Appendix U: Airport Solid Waste & Recycling

Introduction

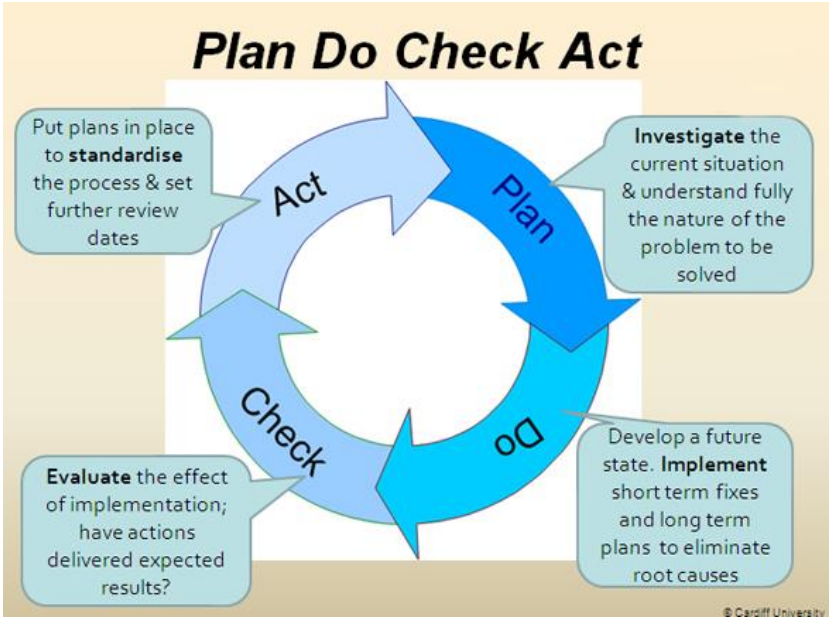
In the FAA Modernization and Reform Act of 2012 (Public Law 112-95), the Airport Improvement Program language was amended (49 USC Section 47106(a)) to include the evaluation of airport solid waste recycling. The change stipulates that the following issues will be addressed:

- Feasibility of Solid Waste Recycling at the Airport,
- Minimizing the Generation of Solid Waste at the Airport,
- Operation and Maintenance Requirements Related to Solid Waste,
- Review of Waste Management Contracts, and
- Potential Cost Savings or Generation of Revenue from Solid Waste Recycling.

To accomplish these objectives this appendix will include:

- Examination of Existing Solid Waste Handling and Recycling
  - Existing Practices including Operations and Maintenance Issues
  - Existing Waste Management Contracts
- Examination of Recycling Opportunities
- Alternatives to Minimize Generation of Solid Waste and
- Cost Savings/Revenue Potential from Recycling.

The FAA published "Recycling, Reuse and Waste Reduction at Airports – A Synthesis Document" April 24, 2013 which is an available resource for this plan. Please note, a Solid Waste Recycling plan is one element of an Environmental Management System (EMS). This appendix will not address all elements of an EMS but information regarding an EMS can be found in FAA AC 150/5050-8 "Environmental Management Systems for Airport Sponsors". The EMS concept follows the "Plan, Do, Check, Act" model which will also be the manner in which the Solid Waste Recycling can be continually evaluated and improved.



Existing Solid Waste Handling and Recycling

There are seven types of waste typically generated at an airport. These are: 1) municipal solid waste; 2) construction/demolition waste; 3) green waste; 4) food waste; 5) waste from aircraft flights; 6) lavatory waste; 7) spill cleanup/remediation waste; and 8) hazardous materials. These are further described in **Table U-1 - Waste Types**.

Table U-1 – Waste Types

Waste Types	
Waste Type	**Description**
Municipal Solid (MSW)	Consists of everyday items that are used and then discarded, such as product packaging, furniture, clothing, bottles, food scraps, and newspapers.
Construction /Demolition (C&D)	Generally categorized as MSW. However, as it can be a major component of airport waste, it has been separated into its own category in this document. C&D waste 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. In some instances, C&D waste may be subject to special requirements (e.g., tar impregnated roofing materials, asbestos containing building materials, etc.).
Green	Categorized as MSW and is also referred to as yard 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	Food that is not consumed or is the waste generated and discarded during food preparation activities. Food wastes are considered part of the MSW waste stream.
Deplaned	A type of MSW removed from passenger aircraft. These include bottles and cans, newspaper and mixed paper, plastic cups and service ware, food waste, food soiled paper, and paper towels. Waste that comes off the airplanes after flights can represent 20% of an airport's total municipal solid waste stream. The composition is roughly 30% each of paper waste, compostable food material, and non-recyclable materials, with the balance consisting of cups and beverage containers.
Lavatory	A type of special waste generated when the lavatory tanks of airplanes are emptied via hose and pumped into a lavatory service vehicle, which can be either a self-powered truck or a lavatory cart pulled by a tug. After the aircraft's lavatory tanks are emptied, they are refilled with a mixture of water and disinfecting concentrate, commonly called "blue juice." The lavatory waste removed from the aircraft is transported to a triturator facility, generally located airside near airline operations, for pretreatment prior to discharge to the sanitary sewage system and publicly owned treatment works (POTW). In the U.S., waste from international flights, except Canada, needs to be processed separately as the waste can potentially introduce plant pests and diseases. International waste is governed by the U.S. Department of Agriculture and must follow the handling procedures found in the Manual for Agricultural Clearance.
Spill Cleanup /Remediation	Another type of special waste. This is generated during cleanup of spills and/or remediation of contamination from various sites on an airport. Care must be taken to ensure that these waste materials are not co-mingled with other waste streams and that storage and disposal procedures comply with applicable regulatory requirements.
Hazardous	Must be handled in accordance with stringent federal regulations. Wastes designated as "hazardous" are covered by regulations outlining legal handling, treatment or disposal. Hazardous wastes are either specifically "listed" in the regulation (40 CFR 261.31-.33), or are ignitable, corrosive, toxic or reactive (as defined in 40 CFR 261.21 -.24). For details, see the Resource Conservation and Recovery Act ("RCRA") and its amendments and the regulations 40 CFR Subtitle C, Parts 260-270.

Source: FAA "Recycling, Reuse and Waste Reduction at Airports – A Synthesis Document" April 24, 2013

For the Black Hills Airport – Clyde Ice Field waste is generated from the FBO, SASOs, construction projects and the hangar area. This waste is generated from normal activities around the airport and collected by tenants and various contractors. There are two containers

approximately 5 yards each which are collected weekly. There was no information available as to the tons of waste generated on an annual basis.

Existing Practices

In the FBO and SASO areas custodial services are provided by tenants and solid municipal waste is collected by Waste Connections and Kieffer Sanitation. Metals are also separated by one of the tenants, Black Hills Aero, based on their maintenance business.

Used oil from the FBO and SASO areas is taken by Tri State Recycling.

Solid Waste and Recycling Opportunities

While currently the waste stream of recyclables is minimal, less than 10%, it is possible to contract with Kieffer Sanitation (current Solid Waste provider for City of Spearfish) to provide solid waste containers, cardboard collection containers and comingled (glass, plastic, metal) collection containers at the airport. These types of containers should be considered if the stream of recyclable materials increases. Any separation containers must be planned with the "Disposal/Recycling Destination" in mind and must annually be reassessed in the event that the Disposal/Recycling Destination's change.

The airport should monitor this activity, measure as much as is practical and review/refine annually the waste/recycling handling.

In addition to waste recycling there are other opportunities for conservation such as low energy use lights, smart thermostat settings, electrical generation, geothermal heating. These items are not examined within this study but could be pursued in a comprehensive Environmental & Energy Audit.

Other Methods Which Would Reduce Environmental Impacts of the Airport

1. Complete an energy audit to see where improvements in existing buildings could be made.
2. Encourage green building policies and practices. Explore the following methods:
    a. White roofs – reduce heat in the summer
    b. Solar wall heating – reduce cost to heat or cool buildings
    c. Wind and phot-voltaic renewable energy system
3. After one year complete a Comprehensive Waste Audit to assess volume of waste and recyclables and results of recycling program changes.

Potential Cost Savings

While exact numbers are not known at this time taking solid municipal waste, deplaned waste and several other wastes out of the waste stream should help reduce the cost for collection services paid by the Airport and its tenants. It is recommended that the Airport work with the solid municipal waste collectors to develop a baseline of trash and recyclables collected at the Black Hills Airport – Clyde Ice Field. A monthly report would show potential areas of improvement and should lead to cost savings in trash collection.