the Airports Director, Lessee shall not store aircraft service vehicles, tugs, fuel trucks, fork lifts, mobile equipment, cargo, or other personal property on the Leased Premises unless the same are in common use in Lessee's customary business operations. The Leased Premises shall not be used for the storage of motor vehicles, recreational vehicles, or boats. Lessee shall not commit or suffer to be committed any nuisance on the Leased Premises. Lessee shall conduct its operations in an orderly and proper manner so as not to annoy, disturb, or be offensive to others at the Airport. Lessee shall take all reasonable measures to keep the sound level of its operations as low as reasonably possible. Lessee shall not permit the accumulation of any rubbish, trash or other waste material. Except in tanks and in the manner approved by appropriate governmental authorities, Lessee shall not store any gasoline or other material likely to give off fumes or gases or any material likely to constitute a fire, safety or security hazard on the Leased Premises. Lessee shall not cause or permit any hazardous or flammable substance to be used, stored, generated or disposed of on the Airport or Leased Premises, except as otherwise provided herein.

Excerpt from:

FOOD & BEVERAGE CONCESSION LEASE AGREEMENT

by and between the

TULSA AIRPORTS IMPROVEMENT TRUST

and

ANTON AIRFOOD OF TULSA, INC.

For Area C – Sit-down Restaurant:	
For food and non-alcoholic beverages	8%
For alcoholic beverages	13%
For merchandise	15%
For Tulsa-based income from advertising or promotions	25%

For all other Areas:	
For food and non-alcoholic beverages	10%
For alcoholic beverages and merchandise	15%
For Tulsa-based income from advertising or promotions	25%

C. Minimum Annual Guarantee. The Minimum Annual Guarantee (MAG) for the first year of the Primary ten (10) year Term that all locations are open to the public is \$350,000 for all locations. For each year after the first full year of the Term, the Minimum Annual Guarantee shall be eighty-five percent (85%) of the previous payments, but not less than \$350,000 for the remainder of the Term.

D. Pro Rata Payment. If the commencement or termination of this Agreement falls upon any date other than the first or last day of any calendar month, the applicable fees and charges for said month shall be in the same proportion that the number of days the Agreement is in effect for that month bears to the total number of days in that month.

Section 6.2. Additional Fees and Charges.

A. Tenants Association Related Fees. Concessionaire acknowledges it will be responsible for a fifty percent (50%) share of all concessionaire's share of the cost of TAIT's special events coordinator for promotion of the concessionaires at the Airport and the Airport itself. In the first year of the Term of this Agreement, Concessionaire's share of said Tenants Association related fees shall not exceed \$35,000. The Tenants Association related fees shall be paid monthly by Concessionaire to TAIT simultaneously with other rents, fees and charges paid hereunder. Subsequent to the first year of the Term, the Concessionaire's costs for its percentage share in the cost of the special events coordinator contract will be determined by the Tenants Association and TAIT.

B. Parking Fees. Concessionaire shall pay to TAIT parking fees for Concessionaire's use of the employee parking areas designated by TAIT.

C. Other Airport Fees and Charges. Concessionaire shall pay to TAIT such other fees and charges as reasonably may be assessed for all other services, privileges or facilities used by Concessionaire at the Airport as set forth in TAIT's published schedule of Airport rates, fees and charges for use of Airport's facilities or services and including, but not limited to (i) if TAIT has paid any sum or sums, or has incurred any obligation or expense, for which Concessionaire has agreed to pay or reimburse TAIT, or for which Concessionaire is otherwise responsible; (ii) if TAIT is required or elects to pay any sum or sums, or incur any obligation or expense because of the failure, neglect or refusal of

Concessionaire to perform or fulfill any of the promises, terms, conditions or covenants required of it hereunder; (iii) pursuant to any separate agreement between the parties not contained herein; or (iv) such other fees and charges for services rendered such as, but not limited to, utilities, trash removal, telephone, delivery access charges and similar charges. Concessionaire's obligations pursuant to this Section shall include all interests, costs, damages and penalties in conjunction with such sums so paid or expenses so incurred by TAIT.

Section 6.3. Discounts. If Concessionaire gives food and beverage discounts or free food ("Discounts") to preferred customers, Airport employees, Concessionaire's employees, suppliers, or any others, the discounted amount may be excluded from the Gross Revenues, but only up to a maximum of two percent (2%) of the Gross Revenues per Agreement Year. If total Discounts given by Concessionaire exceed this two percent (2%) maximum, then the Discounts given in excess of two percent (2%) will not be excluded from Gross Revenues in the calculation of the Percentage Rent. In order to exclude Discounts of up to two percent (2%) from Gross Revenues, Concessionaire's books and records must clearly and accurately reflect all Discounts given so that TAIT can verify the total amount of Discounts given. Discounts must be reported monthly, in the Monthly Report. Total Discounts for the Agreement Year shall be set forth in the Annual Report. In any month that Discounts exceed two percent (2%) of Gross Revenues for that month, only Discounts up to the two percent (2%) Discount will be allowed. At the end of the Agreement Year, however, the total Discount allowed will be adjusted and Concessionaire's account credited for Discounts not allowed on the monthly basis, as long as total Discounts for the Agreement Year did not exceed two percent (2%) of Gross Revenues for the Agreement Year. As used herein, "Discounts" shall not refer to price reductions on food and beverage that is marked down from its original price to a sale price and is available for purchase at the sale price by all members of the general public, or to food or beverages provided to Concessionaire's employees while working, either free or at a discount.

Section 6.4. Recording of Gross Revenues and Handling of Cash. To record all sales generated in, at, or from the Leased Premises, Concessionaire shall use a cash register or computerized registration system ("Register") acceptable to TAIT, which is capable of producing duplicate sales slips, or printouts, on which each sale is identified, itemized, and recorded. Such Register shall be either a non-resettable, serially numbered cash register, or a point of sale register. Concessionaire shall adhere to the "Cash and Record Handling" policy developed by Concessionaire and approved, in writing, by the Airports Director. The Cash and Record Handling policy shall be submitted to TAIT by Concessionaire on or before the Target Effective Date.

Section 6.5. Monthly Statements and Payments. The monthly Rent payment to be submitted by Concessionaire to TAIT shall be the greater of one-twelfth (1/12) of the MAG or the Percentage Rent earned for the previous month, except during the first partial Agreement Year (Effective Date through commencement of the Primary ten (10) year Term), during which time Rent shall be based on the formula described in Section 6.1. On or before the first (1st) day of each month, Concessionaire shall pay to TAIT the monthly MAG by mailing it to the address shown below. The Concessionaire shall thereafter provide to TAIT, by the 20th day of each month ("Statement Due Date"), using the standardized form approved by the Airports Director, a "Monthly Statement" showing Concessionaire's actual total Gross Revenues for the preceding

quantities of all products to allow preparation of all menu items to meet the demands of Airport customers. Concessionaire shall make efforts to ensure that only high quality food and beverage are sold at the Airport. Those efforts shall include, but not be limited to:

Purchasing products only from reputable commercial food vendors;

Receiving, transporting, and storing products in a manner that ensures that the quality and freshness does not decline; and

Food and beverage quality must meet or exceed the quality commensurate with other first class restaurant establishments within the Tulsa metro.

(3) Health Inspections. Concessionaire shall provide to TAIT a copy of all health inspection reports within twenty-four (24) hours after Concessionaire receives the report. This report should be delivered to TAIT in accordance with Section 13.2. If a health inspection does not result in a written report, Concessionaire shall prepare and submit to TAIT a written summary of the nature of the inspection and of the inspector's findings, as they were communicated to Concessionaire.

(4) No smoking. The Terminal is a non-smoking facility. Therefore, no smoking shall be permitted on the Leased Premises.

F. Concessionaire Surveys. Concessionaire may take marketing and customer satisfaction surveys that are approved, in writing, by TAIT. If any such surveys are approved by TAIT and taken by Concessionaire, Concessionaire agrees to give the TAIT a copy of the detailed results of the survey.

G. Travelers Checks/Credit Cards. Concessionaire shall accept traveler's checks and at least two (2) major credit cards for any purchase.

H. Sanitation, Hygiene, and Cleanliness. Concessionaire shall keep the Leased Premises free of debris, trash, and hazardous conditions, shall keep Public Areas around the Leased Premises free of hazardous conditions originating from Concessionaire's operations, and shall notify TAIT promptly of other hazardous conditions in the Public Areas outside the Leased Premises. Concessionaire shall provide a proper arrangement for the adequate sanitary disposal of all trash and other refuse on the Leased Premises and shall provide for its timely removal to the central collection point provided by TAIT. Concessionaire shall take appropriate action in the handling of waste materials to prevent the presence of rodents and other vermin. Concessionaire shall keep all garbage materials in durable, fly-proof and rodent-proof, fireproof containers that are easily cleaned. The containers shall have tight-fitting lids, doors, or covers, and shall be kept tightly covered when material is not being deposited in them. Concessionaire shall clean the containers, as necessary, to prevent odors. Concessionaire shall not allow boxes, cartons, barrels, or other similar items to remain within view of Public Areas. TAIT shall be responsible for handling and removal of trash and other refuse deposited by customers

in Public Areas. Concessionaire shall not deposit any of its trash or other refuse in any containers except those designated for Concessionaire's trash.

Section 7.3 Sanctions - Violation of Operating Standards. Concessionaire's failure to adhere to the operating requirements set forth in this Agreement is reasonably anticipated to result in significant inconvenience to the public, adversely affect the overall business of the Airport, and reduce the amount of Rent to be paid to TAIT. Additionally, TAIT resources will be expended in dealing with violations of this Agreement by Concessionaire. The parties hereby agree that total damages sustained by TAIT for violations of the Sections of this Agreement listed below could be significant, but would be difficult to determine and to track. Therefore, the "Sanctions", set forth below for violation of certain terms and provisions of this Agreement are agreed to between the Concessionaire and TAIT to be reasonable Sanction amounts and reasonable estimates of the loss anticipated to be suffered or incurred by TAIT. Concessionaire, therefore, hereby agrees that imposition of these Sanctions is fair and reasonable and Concessionaire agrees to pay to TAIT the following Sanction amounts upon the occurrence of any of the following breaches, within three (3) business days upon demand by TAIT:

Minimum Operating Hours	\$ 100.00 first occurrence \$ 250.00 second occurrence \$ 500.00 third occurrence \$1,000.00 per occurrence thereafter \$ 500.00 for closure, late opening (more than 15 minutes) or early closure (more than 15 minutes) on any holiday for the first 3 violations \$1,500.00 per holiday violation after the 3rd violation
Service Standards; Employee Standards	\$ 50.00 per occurrence
Food Pricing and Quality	\$ 250.00 first occurrence \$ 500.00 per occurrence thereafter
Signs	\$ 50.00 first occurrence \$ 100.00 per occurrence thereafter
Interference with Utilities	\$ 250.00 per occurrence
Sanitation, Hygiene and Cleanliness,	\$100 per occurrence, for up to 3 occurrences
<u>Waste Disposal and Recycling</u>	<u>Thereafter, Concessionaire will be billed for all garbage service at a rate to be determined to be reasonable by TAIT</u>
Deliveries and Vendor Access	\$ 100.00 per occurrence

Section 7.6 Tenants Association.

A. The Concessionaire shall become a member of and maintain during the Term of this Agreement a membership in the Tenants Association as soon as the same shall be formed and shall abide by all rules, regulations, bylaws, decisions and directions of the Tenants Association.

B. The Concessionaire acknowledges that the Tenants Association will not be concerned with the management or operations of the Terminal or Airport. Nothing in the rules, bylaws, decisions and directions of the Tenants Association shall be in conflict with the provisions of this Agreement, nor shall anything in such rules, regulations, bylaws, decisions and directions affect in any way the rights of TAIT under this Agreement. All such rules, regulations, bylaws, decisions and directions shall be subject to the prior approval of TAIT, failing which such shall not be binding upon the members thereof.

C. The Concessionaire shall pay TAIT the monthly dues during the term, as defined in this Agreement, equal to one-twelfth (1/12th) of the Concessionaire's assessed share of the cost. Concessionaire will pay TAIT, without invoice, that which is due and owing to TAIT by the 10th day of the month for which the charge is due. In the first year of operation, the Concessionaire's annual share will not exceed Thirty-five Thousand Dollars (\$35,000.00). The cost for future years will be determined by the Tenants Association and TAIT.

ARTICLE VIII

Maintenance and Care of Leased Premises

Section 8.1 Maintenance and Care of Leased Premises. Concessionaire shall, at its sole cost and expense, do and perform all maintenance necessary to keep the Leased Premises and adjacent areas in direct support of Concessionaire's Leased Premises as agreed upon by Concessionaire and the Airports Director and all of Concessionaire's property and improvements thereon, in a clean, orderly, attractive condition and appearance. TAIT shall be the sole judge of the quality of such maintenance. Concessionaire may utilize TAIT's independent contractor for janitorial and maintenance services at the then current rate per square foot or for other services rendered plus a fifteen percent (15%) administrative charge payable to TAIT, or employees to perform said functions, which shall be without cost to TAIT. Concessionaire shall not commit or suffer to be committed any nuisance on the Leased Premises. Concessionaire shall at all times maintain the improvements in a safe, clean, orderly, workmanlike and inviting condition at all times satisfactory to TAIT. Concessionaire shall not permit the accumulation of any rubbish, trash or other waste material in or about the Leased Premises.

Section 8.2 Utilities. Concessionaire shall be responsible for the modification and maintenance of all utility services (subject to separate metering) on the Leased Premises. This shall include any janitor services, power, gas, telephone, electricity, heating, water, sewer, and other utility services not specifically provided by TAIT. Concessionaire shall pay when the

Excerpt from:

CARGO FACILITY LEASE AGREEMENT

by and between

TULSA AIRPORTS IMPROVEMENT TRUST

AND

UNITED PARCEL SERVICE, INC.

limited to, the effectiveness or accessibility of the drainage, sewage, water, communications and fire protection, utility, electrical, security or other systems installed or located from time to time at the Airport.

Section 6.5 **Utilities**. TAIT reserves the right to provide separate metering of any or all utilities associated with Lessee's Leased Premises during the Term of this Agreement. In such event, Lessee shall pay when the same comes due, all utility and other charges incurred based on such separate metering and such utility costs will not be included in the development of Rents for Lessee's Leased Premises.

Section 6.6 **Maintenance and Care of Lessee's Leased Premises**. Lessee shall, at its expense, do and perform all maintenance necessary to keep Lessee's Leased Premises and other property and improvements thereon, in a clean, orderly and workmanlike condition and appearance at all times, reasonable wear and tear excepted. TAIT, in its reasonable judgment, may determine the quality of such maintenance at all times, provided, however, this requirement shall not be construed to mean Lessee shall have maintenance, cleaning and upkeep responsibilities designated to be those of TAIT pursuant to Exhibit B hereto.

Notwithstanding the foregoing, Lessee shall have the option of choosing to provide for janitorial services in Lessee's Leased Premises using its own staff or subcontractor or having TAIT, through its designated subcontractor, provide such janitorial services subject to Lessee's reimbursement to TAIT of TAIT's costs associated therewith. In the event Lessee opts to provide such janitorial services, it shall be required to comply with the indemnity and insurance provisions outlined in Article X.

Lessee shall not commit or suffer to be committed any nuisance on Lessee's Leased Premises. Lessee shall not permit the accumulation of any rubbish, trash or other waste material in or about Lessee's Leased Premises. Lessee shall not permit the accumulation of storage containers and other unsightly items used in its Lessee operations in areas that are visible to the public.

Section 6.7 **Operation of Equipment**. In addition to its other responsibilities for maintenance, cleaning and operation pursuant to Exhibit B, as may be amended, supplemented, or modified from time to time by the parties, Lessee shall safely operate all Lessee Equipment located on the Lessee's Leased Premises and on the Aircraft Operating Area.

Article VII

TAIT's Right to Enter and Make Repairs

Section 7.1 **TAIT's Right to Enter**. TAIT and its authorized officers, employees, agents, contractors, subcontractors and other representatives (including but not limited to the Airport's Fire Marshall's Office) shall have the right, after reasonable notice (except in the case of an emergency) and with as little interruption to Lessee's operations as is reasonably practicable, to enter upon Lessee's Leased Premises for the following

j. **Voluntary Programs.** Should TAIT undertake any voluntary programs designed to improve environmental conditions, including, but not limited to, solid waste recycling programs, clean-fuel vehicle programs, or similar programs, Lessee agrees to undertake a good faith review of the program and shall consider participating. Should any such programs be mandated by any federal or state governmental agency, Lessee agrees to comply with such mandates to the extent required by Applicable Environmental Laws; provided, however, Lessee reserves the right to challenge any such mandates.

ARTICLE XI

Governmental Requirements

Section 11.1 Governmental Requirements - General.

a. Lessee shall comply with all Governmental Requirements applicable to Lessee's use and operation at the Airport. Without limiting the generality of the foregoing, Lessee shall at all times use and occupy the Airport in strict accordance with all applicable rules, regulations and security plans that may be imposed by the TSA, FAA or TAIT, the Authority or the City with respect to the Airport and the operations thereof. This Agreement is subject and subordinate to the provisions of any agreement heretofore or hereafter made between TAIT, the Authority and/or the City and the U.S. Government relative to the financing, operation or maintenance of the Airport, the execution of which has been required as a condition precedent to the transfer of federal rights or property to TAIT, the Authority or the City for Airport purposes, or for the expenditure of federal funds for the financing, maintenance, operation or the development of the Airport, including the expenditure of federal funds for development of the Airport in accordance with the provisions of the Federal Aviation Act of 1958, as amended from time to time, or any airport improvement program, law or regulation or successor program, law or regulation.

b. In the event that the FAA or the TSA require modifications or changes in this Agreement as a condition precedent to the granting of funds or for the certification, operation or improvement, rehabilitation, development or expansion of the Airport, or otherwise, Lessee agrees to consent (without further consideration) to such amendments, modifications, revisions, supplements or deletions of any of the terms, conditions or requirements of this Agreement as may be reasonably required to satisfy the FAA or TSA requirements.

c. Lessee shall procure, and require all its subsidiaries or assignees to procure, from all governmental authorities having jurisdiction over the operation of Lessee hereunder, all licenses, franchises, certificates, permits or other authorizations, including all environmental permits or authorizations which may be necessary for the conduct of Lessee's business at the Airport.

d. Lessee shall require its guests and invitees and those doing business with it to comply with all Governmental Requirements relating to the conduct and operation of Lessee's business at the Airport.

Appendix 3: Sample Tracking Spreadsheet

TUL Annual Waste Generation and Management (tons) 2013 to 2015

	<i>Recycle</i>			Total Recycle	Energy from Waste	Landfill	Total
	<i>Office Paper</i>	<i>Plastic & Aluminum</i>	<i>Cardboard</i>				
2013	5.5	2.2	16.7	24	613	196	834
2014	5.2	3.9	16.7	26	700	156	881
2015	11.9	4.1	17.7	34	698	221	953
2016							
2017							
2018							
2019							
2020							
	<i>Average</i>			28	670	191	889

TUL Annual Recycling, EfW, and Landfill Rates (percent) 2013 to 2015

	<i>Recycle</i>			Total Recycle	Energy from Waste	Landfill	Total
	<i>Office Paper</i>	<i>Plastic & Aluminum</i>	<i>Cardboard</i>				
2013	22.5%	9.2%	68.4%	3%	74%	24%	100%
2014	20.0%	15.0%	64.9%	3%	79%	18%	100%
2015	35.2%	12.2%	52.6%	4%	73%	23%	100%
2016							
2017							
2018							
2019							
2020							
	<i>Average</i>			3%	75%	21%	100%

