



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: **ACTION:** Guidance on Airport Recycling, Reuse, and Waste Reductions Plans

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The purpose of this memorandum is to provide guidance on preparing airport recycling, reuse, and waste reduction plans as an element of a master plan or master plan update, within a sustainability planning document, or as a stand-alone document.

This is an initial version of the guidance. It may be updated based on stakeholder input. Direct any comments to the above point of contact.

1. Legislative Background

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

a. 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.”

b. 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 master plan addresses issues relating to solid waste recycling at the airport. This includes:

- (1) The feasibility of solid waste recycling at the airport;
- (2) Minimizing the generation of solid waste at the airport;
- (3) Operation and maintenance requirements;
- (4) Review of waste management contracts; and

- (5) The potential for cost savings or the generation of revenue.

For the purposes of this guidance, “recycling” refers to any program, practice, or opportunity to reduce the amount of waste disposed in a landfill. This includes reuse and waste reduction as well as the recycling of materials.

2. Applicability

This guidance is immediately applicable to all Federally-obligated airports that are preparing or updating an airport master plan, sustainability master plan (a master plan that includes analysis of airport sustainability initiatives), or stand-alone airport recycling, reuse, and waste reduction plan.

Preparing an airport recycling, reuse, and waste reduction plan in accordance with the format and content contained in this guidance will meet the requirements of Section 133 of the FMRA. The format and content described herein may also be used as a basis for the recycling section of an airport sustainability plan, a planning document that focuses on airport sustainability initiatives.¹ Section 7 includes additional information on the deliverables for each of these document types.

3. References

a. 49 U.S.C. § 47102(5) and 47106(a): These provisions outline the legislative requirements for airport recycling, reuse, and waste reduction plans as an element of an airport master plan.

b. [FAA Order 5100.38D, AIP Handbook](#): Published on September 30, 2014, FAA Order 5100.38D outlines AIP grant eligibility for airport recycling, reuse, and waste reduction plans, including the cost of a waste audit.

c. [FAA Synthesis Document: Recycling, Reuse, and Waste Reduction Plans at Airports](#): The Office of Airports (ARP) prepared this synthesis document in collaboration with a team of industry partners. Published on April 24, 2013, it is a resource for airport sponsors that are developing or broadening their recycling programs. The synthesis document compiles airport recycling and waste minimization best practices. Lessons learned and case studies from 16 airports are included.

d. [Advisory Circular \(AC\) 150/5200-34A, Construction or Establishment of Landfills near Public Airports](#) and [AC 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports](#): Siting criteria for waste disposal operations on or near airports are identified in these ACs. Any waste disposal operations in an airport recycling, reuse, and waste reduction plan for a federally-obligated airport must be sited in accordance with these documents.

e. Other Resources: Sources for additional information include the Airport Cooperative Research Program, U.S. Environmental Protection Agency, and airport websites. ARP personnel, airport sponsors, and others in the airport industry are encouraged to evaluate the

¹ For the purposes of AIP grant administration, an airport sustainability plan (formerly called a sustainability management plan) is the sustainability element of an airport master plan.

latest information on recycling from a variety of sources. ARP will incorporate this information into future orders, ACs, and guidance as appropriate.

4. Types of Solid Waste Generated at Airports

Airports generate various types of solid waste. This guidance addresses the recycling, reuse, and reduction of municipal solid waste (MSW) and other materials that can be legally disposed of in a 42 U.S.C. §§ 6941-6949a landfill or equivalent state-permitted facility.

Any reference to MSW for recycling, reduction, or reuse in this guidance includes construction and demolition (C&D) debris, organic compostable material such as food and yard waste, and deplaned waste. Definitions of these terms are provided below. Airports can recycle, reuse, or minimize many of the materials described below.

This guidance does not address other types of solid waste such as hazardous waste, universal waste (i.e., batteries, fluorescent bulbs, electronics, etc.), or industrial waste. These materials are often subject to Federal, state, and local laws with specific disposal and recycling requirements. The guidance applies to the following:

a. *Municipal Solid Waste (MSW)* consists of everyday items that are used and discarded. Recyclable MSW at airports includes, but is not limited to, aluminum and steel, glass bottles and containers, plastic bottles and containers, packaging, bags, paper products, and cardboard.

b. *Construction and Demolition (C&D) Debris* is generally categorized as MSW. C&D debris is any non-hazardous solid waste that results from land clearing, excavation, or construction, demolition, renovation, or repair of structures, roads, and utilities.

C&D debris includes, but is not limited to, concrete, wood, metals, soil, bricks and masonry material, asphalt, rock, stone, gravel, sand, roofing materials, drywall, carpet, plastic, pipe, rocks, earthwork, land-clearing debris, cardboard, and salvaged building components.

In some instances, C&D debris requires special handling and may be subject to special requirements. Examples include tar-impregnated roofing materials and asbestos-containing building materials. Materials that may be subject to special requirements are not addressed in this guidance.

c. *Compostables* are also categorized as MSW. They are sometimes referred to as green waste and food waste. Green waste consists of tree, shrub, and grass clippings, leaves, weeds, small branches, seeds, pods, and similar debris generated by landscape maintenance activities. Food waste is food that is not consumed, or generated during food preparation activities and discarded.

d. *Deplaned Waste* is MSW that is removed from passenger aircraft. These materials include bottles and cans, newspaper and mixed paper, plastic cups and utensils, food waste, food-soiled paper, magazines, unconsumed or surplus food, and paper towels.

With the exception of Canada, waste from international flights must be processed separately, as this waste can introduce plant pests and diseases. The United States Department of Agriculture regulates international waste. It must be handled in accordance with procedures in the [Manual for Agricultural Clearance](#). Therefore, waste from international flights is not discussed in this guidance.

5. Factors Influencing the Scope and Nature of Airport Recycling Programs

Many airports currently implement solid waste recycling programs. However, program scope varies considerably. This variability may occur due to the size and location of different airports, the amount of waste being produced, and external factors that affect the scope of recycling programs. Variables include, but are not limited to:

- a. Local markets for recyclable commodities;
- b. Cost for transport and processing recyclables;
- c. Local recycling infrastructure;
- d. Willingness of an airport and its tenants to implement recycling programs;
- e. The nature of an airport's waste stream;
- f. Competition between recycling and landfilling firms; and
- g. Airport layout and logistics.

6. Contents of an Airport Recycling, Reuse, and Waste Reduction Plan

The content and scope of an airport recycling, reuse, and waste reduction plan will vary depending on the unique conditions at each airport. For airports that already have recycling programs, certain tasks (such as a new waste audit) may not need to be completed.

Document scope is governed by the extent and accuracy of available information. This includes information on the airport's current recycling program, the types and amounts of airport waste, and factors that influence the scope of the program. Plans for small, low activity airports may also be less detailed.

Though certain tasks may not need to be completed to prepare a plan, review and documentation of each of the five (5) elements listed in the FMRA is required in airport master plans and master plan updates (including sustainability master plans) (see also 49 U.S.C. § 47106(a)(6)).

The following subparagraphs describe the sections that should be included in an airport recycling, reuse, and waste reduction plan.

- a. Facility Description and Background: This section should:

(1) Include background information about the airport. This includes, but is not limited to, airport location, hub or general aviation classification, governance, operational statistics, and layout. Airport recycling and waste collection areas can be depicted on maps and/or figures. Operational information such as number of based aircraft, number and type of aircraft operations, carriers that serve the airport, and enplaned passengers should be included as well.

(2) Describe the scope of the existing recycling program. This can be delineated between:

(a) Facilities over which the airport has direct control of waste management (i.e., public space, office space, concourses, and the airfield);

(b) Areas over which the airport has no direct control, but may have influence (i.e., tenant facilities and deplaned waste); and

(c) Areas over which the airport has no direct control or influence. These areas can be excluded from the plan. This section should identify the areas and include justification for the decision to exclude. A waste audit, described in next subsection, may be needed to complete this portion of the plan.

(3) Describe the airport's current waste management program and how it fits into the local municipality's waste management program (ordinances, requirements, permits, etc.).

The following should be included for airports with active recycling programs:

(4) Drivers for implementing/maintaining a recycling program.

(5) A description and inventory of infrastructure in place, both on and off- airport, that supports airport recycling. This includes the location of equipment and facilities used to collect, store, process, and transport waste, and compactors, recycling bins, composting bins, waste sorting facilities, and scales. Off-airport infrastructure includes accessible off-site recycling facilities, existing arrangements with hauling companies for recycling, availability of commodity markets for metals, paper, cardboard, organic material, wood, and other MSW. As stated, maps/figures can be used to depict these areas.

(6) A description of the airport's current solid waste recycling, reuse, and waste reduction efforts, including instances when tenants recycle materials. This description should include:

(a) The date recycling was initiated for various materials;

(b) Recycled or reused material, along with the quantities of various materials being diverted from the landfill. If the information is available, this should be expressed by annual volume or weight, material type, and the percentage of total generated waste; and

(c) Waste minimization efforts.

(7) A description of program performance. This should include:

- (a) Any recycling, reuse, and waste reduction goals or targets;
- (b) Performance indicators (e.g. tons of waste per passenger, percentage of total waste diverted from the landfill by waste type or area, etc.);
- (c) Description of any community outreach/stakeholder involvement during development or review of the recycling program;
- (d) Methods of reporting program performance; and
- (e) Any challenges or barriers to implementation.

If the recycling plan is an element of an airport master plan, master plan update, or sustainability planning document, some information in this section may be included in other chapters of the document. In these instances, the recycling, reuse, and waste reduction plan need only reference the applicable chapters.

b. Waste Audit: Results of a waste audit should be documented in this section. A waste audit is conducted to identify and document the source, composition, and baseline quantity of MSW waste streams generated at an airport. It should include all areas under direct control of the sponsor, and when applicable, areas over which the sponsor has influence. The baseline information can be used to identify recycling, reuse, and waste reduction opportunities and priorities, and gauge program effectiveness over time. Include:

- (1) The annual quantity and composition of generated MSW and C&D debris;
- (2) The sources and activities that generate waste; and
- (3) The generators (owners and facilities/areas) of various waste streams.

c. Review of Recycling Feasibility: This section should:

(1) Describe the technical and economic factors that currently affect the airport's ability to recycle. This includes analysis of the local market for recyclable commodities, logistical considerations (e.g., haulers, space for compactors, etc.), contractual issues (i.e., janitorial, airline consortiums, etc.), requirements on how waste is handled, haulers and landfill requirements, costs, and other factors.

(2) Reference and describe any Federal, state, or local guidelines or policies that aid or hinder recycling efforts.

(3) Identify any other incentives for implementing/maintaining a recycling program.

(4) Identify logistical constraints. This includes space for containers in certain areas, facility layouts, and access to secure areas.

d. Operation and Maintenance (O&M) Requirements: This section should describe waste handling, and the parties responsible for each area and waste stream. Include the department/section/organization responsible for implementation of each aspect of the airport's recycling program, and their roles and responsibilities. This includes data collection/reporting/tracking, collection procedures, transport to containers, procurement of containers and service(s) providers, contract management, maintenance of waste and recycling equipment, etc. O&M requirements should be articulated for each waste stream (MSW to landfills, recyclables, organic materials, and C&D debris).

e. Review of Waste Management Contracts: This section should:

(1) Describe current contracting for waste management at the airport. The purpose of this description is to identify opportunities for improving program scope and efficiency, as well as identifying constraints. Review and documentation of all contracts involving the collection, hauling, disposal, and recycling of MSW, and handling of C&D debris, should be completed.

(2) Describe how existing contracts encourage or impede the purchase/use of environmentally-preferred products (e.g., products with high recycled content, minimal packaging, capabilities for duplexing documents, environmentally-friendly cleaning products, etc.). This task can be accomplished by reviewing contracts that include responsibilities for implementing recycling program elements (e.g., janitorial contracts, tenant leases, contract specifications for construction [including tenant construction]). The nature and scope of each contract, procedure, and policy should be articulated.

(3) Identify tenant leases and service contracts with corresponding expiration, extension, and/or renewal dates. This information can signal the airport's next opportunity to add recycling, reuse, and waste reduction objectives to existing leases and contracts.

(4) Describe how waste handling and recycling is funded.

This information, when combined with the roles and responsibilities of each entity involved in the program in the preceding section, should provide a comprehensive understanding of how the recycling program functions.

f. Potential for Cost Savings or Revenue Generation: This section presents recycling program recommendations developed following review of the preceding work, and compare the cost of landfilling waste with recycling, composting, or reuse. This is accomplished through financial analysis of the overall waste management program, the current airport recycling program, and potential recommendations that will enhance and broaden the program.

The purpose of this analysis is to help airport sponsors evaluate the cost of the current program and determine if proposed enhancements should be implemented. There is a perception that recycling costs more than landfilling. This is not true in every case. The economics are dependent on the available infrastructure to support recycling, availability and proximity to commodity markets, market demand for certain materials, and the types of waste being generated at the airport.

The financial analysis should evaluate all program components. This includes, but is not limited to capital costs for containers, tipping fees, hauling cost, market/recycling rebates, and labor. The comparison of initial costs and cost reductions from robust recycling practices can result in overall savings.

The initial cost of the current program and recommended enhancements can be expressed within the annual O&M costs over some period of the life of the program. The time period an airport contemplates depends on several factors. This includes the availability of reliable financial data or a master plan's implementation period. If cost savings are realized from recycling practices, maximizing resale of commodities, and other activities, they can be expressed as annual O&M cost reductions during the same period of time.

By compiling and analyzing the information in the preceding subsections, the airport will have sufficient data to make informed solid waste management decisions over time. If recycling is not technically or economically feasible at this time, this information will help an airport determine when increased recycling might be feasible.

g. Plan to Minimize Solid Waste Generation: This section documents the final recycling, reuse, and waste reduction program recommendation(s). It is based on the information obtained in the waste audit, analysis of recycling feasibility, and financial analysis to determine the effectiveness of the current program (if one is currently in place) and identify opportunities for improvement. It should:

(1) At a minimum, document the airport's program to recycle paper (newspaper and magazines), plastic bottles and aluminum cans, and plastic cups. If external factors prevent this minimum level of recycling, the rationale should be articulated.

(2) Present the airport's plan for a comprehensive approach to reduce the amount of waste being disposed of in landfills. Objectives and targets should be established.

(3) Other factors to consider include updated arrangements/contracts/leases between the airport and tenants, new development specifications (to include containers and space for material collection, sorting, and recycling), and new purchasing policies/requirements. These should be documented and, when applicable, linked to objectives and targets.

(4) If aspects of the plan require capital improvements, these should be referenced in the plan and included in the Airport Capital Improvement Plan, as appropriate.

(5) Describe any plan recommendations that may conflict with existing plans and programs. Examples include an airport's stormwater pollution prevention plan. When applicable, identify the procedures or best management practices (such as reducing the potential for stormwater violations through operational and maintenance practices) that will address these conflicts.

(6) Include a discussion about how recycling will be contemplated and implemented as part of new development projects. When articulating these goals, the information and timeframe needed to meet the goals should be included.

(7) Discuss how the airport will track and report on the recommendations, and how this will be reviewed in order to come up with ideas to improve performance. Effective tracking and periodic review will ensure a cycle of continuous improvement is established.

(8) If known, include a description of what, if any, program enhancements will be considered in the future. This can be a later point in the planning period or during the next planning period.

(9) Earlier sections may have identified constraints to improving recycling performance that are outside of the airport's control. For example, there may be no current market for cardboard or other commodities in the area. This section should describe conditions that will trigger re-evaluation.

(10) Describe planned efforts for education and outreach to employees, tenants, and the travelling public on recycling.

7. Deliverables

a. For airport recycling, reuse, and waste reduction plans prepared in accordance with Section 133 of the FMRA, FAA must review and accept draft and final versions of the plan. In these cases, the plan may be a section or appendix in an airport master plan or master plan update. FAA review will coincide with review of the master plan.

b. Recycling, reuse, and waste reduction is typically a sustainability category in sustainability master plans.² When completing a sustainability master plan, the recycling, reuse, and waste reduction plan can be included with the other sustainability categories (i.e., emissions reduction, energy efficiency, etc.).

(1) Sustainability master plans typically include a baseline analysis of identified sustainability categories, a list of initiatives for each category, and a plan for tracking and implementing initiatives. Any recycling initiatives identified in a recycling plan should be included in that list.

(2) For airports that are preparing a stand-alone airport sustainability plan, the scope of the recycling plan may be narrower due to funding constraints, and the need to analyze multiple sustainability categories in a single document. In these cases, airports may focus on certain aspects of the recycling plan (waste audit, review of contracts, etc.) to develop a more focused set of objectives. Airports should strive to address the five (5) elements of a recycling plan in the FMRA whenever possible, as this will aid development of meaningful sustainability initiatives.

² For additional information on airport sustainability planning, consult [FAA's Airport Sustainability Webpage](#) and the AIP Handbook (FAA Order 5100.38D).

8. Updates to this Guidance

As noted earlier, the FAA will continue to update this guidance based on additional stakeholder input. In addition, this guidance will eventually be incorporated into a forthcoming update to AC 150/5070-6B, Airport Master Plans, which will supersede this guidance at that time.