Appendix F
RECYCLING PLAN

AIRPORT RECYCLING, REUSE, and WASTE REDUCTION

REGULATORY GUIDELINES

FAA Modernization and Reform Act of 2012

The *FAA Modernization and Reform Act of 2012* (FMRA), which amended Title 49, United States Code (USC), included several changes to the Airport Improvement Program (AIP). Two of these changes are related to recycling, reuse, and waste reduction at airports.

- Section 132(b) of FMRA expanded the definition of airport planning to include "developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit."

- Section 133 of FMRA added a provision requiring airports that have or plan to prepare a master plan, and that receive AIP funding for an eligible project, to ensure that the new or updated master plan addresses issues relating to solid waste recycling at the airport, including:
    - The feasibility of solid waste recycling at the airport;
    - Minimizing the generation of solid waste at the airport;
    - Operation and maintenance requirements;
    - A review of waste management contracts; and
    - The potential for cost savings or the generation of revenue.

State of Arizona Solid Waste Management Plan

The *Arizona Solid Waste Management Plan* (1981)[1] was adopted to promote environmentally sound waste management. General goals of the waste management plan include:

- Promote improved and environmentally sound methods of solid waste management and disposal;

- Promote recovery and reuse of valuable material and energy resources from solid waste;

- Provide policy and procedural guidance to state, substate, and local agencies in the proper management of solid waste; and

- Fulfill requirements of the *Resource Conservation and Recovery Act* (RCRA) and secure the state's continued eligibility for federal financial assistance.

At this time, there is no state law or regulation addressing solid waste management reduction thresholds. However, other means such as education, outreach, voluntary recycling, and non-profit organizations have been employed to reduce the quantity of solid waste in Arizona.

SOLID WASTE

Typically, airport sponsors have authority over waste handling services in facilities they own and operate, such as the passenger terminal building, airport-owned t-hangars, and maintenance facilities. Tenants of airport-owned buildings/hangars or tenants that own their own facilities are typically responsible for coordinating their own waste handling services. While the focus of this plan is airport-operated facilities, the airport should work to incorporate facility-wide strategies that create consistency in waste disposal mechanisms. This would ultimately result in the reduction of materials sent to the landfill.

For airports, waste can generally be divided into eight categories:[2]

- **Municipal Solid Waste** (MSW) is more commonly known as trash or garbage consisting of everyday items that are used and then discarded, i.e., product packaging.

- **Construction and Demolition Waste** (C&D) is considered non-hazardous trash resulting from land clearing, excavation, demolition, renovation or repair of structures, roads and utilities, including concrete, wood, metals, drywall, carpet, plastic, pipe, cardboard, and salvaged building components. C&D is also generally labeled as MSW.

- **Green Waste** is a form of MSW yard waste consisting of tree, shrub and grass clippings, leaves, weeds, small branches, seeds, and pods.

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1 Arizona Department of Environmental Quality *Arizona Solid Waste Management Plan* (March 1981) (https://legacy.azdeq.gov/environ/waste/solid/)
2 Recycling, Reuse and Waste Reduction at Airports, FAA (April 24, 2013)

- **Food Waste** includes unconsumed food products or waste generated and discarded during food preparation and is also considered MSW.

- **Deplaned Waste** is waste removed from passenger aircrafts. Deplaned waste includes bottles, cans, mixed paper (newspapers, napkins, paper towels), plastic cups, service ware, food waste, and food-soiled paper or packaging.

- **Lavatory Waste** is a special waste that is emptied through a hose and pumped into a lavatory service vehicle. The waste is then transported to a triturator[3] facility for pretreatment prior to discharge in the sanitary sewage system. Due to the chemical in lavatory waste, it can present environmental and human health risks if mishandled. Caution must be taken to ensure lavatory waste is not released to the public sanitary sewerage system prior to pretreatment.

- **Spill Clean and Remediation Wastes** are also special wastes and are generated during cleanup of spills and/or the remediation of contamination from several types of sites on an airport.

- **Hazardous Wastes** are governed by RCRA, as well as the regulations in 40 Code of Federal Regulations (CFR) Subtitle C, Parts 260 to 270. The U.S. Environmental Protection Agency (EPA) developed less stringent regulations for certain hazardous waste, known as universal waste, described in 40 CFR Part 237, *The Universal Waste Rule*.

As seen on **Exhibit F1**, there are multiple areas where Laughlin/Bullhead International Airport potentially contributes to the waste stream, including the terminal and pilot's lounge, airfield, hangars, airport construction projects, the aircraft rescue and firefighting building (ARFF), and airport traffic control tower. To create a comprehensive waste reduction and recycling plan for the airport, all potential inputs must be considered.

EXISTING SERVICES

Currently, waste management at the airport is managed by the airport through an agreement with Republic Services. The airport has two MSW dumpsters at the airport. The first is located by the terminal building, the second is located by the ARFF building. The dumpsters are typically emptied five times a week. No information is available regarding the weight of MSW hauled or the cost of service. Generally, waste management is monitored by airport maintenance, but there is not a designated individual at the airport to oversee waste management for the facility.

At this time, there is no recycling program at Laughlin/Bullhead International Airport. The city discontinued the city-wide recycling program on August 31, 2020.[4]

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3 A triturator facility turns lavatory waste into fine particulates for further processing.

4 Bullhead City, AZ *Trash, Recycling, and Bulky Item Pickup* (https://www.bullheadcity.com/community/trash-recycling-bulky-item-pickups).

AIRPORT WASTE STREAMS

AIRPORT AREA	POTENTIAL INPUTS	POTENTIAL OUTPUTS
TERMINAL & ADMINISTRATION OFFICE _AIRPORT_	Cafe Passengers Employees	Food Waste, Paper Plastic, Aluminum Cans Trash, Grease & Oil Green Waste Deplaned Waste
AIRFIELDS	Aircraft Operations	Runway Rubber Green Waste
AIRCRAFT	Aircraft Ground Support Equipment (GSE)	Vehicle Waste Plastic Wastewater Hazmat
AIRPORT CONSTRUCTION	Construction Re-Construction Demolition	Reused Concrete Reused Asphalt Vehicle Waste Soils, Building Materials Wood, General Waste
FLIGHT KITCHENS	Aircraft Food Services	Food Waste Waste Water Plastic
AIRPORT TRAFFIC CONTROL TOWER	Employees	Food Waste Paper, Plastic Aluminum Cans Trash
AIRCRAFT RESCUE & FIREFIGHTING	Employees	Food Waste Paper, Plastic Aluminum Cans Trash, Grease & Oil Green Waste

Source: Recycling, Reuse, and Waste Reduction at Airports, FAA (April 24, 2013)

Exhibit F1
WASTE STREAMS

SOLID WASTE MANAGEMENT SYSTEM

Airports employ either a *centralized* or a *decentralized* waste management system when managing solid waste and recycling efforts at their facility. The differences between these two methods are summarized on **Exhibit F2** and are discussed in further detail below.

- **Centralized waste management system.** A centralized waste management system allows the airport to provide receptacles for all airport tenants for the collection of waste, recyclables, or compostable materials and waste is collected on the same schedule by a single provider.[5] This strategy can be inefficient for some airports as it requires more effort and oversight on the part of airport management. However, the centralized system is advantageous in that there are less players involved in the overall management of the solid waste and allows greater control by the airport over the type, placement, and maintenance of dumpsters, thereby saving space and eliminating the need for each tenant to have their own containers.

- **Decentralized waste management system.** Under a decentralized waste management system, the airport provides waste containers and contracts for the hauling of waste materials in airport-operated spaces only. Airport tenants such as fixed-base operators, retail shops, and others manage the waste from their leased spaces with separate contracts, billing, and hauling schedules. A decentralized waste management system can increase both the number of receptacles on airport property and the number of trips by a waste collection service provider, should the collection schedule for the tenant differ from the airport.

The airport provides a dumpster by the terminal building which is available for use by all tenants and airlines. The airport's fixed base operator (FBO), Signature Flight Support, has their own MSW dumpster. Therefore, since the FBO manages their own MSW service, the airport operates under a decentralized waste management system.
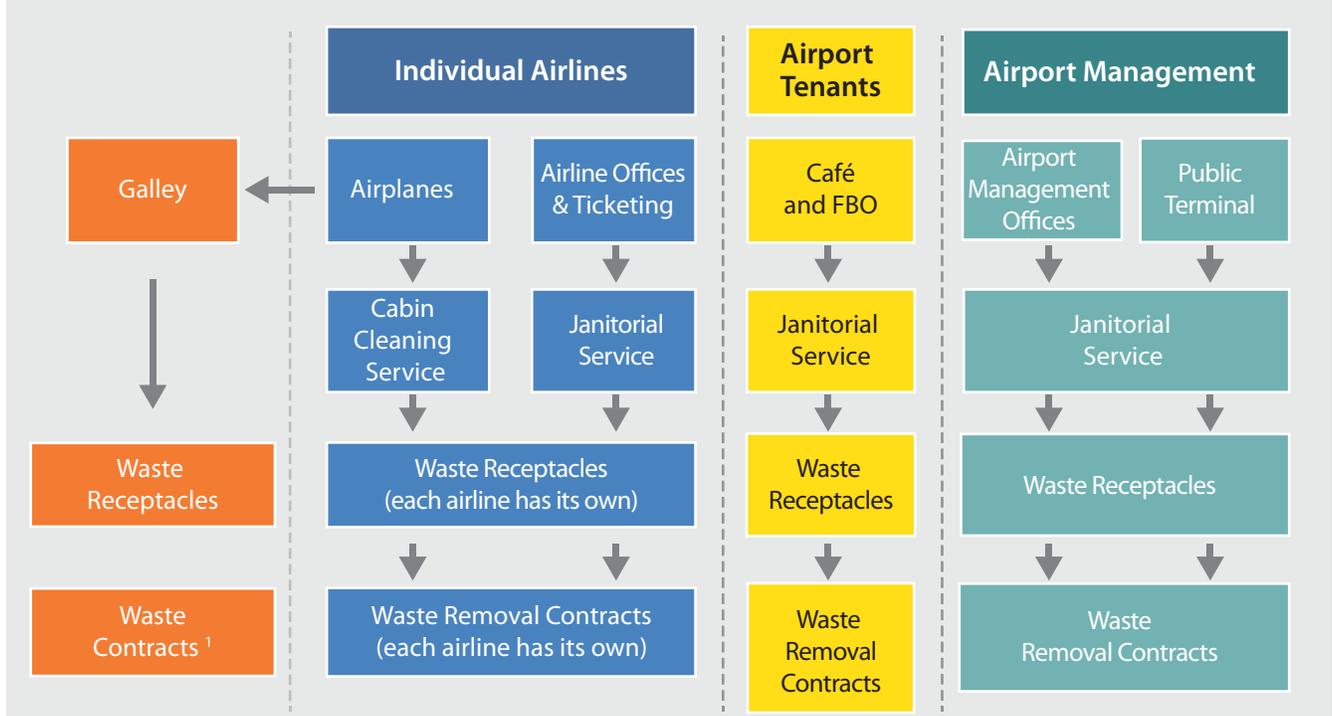
GOALS AND RECOMMENDATIONS

Solid Waste Reduction Goals

Although Bullhead City does not currently have a formal city-wide recycling program, there are other opportunities for improvement to reduce the amount of waste generated by the airport. **Table F1** outlines objectives that could help reduce waste generation. To increase the effectiveness of tracking progress at the airport, a baseline state of all suggested metrics should be established to provide a comparison over time.
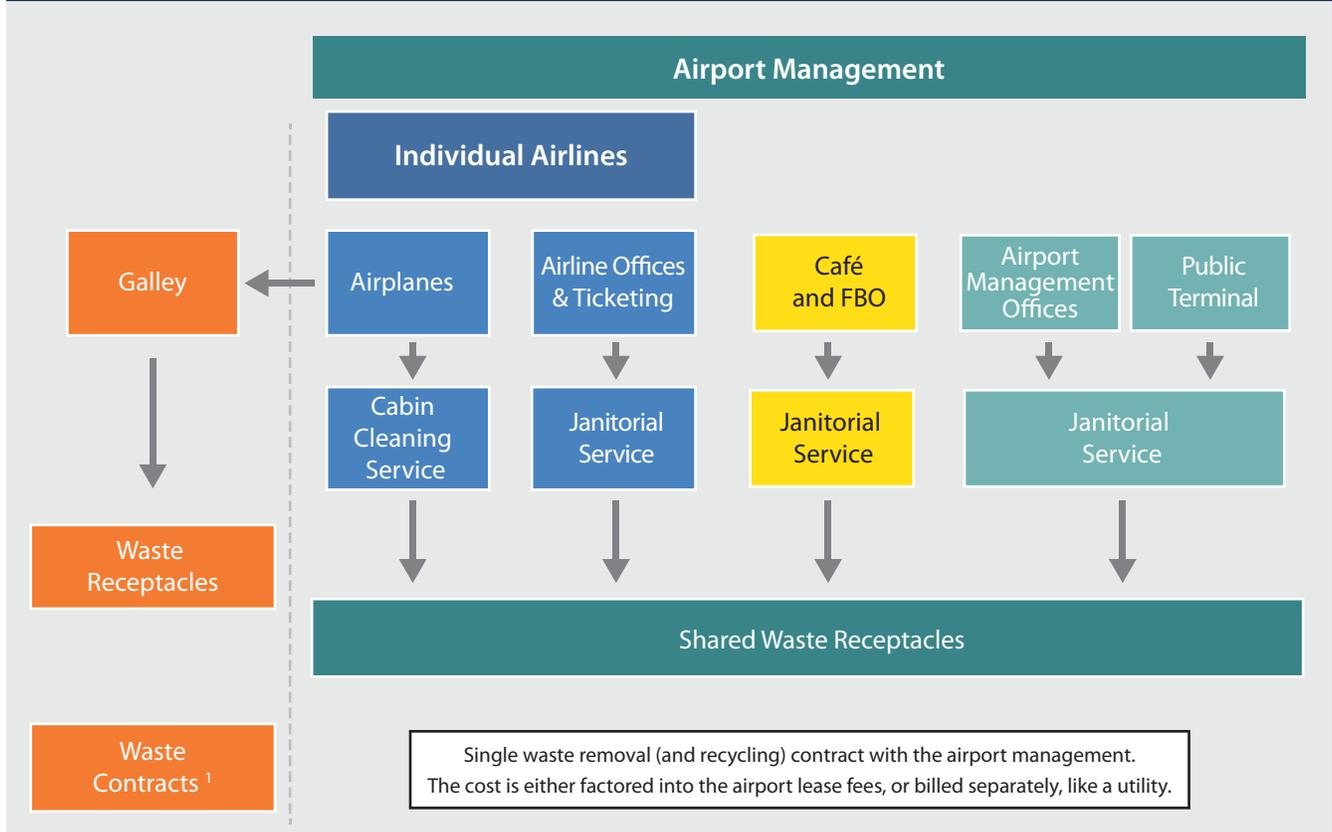
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5 *Airport Waste Management and Recycling Practices* (2018). The National Academies of Sciences, Engineering, and Medicine Airport Cooperative Research Program, Synthesis 92.

Components of a Decentralized Airport Waste Management System

Individual Airlines

Airport Tenants

Airport Management

Galley ← Airplanes | Airline Offices & Ticketing

Café and FBO

Airport Management Offices | Public Terminal

Cabin Cleaning Service | Janitorial Service

Janitorial Service

Janitorial Service

Waste Receptacles

Waste Receptacles (each airline has its own)

Waste Receptacles

Waste Receptacles

Waste Contracts [1]

Waste Removal Contracts (each airline has its own)

Waste Removal Contracts

Waste Removal Contracts

Components of a Centralized Airport Waste Management System

Airport Management

Individual Airlines

Galley ← Airplanes | Airline Offices & Ticketing

Café and FBO

Airport Management Offices | Public Terminal

Cabin Cleaning Service | Janitorial Service

Janitorial Service

Janitorial Service

Waste Receptacles

Shared Waste Receptacles

Waste Contracts [1]

Single waste removal (and recycling) contract with the airport management.
The cost is either factored into the airport lease fees, or billed separately, like a utility.

[1] Galleys usually manage their own waste even if an airport relies on a centralized system
Source: Natural Resources Defense Council, Trash Landings: How Airlines and Airports Can Clean Up Their Recycling Programs, December 2006.

TABLE F1
Waste Reduction Goals
Laughlin/Bullhead International Airport – Bullhead City, AZ

Goals	Objectives
Reduce amount of solid waste generated	Switch to online bill pay to eliminate monthly paper bills
	Conduct a waste audit to identify most common types of waste
	Eliminate purchase of items that are not recyclable (i.e. Styrofoam, plastic bags)
Reuse of materials or equipment	Reuse grass clippings as mulch
	Offer reusable dishes to employees
	Reuse cardboard boxes for storage

Source: Coffman Associates, Inc.

Recommendations

To maximize waste reduction at the airport, the following recommendations are made:

- **Create a centralized waste management system at the airport.** The airport should actively engage Signature Flight Support to create a centralized waste management system at the airport to streamline waste management efforts.

- **Assign the responsibility of waste management to a dedicated individual(s).** Having one person oversee and manage solid waste at the airport will create efficient and cost saving solutions to solid waste management. People dedicated to this operational aspect of the airport will have a familiarity with processes and can help identify areas of improvement and cost-cutting measures.

- **Audit the current waste management system.** The continuation of an effective program requires accurate data of current waste rates. There are several ways an airport can gain insight into their waste stream, such as requesting weights from the hauler, tracking the volume, or reviewing the bills. But managing the waste system first starts with a waste audit. A waste audit is an analysis of the types of waste produced and is the most comprehensive and intensive way to assess waste stream composition and opportunities for waste reduction. A waste audit should include the following actions:

  o Examination of records
    - Waste hauling and disposal records and contracts
    - Supply and equipment invoices
    - Other waste management costs (commodity rebates, container costs, etc.)
    - Track waste from the point of origin
    - Establish a baseline for metrics

  o Facility walk-through conducted by the airport
    - Qualitative waste information to determine major waste components and waste-generating processes
    - Identify the locations of the airport that generate waste

- Identify what type of waste is generated by the airport to determine what can be reduced or reused
- Understanding waste pickup and hauling practices

  o Waste sort to provide quantitative data on total airport waste generation

- **Create a tracking and reporting system.** Continuing to track solid waste generated will allow the airport to identify areas where a significant amount of waste is generated and will help estimate annual waste volumes. Understanding the cyclical nature of waste generation will allow the airport to estimate costs and will identify areas of improvement.

- **Reduce waste through controlled purchasing practices.** The airport can control the amount of waste generated by prioritizing the purchase of items or supplies that are reusable, compostable, or made from recycled materials.

- **Incorporate an airport-wide waste reduction strategic plan.** Designing an airport-wide waste reduction strategic plan will create consistency in waste deposal mechanisms, ultimately resulting in the reduction of materials sent to the landfill.

If Bullhead City reestablishes a city-wide recycling program, the following recommendations are made for airport participation.

- **Initiate a recycling program at the airport.** To guarantee the airport reduces the amount of waste hauled to the landfill, materials that cannot be reused or avoided should be recycled, if possible. The airport should review internal procedures to ensure there are no unacceptable items contaminating recycling containers, or recyclables thrown in the trash. Clearly marked signage of what is and is not accepted placed near the solid waste and recycling containers is another significant component of a consistent, effective recycling program. Laughlin/Bullhead International Airport would actively work with Republic Services to ensure waste and recycling containers are right sized for the existing operation, as well as be on a collection schedule that picks up only when the containers are full.

- **Provide ongoing tenant education.** It is crucial to encourage tenant participation to assure buy-in of the airport's new recycling program. To guarantee recycling is part of the airport's everyday business, airport administration can provide training and educational support to personnel, tenants, and others who conduct business at the airport. In-person meetings with airport tenants could be held to create mutual understanding of the airport's solid waste and recycling goals and how tenants play a vital role in the airport's overall success.