

KANSAS CITY
Aviation

Airport Master Plan

KANSAS CITY DOWNTOWN AIRPORT – WHEELER FIELD

Appendix K

Recycling Plan

Appendix K
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 the 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 the 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 study addresses issues relating to solid waste recycling, 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 MISSOURI SOLID WASTE MANAGEMENT

The Missouri Department of Natural Resources, Division of Environmental Quality's Waste Management Program (WMP) is the permitting authority for solid waste permits and licenses in Missouri. The state is divided into 20 solid waste management districts that implement recycling services and other

alternatives to waste disposal at the local level using grants received from the WMP.[1] All of Clay County, including MKC, is located in District E, the Mid-America Regional Council Solid Waste Management District. Additionally, the City of Kansas City, Missouri Department of Environmental Management is responsible for conducting facility compliance assessments and inspections at City owned and operated properties.[2]

SOLID WASTE

Typically, airport sponsors have purview over waste-handling services in facilities they own and operate such as the airport-owned hangars and maintenance facilities. Tenants of airport-owned buildings/hangars or tenants that own their own facilities are usually 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.[3]

- **Municipal Solid Waste** (MSW), more commonly referred to as trash or garbage, consists of everyday items that are used and then discarded, such are 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. This includes concrete, wood, metals, drywall, carpet, plastic, pipe, cardboard, and salvaged building components. C&D is also generally labelled 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.
- **Food Waste** includes unconsumed food products or waste generated and discarded during food preparation. This is also considered MSW.
- **Deplaned Waste** is waste removed from passenger aircraft. Deplaned waste includes bottle, cans, mixed paper (newspapers, napkins, paper towels), plastic cups, service ware, food waste, and food-soiled paper/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[4] facility for pretreatment prior to discharge in the sanitary sewage system. Chemicals in lavatory waste can present environmental

[1] Missouri Department of Natural Resources, Solid Waste Management Districts, (https://dnr.mo.gov/waste-recycling/reduce-reuse-recycle/solid-waste-management-districts), accessed September 2024
[22] City of Kansas City, Environmental Compliance (https://www.kcmo.gov/city-hall/departments/city-manager-s-office/office-of-environmental-quality/environmental-compliance), accessed September 2024
[3] Recycling, Reuse and Waste Reduction at Airports, FAA (April 24, 2013) (http://www.faa.gov/sites/faa.gov/files/airports/resources/publications/reports/RecyclingSynthesis2013.pdf)
[4] A triturator facility turns lavatory waste into fine particulates for further processing.

and human health risks if mishandled. Therefore, caution must be taken to ensure lavatory waste is not released into the public sanitary sewerage system prior to pretreatment.

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

- **Hazardous Wastes** are governed by the *Resource Conservation and Recovery Act* (RCRA), as well as regulations for certain hazardous waste, known as universal waste, described in 40 CFR Part 237, *The Universal Waste Rule.* Common sources of aviation-related hazardous waste are included below:
    - Solvents
    - Caustic part washes
    - Heavy metal paint waist and paint chips
    - Wastewater sludges from metal etching and electroplating
    - Unused explosives and monomers
    - Waste fuels and other ignitable products
    - Unusable water conditioning chemicals
    - Nickel cadmium batteries
    - Waste pesticides

As seen on **Exhibit K1**, there are multiple areas where the airport potentially contributes to the waste stream, including hangars and airport construction projects. To create a comprehensive waste reduction and recycling plan for the airport, all potential inputs must be considered.

EXISTING SERVICES

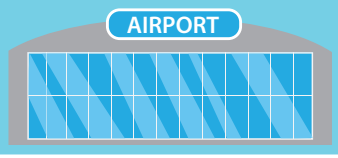
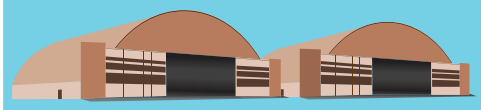
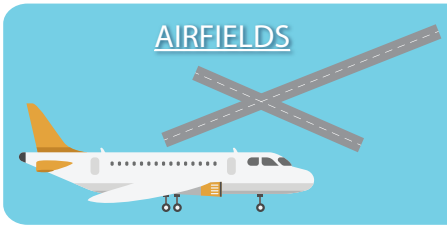
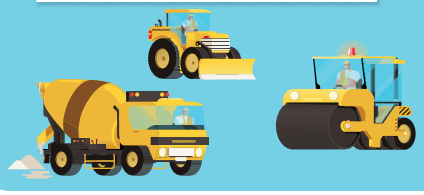
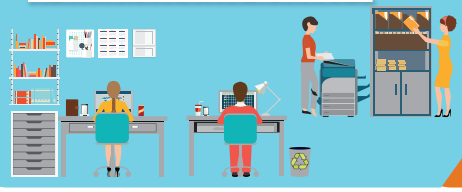
MKC currently has a GA terminal, ATCT, airfield, and hangar commingled recycling program. Emphasis of the current program is on recycling paper goods. There are two recycling bins and four trash bins provided in the locations identified on **Exhibit K2.** The recycling bin and trash service account at MKC is managed by the Kansas City Public Works Department. The bins are emptied weekly by the city's service provider, GFL Environmental Inc.

SOLID WASTE MANAGEMENT SYSTEM

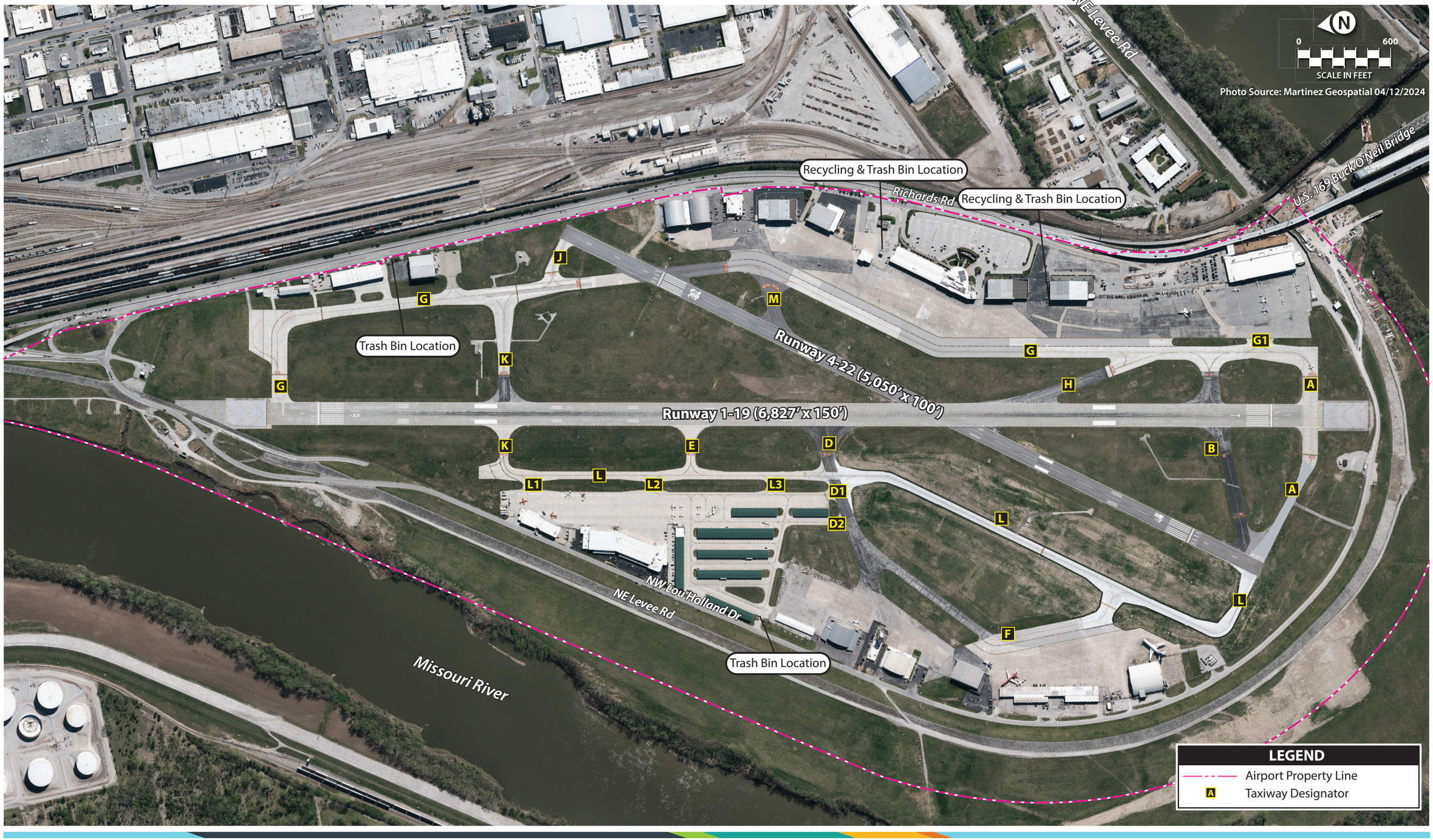
Airports generally utilize either a centralized or a decentralized waste management system. The differences between these two methods are described below and summarized in **Exhibit K3.**

- **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; however, airport tenants manage the waste from their leased spaces with separate contracts, billing, and hauling schedules. A decentralized waste management system can increase the number of receptacles on airport property and the number of trips by a waste collection service provider, should tenants' and the airport's collection schedules differ.

AIRPORT WASTE STREAMS

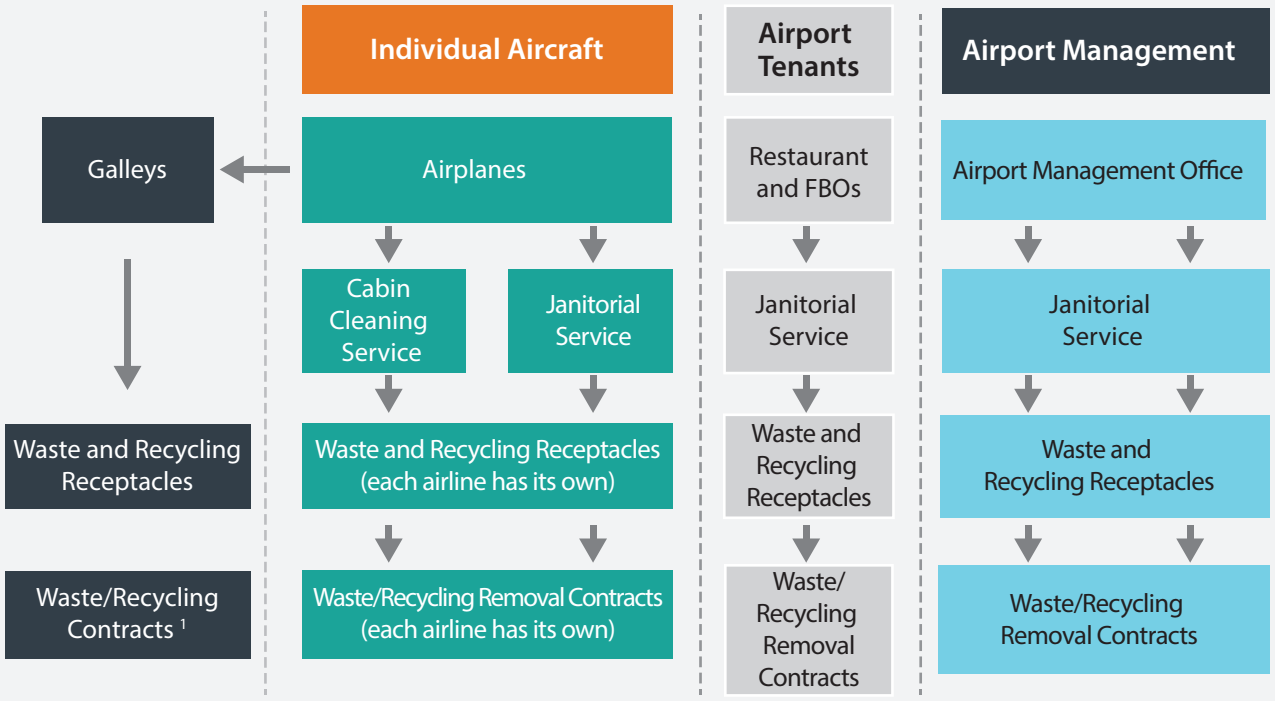
AIRPORT AREA	POTENTIAL INPUTS	POTENTIAL OUTPUTS
TERMINALS 	Restaurants Shops Passengers Employees	Food Waste, Paper Plastic, Aluminum Cans Trash, Grease & Oil Green Waste Deplaned Waste
AIRPORT TRAFFIC CONTROL TOWER 	Employees	Paper, Trash, Aluminum Cans
HANGARS 	Goods Movements	Plastic Wood Vehicle Waste (Tires & Fluids)
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
ADMINISTRATIVE OFFICES 	Employees	Food Waste Paper, Plastic Aluminum Cans Trash

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

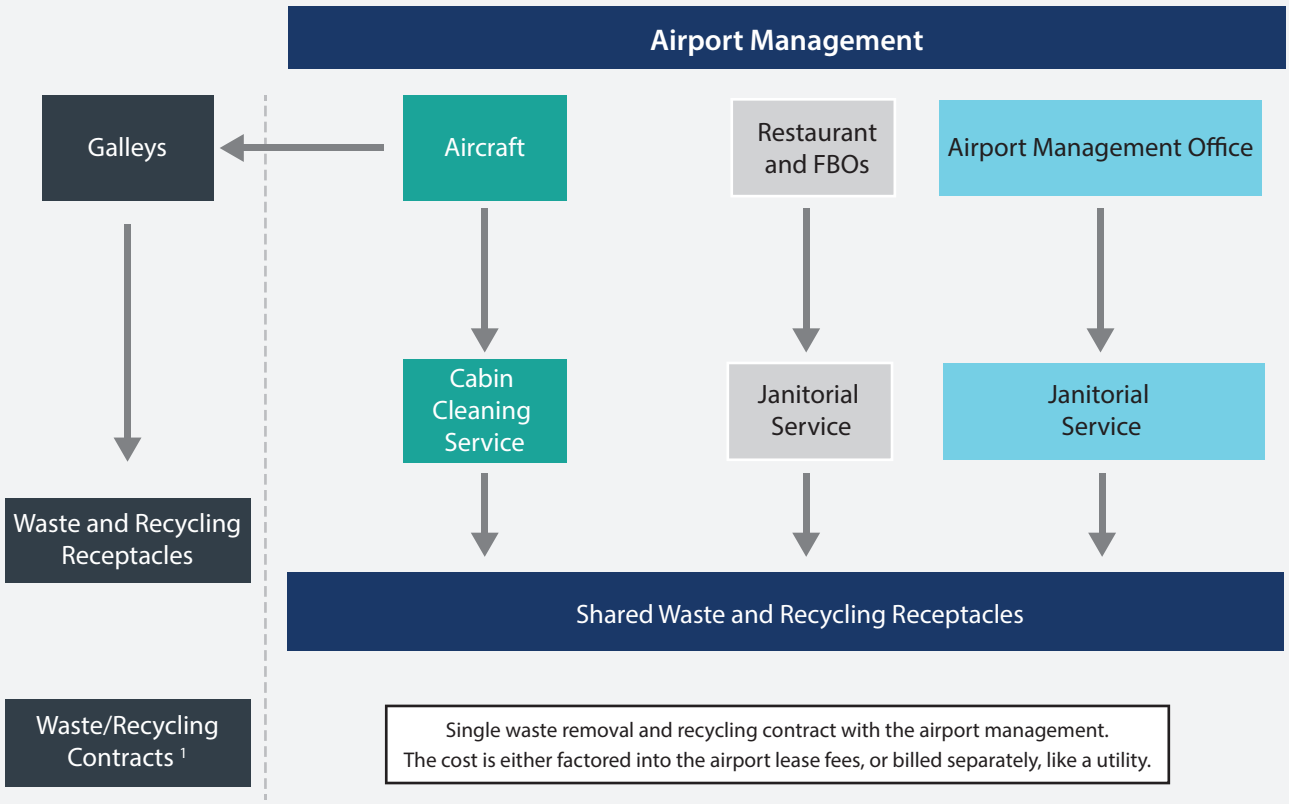

NE Levee Rd
N
0
600
SCALE IN FEET
Photo Source: Martinez Geospatial 04/12/2024
Recycling & Trash Bin Location
Richards Rd
Recycling & Trash Bin Location
U.S. 169 Buck O'Neil Bridge
J
G
M
Trash Bin Location
K
G
Runway 4-22 (5,050' x 100')
G
G1
H
A
Runway 1-19 (6,827' x 150')
K
E
D
B
L
L1
L2
L3
D1
A
D2
L
NW Lou Holland Dr
NE Levee Rd
L
F
Missouri River
Trash Bin Location
LEGEND
Airport Property Line
A
Taxiway Designator

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Components of a Decentralized Airport Waste Management System



Components of a Centralized Airport Waste Management System



[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.

- **Centralized Waste Management System –** With a centralized waste management system, the airport provides receptacles for the collection of waste, recyclables, or compostable materials and contracts for their removal by a single local provider.[5] The centralized waste management system allows for more participation from airport tenants who may not be incentivized to recycle on their own and can reduce the overall cost of service for all parties involved. A centralized 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 it has fewer working components involved in the overall management of the solid waste and recycling efforts. It also allows greater control by the city over the type, placement, and maintenance of dumpsters, thereby saving space and eliminating the need for tenants to have their own containers.

Although the airport manages solid waste collection for its T-hangar tenants and terminal, the airport primarily utilizes a decentralized waste management system, and other airport tenants have separate contracts for solid waste pickup.

GOALS AND RECOMMENDATIONS

SOLID WASTE AND RECYCLING GOALS

Table K1 outlines objectives that could help reduce waste generation and increase recycling efforts at the airport. 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.

TABLE K1 | Waste Management and Recycling Goals – Kansas City Downtown Airport

Goals	Objectives
1. Reduce amount of solid waste generated	Conduct a waste audit to identify common types of waste.
	Consider creating a tracking and reporting system.
	Evaluate eliminating purchase of items that are not recyclable (e.g. Styrofoam, plastic bags).
	Incorporate an airport-wide waste reduction strategic plan.
2. Increase amount of material recycled	Consider creating a centralized waste management system at the airport.
	Enhance the existing recycling program at the airport.
	Evaluate recycling electronic waste (e-waste).
	Provide ongoing education for airport employees.
	Provide tenant education.
	Expand recycling marketing and promotion efforts throughout public areas.
	Recommend contractors implement strategies to reduce, reuse, and recycle construction and demolition (C&D) waste.

Source: Coffman Associates, Inc. analysis

[5] *Airport Waste Management and Recycling Practices* (2018) The National Academies of Sciences, Engineering, and Medicine Airport Cooperative Research Program, Synthesis 92.

RECOMMENDATIONS

To maximize waste reduction and increase recycling efforts at the airport, the following recommendations are made:

Goal #1: Reduce the amount of solid waste generated.

- **Audit the current waste management system.** The continuation of an effective program requires accurate data on current waste and recycling rates. An airport can gain insight into its waste stream in several ways, such as requesting weights from the hauler, tracking the volume, or reviewing the bills; however, managing the waste system starts with a waste audit, which is an analysis of the types of waste produced. A waste audit is the most comprehensive and intensive way to assess waste stream composition, opportunities for waste reduction, and capture of recyclables, and should include the following actions:
    - 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.
    - Facility walk-through conducted by the airport
        - Gather qualitative waste information to determine major waste components and waste-generating processes.
        - Identify the locations on the airport that generate waste.
        - Identify what types of waste are generated by the airport to determine what can be reduced, reused, or recycled.
        - Improve understanding of waste pickup and hauling practices.
    - Sort Waste
        - Provides quantitative data on total airport waste generation
        - Allows problem-solving design and enhances the recycling program for the airport

- **Create a tracking and reporting system.** Track solid waste generated to allow the airport the opportunity to identify areas where a significant amount of waste is generated, which will help the airport estimate annual waste volumes. Understanding the cyclical nature of waste generation will allow the airport to estimate costs and will identify areas of improvement. Since the airport engages in recycling services, the airport can track recycling rates and waste quantities to identify cost-saving measures that are currently unidentified simply due to the lack of quantitative data.

- **Reduce waste through controlled purchasing practices and the consumption of nonessential products.** The airport can control the amount of waste generated by prioritizing the purchase of items or supplies that are reusable, recyclable, 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 disposal mechanisms, ultimately resulting in the reduction of materials sent to the landfill.

Goal #2: Increase the amount of material recycled.

- **Create a centralized waste management system at the airport.** Currently, MKC participates in a decentralized waste management system, since airport tenants are responsible for overseeing their own waste management. Airport staff could consider engaging tenants to create a centralized waste management system at the airport to streamline waste management and recycling efforts at MKC.

- **Enhance the existing recycling program at the airport.** To guarantee the airport continues to reduce 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 an effective recycling program. The existing paper products recycling program could be expanded to include aluminum, cardboard, plastics, glass, and/or electronics.

- **Recycle electronic waste (e-waste).** MKC and its tenants should consider creating a standardized program where electronics can be picked up and sent to a registered electronics recycling business.

- **Provide ongoing education for airport employees.** In order to minimize waste within the airport, it is crucial to inform and provide airport employees with a thorough education on waste management at both an individual and group level. As part of the onboarding process, new employees should be given the tools needed to achieve a thorough understanding of the airport's solid waste and recycling goals.

- **Provide tenant education.** It is crucial to encourage tenant participation to ensure buy-in of the airport's recycling efforts. To ensure recycling is part of the airport's everyday business, airport administration can provide training and education to support 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.

- **Expand efforts to market and promote recycling throughout public areas.** Since the airport does not provide passenger service to the general public, indoor public areas are limited. However, signage and promotional material could be implemented at the general aviation terminal to remind tenants and fueling customers of the airport's recycling initiatives. Additionally, recycling-specific receptacles could be provided in the airport's public areas.

- **Recommend contractors to implement strategies to reduce, reuse, and recycle construction and demolition (C&D) waste.** Upfront minimum goals for recycling, reusing and/or salvaging non-hazardous C&D debris can be established at the beginning of any airport construction project to include percent requirements. Typical construction related products with high-recycled content include steel rebar, copper wire, other metals, wood-based products, carpet, windows, doors, framing, plastic products, and building materials.