

MASTER PLAN  
UPDATE



APPENDIX D

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**Bismarck Airport Waste  
and Recycling Plan**

## EXECUTIVE SUMMARY

The City of Bismarck, North Dakota, operator of Bismarck Municipal Airport (BIS or the Airport) is committed to environmentally responsible operations. The Airport is updating its master plan and has included a solid waste plan in accordance with the *FAA Modernization and Reform Act of 2012* (FMRA) requirements. The purpose of this task is to evaluate BIS's existing waste and recycling program and to provide recommendations for increasing landfill diversion through waste reduction, reuse, and recycling.

The consultant conducted a facility walk-through and informal interviews with BIS staff to develop a baseline and to identify areas of opportunity to divert waste from the landfill. The consultant developed recommendations appropriate for the Airport's waste stream based on the baseline information.

Highlights of these recommendations include:

- Establish goals and objectives
- Track progress and report regularly
- Promote emptying of water bottles pre-security and refilling post-security
- Collect and donate food, beverages, and toiletries
- Encourage reuse of items and materials
- Continue paper, plastic, plastic bottle, aluminum can, cardboard, and glass recycling and expand to other areas, including deplaned waste
- Improve education and outreach for passengers, employees, tenants, and contractors
- Supplement, right size, collocate, and standardize recycling stations and garbage cans
- Expand and improve signage, specifically at the security checkpoint
- Update contracts/leases and establish purchasing policy
- Maintain and improve recycling program according to Plan Do Check Act cycle.

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

# 1. Introduction

## A. Regulatory Background and Project Purpose

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.” FMRA Section 133 added a requirement that airports that prepare or update a master plan and receive Federal Aviation Administration (FAA) Airport Improvement Program (AIP) funding 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
- 5) the potential for cost savings or revenue generation.

In September 2014, the FAA released a memorandum titled “Guidance on Airport Recycling, Reuse, and Waste Reduction Plans.” This memo details the FAA’s expectations and suggestions for an airport’s recycling plan. To comply with FMRA and the FAA’s guidance memo, BIS is preparing this recycling, reuse, and waste reduction plan. The purpose of this plan is to document and assess BIS’s existing waste and recycling program based on the factors listed above and to recommend improvements.

An airport’s waste and recycling program and documented plan depend 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
- the willingness of an airport and its tenants to implement recycling and other strategies.

The extent and accuracy of available information governed the content of this plan.

## B. Airport Description

BIS is in the southern half of central North Dakota, approximately 200 miles west of Fargo, North Dakota and 175 miles east of the Montana-North Dakota border. It is in Burleigh County. The City of Bismarck owns BIS and is the official sponsor of the Airport. The City of Bismarck itself is organized into a five-member city commission which is elected at large. The commission is led by the Mayor of Bismarck. The Airport Director reports directly to the City Commission and is responsible for day to day airport operations. The director is supported by an Assistant Airport Director who has direct responsibility for three lines of business: operations, administration, and maintenance.

BIS is a primary, non-hub, commercial service airport, serving the capital city of North Dakota and the state as a whole. The Airport is a public-use facility and is included in the FAA National Plan of Integrated Airport Systems (NPIAS). The Airport is an FAA Class I Part 139 facility, with facilities and services to accommodate scheduled passenger aircraft with 30 or more passenger seats. In 2014, the North Dakota Aeronautics Commission (NDAC) abandoned their previous proprietary airport classification system in favor of using the criteria published by the FAA.

The Airport serves commercial, general aviation (GA), air cargo, Army National Guard, military, air ambulance service, flight training, and aircraft maintenance activities. In fiscal year 2018, BIS had approximately 563,850 total passengers, 54,510 total operations, and 117 based aircraft. Five airlines serve the Airport (Allegiant, American Airlines, Delta Airlines, Frontier Airlines, and United Airlines) with direct connections to seven domestic destinations. Additional background and activity information is available in the Airport Master Plan Update.

## C. Waste Definitions and Plan Focus

Municipal Solid Waste (MSW) consists of everyday items that are used and then discarded. There are six 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. Food waste and green waste make up a waste stream known as “compostable” waste.
- 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, 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 MSW 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
- waste from international flights
- C&D waste that is subject to special requirements or requires special handling (asbestos, lead, etc.).

The handling, recycling, and disposal of these materials are regulated by federal, state, and local laws.

#### **D. Key Airport Buildings and Plan Scope**

The Airport's buildings include an airline passenger terminal with airport administration offices, Aircraft Rescue and Fire Fighting (ARFF) station, airport operations building, airport maintenance building, and other support facilities and maintenance areas.

##### **Airline Passenger Terminal**

In May 2005, Bismarck completed construction of a state-of-the-art terminal that serves airline passengers and provides space for airline-related services. The terminal building consists of two levels. The non-secure area is located immediately to the west and includes the two primary entrance ways; public greeting space; rental car counters; baggage claim; ticketing; lobby seating; a small food and beverage concessionaire; vending; public restrooms; and the North Dakota Hall of Fame Museum. The secure area is located to the east and makes up the second half of level one. This area includes the baggage screening area, airline office space, and airline storage.

Consistent with level one, level two consists of a non-secure and secure area and is accessed by an elevator, escalator, and a two-sided stair case located in the midpoint of the terminal building. The non-secure area includes the airport administration offices; Transportation Security Administration (TSA) office; airport security office; TSA checkpoint; conference room; public restrooms; and airport storage room. Each of these facilities is connected by a linear hallway spanning the entire length of the terminal building. The administrative office area includes private offices, open reception area, administrative conference room, break room, and private restrooms. The TSA screening area has two lanes for passengers. TSA personnel also have access to training areas, locker room space, and offices. The Bismarck Police airport section and the contract security firm providing airport security services has an office located on the second floor of the terminal. . A second conference room is located north of the TSA checkpoint and is frequently used by TSA and other public meetings.

The level two secure area is accessed through the TSA checkpoint and includes a large non-partitioned holdroom which spans the entire length of the building. The holdroom is made up of public seating including traditional passenger seating clusters, business cubicles, as well as a passenger circulation area spanning the entire length of the second level. The level two secure area also includes a café/gift shop; public restrooms; vending machines; and a game room.

A café/gift shop is located on the second floor of the secure area and features a booth and counter seating, as well as high top seating. This concessionaire sells packaged food and beverages, as well as souvenirs and retail items.

On the secure side of the second floor, there are four gates serving deplaning and enplaning passengers with each gate dedicated to one airline. Holdrooms, where passengers wait to board departing flights within the departure lobby, are loosely defined at BIS by their proximity to each gate.

Additional areas of the terminal are accessible only to credentialed staff and contractors.

### **Airport Support Facilities**

BIS staff maintain the Airport property and perform snow removal and deicing activities. The Airport's plows, other winter equipment, and grounds maintenance vehicles are stored in the Snow Removal Equipment (SRE) Building. A separate maintenance/storage building is used for SRE equipment maintenance and has staff restrooms, office space, and a crew rest area.

ARFF is the responsibility of the City of Bismarck and is staffed by the Rural Metro Fire Department, who serve as contract employees. On-duty firefighters, ARFF vehicles, and associated activities are housed in a dedicated ARFF facility at BIS which includes a restroom with shower facilities, a training room, a fitness area, a break area, and office space.

## General Aviation Facilities and Business Tenants

Many of the hangars at BIS are either owned by one of two Fixed Based Operators (FBOs), Bismarck Aero Center and Executive Air, for their use or are leased to tenants for their flight operations. The FBOs provide services such as general aircraft maintenance, avionics, charter brokerage, aircraft rental, flight instruction, fueling, aircraft sales, ground school, hangar storage and pilot services to support GA activity at BIS. Other tenants at BIS include North Dakota Aeronautics Commission; North Dakota Fish and Game; North Dakota State Patrol; FedEx; Basin Electric Corporation; Montana-Dakota Utilities (MDU); the North Dakota Army National Guard; FAA and Motix. The Bismarck Aero Center complex houses the North Dakota Aeronautics Commission staff offices.

In the GA area at BIS, there are box hangars and T-hangars to store GA aircraft. Both Basin Electric and MDU utilize a large corporate hangar adjacent to Taxiway E. The North Dakota Army National Guard facility is located on the south end of the airfield.

## Air Cargo

Air cargo facilities at BIS are made up of hangars and adjacent areas of the aircraft ramp/apron. FedEx, UPS and United States Postal Service (USPS) operate at BIS.

## Plan Scope

The facilities described above include buildings and areas in which BIS has direct control of waste management and others in which BIS has influence but not direct control. According to FAA guidance, areas over which BIS has “direct control” or “influence” should be included in the Recycling, Reuse, and Waste Reduction Plan; areas outside Airport control or influence may be excluded. The Airport has direct control over operations and activities related to waste management in these areas:

- Passenger Terminal Building
  - public use spaces
  - airport administration offices
  - other staff work areas
- Airport SRE Building
- ARFF building (coordination with City of Bismarck)
- Airport maintenance activities

In addition, BIS may influence the management of waste and recycling in tenant spaces through individual leases and contracts, including:

- Passenger Terminal Building Tenants
  - TSA spaces
  - Airline leased areas (including ticketing counters, offices, breakrooms, baggage makeup, and deplaned waste)
  - Rental car tenant areas
  - Terminal tenant areas (concessionaire and retail areas)
- FBO Buildings
- Aircraft hangars/GA facilities
- Other tenants on BIS property
- Contractor activities

Bismarck Airport provides custodial services and waste removal in all TSA areas under contract. The Airport may not have control over the FAA Airport District Office (ADO) and Airport Traffic Control Tower (ATCT); therefore, these facilities and areas are excluded from this plan.

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## 2. Existing Program

### A. Drivers

The Airport established its recycling program to reduce the quantity of material disposed of in the landfill and to conserve resources, including financial resources. The Airport staff commitment and practices drive the program. While recycling programs are not mandated by the City of Bismarck, the Airport's recycling program is supported by local recycling infrastructure.

### B. Alignment with Local Programs

The City of Bismarck contracts with Waste Management, a waste hauling contractor, to provide waste and recycling collection services for residents, multifamily units, and commercial businesses. BIS's program aligns with the City's efforts; BIS recycles all the material types collected by the City's contractor.

### 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 throughout the building and a few recycling stations in specific locations. The garbage cans are lined/fitted with bags, while the recycling bins are generally unlined/do not have bags.

In the ticketing lobby and airline counter area, there are tall round, metal garbage cans with round openings in the lids (Figure 1). These large garbage cans are also available at the entrance to the security screening checkpoint (Figure 2), in the public greeting space and baggage claim area (Figure 3 and Figure 4), and throughout the sterile area, including in the holdrooms (Figure 5), near the concessionaire on the second floor (Figure 6), and near the gates (Figure 7). There are also several smaller, plastic garbage cans located throughout the non-sterile area (Figure 8). Next to the garbage can at the security screening checkpoint, there is also an amnesty box, which is for safe and secure disposal of items prohibited at the checkpoint (Figure 2).

Figure 1 – Pre-security garbage can and recycling bin for cans and bottles in ticketing lobby/baggage claim



Figure 2 - Garbage can and amnesty box at security screening checkpoint



Figure 3 - Garbage cans near first floor concessionaire and public greeting area

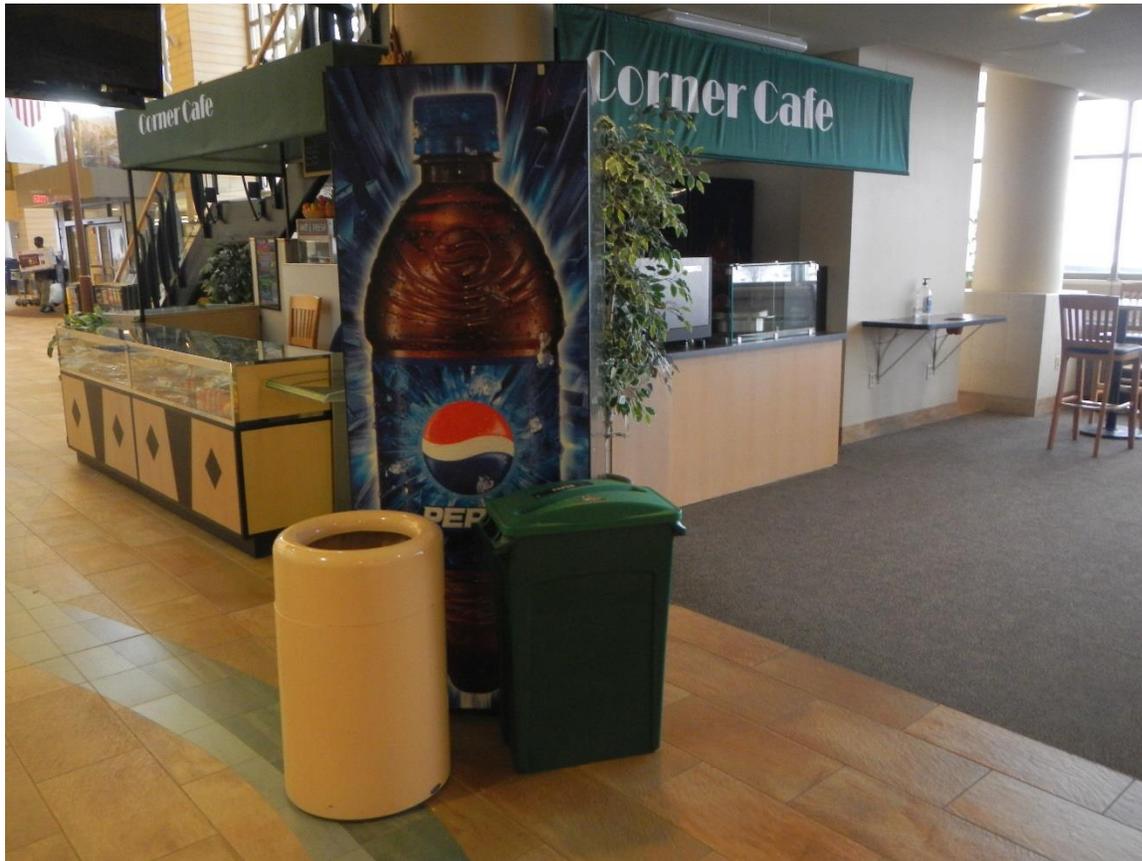


Figure 4 - Garbage cans in public meeting and baggage claim area



Figure 5 - Garbage cans in holdroom



Figure 6 - Garbage can in secure area near second floor concessionaire



Figure 7 - Garbage can near gate 2



Figure 8 - Small garbage can in non-sterile area of the terminal



Recycling stations at BIS are separate units and generally labeled for cans/bottles and newspaper. There are three recycling station locations within public spaces in the non-sterile and sterile areas: in the holdroom area near the concessionaire (Figure 9) and vending area (Figure 10), and in the public meeting area near baggage claim (Figure 11). Aluminum cans, plastic bottles, and paper are collected at these stations.

**Figure 9 - Recycling station and waste bin in sterile holdroom area, near concessionaire**



Figure 10 - Recycling station in sterile area near holdroom vending area



Figure 11 - Recycling for paper near concessionaire in the public meeting area



At the curbside terminal entrances, there are large garbage cans with large, square openings (Figure 12).

**Figure 12 - Curbside garbage can**



The terminal restrooms feature paper towel dispensers and air hand dryers (Figure 13), with garbage cans positioned near the door and small bins located in each toilet stall.

**Figure 13 - Terminal restrooms offer both hand dryers and paper towel dispensers**



Drinking fountains are available near the restrooms throughout the terminal (Figure 14). There are vending machines located in both the non-sterile (Figure 15 and Figure 16) and sterile areas (previously shown in Figure 10).

**Figure 14 - Drinking fountains in sterile area**



Figure 15 - Vending machine in public meeting area



Figure 16 - Vending machines in non-sterile area



The concessionaire areas have small trash cans near the register, and retail employees may use the terminal recycling stations for paper, plastic bottles, cans, and glass.

In the airport administration offices, the conference room has two green recycling bins labeled for paper. There are small trash cans located at each desk. There are centralized recycling locations in the copy room and break room; these bins are for recycling paper, plastic, glass, and cans (Figures 17 and 18).

Figure 17 - Paper recycling bin in conference room

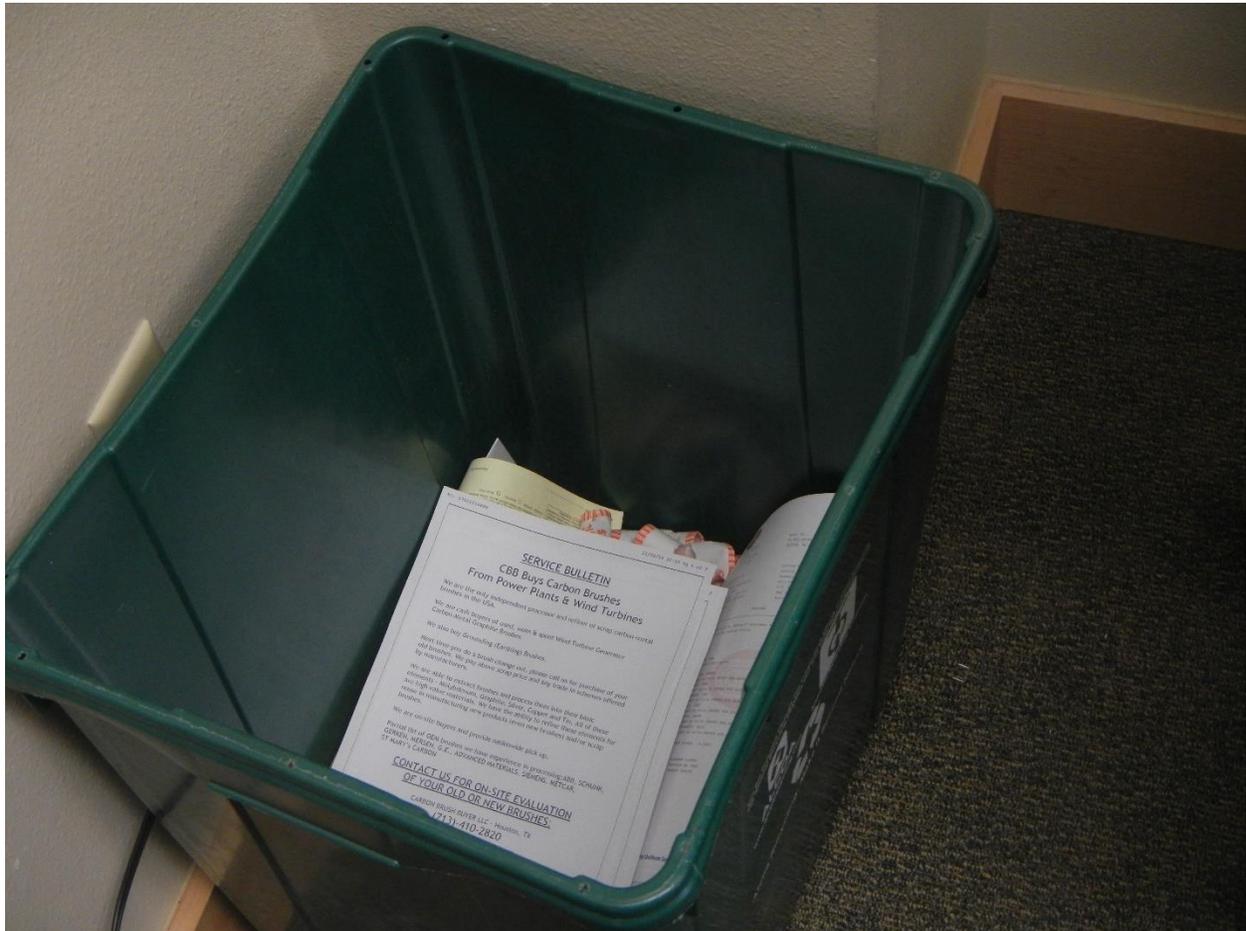


Figure 18 - Conference room recycling bin labeled for cans and plastics



A Waste Management single sort recycling poster is also displayed in the conference room.

Figure 19 - Waste Management single sort recycling poster in conference room



The rental car counters have small trash cans and lock boxes for collection of paper for shredding (Figure 20). Some rental car employees use the terminal recycling stations for plastic bottles, cans, and glass.

**Figure 20 – Paper recycling bins behind car rental counter**



Airline offices have a variety of smaller garbage cans located throughout the spaces (Figures 21 and 22); airline offices do not have recycling stations, but some airline employees use the recycling containers in the terminal or baggage make up areas.

**Figure 21 – Garbage cans in airline office area**



Figure 22 – Small garbage can under desk in airline office area



The ticketing counters have small trash cans at each counter (Figure 23).

**Figure 23 - Airline ticketing counters with trash cans**



A variety of garbage cans and recycling bins are located throughout Airport maintenance support areas of the terminal. Containers in these areas vary in size, type and labeling. A terminal maintenance room has a tall metal trash bin that is lined (Figure 24). Large metal and plastic trash cans are found in several locations of the baggage makeup area (Figure 25 and Figure 26).

**Figure 24 - Metal garbage bin in terminal maintenance area**



Figure 25 - Garbage cans in corner of baggage makeup area



Figure 26 - Garbage can in Airport storage area



Also in the airline baggage makeup area, which is a space shared by all the airlines, there is a bin that is labeled for recycling plastic and glass bottles (Figure 27 and Figure 28). Aluminum cans are collected separately in this area for return at a local redemption center.

**Figure 27 - Recycling bin and signage in baggage makeup area**



Figure 28 - Recycling bin and container for dirty mop heads in baggage makeup area



At the Maintenance/SRE building, there are several garbage cans, including in the breakroom (Figure 29) and the maintenance shop (Figure 30 and Figure 31). Coffee containers are collected for reuse and stored in the maintenance building (Figure 32). There are no recycling stations in the Maintenance/SRE building. Some Airport staff haul recyclables from the Maintenance/SRE building to passenger terminal. There is space for a recycling dumpster outside of this facility.

Figure 29 - Garbage can in maintenance building break room



Figure 30 - Garbage can in maintenance shop



Figure 31 - Additional garbage cans in maintenance shop



Figure 32 - Collected empty coffee ground containers in maintenance building



The ARFF facility has a trash can in the kitchen (Figure 33) and another waste dumpster outside of the building (Figure 34). There is no recycling in the ARFF facility, but some ARFF staff haul recyclables to passenger terminal. There may be space for a recycling dumpster outside the ARFF facility.

**Figure 33 - Garbage cans in ARFF building kitchen**



Labels on recycling stations throughout the terminal and on the bins in the administration offices are the primary method for conveying messages about and instructions for recycling. These recycling station labels found throughout the terminal are not uniform in size, shape, or typeface. The square metal recycling stations found in public areas are generally labeled for “newspaper” and “cans/bottles”. Labeling on the green plastic recycling bin near the pre-security concessionaire is labeled “paper”. The labeling on the green plastic recycling bins for paper and other recycling throughout the employee areas throughout the terminal also varies. These bins are labeled “plastic or glass bottles only”, “plastics”, and “paper”. The only single-sort recycling graphic depicting accepted recyclables was found in the conference room.

Figure 34 - Waste dumpster outside ARFF building



There is a six-yard trash dumpster in the GA area; however, there is no recycling.

There are three six-yard trash dumpsters are positioned next to the terminal (airside). There is also one four-yard recycling dumpster in this area.

A single stream recycling dumpster (Figure 35) and three waste dumpsters (Figure 36) are located within a fenced-in landside area next to the terminal. Waste Management, the waste and recycling hauler, provides these containers. Access to the enclosure is restricted to employees, tenants, and contractors with airside access. Waste Management uses its own vehicles to collect and transfer.

The FBO terminals each have their own small dumpster and waste management contracts, separate from BIS. The FBOs do not have dumpsters for recycling and do not appear to be recycling materials.

Figure 35 - Airport dumpsters within landside area



Figure 36 – Waste dumpsters within fenced enclosure near terminal



#### **D. Operation and Maintenance Requirements / Roles and Responsibilities**

BIS's recycling program is maintained by facilities staff, with support from Airport management personnel.

The Airport Maintenance Manager is primarily responsible for the recycling program, including directing housekeeping activities, adjusting the program, purchasing custodial supplies, and communicating with BIS's business coordinator about collection services.

Airport facilities staff are responsible for custodial activities in specific buildings and areas, including collecting waste and recyclables from cans and bins and transferring these materials to the appropriate dumpsters. Airport facilities staff are responsible for custodial activities:

- in public spaces of the terminal
- in TSA areas
- in Airport Administration offices
- in the SRE building
- in the ARFF building
- in other Airport spaces
- on the airfield.

The Airport's terminal tenants (concessionaires, rental car companies, and airlines) and tenants in some of the outlying buildings (FBOs, FAA, and Army National Guard) are responsible for custodial activities in their areas, including transferring waste to the appropriate dumpsters. The operators of the FBO, and other buildings separate from the terminal are each responsible for securing their own waste and recycling services.

The Assistant Airport Director is responsible for communicating with the collection service providers and tracking program invoices. The Assistant Airport Director is responsible for supporting the program through allocation of resources (financial and other) and for coordinating tenant leases.

Waste Management is contracted through the City of Bismarck and is the primary waste and recycling hauling contractor for BIS. Materials are transported for disposal at the City of Bismarck Landfill. Recyclable materials (comingled paper, plastic, and aluminum, glass, and cardboard) are collected weekly and transported to a recycling facility at the landfill where they are sorted, compressed into bales, marketed, and sold. The landfill is approximately seven miles northeast of the Airport in an eastern outlying area of Bismarck.

The Airport is also serviced by ShredIt for the collection and recycling of shredded paper. The City of Bismarck accepts specific yard waste items (grass clippings, tree leaves, weeds, and twigs) for composting and sells compost to the public. The City does not accept tree branches or food scraps with yard waste. The area does not appear to have a commercial food waste compost facility.

## **E. Current Waste Reduction, Reuse, and Recycling Efforts**

### **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. BIS currently employs the following practices to reduce the total amount of waste generated:

- Double sided printing in administration offices
- Email and internal websites for inter-office communication
- Shared drives for storage of documents
- On-screen print preview and PDF printer or other electronic printing
- Outsourcing large print jobs.

### **Reuse**

In a waste management context, reuse refers to using 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 for a different use. Reuse can require purchasing durable materials and items instead of disposable or single use options.

The Airport currently reuses:

- Ceramic coffee mugs, reusable tumblers and water bottles, and durable silverware, plates, bowls, and cups (instead of plastic, paper, or Styrofoam) in Administration breakroom
- Empty plastic coffee containers for miscellaneous uses related to maintenance
- Office supplies, including inter-office envelopes
- Towels/rags in maintenance areas
- Office furniture

## **Recycling**

Using the infrastructure and resources described above, BIS currently recycles one stream made up of several materials: cardboard; and comingled paper, plastic bottles, glass, and aluminum cans.

Terminal tenants generate most of the cardboard in the form of shipping boxes. The paper 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. The plastic, aluminum, and glass portions are primarily made up of beverage containers, collected from the public areas of the passenger terminal as well as the administration offices and restaurant.

## **Construction and Demolition Debris, Green Waste, and Other Waste**

The Airport reuses and recycles the waste generated during construction projects where possible. Green waste generated from the maintenance of the property is managed on-site where possible. The Airport collects universal and hazardous waste; used oil and filters; batteries; paint; used tires; and scrap metal for beneficial reuse, recycling, or return to supplier programs.

## **Tenant Efforts**

In addition to the recycling program operated by BIS, tenants at the Airport may be recycling on their own. In some instances, these tenants may be using the Airport's bins and dumpsters. Some tenants may be recycling; however, no recycling dumpsters other than those used by the Airport were observed during the site visit.

## **F. Tracking and Performance**

The Airport does not currently track overall waste generation, recycled material volume, or other metrics. At present, BIS does not have specific waste or recycling objectives, targets, or goals.

### 3. Waste Audit

BIS staff provided information about:

- airport buildings and facilities
- areas that generate waste
- the types of waste generated in each area
- the materials that can be recycled under the current program.

Facilities staff have informally observed passenger and employee waste and recycling behaviors and, for this document, described generally how waste flows through the facility. The staff also described waste and recycling collection and hauling practices.

The consultant evaluated Airport information and records as well as aviation industry waste and recycling trends to identify the source, composition, and quantity of waste generated at BIS, including areas under BIS's direct control or influence. The consultant then used this information to identify opportunities to improve and monitor program effectiveness.

#### A. Quantity and Sources

Based on the observations during the site visit, the Airport has the three six-yard waste dumpsters with a capacity of 18 yards that are serviced by Waste Management who collects every week. Assuming a load factor of 75 percent and based on conversion factors from the EPA, each load is estimated to contain 13.5 cubic yards or 1.2 tons of municipal solid waste each collection. This totals approximately 60 tons a year.

Based on a 75 percent load factor and conversion factors from the EPA, the consultant estimated that BIS recycles approximately 350 pounds of commingled recyclables each week. This totals approximately nine tons a year.

Based on industry averages, the overall contribution of waste and recyclables from various areas and activities at BIS is likely similar to the distribution shown in Table 1.

**Table 1 - Estimated Waste and Recycling Generation at BIS by Area/Activity**

BIS Area/Activity	Estimated Percent	Estimated Weight (in tons)
Deplaned	20%	14
Other Airline	24%	17
Administration	3%	2
Public Areas	35%	24
Concessions	18%	12
<b>Total</b>	<b>100%</b>	<b>69</b>

Based on the waste and recycling data provided above, the Airport generates approximately 60 tons of waste a year and 9 tons of recyclables a year. Therefore, the Airport’s current recycling rate is about 13 percent. Based on this distribution, programs that focus on the airlines and public areas may represent the best opportunities to reduce waste generation and increase landfill diversion. A physical waste sort could provide more detailed information about the amount and proportion of waste generated in total and by each area, activity, and tenant.

**B. Composition**

Based on the activities taking place at BIS, a varied waste stream can be expected. According to industry case studies and previous waste planning projects, an airport’s waste stream is approximately 40 percent recyclable, 35 percent compostable, and 25 percent waste that cannot be recycled or composted due to current technologies and, as a result, must be placed in a landfill.

Table 2 lists each area included in the scope of this plan and the type(s) of waste likely generated there.

**Table 2 - Bismarck Municipal Airport Waste by Area and Material**

Bismarck Municipal Airport Waste by Area and Material																		
Area   Material	Office Paper	Newspapers	Magazines	Plastic	Aluminum	Cardboard	Glass	Food Waste	Paper Products	Liquids	Toiletries	Packaging	Styrofoam	Metals	Deplaned Waste	Green / Yard Waste	Construction and Demolition	Other Waste
Airline Terminal Building																		
Public passenger areas Curbs, ticketing lobby, restrooms, security screening queuing area, sterile gate areas, public “meet and greet” spaces, baggage claim area		x	x	x	x			x	x	x	x	x						x
Tenant areas Concessionaires and associated activities	x	x	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			x			x
Rental Car areas Offices, counters, return areas, service areas, breakrooms	x			x	x			x	x	x								x
TSA Spaces	x	x	x	x	x			x	x	x	x	x						x
Airport Administration Offices	x	x	x	x	x	x		x	x			x						x
ARFF Building	x	x	x	x	x	x	x	x	x			x						
SRE/Maintenance Building	x	x	x	x	x	x		x	x						x	x	x	x
Airport Maintenance Activities															x	x	x	x

A physical waste sort could provide more detailed information about the specific composition of waste at BIS. 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)
- 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 (for example, by item substitution or by improving recycling to reduce the volume of waste).

The following sections describe in more detail some of the waste and recyclable materials generated at an airport like BIS: 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 three-ounce containers of toiletries in a one-quart baggie (3-1-1) in their carry-on luggage. Even though these restrictions have been in place for longer than 10 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.

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, less obvious unallowable items are peanut butter, yogurt, applesauce, and maple syrup.

It is expected that the garbage cans and recycling station located in the security queuing area receive a fair amount of liquids and beverage containers due to TSA restrictions. These items 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 such as paper, and may be rejected by a recycler, which can result in them being taken to the landfill.

### **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**

The Airport does not currently track the quantity and type of disposable items and supplies purchased for the facility. This information could provide 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 list may include:

- 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)
- some which indicate scale of the activity at the Airport (paper towel and garbage bags).

## 4. Review of Waste Management Contracts

As noted in Section 1, the 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 (waste) program scope and efficiency, as well as identify constraints.”

In general, the Airport’s contracts and leases address housekeeping requirements and related expectations for managing trash and provide limited information about recycling. These contracts 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 related to waste and recycling.

### A. Custodial and Waste Hauling Contracts

BIS does not contract for custodial services for the areas under airport control; these areas are maintained by City employees.

The City has an exclusive franchise agreement with Waste Management for the collection of waste and recyclable materials. The City’s solid waste franchise agreement outlines the responsibilities of the collection contractor, including:

- Collect garbage, rubbish, or other solid waste from...locations other than residences and city facilities
- Convey such material to the city landfill.

### B. Tenant Leases and Service Contracts

The Airport has individual leases with each of its tenants and, in general, these agreements do not include specifics pertaining to waste management or recycling. Among the sample of tenant lease agreements that were reviewed for this project, only some include basic requirements pertaining to trash removal and janitorial activities in leased areas. All the lease agreements that were reviewed require the tenants to perform general maintenance including cleaning and keeping the property clean and orderly, but some of these agreements do not specify which party is responsible for trash removal. The City’s lease agreements with American Airlines, LSLCO LLC (café/gift shop) and Enterprise note that the City is to provide trash removal services.

The City's agreement with American Airlines notes that the City will provide janitorial services, including trash removal, in the Airlines Preferential Space. The City's agreement with LSLCO notes that the airport will provide two trash receptacles as well as trash pickup and disposal from central locations with such locations designated by the Airport Manager. It also specifies that LSLCO is responsible for janitorial services within their leased space. The lease agreement with Enterprise notes that the City provides trash pickup and disposal from central locations with such locations designated by the Airport Manager. It also notes that Enterprise shall use its own janitorial supplies and keep the leased space clean and orderly. None of the lease agreements that were reviewed describe the Airport's recycling program and practices or discuss the use of recycled products.

While the TSA lease agreement was not available to review, it is assumed that it is a standard U.S. Government Lease for Real Property leased space at the Airport for use by the TSA. TSA lease agreements typically outline the services which are to be provided by the Airport, including trash removal and janitorial service and supplies. TSA lease agreements often outline other requirements including:

- cleaning to be completed during Airport hours
- rent to be adjusted annually based on actual janitorial costs
- the Airport to maintain the area in a clean condition and provide supplies and equipment
- daily emptying of trash receptacles, disposal of trash and garbage, and cleaning of cans used for collection of waste.

### **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 and recycling collection are funded in BIS's operating budget. BIS does not currently receive payment or rebates for recycled materials.

## 5. Recycling Feasibility

Many factors impact the feasibility of recycling at BIS; some are universal, and others, specific to the facility. The following sections describe the more influential of these factors.

### A. Commitment and Support

The willingness of BIS and its contractors and tenants to commit to and support the facility's recycling program are critical to the success of such a program. Without the commitment of resources such as funding, labor and time, space, and access to secure areas, a waste management program could struggle.

#### Airport Policy and Contractor Dedication

BIS's administration has supported the recycling program in the past, and it is expected that this will continue in the foreseeable future. Based on the resources allocated to these programs, the Airport Committee and City of Bismarck appear to generally support recycling, practical waste management, and sustainable operations.

The mission of the City's Solid Waste Utility is to provide high-quality solid waste collection and disposal services in a timely and effective manner to promote the safety and welfare of the City residents. The mission of Waste Management is to provide efficient, easy, and sustainable solutions that help customers reduce, reuse, and recycle. This commitment aligns with continued support of the Airport's recycling programs.

#### Airline Policies

All five airlines that operate at BIS have established sustainability programs that include elements of waste and recycling. At least one of the airlines serving BIS separates and recycles materials deplaned from commercial service flights.

American Airlines has implemented recycling programs on the ground and in the skies. American recycles in back offices and breakrooms at their major hub at Dallas/Fort Worth International Airport, at maintenance centers, and in other offices/employee work areas. According to their website, the airline introduced the industry's first onboard recycling program and recycles aluminum cans, paper, and plastic in-flight.

Per corporate policy, Delta is "committed to minimizing waste streams through diversion and re-use, waste, recycling programs, and (waste reduction)." Delta has been working to increase the number of cities where they recycle, and the volume of material collected. In addition, they track employee recycling at the headquarters campus in Atlanta and upcycle life vests, carpet, and leather seat covers.

Aboard Delta flights, single stream materials, including plastic, aluminum, and paper, are collected by flight attendants in designated bags. These materials are collected by cabin service and transported to designated recycling containers. Empty cans and bottles left in the beverage carts are recycled by Delta’s catering partners.

United Airlines is “committed to operating sustainably and responsibly” and has recycled over 28 million pounds of aluminum cans, paper, and plastic from flights and facilities. In 2014, United began to replace its hot beverage cups with fully recyclable alternatives made from recycled plastic water bottles.

Offering recycling for deplaned waste at BIS aligns the Airport with its airline partners.

**B. Technical and Economic Factors**

**Local Markets and Infrastructure**

Markets for recycled materials fluctuate widely based on many factors and interactions. Local waste haulers typically accept materials that 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 3 are accepted under the City’s residential recycling program; an accepted items list was not available for the City’s commercial program. As noted above, inclusion in such programs typically indicates that the market and/or infrastructure for these materials is strong. BIS currently recycles all the materials the City’s commercial recycling program accepts.

**Table 3 - Materials Accepted for Residential Curbside Recycling in the City of Bismarck**

Recyclable Materials – City of Bismarck Residential Program
Cardboard
Tin and aluminum
Plastic bottles, tubs, and jugs
Mixed paper, newspaper, magazines
Glass

Source: City of Bismarck Garbage & Recycling website  
[https://www.bismarcknd.gov/DocumentCenter/View/20925/Single-Sort-Materials-accepted-and-unacceptable?bidId=.](https://www.bismarcknd.gov/DocumentCenter/View/20925/Single-Sort-Materials-accepted-and-unacceptable?bidId=)

The City of Bismarck operates one landfill and nine recycling drop-off locations in Bismarck. The recycling drop-off locations are for residential use only.

## Logistical Considerations and Constraints

To maintain a recycling program at BIS, certain elements must be in place. These include:

- a proactive and engaged custodial staff
- a willing and affordable hauling contractor
- space for bins and dumpsters
- access to secure areas of the facility (including airside aprons and sterile terminal areas).

At this time, these elements appear unconstrained; additional resources including custodial labor, waste hauling services, space, and airport access are anticipated to be available to support the continuation and/or expansion of the recycling program at BIS.

## Contractual Issues

A detailed evaluation of the Airport’s contracts is included in Section 4. Any major contractual issues with maintaining and improving the recycling program at BIS are not anticipated. BIS and the waste and recycling collection contractor will need to continue to collaborate to support the facility’s recycling program.

## C. Recycling, Landfill, and Energy-from-Waste Facility Requirements

The recycling facility and landfill that accept waste from BIS 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.

Components that seem recyclable (plastic, glass, or metal parts) comprise some items generated at BIS; however, the recycling facility has specific material standards, so it is important that non-recyclable items are not included in the facility’s recycling stream. Waste items that may be generated at the Airport, but are prohibited at the recycling facility include:

- |                         |                         |
|-------------------------|-------------------------|
| • Styrofoam             | • Paper/plastic cups    |
| • Plastic bags          | • Waxed cardboard       |
| • Saran wrap            | • Plastic lids and caps |
| • Frozen food packaging | • Liquid in container   |
| • Plastic clamshells    | • Lightbulbs            |
| • Bakery containers     | • Batteries             |
| • Paper/plastic plates  | • Unnumbered plastic    |
| • Paper napkins         | • Other garbage         |

Waste material that may be generated at BIS but is prohibited by the City of Bismarck's Landfill includes hazardous waste, radioactive waste, large batteries, paint, and C&D waste.

Some waste items cannot be recycled or taken to the landfill, for example hazardous waste and chemicals, paint, batteries, and C&D waste. These items must be managed through hazardous waste or universal waste programs or disposed of at a specialized landfill.

### **Costs**

BIS strives to be as self-sustaining as feasible; therefore, it is imperative that programs implemented and maintained at the facility, including recycling, are as cost-effective as possible.

### **D. Guidelines and Policies**

To evaluate BIS's existing recycling plan in the context of local, state, and national requirements, the consultant reviewed federal, State of North Dakota, and local waste and recycling regulations and policies/factors.

#### **Federal**

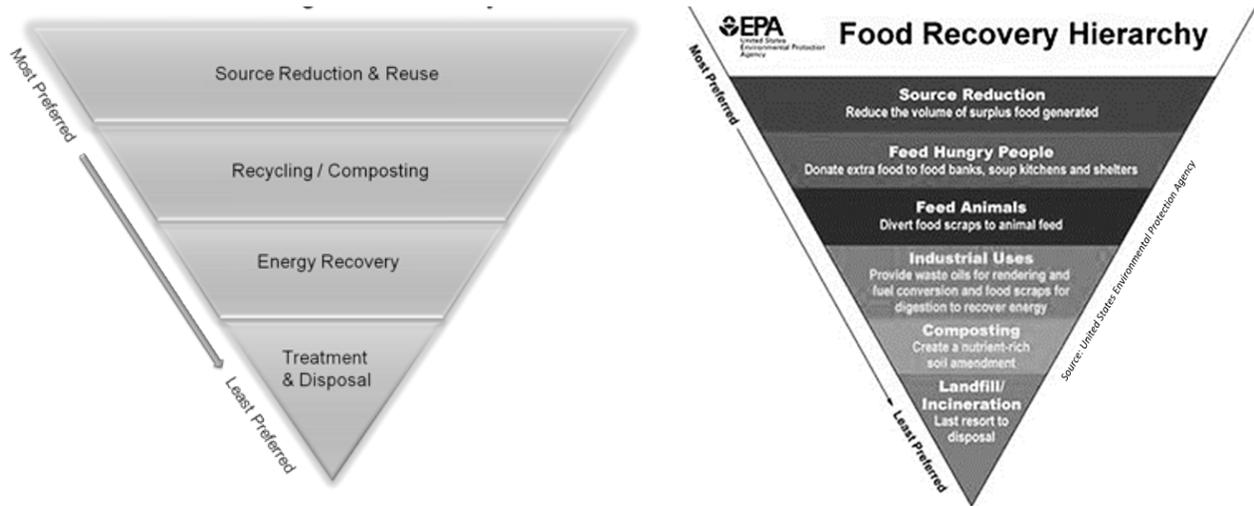
At the federal level, the United States Environmental Protection Agency (EPA) is responsible for developing a solid waste management program under the Resource Conservation and Recovery Act (RCRA) and related policies and guidance. RCRA provides the framework for management of hazardous and non-hazardous 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 1, the FAA's definition of airport planning was updated in 2012 through FMRA to include planning for recycling and waste minimization. The Airport is required to address solid waste as part of airport master planning. 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 FAA'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.

**Figure 37 – Waste Management Hierarchy and Food Recovery Hierarchy**



*Waste Management Hierarchy (left) and Food Recovery Hierarchy (right)  
Source: United States Environmental Protection Agency*

**State**

At the state level, the North Dakota Department of Health Division of Waste Management oversees waste management and recycling. The State encourages waste minimization, reuse, and recycling but does not require municipalities to offer residential programs or businesses to recycle. The State’s most recent waste management plan was finalized in 1993.

**Local**

While the City of Bismarck has contracted with Waste Management, Inc. for the collection of recyclable material through curbside recycling and recycling drop site locations, it is the only capital city in the country that doesn’t employ some form of required recycling program. A major component of the City’s current recycling program is cooperation and willingness to participate among citizens.

**E. Other Incentives**

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

## 6. Cost Savings or Revenue Generation

The costs associated with a recycling program depend 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, 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.

Data pertaining to waste and recycling costs was not provided for review under this project. The amount spent on collection of waste from the terminal, Maintenance/SRE building, ARFF building and airfield each year is unknown. To estimate annual costs for recycling, information about the charges associated with the collection of the recycling dumpster and other services is needed.

After supplementing the information compiled and analyzed in this document, BIS can make informed solid waste management decisions over time. The Airport could use cost information to identify potential cost savings or prioritize strategies to reduce costs. Using the information provided in this plan and available cost information, BIS can begin to analyze the program's financials, evaluate costs, and determine if enhancements should be implemented. If expansion of the program is not technically or economically feasible at this time, this information will help BIS determine when improvements might become feasible.

## 7. Recommendations

This section documents recommendations for the Airport, including waste reduction, reuse, and recycling strategies, based on the information presented earlier, specifically the waste audit and feasibility discussion.

### A. Objectives and Targets

#### ***Set SMART Goals.***

It is 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 in Section 3 provides baseline data for establishing objectives and targets, and Section 5 describes the goal and target established by the State of North Dakota. The objectives and targets derived from this information can be used to calculate target levels for BIS. A physical material sort would further inform goal-setting efforts.

These are potential objectives and targets BIS might adopt or use as inspiration for other goals:

- Recycle 22 percent of waste stream by 2028 (See Section 3B, current rate is approximately 12 percent, one percent improvement each year)
- Hold annual meetings with stakeholders to evaluate and improve recycling program
- Install one liquid collection station at the security checkpoint (more details in Section 7C)
- 100 percent of tenants recycling at least one material
- 100 percent of BIS employees complete simple training on recycling program (more details later in this section)

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 BIS.

### B. Tracking and Reporting

#### ***Estimate and Track Key Metrics.***

As noted in Section 2, BIS does not currently track metrics associated with the waste management program. It is recommended that BIS begin to regularly estimate and track the volume of waste sent to the landfill and the volume of material collected for recycling as well as the costs associated with these services.

**Assess Trends.**

By tracking costs associated with waste and recycling, BIS can begin to identify trends associated with waste generation, landfill, recycling, and cost can be assessed for issues or opportunities for improvement.

**Establish Reporting Schedule and Proactively Provide Information About Program.**

BIS's waste and recycling performance is not currently reported to stakeholders. It is recommended that BIS proactively provide this information to management, employees, tenants, and interested external stakeholders on a regular basis. The purposes of this reporting are:

- 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
- to solicit feedback and suggestions for improving the recycling program.

The frequency of reporting is up to the Airport, but it is recommended that reporting be completed at least annually. The reporting schedule should also be updated as needed to accommodate changes to the program. The schedule is expected to 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*****Substitute Disposable Items with Durable Alternatives and Reuse Items and Materials***

To reduce the its environmental impacts, BIS 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 BIS.

- Substituting disposable items with durable alternatives in the administration office and other staff work areas
- Reusing items and materials where possible
- Working with the concessionaire tenants to donate edible food to a community food security organization

- Collecting and donating unopened food, beverage, and toiletry items subject to TSA restrictions
- Identifying opportunities to encourage waste reduction by passengers, tenants, and contractors.

### ***Promote and Facilitate Bottle Emptying and Refilling.***

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, when these materials end up in the waste stream, the liquids are difficult to manage, and the containers cannot be recycled. Liquids add significant weight to the waste stream, contaminate other materials such as paper, and may be rejected by a recycler, which will result in them being landfilled. BIS could promote emptying of water bottles in the restroom sinks and refilling post security. Adding colorful, graphic signs in the terminal restrooms encourages passengers to empty water bottles prior security and to refill them after screening. Signage can be supplemented, for example, with vinyl cling decals on the mirrors over the sinks and posters or other visuals in the checkpoint queuing area.

In the future, these signs could be revised to also encourage passengers to recycle disposable water bottles if they do not wish to refill them. It is further recommended that BIS make a recycling station (collated to a trash can) available in the immediate proximity of the pre-security restrooms so that passengers who do empty their disposable containers in the sinks have a convenient place to recycle the items they do not wish to refill.

Liquid collection stations are becoming more common at Airports around the country to combat liquids in the waste and recycling streams. If liquids are an on-going issue at this location, it is recommended that the Airport consider installing one liquid collection station and recycling station in the security queuing area to capture the liquids that are discarded in the security checkpoint area.

### ***Donate Food, Beverages and Toiletries.***

It is recommended that BIS work with the food and beverage concessionaire to assess the possibility of donating edible food to a local food bank, soup kitchen, or shelter for distribution to the populations they serve. Feeding people is the second preferred strategy for addressing food waste according to the EPA. Federal and state laws protect organizations that donate food in good faith from liability. Some organizations will pick up food at the source which reduces the demand on the Airport and concessionaire.

It is also recommended that BIS 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. BIS would collect these items by locating a container at the security checkpoint and managing storage of the items until the receiving organization could collect them. To implement this recommendation, coordination between BIS, the designated receiving organization, and the TSA would be needed. An example of an Airport with such a program is McCarran International Airport in Las Vegas, Nevada.



**Example Donation Collection at McCarran International Airport (LAS)**

***Provide Supplies, Fixtures, and Project Guidelines Which Encourage Reuse.***

To reduce its volume of waste, BIS should encourage reuse by Airport employees, passengers, tenants, and contractors. BIS might encourage reuse by Airport employees by issuing reusable tumblers, water bottles or coffee mugs to BIS staff. Providing refill stations next to water fountains as part of fixture upgrade projects also helps to promote the use reusable beverage containers. To encourage reuse by passengers, some Airports have locations where discarded magazines and newspapers can be used by other passengers. It is also recommended that BIS specify that contractors must evaluate the potential to reuse existing pavements onsite as a base course for new pavement as part of future Airport construction projects.

**D. Recycle and Compost**

Recycling is the second preferred waste management strategy, according to the EPA, after waste reduction/reuse. 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 most of these materials as well as cardboard and glass.

## Paper

### ***Continue Paper Recycling.***

The Airport is currently recycling paper (printer paper, mail, envelopes, and other items) collected from the administration offices as well as from the paper recycling stations in the terminal (newspapers and magazines). Paper may also be recycled from the other Airport buildings (Maintenance and ARFF) by employees who bring paper materials to the terminal to be recycled. Within the terminal, these paper streams are collected separately at bins and comingled with other recyclables at the dumpster. Shredded paper is collected and recycled separately. Managing recyclable paper separately from plastic bottles and aluminum cans protects the value of the paper stream and increases its recycling potential by minimizing contamination from liquids and creating a stream that may not need to be sorted. It is recommended that the Airport ask Waste Management about adding non-shredded office paper, newspapers, or magazines to the shredded paper collection.

### ***Expand Paper Recycling Program.***

It is also recommended that the Airport expand the program to additional areas, including the airline and rental car company offices, and encourage increased recycling of paper by employees, tenants, and passengers by placing additional paper recycling locations in high traffic areas. Doing so reduces the environmental impacts associated with landfilling this material and manufacturing virgin paper.

Waste magazines and newspapers are generated aboard commercial flights and when they expire on the newsstand; it is recommended that the Airport collaborate and coordinate with the airlines and concession tenant serving BIS to evaluate adding paper items from deplaned waste and newsstands to this program.

## **Plastic Bottles, Aluminum Cans, and Plastic Cups**

### ***Continue and Expand Plastic Bottle and Aluminum Can Recycling Program.***

The Airport is currently recycling plastic bottles (including water bottles) and aluminum cans collected in the terminal. There is no formal recycling in the Maintenance/SRE and ARFF buildings, but some employees may bring recycling from these buildings to the terminal. 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 and aluminum cans by employees, tenants, and passengers to reduce the environmental impacts associated with landfilling this material and manufacturing virgin plastic.

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

***Collaborate with Airlines to Add Plastic Cups to the Recycling Program.***

Plastic cups are typically generated aboard commercial flights. It is recommended that the Airport collaborate and coordinate with the airlines serving BIS to evaluate adding plastic cups from deplaned waste to the recycling program.

**Cardboard**

***Continue Cardboard Recycling Program.***

The Airport currently recycles cardboard collected from the terminal concessionaire tenants and the administration offices. This material is collected separately and disposed of in the comingled recyclable stream dumpster. It is recommended that the Airport continue to recycle cardboard.

***Provide Feedback to Tenants on Cardboard Recycling Program.***

It is also recommended that BIS 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 the terminal tenants could result in additional participation and remind existing participants of the program's specific requirements.

***Approach Waste Management About Potential to Protect Value of Cardboard Stream.***

When cardboard is collected and managed separately from the comingled recyclable stream, it protects the value of the cardboard material by creating a single material stream (more desirable because it reduced contamination from liquids and requires less processing after collection). It is recommended that BIS approach Waste Management to discuss the potential for collecting and managing cardboard in a separate dumpster to protect the value of the material.

**Glass**

***Continue Glass Recycling Program.***

The Airport currently recycles glass collected from the terminal tenants, concessionaires, and passengers; however, very little glass is generated at BIS. This material is collected with the comingled recycling stream. It is recommended that the Airport continue to recycle glass.

BIS should approach Waste Management about the feasibility of collecting and managing glass separately from the comingled recyclable stream to protect the value of the other material by reducing contamination glass. It is also recommended that BIS 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.

### **Other Recyclables**

As other recyclable materials are identified in BIS's waste stream, it is recommended that the Airport work with the waste hauling contractor to design and implement strategies to separate, collect, and process these materials.

### **Green Waste**

#### ***Evaluate Implementing a Formal Green Waste Program.***

It is recommended that the Airport evaluate how green waste is managed and explore opportunities to align the facility's practices with the waste hierarchy; for example, by reducing the generation of this material at the source (mulching lawnmowers), reusing material where possible (chipped branches as mulch), composting (via the local facility), and disposing of the material on or off site as a last resort.

### **Food Waste Composting**

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 5, the EPA's food recovery hierarchy assigns priority to composting of food waste over landfill of this material (after using it to feed people as discussed under **Reduce and Reuse**). Composting is the process of decomposing food and other waste into a nutritious soil additive.

#### ***Implement a Food Composting when an Area Program is Established.***

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

If a composting facility is found or established in the area, BIS 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 (for example, banana peels or apple cores) and/or by type (fruits, vegetables, etc.) until all food waste appropriate for composting is included.

## **Paper Products**

### ***Implement Paper Composting When an Area Program is Established.***

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.

Besides moving the garbage bins closer to the paper towel dispensers, 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.

## **Energy from Waste**

### ***Utilize EfW Facility If One Is Established.***

Converting waste into energy is environmentally preferred over landfilling, according to the EPA. There does not appear to be an active Energy-from-Waste (EfW) facility in the Bismarck area. It is recommended that the Airport utilize an EfW facility, if one is established in the area, for all waste materials that cannot be reused, donated, recycled, or composted and track this stream.

## E. 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.

### ***Improve In-terminal Messaging.***

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

### ***Provide Ongoing Recycling Program Training.***

It is recommended that BIS provide simple, on-going training for employees, tenants, and contractors that 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 BIS's environmental impact.

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. To use employee time as effectively as possible, waste training could be combined with other training or meetings.

BIS should also consider providing introductory level information to new tenants and provide training materials such as postings, postcards, etc. to existing tenants for use with their employees. As some airport tenants 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.

***Maintain and Update Recycling Education Program.***

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

***Incorporate Information from Stakeholders in Education and Training Programs.***

Information and participation 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 be present during training.

**F. Containers and Bins*****Collocate Garbage Cans and Recycling Stations and Maintain Consistent Placement and Configuration.***

The existing recycling stations in the terminal are separate units with top or front facing signage, and restrictive lids; no changes to the design of the containers are recommended at this time. Top facing signage and restrictive lids have been shown to educate and instruct passengers to separate materials appropriately. It is highly recommended that BIS move a garbage can next to any recycling station or container that does not currently have one paired with it (as space and resources allow). Collocation of recycling containers with garbage cans has been shown to decrease contamination and increase recycling participation.

The recycling containers in other areas at the Airport vary in color, size, and design. Ideally, recycling stations should be consistent in design, color, and signage, throughout airport facilities. However, no major changes are recommended to the design of these bins at this time 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.

***Remove Stand-Alone Trash Cans in the Terminal and Install Additional Recycling Bins***

In addition, BIS 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 they 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 use a recycling station.

These containers could be repurposed as recycling containers in other spaces for comingled or single stream recyclables (in offices for paper, in breakrooms for bottles and cans, etc.). It is recommended that BIS install additional recycling bins in other areas as the other areas are added to the program and resources allow.

#### ***Incorporate Maintenance Staff Input.***

Airport maintenance staff conduct the day to day waste activities, their insight is valuable in improving and maintaining the recycling program at BIS. Their insight on which containers are underused or undersized can help inform changes to the location and size of existing and future recycling stations, recycling containers, and garbage cans.

### **G. Signage and Labeling**

#### ***Expand and Improve Recycling Signage and Labeling.***

The Airport's recycling signage could be expanded and improved. The recycling stations in the terminal are labeled for each accepted material but BIS should consider providing additional signage adjacent to recycling stations that elaborates on the Airport's program and provides direction for passengers. There are a variety of free, printable signage options, such as the one posted in the conference room, which are provided on the Waste Management website. These printable fliers can be laminated and posted at each recycling station to provide instructions and information.

A key location for additional signage is in the security checkpoint queuing area in the terminal. As described in Section 3, 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 that increases 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 to reduce wait times and without throwing these items away. Signage pertaining to the emptying of liquids and refill of containers post-security is discussed above.

Signage and labeling for recycling bins in other areas of the Airport is inconsistent or absent and could be improved with color, images, and short, clear, instructive text to improve understanding of which items are recyclable and which should be thrown away.

### **H. Other Recommendations**

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

## Contracts and Leases

### ***Revise Contracts and Leases to Include Waste Management Preferences.***

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, it is advisable that the Airport consider revising 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.

The contracts and leases could be improved by formalizing which, if any, of the Airport's bins, or dumpsters are available for tenant use, as it is unclear which tenants are currently using this infrastructure. If the Airport 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 housekeeping, waste management, and recycling at BIS through contracts and leases may increase tenant participation in and conformance with the program.

## Purchasing Policies and Requirements

### ***Adopt a Purchasing Policy that Supports Waste Management Priorities.***

The Airport's existing purchases may create waste; specific purchase information was not available for this project. It is recommended that the Airport (or City) consider adopting a purchasing policy that prioritizes items that are durable (versus disposable), reusable, recyclable, compostable, and/or made from recycled content. Once established, this policy could be shared with the Airport's tenants to encourage their own adoption of sustainability-minded purchasing practices.

## Additional Facilities and New Development

### ***Expand the Recycling Program to Areas Outside Airport Control.***

The Airport may wish to consider expanding the recycling program to additional areas, for example, in the buildings and activities that were excluded from this plan. 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. Expansion could be as simple as encouraging these areas to recycle and acting as a resource for their questions or as complex as assisting these areas with an evaluation of their facility and/or container selection and signage design.

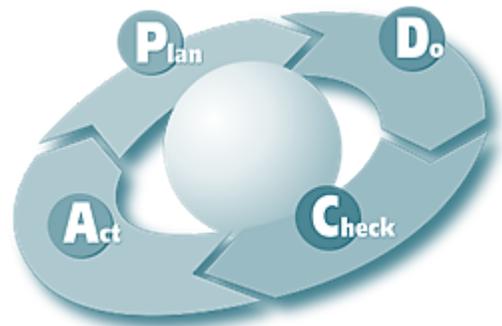
***Incorporate Recycling and Waste Management Considerations into Future Development Projects.***

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

**I. Continuous Improvement*****Maintain and Improve the Program Through the Plan Do Check Act cycle.***

It is recommended that BIS maintains and implements improvements to the recycling program by following the Plan Do Check Act cycle.

***Plan***

The recommended strategies and supporting references make up the “plan” portion of the process. Defining success (for example, something like 40 percent recycling by 2025), establishing materials and areas of focus, collecting baseline information (waste audit, surveys, etc.), identifying sub-goals, and identifying strategies are all part of planning. 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**

As strategies are implemented, the “check” portion of the process involves reporting that 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 Airport to develop and use 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 document:

- New state recycling laws, requirements, or goals
- New BIS programs or goals
- New City of Bismarck programs or goals
- New Burleigh County programs or goals
- New local infrastructure, for example, composting facility
- Changes within or expiration of franchise agreement with waste hauling contractor(s)

## **Act**

The “act” portion of the process encompasses taking what has been learned in the previous stages and actively responding. 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 on waste and recycling 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 these meetings include a representative from each of the following areas: the waste hauling company, the airlines serving BIS, the restaurant tenant, other terminal tenants, a hangar tenant, the Bismarck community, and the traveling public.

**J. Recommendations Summary**

The recommendations outlined in this document do not require major capital improvements and were designed to be compatible with BIS’s in-progress master plan, the existing recycling program, and other airport requirements.

**Table 4** summarizes recommendations for the BIS waste and recycling program.

**Table 4 - BIS Waste and Recycling Program Recommendations Summary**

<b>BIS Waste and Recycling Program Recommendations</b>	
<b>OBJECTIVES AND TARGETS</b>	
-	Set SMART goals (see Section 7).
<b>TRACKING AND REPORTING</b>	
-	Estimate and track key metrics: volume of waste to landfill, volume of material collected for recycling, recycling rate, and costs for waste and recycling services.
-	Assess trends for issues or opportunities for improvement (For example, waste generation, landfill, recycling, and cost trends.)
-	Establish a regular reporting schedule; proactively provide information about the program.
<b>REDUCE AND REUSE</b>	
-	Substitute disposable items with durable alternatives; reuse items and materials.
-	Promote and facilitate emptying of water bottles in restroom sinks and refilling post security. <ul style="list-style-type: none"> <li>o Post water bottle emptying/refilling signs to encourage reuse of disposable water bottles.</li> <li>o Post recycling of disposable water bottles that are not refilled.</li> <li>o Place a recycling station in immediate proximity of the pre-security restrooms.</li> <li>o Install liquid collections station at security checkpoint, if liquids are on-going issue in this location.</li> </ul>
-	Work with the restaurant tenant to donate edible food.
-	Collect and donate unopened food, beverage, and toiletry items.
-	Provide Supplies, Fixtures, and Project Guidelines Which Encourage Reuse. <ul style="list-style-type: none"> <li>o Issue reusable tumblers, water bottles, or mugs to staff.</li> <li>o Provide water bottle refill stations.</li> <li>o Provide location for passengers to discard and reuse magazines and newspapers.</li> <li>o Specify reuse considerations in construction projects.</li> </ul>
<b>RECYCLE AND COMPOST</b>	
<b>Paper</b>	
-	Continue the paper recycling program; ask about adding non-shredded office paper, newspapers, and magazines to the shredded paper collection.
-	Expand paper recycling program to additional areas, specifically airline deplaned newspapers and magazines and expired items from the newsstand.

<b>Plastic Bottles and Aluminum Cans, Plastic Cups</b>
<ul style="list-style-type: none"> <li>- Continue and expand the plastic bottle and aluminum can recycling program to additional areas, specifically airline deplaned beverage containers.</li> <li>- Coordinate plastic cup recycling with the airlines serving BIS.</li> </ul>
<b>Cardboard</b>
<ul style="list-style-type: none"> <li>- Continue the cardboard recycling program;</li> <li>- Provide feedback to tenants on the progress and performance of this program, solicit their feedback, and market the program to all tenants.</li> <li>- Approach Waste Management to evaluate potential to increase the value of cardboard by separating it from other streams.</li> </ul>
<b>Glass</b>
<ul style="list-style-type: none"> <li>- Continue the glass recycling program; approach Waste Management to determine whether it is possible to collect and manage glass separately to reduce contamination in this material stream.</li> <li>- Provide feedback to tenants on the progress and performance of this program and solicit their feedback.</li> </ul>
<b>Other Recyclables</b>
<ul style="list-style-type: none"> <li>- Work with the waste hauling contractor to design and implement strategies for other materials as they are identified in the waste stream.</li> </ul>
<b>Green Waste</b>
<ul style="list-style-type: none"> <li>- Evaluate how this material is managed and explore opportunities to implement strategies in alignment with the EPA hierarchy (reduction, reuse, compost, and lastly disposal).</li> </ul>
<b>Food Waste</b>
<ul style="list-style-type: none"> <li>- Implement food waste composting at BIS if a composting facility is established in the area,.             <ul style="list-style-type: none"> <li>o Start with coffee grounds, then expand to other pre-consumer food waste.</li> </ul> </li> </ul>
<b>Paper Products</b>
<ul style="list-style-type: none"> <li>- Implement paper product composting at BIS when a composting facility is established in the area,.</li> </ul>
<b>Energy from Waste (EfW)</b>
<ul style="list-style-type: none"> <li>- Utilize the EfW facility for all waste materials that cannot be reused, donated, recycled, or composted and track this stream, if an EfW facility is established in the area.</li> </ul>
<b>EDUCATION AND OUTREACH</b>
<ul style="list-style-type: none"> <li>- Improve in-terminal messaging for passengers.             <ul style="list-style-type: none"> <li>o Provide clear, instructional signage at recycling stations.</li> </ul> </li> <li>- Provide simple, on-going training for employees, tenants, and contractors.</li> <li>- Maintain and update educational program.</li> <li>- Incorporate stakeholder information in education and training.</li> </ul>
<b>CONTAINERS AND BINS</b>
<ul style="list-style-type: none"> <li>- Collocate recycling bins and garbage cans; maintain consistent placement and configuration</li> <li>- Remove standalone trash cans.</li> </ul>

- Install additional recycling stations (specifically in high traffic areas of the terminal).
- Install additional recycling bins and garbage cans in other areas, as they are added to program.
- Incorporate feedback from Airport maintenance staff to maintain and improve recycling program at BIS.
<b>SIGNAGE AND LABELING</b>
- Expand and improve signage to elaborate on the program and provide direction, specifically, in the checkpoint queuing area.
<b>OTHER RECOMMENDATIONS</b>
<b>Contracts and Leases</b>
- Revise new contract and lease language to include waste management requirements/preferences.
<b>Purchasing Policies and Requirements</b>
- Adopt a purchasing policy that prioritizes materials that are durable, reusable, recyclable, compostable, and/or made from recycled content. <ul style="list-style-type: none"> <li>o Share with tenants to encourage them to adopt their own similar practices.</li> </ul>
<b>Additional Facilities and New Development</b>
- Expand program to areas outside Airport control (through collaboration with operators of areas excluded from this plan).
- Incorporate recycling and waste management considerations as part of designing and constructing new development.
<b>Continuous Improvement</b>
- Maintain and improve the recycling and waste program according to Plan Do Check Act cycle.

## 8. Conclusion

BIS currently has a simple recycling program in place that includes basic elements and has the potential to be expanded in phases to further reduce the facility's environmental impact. This document has described the existing program and outlined recommended improvements that will allow BIS to potentially increase both landfill diversion and recycling volumes. In addition, this plan documents and supports BIS's compliance with the FMRA of 2012 and FAA guidance for recycling, reuse, and waste reduction.

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