

STEWART INTERNATIONAL AIRPORT SUSTAINABILITY GOAL

To develop Stewart International Airport into a vibrant regional airport that serves the needs of residents and businesses, promotes economic growth in the Hudson Valley region, and operates in a sustainable manner that conserves natural resources and protects the environment, consistent with the Port Authority's mission for the airport.



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Executive Summary

The Port Authority of New York and New Jersey (Port Authority) acquired Stewart International Airport (SWF, or the Airport) in 2007 with the intent to use the Airport as a demonstration of sustainability concepts, both to support and protect the regional community and to fulfill broader Port Authority sustainability goals.

“Sustainability” is not a singular, concrete concept, or a defined objective to be reached by a certain deadline. Rather, “sustainability” represents a holistic approach to integrating social, environmental, and financial factors into decision-making. Airports Council International-North America defines airport sustainability as “a holistic approach to managing an airport so as to ensure the integrity of the Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility (EONS) of the airport.”¹ Planning for sustainability demands a long-term, comprehensive, and integrated perspective that engages science and the community in order to “meet the needs of the present without compromising the ability of future generations to meet their own needs.”² Treating “sustainability” as a holistic approach to airport management shaped the development of this *Environmental Sustainability Plan*: the plan covers a broad range of topics, addresses numerous goals, and is intended to result in tangible change in the short-term, while providing a broad and adaptable framework to guide long term change.

In keeping with this understanding of sustainability, the Port Authority’s sustainability goal for SWF is to:

“Develop SWF into a vibrant regional airport that serves the needs of residents and businesses, promotes economic growth in the Hudson Valley region, and operates in a sustainable manner that conserves natural resources and protects the environment, consistent with the Port Authority’s mission for the airport.”³

The Port Authority expressed this commitment and vision in the development of this *Environmental Sustainability Plan*. The Plan presents an overview of existing and recommended future strategies, developed in close coordination with a broad stakeholder group that included the SWF Citizens Advisory Panel (CAP), resource agencies, local planning officials, members of the local community, and SWF Airport staff. This Plan is not a static guide but a living document meant to steer decision-making and provide a framework for implementation.

1 Airports Council International – North America. Airport Sustainability: A Holistic Approach to Effective Airport Management. www.acina.org/static/entransit/Sustainability%20White%20Paper.pdf. Accessed August 30, 2010.

2 Definitions of sustainability assembled from: Our Common Future, Report of the World Commission on Environment and Development, United Nations World Commission on Environment and Development, 1987. And from Environment Canada 1996 Sustainability Report, accessed from: <http://www2.ec.gc.ca/soer-ree/English/SOER/1996report/Doc/1-7-5-6-3-2-1.cfm>

3 Sustainability goal developed through internal discussions with Port Authority staff, March 2009, and reviewed in CAP workshop, June 2009

Figure ES-1 provides an overview of the process the Port Authority employed to develop this plan. The proposed short-term and future sustainability strategies included in this plan are allocated across the following ten resource categories:

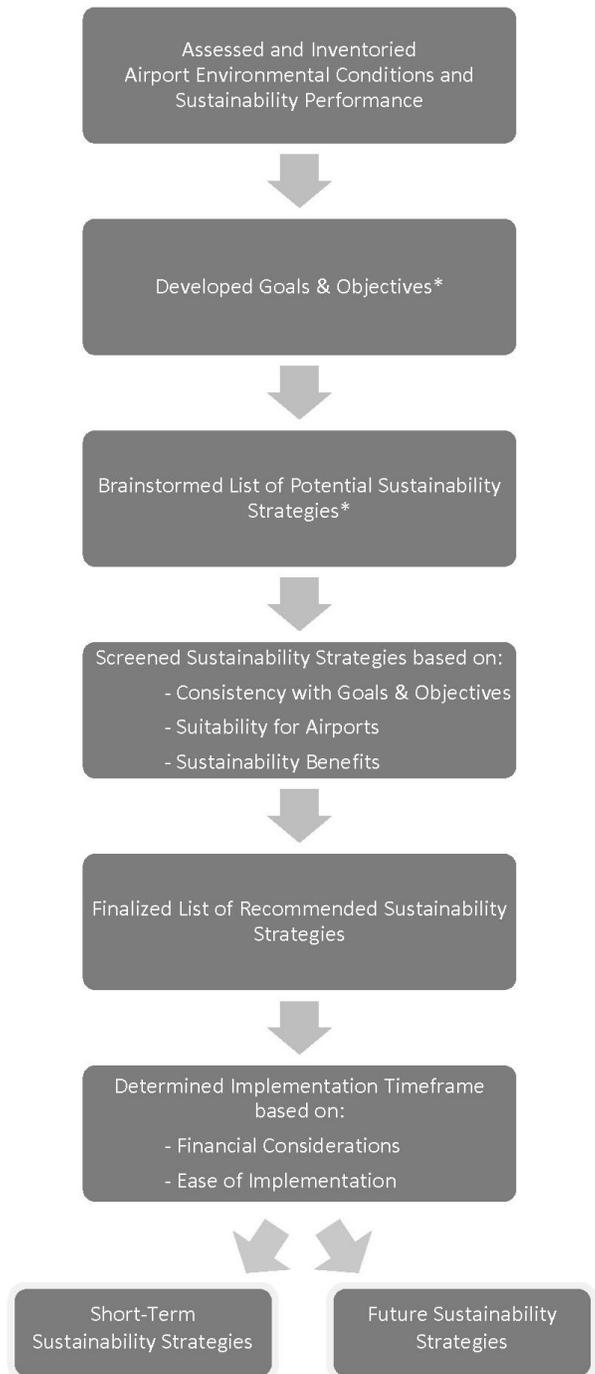
- Air Quality Enhancement and Climate Change Mitigation;
- Energy Conservation and Renewable Energy Use;
- Noise Abatement;
- Water Quality Protection and Water Conservation;
- Land and Natural Resources Management;
- Solid Waste Reduction and Recycling;
- Hazardous Materials and Hazardous Waste Management
- Surface Transportation Management;
- Socioeconomic Outreach/Community Engagement; and
- Land Use Compatibility.

Each resource category is a chapter in the Plan.

The Port Authority will work to implement the short-term strategies, as funding allows, within approximately the next five years; the long-term strategies are recommended for consideration and implementation thereafter. These strategies for future consideration may be modified based on changes in technologies, aviation and transportation trends, and redevelopment of the Airport.

A complete list of the existing and recommended short-term strategies as well as those for future consideration is included in *Appendix A, Strategies Index*, of this Plan. In addition, a list of the recommended short-term strategies is included in Table ES-1 at the end of this chapter. The list shows which strategies help to meet the goals established for the various resource categories. As the table indicates, many strategies help to meet multiple goals.

Figure ES-1 Process for Developing the SWF Environmental Sustainability Plan



* Developed with input from the SWF Citizens Advisory Panel

Although the *Environmental Sustainability Plan* clearly focuses on improving the natural environment, the Port Authority recognizes that the “triple bottom line” of sustainable organizations is environmental, social, and economic. The three components of the triple bottom line are reflected throughout the document:

Environment: The Port Authority operates within the environmental laws and policies established by federal, state, and local environmental authorities. In addition, the agency has a number of policies, goals, and programs that go beyond regulatory requirements in an attempt to reduce the environmental footprint of SWF and other facilities. These efforts include (among others):

- A Sustainability Policy that establishes Port Authority-wide sustainability goals for greenhouse gas (GHG) reduction and net zero GHG emissions, calls for the development of strategies for climate change resilience, and supports sustainable regional growth;
- Guidelines for sustainable design and construction to reduce the adverse environmental impacts of the design, construction, operation, maintenance, and leasing of new or substantially renovated buildings and facilities; and
- Requirements to consider potential climate change impacts as part of the design of new construction and major rehabilitation projects.

In addition, SWF has already implemented and is continuing to pursue a number of sustainability programs and measures. Some of these efforts, which are discussed in more detail throughout this document, include:

- Terminal gate electrification and pre-conditioned air
- Alternative-fuel vehicles
- High-albedo roofing
- Pervious pavement
- Deicing fluid collection and treatment
- Solid waste recycling
- Local procurement
- Community outreach and involvement

This document builds upon the Port Authority’s strong environmental leadership and identifies additional strategies focused on the conditions and needs of SWF. These strategies concentrate on minimizing the environmental footprint of the Airport by using energy efficiently, conserving and protecting natural resources, and preventing pollution and waste. In addition to minimizing SWF’s local impacts, the Plan concentrates on reducing the Airport’s GHG emissions, thereby helping to minimize the Port Authority’s contribution to global climate change.

Social: The Port Authority was formed to promote transportation systems to benefit the regional good. At the heart of its charter, the Port Authority is tasked with considering the social benefits of transportation. This Plan explores current and future strategies for SWF to contribute to the Hudson Valley community and provide opportunities for its citizens. Chapter 5, *Noise Abatement* and Chapter 12, *Land Use Compatibility* address Airport-related noise and explore strategies to limit potential adverse effects of Airport noise by planning far in advance of the Airport’s future redevelopment, with the intent of avoiding conflicts before they arise. Chapters such as *Air Quality Enhancement and Climate Change Mitigation* (Chapter 3), *Water Quality Protection and Water Conservation* (Chapter 6), *Land and Natural Resources Management* (Chapter 7),

Solid Waste Reduction and Recycling (Chapter 8), and *Hazardous Materials and Hazardous Waste Management* (Chapter 9) explore existing and future strategies that are designed to maintain or improve air and water quality for all citizens of the Hudson Valley, minimize the demands on the solid waste stream, and protect the land and natural resources that are the essence of the region. Chapter 10, *Surface Transportation Management*, seeks to address social equity and transportation demand by strategically improving airport accessibility and modal choice for passengers and employees from around the region.

Economic: For the Plan to succeed, the environmental and social measures must be integrated into the agency's budgeting and financing. Each chapter in this Plan reflects the reality of the current state of the economy and the Port Authority budget. The recommended short-term goals and strategies are intended to be achievable within the next few years, recognizing current expectations for the long-term redevelopment of the Airport and the short-term capabilities of the Airport and its staff. The short-term strategies should establish a basic foundation of policies and actions that will set expectations for the long-term future of SWF.

The Port Authority will create an implementation plan to prioritize, identify responsibilities for, and track the progress and impact of the short-term strategies. As part of Plan implementation, the Port Authority will collect data to determine the effectiveness of the sustainability strategies. The goals, objectives, and strategies, both long- and short-term, included in this Plan will be used to guide the Port Authority toward operating SWF in a sustainable manner that conserves natural resources and protects the environment.

Table ES-1 SWF Sustainability Strategies Matrix

SWF SHORT-TERM STRATEGIES ²	SWF SUSTAINABILITY GOALS ¹									
	Minimize SWF contribution to climate change, air pollution, and ozone layer depletion	Reduce energy consumption and use clean/renewable energy sources	Minimize noise impacts on surrounding communities	Minimize water use and contribute to protection of water quality	Minimize impacts to habitat at SWF and work with agencies to protect habitat near SWF	Minimize solid waste generation and reuse and recycle collected waste	Reduce hazardous materials use and minimize associated risks.	Reduce reliance on single occupancy vehicles as a means of travelling to and from SWF	Become a positive catalyst for economic development in the local and regional economy.	Ensure land developed at, and surrounding, SWF is compatible with Airport activities
AIR QUALITY ENHANCEMENT AND CLIMATE CHANGE MITIGATION										
Create a Cell Phone Waiting Area	√	√								
Encourage and Provide Incentives for Use of Alternative Fuel/ Hybrid Vehicles by Taxis and Rental Cars	√	√						√		
Enforce a Vehicle Anti-idling Policy	√	√		√						
Create Preferred Parking for Alternative Fuel/ Hybrid Vehicles	√	√						√		
Continue to Participate in Port Authority Alternative Fuel Vehicles Program	√	√								
Coordinate Routine Maintenance of Equipment and Facilities	√	√		√						
Phase out CFCs, HCFCs, and Halons	√						√			
Widen Taxiway C to Allow Two-way Use	√	√								
Encourage Tenant Airlines to use Alternative Aviation Fuels	√	√								
ENERGY CONSERVATION AND RENEWABLE ENERGY USE										
Include SWF Facilities in Multi-Facility Performance Based Energy Services Process	√	√				√				
Perform Retro-Commissioning of Existing Building Systems	√	√				√				
Install More Energy Efficient Lighting	√	√				√				

¹ Goals are abbreviated.

² In addition to these strategies, SWF will continue to implement numerous sustainability initiatives already in place.

SWF SUSTAINABILITY GOALS¹

SWF SHORT-TERM STRATEGIES²	Minimize SWF contribution to climate change, air pollution, and ozone layer depletion	Reduce energy consumption and use clean/renewable energy sources	Minimize noise impacts on surrounding communities	Minimize water use and contribute to protection of water quality	Minimize impacts to habitat at SWF and work with agencies to protect habitat near SWF	Minimize solid waste generation and reuse and recycle collected waste	Reduce hazardous materials use and minimize associated risks.	Reduce reliance on single occupancy vehicles as a means of travelling to and from SWF	Become a positive catalyst for economic development in the local and regional economy.	Ensure land developed at, and surrounding, SWF is compatible with Airport activities
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ENERGY CONSERVATION AND RENEWABLE ENERGY USE (continued)

Install Daylighting Control Systems	√	√				√			
Install Lighting Occupancy Sensors	√	√				√			
Purchase Energy Star Products	√	√		√		√			
Institute Office Equipment Shut-Off Policy	√	√				√			
Improve Escalator Operation	√	√							
Install High Efficiency Hand Dryers	√	√				√			
Use Energy-Efficient Roofing	√	√							
Partner with NYSERDA for Energy Efficiency Programs and Funding	√	√							
Purchase "Environmental Attributes" or Energy from Renewable Sources	√	√							

NOISE ABATEMENT

Conduct a Noise Baseline Analysis			√						
Work with Municipalities on Compatible Land Use			√						
Enhance Noise Complaint Program			√						
Conduct Noise-Related Community Outreach			√						
Coordinate with the Air National Guard to Reduce Noise Associated with Military Aircraft Activity			√						
Accommodate the FAA's Next Generation Air Traffic Control System	√	√	√						

¹ Goals are abbreviated.

² In addition to these strategies, SWF will continue to implement numerous sustainability initiatives already in place.

SWF SUSTAINABILITY GOALS¹

SWF SHORT-TERM STRATEGIES²	Minimize SWF contribution to climate change, air pollution, and ozone layer depletion	Reduce energy consumption and use clean/renewable energy sources	Minimize noise impacts on surrounding communities	Minimize water use and contribute to protection of water quality	Minimize impacts to habitat at SWF and work with agencies to protect habitat near SWF	Minimize solid waste generation and reuse and recycle collected waste	Reduce hazardous materials use and minimize associated risks.	Reduce reliance on single occupancy vehicles as a means of travelling to and from SWF	Become a positive catalyst for economic development in the local and regional economy.	Ensure land developed at, and surrounding, SWF is compatible with Airport activities
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WATER QUALITY PROTECTION AND WATER CONSERVATION

Conduct Water Use Audits	√	√		√					
Install Water Efficient Fixtures	√	√		√					
Install Water Efficient Landscaping and Irrigation Systems	√	√		√	√				
Install Pervious Pavement				√					
Coordinate with Orange County Water Authority				√					

LAND AND NATURAL RESOURCES MANAGEMENT

Develop a Vegetation Management Plan	√	√		√	√		√		√
Use Non-Wildlife Attracting Native Vegetation				√	√		√		√
Join in Partnerships with Environmental and Conservation Non-Profits				√	√			√	√
Continue Wetland Preservation and Mitigation				√	√				√

SOLID WASTE REDUCTION AND RECYCLING

Develop a Comprehensive Waste Management Program	√	√				√	√		
Purchase Environmentally Preferable Products	√	√				√	√		
Conduct Waste Management Education Program	√	√				√			

1 Goals are abbreviated.

2 In addition to these strategies, SWF will continue to implement numerous sustainability initiatives already in place.

SWF SUSTAINABILITY GOALS¹

SWF SHORT-TERM STRATEGIES²	Minimize SWF contribution to climate change, air pollution, and ozone layer depletion	Reduce energy consumption and use clean/renewable energy sources	Minimize noise impacts on surrounding communities	Minimize water use and contribute to protection of water quality	Minimize impacts to habitat at SWF and work with agencies to protect habitat near SWF	Minimize solid waste generation and reuse and recycle collected waste	Reduce hazardous materials use and minimize associated risks.	Reduce reliance on single occupancy vehicles as a means of travelling to and from SWF	Become a positive catalyst for economic development in the local and regional economy.	Ensure land developed at, and surrounding, SWF is compatible with Airport activities
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HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

Use Integrated Pest Management Techniques				√			√		
Develop Hazardous Materials Substitution Program	√	√		√			√		
Expand Recycling of Universal Wastes	√	√		√			√		

SURFACE TRANSPORTATION MANAGEMENT

Develop Transportation Demand Management Program	√	√						√	
Encourage Newburgh-Beacon Shuttle Ridership	√	√						√	
Use Appropriately Sized Newburgh-Beacon Shuttle Buses	√	√						√	
Coordinate with Local Transportation Agencies	√	√						√	
Install Bicycle Racks, Offer Secure Storage, and Paint Bike Lanes	√	√						√	

SOCIOECONOMIC OUTREACH AND COMMUNITY ENGAGEMENT

Prepare Annual Environmental Sustainability Report Card Showcasing SWF initiatives									√
Appoint an SWF Sustainability Officer									√
Continue to Participate and Collaborate with Local and Regional Business									√

¹ Goals are abbreviated.

² In addition to these strategies, SWF will continue to implement numerous sustainability initiatives already in place.

SWF SUSTAINABILITY GOALS¹

SWF SHORT-TERM STRATEGIES²	Minimize SWF contribution to climate change, air pollution, and ozone layer depletion	Reduce energy consumption and use clean/renewable energy sources	Minimize noise impacts on surrounding communities	Minimize water use and contribute to protection of water quality	Minimize impacts to habitat at SWF and work with agencies to protect habitat near SWF	Minimize solid waste generation and reuse and recycle collected waste	Reduce hazardous materials use and minimize associated risks.	Reduce reliance on single occupancy vehicles as a means of travelling to and from SWF	Become a positive catalyst for economic development in the local and regional economy.	Ensure land developed at, and surrounding, SWF is compatible with Airport activities
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SOCIOECONOMIC OUTREACH AND COMMUNITY ENGAGEMENT (continued)

Develop Sustainability Requirements for Businesses and Contractors	√	√	√	√	√	√	√	√	√	√
Develop Marketing Concept for a Sustainable Business Development District at SWF	√	√	√	√	√	√	√	√	√	√
Coordinate with Orange County Workforce Investment Board									√	
Engage Local Communities on Economic Development Issues									√	
Establish Sustainability Education Program									√	
Focus Air Service Development at SWF on Low-Cost Carriers									√	

LAND USE COMPATIBILITY

Actively Coordinate with Local Municipalities on Land Use Compatibility Issues			√							√
Conduct Noise-Related Community Outreach			√							√
Work with Tenants to Ensure Compatibility with SWF	√			√			√			√

¹ Goals are abbreviated.

² In addition to these strategies, SWF will continue to implement numerous sustainability initiatives already in place.

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Introduction and Airport Profile

Stewart International Airport (SWF) is a commercial service airport operated by the Port Authority of New York and New Jersey (Port Authority), which assumed management and operational control of the Airport in 2007. SWF is located in a semi-rural area of the Hudson Valley, between New York City and Albany, NY. The Airport serves passengers originating primarily from Orange and Putnam counties in New York, but to a lesser extent it also serves passengers from other counties in New York and from Connecticut, Pennsylvania, and New Jersey. SWF covers approximately 2,453 acres of land, of which large portions have been developed for Airport use and for uses that are dependent or reliant on the Airport for services related to cargo handling and mail distribution. Portions of the property continue to be utilized by the New York Air National Guard (NYANG), and many areas of the property remain undeveloped. This chapter provides a description of the history, location, land uses, and activity levels at SWF. It also describes the Port Authority's mission at SWF and discusses the effects of the recent economic downturn on the Port Authority's plans for redevelopment of the Airport. In addition, this chapter outlines the purpose and organization of the *Environmental Sustainability Plan* (the Plan).

1.1 History of SWF

In 1930, Archie Stewart, an aviation enthusiast and descendant of a prominent local dairy farmer, Lachlan Stewart, donated 220 acres of land to the City of Newburgh to be used as an airport. Four years later, the City of Newburgh transferred the land to the U.S. Government for \$1 million. In 1939, the U.S. Military Academy at West Point built the first airfield to be used for cadet aviation training; it was later dedicated as the "Wings of West Point." In 1948, the airfield became Stewart Air Force Base. It was deactivated and acquired by the State of New York in 1970. Later, the operating responsibility of the Airport was transferred to the New York State Department of Transportation (NYSDOT). In the 1980s, several business enterprises began operations at the Airport after NYSDOT and the Urban Development Corporation began planning for the development of Airport land then called the "Stewart Properties."

In 1989, American Airlines announced the beginning of scheduled passenger service at the Airport, followed by American Eagle and United Express. That same year, the Airport opened its 50,000-square-foot air cargo building, and the U.S. Postal Service (USPS) opened its new 300,000-square-foot Federal Mail Distribution Facility. On March 31, 2000, SWF became the nation's first privatized commercial airport under a 99-year lease

agreement with National Express Corporation. On October 31, 2007, the Port Authority assumed management control of SWF by purchasing the remaining years of the lease for \$78.5 million.⁴

1.2 SWF Profile

1.2.1 Location

SWF is located in a semi-rural area, in the Orange County towns of Newburgh and New Windsor, NY, approximately 50 miles north of New York City, and 80 miles south of Albany. It is located 5 miles west of the Hudson River and approximately 1 mile south of the Interstate-84 (I-84)/I-87 interchange. The SWF property, approximately 2,453 acres, is bounded on the west by Stewart State Forest, operated by the New York State Department of Environmental Conservation (NYSDEC), on the east by I-87, and on the north by I-84 and light industrial/commercial development (Figures 1-1 and 1-2).



Aerial view of SWF

1.2.2 Catchment Area

The air passenger catchment area for SWF covers a broad region, primarily encompassing the states of New York, Connecticut, Pennsylvania, and New Jersey. The results of a recent passenger survey show that the majority of passengers originate from Orange and Putnam counties in New York State, but that passengers also originate from Dutchess, Rockland, Sullivan, Westchester, Bronx and other New York counties (refer to Section 10.1.5 - *SWF Passenger and Employee Places of Origin* for additional information).⁵ Given recently completed and anticipated improvements to transportation access, such as a dedicated Airport interchange on I-84 and a new redesigned I-84/I-87 interchange, SWF also has an improved ability to serve communities even further north, west, east, and south along I-87 and I-84.

1.2.3 Land Uses

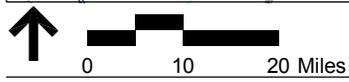
Land uses at most airports can be broadly categorized as either airside or landside facilities. Airside facilities consist of runways, taxiways, and aircraft parking areas. Landside facilities include facilities such as the passenger terminal complex, airline maintenance, general aviation, air freight, airport support, commercial, administration/ office, transportation, parking structures, and access. Some facilities (such as cargo) are located on the airside but also have access to the landside.

Airside Land Uses

SWF operates two intersecting runways (one east-west runway and one north-south runway) and associated taxiways (Figure 1-2). Both runways are paved and 150 feet wide. The east-west Runway 9-27 is the primary runway and is 11,818 feet long (Figure 1-2). The north-south Runway, Runway 16-34, is 6,006 feet long. The majority of commercial aircraft movements are accommodated by Runway 9-27.

⁴ Port Authority of New York and New Jersey, Board of Commissioners Resolution, January 25, 2007.

⁵ FAA Regional Demand Study.



Source: ESRI Streetmap 9.3

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Legend

- Stewart International Airport
- Commercial Airport
- Metro-North Hudson River Line
- Metro-North Port Jervis Line
- State Boundary
- Interstate
- Water
- Orange County
- County Boundary

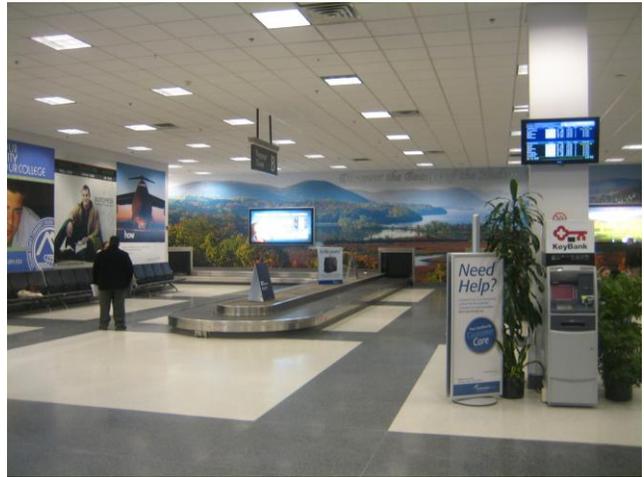
Figure 1-1
Location of SWF

Landside Land Uses

The single passenger terminal building occupies over 110,000 square feet and includes seven passenger loading bridges at eight gates. The terminal was redesigned in 1998 to include concession space, car rental agencies, and other enhancements. Its latest upgrades include a large lobby, 38 check-in stations, an additional security checkpoint, and a wider entranceway. In addition to the passenger terminal building, there are five maintenance buildings, and several administrative and commercial buildings. A portion of the land (outside the airport leasehold) at SWF has been set aside as an airport industrial/commercial development zone by First Columbia Development and the Town of New Windsor. Approximately 17.4 acres are owned as a separate parcel occupied by the NYANG. The U.S. Department of Agriculture (USDA) operates a campus on the Airport and there are other landside developments related to mail, cargo, and light manufacturing on the north side of the runways at Stewart Industrial Park.

Access

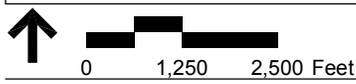
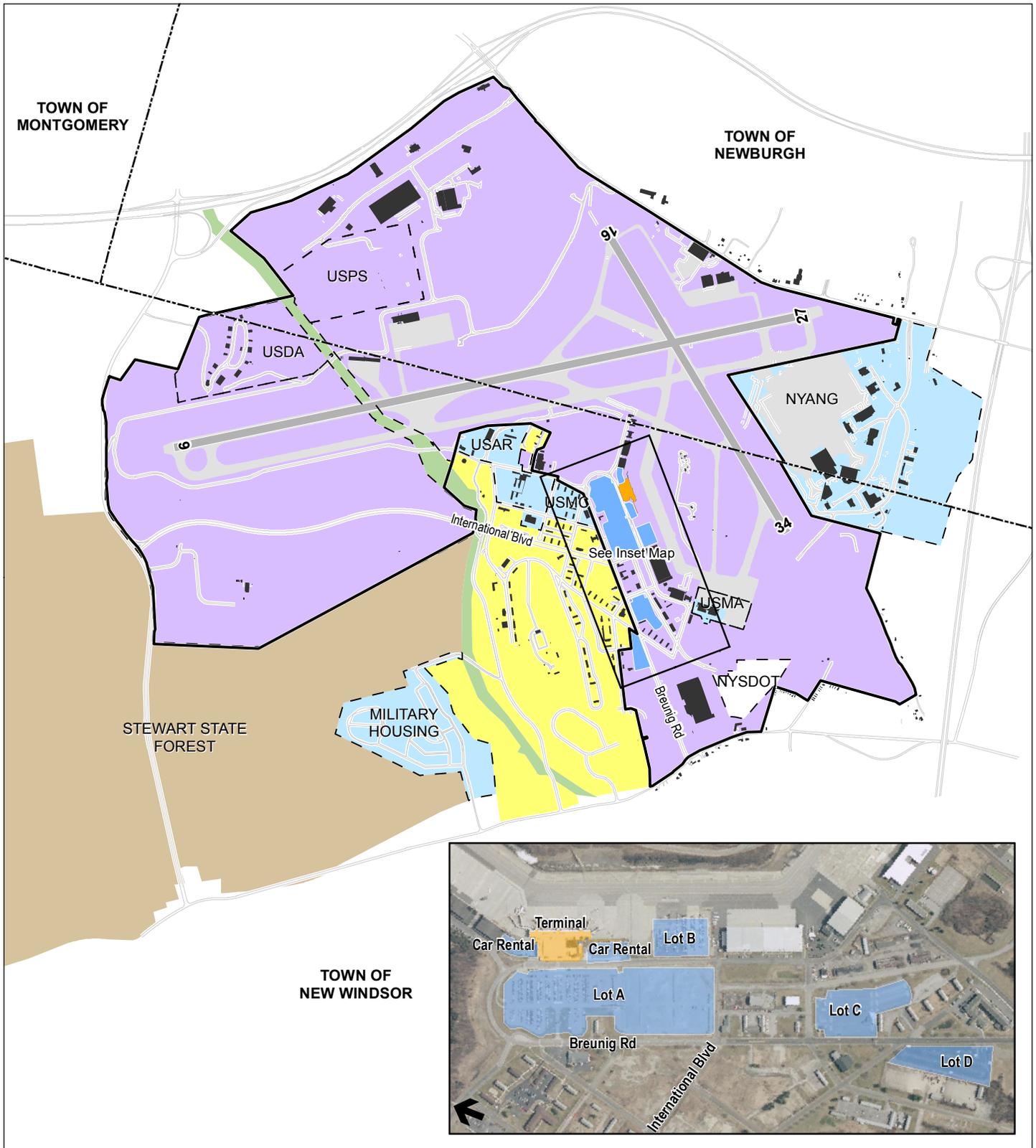
Optimal ground access had been an issue that historically limited the growth of SWF. However, several important transportation improvements have recently been completed or are currently underway: the I-84/I-87 interchange is complete, and in 2007, a new four lane access road (SR-747) opened, connecting the Airport to a new exit on I-84. The establishment of more direct rail access is being studied by the Metropolitan Transportation Authority (MTA).



Check-in and baggage claim area of the passenger terminal building

1.2.4 Operation and Management

Although SWF is owned by the State of New York and operated as a facility of the Port Authority, day-to-day operations are conducted by AFCO AvPORTS Management, LLC (AvPORTS). AvPORTS is responsible for maintaining Airport safety, complying with environmental regulations, operating the fuel farms and parking lots, conducting routine and preventive maintenance of Airport equipment and facilities, and performing all activities required for Federal Aviation Regulation compliance. The SWF General Manager, who works for the Port Authority, is responsible for oversight of AvPORTS to ensure that the operations and infrastructure at SWF are in compliance with all federal, state, and local laws and regulations, and to promote the safe operation of the Airport.



Source: Stewart International Airport, Bing Imagery

Legend

- Municipal Boundary
- Airport Property Boundary
- Parking Locations

Jurisdiction

- New York City Department of Environmental Protection - Aqueduct right-of-way
- New York State Department of Environmental Conservation - Stewart State Forest
- First Columbia Corp / Town of New Windsor
- USA (USAR, USMA, USMC, NYANG)
- SWF Airport

USMA - Military Academy @ West Point
 USMC - United States Marine Corps
 USAR - United States Army Reserve
 NYANG - New York Air National Guard

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Figure 1-2

SWF Property Map

1.2.5 Activity Levels

Aircraft operations, air passenger levels, and cargo volumes handled at SWF are summarized in the following sections. Totals are shown for 2007 through 2009 to indicate the recent effects of the economy on activity at SWF. In particular, the year 2009 was an especially difficult year for passenger travel and air cargo nationwide. The year began in the midst of the worst global recession since World War II and ended with a loss of more than 5 million jobs and a U.S. employment rate above 10 percent. Travel was hampered further by outbreaks of the H1N1 virus.⁶ These conditions (in combination with fluctuations in fuel prices) have resulted in lower passenger levels and aircraft operations at all of the Port Authority airports, but have particularly affected SWF. The suspension of service by AirTran and the short-lived operations of Skybus Airlines (both of which ended service at SWF in 2008) led to fewer flights and fewer available destinations, and associated reductions in passenger levels. These conditions are reflected in the numbers presented below.

Aircraft Operations

In 2008, SWF accommodated a total of 72,643 non-military aircraft operations. In 2009, there were 44,571 non-military aircraft operations, a 39 percent decrease from 2008 (Table 1-1).

In 2009, operations for all categories of aviation activity declined similarly as airlines cut back on service frequencies and private flying decreased due to uncertain economic conditions and high fuel costs.

Table 1-1 Aircraft Operations at SWF (2007, 2008, 2009)

Category	2007	2008	2009	Percent Change (2008-2009)
Non-Military Operations	87,159	72,643	44,571	-39%
<i>Domestic Air Carrier</i>	16,059	13,795	7,827	-43%
<i>International Air Carrier</i>	0	8	6	-25%
<i>General Aviation</i>	71,100	58,840	36,738	-38%
Military Operations	2,250	1,954	1,006	-49%
Cargo (Included in above categories)	1,522	1,612	936	-42%
Commuter/Regional Flights (included in above)	7,756	6,740	5,417	-20%

Source: Military data from FAA Opsnet Online Database. Other data from Port Authority of New York and New Jersey, Monthly Summaries of Airport Activities. <http://www.panynj.gov/airports/traffic-statistics.html>

Notes: A commuter/regional flight is a non-mainline carrier flight. These flights typically use regional jets or turboprop aircraft. Aircraft operations include arriving aircraft and departing aircraft

General aviation operations comprise a variety of aircraft sizes and types that include single engine propeller driven aircraft, corporate jets, and helicopters. General aviation represents a large proportion (82 percent in 2009) of the total non-military operations at SWF. As shown in Table 1-1, there were 58,840 and 36,738 general aviation operations at SWF in 2008 and 2009, respectively. General aviation operations declined 38 percent in 2009, from 2008 levels.

SWF hosts a significant military presence in the form of the NYANG, the United States Marine Corps, and the United States Army. In 2008, there were 1,954 military aircraft operations at SWF. In 2009, military aircraft operations at SWF totaled 1,006, a decrease of 49 percent compared to 2008.

⁶ Port Authority of New York & New Jersey, 2009 Airport Traffic Report.

Air Passengers

In 2008, SWF served 789,307 passengers on scheduled commercial air carrier operations. In 2009, 390,065 passengers were served (Table 1-2).⁷ Four major airlines operated at SWF in 2009 as mainline carriers or through contracted commuter/regional airlines. These airlines include JetBlue Airways, Delta Air Lines, Northwest Airlines (NWA), and US Airways. The merger of NWA into Delta Air Lines was completed on January 31, 2010.

Table 1-2 Total Passengers by Airline (2007, 2008, 2009)

Airline	Passengers		
	2007	2008	2009
JetBlue Airways	353,392	293,444	180,154
AirTran Airways ¹	290,006	208,349	-----
Delta Connection/ Atlantic Southwest	64,012	100,253	43,290
NWA Airlink: Pinnacle	52,528	56,792	76,466
US Airways Express/ Air Wisconsin	39,779	48,328	76,649
US Airways Express/ Piedmont	57,694	47,307	9,088
US Airways Express/ Chautauqua	-----	-----	4,418
Skybus	-----	34,834	-----
American Eagle	53,856	-----	-----
Allegiant Air	2,660	-----	-----
Total	913,927	789,307	390,065

Source: Port Authority of New York and New Jersey, *Monthly Summaries of Airport Activities*, <http://www.panynj.gov/airports/traffic-statistics.html>

¹ AirTran Airways ceased operations at SWF in September 2008.

⁷ Port Authority of New York and New Jersey, *2007 Airport Traffic Report*.

Cargo

In 2009, there were 936 cargo operations at SWF (Table 1-1) carrying 10,755 tons of cargo by integrated air cargo operators (Table 1-3).⁸ The primary integrated air cargo operators at SWF include FedEx, United Parcel Service (UPS), and Air Transport International. Commercial airlines carry cargo in their baggage compartments for additional revenue, often for the USPS.

Table 1-3 Cargo Volume by Operator (2007, 2008, 2009)

Operator	Cargo (in short tons)		
	2007	2008	2009
FedEx	7,867	8,417	7,663
United Parcel Service	5,389	4,108	3,033
ABX Air Inc.	4,405	5,086	----
Air Transport International	----	104	52
US Airways Express / Piedmont	3	3	----
US Airways Express/ Air Wisconsin	1	1	2
NWA Airlink: : Pinnacle	----	2	2
JetBlue Airways	----	----	2
Total	17,666	17,721	10,755

Note: Totals may not add due to rounding.

Source: Port Authority of New York and New Jersey, Monthly Summaries of Airport Activities, <http://www.panynj.gov/airports/traffic-statistics.html>

1.3 Tenants

The tenants at SWF operate a multitude of industries. Airlines, aircraft ground servicing operators, car rental agencies, food concessions, and retailers occupy the terminal. Industrial manufacturers and small and large businesses occupy the Stewart Airport Industrial Park and other parts of the property. Cargo, logistics providers, and government import agencies such as the USDA operate on the northern side of the runways. Aircraft manufacturers, corporate aviation departments, and maintenance facilities operate bases at the Airport. Some tenants, such as utilities, have infrastructure at the Airport but do not have employees. A partial list of tenants is shown in Table 1-4 (some smaller tenants and sub-tenants are not listed).

⁸ Integrated Air Cargo Carriers are airlines solely dedicated to cargo operations such as FedEx.

Table 1-4 SWF Tenant List (Partial)

Aeronautical Radio, Inc.	Mom and Pop's Candy Company
Airport Properties I (Marriott Courtyard)	Nelco International
Air Logistics, LLC	Newburgh City School District
American Express Co.	Nexans
Delta/Northwest	NYS Police - Mid Hudson Crime Lab
Atlantic Aviation	NYS Police - SWF Detail
AT & T	NYS Police - S/P Newburgh
Avis/Budget Car Rental	Orange Co. Waste Transfer Station At intersection of Rts. 17K and 87
Bergy Realty	Richmor Aviation Stewart LLC
Cessna Aircraft Company	Pacific Sintered Metals
CRS Business Computers	Reese Aircraft, Inc.
CRS Retail Systems/CRS Realty	Republic Parking System, Inc.
Enterprise Rent-A-Car	Transportation Security Administration (TSA)
FAA Navaid/Radar Maintenance	United Parcel Service (UPS)
Farpost Soccer Academy	UPS Supply Chain Solutions, Inc.
Federal Express Air	US Airways Express, Inc.
Federal Express Corp. Ground	U.S. Customs Service
Federal Express City Station Stewart Industrial Park	U.S. Dept. of Agriculture Animal Import Center
General Electric Corp.	U.S. Department of Army/2nd Hangar 108
Hertz/Enterprise Car Rental	USPS - General Mail Facility Stewart Industrial Park
Hudson News	Verizon
Jet Blue Airways	Visconti Ground Transport, LLC
Metal Container Corporation (Anheuser-Busch Company)	

Note: Tenants on this list are located throughout the Airport property, including in the terminal, hangars, tenant-owned buildings, and the Stewart Airport Industrial Park. The Air National Guard base was not included in this list because it is a separate entity from SWF. The Air National Guard, however, did complete the 2009 Tenant Survey form for informational purposes only; it was not included in the survey analysis and findings presented in this report. See Section 2.3, Approach to Developing the Environmental Sustainability Plan, for details on the 2009 Tenant Survey.

1.4 Port Authority Mission at SWF

When the Port Authority assumed control of SWF, it committed to a 10-year, \$500 million capital improvement plan and developed a mission statement for guiding the future transformation of the Airport. The Port Authority's mission at SWF is:

- To develop the Airport into an efficient, economical, and sustainable gateway for Hudson Valley travelers and cargo.
- To develop the Airport into a vibrant regional airport that serves the needs of the residents and businesses in the Hudson Valley region.

- To develop the Airport so that it functions as an economic engine that promotes economic growth in the Hudson Valley region in a sustainable manner.⁹

The Port Authority's mission at SWF is integrated with, and supported by, the agency's sustainability policies and programs. Two key components of the Port Authority's sustainability vision are the agency's Sustainability Policy, which focuses on reductions in GHG emissions, and the *Sustainable Design Project Manual*, which addresses airport development. The Port Authority's Sustainability Policy and *Sustainable Design Project Manual* are presented in Chapter 2, *Stewart International Airport Commitment to Sustainability*, of this report.

The recent severe economic downturn has caused a decline in aircraft activity and passenger levels at SWF and at the other Port Authority airports. This decline has resulted in a decrease in revenue generation and has necessitated cuts in the Port Authority's recent capital and operating budgets. The 2010 budget calls for zero growth in operating expenses for the second straight year. Although the budget contains \$3.1 billion for capital spending for all Port Authority airports, this level of funding is only enough for priority capital projects and essential maintenance of Port Authority facilities ("state of good repair" items).

The Port Authority's mission at SWF has not changed. However, with the ongoing economic situation and the necessary focus on relatively small-scale capital improvements and essential maintenance activities, the Port Authority has had to postpone temporarily the preparation of a redevelopment plan for SWF.

When funds are available, the redevelopment plan study will be completed. It is anticipated that future SWF redevelopment would be triggered by a specified activity level (number of passengers). Given the recent downturn in SWF activity and uncertainties regarding the economy and airline service to the Airport, redevelopment has not been tied to a specific time frame.

This *Environmental Sustainability Plan* was prepared recognizing these economic constraints.

1.5 Purpose and Organization of the Environmental Sustainability Plan

Although the Port Authority's plans for redevelopment of SWF are temporarily on hold until the economy recovers, the Airport has remained committed to sustainability. The agency's commitment is demonstrated through this Plan, which will serve as a roadmap for operating SWF responsibly and in a way that conserves the region's natural resources for future generations.

Chapter 2, *Stewart International Airport Commitment to Sustainability*, describes the Port Authority's commitment to sustainability, including an overview of agency-wide initiatives; outlines the overall sustainability goal for SWF; describes the process used to develop and evaluate potential sustainability goals, objectives, and strategies; and explains the short-term and long-term time horizons used to categorize the recommended strategies.

Chapters 3 through 12 represent ten major topic areas: Air Quality Enhancement and Climate Change Mitigation; Energy Conservation and Renewable Energy Use; Noise Abatement; Water Quality Protection and Water Conservation; Land and Natural Resources Management; Solid Waste Reduction and Recycling;

⁹ Developed through internal discussions with Port Authority staff, April 2009.

Hazardous Materials and Hazardous Waste Management; Surface Transportation Management; Socioeconomic Outreach/Community Engagement; and Land Use Compatibility.

Each chapter describes the environmental baseline (existing conditions) of that topic, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF. Many of the sustainability strategies included in this plan also apply to tenant operations at SWF. The emphasis is on strategies that will have environmental and socioeconomic benefits for the Hudson Valley region but that are relatively low cost and appropriate for implementation at SWF in the near term. Each chapter also contains a list of sustainability strategies for the Port Authority to consider implementing in the future when the economy recovers and the Port Authority prepares to redevelop SWF.

Chapter 13, *Performance Management*, describes the Port Authority's overall approach to implementing and monitoring the sustainability strategies proposed in this Plan. The Port Authority will develop more detailed plans for implementation, ongoing monitoring, and measurement of the Airport's performance, including a matrix that prioritizes strategies against implementation metrics. Organizing metrics will facilitate prioritization in both the short and long terms.

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2

Stewart International Airport - Commitment to Sustainability

When the Port Authority assumed management control of the Airport in 2007, it affirmed a core value of environmental sustainability: operating the Port Authority's transportation facilities responsibly and in a way that conserves the region's natural resources for future generations. This chapter describes the Port Authority's commitment to sustainability as well as SWF's sustainability goals. It also describes the approach to developing this *Stewart International Airport Environmental Sustainability Plan* and the planning and implementation horizon for the Plan.

2.1 Agency Sustainability Policies and Programs

In June 1993, the Port Authority formally issued an environmental policy statement recognizing its long-standing commitment to provide transportation, terminal, and other facilities of commerce within the Port District, to the greatest extent practicable, in an environmentally sound manner. The policy seeks to minimize environmental impacts from Port Authority operations, organize and advance regulatory reporting and compliance, and integrate environmental planning into the capital planning process. The key agency initiatives that reflect this policy are summarized in this section. These policies and programs formed the foundation for the preparation of the SWF *Environmental Sustainability Plan*.

Key Port Authority Sustainability Initiatives:

Sustainability Policy

- Sets goal for 80 percent reduction in GHG emissions (within agency control) by 2050
- Calls for agency to work with tenants and others to reduce their GHG emissions
- Sets goal of net zero GHG emissions from Port Authority operations
- Calls for development of strategies for climate change resilience

Sustainable Design Project Manual

- Includes guidelines for design and construction of agency and tenant facilities
- Applies to new construction or renovation of 5,000 gross square feet or more
- Will include guidelines for infrastructure projects

Climate Change Resilience

- Involves adapting facilities to accommodate predicted impacts of climate change
- Requires that new projects be evaluated for potential climate change risks

Note: Specific initiatives being implemented at SWF are discussed in Chapters 3 through 12.

2.1.1 Port Authority Sustainability Policy

In March 2008, the Port Authority Board of Commissioners expanded the Port Authority's environmental policy to include a sustainability component that explicitly addresses the problem of global climate change and ensures that the agency maintains an aggressive posture in its efforts to reduce GHG emissions within the region. The resulting Sustainability Policy establishes Port Authority-wide sustainability goals for carbon neutrality and resilience to climate change, and to support sustainable regional growth. These Port Authority-wide goals are as follows:

- Make best efforts to reduce GHG emissions from the Port Authority's own facility activities by 5 percent annually and 80 percent from 2006 levels, by 2050;
- Encourage customers, tenants, and partners to conduct their business in a more sustainable fashion, including reductions in their own GHG emissions. Seek out innovative mechanisms and partnerships through which the region's overall GHG footprint may be reduced;
- Direct actions toward achieving a goal of net zero GHG emissions for emissions under the Port Authority's direct control, by 2010; and
- Develop strategies that reduce the risk posed by climate change to Port Authority facilities and operations and, in collaboration with other regional stakeholders, develop strategies that mitigate the risk to the region posed by climate change in a manner that will promote a sustainable environment.¹⁰

¹⁰ The Port Authority of New York and New Jersey. *Sustainability Program Fact Sheet*, May 2008.

The above listed goals are applicable to all Port Authority-owned and operated facilities, including SWF.

To aid in implementing the Sustainability Policy, the Port Authority prepares an annual GHG inventory for all of its facilities. The GHG inventory is described in more detail in Chapter 3, *Air Quality Enhancement and Climate Change Mitigation*.

2.1.2 Port Authority Sustainable Design Project Manual

In July 2004, the Port Authority published its *Sustainable Design Guidelines for New Construction*¹¹ to guide design and development of Port Authority-owned and operated facilities in a sustainable manner. These guidelines were expanded to apply to tenant-owned and operated facilities with publication of the *Sustainable Design Project Manual*¹² in August 2007. The *Sustainable Design Project Manual* contains a compilation of actions applicable to Port Authority and tenant capital building projects involving new construction or renovation of 5,000 gross square feet or more. The actions are intended to reduce the adverse environmental impacts of the design, construction, operation, maintenance, and leasing of new or substantially renovated buildings and facilities.

The Port Authority is currently updating and revising the *Sustainable Design Project Manual*. As part of this effort, the Port Authority is developing sustainable design strategies for infrastructure to complement the existing guidelines for building projects. The new *Sustainable Design Project Manual for Infrastructure* aims to capture many of the Port Authority's current best practices as well as provide additional sustainable design strategies for infrastructure-related projects. These strategies will apply to airfield projects, utilities, roadways, parking lots, site work, and outdoor lighting, among others. The Manual includes credits relating to site environmental quality, water, energy, materials, construction, and operations and maintenance (O&M). As with the existing building guidelines, the *Sustainable Design Project Manual for Infrastructure* utilizes a point structure for project achievement, and is tailored to reflect the unique characteristics of airport design, construction, and operation. It is expected that these guidelines will be tested and finalized in 2010.

Any long-term redevelopment of the Airport and all applicable short-term capital projects would be subject to the *Sustainable Design Project Manual* (for building projects) and the *Sustainable Design Project Manual for Infrastructure*. The strategies found in this *Environmental Sustainability Plan* are meant to supplement the concepts already established by the guidelines.

11 Port Authority of New York and New Jersey Engineering Department. *Sustainable Design Guidelines, New Construction*, July 22, 2004.

12 Port Authority of New York and New Jersey Engineering Department. *Sustainable Design Project Manual*, August 15, 2007.

2.1.3 Climate Change Resilience

The climate of New York State is already changing, and current research indicates that, with continuing increases in greenhouse gas concentrations in our atmosphere, New York's climate will change further. Average temperatures each season are predicted to increase, and there are expected to be more extremely hot days during the summer. Winter precipitation is also expected to increase, with more of the precipitation falling as rain. Storms are predicted to become more frequent and severe, and drought conditions are predicted to occur more often.¹³ These changes in climate could affect SWF facilities and operations directly, and could cause impacts in the Hudson Valley and New York City regions that have implications for SWF.

There are two general types of strategies to address climate change: "mitigation" (focusing on reductions in greenhouse gas emissions) and "adaptation" or "resilience" (adapting facilities to accommodate predicted climate-change-related impacts and risks). Strategies for climate change mitigation are included throughout this *Environmental Sustainability Plan*, particularly in the discussions of greenhouse gas reduction (Chapter 3) and reduction in energy use (Chapter 4).

The Port Authority is participating in two separate programs on climate change adaptation: the New York City Climate Change Adaptation Task Force (CCATF), and ClimAID: Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State. The CCATF was launched by Mayor Bloomberg in August 2008 and tasked with the mission of identifying critical infrastructure in New York City that could be at risk from the effects of climate change and developing coordinated adaptation strategies to secure these assets. The Port Authority is one of 40 city, state, federal, and private sector infrastructure operators and regulators that comprise the CCATF. The goal of the ClimAID study is "to provide New York State with cutting-edge information on its vulnerability to climate change and to facilitate the development of adaptation policies informed by both local experience and state-of-the-art scientific knowledge." The study is considering climate risks, vulnerability, and adaptation within key sectors, including transportation. A final report is expected sometime in 2010.¹⁴

In response to the potential risks related to climate change, the Port Authority requires that the design of all new construction and major rehabilitation projects be evaluated based on potential climate change impacts. This requirement will help to minimize potential damage to SWF facilities and to ensure continued and efficient operation of the Airport. The Port Authority Engineering Department will update the estimates of potential climate change impacts as new information becomes available.

2.2 Overall Sustainability Goal for SWF

As an important first step in preparing the *Stewart International Airport Environmental Sustainability Plan*, the Port Authority developed an overall sustainability goal for SWF, which is:

¹³ Union of Concerned Scientists, "New York, Confronting Climate Change in the U.S. Northeast," based on "Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions," a report of the Northeast Climate Impacts Assessment, 2007.

¹⁴ "ClimAID: Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State," presentation, NYSERDA EMEP Meeting, October 15, 2009.

To develop Stewart International Airport into a vibrant regional airport that serves the needs of residents and businesses, promotes economic growth in the Hudson Valley region, and operates in a sustainable manner that conserves natural resources and protects the environment, consistent with the Port Authority's mission for the Airport.

In addition to developing an overall sustainability goal for SWF, goals and objectives were developed for the following categories:

- Air quality enhancement and climate change mitigation
- Energy conservation and renewable energy use
- Noise abatement
- Water quality protection and water conservation
- Land and natural resources management
- Solid waste reduction and recycling
- Hazardous materials and hazardous waste management
- Surface transportation management
- Socioeconomic outreach/community engagement
- Land use compatibility

The goals and objectives are detailed in Chapters 3 through 12 of this *Stewart International Airport Environmental Sustainability Plan*. The goals and objectives in each category listed above are designed to support the Port Authority-wide sustainability goals.

2.3 Approach to Developing the Environmental Sustainability Plan

The Port Authority involved resource agencies, Airport tenants, and the local community in the preparation of this Plan. The environmental sustainability initiatives currently being implemented at the Airport and described in this plan include both Airport and tenant activities. The Port Authority collected data on tenant policies, operations, and employment by distributing a written survey to tenants in February 2009. A copy of this survey is included in Appendix B. The information taken from the survey results has been integrated into each topic chapter of this document. The survey asked about current sustainability practices and environmental policies relating to waste and recycling, energy and fuel usage and conservation, water recycling, and procurement of materials such as local purchasing or recycled content materials. The survey also sought to collect a list of tenant vehicles and their fuel type, and obtain information on flight and ground operations of airlines. The tenant employee commuting information was determined by specifically asking about employee commuting patterns and asking for a list of zip codes for those employed by the tenant to help inform how to best address alternative transportation for employees in this document and in the future. The 30 tenants that responded to the SWF Tenant Survey provided the Port Authority with a valuable inventory of the measures tenants are taking to contribute to SWF's environmental sustainability commitment.

To gather input from the community, the Port Authority held two sustainability strategies brainstorming sessions on June 30, 2009. The purpose of the sessions was to solicit input from attendees on sustainability strategies the Port Authority should consider including in the *Stewart International Airport Environmental Sustainability Plan*. The sessions were attended by some members of the Citizens Advisory Panel (CAP)¹⁵ as well as resource agencies, local planning officials, and members of the local community. The Port Authority presented the sustainability goals and objectives for SWF during the sessions, and invited attendees to brainstorm sustainability strategies that are consistent with the goals and objectives. The sessions generated many excellent ideas and suggestions. A full list of the suggestions made during the sustainability strategies brainstorming sessions is provided in Appendix C. The sustainability strategies suggested by attendees of the sustainability strategies brainstorming sessions, other potentially suitable strategies recommended by the Port Authority's sustainability consultant team, and ideas from sustainability initiatives in practice at other airports around the world were compiled and entered into a database for screening. This screening was intended to capture the strategies that would be suitable for implementation at SWF and that would support the Airport's sustainability goals. Many of the strategies mirror the credits in the *Sustainable Design Project Manual* and the upcoming *Sustainable Design Project Manual for Infrastructure*, but go beyond those documents by applying the concepts to existing facilities and Airport operations and maintenance (as well as to future construction or renovation). The sustainability strategies included in the database were evaluated and screened for inclusion in the Plan based on the following tiered screening approach and criteria (Figure 2-1):



Participants at the sustainability strategies brainstorming sessions

Tier 1 Screening Criteria

A "Yes" response was required for both Tier 1 screening criteria in order for a sustainability strategy to proceed to the next level of screening. A "No" response eliminated a sustainability strategy from further consideration.

A. Is the strategy consistent with the sustainability goals and objectives set for SWF and Port Authority-wide sustainability goals?

Because the intent of this plan is focused on improving SWF's sustainability, strategies that do not contribute to SWF sustainability goals and objectives were not retained for further consideration or inclusion in the Plan.

B. Is the strategy suitable for implementation at an airport?

Strategies that were not appropriate to the Airport's fundamental purpose of providing safe and efficient air transportation were eliminated from further consideration.

¹⁵ The Port Authority formulated the SWF CAP in 2008 as a forum for informing the community of its future plans for SWF and for the community to voice their concerns and suggestions.

Tier 2 Screening Criteria

The sustainability strategies that received a majority of “Yes” responses for these screening criteria were typically retained for inclusion in the *Stewart International Airport Environmental Sustainability Plan* provided they were consistent with the time horizon of the Plan (as discussed in Section 2.4, *Environmental Sustainability Plan Horizon*).

A. Has the strategy been successfully implemented or proven promising by other airports or organizations?

Results of this screening were determined based on knowledge and experience with other airports. If a strategy has been implemented at another airport, it is more likely to be applicable to and successful at SWF.

B. Is the strategy prudent or feasible to implement and/or maintain with limited resources?

Given the current economic climate, the Port Authority has limited its operating budgets for all facilities and has scaled back its capital improvement plan. These restrictions have severely limited the resources available to SWF within the horizon of the Sustainability Plan (Section 2.4, *Environmental Sustainability Plan Horizon*). This screening criterion was intended to prioritize strategies that can be implemented with limited funds. Eligibility for outside assistance and funding may improve a potential strategy's standing under this criterion. Some strategies with higher capital and/or operational costs were retained for inclusion as “strategies for future consideration” if their environmental benefit warranted further consideration.

C. Will the strategy yield the greatest environmental benefits compared to strategies with the same objectives?

This criterion was intended to differentiate between strategies with similar objectives (e.g., reducing greenhouse gas emissions), in order to identify those strategies with greater relative environmental benefits.

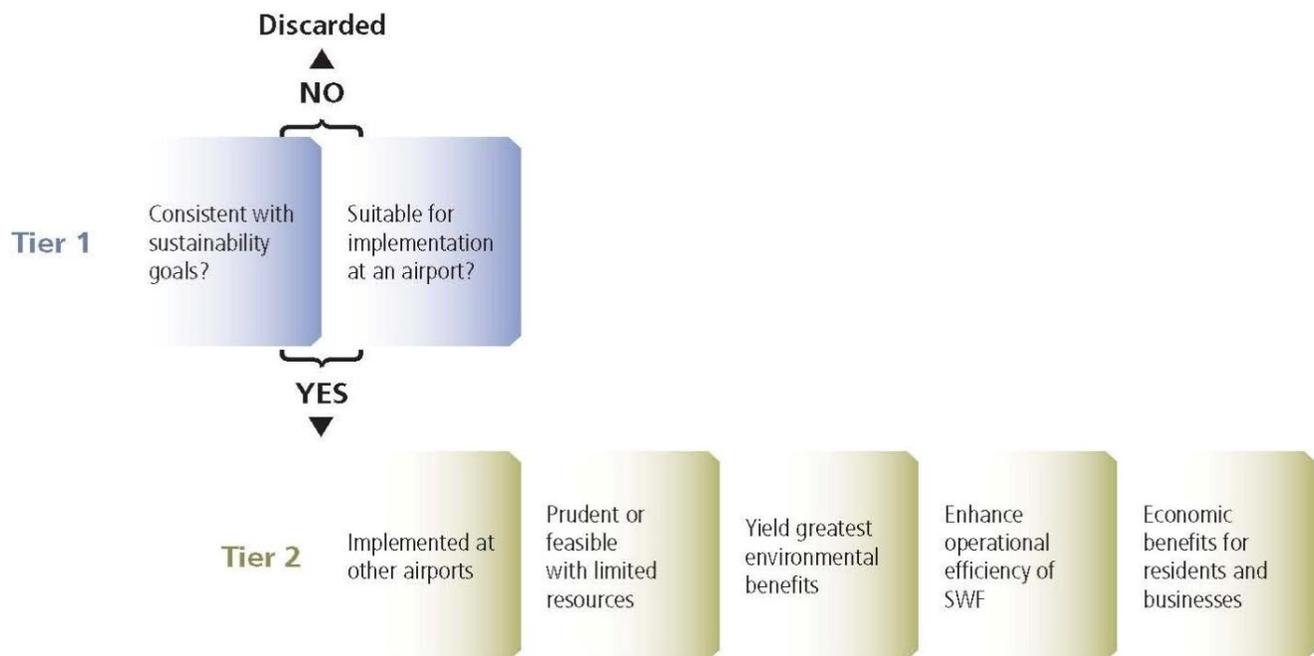
D. Will the strategy enhance the operational efficiency of SWF?

Strategies that would have the potential to enhance SWF's operational efficiency as well as contribute to the Airport's sustainability goals were identified.

E. Will the strategy create economic benefits for residents and businesses in the Hudson Valley region?

This criterion was intended to identify strategies that would result in community and economic benefits.

Figure 2-1 Strategy Screening Criteria and Process



2.4 Environmental Sustainability Plan Horizon

2.4.1 Short-Term Planning Horizon

The *Stewart International Airport Environmental Sustainability Plan* has a short-term planning and implementation horizon of approximately five years. The Plan focuses on sustainability strategies that are feasible to implement or for which implementation can commence during this time frame. During this period, it is expected that only relatively small-scale priority capital improvements and essential maintenance activities will be conducted at SWF. The short-term planning horizon is not tied to an Airport activity forecast or specific planning milestone. As a consequence of the economic downturn, the Plan focuses on sustainability strategies that will have environmental and socioeconomic benefits for the Hudson Valley region while also being relatively low cost and easily implementable.

2.4.2 Long-Term Planning Horizon

Planning for sustainability inherently implies planning for the long-term future. In addition to the short-term sustainability measures SWF plans to implement, SWF is also looking ahead, and beginning to plan strategies to be implemented beyond the five-year short-term horizon. These strategies for future consideration are documented in Chapters 3 through 12. The Plan includes brief discussions of these strategies for future consideration. Some of the strategies are associated with long-term Airport redevelopment, which will be tied to the economy, aviation activity, and Port Authority budgeting abilities. Other strategies would involve agency-wide changes in policies and procedures, or participation/implementation by outside entities.

This *Environmental Sustainability Plan* is a 'living' document and as such, the Port Authority plans to periodically update the Plan and evaluate progress in its implementation. When conducting the first update to the Plan, the Port Authority will reevaluate the applicability of the sustainability strategies that were determined to be beyond the short-term horizon of the Plan in order to ensure that SWF is implementing the optimal strategies to meet its sustainability goals and objectives.

In order to continually move toward SWF's overall sustainability goal, the Port Authority will have to adapt to changes in the environmental, social, and economic context in which it operates. Specifically, changes in technologies, aviation and transportation trends, environmental regulations, climate patterns, and local and regional developments will require SWF to adjust its sustainability strategy. A key component of future updates is an evaluation of advancements in technology and major new industry trends to determine how they apply to and affect the Plan.

Any updates to this *Environmental Sustainability Plan* and progress on its content will be communicated at CAP and Stewart Airport Commission (SAC) meetings and through the Port Authority's SWF website.

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Air Quality Enhancement and Climate Change Mitigation



This chapter describes the environmental baseline, existing sustainability strategies, and sustainability strategies relating to air quality enhancement and climate change mitigation that the Port Authority has committed to implementing at SWF. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

Climate change mitigation is linked to a number of environmental resource categories, including air quality enhancement, energy conservation and renewable energy use, solid waste reduction and recycling, and surface transportation management. The primary discussion of climate change mitigation is included in this section because the GHG emissions that contribute to climate change are considered an air pollutant. Where sustainability strategies in other sections are relevant to climate change mitigation, cross-references to this discussion are provided.

3.1 Environmental Context

This section describes air quality in the region, including the status of United States Environmental Protection Agency (U.S. EPA) criteria pollutants. The section also provides an overview of GHG emissions.

3.1.1 Regional Air Quality

SWF is located in a rural, low-density setting. Major sources of air emissions in the area are vehicles using I-87 and I-84, and nearby power utilities along the Hudson River including two major power stations: Roseton and Danskammer.

The U.S. EPA established the National Ambient Air Quality Standards (NAAQS) to protect public health, the environment, and the quality of life from the detrimental effects of air pollution. These NAAQS were set for the following six “criteria” air pollutants: carbon monoxide (CO), Ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM) with a diameter of less than or equal to 10 or 2.5 micrometers (PM₁₀ and PM_{2.5}, respectively), and lead (Pb). Criteria air pollutants are regulated because they can harm people's health and the environment. Ozone (also known as smog) and particulate matter are considered to cause the greatest

health issues. Ozone can cause irritation to the respiratory system, reduce lung function, aggravate asthma, and trigger asthma attacks. Particulate matter can enter deep into the lungs and into the bloodstream, and can cause increased respiratory symptoms, decreased lung function, aggravated asthma, bronchitis, and heart problems.

According to ambient air quality data obtained from the U.S. EPA for Newburgh, NY (Orange County), the area is currently designated by the U.S. EPA as in “attainment” for CO, NO₂, SO₂, Pb, and PM₁₀. A designation of attainment means that the quality of air in an area meets the NAAQS for these pollutants. The area is currently designated by the U.S. EPA as “nonattainment” for PM_{2.5}. It is also designated as “nonattainment” for 8-hour O₃ with a classification of moderate. A designation of nonattainment means that an area has air quality that has not reached attainment of the NAAQS, and must develop a plan to reach attainment. The closest ambient air quality monitoring station is located in the Town of Newburgh.

3.1.2 Emissions of Criteria Pollutants

Sources of air emissions at SWF include mobile and stationary sources. Mobile sources include aircraft, motor vehicles (including tanker trucks used to distribute fuel from fuel storage tanks to aircraft), and ground support equipment (GSE). Stationary sources include fuel storage, the heating and cooling system, steam boiler plant, and emergency electricity generators. The most recent *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey* quantifies criteria air pollutant emissions from all Port Authority-owned facilities, including SWF, in calendar year 2008.¹⁶ For 2008, it was estimated that SWF emitted 149 metric tons of nitrogen oxide (NO_x), 13 metric tons of SO₂, and 11 metric tons of both of PM₁₀ and PM_{2.5}.¹⁷ In 2008, it was estimated that all Port Authority aviation facilities emitted approximately 12,300 metric tons of NO_x, 1,600 metric tons of SO₂, 700 metric tons of PM₁₀, and 600 metric tons of PM_{2.5}.¹⁸

3.1.3 Greenhouse Gas Emissions and Climate Change

The U.S. EPA defines climate change as “any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer).”¹⁹ Climate change may result from a number of factors, including:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g. changes in ocean circulation);
- human activities that release greenhouse gas emissions into the atmosphere (e.g. through burning fossil fuels or changing land surfaces through deforestation, reforestation, urbanization, desertification, etc.).

16 Southern Research Institute and E.H. Pechan & Associates, Inc., *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey*, Calendar Year 2008, June, 2010.

17 Southern Research Institute and E.H. Pechan & Associates, Inc., *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey*, Calendar Year 2008, June 2010, p. 41.

18 Ibid.

19 United States Environmental Protection Agency. *Climate Change Basic Information*. <http://www.epa.gov/climatechange/basicinfo.html>. Accessed April 12, 2010.

Greenhouse gases are a primary concern in climate change because of their heat trapping properties and because it is through release of greenhouse gases that humans are contributing to climate change. The principal greenhouse gases that enter the atmosphere because of human activities are:²⁰

- **Carbon Dioxide (CO₂):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees, and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH₄):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N₂O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (HFCs, PFCs, and SF₆) are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (e.g., CFCs, HCFCs, and Halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases (“High GWP gases”).

The most recent *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey* quantifies GHG emissions from all Port Authority-owned facilities (including SWF) in calendar year 2008. The GHG emissions calculations for 2008, the first full year of SWF operation under Port Authority control, are partial and do not include all emissions sources. The inventories for future years will include more complete information on all sources of GHG emissions.

The GHG inventory accounted for all six GHGs identified by the Intergovernmental Panel on Climate Change (IPCC): carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulfur hexafluoride (SF₆). Consistent with IPCC Guidelines for National Greenhouse Gas Inventories and other conventions for reporting GHG emissions, the results of the inventory were reported as CO₂ equivalents (CO_{2e}), which is the universal unit of measurement to indicate the global warming potential of the six GHGs. In accordance with the protocol developed by the World Resources Institute and the World Business Council on Sustainable Development (WRI/WBCSD) for preparation of voluntary corporate GHG inventories²¹, the GHG emissions from SWF were categorized as follows:²²

- Scope 1 – Comprising direct GHG emissions, including on-site energy production (e.g., natural gas boilers) and Port-Authority-owned fleet vehicles.
- Scope 2 – Comprising GHG emissions from energy that is generated off site (primarily electricity).
- Scope 3 – Including GHG emissions from employee and passenger travel to and from the Airport, and activities conducted by the airlines and other airport tenants.

20 United States Environmental Protection Agency. Greenhouse Gas Emissions. <http://www.epa.gov/climatechange/emissions/>. Accessed April 12, 2010.

21 The Greenhouse Gas Protocol Initiative <http://www.ghgprotocol.org/>

22 Southern Research Institute and E.H. Pechan & Associates, Inc., *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey*, Calendar Year 2007, March 2009, p. 6.

The Airport Cooperative Research Program (ACRP) *Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*, targeted specifically at the preparation of GHG inventories for airports, uses source categories consistent with this list.²³

GHG emissions from Scope 1 and 2 sources at SWF were not included in the 2008 inventory, due to a lack of available data. For 2008, it was estimated that SWF emitted approximately 53,000 tons of CO_{2e} from Scope 3 sources.²⁴ It was estimated that CO_{2e} emissions from all Port Authority aviation facilities in 2008 totaled approximately 189,000 tons from Scope 1 and 2 sources and approximately 3,534,000 tons from Scope 3 sources.²⁵

3.1.4 CFCs and HCFCs

Many of the existing building systems at SWF are approaching the end of their useful life, and may contain chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). Older fire extinguishers at SWF may also contain CFCs. The Port Authority will conduct an inventory of the Port Authority-owned building systems and equipment containing CFCs or HCFCs.

In response to a 2009 SWF Tenant Survey, 13 tenants reported that they have Heating-Ventilation-Air-Conditioning (HVAC) systems and refrigeration equipment at SWF that contain CFCs and HCFCs.

23 Airport Cooperative Research Program. *Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*. ACRP Report 11. Washington DC: Transportation Research Board, 2009.

24 Southern Research Institute and E.H. Pechan & Associates, Inc., *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey*, Calendar Year 2008, June 2010, p. 40.

25 Southern Research Institute and E.H. Pechan & Associates, Inc., *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey*, Calendar Year 2008, June 2010, p. 40.

3.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to air quality enhancement and climate change mitigation at SWF:

Goal: Minimize SWF's contribution to climate change, air pollution, and depletion of the ozone layer.

Objectives:

- Reduce greenhouse gas emissions from the Port Authority's facility activities by 5 percent annually and by 80 percent from 2008 levels, by 2050.
- Make future design, development, and operational decisions consistent with the goal of making SWF a "carbon neutral" facility.
- Reduce emissions of particulate matter, nitrogen oxides, and sulfur dioxide by 3 percent annually.
- Reduce the emissions of ozone-depleting chemicals.
- Provide indoor air quality that meets or exceeds applicable state and federal guidelines.
- To the extent possible, account for the risks from climate change in planning and operational decisions.

3.3 Existing Sustainability Strategies

The Port Authority has implemented a number of measures to estimate and reduce the emission of air pollutants from SWF. These measures are described in the following sections. The Port Authority also has implemented a number of energy conservation measures at SWF. These measures (which also help to reduce GHG emissions) are described in Chapter 4, *Energy Conservation and Renewable Energy Use*. In addition to the strategies described in this section, the Port Authority's *Sustainable Design Project Manual* and upcoming *Sustainable Design Project Manual for Infrastructure* include a number of strategies designed to minimize air pollutant and GHG emissions from new construction and renovation projects.

3.3.1 Air Pollution Minimization During Construction

(*Sustainable Design Project Manual, Credit CEQ-4*)²⁶

The Port Authority's *Sustainable Design Project Manual* applies to Port Authority and tenant building construction projects of 5,000 gross square feet or more. The Manual recommends the use of construction practices to reduce the emission of air pollutants such as using dust suppressing agents during construction, using ultra-low sulfur diesel (ULSD) or biodiesel fuel in construction equipment, as available, and limiting

²⁶ Where a strategy recommended in this Environmental Sustainability Plan is similar to a credit contained in the Port Authority's Sustainable Design Manual, reference to the applicable credit is noted.

construction vehicle idling times. These practices are currently used at SWF to reduce the emission of air pollutants during construction. In addition, the upcoming *Sustainable Design Project Manual for Infrastructure* will include similar guidelines for Port Authority infrastructure construction projects.

In addition to these guidelines, the Port Authority established a contract specification to be included in all new construction contracts. This specification requires the use of ULSD fuel and certain emissions controls devices and filters, and includes a three-minute anti-idling policy, equipment age requirements, and worksite electrification requirements. This specification will be applicable to all contracts awarded in 2012 and later, and many contracts prior to 2012 depending on their size, based on dollar value. Contractors are required to submit a plan explaining how these requirements will be met.

3.3.2 Gate Electrification and Pre-conditioned Air

The Port Authority has completed a project in conjunction with FAA and the New York Power Authority (NYPA) to add 400 Hz power and pre-conditioned air (PCA) to each of the seven loading bridges at the passenger terminal building. Gate power and PCA provide electricity and air conditioning for aircraft while they are parked at the gate. These improvements allow the airlines to curtail the use of their auxiliary power units (APUs) and ground power units (GPUs), and will reduce air emissions. It is estimated that gate electrification can save approximately 20 pounds of CO₂ for every minute used.²⁷

3.3.3 Single-Engine Taxiing

The Port Authority encourages airlines to maximize the use of single-engine taxi procedures consistent with safety requirements, pilot judgment, and the requirements of federal laws. In response to the 2009 SWF Tenant Survey, JetBlue Airways, Piedmont Airlines (US Airways Express), and General Electric Corporate Aviation reported that they use single-engine taxi procedures at SWF when it is safe and efficient to do so. In addition, General Electric Corporate Aviation reported that it reduces cruise speeds when possible in order to increase fuel efficiency and minimize air pollution. Single-engine taxiing reduces fuel use and associated emissions of air pollutants. A recent study found this procedure has the potential to reduce aircraft taxi emissions by up to 44%, although “under the constraints of a practical single-engine taxi procedure, that requires a minimum of 15 minutes taxi time, the procedure provides the biggest advantage at airports with periods of taxiing delays in excess of 15 minutes.”²⁸

3.3.4 Carbon Offset Purchase

The Port Authority has established a goal of becoming “carbon neutral” on an annual basis, for emissions under the Port Authority’s direct control, by 2010. To achieve this near-term goal, the Port Authority is reducing GHG emissions through capital investment in energy efficiency, and it is purchasing carbon offsets to neutralize the emissions that it is unable to reduce. In October 2008, the Port Authority selected two carbon brokerage firms to identify high-quality and regionally generated carbon offsets for the agency’s purchase. The Port Authority purchased carbon offsets in 2009 and will continue to purchase carbon offsets in 2010 in order to continue progressing toward its goal of becoming carbon neutral. The carbon offsets must meet the Port Authority’s criteria for quality, and at least 75 percent of the offsets must be generated by projects in the region.

²⁷ <http://www.portseattle.org/downloads/community/environment/greenhousefactsheet.pdf>

²⁸ Vivek Kumar, *Analysis of Emissions Inventory for “Single-Engine Taxi-Out” Operations*. Center for Air Transportation Systems Research George Mason University: 2009. Study funded by NASA.

3.3.5 Online Carbon Calculator

To advance its sustainability program, the Port Authority is planning to launch a public carbon calculator on its website. The carbon calculator will enable users to determine their carbon footprint from travel. Users can determine how much greenhouse gas emissions a trip will produce, compare travel options in terms of emissions, find ways to directly reduce emissions, and when emissions cannot be reduced further, purchase verified carbon offsets. The calculator will be a year-long pilot project, with launch anticipated for 2010.

3.3.6 Alternative Fuel Vehicles

The Port Authority and AvPORTS have a fleet of 70 airside, landside, and GSE vehicles in use at SWF. Where suitable, the Port Authority's new vehicle purchases at SWF are hybrid-electric vehicles. In 2008, for example, SWF purchased seven hybrid-electric vehicles. Hybrid-electric vehicles combine a conventional propulsion system with a rechargeable energy storage system to achieve better fuel economy than conventional vehicles, resulting in reduced air pollutant and GHG emissions.

Most of the tenants at SWF reported operating vehicles with standard gasoline and diesel engines. However, some tenants use alternative fuel vehicles. Pacific Aviation and Bank of America utilize some hybrid vehicles, and Piedmont Airlines and General Electric Corporate Aviation utilize some electric GSE. The Port Authority and GAT Airline Ground Support use ULSD fuel in their diesel equipment.

3.3.7 Pre-Pay Parking System

Pre-pay parking systems at many airports nationwide enable parking fees to be pre-paid at kiosks inside the terminals. The pre-paid ticket is then simply scanned at the parking exit, eliminating unnecessary vehicle idling. The expansion of Parking Lot A (discussed in Chapter 6, *Water Quality Protection and Conservation*) will include a pre-pay machine in the passenger terminal building.

3.3.8 Indoor Air Quality

Limited indoor air monitoring for CO was conducted in the baggage handling area of the passenger terminal building in 2008 to ensure the safety of airline workers. The results demonstrated that CO emissions from GSE are at levels that are safe for workers.

The passenger terminal building features smooth polished terrazzo floors, which improve indoor air quality by reducing dust, allergens and the volatile organic compounds (VOCs) that are emitted from some carpeting materials. SWF is also a smoke-free facility.

3.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to minimize air quality impacts in the region and minimize SWF's contribution to greenhouse gas emissions and climate change. (Measures specifically focused on reductions in energy use are presented in Chapter 4, *Energy Conservation and Renewable Energy Use*; measures focused on surface transportation for Airport access are presented in Chapter 10, *Surface Transportation Management*). These strategies are grouped into three subjects: ground transportation,²⁹ facilities and equipment, and airside operations.

²⁹ Ground transportation strategies found in Chapter 10, *Surface Transportation* are focused on improving access and modal choice rather than on explicitly improving air quality.

The Port Authority will leverage outside funds when available, including federal grants to implement emission reduction projects and efficient equipment purchases. For example, SWF may be able to use funds from FAA's Voluntary Airport Low Emissions (VALE) program to pay for some recommended strategies in both the Air Quality and Energy Chapters (Chapters 3 and 4, respectively). The VALE program is designed to reduce emissions from selected types of mobile and stationary sources at the Airport by financing the purchase of low emission vehicles, refueling and recharging stations, gate electrification, and other Airport air quality improvements. Participating airports earn emission credits to meet current or future Clean Air Act requirements. Airport Improvement Program (AIP) funding of eligible costs is 75 percent for large and medium hub airports and 95 percent for smaller commercial service airports. In addition, Passenger Facilities Charge (PFC) funding may be applied to eligible portions of this program. Some of the other potential funding sources include the New York State Energy Research and Development Authority (NYSERDA), NYPA, the U.S. Department of Energy, the Clean Cities Coalition, the Regional Greenhouse Gas Initiative (RGGI), and the National Clean Diesel Funding Assistance Program.

Ground Transportation

3.4.1 Create a Cell Phone Waiting Area

Background

A Cell Phone Waiting Area is a parking area where drivers picking up arriving passengers can park for a limited period of time. The lot provides a vehicle waiting area for drivers who would otherwise have circled the airport or idled at the curb while waiting for arriving passengers. A waiting area reduces unnecessary vehicle circulation on airport roadways, reduces the consumption of gasoline and diesel fuel, and reduces the associated emissions of air pollutants. Cell phone waiting areas are now a common feature at small and large airports around the nation, sometimes featuring outdoor Flight Information Displays (FIDS), restrooms, and even Wi-Fi.

Recommendation

Current passenger levels and parking availability at SWF do not warrant a designated cell phone waiting area at this time. The Port Authority will designate a Cell Phone Zone at SWF when passenger activity indicates that such an area would have a measurable benefit. The Cell Phone Zone can be designated in an existing surface parking area at SWF. A fully separate Cell Phone Lot will be implemented during future redevelopment or expansion of the Airport, when passenger levels require a separate area.

3.4.2 Encourage and Provide Incentives for the Use of Alternative Fuel/Hybrid Vehicles by Taxis and Rental Cars

Background

Transforming the fleet of taxis and rental cars serving airports to be more environmentally sensitive is becoming common at airports across the county. Some airports have run successful head-of-the-line privilege programs for taxis powered by alternative fuel or hybrid vehicles. Such a program encourages taxi companies to use alternative fuel and hybrid vehicles; access to the head of a taxi line enables a taxi company with alternative

fuel/hybrid vehicles to conduct more business than conventionally-fueled vehicles that are required to wait in the queue.

San Francisco International Airport has implemented a series of effective incentives to increase the number of hybrid cars in the SFO rental fleet. The incentives include a \$15 credit to customers who rent vehicles at the airport with a combined U.S. EPA score of 18 or higher (mostly hybrid vehicles).³⁰ In addition, airport rental car companies qualify for a 20 percent reduction of their airport rent fees if 15 percent of their overall transactions are for rentals of hybrid cars or high mileage vehicles based on a combined U.S. EPA score of 17 or higher.³¹

Recommendation

Currently, taxi use at SWF is too low to warrant a head-of-the-line program (there were approximately 5,900 taxi dispatch passengers in 2008, an average of about 16 per day). The Port Authority will implement a head-of-the-line privilege program for taxis using SWF when future passenger activity results in the presence of taxi queues on a regular basis. Such a program can be implemented with little to no cost to SWF.

In addition, the Port Authority will work toward the development of requirements and/or incentives for the use of alternative fuel/hybrid rental cars at SWF. Given the relatively small size of the rental fleet at SWF and the frequent movement of cars to and from other sites, it would not be feasible at this time to require that the rental car companies maintain a certain percentage of the fleet as alternative fuel/hybrid vehicles. The rental car company agreements come up for renewal in fall 2010; the Port Authority will encourage the rental car companies to increase the number of hybrid, alternative-fuel, or highly fuel-efficient vehicles in their fleets. The definitions of such vehicles will be based on U.S. EPA's Green Vehicle Guide (<http://www.epa.gov/greenvehicles/Index.do>). Rental car companies that increase the number of "green" fleet vehicles will be recognized by the Port Authority. As the rental car agreements are renewed again in the future, the Port Authority will review the fleet size and determine whether requirements can be established.

Another possible mechanism would involve the use of direct customer incentives such as a discounted rental rate. Given the potential cost, the Port Authority would need to investigate options for funding the program, including the redirection of Port Authority money budgeted to purchase carbon offsets, partnership with the rental car companies, and/or potential outside funding sources.

3.4.3 Enforce a Vehicle Anti-idling Policy

Background

A typical passenger vehicle idling longer than 10 seconds uses more fuel and produces more greenhouse gas emissions than if the vehicle is turned off and the engine is restarted.³² Vehicle idling wastes fuel and produces unnecessary emissions at terminal curbsides and on the airside apron where there are many GSE vehicles involved in airport and airline operations.

30 A combined U.S. EPA score is an Air Pollution Score ranging from 0-10, which reflects vehicle tailpipe emissions that contribute to local and regional air pollution, creating problems such as smog, haze, and health issues, added to an U.S. EPA Greenhouse Gas Score ranging from 0-10 which reflects emissions of carbon dioxide (CO₂) and other greenhouse gases.

31 "Mayor Newsom Launches Green Rental Car Incentive Program." Sfgov.org: 1/13/2009 http://www5.sfgov.org/sf_news/2009/01/newsom-launches-green-rental-car-incentive.html

32 Natural Resources Canada, Office of Energy Efficiency. "Idling Wastes Fuel and Money" <http://oee.nrcan.gc.ca/transportation/idling/wastes.cfm?attr=8>

Recommendation

An anti-idling policy will be instituted for both the airside and landside activity at SWF to reduce the consumption of gasoline and diesel fuel, and to reduce associated emissions of greenhouse gases and other air pollutants. The cost of implementing an anti-idling policy is low and can be done by erecting signs around the Airport to remind people to turn off their engines. Anti-idling zones on all Airport roadways, curbside at the passenger terminal building, in all parking areas including any future cell phone waiting area, and on the airside will be established.

3.4.4 Create Preferred Parking for Alternative Fuel/ Hybrid Vehicles

(Sustainable Design Project Manual, Credit SEQ-6)

Background

Preferred parking areas have been provided in hundreds of private and public parking lots, airports, and other facilities nationwide. This strategy increases awareness and provides an incentive for drivers to use alternative fuel, hybrid, or fuel-efficient vehicles. Some airports have implemented a preferred parking program for customers driving hybrid and alternative fuel vehicles and did so with the minimal cost of installing signs to identify the preferred parking spaces.

Recommendation

The Port Authority will provide preferred parking spaces for hybrid and alternative fuel vehicles within SWF parking lots or in other locations convenient to the passenger terminal building entrance.

3.4.5 Continue to Participate in the Port Authority Alternative Fuel Vehicles Program for GSE & Airport Fleet

Background

The Port Authority Alternative Fuel Vehicles Program enables the purchase of alternative fuel and hybrid vehicles when replacing Port Authority-owned fleet and GSE vehicles. Alternative fuel fleet vehicles include Compressed Natural Gas (CNG), plug-in electric, biodiesel, and others. Hybrid-electric engines come in a variety of models and greatly improve fuel economy.

Recommendation

The Port Authority will continue to participate in the Port Authority Alternative Fuel Vehicles Program to advance the changeover of Port Authority- or AvPORTS-owned airport fleet and GSE vehicles at SWF. In addition, the Port Authority will work with SWF airlines and the Fixed Base Operator (FBO) to identify and explore opportunities for conversion of their fleets to alternative-fuel vehicles. Such opportunities may be available through the VALE program.

Facilities and Equipment

3.4.6 Coordinate Routine Maintenance of Equipment and Facilities

Background

Properly maintained equipment can improve energy usage and efficiency at the Airport. Using Operation and Maintenance (O&M) manuals can enhance performance of many systems, such as: all HVAC system equipment, lighting controls and sensors, refrigeration systems, vertical transport, building envelope, emergency power generators and automatic transfer switching, uninterruptible power supply systems, life safety systems (fire protection fire alarm, egress pressurization, lightning protection), domestic and process water systems, data and communication systems, paging systems, security systems, irrigation systems, plumbing and fixtures, and any other systems at the Airport.

Currently, SWF keeps its maintenance O&M manuals and record logs together in binders. Logs are kept for required items, with items entered by hand.

Recommendation

The Port Authority will review its procedures for maintaining O&M manuals and record logs at SWF, to determine whether changes to those procedures would have environmental benefits. As part of this review, the Port Authority will evaluate the costs and benefits of maintaining additional record logs.

3.4.7 Phase Out CFCs, HCFCs, and Halons

(Sustainable Design Project Manual, Credit EEQ-4)

Background

CFCs are hydrocarbons that are used as refrigerants and cause depletion of the stratospheric ozone layer. HCFCs are refrigerants that cause significantly less depletion of the stratospheric ozone layer than CFCs. In compliance with the Montreal Protocol, CFC production in the U.S. ended in 1995 which has helped slow the depletion of the ozone layer. Halons are substances used in fire-suppression systems and fire extinguishers that deplete the stratospheric ozone layer.³³

Recommendation

Within the short-term horizon of this Plan, the Port Authority will phase out Port Authority-owned equipment at SWF that uses CFCs or HCFCs as the equipment is replaced. In addition, the Port Authority will prohibit the purchase of HVAC and refrigeration equipment, as well as fire suppression systems that contain CFCs, HCFCs, or Halons.

33 Definitions for CFC and HCFC found in USGBC LEED v2009 Reference Guide for Green Building Design and Construction

Airside Operations

3.4.8 Widen Taxiway C to Allow Two-way Use

Background

The current configuration of Taxiway C at SWF cannot accommodate two-way jet aircraft operations. This situation causes aircraft to hold while other aircraft taxi by. The additional aircraft idling wastes fuel and creates unnecessary GHG emissions.

Recommendation

The Port Authority is currently working on the design for an upgrade to Taxiway C, and will construct the upgrade when financially feasible to accommodate two-way aircraft operations. This modification will also improve operational efficiency of the airfield.

3.4.9 Encourage Tenant Airlines to use Alternative Aviation Fuels

Background

The aviation industry is committed to the acceleration and commercialization of sustainable aviation fuels, primarily biofuels. In North America, the Commercial Aviation Alternative Fuels Initiative (CAAFI) "seeks to enhance energy security and environmental sustainability for aviation through alternative jet fuels. CAAFI is a coalition that focuses the efforts of commercial aviation to engage the emerging alternative fuels industry. It enables its diverse participants – representing all the leading stakeholders in the field of aviation – to build relationships, share and collect data, identify resources, and direct research, development, and deployment of alternative jet fuels." CAAFI is working with airlines and the military on several alternative aviation fuel projects. The new fuels would be designed to be "drop in," thus allowing the use of existing fueling systems. One of the primary sponsors of CAAFI is the Airports Council International of North America (ACI-NA), an organization of which the Port Authority is a member.

Recommendation

The Port Authority will participate with CAAFI in efforts to identify, evaluate, develop, and implement an alternative fuels project in the New York region, possibly involving SWF. Although such a project would be a long-term effort, it is included as a short-term recommendation because of the lead time required. As part of this effort, the Port Authority will explore the possibility of a relationship/ joint project with the NYANG at SWF, through the Defense Energy Support Center (DESC). The joint efforts will consider potential fuel sources and infrastructure needs, among other factors.

The Port Authority will also monitor the industry's progress in implementing other alternative aviation fuels projects. As alternative fuels pass the certification process and become available for use by the airlines, the Port Authority will work closely with the airlines serving SWF to prepare for changes in aircraft fueling needs. This outreach, and the potential for reductions in airline use of fossil fuels, are consistent with the agency's March 2008 Sustainability Policy.

3.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF's sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

- **Develop project-specific sustainable design standards.**

If the Port Authority pursues major redevelopment at SWF, the agency would consider the establishment of specific sustainable design standards for that project. The intent of this measure, which applies to multiple environmental topics, is to achieve a higher level of sustainability than would be provided by the *Sustainable Design Project Manual*. As part of this measure, the Port Authority would consider requesting the Executive Director to designate the project(s) as meeting a specified LEED-equivalent standard (as authorized by a 2007 Board of Commissioners resolution).

- **Expand application of Sustainable Design Project Manual to SWF.**

Currently, compliance with specific credits in the *Sustainable Design Project Manual* is required only for new construction, substantial renovation, or reconstruction projects of 20,000 gross square feet or more. (Smaller new construction, substantial renovation, or reconstruction projects are supposed to incorporate "significant attributes of sustainable design," but there are no specific credit requirements for those projects. Larger projects must "apply best efforts" to follow the sustainable design guidelines.) The Port Authority would evaluate and consider expanding the application of the guidelines, to require or strongly encourage adherence to the "required" credits in the Manual checklist for all projects of 5,000 gross square feet or more. This expanded application of the *Sustainable Design Project Manual* is recommended for SWF because achieving the goal of "carbon neutrality" for the airport will require the extensive use of green design principles. As with other Port Authority projects, use of the *Sustainable Design Project Manual* would be evaluated on a project-by-project basis.

- **Conduct CFC/HCFC inventory and replace equipment.**

When funding is available, the Port Authority would conduct an inventory of Port Authority-owned building systems and equipment to identify the presence of CFCs or HCFCs. Based on the inventory, the agency would establish a goal and prepare a plan for replacement of systems and equipment with items that do not contain CFCs or HCFCs.

- **Use computerized tracking for O&M recordkeeping.**

When funding permits, the Port Authority would acquire a computerized tracking system for maintenance reporting. Ideally, the system would include a GIS component and handheld equipment

for entering logs in the field. Such a system would provide clear communication in a standard format, allowing for improved O&M and corresponding reductions in energy use and air pollutant emissions.

■ **Establish minimum volume restrictions for deliveries.**

Based on information regarding delivery traffic at SWF and the experience at other airports, the Port Authority would determine whether SWF can and should establish, where feasible, restrictions on small-volume deliveries. If deliveries can be consolidated, the reduction in truck trips would result in lower air pollutant and GHG emissions. Activity at SWF may need to be substantially greater than current levels to support this initiative.

■ **Provide Foreign Object Debris (FOD)/ bird radar to reduce airfield vehicle use.**

Various military and civilian airports use bird radar and FOD detection technologies today, but these systems have not been integrated into airport operations and systems in a standardized way industry-wide. Foreign Object Debris radar can detect FOD on the airfield, pinpoint its exact location, and alert Airport staff. The ability to identify the exact location of FOD can reduce unnecessary driving on the airfield to attempt to find the debris.

■ **Implement an environmentally-based take-off and landing revenue system.**

A take-off and landing fee would be structured based on aircraft emissions and would be intended to encourage air carriers to use lower emitting aircraft. Major airports in Europe that have instituted this system include London-Heathrow, Frankfurt, Munich, Cologne, Zurich, Geneva, Bern, Lugano, and airports in Sweden. Such a fee would require extensive review and negotiation by Port Authority staff and the airlines, and would need to be considered in the context of other potential "green lease" strategies.

4

Energy Conservation and Renewable Energy Use



This chapter describes the environmental baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF in relation to energy conservation and renewable energy use. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan. Because consuming energy from non-renewable sources results in greenhouse gas emissions, an important aspect of the Port Authority's strategy to reduce its carbon footprint is to focus on reducing energy use, increasing energy efficiency, and using energy generated from renewable sources.

4.1 Environmental Context

This section describes the existing building systems for Port Authority and tenant owned/operated buildings at SWF. It also describes the source of energy for SWF and current rates of energy consumption.

4.1.1 Existing Building Systems and Design

The existing passenger terminal building at SWF was constructed in the 1940s as a hangar and expanded and modernized into its current configuration in 1998. The passenger terminal building is currently over 110,000 square feet. A description of the existing building systems and design of the passenger terminal building, and known deficiencies, is provided below:

- **Heating and Cooling System** – The heating and cooling system is comprised of packaged rooftop units with evaporator or direct expansion (DX) coils for cooling. Heating is provided by a low-pressure steam boiler plant that converts steam to hot water for heating in the terminal units. The rooftop units were installed in 1998 and have a typical useful life of 15 years. The units are approaching the end of their useful lives.
- **Ventilation System** – The passenger terminal building currently has a standard ventilation system that delivers a constant quantity of outside air into the building. This type of ventilation system was standard practice at the time of its installation. Since then, demand control ventilation, which regulates the amount of outside air delivered to the terminal based on occupancy, has become standard practice.
- **Lighting** - Typical allowable lighting power densities have been reduced significantly since the passenger terminal building retrofit in 1998. At the time the terminal was constructed, there was no

specific lighting category for transportation centers, so the maximum lighting power density for an “assembly space” was likely used, which at the time was 1.7 watts per square foot (W/sf). Current codes require lighting power densities in transportation centers to be no greater than 1.0 W/sf. Therefore, the SWF terminal lighting system is oversized and uses more electricity than needed. In addition, the lighting control system does not currently have occupancy sensors or daylight dimming features.

- **Windows and Doors** – The glazing and other components of the building envelope are relatively modern. The two entryways to the passenger terminal building have revolving doors, which are typically energy efficient. However, the design of the existing revolving doors is such that door operation causes substantial heat loss, pushing large quantities of cold air into the terminal in the winter.
- **Roof** – The existing roof is not constructed of reflective material. A contract was awarded in 2009 to replace a portion of the roofing in 2010 with a reflective material that reflects the heat from the sun and reduces heat inside the building. Additionally, roofs on Buildings 138, 140, and 142 have been replaced with reflective material, and there is an ongoing construction contract for the roof on Building 2269.

In 2008, the Port Authority conducted an inventory of the heating systems in some of the tenant-owned buildings at SWF. The inventory found that the following buildings of significant size are currently heated by using electricity, which is considerably less energy- and cost-efficient than natural gas:

- Building 2201: SAGE Building; 143,052 sq. ft.
- Building 2300: Hertz and Budget vehicle prep Building; 2,716 sq. ft.
- Building 2306: Storage Building; 2,988 sq. ft (This building is currently vacant).³⁴

4.1.2 Energy Source

Deregulation of energy in the state of New York has separated energy suppliers from energy distributors. SWF obtains electricity and natural gas from the energy distributor Central Hudson Gas and Electric Corporation (Central Hudson). The Port Authority does not currently specify an energy supplier. However, the most recently available information for the electricity distributed by Central Hudson shows that electricity distributed to SWF is derived from suppliers that generate electricity using the following sources: 50 percent nuclear, 20 percent coal, 8 percent oil, 7 percent hydroelectric, less than 1 percent from landfill gas, and less than 1 percent from both wind and solar.³⁵ Although nuclear is not considered a *renewable* energy source, it is not a fossil fuel.

A portion of Central Hudson utility bills goes toward the New York State System Benefits Charge (SBC). The revenue from the SBC, originally established in 1996, is administered by NYSERDA and is allocated toward energy-efficiency programs, research and development initiatives, low-income energy programs, and environmental disclosure activities. Any person or entity that pays into the SBC is eligible to participate in a multitude of energy efficiency programs, grant proposal programs, and technical assistance through NYSERDA. SWF is eligible to participate in these funding programs.

³⁴ Building Inventory of Heating Units, May, 2008.

³⁵ NYS Public Service Commission. Environmental Disclosure Label Program. 2006. February 2009 <http://www3.dps.state.ny.us/e/energylabel.nsf/>

4.1.3 Energy Consumption

The Port Authority and its tenants used approximately 5.2 million kWh of electricity and 0.3 million therms of natural gas at Port Authority-controlled buildings at SWF in 2008. The passenger terminal building used about 2.5 million kWh of electricity and 0.07 million therms of natural gas in 2008.³⁶ The utility costs for that period were about \$292,000 for electricity and \$107,000 for natural gas, for a combined utility cost of approximately \$399,000. The utility costs for the passenger terminal equate to approximately \$3.53 per square foot per year. This amount is on the low side of the range of what would be expected for this type of facility. Gasoline, diesel, and Jet A, Avgas, and CNG fuel are also consumed at SWF.

4.1.4 New York State Energy Efficiency Executive Orders³⁷

Executive Order 111 (2001) instructs all state agencies, public benefit corporations and public authorities to become more energy efficient, environmentally aware, and specifically to "...seek to achieve a reduction in energy consumption by all the buildings they own, lease or operate of 35 percent by 2010 relative to 1990 levels." Parts of this Executive Order address existing buildings, new buildings, purchase of power from renewable sources, and the procurement of clean fuel vehicles. Although Order 111 does not contain specific building code or construction guidelines, it contains provisions for procurement of energy efficient products by instructing these entities to "... select Energy Star products when acquiring new or replacing existing equipment." Purchases including lighting must adhere to Article 5, Section 5-108a of NYS Laws: NYSERDA's Energy Efficient Equipment Standards for State Purchasing.³⁸

NYS Executive Order 142 (2005) builds on these requirements by directing state agencies, public benefit corporations and public authorities with specific provisions to diversify transportation fuel and heating oil supplies through the use of bio-fuels related to their operations in vehicles and buildings.

The Port Authority ensures compliance of future development projects with these Executive Orders through the requirements set forth in its *Sustainable Design Project Manual*.

³⁶ All kWh and therm data provided by Stewart Airport staff from utility account data.

³⁷ More information including original copies of these Orders can be found at <http://www.nyserda.org/programs/state.asp>

³⁸ NYSERDA's Energy Efficient Equipment Standards for State Purchasing: <http://www.nyserda.org/programs/equipstds.asp>

4.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to energy conservation and renewable energy use at SWF:

Goal: Reduce energy consumption to the maximum extent practicable and utilize clean and renewable energy sources.

Objectives:

- Reduce consumption of energy derived from fossil fuels/grid electricity, consistent with Port Authority goals and objectives for greenhouse gas emission reductions. Potential means of achieving this objective may include (but are not limited to):
 - Maximizing energy efficiency;
 - Enhancing the use of energy supplies based on renewable, environmentally sound resources; and
 - Generating renewable energy on site.

4.3 Existing Sustainability Strategies

Since acquiring SWF, the Port Authority has implemented a number of energy conservation measures, as described in the following sections. Because energy use and greenhouse gas emissions are interlinked, some strategies intended to reduce greenhouse gas reductions and described in Chapter 3, *Air Quality Enhancement and Climate Change Mitigation*, also address energy consumption.

In addition to the measures described in this section, the Port Authority's *Sustainable Design Project Manual* requires new projects of 20,000 gross square feet or more to incorporate a number of strategies to optimize building energy use, including tenant incentives to conserve energy, developing energy management and building systems commissioning plans, incorporating end-user metering of tenant spaces, and plans for transitioning to renewable energy.

4.3.1 Energy-Efficient Lighting Improvements

In 2008, the Port Authority conducted a trial to determine the effects on winter operations of replacing the existing airfield taxiway edge lights with light-emitting-diode (LED) lights. LEDs produce light through the movement of electrons in a semiconductor material (diode). Compared to standard incandescent light bulbs, the key advantages of LED lighting are increased energy efficiency, durability, and reliability. LEDs are up to four times as efficient as standard incandescent lights. However, the use of LED lighting on an airfield is a specialized application that warrants specific evaluation. The winter operations trial, which compared lights with and without heaters, was successful, and in 2010 the Port Authority plans to upgrade the taxiway edge lighting at SWF with LEDs. After installation, the Port Authority plans to conduct further evaluation of the lights.

The Port Authority also developed a project to install a pedestrian walkway covered by a solar-paneled canopy leading from the parking lots to the terminal. This solar-paneled canopy would power LED lighting for the Airport signage, parking areas, and roadways. However, capital funds to implement this project are not currently available.

4.3.2 Alternative Fuel Vehicles

Please see Chapter 3, *Air Quality Enhancement and Climate Change Mitigation*, for a description of alternative fuel vehicles at SWF.

4.3.3 High Albedo Roof

As discussed previously, a portion of the existing black roof of the passenger terminal building is to be replaced with a high-albedo roof in 2010. This material reflects heat from the sun and will minimize the cooling load during the summer months.

4.3.4 Use of Energy Service Performance Contracting to Finance Energy Improvements at SWF

In 2009, the Port Authority issued a request for proposals (RFP) for Multi-Facility Performance Based Energy Services, an initiative intended for an Energy Services Company (ESCO) to “provide audit, management and capital improvement services that will increase the efficiency of energy and water use and reduce utility costs.” With Energy Service Performance Contracting (ESPC), the costs of the energy improvements are borne by the performance contractor and paid back with the savings from the energy efficiency projects. The ESCO performs an opportunity assessment and a technical energy and utility audit of all components of the building, installs efficiency measures, performs commissioning, and conducts measurement and verification to guarantee the savings even if the measures do not live up to expectations. Once the ESCO retrieves its investment, the Port Authority benefits from reduced operating expenses resulting from the system’s increased energy efficiency.

The use of ESCOs has become an innovative and popular financing technique to use cost savings from reduced energy consumption to repay the cost of installing energy conservation measures, protecting the organization through a guaranteed savings agreement, and allowing building users to achieve energy savings without up-front capital expenses. This type of contracting is potentially useful to SWF because it allows the Airport to achieve energy savings without incurring up-front capital expenses and to focus on minimizing lifecycle costs rather than first capital costs. Considering the cost of an improvement over its durable life often results in long-term cost savings. It is anticipated that energy savings achieved by this Multi-Facility Performance Based Energy Services initiative will be reflected in future Port Authority-wide annual GHG inventories.

Through the public RFP process, the Port Authority selected four ESCO teams as pre-qualified to perform the energy services for all agency facilities. The teams conducted preliminary assessments of selected buildings at SWF and three other Port Authority facilities in May 2010, and submitted competing proposals for detailed audits of one or more of the facilities in July 2010. Energy-efficiency improvements at SWF may be included in the winning proposal.

4.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to minimize energy consumption and maximize the use of renewable energy. It is expected that energy savings from these strategies will be reflected in future Port Authority-wide annual GHG inventories.

SWF can apply for eligible FAA VALE program funds or other outside funding to pay for some recommended energy strategies. The VALE program is described in Chapter 3, *Air Quality Enhancement and Climate Change Mitigation*. Funding opportunities through NYSERDA are discussed later in this chapter.

4.4.1 Include SWF Facilities in Multi-Facility Performance Based Energy Services Process

(Sustainable Design Project Manual, Credit EEQ-1)

Background

The Multi Facility Performance Based Energy Services process is described above in Section 4.3.4, *Use of Energy Service Performance Contracting to Finance Energy Improvements at SWF*. Four SWF buildings (the passenger terminal and Buildings 142, 800, and 2269) have been included in the first round of ESCO preliminary assessments. The Port Authority ESCO program has a potential duration of six years, which should allow for inclusion of additional SWF facilities.

Recommendation

The Port Authority will include SWF facilities in the Multi Facility Performance Based Energy Services process. Over the duration of the ESCO program, SWF buildings will be included in successive rounds of the process, to involve preliminary assessments, submittal of proposals, investment-grade audits, installation of energy-efficiency measures, and measurement and verification. The intent is that over the life of the ESCO program, most, if not all, Port Authority buildings at SWF will be included. The energy audit of each building should include at a minimum the building envelope and mechanical/electrical systems.

4.4.2 Perform Retro-Commissioning of Existing Building Systems

(Sustainable Design Project Manual, Credit EEQ-2)

Background

Commissioning for existing buildings, or “retro-commissioning,” is a systematic process of investigating, analyzing, and optimizing the performance of building systems by improving their operation and maintenance. This measurement and verification process ensures that buildings are performing optimally and as originally designed. Retro-commissioning activities typically focus on energy-using equipment such as mechanical equipment, lighting and related controls and usually optimizes existing system performance, rather than relying on major equipment replacement. These improvements typically result in improved indoor air quality, comfort, controls, energy, and resource efficiency.

According to a Lawrence Berkeley National Laboratory study consisting of the world’s largest compilation and meta-analysis of commissioning experience in commercial buildings, the median whole building energy savings for commissioning of existing buildings was 16%, translating to a median payback time of 1.1 years. The median benefit-cost ratio of commissioning for all existing buildings in the study was 4.5.³⁹

Recommendation

The Port Authority will explore opportunities for retro-commissioning to be conducted at SWF. Given short-term funding limitations, the best opportunity may be to include SWF in a pilot project. When funding is available, the Port Authority could issue an RFP for a commissioning authority to retro-commission selected buildings at SWF.

39 Evan Mills (2009) Lawrence Berkeley National Laboratory. *Building Commissioning: A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions* at <http://cx.lbl.gov/2009-assessment.html>

4.4.3 Install More Energy Efficient Lighting

(Sustainable Design Project Manual, Credit EEQ-3)

Background

Lighting can account for a substantial portion of the electricity use at an airport. Lighting also holds a high potential for energy savings. These savings can result in indirect benefits to other airport systems. For example, "cooler" lighting fixtures can reduce the loads on building cooling equipment, and the electricity savings from energy-efficient lighting can reduce or eliminate the need for expansion of the airport power supply. Some types of lighting improvements (such as lamp and fixture retrofits) can be done at relatively low cost with short payback times.

In general, potential lighting improvements include (among others) upgrading incandescent lamps to fluorescent lamps; replacing T-12 lamps and ballasts with T-8 or T-5 lamps and electronic ballasts; replacing fluorescent lamps with high-intensity-discharge (HID) lamps; and using LED technology. The type of technology chosen should be based on the optimal product for the application, the desired results, and the available budget.

Recommendation

As the existing lamps and fixtures reach the end of their useful lives, the Port Authority will replace roadway, airside apron, and applicable building interior lighting with the most energy efficient lighting applicable to the needs of the space. The Port Authority will also use the Multi Facility Performance Based Energy Services process to identify and implement potential lighting replacement/upgrade projects in the passenger terminal and other airport buildings. In addition, the Port Authority will pursue other outside funding opportunities to implement energy-efficient lighting projects.

4.4.4 Install Daylighting Control Systems

(Sustainable Design Project Manual, Credit EEQ-6)

Background

Daylighting control systems dim lights in response to interior daylight levels and save energy. Photosensors, typically mounted in the ceiling, are used to measure the quantity of daylight in the space then determine the amount of dimming required to maintain the desired luminance level. Electronic dimming ballasts dim the lights. If daylight levels are more than adequate, electric lights can be shut off entirely.

Specifying certain types of finishes in a space is a critical component of a comprehensive daylighting strategy. To maximize the contribution of daylight in a space finishes with lighter colors, glossy paints, and purposefully constructed light-reflecting shelves integrated into windows are important parts of maximizing the investment in automated electronic daylighting controls.

Recommendation

The Port Authority will install daylighting control systems in offices, conference rooms, and public areas of the passenger terminal building that receive natural light during a significant portion of the day. To the extent possible, the Port Authority will use the Multi Facility Performance Based Energy Services process to identify and implement potential daylighting control projects. Where this process is not used, the Port Authority will pursue other funding opportunities to implement daylighting projects. Until such time as the daylighting control systems are installed, the Port Authority will erect signs near light switches in offices and conference rooms requesting that lights be switched off in these areas when daylight is adequate. When interior finishes are

replaced, the Port Authority will use materials that maximize the contribution of daylighting (where applicable).

This strategy will result in the greatest benefit if the Airport undergoes major redevelopment or renovation; at that time, a comprehensive daylighting strategy can be integrated into the building design.

4.4.5 Install Lighting Occupancy Sensors

(Sustainable Design Project Manual, Credit EEQ-6)

Background

Occupancy sensors (either motion detecting or infrared heat-detecting) turn off or dim lighting when a space is vacant, thereby reducing unnecessary energy use. Occupancy sensors are not appropriate in all areas, and should be coordinated by a lighting contractor.

Recommendation

The Port Authority will install occupancy sensors in appropriate areas (primarily in areas that receive little daylight and therefore where installation of a daylighting control system is not appropriate). These areas include internal private offices, conference rooms, restrooms, and the baggage claim area of the passenger terminal building. Occupancy sensors for dimming may be appropriate in certain public areas of the passenger terminal building because the lulls and peaks in passenger activity are more pronounced at SWF than at large and medium hub airports. To the extent possible, the Port Authority will use the Multi Facility Performance Based Energy Services process to identify and implement potential occupancy sensor projects.

Until such time as occupancy sensors are installed, the Port Authority will erect signs near light switches in offices, conference rooms, and restrooms in buildings other than the passenger terminal requesting that lights be switched off in these areas when they are unoccupied.

4.4.6 Purchase Energy Star Products

(Sustainable Design Project Manual, Credit EEQ-3)

Background

Energy Star is a joint program of the U.S. EPA and the U.S. Department of Energy helping to save money and protect the environment through energy efficient products and practices. It is a voluntary labeling program designed to identify and promote energy-efficient products to save energy and reduce GHG emissions. Energy Star provides a trustworthy label on over 60 product categories. These products deliver the same or better performance as comparable models while using less energy and saving money. Product categories include (among others): electronics such as computers, printers, servers, and battery chargers; heating and cooling equipment such as boilers, air conditioners, ventilating fans, and heat pumps; plumbing equipment such as water heaters; lighting such as commercial grade LED lights and other fixtures and bulb types; appliances such as vending machines and water coolers; and commercial food service equipment such as dishwashers, fryers, ice machines, ovens, and freezers. This strategy is consistent with the requirements of NYS Executive Order 111.

Recommendation

The Port Authority will purchase Energy Star products as existing equipment needs replacing.

4.4.7 Institute Office Equipment Shut-Off Policy

Background

Shutting off office equipment at night and on weekends saves energy, money and GHG emissions. It is estimated that an organization with 100 computers could save about 26,000 kWh, the equivalent of 31,000 lbs of CO₂ or about \$2,600 per year.⁴⁰

Recommendation

The Port Authority will institute a policy of shutting off computers, printers, and other office equipment in the evening and at other times when they are not in use for extended periods.

4.4.8 Improve Escalator Operation

Background

Some manufacturers offer high efficiency controllers for escalators. One such controller soft starts an electric motor, quickly bringing the escalator from rest to full speed. Once it is at full speed, the controller continuously monitors the motor and improves its efficiency when operating, conserving energy throughout the day.⁴¹

Variable speed escalators run at a slower idle speed of 15 feet per minute when not in use and speed up to a normal 100 feet per minute when a person steps on them. This technology is best utilized in public areas with pronounced lulls in pedestrian traffic, such as SWF. New York City's MTA has installed 35 variable speed escalators in several of its subway stations and is testing them as part of a pilot program.⁴² MTA estimated an annual savings of \$1,800 per escalator per year, and an extension of the useful life of components by up to 33 percent.⁴³ Currently, variable speed escalators do not comply with American Society of Mechanical Engineers (ASME) Code, and thus the Port Authority cannot install them at its facilities.

Recommendation

The Port Authority will investigate the costs and energy savings of installing high efficiency controllers on the escalators at the passenger terminal building. To the extent possible, the Port Authority will use the Multi Facility Performance Based Energy Services process to evaluate potential escalator projects. If ASME Code is modified to allow the use of variable speed technology, the Port Authority will include such technology in its evaluation.

4.4.9 Install High Efficiency Hand Dryers

(Sustainable Design Project Manual, Credit EEQ-3)

Background

Hand dryer manufacturers currently offer products that operate more efficiently than standard hand dryers do. One such dryer uses up to 80 percent less energy than a standard hot air hand dryer. This increased energy efficiency is achieved through a considerably shorter hand drying time, a more efficient motor, and lack of an energy intensive heating element. This hand dryer also reduces restroom maintenance needs and is more sanitary than typical hand dryers are because it catches and neutralizes all of the water that is blown off hands and uses a high efficiency particulate absorbing (HEPA) air filter. An evaluation of purchase and operating costs for one dryer brand indicates a six-year return on investment and a reduction of about four tons of CO₂

40 The 1E Computer shut-down Energy Savings Calculator <http://www.1e.com/energycampaign/Calculation.aspx#>

41 McCarran International Airport to Save Energy by Installing the KONE EcoStart on Escalators. Reuters: 10/20/2009. <http://www.reuters.com/article/idUS159017+20-Oct-2009+BW20091020>

42 NY City Subway Escalators Get an Energy Efficient Facelift, NYC Subway News, 3/21/2010, <http://www.nycsubwaynews.com/mta/ny-city-subway-escalators-get-an-energy-efficient-facelift>. NYCMTA received a Code variance to allow use of the escalators.

43 M.T.A. Rolls Out Escalators With Conservation Feature. New York Times: 8/5/2008. <http://www.nytimes.com/2008/08/06/nyregion/06escalators.html>

emissions per year (compared to standard hand dryers) and a one-year payback when compared to paper towels.⁴⁴

Recommendation

The Port Authority will evaluate the potential costs and benefits (from an environmental and financial perspective) of installing high-efficiency hand dryers in the passenger terminal building restrooms.

4.4.10 Use Energy-Efficient Roofing

(*Sustainable Design Project Manual, Credit SEQ-12*)

Background

High-albedo roofing material reflects ultraviolet radiation from the sun and minimizes cooling loads during the summer months, resulting in reduced electricity consumption, energy costs, and associated GHG emissions. Replacing traditional roofing materials that absorb ultraviolet radiation with high albedo roofs can save 20 to 70 percent of the energy costs associated with cooling. Terminal roofing can also benefit from added or improved insulation, which can be achieved relatively easily during a roof replacement project. Green roofs save energy by shading roof surfaces and substantially reducing heat gain; they also provide stormwater and water quality benefits by filtering and reducing runoff.

Recommendation

As described in Section 4.3.3, *High Albedo Roof*, the Port Authority is replacing a portion of the existing roof of the passenger terminal building with a high reflectance roofing material. As additional roof replacement on Port Authority facilities becomes necessary, the Port Authority will use energy-efficient roofing material, considering high-albedo roofing, high-performance insulation, green roofing, and other options. When future Airport redevelopment occurs, the Port Authority *Sustainable Design Project Manual* suggests consideration of a combination of vegetated green roof and high-albedo white roofing for new construction projects.

4.4.11 Partner with NYSERDA for Energy Efficiency Programs and Funding

Background

NYSERDA offers a number of programs that might be used at SWF. For example, the Technical Assistance Program offers cost sharing for energy feasibility studies, rate analysis and aggregation studies, retro-commissioning, and long-term energy management. The Existing Facilities Program offers incentives for pre-qualified energy efficiency measures and performance-based incentives for large-scale projects. The New Construction Program provides technical assistance in the evaluation of energy efficiency measures in new buildings, and potential funding to help offset the costs of equipment purchase and installation. These programs and others are designed in part to help state entities comply with NYS Executive Orders 111 and 142 (described in Section 4.1.4, *New York State Energy Efficiency Executive Orders*).⁴⁵

Recommendation

The Port Authority will continually review available opportunities for energy efficiency assistance through NYSERDA, and will partner with NYSERDA when appropriate to obtain funding for applicable programs and projects at SWF. One possible opportunity is to use NYSERDA's Flex-Tech Program to provide funding for the energy-efficiency measures implemented through the Multi Facility Performance Based Energy Services process.

⁴⁴ All calculations were completed using the cost and carbon comparison calculator available at <http://www.dysonairblade.com/specification/calculator.asp>

⁴⁵ New York State Energy Efficiency Clearinghouse, *Energy Efficiency Programs for Institutional Customers* <http://www.nyserda.org/clearinghouse/state.asp>. Accessed August 30 2010

4.4.12 Purchase “Environmental Attributes” or Energy from Renewable Sources

Background

There are a number of ways to reduce GHG emissions associated with operating the Airport through the purchase of renewable energy. The most common strategies include:

1. ***Purchase of “environmental attributes”***
“Environmental attributes,” also known as “green tags,” are the environmental, social and economic features associated with renewable power generation that may be sold separately from the energy itself. An environmental attribute is tied to one megawatt-hour of electricity that is generated from renewable sources and delivered to the grid. Purchase of environmental attributes allows an organization to encourage renewable energy production while not directly connected to the source of renewable energy generation.
2. ***Purchase of renewable energy through an energy supplier***
As described in Section 4.1.2, *Energy Source*, deregulation of energy in the State of New York has separated energy suppliers from energy distributors. SWF obtains electricity and natural gas from the energy distributor Central Hudson, which distributes electricity primarily derived from nonrenewable sources. SWF has the option of purchasing electricity through an energy supplier that generates electricity from renewable sources. Although purchase of electricity through a “green energy” supplier often costs a premium, it supports current renewable energy production and encourages further development of renewable energy capacity.
3. ***Obtain renewable energy directly from where it is sourced***
Another strategy for obtaining energy from renewable sources, which airports in the U.S. have employed, is to outsource the development and production of a renewable energy system that supplies electricity to the airport. In this case, an energy service company would develop the renewable energy infrastructure and maintain the system to ensure energy savings during the payback period. The savings in energy costs is often used to pay back the capital investment of the project over a five- to twenty-year period. As part of the arrangement between the airport and the energy service company, the airport purchases the electricity generated from the renewable energy system at a reduced rate. The energy service company then sells back to the electricity grid any excess electricity generated.

In addition to reducing the GHG emissions associated with the Airport’s operations, each of these strategies contributes to encouraging development of renewable energy systems and associated technology.

Recommendation

The Port Authority will explore options for purchasing electricity or environmental attributes from renewable sources. On January 10, 2010, NYPA issued an RFP on behalf of the Port Authority for environmental attributes from newly constructed renewable energy projects. The RFP sought proposals that provide economic development contributions in the form of jobs or other social and environmental benefits to the community in and around SWF. NYPA will select a bidder based on a number of criteria, including the price of environmental attributes as well as the economic, environmental, and social benefits associated with the attribute.

The Port Authority will also consider alternatives to purchasing environmental attributes, such as those strategies described in *Background*, above, based on feasibility, applicability, and financial viability. One possibility is to use a process such as an on-line auction to purchase electricity, with a specified percentage from renewable sources.

4.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the Plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

- **Install a smart metering system.** (*Sustainable Design Project Manual, Credit EEQ-7*)

Central Hudson currently owns the electric meters at SWF. If at some point in the future, the Port Authority assumes ownership of the meters, the agency would install smart metering to obtain more accurate information on energy use.

- **Implement additional lighting projects.**

The Port Authority would implement lighting projects not undertaken as part of the Multi Facility Performance Based Energy Services process. The Port Authority would conduct an evaluation to identify opportunities for such projects, including (but not limited to) parking lots and entrance roadways.

- **Replace revolving doors in the terminal**

The two entryways to the passenger terminal building have revolving doors, which are typically energy-efficient. In this case, however, the design of the doors is such that they result in heat loss by pushing air from the outside into the terminal. The energy loss is limited because the doors operate only when someone is entering or exiting through them and for a maximum of 15 seconds afterward.

As a result, the cost of replacing the doors would be substantial relative to the energy saved. The Port Authority will consider replacement of the doors as part of future terminal modification.

- **Install a green or vegetated roof on appropriate facilities.** (*Sustainable Design Project Manual, Credit SEQ-10, -12*)

Green roofs have multiple benefits, keeping a building warm in the winter and cool in the summer, and they absorb rainfall and reduce the volume of stormwater that needs to be retained and treated. The Port Authority would identify existing facilities that could support a green roof, and/or incorporate a green roof into one or more Airport new construction projects.

- **Use high-albedo pavements.** (*Sustainable Design Project Manual, Credit SEQ-11*)

The agency would identify locations for, and install, high-albedo pavements such as concrete to help reduce heat island effects.

- **Implement planned renewable energy projects.** (*Sustainable Design Project Manual, Credit EEQ-5*)

As funding becomes available, the Port Authority would implement projects to use cost-effective solar and wind technology for small-scale Airport power needs. These projects would include, but would not be limited to, the entry signage and pedestrian canopy discussed in Section 4.3.1, *Energy Efficient Lighting Improvements*.

■ **Produce renewable energy on site and/or off site.** (*Sustainable Design Project Manual, Credit EEQ-5*)

The Port Authority would produce renewable energy at SWF or in the Hudson Valley by installing solar panels and/or wind, geothermal, or cogeneration systems. This effort could include Port Authority ownership or a hosting arrangement with a third party. The Port Authority would continue to work with the Solar Consortium to explore opportunities for solar energy production. In addition, the Port Authority may be able to establish a solar project at SWF through NYPA. Depending on the outcome of these efforts, this measure may be feasible to implement in the short term.

■ **Install alternative energy fueling stations.**

The Port Authority would identify opportunities for alternative fueling stations, including electric vehicle charging stations, and install one or more such stations at SWF. Opportunities could include outside sources of funding (such as the VALE program) and partnerships with private entities.

■ **Retrofit HVAC systems.**

The Multi Facility Performance Based Energy Services process may include the retrofit of some existing HVAC systems. For those systems not included, the Port Authority would retrofit or replace them with more efficient technology when the systems reach the end of their useful lives.

■ **Encourage and accommodate use of airline or FBO electric GSE.**

The existing building electrical system cannot support the installation of the fast-charging stations necessary for electric GSE. The Port Authority would accommodate this increasingly popular technology in future new terminal building development or major renovations that include system-wide electrical upgrades. The electrical capacity at the Fixed Base Operator (FBO) facility will be evaluated in the future.

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Noise Abatement



This chapter describes the noise environmental baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

5.1 Environmental Context

This section describes the noise environment at SWF and its relationship to land use compatibility, and outlines the steps the Port Authority has taken to understand the noise environment.

5.1.1 Noise Levels

The primary sources of noise are general aviation and scheduled airline service flights associated with operations at SWF, and military flights associated with operations at the NYANG. In 2009, SWF accommodated a total of 45,557 aircraft operations, of which 44,571 (98% of total operations) were general aviation and scheduled airline service flights and 1,006 (2% of total operations) were military operations.

5.1.2 Land Use Compatibility and Airport Noise

“Land use compatibility” is a concept used by the FAA to ensure that development of land in the vicinity of an airport is compatible with airport operations. Safety, obstructions, aircraft noise, and environmental impacts to land uses around airports are considered to determine land use compatibility. Historically, aircraft noise has been the primary driver of airport land use compatibility conflicts. FAA’s 1999 report, *Land Use Compatibility and Airports, a Guide for Effective Land Use Planning* states “the objectives of compatible land use planning are to encourage land uses that are generally considered to be incompatible with airports (such as residential, schools, and churches) to locate away from airports and to encourage land uses that are more compatible (such as industrial and commercial uses) to locate around airports.”⁴⁶ The FAA has established noise levels to determine the compatibility of a given land use with the noise generated by airport operations. These specified noise levels are listed in an FAA guide entitled [Land Use Compatibility and Airports, a Guide for Effective Land Use Planning](http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf).⁴⁷

Community land use regulations are often designed to maximize the economic opportunity of the city or town, especially potential tax revenue, and many communities have not properly taken into account long-term airport growth. As an airport expands or service levels increase, conflicts arise between aviation activity and local development: “Land use decisions that conflict with aviation activity and airport facilities can result in undue

46 Federal Aviation Administration, *Land Use Compatibility and Airports*. 1999
http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf

47 Federal Aviation Administration, *Land Use Compatibility and Airports*. 1999
http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf

constraints being placed on an airport. In order to enable this sector of the economy to continue to expand, to provide for a wide variety of job opportunities for local citizens, and to meet the needs of the traveling public, it is vitally important that airports operate in an environment that maximizes the compatibility of the airport with off-airport development.”⁴⁸ In the U.S., planning, zoning and land use regulations are entirely within the jurisdiction of local, regional, and state governments. Therefore, cooperation and coordination between municipalities and airports is the only way to ensure the compatibility of land outside the airport boundary.

There are a number of federal regulations that relate to airport land use compatibility such as the Airport Noise and Capacity Act of 1990, which implemented a mandatory phase-out of the noisiest aircraft, and the Aviation Safety and Noise Abatement Act of 1979, which required the establishment of a single system for measuring noise, and authorized FAA to issue grants for noise compatibility planning.

Local comprehensive plans are critical to informing the airport of a locality’s future development plans. Similarly, the local comprehensive planning process is the best way for an airport to affect land use compatibility. Airports such as SWF with relatively little development in the vicinity of the Airport are optimally positioned to ensure off-Airport development is compatible with the Airport as it expands and operations increase. Addressing compatibility conflicts after development occurs is difficult and expensive. For additional information on land use policy and regulatory tools used by both airports and local land use planners, refer to the FAA guide entitled *Land Use Compatibility and Airports, a Guide for Effective Land Use Planning*, a component of the FAA Airport Land Use Compatibility Toolkit available at http://www.faa.gov/airports/environmental/land_use.⁴⁹

Existing land uses and zoning near SWF are described in Chapter 12, *Land Use Compatibility*. The Stewart State Forest, adjacent to SWF, provides a noise buffer by separating the Airport from populated areas to the west. Much of the land near SWF is developed and/or zoned for noise-compatible uses. However, there are residential uses adjacent to the Airport, and areas near the Airport (primarily to the south and southwest) are zoned for residential use. The Comprehensive Plan Updates for both the Town of Newburgh and the Town of New Windsor recognize the presence of SWF, and the Plan for the Town of New Windsor specifically refers to the retention of noise buffers and establishment of Airport-compatible development.⁵⁰

5.1.3 Noise Complaint Program

The public can register noise complaints by calling the operations department at SWF. Staff is available to receive noise complaints on weekdays and weekends during normal business hours. The public also can register complaints outside these hours by leaving a message. Upon receiving a complaint, staff researches the aircraft flight operations leading to the complaint. Given the larger noise profile of the relatively old, large C-5 military transport aircraft that are based at SWF, noise complaints sometimes include military flights.

Table 5-1 shows that SWF currently receives very few noise complaints, with only 9 complaints received in 2009.

48 Federal Aviation Administration, *Land Use Compatibility and Airports*. 1999

http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf

49 Federal Aviation Administration Land Use Compatibility resources: http://www.faa.gov/airports/environmental/land_use/

50 Town of Newburgh *Comprehensive Plan Update*, October 2005. <http://www.townofnewburgh.org/uppages/PDF%20Final%20Report.pdf>,
Town of New Windsor *Comprehensive Plan – Draft Generic Environmental Impact Statement (DGEIS)*. January 2009 <http://town.new-windsor.ny.us/LinkClick.aspx?fileticket=FCE0GjHtQ2c%3D&tabid=36>

Table 5-1 2009 Noise Complaint Summary

Town	Complaints
Cragsmoor, NY	1
Garrison, NY	1
Middletown, NY	1
Milton, NY	1
Newburgh, NY	2
Poughkeepsie, NY	1
Port Jervis, NY	1
Wappingers Falls, NY	1
Total	9

Source: Port Authority, 2010.

5.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to noise abatement at SWF:

Goal: Minimize noise impacts on surrounding communities.

Objectives:

- Understand the existing noise environment.
- Work to minimize exposure to high levels of Airport-generated operational noise.
- Work to maximize compatibility between the Airport and nearby uses.
- Minimize noise and vibration from construction activities.

Ensuring that the land uses near the Airport are compatible with the noise generated at the Airport is essential to managing Airport noise. The goal and objectives in Chapter 12, *Land Use Compatibility*, are therefore complementary to the goal and objectives listed above for noise abatement.

5.3 Existing Sustainability Strategies

As detailed in Section 12.3- *Land Use Compatibility: Existing Sustainability Strategies*, the Port Authority has engaged and continues to engage with host communities in relation to land use compatibility. There is currently a noise complaint program in place at SWF, as detailed in Section 5.1.3 - *Noise Complaint Program*. Additionally, the Port Authority's *Sustainable Design Project Manual* and the upcoming *Sustainable Design Project Manual for Infrastructure* include guidance on actions that can be taken to reduce noise and vibration impacts through the implementation of a Construction Environment Plan, noise barriers where practicable, communication with the community on scheduled construction, and minimizing the use of equipment that generates more than 80 db(A) of noise, as well as several other possible noise minimizing measures.⁵¹

51 Port Authority of New York and New Jersey Engineering Department, Sustainable Design Project Manual, August 15, 2007.

5.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to minimize noise impacts on surrounding communities.

5.4.1 Conduct a Noise Baseline Analysis

Background

The generally accepted method of depicting the existing noise environment near an airport is the use of noise contours. The contours are lines representing designated average noise levels, overlaid on maps showing the existing land uses. The FAA has established guidance and standards for the preparation of noise contours. Airports use noise contours in a variety of ways. For example, noise contours can be used to influence land use planning and zoning decisions in nearby communities.

Recommendation

The Port Authority will conduct a noise baseline analysis to determine current noise levels in the vicinity of the Airport. The noise analysis will be conducted in accordance with current FAA guidance and standards. The preparation of noise contours for SWF will allow the Airport to track noise level trends moving forward, and will provide valuable information to nearby communities to help ensure that off-Airport land development remains compatible with Airport activities. If funding allows, the analysis will be prepared for year 2010 aircraft operations.

5.4.2 Work with Municipalities on Compatible Land Use

Background

As the FAA acknowledges in its 1999 task force summary report, *Land Use Compatibility and Airports, a Guide for Effective Land Use Planning*, "The development of land uses that are not compatible with airports and aircraft noise is a growing concern across the country. In addition to aircraft noise, there are other issues, such as safety and other environmental impacts to land uses around airports which need to be considered when addressing the overall issue of land use compatibility. The objectives of compatible land use planning are to encourage land uses that are generally considered to be incompatible with airports (such as residential, schools, and churches) to locate away from airports and to encourage land uses that are more compatible (such as industrial and commercial uses) to locate around airports."⁵²

Given that the Port Authority does not have control over land outside the Airport boundary, cooperation with neighboring municipalities is necessary. The local zoning and land use policies are within the authority of the adjacent jurisdictions, in this case the Towns of Newburgh and New Windsor.

Recommendation

The Port Authority will continue to work with its surrounding municipalities regarding the development of properties near the Airport, with the objective of discouraging the development of incompatible land uses, such as residences and schools, adjacent to the Airport. The Port Authority will also ensure that the Airport property is developed for Airport facilities, Airport-dependent businesses, and Airport-compatible uses. This strategy is consistent with the goal and objectives for land use compatibility listed in Chapter 12, *Land Use Compatibility*.

⁵² Federal Aviation Administration, *Land Use Compatibility and Airports*. 1999
http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf

5.4.3 Enhance Noise Complaint Program

Background

The public currently registers noise complaints by calling the operations department at SWF. Staff is available to receive noise complaints on weekdays and weekends during normal business hours and the public can leave a message outside these hours.

Recommendation

The Port Authority will enhance the noise complaint program by ensuring that the noise hotline phone number is clearly displayed on the SWF website and that the public can submit noise complaints online.

5.4.4 Conduct Noise-Related Community Outreach

Background

The FAA explains that “Airports or local planning agencies that expect a reasonable chance of success in their planning efforts must provide for public education and awareness in the planning process.”⁵³ Outreach involves both the dissemination of information to educate, and the exchange of information and establishment of a dialogue to ultimately improve land use compatibility planning in a given community.

Recommendation

As SWF develops, the Port Authority will conduct noise-related community outreach to ensure that community concerns are well known and understood.

5.4.5 Coordinate with the Air National Guard to Reduce Noise Associated with Military Aircraft Activity

Background

The New York Air National Guard Base at SWF currently operates the Lockheed C-5 transport, flown by the US Air Force since 1969. This aircraft was designed to provide heavy airlift and oversize cargo transport over long distances. This older model large military transport has a larger noise profile than the newer transports also in use by the US Air Force.

Recommendation

The Port Authority will include information on the noise from Air National Guard operations, as well as current Guard noise procedures at SWF, in the baseline noise analysis (Section 5.4.1, *Conduct a Noise Baseline Analysis*). The Port Authority will also maintain an open dialogue with the Air National Guard regarding its noise abatement procedures and community noise issues.

5.4.6 Accommodate the FAA’s Next Generation Air Traffic Control System

Background

The FAA’s Next Generation Air Traffic Control System (NextGen) will transform the National Airspace System (NAS) from a ground-based system of air traffic control to a satellite-based system of air traffic management. This transformation will be achieved through the development of aviation-specific applications for existing, widely used technologies such as Global Positioning Satellites (GPS). Changes will also be realized through the fostering of technological innovation in areas such as weather forecasting, data networking, and digital

⁵³ Federal Aviation Administration, *Land Use Compatibility and Airports*. 1999
http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf

communications. Hand in hand with state-of-the-art technology will be new airport infrastructure and new procedures, including the shifting of certain decision-making responsibility from the ground to pilots in the aircraft.

When fully implemented, NextGen will have safety as well as environmental benefits, allowing more aircraft to fly more closely together on more direct routes, reducing delays, and providing unprecedented reductions in carbon emissions, fuel consumption, and noise.⁵⁴ For example, NextGen will enable straighter flight paths and continuous descent arrivals, which will reduce overall emissions and allow for arrival and departure paths that are designed around communities and environmentally sensitive areas, thus reducing noise pollution in some areas.

Recommendation

The Port Authority will work with the FAA to equip SWF with the infrastructure and technology to implement NextGen. Although NextGen will not be fully implemented until 2025, the FAA has committed to making a number of more immediate changes to the existing NAS (such as advances in navigation), and has a partial implementation plan targeted to finish by 2018. The Port Authority will also continue to support the implementation of NextGen through the National Alliance to Advance NextGen, a coalition led by the agency that advocates implementation through legislation, funding, technology development, government engagement, and deployment.

5.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF's sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

- **Proactively acquire and manage land adjacent to SWF.**

If the opportunity arises and funding becomes available, The Port Authority would strategically acquire and manage selected parcels adjacent to SWF, to act as a noise buffer and prevent residential encroachment. Such land management could be conducted in coordination with the natural resource management objectives described in Chapter 7, *Land and Natural Resources Management*.

- **Continuously explore ways to minimize operational noise.**

The Port Authority will continue to consider noise minimization initiatives as they become available and applicable to SWF. These initiatives could include a fly quiet program (similar to the program operated by San Francisco International Airport).

54 Federal Aviation Administration, *What is NextGen?* Updated April 20, 2010 <http://www.faa.gov/about/initiatives/nextgen/defined/what/>

6

Water Quality Protection and Water Conservation



This chapter describes the environmental baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF relating to water quality and water supply. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

6.1 Environmental Context

This section describes the existing surface water and groundwater quality at SWF, and hazardous material spills that occurred in 2008. It also describes current rates of water consumption.

6.1.1 Surface Water Drainage and Quality

SWF lies within the Lower Hudson River Basin, which is one of the largest watersheds on the eastern seaboard. The drainage area of the Lower Hudson River Basin covers 5,276 square miles in New York State including most of Westchester, Putnam, Dutchess, Orange, Ulster, and Columbia Counties; large parts of Rockland, Greene, Albany, and Rensselaer Counties; and borders New York (Manhattan) and Bronx Counties in New York City.⁵⁵ The western and central portions of SWF, and the area north of Runway 9-27, are drained by Drury Lane Creek and Gillick Brook. Drury Lane Creek and Gillick Brook come together to flow into Beaverdam Lake, which flows into Moodna Creek. With the exception of the far eastern portion of SWF, which drains to Quassaic Creek, the remaining portion of the Airport drains into two unnamed tributaries of Silver Stream, which then flows to Moodna Creek, as does Beaverdam Lake. Quassaic Creek and Moodna Creek ultimately drain to the Hudson River.

According to the NYSDEC, one of the most notable water quality problems in the Lower Hudson River Basin is the effect of toxic/contaminated sediment in the estuary of the Hudson River main stem. This contamination is primarily the result of historic polychlorinated biphenyl (PCB) discharges in the Upper Hudson River and has resulted in extensive fish consumption advisories. A number of the lakes and reservoirs in the Lower Hudson River Basin are affected by residential/commercial development and associated urban/suburban runoff of sediment and nutrient loads that promote eutrophication (a buildup of nutrients that leads to excess plant

⁵⁵ Bureau of Water Assessment and Management, Division of Water, NYS Department of Environmental Conservation, New York State Water Quality 2006. January 2007.

growth), and silt/sediment attributed to streambank erosion.⁵⁶ Agricultural activities in rural areas of the basin contribute silt, sediments, nutrients, oxygen demanding organic wastes and some pesticides to the waters of the basin.⁵⁷ According to the NYSDEC, the segment of the Hudson River in Orange County and Quassaic Creek are “impaired.” Water bodies are classified as “impaired” if water quality standards are not being met and/or where uses such as recreation, boating, and fishing are not supported.

Potential surface water pollutants at SWF include Jet A fuel, Avgas, gasoline, diesel fuel, kerosene, lubricating and fuel oils, aircraft and airfield pavement deicing fluid, solvents, paint, cleaning agents, herbicides, pesticides, and heavy metals.⁵⁸ As documented in Section 6.3, *Water Quality: Existing Sustainability Strategies*, and Chapter 9, *Hazardous Materials and Hazardous Waste Management*, hazardous materials are handled in ways to minimize risk to surface water and there are controls in place to protect surface water in the event of an inadvertent release of hazardous materials to the stormwater system at SWF.

Stormwater discharge prevention and watershed management is under the jurisdiction of the NYSDEC through the State Pollutant Discharge Elimination System (SPDES). A permit was issued under the SPDES on January 1, 2007 that applies to the entire SWF property, including aviation and non-aviation tenants. The permit was modified on April 2, 2009 and again on May 1, 2009. The SPDES permit expires on December 31, 2011. SWF and its tenants are required to comply with the provisions of the SPDES permit, which requires monthly and quarterly surface water quality sampling during stormwater discharge events.

Surface water samples are collected from the following six locations at the Airport:

- **Outfall No. 001.** Outfall from the oil/water separator serving the truck unloading pad at the Northeast Fuel Farm.
- **Outfall No. 004.** Outfall from two 30,000-gallon oil/water separators serving the cargo aircraft parking apron at the north cargo building.
- **Outfall No. 005.** Outfall from a large portion of Stewart Industrial Park.
- **Outfall No. 008.** Outfall from much of the original Stewart Air Force Base, including the area where commercial aircraft deicing is conducted.
- **Outfall No. 011.** Outfall draining paved and vegetated areas through an oil/water separator at the Southwest Fuel Farm.
- **Outfall No. 013.** Outfall that drains a portion of the aircraft parking apron north of the terminal area and a vegetated area.

Surface water samples from all of the outfalls are tested monthly for oil and grease and Total Suspended Solids (TSS). Outfalls 001, 004, 011, and 013 are tested quarterly for the polycyclic aromatic hydrocarbons (PAHs) toluene, benzene, ethylbenzene, and xylene. Outfalls 001 and 013 are tested monthly for methyl tertiary butyl ether (MTBE). In 2007, 2008, and 2009 none of the samples collected exceeded the daily maximum limits set by the SPDES permit.

At the request of the NYSDEC, the Port Authority recently commenced monitoring for the deicing compound propylene glycol. Samples were collected from four locations twice per month during both the 2007 and 2008 deicing seasons. In 2007, propylene glycol was detected to exceed the lab detection limit (the minimum

⁵⁶ Bureau of Water Assessment and Management, Division of Water, NYS Department of Environmental Conservation, New York State Water Quality 2006. January 2007.

⁵⁷ Bureau of Water Assessment and Management, Division of Water, NYS Department of Environmental Conservation, New York State Water Quality 2006. January 2007.

⁵⁸ The Chazen Companies, *Storm Water Pollution Prevention Plan for Stewart International Airport*, November 2008, p.13.

concentration that can be established as being greater than zero) of 5.0 mg/L in 11 of the 48 samples collected and in 2008 it was detected in an amount exceeding the lab detection limit in 10 of the 48 samples. The current SPDES permit requires that stormwater from Outfalls 004, 005, 008, and 013 be tested monthly for Biological Oxygen Demand (BOD), glycol, and total nitrogen. These tests are conducted for benchmark monitoring, which does not constitute direct numeric effluent limitations. The purpose of this type of monitoring is to signal the need for the SPDES permittee to implement corrective actions, as necessary.

A second SPDES permit at SWF, specifically related to construction activity, became effective in March 2007. This permit is required to be in place prior to commencing any construction activity. The permit issued for construction projects requires that site inspections be conducted every seven days or within 24 hours of the end of a storm event with over half an inch of precipitation.

6.1.2 Groundwater

In 2004, the NYSDOT conducted a groundwater investigation at the former Southwest Fuel Farm to comply with state regulations. Groundwater samples were collected from five monitoring wells. Only sodium and manganese were detected in exceedance of applicable standards or guidance values. However, because manganese had been detected at similar concentrations in the groundwater in nearby areas, it was determined that the concentration of manganese was typical of site background conditions.⁵⁹

In 2008, the Port Authority discovered a section of existing sewer line in which groundwater was infiltrating into the sanitary system, causing a higher than necessary load to be sent to the Newburgh Wastewater Treatment Plant. As described in Section 6.3.5 - *Sewer Relining*, the sewer line was replaced in 2009. Currently there is an existing active septic system servicing Building 2290 (North Cargo Area- Cargo Road) that is located in a grassy area adjacent to an open water pond. The Port Authority plans to cease use of this septic system and connect the building to an 8-inch sanitary line that was installed under Cargo Road. There may be additional septic systems at SWF that have not been cleaned and closed.

6.1.3 Spills

Petroleum spills of five gallons or more, or any spill not contained and cleaned up within two hours of discovery, must be reported to the NYSDEC. The majority of spills that occur at SWF consist of fuel spills of less than five gallons. In 2007, only three reportable spills occurred: a 50-gallon jet fuel spill at the Southwest Fuel Farm, a 25-gallon jet fuel spill at Gate 5, and a 50-gallon jet fuel spill at Gate 1. In 2008, only two reportable spills occurred: a 25-gallon spill of jet fuel at the Southwest Fuel Farm and a 20-gallon spill of jet fuel on the Building 112 Ramp. These spills were promptly cleaned up before entering the stormwater system. Absorbents stored on site were used to clean up the spills.

6.1.4 Water Consumption

In 2008, approximately 3.2 million gallons of potable water, or approximately 4.2 gallons per passenger, were consumed at the Airport in Port Authority operated buildings. This figure only includes water used in buildings owned and operated by the Port Authority and does not include buildings owned by tenants or water use metered to tenants.

⁵⁹ Lawler, Matusky & Skelly Engineers, Environmental Science & Engineering Consultants, *Subsurface Soils and Groundwater Investigation at the Southwest Quadrant Fuel Farm*, Stewart International Airport, May 2004, page 1-2.

6.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to water quality protection and water conservation at SWF:

Goal: Minimize water consumption and contribute to protection of water quality in the Moodna Creek Drainage Basin, Quassaic Creek and the Beaver Dam Lake watershed.

Objectives:

- Maximize water use efficiency within buildings and reduce potable water consumption as opportunities become available.
- Seek to identify opportunities to minimize Airport sanitary wastewater outflows.
- Optimize the utilization of site water resources for purposes such as landscape irrigation.
- Enhance the management and treatment of deicing fluid.

6.3 Existing Sustainability Strategies

This section describes measures currently in place at SWF to conserve water and protect water quality.

6.3.1 Water Conservation

Restrooms in the passenger terminal building are equipped with automatic shut off faucets to conserve water. The Port Authority and its tenants minimize the volume of water used during aircraft and vehicle washdown; for example, aircraft are wiped down to take hydraulic fluid off the plane, rather than washing the planes down.

Waterless and low-flow urinals (such as those using up to 1.0 pint of water) have many benefits including reduced water use and wastewater discharge, and lower electricity costs associated with pumping water and sewage. SWF has installed three waterless urinals in Building 138 (Administrative building) on a trial basis. SWF has experienced mixed results with the fixtures and prefers low-flow urinals.

6.3.2 Water Reuse

Due to the age and configuration of the existing facilities, water recycling is not currently conducted at Port Authority operated facilities at SWF. However, in 2009, the Port Authority commenced installing new rainwater collection tanks to recycle and reuse stormwater runoff from Parking Lot A for landscape irrigation.

In response to the 2009 SWF Tenant Survey, two tenants reported that they recycle or reuse water. Avis/Budget recycles water from its car wash facility, and the Metal Container Corporation, an Anheuser-Busch metal can factory, reuses water in its operations.

6.3.3 Pervious Pavement and Stormwater Management

In 2009, the Port Authority initiated the expansion of Parking Lot A. The expansion incorporates sustainable design elements including the use of 5.5 acres of porous surface pavement to increase stormwater infiltration.

The area adjacent to the parking lot will have grassed areas, gravel, mulch and a dry swale to remove pollutants including suspended solids and bacteria from stormwater runoff. The dry swale will also reduce the peak runoff rate and increase stormwater infiltration. Increased groundwater recharge will occur as a result of increased stormwater infiltration. The project is scheduled to be substantially complete by mid- 2010.

6.3.4 Stormwater Pollution Prevention Plan

The 2008 *Stormwater Pollution Prevention Plan for Stewart International Airport (SWPPP)* documents best management practices (BMPs) for preventing the contamination of stormwater at SWF. The BMPs implemented at SWF fall into the following categories:⁶⁰

- **Good Housekeeping** - Chemicals including solvents, paints and oils are stored in closed containers indoors and in a neat and orderly manner; dry cleanup methods are used whenever possible; containers are not stored on the ground or near stormwater drains; spills are cleaned up promptly; the floors of the hangars, storage areas, and maintenance buildings are cleaned; garbage and debris are collected regularly for disposal.
- **Inspections and Record Keeping** - Comprehensive inspection programs and consistent recordkeeping procedures aim to minimize pollutant discharges to stormwater.
- **Storage Tank Spill Prevention and Response Measures** - Fuel storage tanks are double-walled or have secondary containment; fuel farms have fences and gates with locks; fuel transfers in and out of storage tanks are supervised and manually controlled; fuel storage tank levels are monitored; inspections for leaks and spills are conducted regularly; spill response equipment is provided on-site; spill response action is taken immediately when a spill is detected. As described in Section 9.3.3 - *Spill Prevention, Control and Countermeasure Plan (SPCC)*, there are SPCC Plans in place that require that every effort be made to control a spill. Additionally, if a discharge of more than five gallons onto land or any amount threatening to enter waters of the state occurs, the facility must notify the NYSDEC no later than two hours after the event.
- **Preventive Maintenance** - Stormwater management devices, drainage systems, oil/water separators, and equipment are inspected and maintained regularly.
- **Employee Training** - Employees are trained annually on good housekeeping practices and stormwater pollution prevention, BMPs, spill response, and inspections. Training is documented and maintained on file.
- **Runoff Management** - Oil/water separators are used in areas where concentrations of petroleum hydrocarbons are high and source control techniques may not be effective; vegetated swales are used adjacent to runways to permit the collection and infiltration of stormwater runoff.
- **Aircraft Fueling, Aircraft and Vehicle Maintenance** - Fueling is conducted as far away from stormwater drains as possible; if fueling must be conducted near stormwater drains absorbent material is placed around the drain prior to commencement of fueling; where possible fueling operations are not conducted during rainfall events; spill control equipment is maintained onboard fuel trucks and any spills are cleaned up promptly; vehicles are maintained to prevent the buildup of oil and grease; vehicles are inspected for leaks; waste oils are collected and recycled.
- **Aircraft Deicing** - Deicing is carried out at specific locations to minimize runoff and possible water contamination (refer to Section 6.3.6 - *Deicing Fluid Use and Collection* for details). A vacuum truck is used to collect and control deicing fluid.

60 The Chazen Companies, *Storm Water Pollution Prevention Plan for Stewart International Airport*, November 2008, pages 20 – 38.

- **Vehicle Fueling** – Off-site fueling stations are used as much as possible; on-site tanks are double walled to prevent fuel spills; spill control equipment is maintained in fueling areas.
- **Aircraft and Vehicle Washdown** – Off-site commercial washing operations are used as much as possible; where washdown must be conducted on site it is conducted in designated indoor areas; washdown water is collected with a wet vacuum or, in some locations is discharged to the sanitary sewer system.
- **Painting Operations** – Painting operations are conducted in designated indoor areas; spill response equipment is provided on-site; waste and paint-contaminated material are disposed of properly.
- **Rubber Removal** – Rubber removal from runways is conducted approximately one time per year. During rubber removal a biodegradable detergent is sprayed onto the runways, which are then rinsed off with water into the adjacent grassy swales.

The SWF Pollution Prevention Team is responsible for ensuring that the SWPPP is implemented properly, for conducting annual stormwater pollution prevention compliance evaluations, and for updating the SWPPP as needed. The team includes the general manager of engineering, the general manager of operations, the supervisor of maintenance, and a representative from Airport engineering services.

6.3.5 Sewer Relining

In 2009, approximately 7,500 feet of sewer line was remediated to repair a section where groundwater was infiltrating the line and causing a larger than necessary load to be sent to the municipal wastewater treatment plant.⁶¹

6.3.6 Deicing Fluid Use and Collection

Propylene glycol, one of the standard chemicals used for aircraft deicing, is used at SWF. Aircraft deicing is conducted by FBOs primarily at the passenger terminal building. FedEx deices aircraft at its own ramp; if there were a need, the North Cargo Ramp could also be used for the deicing of other cargo aircraft. The passenger terminal deicing area includes two sub-areas: “Terminal North,” which includes Gates 1 and 2 and Hangars A and B; and “Terminal South,” which includes Gates 3 through 8. At each location, deicing is conducted at a designated deicing pad. Fluid from the deicing pads is directed to holding tanks or on-site lagoons where it is aerated and tested prior to release to the sanitary sewer system for treatment at the Town of New Windsor’s sewage treatment plant.⁶² In addition, when aircraft leave the designated deicing pads, a vacuum truck follows behind to remove deicing fluid that drips from the aircraft onto the apron and taxiways. The following list of SWF tenants conduct deicing on their equipment and aircraft: Atlantic Aviation, Richmor Aviation, Federal Express, and Delta Air Lines.

6.3.7 Utilization of Low-Impact Development Principles

Vegetated depressions or swales reduce rainwater runoff from impervious areas like roofs, roadways, parking lots, sidewalks, and compacted lawns. The use of depressions or swales reduces rain runoff by allowing stormwater to soak into the ground as opposed to flowing into storm drains and surface waters and causing erosion, water pollution, flooding, and diminished groundwater. The Port Authority incorporated vegetated depressions and swales into the construction of the Overflow Parking Lot (Lot D) and the design of stormwater systems for current projects, such as the improvement of Lot A.

61 The catalyst for this was a mandate by the Town of New Windsor to identify and remediate any groundwater infiltration into the sewer system to help reduce the load going to the town’s wastewater treatment facility.

62 The Chazen Companies, *Stormwater Pollution Prevention Plan for Stewart International Airport*, November 2008, page 10.

6.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to conserve water and protect water quality.

6.4.1 Conduct Water Use Audits at SWF (Sustainable Design Project Manual, Credit WEQ-1)

Background

Water use audits, similar to energy audits, serve to more accurately quantify water consumption, and identify potential opportunities to decrease water consumption. Water audits evaluate the efficiency of plumbing systems and plumbing products throughout a given facility and sometimes identify unknown leaks. The current Multi-Facility Performance Based Energy Services process allows for the inclusion of water conservation measures in the improvements installed.

Recommendation

The Port Authority will include water conservation at SWF facilities in the Multi Facility Performance Based Energy Services process. Over the duration of the ESCO program, water use at SWF buildings will be included in successive rounds of the process, to involve preliminary assessments, submittal of proposals, investment-grade audits, installation of water-efficiency measures, and measurement and verification. The intent is that over the life of the ESCO program, most if not all Port Authority buildings at SWF will be included.

6.4.2 Install Water Efficient Fixtures (Sustainable Design Project Manual, Credit WEQ-3)

Background and Recommendation

There are currently automatic shut off faucets in the restrooms at the passenger terminal building that conserve water. Potable water use in the passenger terminal building and other buildings will be reduced further by installing high efficiency water fixtures in restrooms either as traditional fixtures need to be replaced or capital becomes available for a larger scale retrofit. The following water efficient fixtures will be installed:

- **Low flow faucets.** Traditional faucets will be replaced with low-flow faucets, which reduce water consumption.
- **High efficiency urinals.** Traditional urinals will be replaced with high-efficiency urinals such as the low-flow urinals currently preferred by SWF.

6.4.3 Install Water Efficient Landscaping and Irrigation Systems (Sustainable Design Project Manual, Credit WEQ-4)

Background and Recommendation

To limit irrigation frequency and duration, the Port Authority will use the following water efficient landscaping and/or irrigation techniques when installing landscaping, including the following components:

- Utilize vegetation suitable to the existing site conditions, specifically in regard to locale, climate, precipitation, solar radiation, soil characteristics (pH, OM, soluble salts, percent sand, percent silt, percent clay, etc.) and operational requirements. All vegetation varieties shall be in accordance with FAA Advisory Circular 150/5200/33B.⁶³

63 Hazardous Wildlife Attractants On or Near Airports, August 28, 2007.

- Minimize lawn area and replace with more drought tolerant landscaping.
- Install a digital soil moisture system, or an on-site weather station can be used to determine irrigation needs by monitoring weather conditions including humidity, temperature, wind speed, and wind direction.
- Install a high-efficiency drip irrigation system where drought tolerant landscaping is not used. Drip irrigation systems conserve water by allowing water to drip slowly to the roots of plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. The Airport should irrigate landscaping only when necessary.
- Continue to invest in stormwater/rainwater capture for irrigation and other non-sanitary uses when possible.

6.4.4 Install Pervious Pavement

(Sustainable Design Project Manual, Credit SEQ-10)

Background

Areas typically suitable for the use of pervious pavement include parking lots, low-traffic roadways, road shoulders, non-traffic pavements, maintenance roads, utility yards, and airside and landside automobile parking facilities. Pervious pavement increases stormwater infiltration, resulting in increased groundwater recharge, and reduces stormwater runoff. These types of pavement should not be installed in areas subject to heavy vehicle load areas with high water table, or locations where oil and hazardous materials are transported.

Recommendation

As replacement or addition of new pavement is required at SWF, pervious pavement will be considered in relation to the pavement specifications needed for each use.

6.4.5 Coordinate with Orange County Water Authority

Background and Recommendation

The Port Authority will coordinate with the Orange County Water Authority (OCWA), whose programs are focused on water supply, water resource protection, watershed planning, and conservation. The Port Authority will review and reference the County Draft Watershed Management Plan in its planning of future development at SWF.

6.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF's sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

■ **Install water metering.**

The Port Authority does not control the water meters at SWF. If at some point in the future, the Port Authority assumes ownership of the meters, the agency would evaluate the costs and benefits of installing water meters and would install the meters if warranted. Water metering networks would facilitate accurate measurement of water use.

■ **Encourage tenants to use alternative deicing methods.**

The Port Authority would exchange information on deicing best practices with Airport tenants, in order to encourage the use of alternative deicing methods and reduce the use of glycol-containing aircraft deicing fluid in a manner that maintains flight safety.

■ **Recycle deicing fluid.**

Currently, the amount and concentration of deicing fluid collected are being assessed to develop a recycling program. As the Airport expands and redevelops, the method of collection and opportunities for recycling deicing fluids would be explored. Any future methods of collection would need to comply with applicable Federal regulations, including the proposed EPA Effluent Limitations Guidelines (if finalized).⁶⁴

■ **Develop a water reuse program.** (*Sustainable Design Project Manual, Credit WEQ-2*)

If funding is available, the Port Authority would pursue opportunities to reuse water, including the recycling of rainwater and the reuse of greywater. Such opportunities could arise in conjunction with building or other facility construction projects.

64 EPA Airport Deicing Effluent Guidelines: Proposed Rule. August 28, 2009 Docket number: EPA-HQ-OW-2004-0038

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7

Land and Natural Resources Management



This chapter describes the environmental baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF in relation to land and natural resources. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

7.1 Environmental Context

This section describes wetlands, threatened and endangered species that occur on the SWF property and in nearby areas, and existing vegetation, pest, and wildlife management practices.

7.1.1 Wetlands

The New York State Freshwater Wetlands Act (Article 24 of the Environmental Conservation Law) protects wetlands of 12.4 acres or larger, as well as a 100-foot buffer around the wetlands. Smaller wetland areas may be regulated by the United States Army Corps of Engineers if they are considered of unusual local importance. The Freshwater Wetlands Act requires NYSDEC to map freshwater wetlands that are subject to State jurisdiction. The NYSDEC maps show approximate locations only, and must be verified and refined through more detailed delineations. The original mapping for Orange County was conducted in 1987 and updated in 2008.

The New York State Freshwater Wetlands mapping shows several areas of wetlands within the boundaries of SWF. As individual projects are considered, the Port Authority is conducting more detailed wetland delineations that will consider federal Clean Water Act Section 404 jurisdiction as well as the State jurisdiction and mapping. Any updated delineations would be submitted to the U.S. Army Corps of Engineers for a formal determination.

Encompassing some 6,700 acres of property formerly owned by the New York State Department of Transportation (NYSDOT), Stewart State Forest is directly to the west of SWF. There are NYSDEC Regulated Wetlands located throughout Stewart State Forest. Some portions of the 5,264 acres of land in Stewart State Forest (lands to the west of Maple Avenue) serve as a land bank for wetland creation and/or enhancement as

mitigation for wetland impacts of NYSDOT and SWF projects.⁶⁵ Wetland mitigation projects are not permitted within the remainder of Stewart State Forest (lands east of Maple Avenue).⁶⁶

7.1.2 Threatened and Endangered Species

The Endangered Species Act provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the U.S. Provisions. The Endangered Species Act is made for the listing of species, as well as for the development of recovery plans and the designation of critical habitat for Listed Species. The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize Listed Species, and contains exceptions and exemptions.

The Indiana Bat (*Myotis sodalis*), which is a federally-listed endangered species, has been recorded to be roosting within a quarter mile of the Stewart State Forest.^{67,68} Given that the bat has a forage range of 2 miles from its roost site, it is possible that it forages within Stewart State Forest, although no individuals have been observed in the forest to date.⁶⁹ However, one male Indiana Bat was identified in a survey at SWF in 2009. As the result of that survey, SWF is preparing to conduct a formal consultation with the U.S. Fish and Wildlife Service, following the procedures established under Section 7 of the Endangered Species Act. Due to habitat conditions for the Indiana Bat on site, SWF is restricted in its tree cutting during the summer months.

There are 13 state-listed threatened species of birds and amphibians that are known to occur within Stewart State Forest.⁷⁰ These species are the Northern Harrier (*Circus cyaneus*), Upland Sandpiper (*Bartramia longicauda*), Least Bittern (*Ixobrychus exilis*), Grasshopper Sparrow (*Ammodramus savannarum*), Coopers Hawk (*Accipiter cooperii*), Red shouldered Hawk (*Buteo lineatus*), Sharpshinned Hawk (*Accipiter striatus*), Pied-billed Grebe (*Podilymbus podiceps*), Horned Lark (*Eremophila alpestris*), Yellow-breasted Chat (*Icteria virens*), Jefferson Salamander (*Ambystoma jeffersonianum*), Blue-spotted Salamander (*Ambystoma laterale*), and Marbled Salamander (*Ambystoma opacum*). Habitat for the Blue-spotted Salamander can be found at SWF in vernal pools.

There are three species of rare state-listed plants that occur in Stewart State Forest, namely, the Winged Monkey Flower, (*Mimulus alatus*), Small Flowered Agrimony (*Agrimony parviflora*), and Slender Knotweed (*Polygonum tenue*). One state-listed plant species of special concern,⁷¹ the Purple Milkweed (*Asclepias purpurascens*), is also found in Stewart State Forest and at SWF.⁷²

7.1.3 Vegetation Management

The Port Authority has professional staff that advises SWF on vegetation management on a regular basis. Vegetation clearance is conducted along fence lines to meet Part 1542 (Transportation Security Administration) requirements. Grass is cut to a height of 6 to 10 inches for general upkeep.

7.1.4 Wildlife Hazard Management

FAR Part 139.337 requires airports to develop a Wildlife Hazard Management Plan and secure approval for the plan from the FAA. In recognition of the potential risk of serious aircraft damage or the loss of human life that

⁶⁵ Stewart Park and Reserve Coalition v. Slater, et al. Page 4 and Section C-13 (page 14) of the Substantive Provisions of the Consent Decree dated December 7, 2005.

⁶⁶ Stewart Park and Reserve Coalition v. Slater, et al. Section C-14 (page 15) of the Substantive Provisions of the Consent Decree dated December 7, 2005.

⁶⁷ New York State Department of Environmental Conservation, *Unit Management Plan and Appendices for the Stewart State Forest*: December 2006, page 17.

⁶⁸ An endangered species is one that is in danger of extinction throughout all or a significant portion of its range.

⁶⁹ New York State Department of Environmental Conservation, *Unit Management Plan and Appendices for the Stewart State Forest*: December 2006, page 17.

⁷⁰ New York State Threatened Species are defined by NY State Department of Environmental Conservation as any native species likely to become an endangered species within the foreseeable future in the state of New York.

⁷¹ A species of Special Concern is defined by the NYSDEC as: any native species for which a welfare concern or risk of endangerment has been documented in the state of New York.

⁷² *State Agencies Announce Effort to Restore a Rare Plant in Stewart State Forest*, Environment DEC Newsletter, August 2006. <http://www.dec.ny.gov/environmentdec/18883.html>.

could result from a wildlife strike to an aircraft, greater emphasis is being placed on preparing airport Wildlife Hazard Management Plans that effectively address potential aircraft safety hazards.

In 2010, the USDA will complete a Wildlife Hazard Assessment of SWF. In the past, wildlife of concern have included deer, coyotes, and birds such as Canada Geese, waterfowl, gulls, pigeons, doves and starlings. Wildlife strikes involving birds, deer and coyotes have been reported in the past.⁷³

The Port Authority has an interim Wildlife Hazard Management Plan in place at SWF while the USDA completes the Wildlife Hazard Assessment. The interim Wildlife Hazard Management Plan requires the use of standard wildlife hazard management strategies, including the elimination of wildlife attractions such as open trash bins, standing water, and perches on buildings, and the use of exploding pyrotechnic launchers to scare away wildlife. The interim Wildlife Hazard Management Plan also establishes SWF's first computerized database for efficient and timely identification and tracking of wildlife strike incident information. The Port Authority is currently working with the USDA to finalize its Wildlife Hazard Management Plan.

Wildlife and grassland management strategies utilized by the NYSDEC in the Stewart State Forest have been developed to enhance habitat for bird species that do not pose a threat to aircraft at SWF, and to discourage bird species known to conflict with Airport operations.⁷⁴

7.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to land and natural resources management at SWF:

Goal: Proceed with development so as to minimize impacts to habitat on the SWF property and work with local, state, and federal agencies to protect habitat in the vicinity of SWF, while ensuring the safe operation of the Airport.

Objectives:

- Protect and ensure no net loss of wetlands as a result of Airport operations.
- Remove invasive species on Airport property.
- Minimize wildlife hazards at the Airport and work cooperatively with the NYSDEC, USDA, and property owners within a 5-mile radius of the Airport to ensure that land uses in the adjacent Stewart State Forest and other properties do not create new wildlife hazards that may be incompatible with safe Airport operations.

⁷³ Stewart International Airport *Interim Wildlife Hazard Management Plan*, 2007, page 1.

⁷⁴ New York State Department of Environmental Conservation, *Unit Management Plan and Appendices for the Stewart State Forest*. December 2006, page 70.

7.3 Existing Sustainability Strategies

SWF Airport staff conducts regular debris collection events in culverts and streams at SWF; the reduction of debris enhances the habitat of waterways downstream. The Port Authority is also conducting more detailed wetland delineations on the SWF property, as specific projects are developed.

The Hudson River supplies fresh water to the Hudson-Raritan Estuary, one of the largest estuaries on the East Coast. In July 2001, the Port Authority authorized \$60 million to preserve open space throughout the Hudson-Raritan Estuary. The New York-New Jersey Harbor Estuary Program acquires property sites in the estuary identified as suitable for conservation, ecological enhancement, public access, or environmental mitigation. The Port Authority's primary partners on these projects include the New York New Jersey Baykeeper; the Trust for Public Land; the New Jersey Department of Environmental Protection; the Green Acres Program; the National Parks Conservation Association; New York City Audubon; and NYSDEC.⁷⁵

In addition, the Port Authority helped fund the U.S. Army Corps of Engineers' Hudson-Raritan Ecosystem Restoration Feasibility Study.⁷⁶ The study purpose is to identify the water resources problems, existing conditions, and factors contributing to environmental degradation within the estuary in order to develop potential solutions aimed at ecosystem restoration, building upon existing restoration efforts and management plans. As a first step, the Corps developed a Comprehensive Restoration Plan (CRP) in 2009 in partnership with the New York-New Jersey Harbor Estuary Program. The CRP will serve as a master plan and blueprint for future restoration.

7.4 Recommended Sustainability Strategies

This section describes land and natural resource enhancement measures that will be implemented at SWF to minimize impacts on land and natural resources.

7.4.1 Develop a Vegetation Management Plan

Background and Recommendation

The traditional role of an airport Vegetation Management Plan is to maintain vegetation in accordance with FAA safety requirements. Vegetation management can also be used to maintain or enhance the value of vegetation communities. When funding permits, the Port Authority will prepare a Vegetation Management Plan for SWF. In addition to complying with applicable FAA requirements, the plan will provide design criteria and standards for landscaped areas at the Airport. The plan will incorporate sustainable practices wherever permissible.

7.4.2 Use Non-Wildlife-Attracting Native Vegetation

Background

Native vegetation is typically low-maintenance as it is already adapted to the local climate, and native plants grow well together. Because native vegetation is adapted to its local climate, it often requires less irrigation and tends to have lower maintenance and upkeep costs than non-native species. Lastly, native vegetation often

⁷⁵ The Port Authority of New York & New Jersey, *Coastal Ecosystems* <http://www.panynj.gov/about/coastal-eco-systems.html>, accessed June 10, 2010

⁷⁶ U.S. Army Corps of Engineers. *Hudson-Raritan Estuary, New York & New Jersey, Ecosystem Restoration (Overall Feasibility Study)* As of: 7 January 2010 <http://www.nan.usace.army.mil/project/newyork/factsh/pdf/estuary.pdf>

requires fewer fertilizers and pesticides, reducing human exposure to chemicals as well as costs associated with fertilizer application.

Recommendation

The Port Authority will encourage only non-wildlife attracting native vegetation on-site to promote local biodiversity and reduce landscaping maintenance and irrigation needs. To implement this measure, the Port Authority will develop an approved list of plants meeting the criteria (if possible, as part of the Vegetation Management Plan). The measure would apply to landscaping, construction, and mitigation projects at SWF. Native vegetation can be purchased locally, thereby supporting the local economy.

7.4.3 Join in Partnerships with Environmental and Conservation Non-Profits

Background

Many environmental nonprofit organizations devote their efforts to maintaining environmental quality, equity, and conservation. Partnering with environmental non-profit organizations therefore enables airports to contribute to efforts to maintain local and regional biodiversity, as well as support the other efforts of environmental non-profit organizations.

Recommendation

The Port Authority will partner with national nonprofits or will join efforts with local organizations that focus their efforts on local environmental needs in surrounding host communities. Local non-profit organizations have expressed interest in working with the Port Authority to advance common goals in the area of environmental stewardship. Recently, the Port Authority reached out to organizations expressing its intent to work on land mitigation efforts during future long-term redevelopment of the Airport.

7.4.4 Continue Wetland Preservation and Mitigation

Background and Recommendation

The agency will continue avoidance of disturbance of wetlands, and will provide for appropriate wetland mitigation and preservation if impacts occur. The Port Authority will conduct its activities in accordance with state laws and the agreements between NYSDOT and NYSDEC on the transfer of land for Stewart State Forest as detailed in Section 7.1, *Land and Natural Resources Environmental Context* and Chapter 12, *Land Use Compatibility*.

7.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF's sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

- **Install an avian radar system**

If conditions warrant in the future, and systems prove reliable, the Port Authority would evaluate the feasibility and effectiveness of installing an avian radar system at SWF. Avian radars are useful devices for airports to locate, identify, and track birds in airport environments.

8

Solid Waste Reduction and Recycling



This chapter describes the environmental baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF in relation to solid waste reduction and recycling. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

8.1 Environmental Context

This section describes solid waste generation, collection, and disposal at SWF.

8.1.1 Waste Generation

Solid waste is generated by SWF operations and airline and other tenant activities. The type of solid waste generated is typical of most airports, consisting of glass, plastic, metal, paper, cardboard, wood, and food. SWF also generates non-hazardous construction and demolition wastes from small-scale demolition and improvement projects. Typical construction and demolition waste generated at SWF includes metals, wood, and asphalt. The Port Authority currently does not track the volume of solid, construction, or demolition waste generated at SWF.

8.1.2 Waste Collection

SWF provides waste collection containers in the passenger terminal building for use by passengers and tenants. Comingled recycling containers are in the administration building and in operations and maintenance areas. Solid waste material is transferred to on-site dumpsters and hauled to a municipal landfill for disposal. Recyclable material is deposited into an on-Airport dumpster and hauled to off-site recycling facilities. Private contractors are responsible for hauling both solid waste and recyclable materials.

8.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to solid waste reduction and recycling at SWF:

Goal: Minimize the generation of solid waste, and reuse and recycle collected waste to the maximum extent practicable.

Objectives:

- Reduce the generation of solid waste from Airport operations.
- Reduce the landfill disposal of solid waste from Airport operations.
- Reuse construction waste wherever possible.
- Recycle 75 percent of collected construction and demolition waste products.

8.3 Existing Sustainability Strategies

This section describes existing waste reduction, recycling, and waste reuse at SWF.

8.3.1 Waste Reduction

As part of the “Going Green with Cleaning Products” initiative recently implemented at SWF and other Port Authority-owned facilities, cleaning products must be purchased in concentrated form in order to reduce the quantity of plastic containers and other packaging material requiring disposal or recycling. A full description of the green cleaning products initiative is provided in Chapter 9, *Hazardous Materials and Hazardous Waste Management*.

8.3.2 Waste Recycling and Use of Recycled Materials

The Port Authority currently has a limited recycling program in place at SWF. As described in Section 8.1.2 - *Waste Collection*, recycling containers are currently provided in a number of the buildings at the Airport. Paper, cardboard, bottles, and cans are recycled from the administration building. Scrap metals generated at the Airport are hauled by a private contractor to an off-site scrap yard for recycling. A Port Authority-wide policy requires that contractors recycle 75 percent of certain demolition debris items, which currently include asphalt, portland cement concrete (PCC), and clean soil. Recycling reduces CO₂ emissions because reused material requires less energy to extract, transport, and process. The Port Authority does not currently track the rate of recycling at SWF.

Of the 30 tenants that responded to the 2009 SWF Tenant Survey, 21 reported having a waste recycling or reuse program. Tenants recycle materials including aluminum cans, plastic bottles, ink cartridges, cardboard, paper, metal, and batteries. Some tenants with industrial type operations estimated achieving a 90 to 100 percent rate of recycling, recycling materials such as cardboard, glass, and scrap metal. JetBlue Airways, Piedmont Airlines (US Airways Express), and General Electric Corporate Aviation all dispose of deplaned waste at SWF but do not separate waste for recycling.

The Port Authority uses recycled paper products, including office paper and paper cups, in the administration building. Of the 30 tenants that responded to the 2009 SWF Tenant Survey, 18 reported using materials with recycled or renewable content, such as paper and office supplies.

8.3.3 Waste Reuse

SWF reuses asphalt for resurfacing projects and has reused materials in improvement of the lower level of the administration building. In response to the 2009 SWF Tenant Survey, Cessna Aircraft reported that it reuses aircraft and part protection materials, cardboard, packing peanuts, bubble wrap, and paper.

8.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to reduce solid waste generation and increase materials recycling and reuse.

8.4.1 Develop a Comprehensive Waste Management Program

(Sustainable Design Project Manual, Credit MEQ-1)

Background

A comprehensive Waste Management Program includes tracking of the volume of waste and recycling handled annually to help set future goals. Often these programs include establishing a standard system of co-located trash and recycling receptacles across an organization. Recycling programs with the highest utilization rates have recycling bins co-located with or attached to all trash receptacles. High utilization rates are also seen in recycling programs that measure progress and establish targeted incentives.

Recommendation

The Port Authority will develop a comprehensive Waste Management Program. The program will include expansion of current SWF recycling efforts. Data on Port Authority solid waste disposal and recycling will be collected, used to establish waste reduction and recycling targets and identify specific implementation measures, and tracked to measure progress. As funding allows, recycling containers will be distributed throughout Port Authority areas of the Airport and Airport offices. These bins will be co-located with trash receptacles or single units (that feature recycling and trash integrated into one unit) will be used. As part of the program, the Port Authority will also consider (among other initiatives) composting food and/or grass clippings (if compatible with the Wildlife Management Plan), working with SWF airlines to establish airline recycling of deplaned in-flight waste, and donating or reusing removed vegetation or materials during construction. The Port Authority will also conduct outreach to the airlines and other Airport tenants regarding their recycling efforts. In addition, the Port Authority will consult and work with the appropriate waste management facilities in the Hudson Valley region to identify opportunities for waste reduction and increased recycling.

8.4.2 Purchase Environmentally Preferable Products

Background

Environmentally Preferable Purchasing (EPP) means the purchasing of a product or service that has less of an impact on human health or the environment than another product or service that fulfills the same purpose. The U.S. EPA compiles an EPP index, which is aimed primarily at helping federal purchasers, but can also help green vendors, businesses, and consumers identify and select green products and services. The EPP index also identifies federal green buying requirements, and allows users to calculate the costs and benefits on purchasing

choices, and manage the green purchasing process.⁷⁷ New York City offers a comparable manual to help City agencies optimize “purchasing decisions in terms of environmental performance, product performance, and cost.”⁷⁸

Recommendation

Port Authority Aviation staff will work with its Procurement Department, Office of Environmental and Energy Programs, and other agency staff to implement an EPP program. The EPP program will be based on the most applicable guide (U.S. EPA, New York City, or other) and tailored to address the particular needs of Port Authority facilities. Purchasing procedures to be implemented at SWF will be revised based on criteria to be developed by the Port Authority. Some of the selection criteria that will be considered include overall life-cycle cost, durability, quality of finishes, energy use, use of recycled materials, origin of manufacture or distribution, use of fair-trade principles, and air and water quality impacts.

8.4.3 Conduct Waste Management Education Program

(Sustainable Design Project Manual, Credit MEQ-2)

Background

Education is a critical component of a successful waste management program. Providing the facilities, procedures, and capacity for a recycling program is not enough. An education program will maximize the larger investments and improve results.

Recommendation

The Port Authority will establish a program to educate SWF staff on simple ways to reduce waste and increase recycling while at work. For example, SWF will post informational signs and distribute emails for staff that contain details on the types of materials that can be recycled at work.

8.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF’s sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

A current strategy for future consideration includes:

■ Consider and evaluate alternative systems for waste collection and recycling.

The Port Authority would evaluate the potential costs, feasibility, and benefits of alternative waste collection and recycling systems at SWF. Options could include a more centralized collection and recycling operation controlled by the Port Authority; requirements and/or incentives for waste reduction and recycling, incorporated into tenant agreements; technological solutions, such as electronic tracking of waste disposal and recycling; or a combination.

⁷⁷ Environmental Protection Agency Environmentally Preferable Purchasing website, www.epa.gov/epp/index.htm. Accessed February 11, 2010.

⁷⁸ New York City Department of Sanitation, *Environmentally Preferable Purchasing*, April 2001
<http://www.nyc.gov/html/nycwasteless/downloads/pdf/eppmanual.pdf>. Accessed June 11, 2010.

9

Hazardous Materials and Hazardous Waste Management



This chapter describes the environmental baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF in relation to hazardous materials and hazardous waste management, including hazardous waste remediation. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

9.1 Environmental Context

This section describes existing hazardous material use and management at SWF.

9.1.1 Hazardous Material Use and Management

Hazardous substances generally consist of materials with chemical and physical properties that may pose a hazard to human health or the environment when improperly handled, stored, disposed, or otherwise managed. A hazardous material is characterized as being ignitable, toxic, reactive, or corrosive. Hazardous materials used and stored at SWF consist primarily of Jet A fuel, Avgas, gasoline, diesel fuel, kerosene, lubricating and fuel oils, waste oils, solvents, paint, cleaning agents, herbicides, and pesticides.⁷⁹ Airport tenants also use and store small quantities of other hazardous materials.

Hazardous materials used at SWF are stored and handled in ways that reduce hazards to human health or the environment. Storage and handling are conducted as follows:

- **Jet A Fuel and Avgas** – The Airport has three fuel storage facilities for aircraft fuel: the Southwest Fuel Farm; the Northeast Fuel Farm; and the Atlantic Aviation Fuel Farm. The Southwest Fuel Farm has two 150,000 gallon Jet A fuel tanks with a concrete dike for spill containment. The Northeast Fuel Storage Facility has four aboveground horizontal steel storage tanks. Tanks 1 and 2 have a capacity of 15,000 gallons each and store Avgas. Tanks 3 and 4 have a capacity of 50,000 gallons each and both store Jet A fuel.⁸⁰ The Port Authority holds a Major Oil Storage Facilities license from the NYSDEC for these facilities. The Northeast Fuel Storage Facility has a bentonite clay dike liner and a 2-foot high berm for spill containment.⁸¹ The Atlantic Aviation Fuel Farm consists of two 20,000-gallon horizontal steel

⁷⁹ The Chazen Companies, *Storm Water Pollution Prevention Plan for Stewart International Airport*, November 2008, page 13.

⁸⁰ P.W. Grosser Consulting, Inc, *Spill Prevention Control and Countermeasure Plan*, Stewart International Airport, Northeast Fuel Storage Facility, September 2006, page 5.

⁸¹ P.W. Grosser Consulting, Inc, *Spill Prevention Control and Countermeasure Plan*, Stewart International Airport, Northeast Fuel Storage Facility, September 2006, page 7.

storage tanks for Jet A fuel, and has a steel dike for spill containment.⁸² The tanks are also equipped with an over fill prevention system.⁸³

- **Gasoline and Diesel Fuel** – Ten tenants who operate at SWF conduct vehicle fueling and have aboveground and belowground fuel tanks. There are five aboveground diesel fuel tanks, one aboveground gasoline tank, and three belowground gasoline tanks located at SWF. Fuel tanks range in capacity from 125 gallons to 4,000 gallons. These tanks are equipped with spill containment. Port Authority vehicles are either fueled on site at Building 202 or off site at a local gas station.
- **Oils and Waste Oils** – A 500-gallon Number 2 Fuel Oil aboveground storage tank is located in the Southwest Fuel Farm. Used oil and petroleum products are collected and stored in aboveground waste fuel tanks, containers, drums, and waste oil tanks on site. The Northeast Fuel Storage Facility has one 550-gallon aboveground fuel tank for storing waste Jet A fuel and one 275-gallon aboveground storage tank for storing waste Avgas fuel. There is a bentonite clay dike liner and a 2-foot-high berm for spill containment.⁸⁴
- **Deicing Materials** – The Atlantic Aviation Fuel Farm has two 6,000-gallon and one 3,000-gallon vertical aboveground storage tanks for storing propylene glycol, which is used for aircraft deicing. The storage tanks are in individual containment dikes.⁸⁵ Pavement deicers are stored at Building 2290 (vehicle maintenance).
- **Paint** – Five tenants at SWF conduct aircraft painting. The majority of aircraft painting at SWF is performed indoors in a “dry shop” at Building 2290.
- **Herbicides and Pesticides** – Herbicides and pesticides are stored in closed containers indoors.

Information on the storage and handling of hazardous materials is also provided in Section 6.3, *Water Quality Existing Sustainability Strategies*.

9.1.2 Contamination and Remediation

Between 1948 and 1970, SWF was the site of the Stewart Air Force Base. The military stored hazardous waste and operated a firing range on the property and used an area south of Runway 16-34 for waste disposal. Environmental assessments have been conducted for the waste disposal area (known as the “Southern Landfill”) and other areas of SWF.⁸⁶ These studies have reached differing conclusions about the presence of soil and groundwater contamination. However, the studies generally indicate that some contaminants could be present in soil and groundwater at levels above New York State standards. The extent of contamination and need for remediation at a particular location cannot be determined without additional testing. In addition, the studies indicate that groundwater conditions need to be better understood before testing and making conclusions about groundwater quality. Several reports recommended that the impact of landfill gas be evaluated as part of any design and construction activities within the Southern Landfill.

82 Madison Environmental Group, *Atlantic Aviation Stewart International Airport Spill Prevention, Control, and Countermeasure Plan*, September 2007, page 4.

83 The Chazen Companies, *Storm Water Pollution Prevention Plan for Stewart International Airport*, November 2008, page 11.

84 P.W. Grosser Consulting, Inc, *Spill Prevention Control and Countermeasure Plan, Stewart International Airport, Northeast Fuel Storage Facility*, September 2006, page 5.

85 Madison Environmental Group, *Atlantic Aviation Stewart International Airport Spill Prevention, Control, and Countermeasure Plan*, September 2007, page 4.

86 Harza Engineering Company, Alpha Geoscience, Resolution Resources, Inc., General Ammunition Consultations, *Preliminary Environmental Site Assessment of the Southern Landfill Area at Stewart International Airport*, prepared for NYSDOT, June 2001; Lawler, Matusky & Skelly Engineers (LMS), LLP, *Southern Landfill Area B Report, Stewart International Airport*, prepared for NYSDOT, March 2003; LMS, *Southern Landfill Area C Report, Stewart International Airport*, prepared for NYSDOT, November 2003; HDR, *Area D Reapportionment, Subsurface Investigation Report, Stewart International Airport*, prepared for NYSDOT, March 2009; Roux Associates, *Phase II Site Investigation Results, Stewart International Airport, New Windsor, New York*, September 2001.

As documented in the Lease Agreement between the Port Authority and the State of New York, the Port Authority is not responsible for the identification or remediation of any below-ground contamination that occurred prior to October 31, 2007, when the Port Authority assumed management control of the Airport. The NYSDEC is responsible for oversight of site investigation and clean up of any historic soil or groundwater contamination at SWF.

9.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to hazardous materials, waste management, and remediation at SWF:

Goal: Reduce the use of hazardous materials and the risks associated with hazardous materials use and hazardous waste management during routine operation of SWF.

Objectives:

- Strive to eliminate hazardous materials use and hazardous waste generation wherever possible.
- Where use of hazardous materials is unavoidable, ensure the proper storage, handling and disposal of hazardous materials and hazardous wastes to minimize the potential for release of any hazardous materials into the environment.
- Reduce the occurrence of fuel (and other hazardous materials) spills and maintain emergency response and clean-up capability to prevent releases of spills reaching off-airport.
- At sites where remediation is required, cooperate with NYSDOT and NYSDEC to facilitate their subsurface remediation of historical soil and/or groundwater contamination.
- Expeditiously remediate any future releases for which the Port Authority and its contractor AvPORTS are responsible, and work with tenants to remediate releases they are responsible for quickly and effectively.

9.3 Existing Sustainability Strategies

This section describes existing strategies for managing hazardous materials and hazardous materials.

9.3.1 Reduced Use of Hazardous Materials

In 2008, SWF implemented a policy to reduce hazardous ingredients in cleaning products used at the Airport. In addition, the Operations Services and Procurement Departments of the Port Authority teamed up in 2009 to develop a “Going Green with Cleaning Products” initiative for implementation at all Port Authority-owned facilities, including SWF. This initiative applies to Port Authority Operations Services, Procurement and Facilities staff. By substituting traditional cleaning products that contain hazardous ingredients with green cleaning products, SWF and the Port Authority aim to minimize the effects cleaning products have on the environment and to improve indoor air quality for employees and the public.

The following criteria were developed to assist Operations Services, Procurement, and facility staff to identify green cleaning products:

- Product should contain little or no fragrance.
- Ingredients should not be corrosive or irritating to the eyes.
- Ingredients should be biodegradable.
- Use of a pump spray is preferable.
- Ingredients should be plant-based rather than petroleum-based.
- Product should contain less than 0.5 percent phosphorous, which can be harmful to aquatic life.

Operations Services, Procurement and Facility staff is expanding the use of established criteria in selecting and replacing cleaning products currently in stock with greener products on a case-by-case basis. Each green cleaning product is evaluated prior to acceptance and placement on stockroom shelves. Furthermore, requirements are being developed for contractors who provide cleaning services at Port Authority facilities to use green cleaning products.

Of the 30 tenants that responded to the 2009 SWF Tenant Survey, 14 reported that they have replaced products containing hazardous materials with non-toxic or more environmentally-friendly products. For example, Cessna Aircraft has replaced traditional paints with low-VOC paints and Metal Container Corporation uses low-impact coatings on the cans it produces. Several tenants, including Pacific Aviation and General Electric Corporate Aviation, reported utilizing green cleaning products. General Electric's Corporate Aviation department has replaced potentially hazardous cleaning agents with BIOACT 121 Precision Cleaner, which is a food grade citrus terpene based cleaning agent designed to provide strong cleaning performance, low odor, quick evaporation, and minimal non-volatile residue. Pacific Aviation stated that they use vinegar to clean some surfaces.

9.3.2 Hazardous Waste Materials Recycling

Used oil products and other petroleum wastes are generated in the Port Authority and tenant vehicle maintenance garages. There are a total of 12 vehicle maintenance garages at SWF. Used oil and petroleum products from the maintenance garages are collected and stored in containers, drums, and waste oil tanks on site. Some of the spent oil and petroleum product is recycled and reused. Other hazardous wastes such as waste paints and vehicle batteries are also collected for recycling.

9.3.3 Spill Prevention, Control and Countermeasure Plan

SWF has prepared and implemented an SPCC plan for the Northeast, Southwest, and the Atlantic Aviation Fuel Storage Facilities, and for the Airport as a whole, in accordance with 40 Code of Federal Regulations (CFR) 112. The SPCC Plans aim to reduce fuel spills of any type, and ensure that, in the event of a spill, every effort is made to control the spill. The SPCC Plans document discharge prevention measures, spill cleanup and disposal procedures, spill notification and reporting requirements, and spill prevention and clean up training procedures. Although this plan is a federal requirement, the Port Authority believes it is integral to meeting its sustainability goals.

9.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to minimize hazardous materials use and the associated risks.

9.4.1 Use Integrated Pest Management Techniques

(Sustainable Design Project Manual, Credit IEQ-8)

Background

Integrated pest management (IPM) is an approach to pest control that utilizes regular monitoring and recordkeeping to determine if and when treatments are needed, and employs a combination of strategies and tactics to keep pest numbers low enough to prevent unacceptable damage or annoyance. The basic foundation of IPM is to treat or manage the cause instead of treating the effect which is typically considerably more harmful. IPM is inherently preventive rather than reactionary. Biological, cultural, physical, mechanical, educational, and chemical methods are used in site-specific combinations to solve the pest problem. Chemical controls are used only when needed, and in the least-toxic formulation that is effective against the pest. Educational strategies are used to enhance pest prevention.⁸⁷ Aside from IPM's potential cost savings, it also creates a healthier workplace and public space.

Recommendation

The Port Authority will adopt a non-chemical approach to pest management and hire pest control contractors that utilize IPM practices. Specifically, as the SWF pest control contract(s) come up for renewal, the Port Authority will include language in renewed or new contracts, requiring pest control contractors to use and be trained in the implementation of IPM.

9.4.2 Develop Hazardous Materials Substitution Program

Background

Sustainable organizations look for opportunities to replace potentially hazardous materials to create the healthiest possible indoor and outdoor environment for the public and a healthy workplace. Many products are used across the Airport in maintenance, cleaning, operations, and general upkeep that may have a more innocuous substitute.

Recommendation

The Port Authority will include specific language in its future cleaning contracts at SWF that requires the use of "environmentally-friendly" cleaning products. In addition, the Port Authority will develop a formal hazardous materials substitution program for the Port Authority-controlled areas of SWF, to identify hazardous chemical products for which alternative, safer products can be substituted, thereby reducing the amount of hazardous materials used at the Airport. The types of products that will be assessed by SWF include (but are not limited to):

- **Traditional paints and carpeting** - Traditional paints and carpeting can be substituted with low-VOC (Volatile Organic Compound) materials. VOCs are carbon compounds that vaporize at normal room temperatures, and are often noticeable in new buildings as a "new carpet" or "new paint" smell. Low-VOC products are better for indoor air quality, and have become fairly standard in the paint and

⁸⁷ U.S. Environmental Protection Agency. *Integrated Pest Management for Schools: A How-to Manual*. <http://www.epa.gov/pesticides/ipm/schoolipm/chap-1.pdf> accessed on December 12, 2009.

carpeting industry. These products can be purchased without a cost premium. The use of low-VOC paints and carpeting is required for new construction projects of more than 20,000 gross square feet (*Sustainable Design Project Manual, Credit IEQ-5*); this measure would apply to smaller construction and renovation projects and painting or carpeting performed as part of building maintenance.

- **Sidewalk deicing replacement** - Traditional deicing materials on the landside of the Airport (terminal sidewalks, parking garage walkways, etc) can be replaced with more environmentally and human friendly materials. The ubiquitous sidewalk deicer rock salt (sodium chloride), while effective, is corrosive on metals, asphalt, and concrete; inhibits the ability of vegetation to absorb both water and nutrients, which can slow plant growth and ultimately affect animal habitats; contaminates streams and groundwater; and is harmful to pets. Some alternatives include:
 - *Magnesium chloride* does not leave a powdery residue, and is considered safe for humans, animals, and vegetation. It damages concrete and masonry surfaces considerably less than calcium chloride and sodium chloride.
 - *Calcium chloride* is available in flake, pellet, or liquid form and often outperforms other deicing products, especially at lower temperatures. It produces an exothermic reaction, giving off heat as it melts. Calcium chloride also has a greater capacity to attract and retain moisture directly from its surroundings, which enables it to dissolve faster and start the melting process. However, it can leave a residue on carpets and shoes.
 - *Acetates*, such as calcium magnesium acetate, are anti-icers (they prevent ice from forming). These acetates are organic chemical compounds that break down naturally in the environment, leave little damage compared to rock salt, and are available in both liquid and granular form. However, because they are anti-icers (not de-icers), they require frequent use and the ability to predict the weather.

The U.S. EPA's "Design for the Environment" Safer Product Labeling Program has tested and recognized a few specific deicing products. The program uses EPA's chemical expertise and resources to evaluate products carefully and to label only those that have met the program's highly protective standards. This list can be used as a reference for the highest-quality, most effective products, which are also better for the environment and human health.⁸⁸

9.4.3 Expand Recycling of Universal Wastes

Background and Recommendation

Discarded fluorescent light fixtures, light ballasts, rechargeable batteries, and computer monitors contain hazardous chemicals and must be handled properly. There are opportunities to recycle these materials. The Port Authority will expand its program for collection and recycling of universal wastes. As part of the program, the Port Authority will explore opportunities for reuse of electronic wastes in the SWF region (such reuse must be consistent with agency security requirements).

9.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine

88 This EPA list *Design for the Environment* can be found at: <http://www.epa.gov/dfe/pubs/projects/formulat/formparte.htm#deicers>

whether they meet SWF's sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

Strategies for future consideration include:

- **Reduce reliance on trucks for aircraft fuel delivery.**

In the future, the airport could consider using a pipeline fuel delivery system, also known as a fuel hydrant system. A pipeline system would eliminate the need for fuel trucks to service aircraft, and as a result, would reduce the potential for fuel spills, would enhance safety, and would reduce the air pollutant emissions associated with truck use. Given the cost of a hydrant system, it would need to be installed in connection with major Airport development (such as redevelopment of the passenger terminal).

- **Utilize above-ground storage tanks instead of underground storage tanks.**

In connection with Airport redevelopment, or as tank replacement is required, the Port Authority would install above-ground tanks (if feasible) to minimize potential underground leakage or spilling. Above-ground tanks are easier to maintain and provide easier access to potential tank leaks.

- **Expand the hazardous materials substitution program to include Airport tenants.**

After the Port Authority has developed its own hazardous materials substitution program, it would reach out to and work with tenants to implement their own hazardous materials substitution procedures.

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10

Surface Transportation Management



This chapter describes the surface transportation baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF to enhance mobility and access. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

10.1 Environmental Context

This section describes the existing roadway network and access to SWF, the roadway network within the Airport, and parking facilities.

10.1.1 Existing Roadway Network and Airport Access

SWF is located southwest of the intersection of two major limited access highways, I-84 and I-87 (Figure 10-1). I-84 connects SWF to the east across the Newburgh-Beacon Bridge over the Hudson River, and across Dutchess County to Connecticut. To the west of SWF, I-84 continues through Orange County to Pennsylvania. I-87, also known in this area as the New York State Thruway, extends from New York City, through Westchester, Rockland, and Orange Counties, continuing north through Albany to the Canadian Border. Four State Routes border the Airport on all four sides. SR 207 is an east-west route on the south side, SR 17K is an east-west route on the north side, SR 747 (International Boulevard) is a north-south route on the western side, and SR 300 is a north-south route near the eastern side of the Airport. The interchange of I-84 and I-87 also intersects with SR 17K and SR 300 at Exit 17. The interchange of these two interstates and two state routes was reconstructed and opened in winter 2009.

Direct access to SWF from the surrounding highways is provided in several ways. I-84 provides connections to SWF at two points: one at Exit 5/SR 17K and the second at Exit 5A/SR 747 (Figure 10-1). SR 747 (International Boulevard), located on the western side of SWF, was constructed to extend onto SWF property through previously vacant land to provide a direct connection into the Airport from I-84. Before the construction of this interchange and access road, SR 207 on the south side of the Airport provided the primary entry to SWF. The new, more direct connection, from I-84 via SR 747 has much greater traffic volume capacity, and would ultimately be expected to become the primary entry point to SWF.

10.1.2 Existing Traffic Volumes and Level of Service

The New York State Department of Transportation 2007 Traffic Data Report (the most recent available) provides information on the Average Annual Daily Traffic (AADT) along State highways. AADT represents the amount of traffic traveling in both directions during an average 24-hour day. The following AADT volumes were identified for State roadways near SWF:

- I-87 between interchanges 16 and 17: 51,200 vehicles per day
- I-84 between SR 208 and SR 17K: 54,890 vehicles per day
- SR 207 Between SR 747 and Breunig Road, south of SWF: 10,570 vehicles per day
- Between SR 747 and Ridge Road (about 2.6 miles west of SR 747): 5,720 vehicles per day
- SR 17K between I-84 and I-87: 22,770 vehicles per day
- SR 300 between SR 17K and SR 207: 27,720 vehicles per day

Additional traffic studies reporting on level of service or more detailed traffic counts do not appear to be available.

10.1.3 Airport Roadways and Circulation

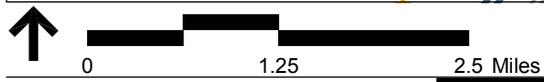
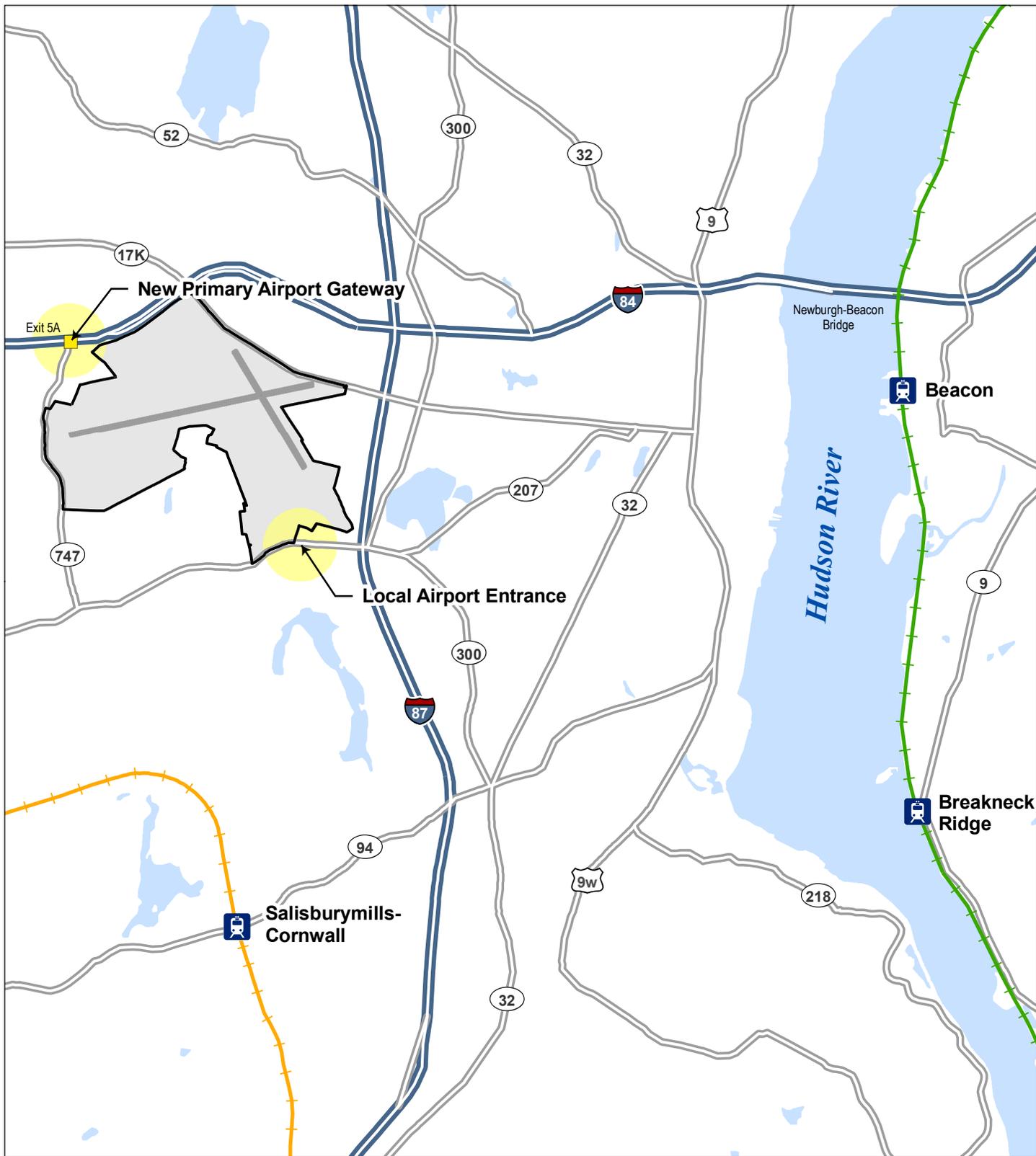
A significant portion of the roadway network on the Airport reflects the original pattern of the military base. Breunig Road heads north toward the passenger terminal building on Airport property from SR 207. Stewart Boulevard heads east toward the passenger terminal on Airport property from SR 747. Breunig Road and Stewart Boulevard intersect near the passenger terminal building, where all vehicles travelling to the passenger terminal building turn north along Breunig Road, following signs to the terminal and the short- and long-term parking facilities. The access road to the passenger terminal building and main parking lot is a one-way loop around the main parking lot, with two travel lanes. Signage along Breunig Road also directs drivers to Economy Lot B, accessed via C Street, south of the passenger terminal building. Other roadways provide access to the ancillary and tenant buildings and their associated parking lots. These roads have one or two lanes in each direction.

10.1.4 Airport Parking

Air passenger parking is operated by Republic Parking System (RPS). Currently, only three parking facilities are in use: the short-term and long-term main parking lots located directly across from the passenger terminal building, and economy parking in Lot B. Lot B is also known as the credit card only lot. Other parking facilities are not currently in use due to decreased demand resulting from a reduction in air service. A list of the parking facilities and their capacities is provided in Table 10-1. Parking Lot A is currently being expanded and plans are in place to expand Parking Lot D when warranted by increased traffic. Both of these expansions have, or will include, sustainable elements such as permeable pavement and vegetated swales.



Short-term and Long-term parking lot



Source: ESRI Streetmap 9.3

Legend

- Airport Property Boundary
- Airport Access Points
- Metro-North Hudson River Line
- Metro-North Port Jervis Line
- Metro-North Commuter Rail Station
- Interstate
- State Highway
- Water

Vanasse Hangen Brustlin, Inc.

Figure 10-1

SWF Transportation Connectivity

Table 10-1 Air Passenger Parking Facilities

Parking Facility Name	Regular Spaces	ADA Spaces	Employee Spaces	Current Use
Primary Facilities				
Main: Short-Term	136	7	0	Open
Main: Long-Term	686	15	4	Open
Lot B (Credit Card Lot)	348	10	0	Open
Lot C (Blue Economy)	462	14	5	Closed
Subtotal	1632	46	9	
Secondary Facilities				
Lot D	401	9	0	Closed
Green	150	0	0	Closed
Orange	67	0	0	Closed
Red	78	0	0	Closed
Subtotal	696	9	0	
Overflow Facilities				
Black	80	0	0	Closed
Black Additional	60	0	0	Closed
Second Street – estimated by RPS	80	0	0	Closed
Second St. DE – estimated by RPS (dead end by warehouse)	60	0	0	Closed
Yellow – estimated by RPS	150	0	0	Closed
Subtotal	430	0	0	
Total	2,578	55	9	

Source: Republic Parking System (RPS), February 5, 2009.

Rental car parking facilities are located to the north and south of the passenger terminal building. Within these lots are also several parking spaces for police and Transportation Security Administration (TSA) personnel, Port Authority staff, and other employees. An employee parking lot is located off C Street near Second Street. The capacity of these parking facilities is provided in Table 10-2. Individual parking lots are also located at many of the tenant buildings.

Table 10-2 Rental and Employee Parking Facilities

Parking Facility Name	Car Spaces	ADA Spaces	Permit, Police or Other Spaces	Current Use
North Rental Lot	44	1	22	Open
South Rental Lot	33	0	24	Open
Employee Lot	88	0	0	Open
Total	165	1	46	

Source: Eng-Wong, Taub and Associates, February 5, 2009.

10.1.5 SWF Passenger and Employee Places of Origin

Based on passenger survey data collected by the Port Authority, most passenger trips to SWF by ground transportation are made from within New York State (approximately 80 percent). The majority of these trips originate from Orange and Putnam Counties (28 percent and 20 percent, respectively); a smaller proportion of trips (ranging from 1 to 5 percent each) originate from other surrounding counties (Bronx, Dutchess, Putnam, Rockland, Sullivan, and Westchester). About 20 percent of the trips to SWF originate from other parts of New York State.

An additional 20 percent of passenger trips made to SWF originate from outside of New York State. Half of these trips are from Connecticut, New Jersey, or Pennsylvania, and the rest originate from other states. A detailed percentage breakdown of SWF passenger places of origin is presented in Table 10-3.

Table 10-3 SWF Passenger Places of Origin

Trip Origin	Percent of Total Trips
Orange County	28
Putnam County	20
Sullivan County	5
Dutchess County	3
Rockland County	2
Westchester County	1
Bronx County	1
Other New York	20
Connecticut	6
Pennsylvania	2
New Jersey	2
Other United States	10
Total	100

Note: Percentages are rounded.

Source: Southern Research Institute and E.H. Pechan & Associates, Inc., *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey, Calendar Year 2007*, March 2009.

Of the 30 tenants that responded to the 2009 SWF Tenant Survey, 23 provided zip code information for their employees – representing 628 employees out of a total of 734 employees. The 20 most frequently listed zip codes represent 437 employees in five counties, or 70 percent of the zip codes given in the survey. The remaining 191 employees, or 30 percent, are spread across an additional 97 zip codes in 21 counties. Table 10-4 provides a summary of the data.

Table 10-4 Residential Location of Some SWF Employees

Zip Code Employee Origin	Town, State	County	Number of Employees per Zip Code
12550	Newburgh, NY	Orange County	125
12553	New Windsor, NY	Orange County	54
12590	Wappingers Falls, NY	Dutchess County	28
10940	Middletown, NY	Orange County	25
12589	Walkill, NY	Ulster County	25
12603	Montgomery, NY	Orange County	21
12586	Walden, NY	Orange County	21
12549	Poughkeepsie, NY	Dutchess County	20
12566	Pine Bush, NY	Orange County	18
10950	Monroe, NY	Orange County	14
12508	Beacon, NY	Dutchess County	11
12561	New Paltz, NY	Ulster County	11
12528	Highland, NY	Ulster County	10
10992	Washingtonville, NY	Orange County	9
06488	Southbury, CT	New Haven County, CT	8
06810	Danbury, CT	Fairfield County, CT	8
12577	Salisbury Mills, NY	Orange County	8
10941	Middletown, NY	Orange County	7
12533	Hopewell Junction, NY	Dutchess County	7
10924	Goshen, NY	Orange County	7
Subtotal			437
98 other zip codes			191
Total			628

Source: 2009 SWF Tenant Survey

Note: This table is not representative of all employees working at the airport. Not all tenants responding to the survey provided zip codes for each of their employees.

10.1.6 Public Transportation

There is no local stop for public bus transit or direct commuter rail service available at SWF. However, there is one scheduled shuttle bus route, the Newburgh-Beacon Shuttle, which is operated by Leprechaun Lines. The bus service connects SWF with commuter rail service to New York City, via the MTA Metro-North Railroad at the Beacon Station. Beacon Station is located on the east side of the Hudson River just south of the Newburgh-Beacon Bridge (Figure 10-1). Bus schedules are specifically designed for customers to meet trains going to and from New York City. The service operates Monday through Friday from approximately 6:00 AM to 11:00 PM (14 round trips); and weekends from 8:00 AM to 10:00 PM (11 round trips). Ridership during 2008 to and from SWF on the Newburgh-Beacon Shuttle is provided in Table 10-5, along with the total ridership along the entire route. The bus always stops at a park-and-ride lot on SR-17K, and during some trips makes stops in the City of Newburgh, before arriving at the Airport from Beacon Station.



The Newburgh-Beacon Shuttle which is operated by Leprechaun Lines serves SWF

Table 10-5 Newburgh-Beacon Shuttle 2008 Ridership

Month	SWF On	SWF Off	SWF Total	Total Route Ridership ¹
Jan	1,011	802	1,813	NA
Feb	1,164	901	2,065	NA
Mar	559	503	1,062	914
Apr	415	359	774	4,200
May	33	81	114	4,002
Jun	45	78	123	4,194
Jul	118	113	231	4,388
Aug	80	113	193	4,156
Sep	49	60	109	4,395
Oct	77	74	151	4,832
Nov	43	66	109	3,763
Dec	38	47	85	4,158
Total	3,632	3,197	6,829	39,002

¹ In both directions, the shuttle bus always makes a stop at a park-and-ride lot on SR-17K, and during some westbound trips, makes stops in the City of Newburgh, before arriving at the Airport from Beacon Station. As shown in "Total Route Ridership," many shuttle bus riders do not get on or off at SWF.

10.1.7 Ground Transportation Mode Share

The majority (93 percent) of passenger trips to SWF by ground transportation are made either by personal car (76 percent) or rental car (17 percent). The remainder of passenger trips (7 percent) are made either by taxi, limousine/town car, shared ride, chartered/tour bus, or hotel shuttle. Detailed percentage breakdowns of these modes are included in Table 10-6.

A comparison of mode of arrival by trip origin indicates that all passenger trips made by taxi, limousine/town car, shared ride, chartered/tour bus and hotel shuttle originated from within either Orange or Putnam Counties. Ground transportation trips from all other origins were made either by personal car or rental car.

Table 10-6 Mode of Arrival of Passengers to SWF

Arrival Mode	Percent of Total
Personal car	76
Rental car	17
Taxi	3
Limousine/town car	1
Shared ride van service	1
Chartered/tour bus	1
Hotel shuttle	1
Total	100

Note: Percentages are rounded.

Source: Southern Research Institute and E.H. Pechan & Associates, Inc., *Greenhouse Gas and Criteria Air Pollutant Emission Inventory for the Port Authority of New York and New Jersey, Calendar Year 2007*, March 2009.

Due to Orange County's generally semi-rural and low-density suburban character, extensive public transit connections to the Airport are not viable. The passenger and employee populations traveling to and from SWF are dispersed over a wide geographic region, and work unusual and unpredictable shift times. With the relatively low aviation activity levels currently at SWF, and the geographic dispersion of the current passenger and employee base, there are no higher-density residential and commercial centers for which transit connections would be viable or greatly reduce emissions and congestion. Higher Airport activity levels in the

future may change this situation. Additionally, the establishment of “one-seat” direct rail access to SWF, currently being studied by the MTA, has the potential to induce new public transit ridership and expand the potential customer base for the Airport.

Of the 30 tenants that responded to the 2009 SWF Tenant Survey, it was reported that only 35 to 40 employees, or about 5 percent, currently use public transportation. Thus, the majority of SWF employees can be assumed to drive to work.

10.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to surface transportation management at SWF:

Goal: Reduce reliance on single occupancy vehicles as a means of travelling to and from SWF so as to alleviate future surface traffic congestion.

Objectives:

- Support and encourage the movement of passengers and employees from cars to public transportation (trains and buses) and other high-occupancy vehicles (HOVs).
- Work with Orange County, NYSDOT, and others to maintain a public transportation option for SWF.
- Facilitate the movement of passengers and employees from cars to bicycles.
- Provide the infrastructure for an efficient airport roadway, shuttle transportation, and public transportation network within the airport that reduces emissions and vehicle miles travelled.
- Provide efficient and consolidated public parking facilities at the airport.
- Encourage tenants who handle cargo to do so in the most efficient way possible.

10.3 Existing Sustainability Strategies

This section describes existing strategies to alleviate traffic congestion and reduce Airport user reliance on single occupancy vehicles.

10.3.1 Public Transportation

As described in 10.1.6, no local stop for public bus transit or direct commuter rail service available at SWF. However, there is one scheduled shuttle bus route, the Newburgh-Beacon Shuttle, which is operated by Leprechaun Lines.



Beacon Station on the Hudson Line of MTA Metro-North Railroad

In the 2009 SWF Tenant Survey, tenants were asked if they provide incentives for using public transportation such as transit passes to its employees. Of the 27 tenants that responded to this question, only one reported that they provide such incentives at SWF. JetBlue Airways reported that it offers transit passes or reimbursement to employees at SWF. Bank of America reported that while it provides public transportation incentives to employees in other cities such as Boston or New York, it does not currently provide such incentives for SWF employees.

10.3.2 High Occupancy Vehicle Services

High occupancy vehicle (HOV) services in the Hudson Valley are coordinated through MetroPool, a transportation management organization supported by NYSDOT, which makes periodic presentations at SWF tenant meetings. MetroPool offers many services to both individuals and employers to encourage the use of carpooling, public transit, and alternative modes of transportation. Among other services, it administers carpooling and vanpooling programs and services; guaranteed ride-home program for car- and vanpoolers; and provides services directly to commuters including personalized online and over-the-phone commute information. MetroPool also administers Easy Street NY, a not-for-profit initiative sponsored by NYSDOT, which offers a turnkey van service that can be used as a



MetroPool brochures to encourage high occupancy vehicle travel

traditional vanpool or a bus/train shuttle. Brochures advertising MetroPool are available in the administration building at SWF.

Nu-Ride is a private, for-profit company that has created an online ridesharing community where members can find drivers or riders at any time while, as an incentive, earning rewards from sponsors. Site users are required to be associated with an organization before sharing a ride; this requirement helps organize trips as well as provide a higher level of user confidence in the person with whom they may ride. Reward points can be earned for car- or vanpooling, walking, biking, telecommuting, or taking public transportation. Brochures advertising Nu-Ride are available at SWF.

10.3.3 Bicycle Policy

Port Authority Executive Director Christopher Ward recently explained, “Bicycling is a rapidly growing mode of transportation and the New York-New Jersey region is facing increased demand for expanded bicycle infrastructure, safer bicycle routes, access to transit connections and secure parking facilities. While we recognize that many Port Authority facilities currently provide some accommodations for bicycle users, we need to prepare more systematically for the growing use of bicycles as a mode of travel within the regional transportation system.”⁸⁹

On February 25, 2010 the Port Authority Board of Commissioners officially adopted a bicycle policy: “In keeping with its mission to meet the critical transportation needs of the bi-state region, the Port Authority supports bicycling as an important and sustainable mode of travel. It seeks to provide its customers, tenants, visitors and employees with safe and convenient bicycle access and secure bicycle parking at its facilities, wherever operationally and financially feasible.”

The Board also authorized the Executive Director to take the following steps to advance the goals of this policy:

- Integrate improved bicycle access, safe bicycle lanes, and secure bicycle parking and storage into existing Port Authority buildings and facilities, owned or operated by the Port Authority.
- Ensure that design guidelines for new construction and major renovations include sufficient bicycle access, storage, and related amenities to meet emerging demand.
- Develop multimodal transit hubs that encourage biking and walking.
- Remove any unnecessary restrictions on bicycle access, and promote the safe coexistence of motor vehicles, bicycles, and pedestrians at Port Authority facilities.
- Encourage tenants to expand bicycle access and accommodations.
- Coordinate bicycle facility improvements and intermodal connections with regional planning organizations, other regional transportation providers, and local governments to promote safe and seamless travel throughout the region.

New Port Authority Bicycle Master Planning efforts will be created in late 2010.

10.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to minimize impacts from transportation sources associated with the Airport and improve multi-modal choice.

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10.4.1 Develop Transportation Demand Management Program

Background

Transportation Demand Management (TDM) encompasses a wide range of tools to manage travel demand, often with the goal of reducing travel in single-occupancy vehicles. Many of the recommended strategies in this chapter are TDM measures. Other examples of TDM measures that may be feasible at SWF in the short term include carpool and ride-sharing programs, preferred parking spaces for carpool/vanpool vehicles, and targeted pricing for automobile parking. Potential long-term TDM strategies include expanded bus and shuttle service, bicycle lanes and secure bicycle parking, and transit-friendly features in the design of Airport redevelopment projects. A TDM program coordinates and prioritizes these individual measures, and often includes data collection and tracking. Such a program would help the Port Authority to minimize future congestion on Airport roadways, reduce the need for new parking, and provide convenient and environmentally friendly alternatives to driving to the Airport. Beyond the potential congestion-reducing benefits, having a comprehensive and continually updated TDM program in place as the Airport grows would help improve air quality and reduce greenhouse gas emissions.

Recommendation

The Port Authority will establish and implement a TDM program at SWF. In the short term, the primary goal of the program will be to give SWF and tenant employees opportunities and incentives to find other ways to commute to the Airport. For example, the Port Authority will work with MetroPool and Nu-Ride to explore and implement measures to increase use of their existing programs.

In the short term, it will be difficult to expand the options for airline passengers beyond the current bus connections to Newburgh and rail stations. To enhance the usability of these options, transportation information will be prominently displayed throughout the Airport.

10.4.2 Encourage Newburgh-Beacon Shuttle Ridership

Background

Shuttle service connects the Airport to a park-and-ride facility outside Newburgh and the Beacon Metro-North station on the east side of the Hudson River providing airport employees, tenants, and visitors with a link to a rail station with trains north to Poughkeepsie and south to New York City.

Recommendation

The Port Authority will encourage shuttle ridership by working with Leprechaun to explore strategies to continue Airport service, and providing shuttle information on its website and in the Airport.

10.4.3 Use Appropriately Sized Newburgh-Beacon Shuttle Buses

Background

Ridership on Newburgh-Beacon shuttle buses fluctuates from season to season as airline schedules change, and from morning to afternoon and evening. On some shuttle runs, no people are picked up from the Airport, and at other times just a few people board the bus. When SkyBus Airlines operated at SWF, coach buses would be filled at Beacon Station.

Recommendation

Leprechaun Lines owns multiple sizes of buses, and should use the most appropriately sized vehicle for the time of day based on ridership trends. Such use will help ensure that fuel use corresponds with the actual

equipment needed, and will improve air quality when smaller vehicles can be utilized. The Port Authority will work with NYSDOT and Orange County to integrate language regarding optimizing shuttle bus sizes and/or utilizing hybrid or alternative fuel buses into future bus service agreements. Orange County plans to use federal stimulus funds during 2010 to purchase hybrid-electric buses for use by Leprechaun. There is the potential that one of these vehicles would be used on the route that serves SWF. The Port Authority will encourage the County to put one of the new hybrid vehicles on the SWF bus route.

10.4.4 Coordinate with Local Transportation Agencies

Background and Recommendation

The Airport will work with local planners and transit agencies to improve coordination of long-term regional and local transportation plans. These entities will be aware of all future growth scenarios and redevelopment plans for the Airport so they can anticipate the transportation needs of SWF employees and customers. As SWF redevelops, annual or bi-annual coordination meetings will be held among entities such as the New York Metropolitan Transportation Council (NYMTC), the MTA, NYSDOT, the NYS Thruway Authority, the Mid-Hudson South Transportation Coordinating Committee, and the Orange County Transportation Council. The redevelopment goals of the Airport will be outlined to these agencies and coordinated with current and future intermodal transportation initiatives throughout the tri-state area. Available data relating to trip origins and destinations for employees and passengers and projections of future Airport use will be shared among all interested transportation and planning entities. Although implementation of regional transportation initiatives is likely to occur in the long term, this measure is included as a short-term strategy because of the long lead time involved. As part of this measure, the Port Authority will continue its participation in the West of Hudson Regional Transit Access Study being conducted by the MTA.

10.4.5 Install Bicycle Racks, Offer Secure Storage, and Paint Bike Lanes

(Sustainable Design Project Manual, Credit SEQ-5)

Background

Accommodating the needs of bicycles through secure and/or weather proof bicycle storage and enhancing the feeling of safety on roadways has been shown to induce demand where people would have not previously considered the bicycle as an option. Intermodal bicycle accommodations such as bike racks on buses and trains also help to encourage the use of this efficient alternative to single occupancy vehicles. The semi-rural setting of SWF and wide dispersion of employee residences make bicycle travel less attractive as an option, but supporting even a small number of people to use a bicycle to access the Airport will set a precedent and show a commitment to multi-modal choice for future Airport growth.

Recommendation

The Port Authority will install bicycle racks at key locations near Port Authority buildings. When funding permits and/or Airport redevelopment projects develop the need, the Port Authority will provide secure bike storage and shower/changing facilities in Port Authority buildings. Tenants will be encouraged to do the same. In addition, the Port Authority will explore the provision of bicycle racks on Leprechaun shuttle buses and will encourage racks on future public transit vehicles that serve the Airport. The Port Authority will conduct a focused traffic study to assess the impact that providing painted bike lanes and shared lane arrows (“sharrows”) on Airport roadways will have on Airport operations and safety of drivers, bicyclists, and pedestrians. If determined safe and feasible, the Port Authority will make these roadway modifications to encourage bicycle travel.

10.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF's sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

- **Replace parking revenue control system.**

As activity levels at SWF increase, the Port Authority would evaluate the costs and benefits of replacing the revenue control system for the Airport parking lots. Replacement would allow for the installation of EZ-Pass, which would help to minimize congestion at parking lot payment areas. This system is currently utilized at other larger Port Authority airports.

- **Support regional transport linkages and integrated air-rail ticketing.**
(*Sustainable Design Project Manual, Credit SEQ-4*)

Integrated ticketing and transportation would encourage the reduction of vehicle trips to and from SWF and reduce traffic to and from the area. The increased activity would benefit surrounding communities economically, and would make the Airport more attractive and convenient for travelers going to and from regional locations.

- **Construct a consolidated rental car facility.**

The Port Authority would construct a consolidated facility if and when the Airport is re-developed at a capacity that would support it. A consolidated facility would eliminate the need for rental agency shuttle buses (to serve future dispersed facilities) and minimize the number of rental cars on terminal roadways. This strategy would help minimize the Airport's carbon footprint by improving overall traffic flow around the passenger terminal.

- **Enhance the efficiency of the internal roadway network.**

Through roadway redesign, a more efficient roadway system would minimize future traffic congestion and improve air quality at the Airport.

- **Construct bicycle paths and pedestrian walkways.**

The Port Authority would develop a plan that provides enhanced accessibility and inter-modal connectivity for pedestrians and bicyclists. Bicycle and pedestrian pathways would allow for safe travel to the Airport and around the Airport property for Airport and tenant employees who bike or take public transportation to work.

- **Establish remote check-in facilities.**

The Port Authority would establish remote check-in facilities if and when the Airport is redeveloped at a capacity that would support such a strategy. Remote check-in reduces pressure on the terminal lobby, resulting in shorter lines and less congestion. Additionally, remote check-in coupled with transit or rail provides enhanced convenience to passengers, and is used throughout Europe.

- **Install real-time transit information and flight information displays.**

Such information would help to minimize future traffic congestion and the Airport's overall carbon footprint.

- **Install ground transportation kiosks in passenger terminal.**

When passenger activity increases and a range of alternative transportation options is available, the Port Authority would install ground transportation kiosks in the baggage claim area before passengers exit the building. The kiosks would include ground transportation options, maps, schedules, and approximate total cost to get to various major geographic points. The kiosks would provide visitors and novice transit users with the information they need to confidently choose transit if it fits their trip.

- **Establish consolidated hotel shuttles.**

The Port Authority would work with Airport area hotels to establish consolidated shuttles when the Airport is redeveloped at a capacity that would support it, and when the number of hotels serving the Airport reaches a critical mass. At large airports, this strategy reduces the vehicle trips, congestion, and emissions on airport roadways.

- **Ensure multi-modal transportation choices during all future planning, construction, and redevelopment of SWF.**

Multi-modal transportation choices are essential to ensuring the most efficient, flexible, and equitable mobility system possible. The Port Authority would prioritize multi-modal access during future planning, construction, and redevelopment projects at SWF.

- **Consider providing incentives for carpools and vanpools.**

This strategy would minimize future traffic congestion as well as the Airport's overall carbon footprint.

- **Consider providing incentives for use of public transportation.**

This strategy would be implemented if and when SWF is developed at a capacity that would support the introduction of direct local or regional public transit and rail options. In areas with direct transit and rail service, many employers offer to pay the full cost or a portion of an employee's public transit pass. Workplace transit incentives help to encourage transit ridership, reducing traffic congestion and air pollution. The Port Authority already offers a similar "TransitChek" program to its employees, and this program can be used by SWF employees when public transit or rail comes to SWF. The Port Authority would encourage tenants to offer employee transit incentives. The Port Authority would also consider public transportation incentives for passengers to encourage them to arrive at the Airport on transit in the future.

11

Socioeconomic Benefits and Community Engagement



This chapter describes the baseline conditions related to socioeconomic benefits and community engagement, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

11.1 Environmental Context

This section describes the socioeconomic context of SWF including key industries, job growth, and labor market patterns. The economic study area is the Hudson Valley, as defined by the Hudson Valley Economic Development Corporation, which is comprised of the New York counties of Columbia, Dutchess, Greene, Orange, Putnam, Rockland, Sullivan, and Ulster. This chapter also describes the economic contribution of SWF to the region.

11.1.1 Employment in the Region

In 2007, there were approximately 933,000 jobs in the Hudson Valley, with more than 130,000 located within Orange County (Table 11-1). The majority of jobs in the region were located in Westchester County, southeast of Orange County. Between 2001 and 2007, jobs grew at an average rate of 0.8 percent per year Hudson Valley-wide, nearly three times the rate of statewide job growth. Job growth within Orange County was relatively strong during the period, averaging 1.2 percent per year. Two neighboring counties also experienced rapid job growth. Putnam County, located along Orange County's eastern border, realized the most rapid job growth in the region, averaging some 2.5 percent per year while Rockland County averaged 1.3 percent growth during the period. These numbers do not reflect the recent economic downturn, which has affected Orange County and the Hudson Valley.

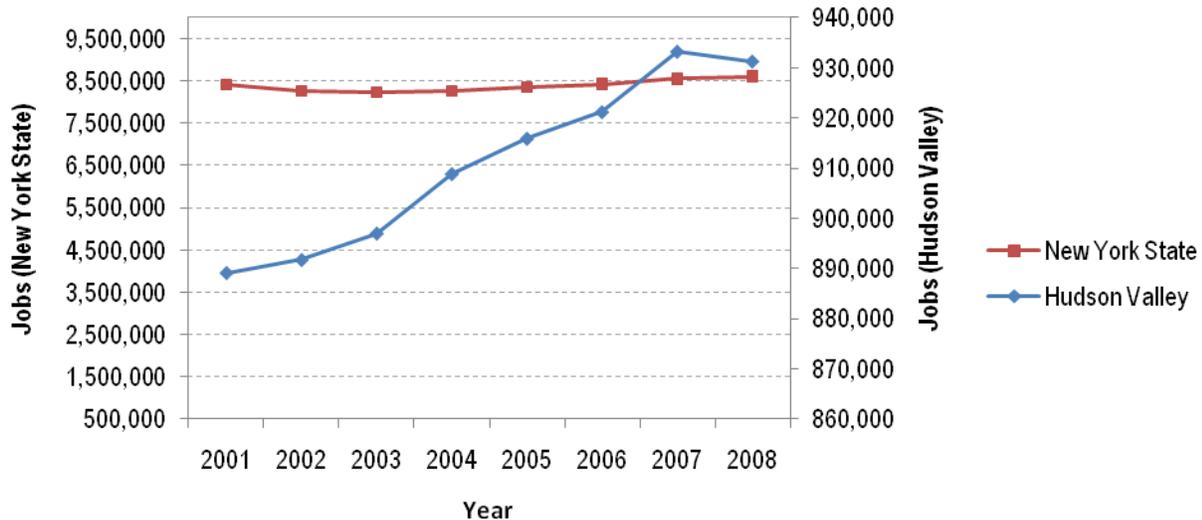
Table 11-1 Employment and Job Growth, 2001, 2007, and 2008

State/Region	Number of Jobs			Average Annual Growth Rate (2001-2007)	Average Annual Growth Rate (2007-2008)
	2001	2007	2008		
New York State	8,423,312	8,554,012	8,633,580	0.3%	0.6%
Hudson Valley ¹	889,147	933,286	932,061	0.8%	-0.2%
Columbia County	21,318	21,149	21,738	-0.1%	-0.7%
Dutchess County	112,912	116,614	115,212	0.5%	-1.2%
Greene County	13,152	14,636	14,653	1.8%	0.1%
Orange County	120,903	130,134	130,909	1.2%	0.6%
Putnam County	22,380	25,921	25,703	2.5%	-0.8%
Rockland County	107,348	115,696	116,132	1.3%	0.4%
Sullivan County	24,713	25,964	25,929	0.8%	-0.1%
Ulster County	61,447	62,267	60,559	0.2%	-2.8%
Westchester County	404,974	420,905	421,226	0.6%	0.1%

Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages.

¹ As defined by the Hudson Valley Economic Development Corporation.

Figure 11-1 Annual Job Growth, New York State and Hudson Valley, 2001-2008



Source: Bureau of Labor Statistics Quarterly Census of Employment and Wages.

In terms of total jobs, the top three industries in the Hudson Valley, as well as more locally in Orange County, are government, retail trade, and health care and social services. Regionally, these sectors account for 40 percent of jobs, and nearly half of all jobs in Orange County, which is higher than the national level of approximately 30 percent.⁹⁰ In the Hudson Valley region, key primary industries are computer and electronics products, internet and data processing services, chemical manufacturing and electrical equipment and appliance manufacturing. More locally within Orange County, industries with high employment concentration are agricultural and

⁹⁰ Primary industries are those that bring new dollars into the economy by supplying goods or services to other regions, or through local tourism that brings in visitors from other regions.

agriculture support services, chemical manufacturing, mail package delivery and warehousing, transportation, wholesale trade, and fabricated metal products. In the Hudson Valley region as a whole, key growth industries are financial, credit, and waste management and remediation. Waste management and remediation is growing both in the region and within Orange County. The majority of job growth in Orange County is in secondary industries such as retail, health care and social services, and religious, civic, and professional organizations.

The Hudson Valley Economic Development Corporation has identified five targeted industry clusters in the region: semiconductors and microelectronics; biotechnology and pharmaceuticals; research and development; information technology; and finance and insurance. These clusters were identified based on the prevalence of existing firms in those industries within the region, as well as the presence of key factors critical for each industry such as a skilled labor force, transportation access, and proximity to consumer markets.

11.1.2 Economic Contribution of SWF

In general, airports provide significant employment and economic benefits to communities through the movement of people and goods, promotion of tourism and trade, stimulation of business development, and the opportunity for a wide variety of jobs.

SWF contributes to the economy of the Hudson Valley region in the following ways:

- By attracting visitors and other Airport users who support Airport dependent businesses;
- Through Airport employees and procurement for Airport operations;
- By providing office, industrial and retail space to tenants of on-Airport real estate, and
- By providing air passenger and cargo service to aviation-related businesses throughout the region.

Though the Airport may be important to other industries in the region, businesses in these four categories are most directly affected by the movement of passengers and cargo through SWF. As a result, efforts to leverage the Airport for economic development and job growth are most effective when they meet the needs of these industries. Likewise, policy changes at the Airport that affect procurement relationships and/or passenger and cargo flows will have a greater impact upon these businesses. Each of the above categories and their contribution to the economy of the Hudson Valley is described below.

Airport Dependent Businesses

Industries in this category primarily serve businesses that operate at an airport or passengers that travel through an airport, or are third-party business providers of air services, such as freight forwarders and couriers. They can be located on or off airport property. Examples of airport dependent businesses include taxi, van and limousine services, car rental, hotels, travel agencies and tour operators, aviation fuel stations, airport parking, and flight schools, among others. This list of industries does not include government agencies such as the FAA or the TSA that maintain staff on the airport. Other industries in the area serve local or regional needs but do not depend on airport passengers or other operations. Some, such as restaurants located off-airport, may serve travelers and airport workers as well as local residents not affiliated with the airport. Thus to be conservative it is not assumed that these businesses are airport dependent.

According to current data from Dun & Bradstreet, there are approximately 140 airport dependent businesses providing more than 2,600 jobs in the towns of New Windsor and Newburgh.

Contribution of Airport Employment and Operations

In 2008, the Port Authority and its operation and management contractor AvPORTS employed a total of approximately 50 full time people at SWF. This on-Airport employment generates direct wage earnings. When those wages are re-spent within the region, they support additional jobs.

In addition to the economic impact of Airport employees spending their wages, airports support additional jobs and businesses through procurement relationships. The impact to a region depends upon the amount and type of products that are procured locally. The Port Authority supports local procurement. The Port Authority website includes information on the benefits of doing business at SWF, and provides clear instructions on how businesses can apply to be a vendor at SWF. In addition, Port Authority representatives have held meetings in 2008 and 2009 with local business vendors to answer questions and provide further information on conducting business at SWF. SWF representatives also hold formal events twice a year to provide additional information on local procurement opportunities. These efforts have enhanced local procurement and provide economic benefits to the region.

Contribution of Airport Tenants

SWF hosts a wide range of industrial, service, retail, and aviation tenants. Tenants at SWF employ approximately 1,100 people. The largest on-Airport employer is the business services firm Epicor Software, with more than 200 employees on site, followed by the manufacturing firm Metal Container Corporation, with over 190 on-Airport employees. Airlines and air freight companies employ nearly 300 people at SWF.

According to the 2009 SWF Tenant Survey 20 percent of Airport employees live in Newburgh and 9 percent live in New Windsor.⁹¹ The remaining employees of SWF tenants reside in numerous neighboring towns (refer to Table 10-4). More than 50 percent of the employees of Epicor Software live in the towns of Newburgh, New Windsor, Wappinger Falls, Middletown, Wallkill, Poughkeepsie, Walden, Montgomery, Pine Bush, Monroe, and Beacon.⁹²

Of the 30 tenants that responded to the 2009 SWF Tenant Survey, nine reported having a policy on purchasing materials locally. Materials purchased locally by tenants typically include everyday office supplies. In addition, Pacific Aviation purchases building materials locally and Cessna Aircraft purchases chemicals and solvents locally.

Aviation-Reliant Businesses and Industries

SWF is a regional transportation asset that makes the Mid-Hudson Valley more attractive to businesses looking to locate or expand there. Many businesses require access to an airport for their normal operations, either for air cargo to receive supplies and materials and to ship products to customers, or for passenger flights to reach and receive customers and/or staff from branch offices. SWF has a 50,000- square-foot air cargo building, a FedEx distribution center, and a 300,000-square-foot U.S. Postal Service Federal Mail Distribution Facility. Aircraft of integrated air cargo carriers such as UPS, FedEx, and Air Transport International all operate at SWF. In addition, some cargo is carried in the belly compartments of passenger aircraft. In total, SWF handled approximately 13,000 tons of cargo in 2008.

Aviation-related industries are those that make higher than average use of aviation services. They are consumers of aviation services for business travel or cargo shipments, though they are not aviation businesses. Some aviation-related businesses must locate adjacent or very close to an airport; others simply need convenient

91 These percentages are approximated based on tenant responses to the 2009 SWF Tenant Survey, which accounted for 628 of the airport employees. Not all tenants responding to the survey provided zip codes for each of their employees.

92 Port Authority of New York and New Jersey, 2009 SWF Tenant Survey.

and reliable access to an airport and are more flexible in location decisions. Examples of aviation-related businesses include motor vehicle parts and supplies, food distributors, electronic parts, local trucking, medical laboratories, medical supplies, and professional services such as engineering, architecture and legal services.

Table 11-2 below shows the number of aviation-related industries and employment in the Mid-Hudson Valley region, Orange County, and more locally within New Windsor and Newburgh. As the table shows, aviation-related industries are an important source of employment in the Mid-Hudson Valley region, comprising more than a fifth of all jobs. This demonstrates the importance of SWF in the region.

Table 11-2 Aviation-Related Industries and Employment in the Mid-Hudson Valley Region

	Number of Businesses in Aviation-Related Industries	Total Employment in Aviation-Related Industries	Total Employment - All Industries	Aviation-Related Employment as % of Total Employment
Mid-Hudson Valley ¹	33,391	170,881	823,672	20.7%
Orange County, NY	4,605	22,067	123,991	17.8%
New Windsor and Newburgh, NY	959	6,758	32,199	21.0%

Source: Zapdata (Dun & Bradstreet).

¹ Dutchess, Orange, Putnam, Rockland, Ulster, and Westchester Counties.

Note: Aviation-related industries are identified on the basis of national data that report overall aviation utilization tendencies by industry. Utilization of aviation transportation by each business within an industry classification may vary considerably.

11.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to socioeconomic and community outreach and involvement at SWF:

Goal: Become a positive catalyst for economic development in the local and regional economy, and a good neighbor.

Objectives:

- Continue to support procurement from local and regional businesses and ensure local and regional businesses are made aware of Airport development and procuring plans.
- Maintain open communications and good community relations.

11.3 Existing Sustainability Strategies

This section describes existing efforts for SWF to become a positive catalyst for economic development in the local and regional economy, and a good neighbor.

11.3.1 Local Procurement

As detailed above, the Port Authority supports local procurement and holds formal events twice a year to provide local businesses with information on how to conduct business at SWF. Some tenants at SWF also support local procurement.

11.3.2 Education

SWF supports community education through a program called Y2Kids. The Y2Kids event is open to local school and community groups and provides hands-on, interactive career exploration activities for children aged 9 through 13. Students visit the Airport, ask questions, and see demonstrations. May 2009 was the 10th anniversary of the Y2Kids program, which has served over 30,000 children since its inception in 1999.⁹³

11.3.3 Community Outreach and Involvement

In 2008, the Port Authority formulated the SWF Citizens Advisory Panel (CAP). The CAP is a component of an emerging community engagement plan for SWF. The CAP provides a forum for:

- The Port Authority to keep local residents informed of the Port Authority's efforts and plans for SWF.
- The Port Authority to be made aware of the concerns of local residents and businesses as they relate to the Port Authority's efforts and plans for SWF.
- CAP members to raise ideas and suggestions as well as raise issues that may not be directly related to Port Authority efforts and plans so that they can be heard and considered.
- CAP members to identify practical action items for consideration by the Port Authority or others to support the Port Authority's marketing, community, and sustainability initiatives.⁹⁴

As described in Chapter 2, *Stewart International Airport Commitment to Sustainability*, the CAP participated in the preparation of this *Environmental Sustainability Plan*.

CAP members include representatives from the following organizations: Town of Newburgh, New York State Assembly, Hudson Valley Economic Development Corporation, Orange County Chamber of Commerce, Orange County Executive, Appointment by Town of Montgomery, Labor Construction, Patterns for Progress, Representative for Congressman Hall, Town of New Windsor, Appointment by Senator Schumer, Orange County Partnership, Stewart Park and Reserve Coalition (SPARC), City of Newburgh, Labor-Trades, Travel Industry, Orange County Citizens Foundation, UFO, Orange County Community College, Scenic Hudson, Ulster County, Representative for Congressman Hinchey, and frequent flyers. The CAP meets quarterly.

11.3.4 Support Local Charities

In general, the Port Authority supports aeronautical related charities. SWF donates funds to the Tuskegee Airmen Group and in the past has supported or made charitable contributions to the following non-profit organizations: Hudson Valley Boy Scouts, Orange County Chamber of Commerce, County Partnership, Pattern for Progress, Citizens Foundation, Hudson Valley Economic Development Corporation, and the Hudson Valley Materials Exchange. SWF also purchases tables at local charity events and has donated a bus to the Hudson Valley Materials Exchange.

⁹³ Y2Kids: Careers from A to Z Save the Date http://www.ouboces.org/CTE/0910news/0910_y2kids_save_date.pdf.

⁹⁴ Stewart International Airport Citizens Advisory Panel (CAP) Meeting, May 8, 2008.

11.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to maximize socioeconomic and community benefits of the airport.

11.4.1 Prepare Environmental Sustainability Report Card Showcasing SWF initiatives

Background and Recommendation

The Port Authority will develop an Environmental Sustainability Report Card and will update it on a regular basis. The Report Card will provide an assessment of SWF's progress in implementing sustainability measures, as reflected in a set of key sustainability metrics. The Report Card will also be used as an important tool for communicating with regulatory agencies and the public.

11.4.2 Appoint an SWF Sustainability Officer

Background and Recommendation

SWF will designate a Sustainability Officer to identify, guide and direct sustainability efforts at the Airport. The Sustainability Officer will be responsible for managing the integration of selected sustainability goals into the Airport's operations and development and for implementing the strategies recommended in this *Environmental Sustainability Plan*.

11.4.3 Continue to Participate and Collaborate with Local and Regional Business

Background

The use of local vendors and suppliers provides support to the local economy, and invests in the community. It also reduces energy use and air emissions associated with material transport and delivery costs. Using local vendors/ suppliers may also reduce the need for storing materials, as delivery time is significantly reduced and materials can be ordered as needed.

Recommendation

The Port Authority will continue to participate and collaborate with local and regional business to supply products and services. Several meetings have already occurred to inform and train local entities on the Port Authority bidding processes.

11.4.4 Develop Sustainability Requirements for Businesses and Contractors

Background

Due to the amount of work done at airports through contracts and vendors, one of the most effective methods of improving the sustainability of the Airport is to require that the Port Authority's sustainability principles are carried out by contractors and vendors that do work on the agency's behalf. Sustainability requirements for businesses and contractors can be used not only to monitor performance but can also predict problems. The requirements would establish accountability with contractors and would reduce environmental impacts. The Port Authority already has standards and metrics in place for construction projects, through the *Sustainable Design Project Manual* and upcoming *Sustainable Design Project Manual for Infrastructure*.

Recommendation

For construction projects, the Port Authority will make contractors aware of the requirements and recommendations in the *Sustainable Design Project Manual* and upcoming *Sustainable Design Project Manual for Infrastructure*. As service contracts at SWF are renewed, the Port Authority will incorporate sustainability principles into the contract specifications. For example, contractors can be required to provide a monthly log that documents the collection, storage, and disposal of recyclable materials. Contractors can also provide a monthly log of their use of low-environmental-impact cleaning equipment, including Green Label equipment, low-noise-level and low-emissions equipment. Contractors should also maintain documentation of disposal procedures and methods of preventing employee exposure to chemicals.

11.4.5 Develop Marketing Concept for a Sustainable Business Development District at SWF

Background and Recommendation

The Port Authority will showcase key SWF sustainability initiatives to local host communities so that SWF can serve as a demonstration and commercialization launch pad for private sector alternative energy technologies and products. This effort can be achieved through methods such as marketing and press releases. An annual sustainability and/or energy consumption report will serve as a first step in promoting Airport initiatives. The agency will engage and educate the Airport's customers by creating a display within the terminal(s) or other frequented facilities explaining sustainability in general and publicizing current and/or planned sustainable initiatives at the Airport.

11.4.6 Coordinate with Orange County Workforce Investment Board

Background and Recommendation

The Port Authority will continue its coordination with regional organizations focusing on the economy and employment. Such coordination is essential for the Airport to have an impact on the local and regional economy.

11.4.7 Engage Local Communities on Economic Development Issues

Background and Recommendation

The Port Authority will continue its discussions and involvement with local communities regarding land use development and local economic issues. One goal is to direct new development to higher-density centers such as downtown Newburgh, away from the Airport and near existing and potential future transit hubs. Another is to encourage appropriately placed affordable housing in the immediate region. These types of land use decisions can provide opportunities for Airport employees to live closer to work, improve the viability of future transit connections to the Airport, and prevent the establishment of uses incompatible with SWF operations.

11.4.8 Establish Sustainability Education Program

Background and Recommendation

A key component of Plan implementation is public education. Educating the public about SWF's sustainability initiatives will encourage continued community support. Potential strategies to enhance public awareness of sustainability and specific initiatives in place at SWF include:

- Signage in the terminal to notify travelers of current sustainability efforts and initiatives.
- Interpretative displays in the terminal that provide in-depth education on specific sustainability topics.
- Providing additional information on the Port Authority Website

11.4.9 Focus Air Service Development at SWF on Low-Cost Carriers

Background and Recommendation

The Port Authority will continue its efforts to improve air service at SWF, and will focus on attracting one or more low-cost air carriers. Support of low-cost carriers will lower average ticket prices at the Airport, and will help to ensure that the Airport remains economically accessible.

11.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF's sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

- **Become a model for clean energy and sustainable airports through partnerships and demonstration projects.**

A continued commitment to sustainability at Stewart Airport will garner further community support for these initiatives.

- **Work with local non-profits to provide job training.**

As funding allows, the Port Authority would work with local non-profits to provide job training at SWF for low-income residents of the region.

- **Set aside land for outdoor space for employees.**

As the Airport redevelops in the future, the Port Authority would identify and set aside outdoor space for employee use. Such space could include break/eating areas, outdoor walking trails, and sidewalk connections across the property.

- **Explore potential modifications to the procurement/RFP process to include sustainability.**

All Port Authority facilities, including SWF, follow established procedures for the selection of contractors and purchasing of products. Typically, the procedures for selection of contractors do not include a sustainability component (such as life-cycle analysis). The Port Authority would coordinate with Procurement and other agency departments to explore potential modifications to the procurement/RFP process to include sustainability considerations.

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12

Land Use Compatibility



This chapter describes the environmental baseline, existing sustainability strategies, and sustainability strategies the Port Authority has committed to implementing at SWF. It also contains a list of sustainability strategies the Port Authority will consider implementing beyond the short-term horizon of this plan.

12.1 Environmental Context

There are a variety of land uses at SWF and in the surrounding areas, including large tracts of undeveloped land. SWF is within two municipalities – most of the property is located within the Town of New Windsor, and the northern portion is located in the Town of Newburgh. As a property owned by the State of New York and leased by the Port Authority, SWF is not subject to local land use control. However, SWF strives to be sensitive to the surrounding communities and to ensure land uses in the vicinity are compatible with the Airport's aviation activity. The Town of Newburgh completed a Comprehensive Plan Update in 2005, and the Town of New Windsor completed a Comprehensive Plan Update in 2009. Future updates to this *Environmental Sustainability Plan* will include zoning maps for the areas adjacent to the Airport, based on the information in the comprehensive plan updates.

The effect of noise on land use compatibility is described in detail in Section 5.1.2, *Land Use Compatibility and Airport Noise*. Land use and zoning at SWF and in the surrounding areas are described in the following sections.

12.1.1 Land Uses and Zoning to the West

The western portion of the SWF property consists primarily of the main runway (9-27) and the USDA Animal Import Center. The Animal Import Center, one of only two such centers in the country, facilitates the import of livestock, poultry, exotic birds, zoo animals, and race horses, and provides a livestock quarantine facility. Crestview Lake, which consists of two created water bodies connected by a culvert, is near the west end of Runway 9-27. The Catskill Aqueduct for the New York City water system runs through the western part of the Airport.

Existing land uses to the west of SWF include (among others) public land uses and Stewart State Forest. Approximately 8,675 acres west of the Airport were acquired by NYSDOT in 1971 as "Stewart Airport Buffer Lands" in anticipation of dramatic Airport growth. The land was managed as a NYS Cooperative Wildlife/Recreation Management Area until 1999, when 5,264 acres (eventually reduced to 5,100 acres to account for utility right-of-way lands) on the western side were transferred to NYSDEC and Stewart State Forest was created. The transfer documents noted that "the planned management will not create uses incompatible with existing and future airport operations, and will be consistent with noise buffer usage for which the land

was, in part, acquired.”⁹⁵ At that time NYSDOT reserved the right to use the transferred lands “for purposes of wetland creation and/or enhancement as mitigation for wetland impacts of NYSDOT and/or Airport projects.” That right does not apply to an additional 1,600-acre portion of the original Stewart Airport Buffer Lands that was transferred to NYSDEC in 2006.⁹⁶ The resulting Stewart State Forest is currently an approximately 6,700-acre forest preserve with 40 miles of public access recreation trails. A 400-acre portion of the Stewart Airport Buffer Lands near the I-84 and SR-747 interchange has been reserved for future commercial/industrial development.⁹⁷

Most of the western portion of SWF is within the Town of New Windsor (lands in the Town of Newburgh are described in Section 12.1.4, *Land Uses and Zoning to the North* below). SWF property within the Town of New Windsor and the land west of the Airport boundary in New Windsor are currently zoned as “Airport Uses.” In the Town of New Windsor Comprehensive Plan Update, the SWF property and some lands immediately adjacent to the Airport are designated as “Airport and Planned Development.” The land northwest of that area, near I-84/International Boulevard, is designated as “Campus Economic Development.” According to the Comprehensive Plan, the Campus Economic Development category would “encourage high quality economic activity generated by the presence of Stewart Airport” including hotels, conference centers, educational facilities, high tech businesses, and corporate offices. The “Airport and Planned Development” category is similar to the Campus Economic Development category but would occur on Airport lands where opportunities exist.

12.1.2 Land Uses and Zoning to the East

The eastern edge of SWF is near I-87. Within the eastern portion of the SWF property is the NYANG facility, close to the intersection of the primary and secondary runways. Existing land uses to the east of SWF within the Town of New Windsor include public uses, vacant land, and a smaller area of residential uses. The land along the eastern edge of SWF near I-87 is currently zoned “Planned Industrial,” and is designated as Planned Industrial in the Town of New Windsor Comprehensive Plan.

12.1.3 Land Uses and Zoning to the South

The entire southern portion of SWF is located within the Town of New Windsor. SR-207 abuts the southern edge of SWF. Existing land uses within the southern portion of the Airport include (among others) the Airport terminal building and parking lots, Airport support buildings, a hotel, the RSA and RPZ for Runway 34, an aluminum can manufacturing plant, and U.S. Army Reserve and U.S. Marine Corps facilities. Existing land uses adjacent to the Airport include residential, office, commercial, and industrial uses.

Land along SR-207 and along the southern edge of SWF is currently zoned “Office and Light Industrial” and “Neighborhood Commercial.” The 2009 Town of New Windsor Comprehensive Plan Update designates the area near the southern border of the Airport and along SR-207 as “Neighborhood Commercial” and “Office Residential.” A residential area connected to the Airport along SR-207 that has already been developed by the U.S. Marine Corps is designated in the Comprehensive Plan Update as “Medium Density Residential.”

12.1.4 Land Uses and Zoning to the North

The entire northern portion of SWF is located within the Town of Newburgh. The Airport is bounded on the north by NY Route 17K and I-84. Existing land uses within the northern part of the Airport include parts of the

95 NYS Office of General Services, Transfer of Jurisdiction Papers from NY State Department of Transportation to NY State Department of Conservation, June 6, 2006.

96 Stewart Park and Reserve Coalition v. Slater, et al. Section C-13 & C-14 (page 15) of the Substantive Provisions of the Consent Decree dated December 7, 2005.

97 New York State Department of Environmental Conservation, *Unit Management Plan and Appendices for the Stewart State Forest*, December 2006.

Airport runways and taxiways, a United States Postal Service facility, air cargo, and an industrial park. Existing land uses north of the Airport include a mix of residential, commercial, agricultural, and industrial uses.⁹⁸

The Town of Newburgh Comprehensive Plan (2005) shows the existing zoning in the northern part of SWF as “Industrial.” Most of the lands directly north and northwest of the Airport and along I-84 are zoned as “Interchange Business.” After the Comprehensive Plan was updated in 2005, two areas north and northwest of the Airport that were zoned R3 (single-family residential) were rezoned to a lower density code (R1), and an area northwest of the Airport was rezoned from “Interchange Business” to “Business” to promote more neighborhood-oriented commercial development.⁹⁹

12.2 Goals and Objectives

This Plan establishes the following goals and objectives in relation to land use compatibility at SWF:

- Goal:** Ensure land developed at, and surrounding, SWF is compatible with Airport activities.
- Objectives:**
- Work with local planning agencies to promote development of land surrounding SWF for purposes that are compatible with Airport activities.
 - Develop on-Airport lands for purposes that are compatible with Airport activities.
 - Work with Airport tenants to ensure that their operations are compatible with SWF sustainability goals and objectives.
 - Develop on-Airport lands in ways that reduce adverse environmental impacts.

12.3 Existing Sustainability Strategies

SWF does not have control over lands outside the Airport boundary; local zoning and land use policies are within the authority of the adjacent jurisdictions. However, SWF continues to work with its host municipalities regarding the development of properties near the Airport. Other existing sustainability strategies used at SWF that will benefit nearby land uses are described elsewhere in this Plan.

12.3.1 Town of New Windsor

The existing zoning and the zoning changes recommended in the *Town of New Windsor Comprehensive Plan Update* are described above. Depending on the specific uses that are permitted and approved, the new Airport and Planned Development and Campus Economic Development designations, as well as the existing Industrial and Commercial zones, will promote compatibility between SWF and lands to the west, east, and south of the Airport. In addition, the Comprehensive Plan recommends that large vegetative buffers in excess of 100 feet be

⁹⁸ Town of Newburgh, NY Comprehensive Plan 2005. <http://www.townofnewburgh.org/uppages/PDF%20Final%20Report.pdf>
⁹⁹ Town of Newburgh, NY Comprehensive Plan 2005. <http://www.townofnewburgh.org/uppages/PDF%20Final%20Report.pdf>

maintained between the Airport and any development, and encourages developments to retain as many mature trees as possible so as to reduce noise and visual impacts.

12.3.2 Town of Newburgh

Depending on the specific uses that are permitted and approved, the Interchange Business and Business designations could promote compatibility between SWF and lands to the north and northwest of the Airport. *The Town of Newburgh Comprehensive Plan* does not contain any policies or recommendations specific to Airport land use compatibility.

12.3.3 Stewart State Forest

One of the goals of the Forest Unit Management Plan is to “provide a safe and effective buffer for airport operations. All management decisions will take into account the unique public safety concerns raised by the proximity of the property to Stewart International Airport. No management actions will be undertaken that will conflict with the safe operation of the airport.”¹⁰⁰

12.4 Recommended Sustainability Strategies

This section describes measures that will be implemented at SWF to ensure land use compatibility is maintained in the future with minimal effect on the mission of the Airport.

12.4.1 Actively Coordinate with Local Municipalities on Land Use Compatibility Issues

Background

As the FAA acknowledges in its 1999 Task Force Summary Report,¹⁰¹ *Land Use Compatibility and Airports*, “The development of land uses that are not compatible with airports and aircraft noise is a growing concern across the country. In addition to aircraft noise, there are other issues, such as safety and other environmental impacts to land uses around airports which need to be considered when addressing the overall issue of land use compatibility. The objectives of compatible land use planning are to encourage land uses that are generally considered to be incompatible with airports (such as residential, schools, and churches) to locate away from airports and to encourage land uses that are more compatible (such as industrial and commercial uses) to locate around airports.” Given that the Port Authority does not have control over lands outside the Airport boundary, cooperation with neighboring municipalities is necessary. In the U.S., local zoning and land use policies are within the authority of the adjacent jurisdictions.

Recommendation

The Port Authority will continue to work with its host municipalities regarding the development of properties near the Airport, with the objective of discouraging the development of incompatible land uses, such as residences and schools adjacent to the Airport. The Port Authority will also ensure that the Airport property is developed for Airport uses, Airport-dependent or -reliant businesses, and Airport compatible uses.

¹⁰⁰ New York State Department of Environmental Conservation, *Unit Management Plan and Appendices for the Stewart State Forest*. December 2006. Page 29.

¹⁰¹ Federal Aviation Administration, *Land Use Compatibility and Airports*. 1999
http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf

12.4.2 Conduct Noise-Related Community Outreach

Background

The FAA explains that “Airports or local planning agencies that expect a reasonable chance of success in their planning efforts must provide for public education and awareness in the planning process.” This involves both information dissemination to educate and information exchange to begin a dialogue to ultimately improve land use compatibility planning in a given community.

Recommendation

As SWF develops, the Port Authority will conduct noise-related community outreach to ensure community concerns are well known and understood.

12.4.3 Work with Tenants to Ensure Compatibility with SWF

Background

The area within the Port Authority leasehold at SWF supports a variety of tenants. In addition to Airport-dependent uses, these tenants include a can manufacturing company, a waste transfer station, a State Police crime laboratory, and others.

Recommendation

The Port Authority will continue to coordinate and work with SWF tenants to ensure that they comply with all applicable federal, State, and local environmental regulations. The Port Authority will also provide briefings and other educational information regarding sustainability concepts and the SWF sustainability goals and objectives.

12.5 Sustainability Strategies for Future Consideration

The Port Authority is also planning strategies that would be implemented beyond the short-term horizon of the plan, in order to ensure the long-term environmental sustainability of the Airport. These strategies will be considered for future implementation, with the understanding that some, all, or none may be applicable and practicable in the future. Some of these strategies will be applicable only if the Port Authority opts to further develop SWF. The Port Authority will also track advanced technologies that emerge in the future to determine whether they meet SWF’s sustainability goals and would be feasible to implement. The Port Authority may be able to implement some strategies within the short-term horizon of the Plan if adequate funding becomes available.

The current strategies for future consideration include:

- **Proactively acquire and manage adjacent properties.**

In connection with future Airport redevelopment and as funding is available, the Port Authority would acquire and manage properties adjacent to the Airport. Ideally, these properties could be used to help protect and enhance environmental systems in the Airport region (by sequestering carbon and providing for runoff absorption, for example). The properties could also be used to help offset the impacts (such as tree removal and wetland displacement) of future Airport redevelopment projects. In addition, the acquisition of nearby properties would help to provide an additional noise buffer for SWF operations and would prevent the development of incompatible land uses near the Airport.

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13

Implementation Strategy & Performance Management

The Port Authority will develop a detailed approach for implementation of the short-term sustainability strategies described in this document. The main components of the approach include the following:

Prioritize strategies:

SWF will focus on strategies that yield significant environmental benefits and can be implemented quickly and at low cost. However, a number of factors will affect the order and schedule for implementing specific strategies. These factors include (among others) the timing of budget and funding cycles and availability of funding; the timing for the renewal of agreements with Airport tenants; the status of ongoing Port Authority programs and projects that might include SWF strategies; the need for SWF facility renovation and equipment replacement; the potential for grouping strategies together; and SWF activity levels. Some of these factors will change over time, and may affect the timing for implementation of certain strategies.

Identify and assign responsibilities:

The Port Authority will identify the personnel responsible for implementing each strategy. Implementation of strategies may involve various combinations of Port Authority and AvPORTS staff at SWF, Port Authority Aviation Department Central Office staff, staff in other Port Authority departments, and outside parties. For each strategy, someone will be identified who is the primary person responsible for managing implementation.

Develop metrics:

A metric is a means of measuring the environmental/sustainability performance of an airport. Examples of the metrics used at other airports include the number of kilowatt-hours used per passenger, the total gallons of water used, the number of noise complaints received, and the number of violations of water quality standards. The Port Authority will identify metrics specific to SWF that reflect the operating conditions and environmental context of the Airport, and that are tied to the goals, objectives, and strategies included in this *Environmental Sustainability Plan*. The metrics will be consistent with current agency-wide efforts to develop environmental/sustainability metrics.

Develop monitoring and measurement approach

The Port Authority will conduct monitoring and measurement in order to assess its progress toward achieving the goals and objectives contained in this Environmental Sustainability Plan. Monitoring will include the tracking of specific measures to confirm their implementation and evaluate their success; measurement will include the collection of data for the metrics of environmental performance. The Port Authority will identify the personnel responsible for monitoring and measurement, and will develop a schedule for data collection.

Develop approach for reporting on progress

SWF will identify means for reporting to the community on the Airport's progress in implementing the short-term strategies. One aspect of reporting is identified as a specific short-term strategy, Prepare Annual Environmental Sustainability Report Card Showcasing SWF initiatives, in Chapter 11, *Socioeconomic Benefits and Community Engagement*.

Appendix A

Strategies Index

Existing, Recommended, and Long-term Sustainability Strategies Listed in this Sustainability Plan:

AIR QUALITY ENHANCEMENT AND CLIMATE CHANGE

Existing Sustainability Strategies

- Air Pollution Minimization During Construction
- Gate Electrification and Pre-conditioned Air
- Single-Engine Taxiing
- Carbon Offset Purchase
- Online Carbon Calculator
- Alternative Fuel Vehicles
- Pre-Pay Parking System
- Indoor Air Quality

Recommended Sustainability Strategies

Ground Transportation

- Create a Cell Phone Waiting Area
- Encourage and Provide Incentives for the Use of Alternative Fuel/Hybrid Vehicles by Taxis and Rental Cars
- Enforce a Vehicle Anti-idling Policy
- Create Preferred Parking for Alternative Fuel/ Hybrid Vehicles
- Continue to Participate in the Port Authority Alternative Fuel Vehicles Program for GSE & Airport Fleet

Facilities and Equipment

- Coordinate Routine Maintenance of Equipment and Facilities
- Phase out CFCs, HCFCs, and Halons

Airside Operations

- Widen Taxiway C to Allow Two-way Use
- Encourage Tenant Airlines to use Alternative Aviation Fuels

Sustainability Strategies for Future Consideration

- Develop project-specific sustainable design standards
- Expand application of Sustainable Design Project Manual to SWF
- Conduct CFC/HCFC inventory and replace equipment
- Use computerized tracking for O&M recordkeeping
- Establish minimum volume restrictions for deliveries
- Provide Foreign Object Debris (FOD)/bird radar to reduce airfield vehicle use
- Implement an environmentally-based take-off and landing revenue system

ENERGY CONSERVATION AND RENEWABLE ENERGY

Existing Sustainability Strategies

- Energy-Efficient Lighting Improvements
- Alternative Fuel Vehicles
- High Albedo Roof
- Use of Energy Service Performance Contracting to Finance Energy Improvements at SWF

Recommended Sustainability Strategies

- Include SWF Facilities in Multi-Facility Performance Based Energy Services Process
- Perform Retro-Commissioning of Existing Building Systems
- Install More Energy-Efficient Lighting
- Install Daylighting Control Systems
- Install Lighting Occupancy Sensors
- Purchase Energy Star Products
- Institute Office Equipment Shut-Off Policy
- Improve Escalator Operation
- Install High Efficiency Hand Dryers
- Use Energy Efficient Roofing
- Partner with NYSERDA for Energy Efficiency Programs and Funding
- Purchase “Environmental Attributes” or Energy from Renewable Sources

Sustainability Strategies for Future Consideration

- Install a smart metering system
- Implement additional lighting projects
- Replace revolving doors in the terminal
- Install a green or vegetated roof on appropriate facilities
- Use high-albedo pavements
- Implement planned renewable energy projects
- Produce renewable energy on site and/or off site
- Install alternative energy fueling stations
- Retrofit HVAC systems
- Encourage and accommodate use of airline or FBO electric GSE

NOISE ABATEMENT

Existing Sustainability Strategies

- Engagement with Host Communities
- Noise Complaint Program
- Construction Noise Reduction Measures

Recommended Sustainability Strategies

- Conduct a Noise Baseline Analysis
- Work with Municipalities on Compatible Land Use
- Enhance Noise Complaint Program
- Conduct Noise-Related Community Outreach
- Coordinate with the Air National Guard to Reduce Noise Associated with Military Aircraft Activity
- Accommodate the FAA's Next Generation Air Traffic Control System

Sustainability Strategies for Future Consideration

- Proactively acquire and manage land adjacent to SWF
- Continuously explore ways to minimize operational noise

WATER QUALITY PROTECTION AND WATER CONSERVATION

Existing Sustainability Strategies

- Water Conservation
- Water Reuse

- Pervious Pavement and Stormwater Management
- Stormwater Pollution Prevention Plan
- Sewer Relining
- Deicing Fluid Use and Collection
- Utilization of Low-Impact Development Principles

Recommended Sustainability Strategies

- Conduct Water Use Audits
- Install Water Efficient Fixtures
- Install Water Efficient Landscaping and Irrigation Systems
- Install Pervious Pavement
- Coordinate with Orange County Water Authority

Sustainability Strategies for Future Consideration

- Install water metering
- Encourage tenants to use alternative deicing methods
- Recycle deicing fluid
- Develop a water reuse program

LAND AND NATURAL RESOURCES MANAGEMENT

Existing Sustainability Strategies

- Regular Debris Collection Events
- Open Space Preservation
- Hudson-Raritan Ecosystem Restoration Feasibility Study

Recommended Sustainability Strategies

- Develop a Vegetation Management Plan
- Use Non-Wildlife Attracting Native Vegetation
- Join in Partnerships with Environmental and Conservation Non-Profits
- Continue Wetland Preservation and Mitigation

Sustainability Strategies for Future Consideration

- Install an avian radar system

SOLID WASTE REDUCTION AND RECYCLING

Existing Sustainability Strategies

- Waste Reduction
- Waste Recycling and Use of Recycled Materials
- Waste Reuse

Recommended Sustainability Strategies

- Develop a Comprehensive Waste Management Program
- Purchase Environmentally Preferable Products
- Conduct Waste Management Education Program

Sustainability Strategies for Future Consideration

- Consider and evaluate alternative systems for waste collection and recycling

HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

Existing Sustainability Strategies

- Reduced Use of Hazardous Materials
- Hazardous Waste Materials Recycling
- Spill Prevention, Control and Countermeasure Plan

Recommended Sustainability Strategies

- Use Integrated Pest Management Techniques
- Develop Hazardous Materials Substitution Program
- Expand Recycling of Universal Wastes

Sustainability Strategies for Future Consideration

- Reduce reliance on trucks for aircraft fuel delivery
- Utilize above-ground storage tanks instead of underground storage tanks
- Install a leakage detection system for fuel storage tanks
- Expand the hazardous materials substitution program to include Airport tenants

SURFACE TRANSPORTATION MANAGEMENT

Existing Sustainability Strategies

- Public Transportation
- High Occupancy Vehicle Services
- Bicycle Policy

Recommended Sustainability Strategies

- Develop Transportation Demand Management Program
- Encourage Newburgh-Beacon Shuttle Ridership
- Use Appropriately Sized Newburgh-Beacon Shuttle Buses
- Coordinate with Local Transportation Agencies
- Install Bicycle Racks, Offer Secure Storage, and Paint Bike Lanes

Sustainability Strategies for Future Consideration

- Replace parking revenue control system
- Support regional transport linkages and integrated air-rail ticketing
- Construct a consolidated rental car facility
- Enhance the efficiency of the internal roadway network
- Construct bicycle paths and pedestrian walkways
- Establish remote check-in facilities
- Install real-time transit information and flight information displays
- Install ground transportation kiosks in passenger terminal
- Establish consolidated hotel shuttles
- Ensure multi-modal transportation choices during all future planning, construction, and redevelopment of SWF
- Consider providing incentives for carpools and vanpools
- Consider providing incentives for use of public transportation

SOCIOECONOMIC BENEFITS AND COMMUNITY ENGAGEMENT

Existing Sustainability Strategies

- Local Procurement
- Education
- Community Outreach and Involvement
- Support Local Charities

Recommended Sustainability Strategies

- Prepare Annual Environmental Sustainability Report Card Showcasing SWF initiatives
- Appoint an SWF Sustainability Officer
- Continue to Participate and Collaborate with Local and Regional Business
- Develop Sustainability Requirements for Businesses and Contractors
- Develop Marketing Concept for a Sustainable Business Development District at SWF
- Coordinate with Orange County Workforce Investment Board
- Engage Local Communities on Economic Development Issues
- Establish Sustainability Education Program
- Focus Air Service Development at SWF on Low-Cost Carriers

Sustainability Strategies for Future Consideration

- Become a model for clean energy and sustainable airports through partnerships and demonstration projects
- Work with local non-profits to provide job training
- Set aside land for outdoor space for employees
- Explore potential modifications to the procurement/RFP process to include sustainability

LAND USE COMPATIBILITY

Existing Sustainability Strategies

- Town of New Windsor
- Town of Newburgh
- Stewart State Forest

Recommended Sustainability Strategies

- Actively Coordinate with Local Municipalities on Land Use Compatibility Issues
- Conduct Noise-Related Community Outreach
- Work with Tenants to Ensure Compatibility with SWF

Sustainability Strategies for Future Consideration

- Proactively acquire and manage adjacent properties

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Appendix B

2009 Tenant Survey

CONTACT INFO

TENANT/COMPANY

NAME DATE

PHONE E-MAIL

TENANT BACKGROUND /CONTACTS

1. Does your company have an environmental sustainability or “green” policy/statement?:

Y / N

a. If not, do you foresee your company adapting or incorporating an environmental sustainability or “green” policy/statement in the near future?

Y / N N/A

b. Does your company have any type of corporate office of environmental sustainability or “green” coordinator? If so, please provide any available name and contact information:

NAME TITLE

DEPARTMENT

PHONE E-MAIL

ADDRESS

2. How many employees does your company have at SWF?

#

a. What are the zip codes your employees are commuting from, and how many from each?

Zip codes	# of employees						

Note: If any question is not applicable, please indicate “N/A” and if unknown indicate “unknown”

PROCUREMENT / MATERIALS / WASTE & RECYCLING

1. Does your company have a policy on sourcing materials locally?

Y / N

a. What, if any materials are locally supplied, and where are they sourced from?

2. Have you replaced hazardous or unsustainable materials/products with “green products” (i.e., cleaning supplies, low-VOC (Volatile Organic Compound) carpeting, etc...)?

Y / N

a. If so, please list:



3. Do you have waste reduction, recycling or reuse programs in place (ie: glass, paper, plastic, used oil, etc...)? Y / N
- a. Do you compost food and/or green waste? Y / N
- b. What types and percentage/quantity of materials are recycled, please list:

4. If you are an airline, do you dispose of in-flight trash at SWF? Y / N
- a. Is this in-flight trash separated for recycling? Y / N
5. Does your organization use renewable materials and materials with recycled content (i.e., recycled paper, etc)? Y / N
- a. If so, please list:

Other: Describe any other sustainability efforts which may fit in the procurement/materials/waste & recycling category:

FLIGHT & GROUND OPERATIONS

6. If you are an airline, does the company have a policy on using a single engine during taxiing? Y / N
7. If you are an airline, do you plan to use pre-conditioned air (PCA) and 400Hz power which is to be installed at SWF gates in 2009? Y / N
8. If you are an airline, do you have noise policies beyond basic regulations which encourage quiet daily operations? Y / N
- a. Please describe:

Other: Describe any other sustainability efforts which may fit in the flight & ground operations category:

AIR & WATER QUALITY / CLIMATE CHANGE

9. How many vehicles by type—bus/shuttle, ground service equipment, construction equipment, cars, trucks, etc... do you operate at the airport, including fuel source (i.e., electric battery, diesel, hybrid, hydrogen, gasoline, etc...)
10. If applicable, do you use CFC refrigerants, HCFCs and halons in heating and cooling systems or operations?
11. If applicable, do you recycle/reuse water?
- a. Please describe:

Qty	Vehicle Type	Fuel Source

Y / N

Y / N

Other: Describe any other sustainability efforts which may fit in the air & water quality/climate change category:



EMPLOYEE TRANSPORTATION

12. What number and percentage of employees use public transportation, carpool or bike to commute to work?

%

13. Does your company provide alternative transportation incentives? (i.e., transit passes, etc)? If so, please describe:

Y / N

Other: Describe any other sustainability efforts which may fit in the employee transportation category:

ENERGY / FUEL USAGE

14. If separately charged/metered for utilities, what quantities of energy did you consume in 2007 at SWF (electricity, gas, etc...)?

15. Do you have energy conservation strategies in place?
a. If so, please describe:

Y / N

16. Do you purchase electricity from renewable sources (i.e., through your utility bill)?
b. If so, please describe (ie: wind, hydro):

Y / N

17. How much fuel do you consume in a year
jet fuel, CNG, diesel, AV gas, etc:

Table with 2 columns: Fuel Type, Qty. Includes three empty rows for data entry.

Other: Describe any other sustainability efforts which may fit in the energy category:

MISCELLANEOUS

18. Are there any other notable environmentally friendly "green" programs which your company utilizes to contribute to the sustainability of the entire airport, including reducing emissions and pollutants?



Appendix C

Sustainability Strategies Brainstorming Session Meeting Notes

Meeting Notes

Attendees: Diannae Ehler / PANYNJ
Ed Knoesel / PANYNJ
Arlyn Purcell / PANYNJ
Peter Byrne / VHB
Sarah Townsend / VHB
[Full list of participants on last page]

Date/Time: Tuesday, June 30, 2009

Place: Stewart International Airport

Re: Stewart International Airport Environmental Sustainability Plan, Sustainability Strategies Brainstorming Session Notes

Notes taken by: Peter Byrne, Arlyn Purcell, and Sarah Townsend

On Tuesday June 30, 2009, the Port Authority of New York and New Jersey (Port Authority) held two sustainability strategies brainstorming sessions, one at 2:00 PM and the other at 5:00 PM. The purpose of the sessions was to solicit input from attendees on sustainability strategies the Port Authority should consider including in the Environmental Sustainability Plan for Stewart International Airport (SWF). The sessions were attended by some members of the Citizens Advisory Panel (CAP) as well as resource agencies, local planning officials, and members of the local community.

The Port Authority presented the draft sustainability goals and objectives statement during the sessions, and invited attendees to brainstorm sustainability strategies that are consistent with the stated goals and objectives. The following is a compilation of the ideas and suggestions which were generated during the sessions.

Suggested Sustainability Strategies

Air Quality Enhancement and Climate Change

- Conduct an inventory of sustainability measures / actions to achieve carbon neutrality
 - Develop a list of alternative energy supply measures: solar, wind, biomass etc
 - Establish a matrix of cost effectiveness (cost reduction) of measures to evaluate the most efficient and cost-effective measure for SWF at different stages in its growth
- Purchase local carbon credits
- Fund the purchase of land in the local area as a way of off-setting carbon emissions generated by SWF
- Revegetate land or purchase forested land to avoid deforestation and off-set carbon emissions generated by SWF
- Eliminate engine idling at the airside and groundside
- Encourage use of single-engine taxiing by aircraft
- Use incentives to encourage people to come in hybrid or alternative fuel/compact cars i.e. preferred parking spaces
- Utilize hybrid and/or alternatively-fueled shuttle buses (manufactured in New York State by www.novabus.com and www.orionbus.com)
- Encourage use of hybrid/alternative fuel only rental cars and taxis
 - Provide cost incentives
 - Provide head-of-the-line privileges for taxis

- Survey open spaces which could be used for pollution mitigation
 - Along Drury Lane, adjacent to Crestview Lake, between Crestview Lake and C Street (area used for salamander mitigation)
 - North and west of the property in Stewart State Forest
- Encourage airlines to achieve high passenger load factors (right-sizing aircraft types etc)
- Assist the region in achieving EPA air quality attainment area status
- Participate in aviation research and demonstration of third generation biofuel use (i.e. use of algae) for aircraft

Energy Conservation and Renewable Energy

- Maintain a 5 percent reduction in energy use as the airport expands
- Study the feasibility of a co-generation plant or district energy for the airport and sites to be developed on the airport
- Capture and use waste heat—i.e. combined heat and power (CHP) and capture waste heat from the aircraft APUs
- Install solar panels, including solar panels to power signage
- Use parking lots for solar energy production (roof over surface lots)
- Work with the Solar Energy Consortium [<http://thesolarec.org/>] based in Kingston, NY
- Incentivize LEED rating of existing and new buildings for tenants—include in the Port Authority RFP process
- Install green roofs
- Utilize NYSERDA funding which is available for many technologies
- Convert lighting to LED technology across the airport
- Minimize light pollution
- Use regenerative pavements/roadway and runway kinetic energy harvesting to produce electricity [<http://www.innowattech.co.il>] [<http://www.newenergytechnologiesinc.com/>] [<http://www.thegreenroadway.com/index.html>]
- Use jet blast from aircraft to power wind turbines and produce electricity
- Utilize geothermal energy for HVAC needs
- Set a percentage target of energy purchase/generation from alternative energy sources
- Conduct comprehensive energy audits
- Hold a tenant meeting to apply for stimulus money to fund energy conservation measures

Noise Abatement and Land Use Compatibility

- Conduct a baseline noise analysis (Part 150 Study)
- Coordinate with the FAA on airspace development
- Coordinate with the FAA on any possible re-routing of flights
- Support NextGen implementation—the Next Generation Air Traffic Control System—a GPS-based air traffic control system which will reduce the environmental footprint of the aviation industry, increase national airspace capacity, reduce delay in the system, and reduce aviation noise overall [<http://www.panynj.gov/nextgennow/>]
- Discourage development along flight paths / encourage compatible zoning / compatibility with historic/cultural/natural resources in area
- Communicate with local planning boards about land use compatibility and zoning. Port Authority to take the initiative to advise these bodies according to FAA guidance on airport land use compatibility [http://www.faa.gov/airports_airtraffic/airports/environmental/land_use/]
- Work with local municipalities regarding zoning and development and low-impact development
- Use low-impact development standards for all new construction
- Construct noise reducing aircraft test cell
- Buy property and convert it to natural forest to serve as a future noise buffer

Water Quality Protection and Water Conservation

- Use pervious pavement / open pavers etc on new and existing parking lots and other paved areas
- Install a deicing fluid recovery system similar to Albany International Airport
- Capture and recycle aircraft deicing fluid
- Install rain gardens
- Minimize sources of stormwater pollutants
- Enhance runoff control
 - Use small ponds for retention
 - Improve infiltration
 - Increase vegetative cover/trees where possible
- Conduct stormwater monitoring (bio-monitoring) downstream of SWF and coordinate with NYSDEC who may be proposing biomonitoring for Moodna Creek
- Refer to Orange County Draft Watershed Management Plan as SWF develops
- Fund stream restoration work
- Limit pesticide use and use Integrated Pest Management techniques
- Conduct greywater recycling
- Use recycled water for construction projects
- Install waterless urinals

Land and Natural Resources Management

- Conduct a wetlands inventory
- Use native species for landscaping

Solid and Hazardous Materials Use and Waste

- Create a strategy or overall guidelines for waste management
- Minimize packaging / i.e. don't use bottled water at meetings
- Use language in contracts with tenants and construction contractors to minimize waste generation and encourage waste recycling
- Recycle asphalt
- Compost food and green waste
- Encourage materials reuse and recycling, including possible recycling of hazardous materials
- Buy earth-friendly products
- Encourage / facilitate airlines separating deplaned waste
- Build in waste minimization strategies as the airport expands

Surface Transportation Management

- Coordinate with local transportation planning agencies in relation to present and future transportation connections to SWF
- Use the EZ Pass system for parking payment
- Pay for parking on foot (at kiosks located inside the terminal)
- Use appropriately-sized buses for passenger ridership and adapt the size to changing passenger ridership
- Construct bicycle paths
- Install bicycle racks on buses and trains to maximize multi-modal use
- Construct sidewalks to improve pedestrian accessibility around the property and onto the property
- Use small electric utility carts for getting around on-site [<http://www.gemcar.com/>]
- Balance providing additional parking against providing/enhancing public transportation options
- Give preferential treatment to alternative modes of transportation

Socio-Economic Benefits and Community Outreach/Involvement

- Consider local businesses when awarding contracts
- Modify language in contracts to target Hudson Valley businesses
- Participate in developing a “green directory” of green businesses in the Hudson Valley
- Source materials locally and encourage tenants to do the same
- Encourage tenants to source produce from local farmers markets
- Utilize undeveloped land at the airport or nearby SWF for local food production
- Break contracts into smaller projects where possible to encourage local businesses to bid on the work
- Develop an airport business improvement district with common branding—currently no brand for the redevelopment campaign
- Encourage / require sustainability participation of on-airport businesses and off-airport businesses that rely on SWF
- Enhance public education programs such as by providing sustainability displays/installations in the terminal, holding workshops, and conducting tours to showcase sustainable features of SWF
- Work with local non-profits to provide job training for low-income residents
- Coordinate with the Orange County Workforce Investment Board on employment issues
<http://www.co.orange.ny.us/orgMain.asp?storyID=3405&sid=>
- Support affordable housing initiatives in the area
- Form partnerships and demonstration projects to raise the profile of SWF and Hudson Valley
 - Clean energy technology training at SUNY Ulster and other colleges in the SUNY system
<http://www.nyseia.org>
- Help in branding the Hudson Valley as a green corridor (work with Sustainable Hudson Valley)
<http://www.sustainhv.org/>
- Become a model for clean energy / sustainable airports
- Encourage airline ticket price reduction by focusing and developing SWF specifically as a low-cost-carrier airport
- Provide a calculator online which calculates the benefits of taking a flight from SWF vs. other transportation alternatives and airports. Consider total ticket cost, total travel time, GHG emissions etc
- Hold a press conference about the Environmental Sustainability Plan (Times-Herald-Record)
- Publish an annual environmental report card
- Establish a Sustainability Officer for SWF or the Port Authority as a whole

Suggested Revisions to Internal Draft Goals and Objectives Statement

- Include Surface Transportation Management Objectives of:
 - Reducing vehicle miles travelled (VMT)
 - Promoting efficient inter-modal connections—advocate for better regional intermodal connectivity through multiple modes—including future rail links
- Add “Beaver Dam Lake watershed” to the Water Quality Protection and Water Conservation Goal
- The Surface Transportation Management Objective “Facilitate the movement of passengers and employees from cars to bicycles” should be strengthened
- Include a Surface Transportation Management Objective that addresses cargo handling
- Make Land Use a separate category, separate from the Noise category
- Include performance measures for all objectives

Full list of participants

Session 1

- Erin Griffin / The Chazen Companies
- Peg Dulce / NYSDEC
- Joseph R Murray / NYSDEC
- Charles Houghton / Scenic Hudson
- Steve Rosenberg / Scenic Hudson
- Peggy Atwood / MHESC / NYSERDA
- Carol Smith / OC chamber of Commerce
- Jim Wright / SAC
- Daniel Coots / NYSDOT
- Chris White / Rep Hinchey's office
- Maureen Radl / Ulsterites Fight Overflight Noise
- Charles Radier / NYS Empire State Development Corporation
- Simon Gruber / Hudson Valley Regional Council
- Jolanda Jansen / Hudson Valley Smart Growth Alliance
- Eric Billowitz / AvPorts
- Nancy Proyect / OC Citizens Foundation
- Jon Decker / SAC

Session 2

- Russell Robbins / NYSDOT –Tappan Zee Bridge Project
- Pat Snyder / NYSDOT Major Projects
- Jim Taylor / Taylor Biomass
- R Boyle / Newburgh STC
- Tom Bourgeois / Pace University Energy Project
- Dave Church / OC Planning
- Diane Newlander / Mid-Hudson Times
- Sandra Kassam / SPARC
- Thomas Corl / Beaver Dam Lake District



