

Florida Airport Sustainability Tracking/Monitoring System

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Final Report

**Florida Airport Sustainability
Tracking/Monitoring System**

BDV25-977-39

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Metric Conversion Chart

Symbol	When You Know	Multiply By	To Find	Symbol
Area				
ac	acres	0.004	square kilometers	km ²
Volume				
gal	gallons	3.785	liters	L
kgal	kilogallons	3,785	liters	L
NOTE: Volumes greater than 1000 L shown in m3				
Mass				
lb	pounds	0.454	kilograms	kg
T	short tons (2,000lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
Energy				
kWh	kilowatt-hour	0.0341	therm	thm
thm	therm	29.3	kilowatts	kWh

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16. Abstract Tracking and monitoring airport sustainability performance is an essential component of an airport's sustainability program development process and also the foundation for continuous development of airport systems. This study identified airport sustainability performance metrics under the Economic Vitality, Operational Efficiency, Natural Resources, and Social Responsibility (EONS) focus area based on literature reviews and industry inputs from a survey disseminated to the Florida airports. A comprehensive Web-based tracking system was developed and incorporated into Florida Aviation Database (FAD). The system allows airport managers to input and archive data and has the capabilities of computing and analyzing airport sustainability performance and comparing that across different years or with other peer airports. A case study was performed for two airports – Commercial Service airport at St. Pete-Clearwater International Airport (PIE) and General Aviation airport at Immokalee Regional Airport (IMM) – to obtain the baseline sustainability performance metrics of these two airports. The tracking/monitoring system provides a powerful tool to both airport managers and FDOT staff to access and archive sustainable performance data and to analyze airport sustainability performance. It also increases airports' awareness of collecting and documenting relevant data to expand their performance tracking inventory.			
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Executive Summary

Tracking and monitoring airport sustainability performance is an essential component of an airport's sustainability program development process and also the foundation for continuous development of airport systems. Florida is one of very few states that has developed a continuous system planning process that helps maintain and enhance the Florida aviation system successfully. FDOT's Aviation and Spaceports Office also periodically updates the Florida Aviation System Plan (FASP) and produces various guidebooks to stimulate the continuous development of the aviation system.

Florida's airport system has its special features. It has a large number of public-use Commercial Service airports and General Aviation (GA) airports compared to other states. Some of the large commercial airports serving mega-regions are located close to city downtown or high-population areas. In addition, many airports are located at low altitude sites and will face sea-level rise threats in the long run. Florida is in need to develop a comprehensive airport sustainability tracking/monitoring system that can help report, evaluate, and archive the sustainability performance of the airports and help decision makers make informed financial and planning decisions for airport development to support a sustainable society served by the airport systems.

The main goal of this study was to identify airport sustainable focus groups and performance metrics and then develop a Web-based monitoring/tracking system that has the function of performance metrics calculation and comparison study. In order to achieve the goal, this study has completed the following parts.

First, based on the outcomes of Airport Cooperative Research Program (ACRP) and National Cooperative Highway Research Program (NCHRP) studies and airport surveys, this research proposed to use the classic four principles or focus areas — Economic Vitality, Operational Efficiency, Natural Resources, and Social Responsibility (EONS) for tracking the performance to identify and group airport sustainability performance metrics. Second, this research developed an industry survey to further support the development of a sustainability performance tracking and monitoring system. According to the survey, more than 50% of airports in Florida have a sustainability program or policy, while 41% of airports do not track sustainability performance regularly. The majority of Commercial Service airports tend to track but not report some environmental-related performance metrics, such as water conservation, materials, and resources. General Aviation airports tend to track and report only the economic-related performance metrics. Third, based on the literature reviews and detailed industrial survey, this research identified objective performance metrics under EONS categories and determined the method to calculate each metric. Potential data sources for tracking the proposed performance metrics were also identified and presented in this report. Fourth, a Web-based system was developed and incorporated into the existing Florida Aviation Database. The system has the capability to archive historical data, compute sustainability metrics, and execute comparison analysis. Then, in order to test the functionality of the tracking/monitoring system, two airports were selected for case study, based on their role in the Florida aviation system and their expressed interest in participation: Commercial Service airport at St. Pete-Clearwater International Airport (PIE) and General Aviation airport at Immokalee Regional Airport (IMM).

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CHAPTER 1 INTRODUCTION

1.1 BACKGROUND

It is well recognized that tracking and monitoring airport sustainability performance is an essential component of an airport's sustainability program development process and the foundation for continuous development of airport systems. In 2010, the Federal Aviation Administration (FAA) initiated the Sustainable Master Plan Pilot Program to enhance airport sustainability planning efforts and included Airport Improvement Program (AIP) funding for 44 airport plans. Per the FAA's interim report, airports had the option to include sustainability plans within a traditional master plan or provide a stand-alone sustainability plan. Nationwide, sustainable development of aviation systems has attracted significant attention. To meet the needs, the Transportation Research Board (TRB) Airport Cooperative Research Program (ACRP) supported multiple projects to explore best practices and solutions in that direction.

Florida is one of very few states that has developed a continuous system planning process that helps maintain and enhance the Florida aviation system successfully. FDOT's Aviation and Spaceports office also periodically updates the Florida Aviation System Plan (FASP) and produces various guidebooks to stimulate the continuous attainment of the aviation system. Furthermore, the Aviation and Spaceports office developed the *Florida Airport Sustainability Guidebook* in January 2018, which presents recommended methods and guidance for airports to plan and implement sustainability initiatives. The guidebook serves as a reference that offers a step-by-step process that airports can adopt to develop a customized suitability plan.

The purpose of this sustainability tracking/monitoring system is to propose sustainable tracking categories and metrics and develop a Web-based interface that stakeholders and airports can use to track performance and compare with their peers.

1.2 RESEARCH OBJECTIVES

This research project, which is based on the outcomes of ACRP National Cooperative Highway Research Program (NCHRP) studies in related areas and airport surveys, proposes to explore the general needs of Florida's airport system and produce a Florida Airport Sustainability Performance Tracking/Monitoring System that can be efficiently used by state aviation stakeholders and related transportation professionals.

1.3 REPORT STRUCTURE

Chapter 1 is an introduction and background of the tracking/monitoring system and provides basic instructions on how and when to use the system.

Chapter 2 is a review of current airport sustainability performance measurements, best practices, and tracking/monitoring availability.

Chapter 3 presents a Stakeholder Survey Analysis and provides a summary of survey outcomes and insights that could benefit the design of the system.

Chapter 4 includes airport sustainability categories and metrics based on review of research reports and airport surveys on airport sustainability performance

measurements and provides selected metrics, calculation methods, and potential data sources.

Chapter 5 provides information on web design on the platform of current FAD system and designs a Web-based system for tracking and monitoring airport sustainability performance

Chapter 6 presents case studies of two Florida airports, including current airport planning, operation, and maintenance data as well as sociodemographic information of airport catchment areas to calculate the baseline of airport sustainability performance.

CHAPTER 2 REVIEW OF AIRPORT SUSTAINABILITY LITERATURE

2.1 SUSTAINABILITY DEFINITION

Sustainability has many definitions depending on the context; however, the most commonly accepted interpretation is that given by the Brundtland Commission in 1987, which defined sustainability as “making development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland and World Commission, 1987; WCED, 1997). Another widely used sustainability definition is the Triple Bottom Line (TBL) (Elkington, 1997; Kenway et al., 2007), which identifies three principle parts: economic growth, environmental stewardship, and social responsibility. The TBL framework was originally used as an accounting tool for measuring corporate financial status, but later, with the addition of social and environmental components, became the most widely used public sector full cost accounting for measuring sustainability.

The airport community has adopted its own definition of sustainability called EONS (Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility), which was developed based on TBL principles. The Airports Council International–North America (ACI–NA) defined airport sustainability as a “holistic approach to manage an airport so as to ensure the integrity of the EONS of the airport.” In addition to the three components outlined in the TBL, this definition also considers operational efficiency, which is essential to airport systems and worthy of highlighting (ACI-NA, 2013).

The FAA issued interim guidance on its Sustainable Master Plan Pilot Program, requiring all selected airports to develop a sustainable master plan or stand-alone sustainable airport management plan. The guidance identifies the following airport sustainability principles: a) protecting the environment, b) maintaining high and stable levels of economic growth, and c) social progress. It also asserts that sustainability issues should be taken as core considerations in the planning stage.

2.2 SUMMARY OF AIRPORT SUSTAINABILITY PERFORMANCE MEASUREMENTS

Each EONS principle includes a series of indicators to measure specific sustainability targets. In many cases, a sustainable activity/initiative may impact more than one EONS principle. For example, reduction of energy consumption could benefit economic viability but also contribute to natural resource conservation. In this study, the metrics derived from the literature are divided into four categories – Environmental, Social, Economic, and Operational – depending on the primary goal of the metrics.

Sustainability can be measured by metrics developed by airport operators or third-party organizations. Metrics are useful for airports to establish baselines, identify trends, predict problems, assess options, set performance goals or targets, and evaluate a particular project or airport organization/enterprise (SAGA). Based on a review of relevant literature, sustainability metrics can be classified as either objective, primarily

relating to an existing airport sustainability framework, or subjective, which is based on user perceptions of airport sustainability.

Currently, the most commonly used airport sustainability metrics are included in the Leadership in Energy and Environmental Design (LEED) program and Global Reporting Initiative (GRI) program. LEED is a rating system developed by the United States Green Building Council (USGBC) to evaluate the environmental performance of a building and encourage market transformation towards sustainable design. It is often associated with the design and construction stages of an airport, and some components can be applied to operations and maintenance as well. However, LEED is not all-inclusive—it may not cover many different types of capital projects at an airport or maintenance activities, and it cannot effectively measure sustainable airports operations or administration (SAGA). Another important source for developing airport sustainability metrics is the Global Reporting Initiative (GRI), an international non-profit organization founded in 1997 by the Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environmental Program (UNEP). The GRI program has become one of the most recognized standards for sustainability reporting and is a widely accepted framework for reporting on economic, environmental, and social performance. GRI reviewed 17 sustainability reports from airports around the world and published an overview report, “A Snapshot of Sustainability Reporting in the Airports Sector” (GRI, 2009). The GRI Airports Sector Supplement (GRI, 2011) was published in 2011 with more detailed metrics specifically relating to airports. In turn, some U.S. airports have incorporated GRI indicators as part of their sustainability master plan. Additionally, Skouloudis et al. (2012) conducted a content analysis to review the typical scope and quality of airport corporate sustainability reports as they relate to GRI guidelines.

In addition to these two programs, many ACRP and NCHRP reports and much literature also include comprehensive studies on airport sustainable performance metrics. These studies often first determine sustainable categories and then develop associated metrics to measure the performance within the content of each category. They usually target a specific type of airports (e.g., primary commercial service airports or general aviation airports). For instance, ACRP Report 42 collected sustainable practices during the construction phase of an airport project, ACRP Report 80 identified sustainability applications not only in airport construction but also everyday maintenance projects, and ACRP Report 110 provides an evaluation process and cost-benefit analysis tool for lifecycle analysis of airport projects. More recently, ACRP Report 119 summarizes the effort of developing a prototype airport sustainability rating system via a literature review, stakeholder outreach, and project development. In addition, similar efforts have been made from broad transportation perspectives by NCHRP. NCHRP Report 708, a guidebook for sustainability performance measurement for transportation agencies, provides an easy-to-use approach to identify and apply sustainability performance measures that can be used further for evaluating the effectiveness of the agency's efforts towards sustainability goals. More recently, a series of NCHRP studies were conducted to prepare state departments of transportation and other transportation agencies in an uncertain future, including NCHRP Report 750, “Strategic Issues Facing Transportation, Volume 4: Sustainability as an Organizing Principle for Transportation Agencies.”

Airport sponsors also have developed their own sustainability management plans since FAA initiated the sustainable airport pilot program. Lists of reviewed airport sustainability programs are included in the References of this report. Although these management/sustainability plans are built for specific airports, some metrics are commonly used and can be adopted by other airports

In the literature, various sustainability categories have been developed, but it is difficult for airports to use some of these categories to track performance because of the complexity of the categorization. To keep the categories simple but condensed as well as consistent with the *Florida Airport Sustainability Guidebook*, this study uses EONS framework and classifies the metrics in the literature into the four principles of EONS. The following section summarizes the metrics from the literature review and airport sustainability plan reviews and provides a list of proposed metrics based on the principles of EONS.

Figure 2-1 depicts the framework for airport sustainability. The first layer depicts the four principles or focus areas —Environmental, Social, Economic, and Operations—and the second layer contains more detailed subcategories of metrics relating to each principle. In the rest of this section, the feasible metrics extracted from different sources based on EONS principles.

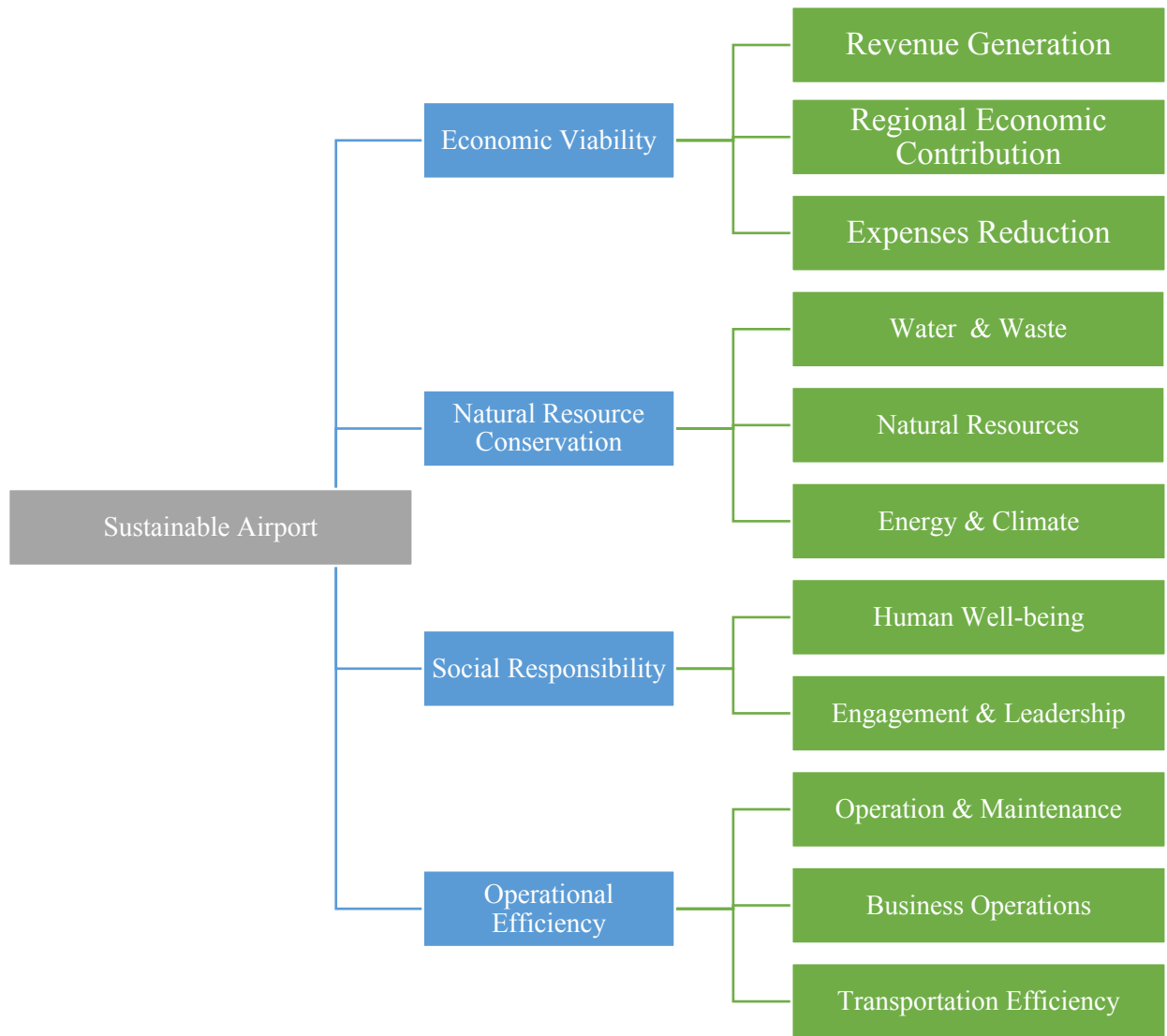


Figure 2-1 Airport Sustainability Goal Categories

2.2.1 Economic Viability-related Metrics

According to GRI (2009), economic performance indicators represent the impact each sector has on its stakeholders' economic condition, as well as domestic, national, and/or international level economic systems. For commercial airports, economic viability can be achieved through revenue generation, cost reduction, and long-term investment [ACRP 66]. Because the facilities within airport terminals and customer composition are different for primary commercial service airports (including large, medium, and small hub airports designated by FAA) vs. non-hub commercial service airports and general aviation (GA) airports, the ways of generating revenues could vary, so the sustainability metrics and associated measurements would be different as well. The following bullets assemble the specific sustainability measures from the reports reviewed; some focus on large, medium, or small hub commercial service airports and some on non-hub commercial airports and GA airports.

Summary of Economic Viability-related Performance Metrics from Literature Reviews

Revenue Generation

- Number of new non-aeronautical businesses attracted to the airport in each calendar year.
- Non-aeronautical revenue at airport as percentage of airport's total revenue each year.
- Airport revenue from non-passenger-dependent sources (%), such as investment income, industrial development, and other compatible uses of airport-owned land.
- Non-aeronautical operating revenue per enplanement
- Parking revenue to airport per originating passenger
- Parking utilization – average number of parking spaces used, by parking product, during daily peak as percent of total number of parking spaces.
- Concession revenue to the airport per enplanement.
- Rental Car revenue to the airport per destination passenger.
- Percentage of travelers flying from within their local service area (measured through surveys and airline booking data).
- Total number of passengers annually (by type); total number of aircraft movements (operations) and by type of transport (passenger, cargo, general aviation).
- Total amount of cargo tonnage (e.g., metric tons domestic, metric tons international).
- Number of based aircraft.
- Percent of total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening.
- Increased federal grant amount from baseline.
- Increased State grant amount from baseline.
- Increased local subsidies amount from baseline.
- Hangar rental and ground lease income.
- Acres of airport property available to be rented, whether improved or vacant, aeronautical or non-aeronautical, rented or not rented currently.
- Acres of airport property currently being rented.
- Debt service as percent of operating revenue

Expense Reduction

- Cost per enplaned passenger (CPE).

- Total operating expense.
- Total operating costs per enplanement passenger
- Total non-operating expense.
- Bond rating.
- Total airport debt per enplanement.
- Debt service coverage ratio – net revenues as defined in an airport’s bond ordinance divided by principal and interest requirements for fiscal year.
- Contract services cost as percent of total operating cost, such as police and fire.

Regional Economic Contribution

- Direct jobs created by airports.
- Indirect jobs created by airports.
- Percent of Disadvantaged Business Enterprise (DBE) business over total contract.
- Regional impact of air cargo operations measures regional economic impact of air cargo operations in terms of total employment and revenue generated.

2.2.2 Natural Resource Conservation-related Metrics

According to the International Organization for Standardization (ISO, 1999), environmental performance and environmental reporting is defined as “the result of an organization’s management of its environmental aspects” (ISO, 1999). It addresses a sector’s influences on “living and non-living natural systems, including ecosystems, land, air, and water” (GRI, 2009). An environmental report outlines and tracks an organization’s environmental performance indicators, which include an evaluation of the company’s inputs and outputs as well as the accompanying environmental impact. Airports have the potential to affect the environment through, for example, use of resources, such as energy and water, or via pollution generation in the form of emissions and noise. The following bullets assemble the metrics used for measuring environmental-related impacts of airports.

Summary of Natural Resource Conservation-related Performance Metrics from Literature Reviews

Water & Waste

- Total volume of water used by airport (water footprint), per year.
- Total volume of water (in terminal) used per passenger, per year.
- Total volume of irrigation water used per total landscape area.
- Total permeable area at site, with specific targets to be developed on site-specific basis.
- Percent of total permeable landside surface area.
- Potable water consumption in kgal.

- Pounds of Municipal Solid Waste (MSW) sent to landfill per year (i.e., not recycled or reused).
- Pounds of Municipal Solid Waste (MSW) generated per passenger per year and disposed of at a landfill.
- Pounds of recyclables per passenger.
- Presence of airport recycling program.
- Waste diversion rate (total recyclables divided by total waste).
- Total hazardous waste produced (tons or gallons).
- Amount of hazardous materials disposed of or recycled (tons or gallons).
- Amount paid for hazardous materials such as solvents, oil, etc.

Natural Resources

- Number of damaging wildlife strikes per 100,000 movements.
- Number and amount of spills annually.
- Percent of total airport landside surface area covered by permeable materials.
- Airside storm water quality; performance evaluated and points awarded based on number of performance actions pursued that address, for example, deicing fluid management, designated deicing and vehicle washing areas, water filtration systems, biological treatment, and runoff capture, among others beyond compliance standards.
- Heat island reduction measurements; performance evaluated and points awarded based on number of performance actions pursued that address, for example, high solar reflectance and high albedo building and paving materials, increased vegetation and green roofing, and increased shade and covering.

Energy & Climate & Air Quality

- Total onsite electricity consumption measured in kWh.
- Total onsite electricity consumption (kWh) per passenger.
- Percentage of gates offering connection to terminal power and providing pre-conditioned air.
- Percentage of annual electricity consumption derived from onsite renewable energy sources.
- Natural gas consumption (therms).
- Amount of unleaded gasoline and/or diesel fuel used for non-aeronautical vehicles (gallons).
- Total renewable electricity produced on property or from utility offsets (kWh).
- Total GHG emissions measured in mt CO₂e (Scope 1, 2 and 3, measured in metric tons of carbon dioxide equivalents (mt CO₂e)).
- GHG emissions (Scope 2) measured in mt CO₂e/sq ft.

- Total GHG emissions measured in mt CO₂e/passenger.
- Number of hybrid rental cars.
- Indoor air quality improvement.
- Alternative vehicle fuels, percent of total fleet fuel energy purchased annually derived from alternative sources (as portion of total cost or energy content of fuel/electricity purchased); energy content converted to British thermal units (Btu); purchased fuel/electricity assumed to be consumed in that same year; electric vehicle charging requires dedicated metering.
- GSE equipment improvements, usage of alternately-fueled Ground Service Equipment (GSE) (% of total GSE).
- Usage of preconditioned air units (PCA).
- Airside equipment energy use; performance evaluated and points awarded based on number of performance actions, for example, vehicle idling, high-efficiency equipment procurement, maintenance and repair schedules, and right-sized vehicle planning, among others.

2.2.3 Social Responsibility-related Metrics

Airports are visible and valued gateways for the community. It is important to promote the value of an airport and improve relations with the local community and airport users. The following bullets summarize the social-related metrics from reviewed reports.

Summary of Social Responsibility-related Performance Metrics from Literature Reviews

Human Well-Being

- Number of security breaches or violations to air operation area.
- Number of environmental notices of violation annually.
- Noise complaints (each individual call, not each household).
- Non-noise related complaints, such as temperature, service, comfort, etc.
- Average time to respond to community complaints.
- Noise – number of homes subjected to noise resulting from aviation activities of 65 dBA DNL or above.
- Number of health and wellness clinics.
- Aircraft Rescue and Fire Fighting (ARFF) responses within mandated response times (%), percent of ARFF responses to emergencies within mandated response times.
- Percent of airport medical emergency responses within established standards.
- Lost work days from employee accidents and injuries.
- Number of performance reviews over time for total work force.
- Number of labor grievances.

- Total employee injuries
- Customer service improvement, number of airport service-related complaints

Engagement & Leadership

- Number of “likes” or “follows” for airport’s presence on social media platforms (e.g., Facebook, Twitter, Instagram, etc.).
- Hours of internship time.
- Number of community events held to inform stakeholders about airport and its sustainability efforts.
- Sustainability recognition; notice for existing activities such as employee training, raw water re-use, xeriscaping, etc.
- Airport use of Internet media or social media to update public on airport matters.
- Number of workforce development training sessions on airport’s goals, sustainability initiatives, incentives, and employee role in achieving goals.
- Number of employees attending annual workforce development training sessions.
- Number and frequency of customers surveyed.

2.2.4 Operational Efficiency-related Metrics

Generally, airport operations include aircraft and vehicle movement as well as construction and maintenance. Operational efficiency can take many forms depending on the type of airport. For large, medium, and small hub airports, operational efficiency could be achieved through improvement of daily operations, such as efficient aircraft and vehicle operation and economically responsible facility operations and maintenance. However, non-hub and GA airports are especially reliant upon implementation of special projects, such as installation of LED lighting, to increase their operational efficiency (ACRP, 2015). This approach is crucial, as these measures directly translate into TBL savings for airports that would otherwise be limited by significantly less daily operations.

Summary of Operational Efficiency-related Performance Metrics from Literature Reviews

Operations & Maintenance

- Total operation and maintenance cost per enplanement passenger.
- Operation and maintenance costs per terminal square foot.
- Two tiers starting with lower points: 1) percent of total building space that achieves self or second-party verified sustainable performance guidelines, and 2) percent of total building space achieving third-party verified green certification – e.g., LEED, Green Globes, Envision™, etc.
- Construction waste diversion percent of total construction and demolition waste diverted from landfill or incinerator, in tons or cubic yards.

- Gate utilization, average number of flight departures per gate per day, measured separately during weekdays and weekend.
- Practical hourly capacity, average number of operations that can be performed in one hour on runway with average delay per operation of four minutes.
- Average time to taxi from gate to the runway end during peak periods compared with unimpeded taxi time.
- Percent of runway/taxiway maintenance cost of total airport maintenance cost.
- Maintenance cost per square foot of terminal.
- Percent of jet bridge and airport vehicle maintenance cost of total airport maintenance cost.
- Number of system failures.
- Duration of system failures (h).
- Preventive maintenance costs compared to non-preventive maintenance costs.
- Number of successful maintenance inspections.
- Average maintenance response time.
- Maintenance cost per parking space.

Transportation Efficiency

- Reduced roadway or curbside congestion; performance evaluated and points awarded based on reduced travel or curbside waiting.
- Improvement of intermodal transportation access, number of intermodal transportation modes, and percentage of enplanement passengers with each transportation mode.
- Air travel delay reduction, minutes of delay per passenger compared with baseline.
- Alternative passenger transportation, for example, parking incentives and infrastructure for alternative, HOV, low-emitting, and pedestrian forms of passenger transportation.
- Alternative employee commute, percent of employee alternative commutes versus total commutes by all full- and part-time employees.
- Frequency of ground transportation service (e.g., shuttle service).

Business Operations.

- Revenue from food and beverage per enplanement passenger, revenue from general merchandise per enplanement passenger, advertising revenue per square foot.

2.3 AIRPORT SUSTAINABILITY REPORTS

2.3.1 ACRP Report 119 (ACRP, 2014), “Prototype Airport Sustainability Rating System— Characteristics, Viability, and Implementation Options”

ACRP Project 02-28, Airport Sustainability Practices: Tools for Evaluating, Measuring, and Implementing, aimed at developing a prototype airport sustainability rating system to help airports and stakeholders evaluate sustainability performance. The outcomes of this project are summarized in ACRP Report 119.

The report reviewed airport and some non-airport sustainability practices, performance metrics, and rating systems. In addition, the research process included an intensive stakeholder outreach effort to solicit opinions from a range of aviation industry representatives from airports, airlines, consultant companies, and government representatives. The first phase included an online survey, interviews, and teleconferences conducted to collect opinions on the challenges and potential improvements of airport sustainability. The second phase of interviews and teleconferences was aimed at obtaining feedback for the development of a decision tool.

Stakeholder outreach efforts led to some critical findings that guided the airport sustainability research effort. Survey results indicated that many participants valued an airport-specific standardized rating system. Participants also believed that the number of passengers and FAA categories of airports are the best indicators of airport size and complexity.

ACRP 119 presents a rating system for airport sustainability based on information from the following sources:

- GRI: Sustainability Reporting Guidelines 3.1 and AOSS (Version 3.1/AOSS Final Version)
- LEED: 2009 Guidelines for Existing Buildings and Operations Maintenance
- LAWA: Sustainable Airport Planning, Design and Construction Guidelines, Version 5.0 (LSAG)
- Sustainable Design Manual, 2003; Sustainable Airport Manual 2009–2011 (Current Version 2.1, CDA)
- PANYNJ: Sustainable Infrastructure Guidelines (Part 2)
- Sustainability Tracking Assessment & Rating System (STARS) (Version 1.2 Technical Manual)
- Institute for Sustainable Infrastructure (ISI): A Rating System for Sustainable Infrastructure
- Envision™ Sustainability Rating System (Version 2.0)

2.3.2 CDOT (2016), General Aviation Airport Sustainability Program Sustainability Tool Kit

The Colorado Department of Transportation's (CDOT) Division of Aeronautics developed a Web-based tool kit that provides online guidance, instruction, and a simple process for GA airports to create their own Airport Sustainability Plan. The tool kit incorporates the four categories specified by the EONS approach and uses information collected through three case studies of GA airports in Colorado. The tool provides users with functions to add relevant baseline data for an airport's profile, create a Sustainability Mission Statement, select Sustainability Goals and Initiatives in the areas that are most important to the airport, identify staff for implementing the plan, and tracking and reporting progress.

2.3.3 ACRP Project 02-30: Enhancing the Airport-Industry SAGA Website

The Sustainable Aviation Guidance Alliance (SAGA) website, launched in 2009, records and manages a collection of best practices for sustainability initiatives from airports in the U.S., Canada, and other countries worldwide. It is a comprehensive database with a guidance document that can be used by airport operators for planning, implementing, and maintaining sustainability programs. ACRP 02-30 aims to improve and enhance the SAGA database. According to the description of project progress, ACRP 02-30 involved the development of detailed computation methods for each sustainability metric and listed measures that could help improve each metric. The project is complete, but the report and improved features of the SAGA website have not yet been published. The progress of the project outcomes will be monitored and explored to determine how the findings can be applied within the scope of this research.

2.3.4 ACRP Report 19, "Developing an Airport Performance-Measurement System," and ACRP Report 19A, "Resource Guide to Airport Performance Indicators"

ACRP Report 19A is the product of ACRP Project 01-09, which aimed at providing an extensive and categorized sets of airport performance indicators (API) for airport performance benchmarking on executive level or departmental management level. A total of 29 core and 132 key APIs were identified and categorized into 23 functional areas together with 659 other APIs that serve as additional APIs below management level. The core and key APIs listed in the report are explained by function area. Because the study provided a comprehensive indicator database for the airports to self-benchmark or peer-benchmark performance regardless of airport type, airport directors and managers need to develop their own sets of APIs derived from the report. Among the core and key APIs in 23 functional areas, some can be applied to sustainable airport metrics—for example, financial-related APIs, operation-related APIs, human resources-related APIs. Environment and natural resource-related measurements are less addressed in this study.

ACRP Report 19 is the product of ACRP Project 1-06 and provides step-by-step guidance on how to develop and implement an effective airport performance measurement system. The report proposes a performance-measurement system/framework development process that suits all airports of all sizes. Airport

managers can follow the five steps in this report to develop their own performance measurement system. The framework starts with the task of determination of short-term and long-term objectives that will be used as airport performance measurements and targets. Then, a reporting structure is created with specific responsibilities within each department. Finally, the framework evaluates the results and uses the performance data obtained to initiate a new performance evaluation cycle. The report provides a compendium key performance indicators (KPIs) collected from U.S. airports for reference. Useful KPIs are used in this study in Chapter 2.2.

2.4 AIRPORT SUSTAINABILITY LITERATURE SUMMARY

There is extensive literature on airport sustainability. Considering the scope of this research project, the literature review focuses exclusively on identifying sustainability performance metrics. Overall, the metrics can be distinguished as objective and subjective metrics. Objective metrics are based on historical data collected from economic, environmental, social, and operational aspects. This report summarizes the metrics that fall under these categories. Alternatively, subjective metrics are based on user perception. Comparing the two different metrics provides a method of validating the effectiveness of measures for improving objective sustainability measures. Thus, in addition to the objective metrics, in the proposed tracking/monitoring system, a user survey questionnaire was designed for implementation by potential users to collect subjective opinions of airport sustainability performance.

In addition, it is recognized by aviation stakeholders that different airport types should have customized sustainability performance metrics; some reports/tools reviewed target specific types of airports. In the outreach task for this study, a survey was conducted to obtain opinions from different types of airports in Florida to help determine suitable metrics for each type of airport.

CHAPTER 3 STAKEHOLDER SURVEY

The Florida Department of Transportation (FDOT), in association with the University of South Florida (USF), developed an industry survey to support development of a sustainability performance tracking and monitoring system. Tracking and monitoring sustainability performance is an essential component of sustainability programs and serves as a foundation for continuous improvement at airports. Survey results can assist in the development of a Florida Airport Sustainability Performance Tracking/Monitoring system that can be efficiently used by state aviation stakeholders.

The survey was initiated on August 2, 2017, and was completed on August 23, 2017. The following describes the results of the survey.

3.1 OVERALL OBSERVATIONS

- More than 50% of airports in Florida have a sustainability program or policy.
- 41% of airports do not track sustainability performance regularly.
- Top categories tracked but not reported included:
 - Commercial Service Airports—Energy/Air Quality; Social; Environmental; Water Conservation; Materials & Resources; Indoor Environmental Quality¹
 - General Aviation Airports—Environmental; Economics/Organizational; Social
 - Consultants/Tenants—Environmental; Water Conservation; Materials & Resources; Indoor Environmental Quality²
- Top categories tracked *and* reported include:
 - Commercial Service Airports—Economics/Organizational; Environmental; Social
 - General Aviation Airports—Environmental; Economics/Organizational; Water Quality; Materials & Resources; Social³
 - *Consultants/Tenants*: Environmental; Social; Economics/Organizational⁴
- Majority of airports track sustainability initiatives via:
 - Visual observations
 - Monitoring programs
 - Stormwater pollution prevention programs

¹ Environmental, Water Conservation, Materials & Resources, and Indoor Environmental Quality received same percentage of responses at 43%.

² Environmental, Water Conservation, Materials & Resources, and Indoor Environmental Quality received same percentage of responses at 33%.

³ Water Conservation, Materials & Resources, and Social received same percentage of responses at 6%.

⁴ Environmental, and Social received same percentage of responses at 67%.

- Wildlife hazardous management programs
- Surveys
- Activity reports
- Utility bills/metering
- Auditing
- Financial reporting software
- Social media
- Internal/external meetings

3.1.1 Respondent Profiles and Airport Information

In total, 65 individuals participated in the survey.⁵ Respondents were asked to identify themselves as one of the following:

- Airport (administration/finance, operations/maintenance, capital programs, environmental, legal, or other)
- Airport Tenant (airline, rental car, concessions, federal aviation administration, transportation security administration, immigration and customs enforcement, other federal government, state government, municipal government, or other)
- Airport Industry Organization (Airport Consultants Council, Airports Council International, American Association of Airport Executives, Air Transport Association, or other)
- Consulting Firm (planning, architecture/design, environmental, financial, legal, engineering, construction, or other)

Figure 3-1 shows the types of survey participants by the above categories. The majority of respondents were Airports, followed by Consultants, and Tenants. No respondents identified as Airport Industry Organization.

⁵ Environmental, Water Conservation, Materials & Resources, and Indoor Environmental Quality received same percentage of responses at 33%.

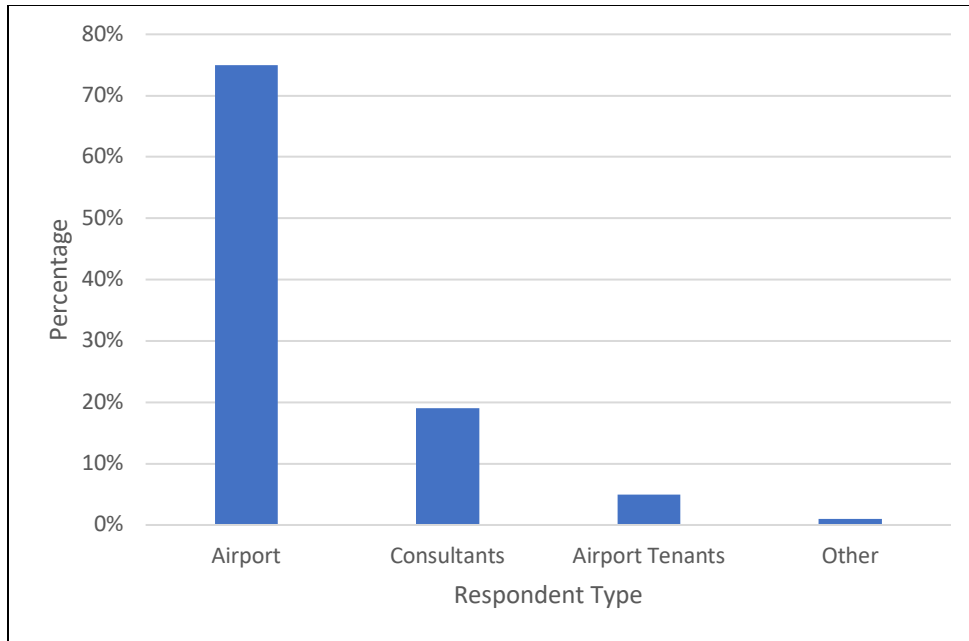


Figure 3-1 Types of Survey Respondents

Airport respondents were further divided into Commercial Service and General Aviation. **Figure 3-2** shows the breakdown of airport respondents' primary function of the airport (Commercial Service, General Aviation, Cargo, Military, Other). No airport respondents identified themselves as Cargo or Military. Consultants, Tenants, and other respondents were asked to answer survey questions based on an airport in which the company has provided consulting services, works at, or conducts work for.

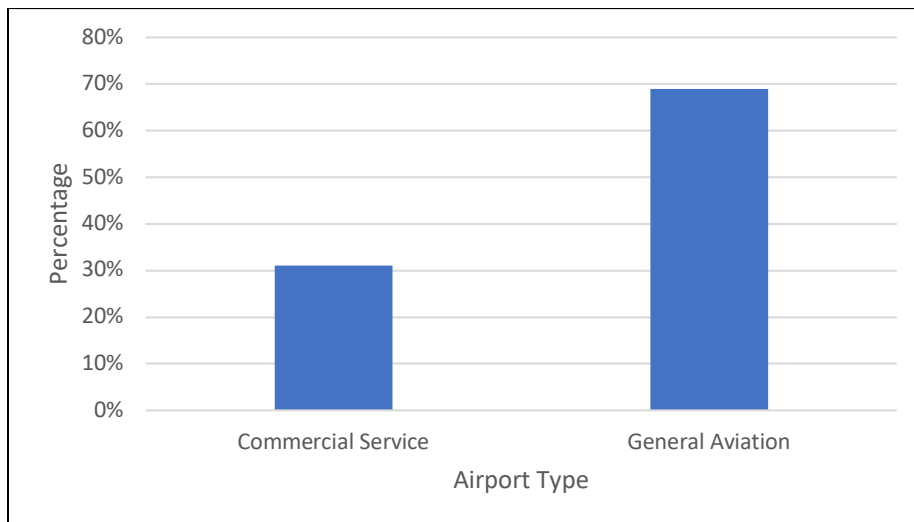


Figure 3-2 Airport Respondents (Commercial Service vs. General Aviation)

Figure 3-3 shows the airport types for each Consultant/Tenant/other respondent. In total, 12 consultants, 3 tenants, and 1 “other” responded to the survey; 7 responded with an airport.

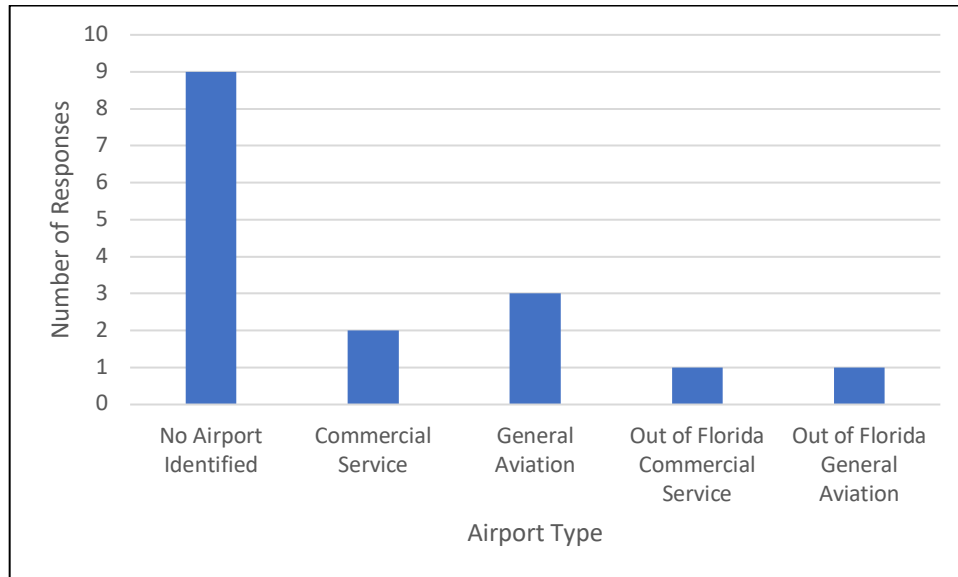


Figure 3-3 Consultant/Tenant/Other Respondents Airport Type

Respondents were asked to provide the number of Full Time Equivalent (FTE) airport staff, excluding tenants. In total, 56 participants responded, with a majority of responses identifying 1–19 FTE employees (see Figure 3-4).

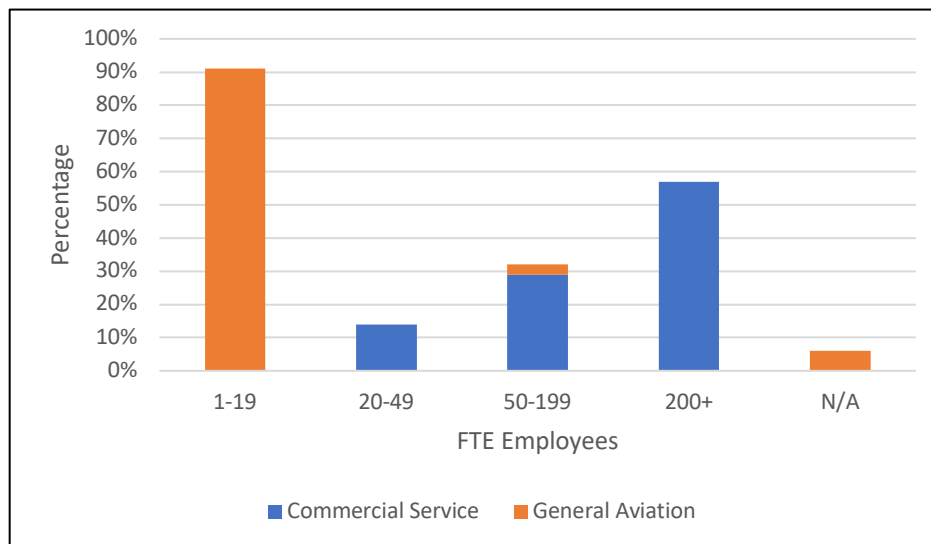


Figure 3-4 Full-time Equivalent Employees

Figure 3-5 demonstrates the number of based aircraft by type of respondent. The majority of General Aviation and Commercial Service airports have more than 150 based aircraft.

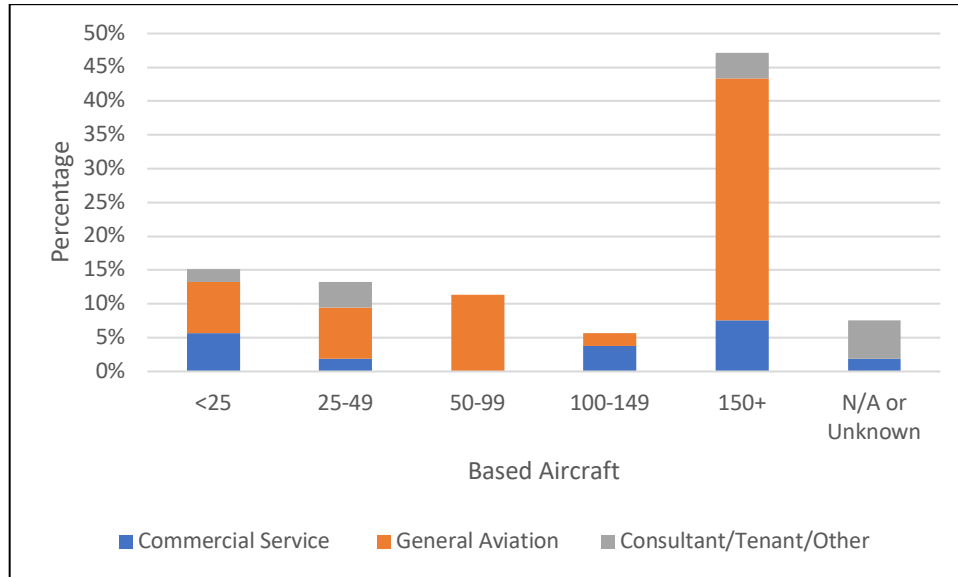


Figure 3-5 Based Aircraft by Airport Type

The total number of annual airport passengers and operations is based on the airport type. **Table 3-1** shows the total number of respondents by the National Plan of Integrated Airports Systems (NPIAS).

Table 3-1 Airport Respondents NPIAS Categories

NPIAS Classification	Count/Frequency
Large hub	3
Medium hub	4
Small hub	4
Non-hub	2
General Aviation	25
Reliever	9

3.2 SUSTAINABILITY-RELATED RESPONSES

Participants were asked to identify if the airport has a sustainability program or policy in place. In total, 55 participants responded, with the majority confirming that their airport had a sustainability program or policy (see **Figure 3-6**).

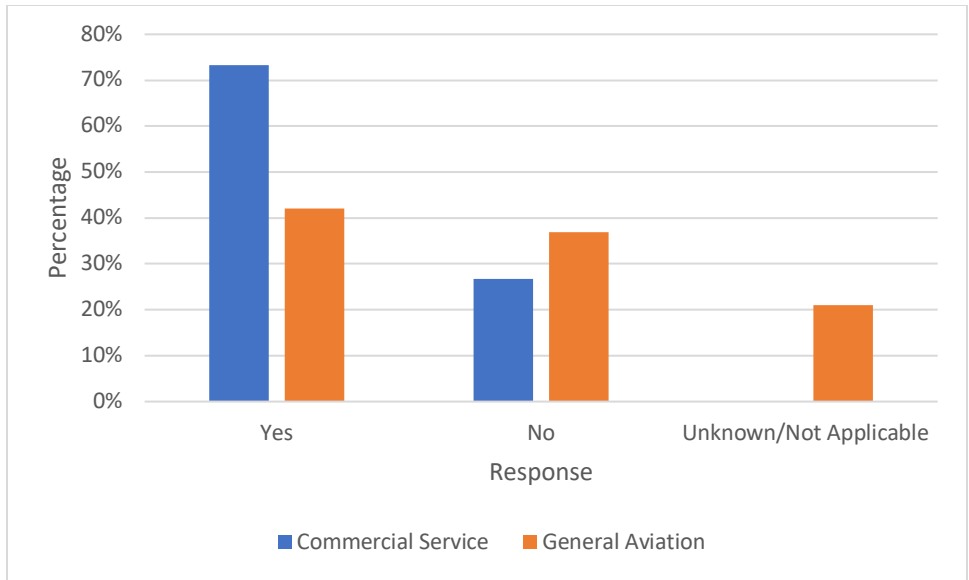


Figure 3-6 Airport Sustainability Program

Figure 3-7 shows the types of challenges each airport type faces when implementing sustainability practices. Respondents identified funding constraints as the largest challenge when implementing sustainability practices.

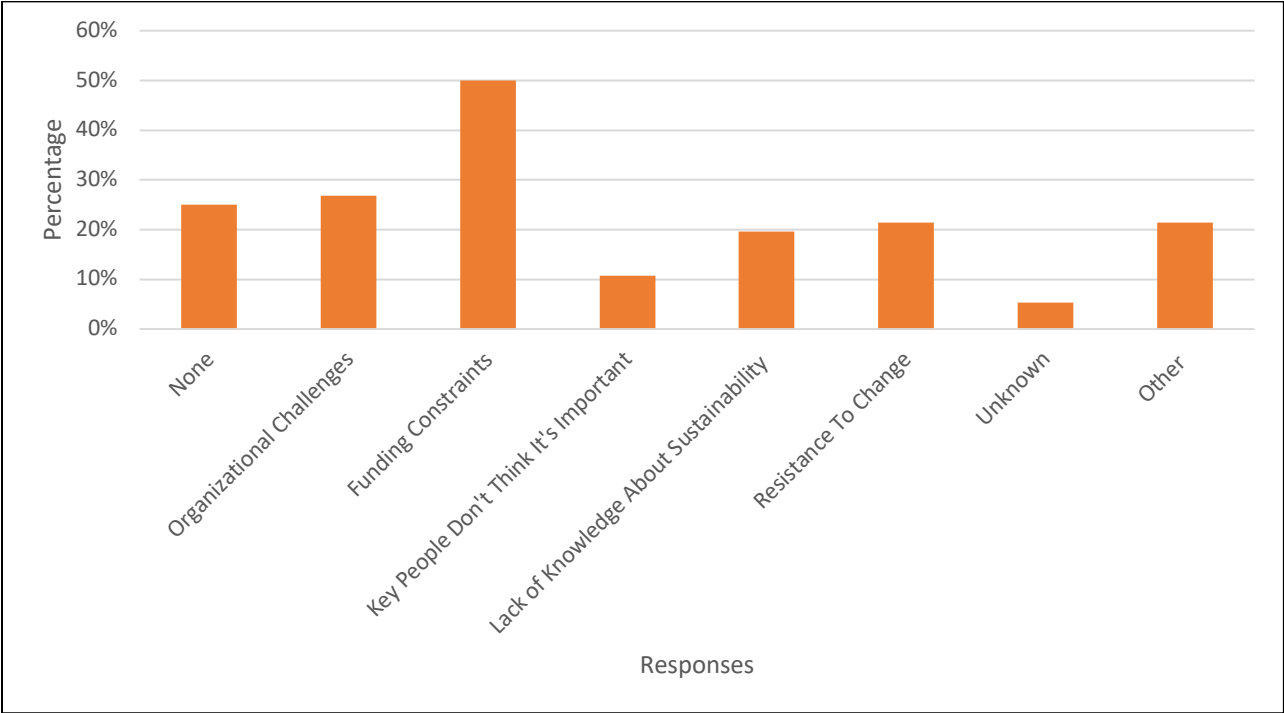


Figure 3-7 Sustainability Implementation Challenges

3.3 SUSTAINABILITY PERFORMANCE TRACKING

In total, 41% of respondents reported not tracking sustainability performance regularly. A larger number of Commercial Service airports (50%) tracked sustainability performance than General Aviation airports (29%). **Figure 3-8** shows the distribution of respondents that tracked sustainability regularly.

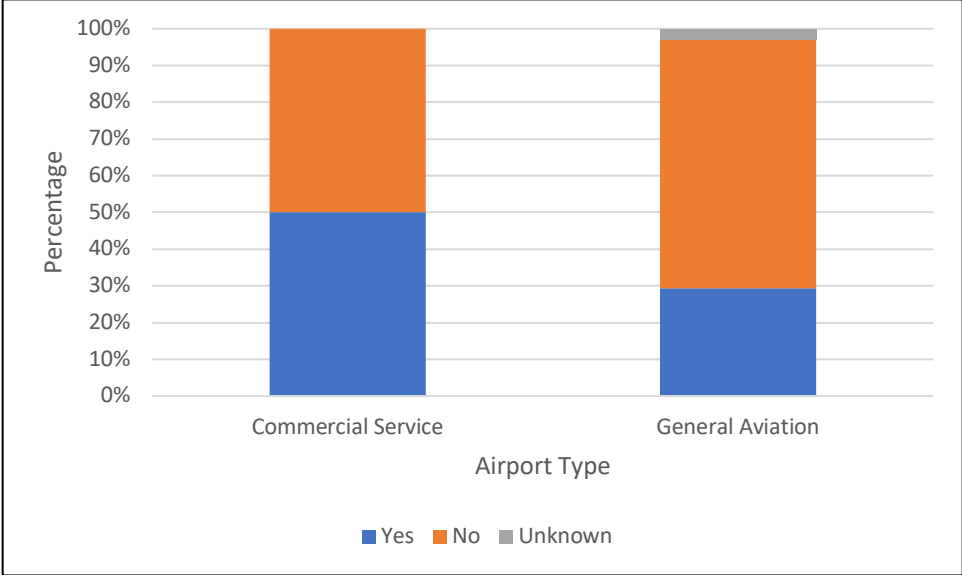


Figure 3-8 Airport Tracking Sustainability

Respondents were asked to indicate if sustainability performance indicators were tracked and reported to assess progress on sustainability. Responses based on the following categories were indicated:

- Environmental Considerations – storm water and water quality, vegetation and wildlife management
- Airport Accessibility – alternative transportation and access to public transit
- Energy and Air Quality – energy efficiency and management, renewable energy, commissioning, and greenhouse gases
- Water Conservation – water quality/quantity impacts from storm water runoff, sediment runoff from construction areas, and total volume of water used
- Materials and Resources – waste minimization and source reduction, sustainable purchasing policies, and hazardous waste management and reduction
- Indoor Environmental Quality – indoor air quality practices, day lighting, thermal comfort and control, and noise practices
- Economic/Organizational – economic performance or impact, market presence, return on investment and training

- Social – fair employment and diversity, equal opportunity, non-discrimination, employee and passenger education, and occupational health and safety

3.3.1 Environmental Considerations

In total, 28 participants responded to tracking environmental sustainability indicators. A majority of respondents (39%) tracked some/all environmental considerations but were not reporting; 57% of Commercial Service and 22% of General Aviation airport respondents responded to tracking and reporting some/all environmental indicators. The respondent that selected “Other” noted that environmental studies were conducted within the airport’s Master Plan.

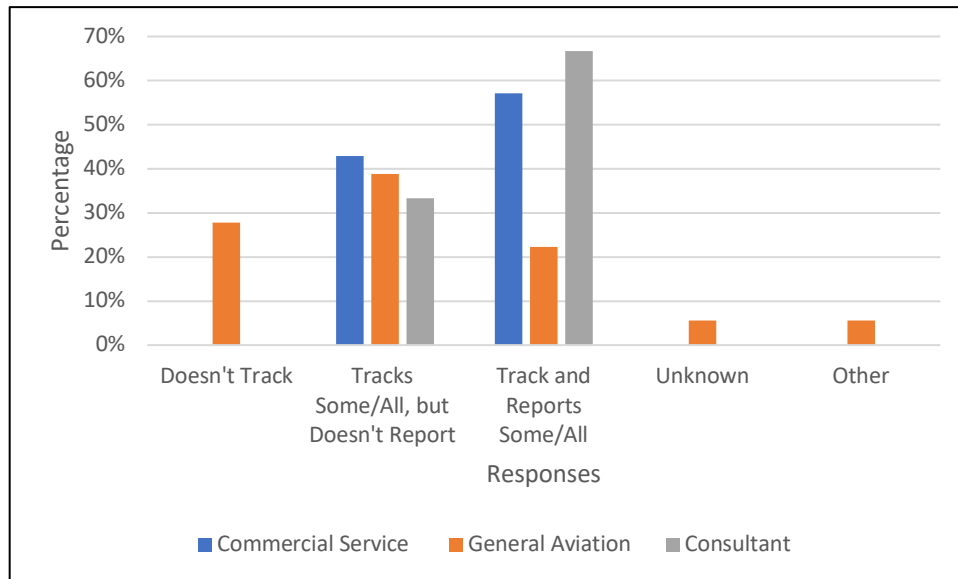


Figure 3-9 Environmental Considerations Tracking/Reporting

Table 3-2 shows the responses for how each type of airport tracks noise, storm water/water quality, and vegetation/wildlife management.

Table 3-2 How Airports Track Environmental Considerations

Noise	Storm Water and Water Quality	Vegetation and Wildlife Management
Consultants/Tenants/Other		
<ul style="list-style-type: none"> • Noise complaints tracked, but not part of sustainability program • Monitor instrumentation on airport and in surrounding area 	<ul style="list-style-type: none"> • Deicing amounts tracked annually • Automated water quality and flow stations • Visually 	<ul style="list-style-type: none"> • Wildlife strikes and taking tracked, but not part of sustainability program • By consultant • Visually

General Aviation Airports		
<ul style="list-style-type: none"> • Manually • Airport Manager tracks and measures • Noise monitoring program • ANOMS and VECTOR • Record night operations and noise complaints • Airport Noise Manager • Complaint logs 	<ul style="list-style-type: none"> • Quarterly inspections • Airport Engineer • Implementation of storm water pollution prevention plan • Manually • Storm Water Department and Water Department • Follows storm water Plan and Permitting • Water Quality Monitoring • Storm Water Pollution Prevention Plan (SWPPP) • periodic sampling • Airport Environment Specialist • City Utilities department monitors and documents 	<ul style="list-style-type: none"> • As needed basis • Implementation of wildlife hazard management plan • Manually • Vegetation and Storm Water Department • Follows plans in place with River Management District and County Wildlife Commission • Wildlife biologist on staff • Not tracked by General Aviation Airport in system • Wildlife Hazard Management Plan • CFR Part 139 approved wildlife management program • Airport Wildlife Manager • Report wildlife strikes as necessary • Completes hazard assessment, trapping activities on as-needed basis
Commercial Service Airports		
<ul style="list-style-type: none"> • ANOMS data • Noise comments and noise studies • Noise Abatement Task Force • Maintain database of noise complaints • Noise complaints 	<ul style="list-style-type: none"> • Tracked monthly and per NPDES requirements • Permit compliance and water quality sampling • Through County • SWPPP Program at all authority airports; quarterly reporting and annual audits • Maintain SWPPP • Track storm water only; conduct quarterly maintenance • Annual analysis/NPDES permit 	<ul style="list-style-type: none"> • Tracked monthly and per FAA requirements; Wildlife Biologist onsite • Exotic control measures and wildlife monitoring • Contract with Environmental Services • Wildlife consultant manages program; wildlife numbers collected monthly at all authority airports and studied for trending and solutions • Maintain wildlife database • Wildlife Plan; continuous monitoring • Daily wildlife observation reports and strikes

3.3.2 Airport Accessibility

A total of 27 participants responded, with a majority of respondents (63%) *not* tracking or reporting airport accessibility. An equal number of respondents of Commercial and General Aviation airports responded to tracking and reporting some/all, but not reporting airport accessibility. No General Aviation airports tracked and reported some/all airport accessibility.

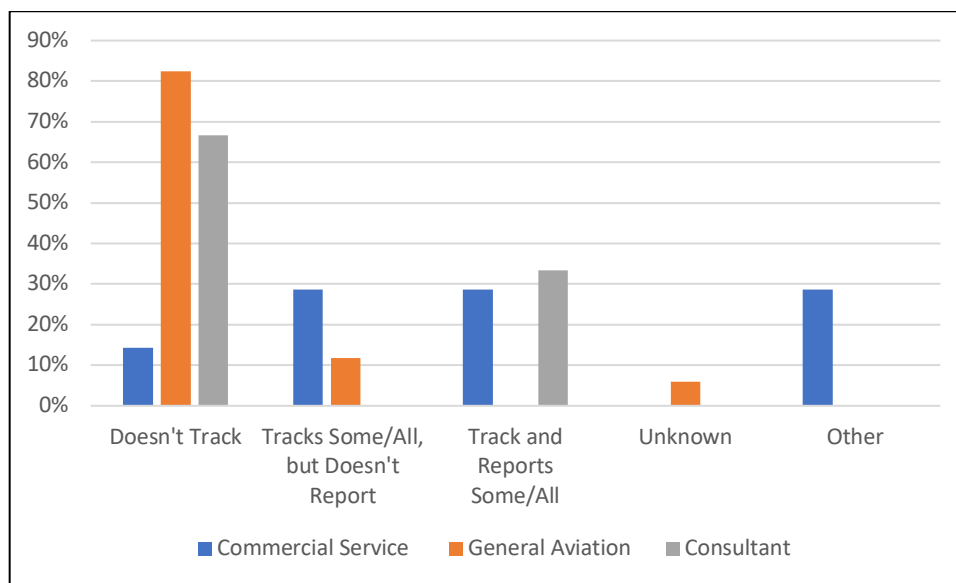


Figure 3-10 Airport Accessibility Tracking/Reporting

Table 3-3 shows the responses for how each airport tracks alternative transportation, parking availability, and ridership by mode.

Table 3-3 How Airports Track Accessibility

Alternative Transportation	Parking Availability	Ridership by Mode
Consultants/Tenants/Other		
<ul style="list-style-type: none"> Consultants; Disability Advisory Board Carpooling customers to events 	<ul style="list-style-type: none"> Concessionaire reports, revenues, costs, automated counters Number of guests and students arriving and parking 	<ul style="list-style-type: none"> Department of Transportation, Airport, Airport police, consultants Mostly single in personal cars
General Aviation Airports		
<ul style="list-style-type: none"> Community Development Department 	<ul style="list-style-type: none"> Ample Self-monitor available public parking Tracking completed as needed Airport Manager tracks 	<ul style="list-style-type: none"> Rental car revenues
Commercial Service Airports		

<ul style="list-style-type: none"> • Annually • Most tracked with AVI or geofence through Gatekeeper system • Public transportation (bus), Uber and Lyft, bike racks • Bi-annual activity reports 	<ul style="list-style-type: none"> • Manually • Tracked through Parking Revenue Control System (PARCS) • Parking manager tracks • Daily counts of parking spaces available • Automated signage • Daily visual checks of parking lots 	<ul style="list-style-type: none"> • DOT and in-house transportation surveys • No tracking most categories; on-demand ridership available through taxi concessionaire daily dispatch reports • Some captured in Annual DRI Report • Tag inventory for location of passenger • TNC activity reports
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3.3.3 Energy and Air Quality

In total, 28 participants responded, with a majority (57%) not tracking or reporting energy or air quality performance; 78% of General Aviation airport respondents did not track energy and air quality performance; 71% of Commercial Service airports tracked and reported some/all but did not report energy and air quality performance. No General Aviation airports tracked and reported some/all energy and air quality performance.

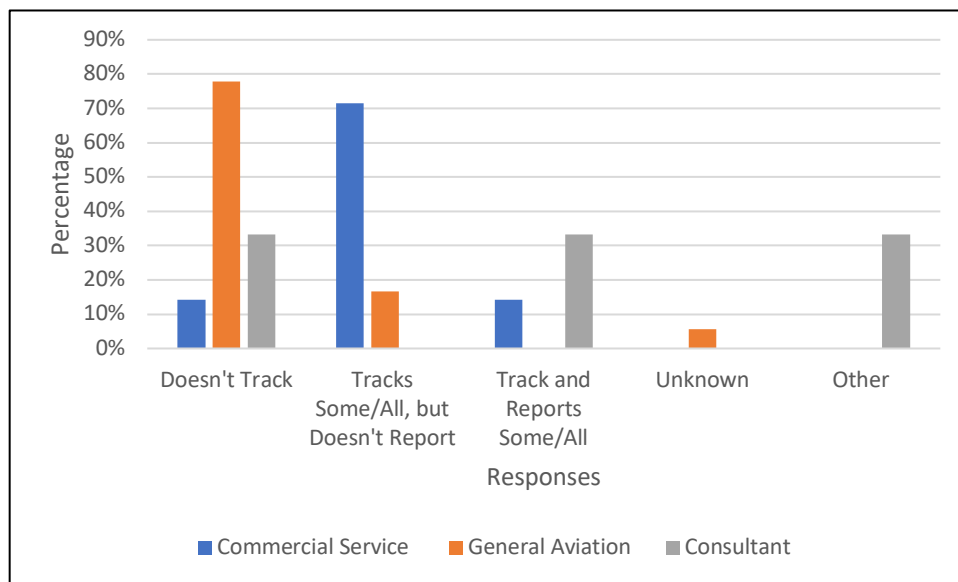


Figure 3-11 Energy and Air Quality Tracking/Reporting

Table 3-4 shows the responses for how each airport tracks the intensity of electricity consumption, total natural gas usage, and total greenhouse gas (GHG) emissions.

Table 3-4 How Airports Track Energy and Air Quality

Intensity of Electricity Consumption	Total Natural Gas Usage	Total GHG Emissions
Consultants/Tenants/Other		
<ul style="list-style-type: none"> • KWh measured monthly through utility bills • Metered/monitoring 	<ul style="list-style-type: none"> • Gas bills • Metered 	<ul style="list-style-type: none"> • Air Resources Board, consultant, City
General Aviation		
<ul style="list-style-type: none"> • Review of monthly utility bills • Treasury • Meter readings • Compare usage year-to-year • All utilities tracked monthly by Airport Manager for City-owned structures and airfield lighting 	<ul style="list-style-type: none"> • Gas bill • All utilities tracked monthly by Airport Manager for City-owned structures 	<ul style="list-style-type: none"> • EPA station
Commercial Service		
<ul style="list-style-type: none"> • EnergySTAR portfolio • Utility billing and analysis of meters onsite • Through County • Conducted several studies to increase efficiency and tracked in Sustainability Tracking Program • Electric car charging stations; usage monitored by Parking Management 	<ul style="list-style-type: none"> • Through County 	<ul style="list-style-type: none"> • Utility company provides annual review • Through County • Previously tracked but no longer

3.3.4 Water Conservation

In total, 28 participants responded, with a majority of respondents (57%) not tracking or reporting water conservation performance; 43% of Commercial Service airports tracked and reported some/all but did not report water conservation practices; no General Aviation airports tracked some/all and did not report. Additionally, 43% of Commercial Service airports and 6% of General Aviation airports tracked and reported some/all. One airport respondent that selected “Other” stated that the local utility company enforced water restrictions.

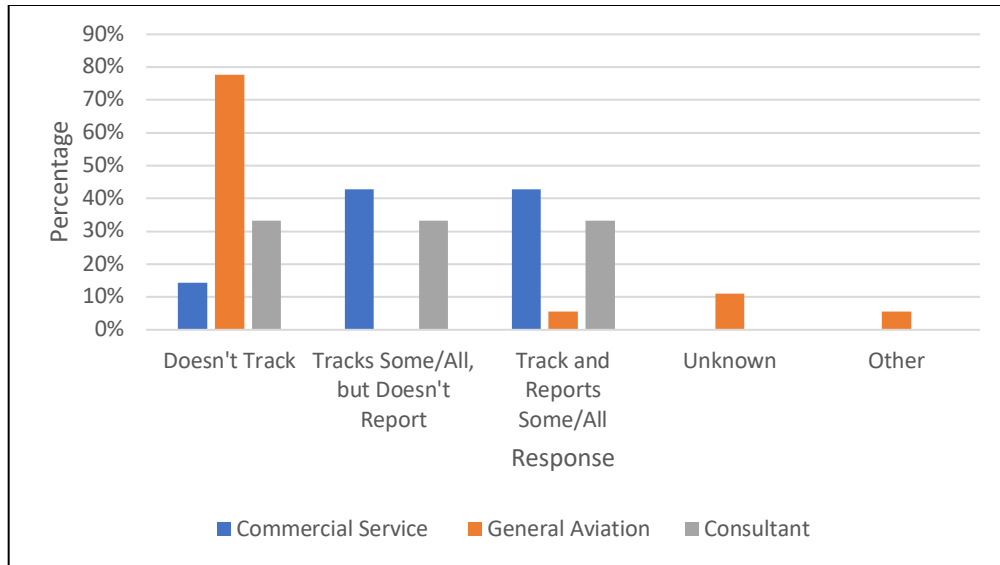


Figure 3-12 Water Conservation Tracking/Reporting

Table 3-5 shows the responses for how each airport tracks water quality/quantity impacts from storm water runoff, sediment runoff from construction areas, and total volume of water.

Table 3-5 How Airports Track Water Conservation Practices

Water Quality/Quantity Impacts from Stormwater Runoff	Sediment Runoff from Construction Areas	Total Volume of Water Used
Consultants/Tenants/Other		
<ul style="list-style-type: none"> Contracted services Monitor runoffs and flood areas 	<ul style="list-style-type: none"> Standard construction BMPs and NPDES permit for erosion and sedimentation control for construction sites Contracted services; contract conditions 	<ul style="list-style-type: none"> Monthly utility bills Metering
General Aviation Airports		
<ul style="list-style-type: none"> Storm water runoff addressed through project design Water quality monitoring program Sampling Airport Environment specialist City Storm Water Department monitors 	<ul style="list-style-type: none"> Airport engineers Silt fencing installed during construction projects Visual inspections Construction contractor responsibility 	<ul style="list-style-type: none"> Manager reviews monthly water bill/invoices Information available but does not track City Water Department monitors
Commercial Service Airports		
<ul style="list-style-type: none"> Monthly monitoring 	<ul style="list-style-type: none"> Weekly monitoring 	<ul style="list-style-type: none"> Monthly monitoring

<ul style="list-style-type: none"> • Water quality sampling and permit compliance • County responsibility • SWPPP Program • storm water; quarterly maintenance/inspection • NPDES permit; annual monitoring/testing 	<ul style="list-style-type: none"> • Construction practices and BMP's • County responsibility • MPDS for Construction-Managed in Engineering Department • Each project must comply with NPDES requirements 	<ul style="list-style-type: none"> • irrigation well pump data • County responsibility • Facilities Manager tracks; also included in Sustainability Program tracking • Sub-metered for RACs • Utility bill
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3.3.5 Materials and Resources

A total of 27 participants responded, with a majority of respondents (52%) not tracking or reporting materials and resources performance; 43% of Commercial Service airports and 12% of General Aviation airports tracked and reported some/all but did not report materials and resources performance. Additionally, 29% of Commercial Service airports and 6% of General Aviation airports tracked and report some/all. One General Aviation airport respondent that selected “Other” noted that recycling and waste was taken to the international airport for proper disposal. Two consultants and one tenant responded to the question.

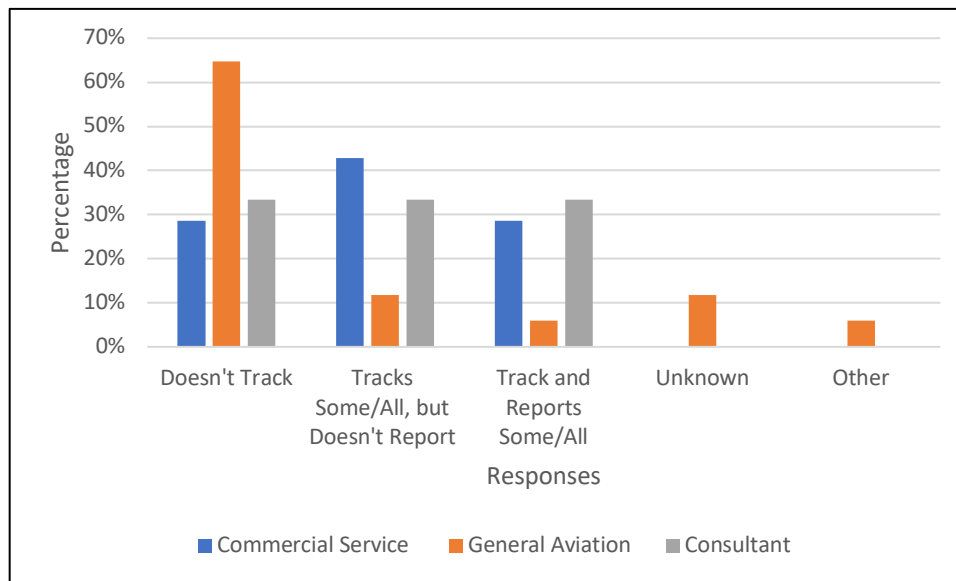


Figure 3-13 Materials and Resources Tracking/Reporting

Table 3-6 shows the responses for how each airport tracks municipal solid waste sent to landfills, recycling and reuse diversion rates, recycling of construction and demolition waste, and composting rates. No respondents identified tracking efforts for composting rates; therefore, it is not shown in the table.

Table 3-6 How Airports Track Materials and Resources

Municipal Solid Waste to Landfills	Recycling and Reuse Diversion Rates	Recycling of Construction/Demolition Waste
Consultants/Tenants/Other		
<ul style="list-style-type: none"> • Monthly collection service invoicing • Weight and number of trucks 	<ul style="list-style-type: none"> • Monthly collection service invoicing (number of roll-off pulls) • By City department 	<ul style="list-style-type: none"> • By contractor according to contract requirement and State law
General Aviation Airports		
<ul style="list-style-type: none"> • Utility service invoice • Review waste pickup frequency • City Solid Waste Department monitors 	<ul style="list-style-type: none"> • Review recycle pickup frequency • All waste recycled and incinerated 	<ul style="list-style-type: none"> • Hauled off property by contractor • Contractor responsibility
Commercial Service Airports		
<ul style="list-style-type: none"> • Monthly invoicing • Solid waste billing • Through County • Facilities Manager; included in Sustainability Program tracking • Monthly bills showing tonnage 	<ul style="list-style-type: none"> • Monthly invoicing • Recycling billing • Through County • Facilities Manager • Monthly bills showing tonnage 	<ul style="list-style-type: none"> • Monthly invoicing • Construction management • Through County • Facilities Manager tracks

3.3.6 Indoor Environmental Quality

A total of 27 participants responded, with a majority of respondents (63%) not tracking or reporting indoor environmental performance; 43% of Commercial Service airports, 6% of General Aviation airports, and one tenant tracked and reported some/all, but were not reporting indoor environmental quality. No Commercial Service or General Aviation airports tracked and reported some/all; however, one Consultant responded that the airport tracked and reported some/all indoor environmental quality. One General Aviation airport respondent that selected “Other” noted the airport did not have buildings on the property.

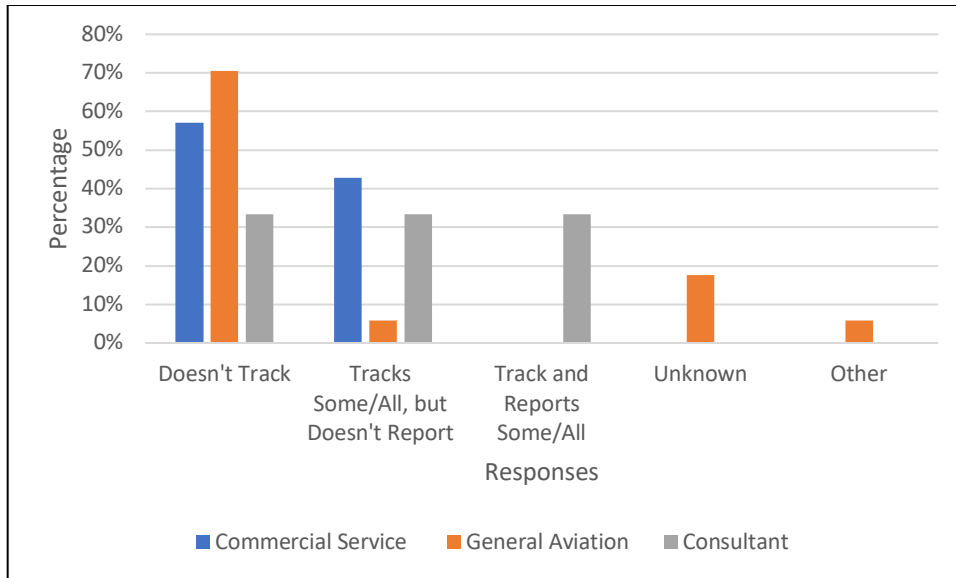


Figure 3-14 Indoor Environmental Quality Tracking/Reporting

3.3.7 Economic/Organizational Performance

A total of 26 participants responded, with a majority of respondents (31%) tracking/reporting some or all economic and organizational performance; 38% of Commercial Service airports and 31% of General Aviation airports tracked and reported some/all, but were not reporting economic/organizational performance. Additionally, 63% of Commercial Service airports and 13% of General Aviation airports tracked and reported some/all.

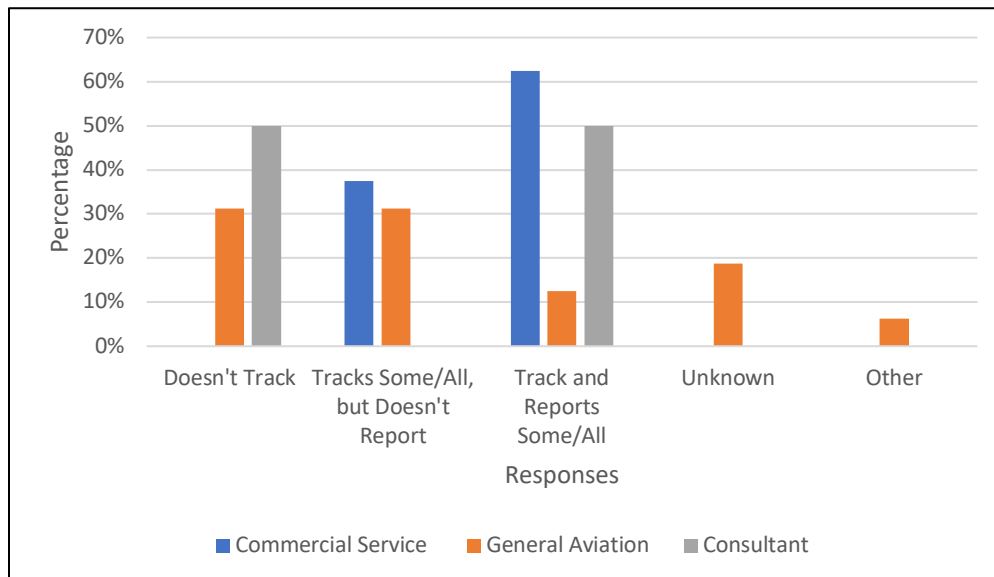


Figure 3-15 Economic/Organizational Tracking/Reporting

Table 3-7 shows the responses for how each airport tracks the number of capital projects that incorporate resilience design and construction standards, airport tenant and operational costs, non-aeronautical revenue generation, and cost per enplaned passenger (for commercial service airports).

Table 3-7 How Airports Track Economic and Organizational Performance

Number of Capital Projects that Incorporate Resilience Design and Construction Standards	Airport and Tenant Operational Costs	Non-Aeronautical Revenue Generation	Cost Per Enplaned Passenger
Consultants/Tenants/Other			
<ul style="list-style-type: none"> • Outside auditor, City auditor, FAA audits 	<ul style="list-style-type: none"> • Airport, independent auditor, airline auditors • Through weekly income/expense reports 	<ul style="list-style-type: none"> • Airport, independent auditor • Through financial records 	<ul style="list-style-type: none"> • Airport, independent auditor
General Aviation Airports			
<ul style="list-style-type: none"> • Tracking spreadsheets • Airport consultant • Quarterly reporting 	<ul style="list-style-type: none"> • Tracking software • Tracking from internal staff as needed • Tracked through annual budget • Airport Manager • Airport operating expenses, none for tenant expenses unless capital improvement • Financial reporting • Monthly reporting 	<ul style="list-style-type: none"> • Tracking spreadsheets • Tracking from internal staff as needed • Tracked through annual budget • Finance Department • FMV appraisal applying cap rate • Financial reporting • Monthly reporting 	
Commercial Service Airports			
<ul style="list-style-type: none"> • Internal software • Construction projects/designs 	<ul style="list-style-type: none"> • Weekly tracking • Agreements with tenants and cost center accounting • Internal software • Finance Department tracks • Monitor airport operational costs via budget • Concessions sub-metered for utilities • Airport financials 	<ul style="list-style-type: none"> • Weekly tracking • 40+ categories through monthly tenant activity reports • Internal software • Finance Department • Monthly tracking • Airport financials 	<ul style="list-style-type: none"> • Payments from signatory airline divided by enplanements • Internal software • Finance Department • Calculated annually • Annual rates & charges • Airport financials

3.3.8 Social Performance Tracking/Reporting

Social performance tracking and reporting includes periodic reporting, participation in communication relations, civic engagement, employee participation in sustainable initiatives, and communication patterns, as well as employee participation in sustainable practices. A total of 25 participants responded, with a majority (28%) reported tracking some social performance but not reporting; 24% tracked and reported some or all, and 24% classified as “Other” without specification; 50% of Commercial Service airports and 25% of General Aviation airports tracked and reported some/all but did not report social performance. Additionally, 50% of Commercial Service airports and 6% of General Aviation airports tracked and reported some/all. It can be observed that commercial service, general aviation, consultant, tenant, and other research candidates, at a minimum, tracked social performance.

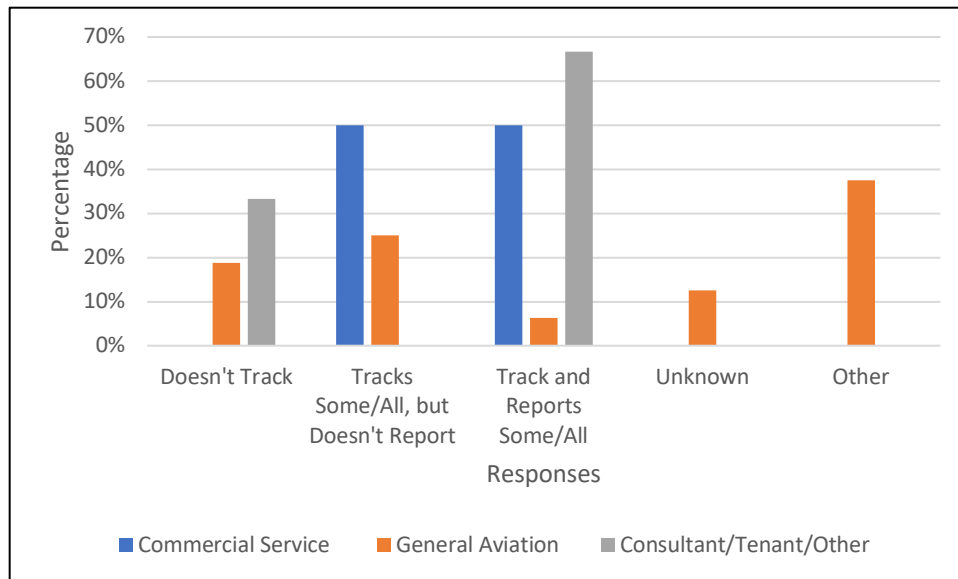


Figure 3-16 Social Tracking/Reporting

Table 3-8 shows the responses for how each airport tracks and reports the varied means airports engage in community relations, employee participation in sustainable initiatives, and communication patterns.

Table 3-8 How Airports Implement Social Tracking and Reporting

Overall Community Relations, Engagement, Communication Patterns	Employee Participation in Sustainable Practices Initiatives
Consultants/Tenants/Other	
<ul style="list-style-type: none"> • Social media (social listening/data mining) • Number of events offered • By number of events offered in which airport participates 	<ul style="list-style-type: none"> • Employees frequently provide recommendations to management team
General Aviation Airports	
<ul style="list-style-type: none"> • Monthly reporting • Public meetings, citizen call-in line • Annual meetings • Handled by international airport • City Economic Development Department • Quarterly reporting 	<ul style="list-style-type: none"> • Handled by international airport
Commercial Airports	
<ul style="list-style-type: none"> • Customer service software platform • Social media and web platforms and direct contact through speaking engagements • County tracking • Do not track but airport has dedicated department • Regularly attend community meetings, make presentations in community • ACDBE/DBE Annual Reporting and tri-annual goal setting 	<ul style="list-style-type: none"> • Manual • County tracking

3.4 Sustainability Reporting to the Public

A total of 27 responded, and 26% reported to the public annually; 11% reported quarterly, with no quarterly reports from Commercial Service and Consultants; 7% reported less than once each year, with the majority of respondents marking “Unknown.”

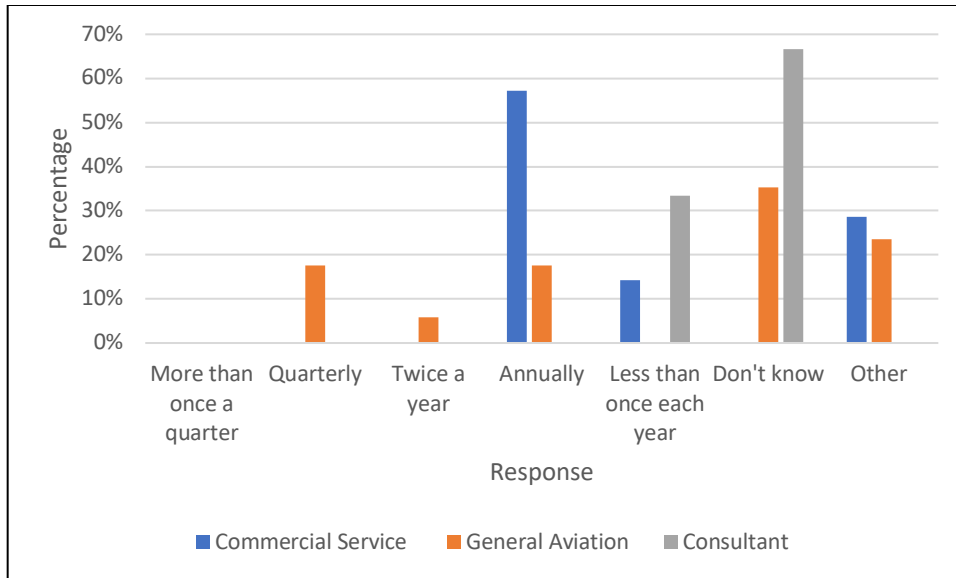


Figure 3-17 Reporting Sustainability to the Public

3.5 Sustainability Director Position

In total, 28 participants responded to the question regarding a Sustainability Director at their airport. A total of 79% did not have an airport Sustainability Director, and 18% did. Furthermore, 86% of Commercial Service airports and 78% of General Aviation airports did not have a Sustainability Director.

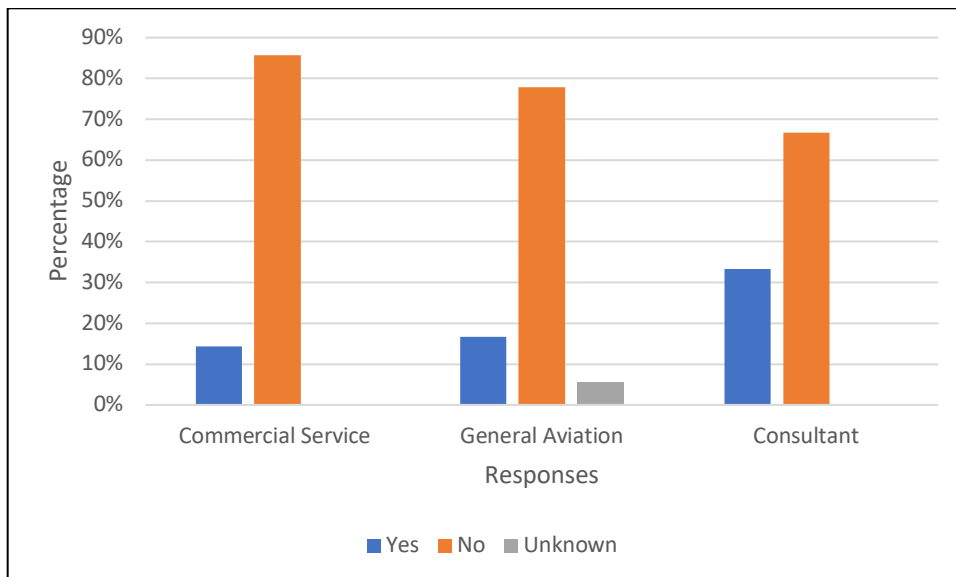


Figure 3-18 Sustainability Director Position

CHAPTER 4 AIRPORT SUSTAINABILITY TRACKING/MONITORING CATEGORIES AND METRICS

Two methods are generally applied for the evaluation of airport sustainability—a score or points-based rating system and a framework system.

The score/point-based rating method has been widely used for airports to measure the performance of airport sustainability programs. For example, the USGBC and LEED use a score-based rating system. This method tends to have a prescriptive approach, where points/scores are given based on objective calculation and can be referred for future analysis. First, metrics and corresponding calculation methods are defined to measure performance. Then, thresholds are used to convert the calculated measures into scores. Finally, a combined score is calculated to represent the sustainable performance of an airport.

A framework system is usually used for airports at which a sustainable airport program needs to be initiated or improved. This method tends to offer more descriptive guidance, e.g., countermeasures to improve waste recycling. First, performance metrics need to be defined and calculated if quantitative or described if qualitative. Then, the corresponding problem, if any, is identified for each metric. Finally, a descriptive countermeasure is given for mitigating or solving the problem, usually called airport sustainability design guidelines. One example of such framework system is the Colorado GA airport sustainability system.

As the goal of this research project was to track and monitor the sustainable performance of an airport, a score/point-based rating system was more appropriate. However, score-based measurements can sometimes be biased, as scores could be subjective because the thresholds are determined by a person, and also a score-based rating system uses the same criteria for all airports and usually does not distinguish airports by type, level of aircraft movement and enplaned passengers, or air cargo service. Hence, an airport-specific sustainability rating system is preferred by airport representatives, as shown in the survey outcomes of ACRP Report 119 and ACRP Report 10.

This chapter (1) identifies more objective performance metrics under four categories, (2) determines the method to calculate each metric, and (3) archives airports performance for comparison with other peer airports and the previous year. A sample Excel-based sustainable performance tracking system was created with columns indicating Code, Measurement, Units, Current, Previous, Peer Average, and Target. A Web-based interface was developed following the similar structure of the Excel sheet sample. Airports using this system can input their information related to sustainability. The Web-based system calculates the airport's current performance and generate tables and figures to visualize the outcomes. All inputs are archived on the FDOT server, so multiple year comparisons could be achieved. In addition, the airport can obtain a report showing their comparison with peer airports in the same cluster, and the cluster can be determined by airport type (Commercial vs. GA), levels of operation and enplanements, hub/non-hub airport, airports in multi-airport region, etc.

Data availability and accessibility are critical for tracking and monitoring airport sustainability performance. Available data sources for metrics are listed below; information that cannot be found in public records will require input from airport operators. Aggregated airport statistics, such as annual enplanements and air cargo tonnage, can be found on the Bureau of Transportation Statistic (BTS) website and via data provided by the airport. Financial performance-related data of commercial airports can be retrieved from the FAA Certification Activity Tracking System (CATS). In addition to national-level databases for commercial airports, compliance reports from local airport sponsors can be useful in regards to airport grant sources, land leasing, etc.

Airfield operations-related metrics can be derived from the FAA Aviation System Performance Metrics (ASPM) database, such as hourly operational capacity, taxiing performance, etc. General Aviation airports have much less available data online. Usually financial-related aggregated data can be found in the aviation authority annual financial statements; however, those documents do not include detailed income and expenses of GA airports. Depend on the ownership of GA airports, financial-related information can be found in their annual financial statement and compliance report issued by either the County or City aviation authority in Florida annually. Environment-related information is airport-specific; some commercial airports (e.g., Miami International) issue environmental reports periodically and have them published online. If no environmental reports are published online, data need to be collected directly from the airports. Greenhouse gas emissions (GHG) metrics cannot be obtained directly from airport records.

Data sources included under the metrics are provided below if the sources are publicly accessible; otherwise, the information can be obtained by communicating directly with the airports.

4.1 ECONOMIC VIABILITY-RELATED PERFORMANCE METRICS

Econometric viability-related performance metrics are easy to track, and source information is usually accessible through airport financial reports, operating statistics, and airport records.

Revenue Generation (RG)

1) RG1: New non-aeronautical businesses

- Method: Number of new non-aeronautical businesses attracted to airport in each calendar year.
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

2) RG2: Non-aeronautical revenue

- Method: Annual non-aeronautical revenue / Total annual revenue
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

- 3) RG3: Non-passenger-dependent revenue
 - Method: Non-passenger-dependent revenue / Total revenue, such as investment income, industrial development, and other compatible uses of airport-owned land
 - Source:
 - Operating and Financial Summary, FAA Form 5100-127(CATS)
 - Airport financial statements and compliance reports
- 4) RG4: Non-aeronautical operating revenue per enplanement
 - Method: Non-aeronautical operating revenue / Total annual passenger
 - Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport facts / statistics / financials or BTS airport statistics
 - Airport financial statements and compliance reports
- 5) RG5: Parking revenue
 - Method: Parking revenue / Total originating passenger
 - Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - BTS Origin and Destination Survey (DB1B)
 - Airport financial statements and compliance reports
- 6) RG6: Parking utilization
 - Method: During daily peak hour, occupied parking space/total number of parking spaces by parking products (e.g., short-term, long-term and economic parking)
 - Source: Airport records
- 7) RG7: Concession revenue
 - Method: Annual concession revenue/ Total annual enplanement passengers
 - Source:
 - Operating and Financial Summary, FAA Form 5100-127. (CATS)
 - Airport Facts / Statistics / Financials or BTS Airport Statistics
 - Airport Financial Statements and Compliance Reports
- 8) RG8: Rental Car Revenue
 - Metric: Annual rental car revenue/Total annual destination passenger
 - Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - BTS Origin and Destination Survey (DB1B) or airport records
 - Airport financial statements and compliance reports

- 9) RG9: Local enplaned passengers
- Method: Percentage of travelers flying from within local service area (measured through surveys and airline booking data)
 - Source: Airline/airport survey
- 10) RG10: Airport statistics
- Method: Total number of passengers annually (by type, e.g., business, leisure); Total number of aircraft movements (operations) and by type of transport (passenger, cargo, general aviation)
 - Source: Airport facts / statistics / financials or BTS airport statistics
- 11) RG11: Air cargo tonnage
- Method: Total amount of cargo tonnage (e.g., metric tons domestic, metric tons international).
 - Source: Airport facts / statistics / financials or BTS airport statistics
- 12) RG12: Number of based aircraft
- Method: Annual number of based aircrafts
 - Source: Airport Master Record Form 5010 or National Based Aircraft Inventory Program
- 13) RG13: Social and environmental investments
- Method: Percent of total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening
 - Source:
 - Airport financial report
 - Airport financial statements and compliance reports
- 14)RG14: Increased federal grant amount
- Method: $\frac{\text{Current annual federal grant} - \text{previous annual federal grant}}{\text{Previous annual federal grant}}$
 - Source: Airport financial statements and other compliance reports
- 15)RG15: Increased State grant amount
- Method: $\frac{\text{Current annual State grant} - \text{Previous annual State grant}}{\text{Previous annual State grant}}$
 - Source: Airport financial statements and compliance reports
- 16)RG16: Increased local subsidies amount
- Method: $\frac{\text{Current annual local subsidies} - \text{Previous annual local subsidies}}{\text{Previous annual subsidies}}$
 - Source: Airport financial statements and compliance reports
- 17) RG17: Hangar rental and ground lease income
- Method: Hangar rental and ground lease revenue annually

- Source:
 - Operating and Financial Summary, FAA Form 5100-127. (CATS)
 - Airport financial statements and compliance reports

18) RG18: Airport property

- Method: Acres of airport property available to be leased, whether improved or vacant, aeronautical or non-aeronautical, leased or not leased currently.
- Source: Airport records

19) RG19: Profitable airport property percentage

- Method: Acres of airport property currently being leased/ RG18
- Source: Airport records

20) RG20: Airport debt service

- Method: Debt service / Total annual operating revenue
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

Expense Reduction (ER)

21) ER1: Cost per enplaned passenger (CPE)

- Method: Total passenger airline payment / Total annual enplaned passenger
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

22) ER2: Operating costs

- Method: Total annual operating costs / Total annual enplaned passenger
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

23) ER3: Non-operating expenses

- Method: Total annual non-operating expenses / Total annual expenses
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

24) ER4: Bond rating.

- Source: Airport records or financial statements and other compliance reports

25) ER5: Airport debt

- Method: Total airport annually debt / Total enplaned passengers
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

26) ER6: Debt service coverage ratio

- Method: Net revenues as defined in airport's bond ordinance divided by principal and interest requirements for fiscal year
- Source:
 - Operating and Financial Summary, FAA Form 5100-127 (CATS)
 - Airport financial statements and compliance reports

27) ER7: Contract service

- Method: Contract services / Total operating cost, such as police and fire
- Source: Airport records

Regional Economic Contribution (EC)

28) EC1: Jobs creation

- Method: Number of direct, indirect, and induced jobs and related payroll supported by airports annually.
- Source: Airport records

29) EC2: Annual economic activity (direct, indirect, and induced)

- Method: Input-output model outcomes
- Source: Economic report of State DOT aviation office

30) EC3: Disadvantaged Business Enterprise (DBE) business

- Method: Percent of Disadvantaged Business Enterprise (DBE) business over total contract
- Source: Airport records

31) EC4: Regional impact of air cargo operations

- Method: Measures regional economic impact of air cargo operations in terms of total employment and revenue generated
- Source: FDOT Aviation and Spaceports Office conducted statewide aviation economic impact study in 2014 and is in process of updating it. Some historical information of direct and indirect jobs as well as regional impacts of air cargo operations can be found in those reports. Most recent information needs to be collected from airports.

4.2 NATURAL RESOURCE CONSERVATION-RELATED PERFORMANCE METRICS

Water Conservation (WC)

- 1) WC1: Water usage
 - Method: Total volume of water used by the airport (water footprint), per year
 - Source: Local water management department
- 2) WC2: Passenger water usage
 - Method: Total volume of water (in terminal) used per passenger, per year
 - Source: Airport record
- 3) WC3: Irrigation water usage
 - Method: Total volume of irrigation water used per total landscape area
 - Source: Airport record
- 4) WC4: Permeable area
 - Method: Total permeable area at site, with specific targets to be developed on site-specific basis
 - Source: Airport record
- 5) WC5: Potable water consumption
 - Method: Potable water consumption in kgal
 - Source: Airport record

Waste & Recycling (WR)

- 6) WR1: Municipal Solid Waste (MSW)
 - Method: Pounds of MSW sent to landfill per year (i.e., not recycled or reused)
 - Source: Local waste management department
- 7) WR2: MSW generated
 - Method: Pounds of MSW generated per passenger per year and disposed of at landfill
 - Source: Airport record
- 8) WR3: Recyclable waste
 - Method: Pounds of recyclables per passenger = total recyclable waste/total enplanements
 - Source: Local waste management department and airport record
- 9) WR4: Recycling program
 - Method: Airport recycling program (Y/N?)
 - Source: Airport record

- 10) WR5: Waste diversion rate
- Method: Total recyclables divided by total waste
 - Source: Local waste management department
- 11) WR6: Hazardous waste produced
- Method: Total hazardous waste produced (tons or gallons)
 - Source: Local waste management department and airport record
- 12) WR7: Hazardous materials disposed
- Method: Amount of hazardous materials disposed or recycled (tons or gallons).
 - Source: Local waste management department and airport record
- 13) WR8: Hazardous materials cost
- Amount paid for hazardous materials such as solvents, oil, etc.
 - Source: Airport record

Natural Resources Conservation (NR)

- 14) NR1: Wildlife
- Method: Number of damaging wildlife strikes per 100,000 aircraft movements
 - Source: Airport control tower and airport record
- 15) NR2: Spills
- Method: Number and amount of spills annually (gallons)
 - Source: Airport record
- 16) NR3: Permeable materials coverage
- Method: Percent of total airport landside surface area covered by permeable materials
 - Source: Airport record
- 17) NR4: Airside stormwater quality
- Method: performance evaluated/scores awarded based on number of performance actions pursued—e.g., deicing fluid management, designated deicing/vehicle washing areas, water filtration systems, biological treatment, runoff capture, others beyond compliance standards
 - Source: Airport record
- 18) NR5: Heat island reduction measurements
- Method: performance evaluated/scores awarded based on number of performance actions pursued, e.g., high solar reflectance and high albedo building and paving materials, increased vegetation and green roofing, and increased shade and covering
 - Source: Airport record

Energy Consumption (EC)

19) EC1: Electricity consumption

- Method: Total onsite electricity consumption (kWh) per passenger
- Source: Local energy company or airport record

20) EC2: Pre-conditioned air

- Method: Percentage of gates offering connection to terminal power and providing pre-conditioned air
- Source: Airport record

21) EC3: Renewable energy sources

- Method: Percentage of annual electricity consumption derived from onsite renewable energy sources
- Source: Airport record

22) EC4: Natural gas consumption

- Method: Natural gas consumption (therms)
- Source: Airport record

23) EC5: Non-aeronautical vehicles fuel consumption

- Method: Amount of unleaded gasoline and/or diesel fuel used for non-aeronautical vehicles (gallons)
- Source: Airport record

24) EC6: Renewable electricity produced

- Method: Total renewable electricity produced on property or from utility offsets (kWh)
- Source: Airport record or third party for producing renewable electricity on airport property

25) EC7: Airside equipment energy use

- Method: Equipment types multiplied by total time used of each type and average energy consumption of each type of equipment
- Source: Airport record and ICAO data bank

Air Quality & Greenhouse Gas Emissions (AQ)

26) AQ1: GHG Emission

- Method: Total GHG emissions measured in mt CO₂e (Scope 1, 2 and 3)
- Source:
 - Airport Emissions Inventory—some large hub commercial airports have own emission inventory base on FAA Aviation Emission and Air Quality Handbook, e.g., Denver International Airport.

- ACRP Report 11, “Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories,” provides framework for identifying and quantifying specific components of airport contributions to GHG

27) AQ2: GHG emissions (Scope 1)

28) AQ3: GHG emissions (Scope 2)

29) AQ4: GHG emissions (Scope 3)

Note: Scope 1 GHG emissions are direct emissions from sources owned or controlled by airport, including stationary combustion and fugitive emission sources. Scope 2 GHG emissions are indirect emissions that result from airport direct energy consumption from energy generated off-site (e.g., electricity and steam). GHGs considered under this activity include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)

30) AQ5: Hybrid rental cars

- Method: Number of hybrid rental cars in airport area
- Source: Airport rental car companies

31) AQ6: Indoor air quality improvement program

- Method: Airport Indoor air quality improvement (Y/N?)
- Source: Airport record

32) AQ7: GSE equipment improvements

- Method: Use of alternately-fueled Ground Service Equipment (GSE) (% of total GSE)
- Source: Airport record

33) AQ8: Preconditioned air units

- Method: Use of preconditioned air units (PCA) (Y/N?)
- Source: Airport record

34) AQ9: Alternative vehicle fuels

- Method: Percent of total fleet fuel energy purchased annually derived from alternative sources (as portion of total cost or energy content of fuel/electricity purchased); energy content converted to British thermal units (Btu); purchased fuel/electricity assumed to be consumed in same year; electric vehicle charging requires dedicated metering
- Source: Airport record

4.3 SOCIAL RESPONSIBILITY-RELATED PERFORMANCE

Human Well-Being (HW)

- 1) HW1: Security breaches and violations
 - Method: Number of security breaches or violations to air operations area
 - Source: Airport record, TSA, and local police records
- 2) HW2: Aircraft accidents/incidents.
 - Method: Number of aircraft accidents/incidents
 - Source: National Transportation Safety Board (NTSB) aviation accident database and synopses
- 3) HW3: Hazardous materials incidents
 - Method: Number of incidents caused by hazardous materials
 - Source: Office of Hazardous Material Safety Incident Reports database
- 4) HW4: Environmental notices of violation
 - Method: Number of environmental notices of violation annually
 - Source: Airport record
- 5) HW5: Noise complaints
 - Method: Noise complaints per individual call (not per household)
 - Source: Airport noise abatement office
- 6) HW6: Non-noise related complaints
 - Method: Number of non-noise related complaints such as temperature, service, comfort, etc.
 - Source: Airport record
- 7) HW7: Response to complaints
 - Method: Average time to respond to community complaints
 - Source: Airport record
- 8) HW8: Noise impact area
 - Method: Number of homes subjected to noise resulting from aviation activities of 65 dBA DNL or above
 - Source: Airport noise abatement office and GIS office of local municipality
- 9) HW9: Human wellness
 - Method: Number of health and wellness clinics
 - Source: Airport record
- 10) HW10: Aircraft Rescue and Fire Fighting (ARFF) responses
 - Method: Percent of ARFF responses to emergencies within mandated response times
 - Source: Airport fire station

11) HW11: Medical emergency responses

- Method: Percent of airport medical emergency responses within established standards
- Source: Airport record

12) HW12: Work time lost

- Method: Lost work days from employee accidents and injuries
- Source: Airport record

13) HW13: Employee performance reviews

- Method: Number of performance reviews over time for total work force
- Source: Airport record

14) HW14: Labor grievances

- Method: Number of labor grievances
- Source: Airport record

15) HW15: Employee injuries

- Method: Total employee injuries
- Source: Airport record

Engagement & Leadership (EL)

16) EL1: Social media involvement

- Method: Number of “likes” or “follows” for airport’s presence on social media platforms (Facebook, Twitter, Instagram, etc.)
- Source: Airport record or extracting from social media channels

17) EL2: Internship

- Method: Hours of internship time
- Source: Airport record

18) EL3: Community outreach

- Method: Number of community events held to inform stakeholders about airport and its sustainability efforts
- Source: Airport record

19) EL4: Workforce development

- Method: Number of workforce development training sessions on airport’s goals, sustainability initiatives, incentives, and employee roles in achieving goals
- Source: Airport record

20) EL5: Employee engagement

- Method: Number of employees attending annual workforce development training sessions
- Source: Airport record

21) EL6: Customer survey

- Method: Number and frequency of customers surveyed
- Source: Airport record

4.4 OPERATIONAL EFFICIENCY-RELATED PERFORMANCE METRICS

Operations & Maintenance (OM)

1) OM1: Operation and maintenance cost per enplanement

- Method: Total operation and maintenance cost per enplanement passenger
- Source: Operating and Financial Summary, FAA Form 5100-127 (CATS)

2) OM2: Operation and maintenance costs per terminal square foot

- Method: OM cost divided by total square foot of airport terminal
- Source: Operating and Financial Summary, FAA Form 5100-127 (CATS)

3) OM3: Green building certification

- Two tiers: 1) Percent of total building space that achieves self or second-party verified sustainable performance guidelines, and 2) Percent of total building space achieving third-party verified green certification, e.g., LEED, Green Globes, Envision™, etc.

4) OM4: Construction waste diversion

- Method: Construction waste diversion percent of total construction and demolition waste diverted from landfill or incinerator, in tons or cubic yards
- Source: Airport record

5) OM5: Runway/Taxiway maintenance cost

- Method: Percent of runway/taxiway maintenance cost of total airport maintenance cost
- Source: Airport finance and budget office

6) OM6: Jet bridge and airport vehicle maintenance cost

- Method: Percent of jet bridge and airport vehicle maintenance cost of total airport maintenance cost
- Source: Airport finance and budget office

7) OM7: Preventive maintenance costs

- Method: Preventive maintenance costs compared to non-preventive maintenance costs (ratio)
- Source: Airport finance and budget office

- 8) OM8: Maintenance inspections
 - Number of successful maintenance inspections
 - Source: Airport record
- 9) OM9: Maintenance response time
 - Method: Average maintenance response time
 - Source: Airport record
- 10) OM10: Maintenance cost per parking space
 - Method: Maintenance cost of parking infrastructure divided by total parking space
 - Source: Airport record

Operation Efficiency (OE)

- 11) OE1: Gate utilization
 - Method: Average number of flight departures per gate per day, measured separately during weekdays and weekend
 - Airport record
- 12) OE2: Practical hourly capacity
 - Method: Average number of operations performed in one hour on runway with average delay per operation of 4 minutes
 - Source: FAA Aviation System Performance Metrics (ASPM) database
- 13) OE3: Average taxi time
 - Method: Average time to taxi from gate to runway end during peak periods compared with unimpeded taxi time
 - Source: FAA Aviation System Performance Metrics (ASPM) database
- 14) OE4: System failure
 - Method: Number of system failures
 - Source: Airport control tower
- 15) OE5: Duration of system failures (h). Same as OE4.

Transportation Efficiency (TE)

- 16) TE1: Reduced roadway or curbside congestion
 - Method: Performance evaluated and points awarded based on reduced travel or curbside waiting
 - Source: Sensor data if available
- 17) TE2: Improvement of intermodal transportation access
 - Method: Number of intermodal transportation modes and percentage of enplaned passengers with each transportation mode
 - Source: Airport survey

18) TE3: Air travel delay reduction

- Method: Minutes of delay per passenger compared with previous year
- Source: FAA Aviation System Performance Metrics (ASPM) database

19) TE4: Alternative passenger transportation

- Method: Performance evaluated and points awarded based on activities, e.g., parking incentives and infrastructure for alternative, HOV, low-emitting, and pedestrian forms of passenger transportation

20) TE5: Alternative employee commute

- Method: Percent of employee alternative commutes vs. total commutes by all full- and part-time employees
- Source: Airport record

21) TE6: Frequency of ground transportation service

- Method: Frequency of ground transportation service in minutes (e.g., shuttle service, metro)
- Source: Sensor data if available or airport record

Business Operations (BO)

22) BO1: Customer service improvement

- Method: Number of airport service-related complaints in total (within airport terminal area)
- Source: Airport record

CHAPTER 5 DESIGN OF TRACKING/MONITORING AND REPORTING WEB SYSTEM

In this project, a Web-based system was developed for airports to track their sustainability performance. The system has the capability to archive historical data and execute comparison analysis. It is designed and incorporated into the Florida Aviation Database (FAD), which has been used widely by FDOT airport managers. The flow chart of web design is shown in **Figure 5.1**.

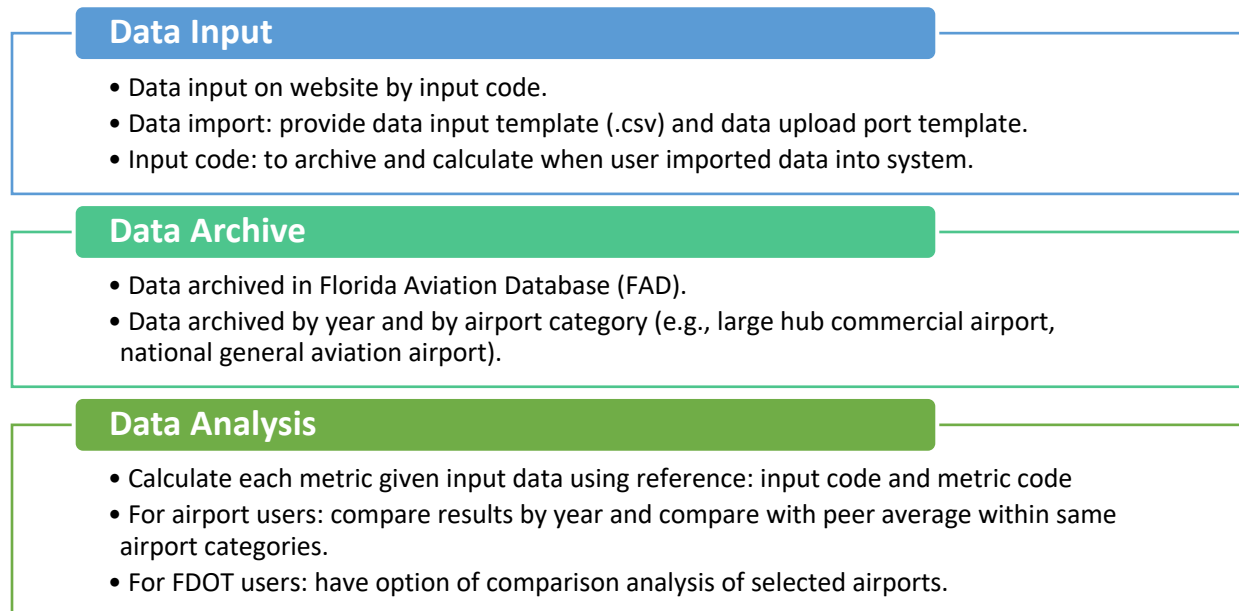


Figure 5-1 Web Design Flowchart

Function of Tracking/Monitoring System

- Data input and archive – The system serves as a sustainability database for all Florida airports; users can input the airport data by year on the website or upload the data using the designed Excel template.
- Data comparison analysis – Once the data are input/imported, the system will automatically calculate the sustainability performance using the built-in category and metrics. Then, users can retrieve the data from previous years for vertical comparison analysis. The system also can calculate the peer average for each airport category and show the results in the data analysis, so the airport can see horizontal comparison with peer average. FDOT users have enhanced functions with access to perform comparison at the individual airport level and more options to select comparison subjects:
 - Airport users – compare by year and compare with peer average by airport category

- FDOT users – compare by year and compare with peer average by airport category; also have option of comparing any selected airports or airports within same category, airports within same district, and within same CFASPP region
- Data comparison analysis export – users can download comparison analysis results in Excel format and do their own analysis if further study needed

Airport categories defined in this system are from 2019-2023 National Plan of Integrated Airport Systems (NPIAS) Report. Once a specific airport is selected while inputting the data, the associated airport category will be automatically provided in the system.

- Commercial Service = Hub
 - Large hub (L), e.g., Orlando International
 - Medium hub (M), e.g., Jacksonville International
 - Small hub (S), e.g., Key West International
 - Non-hub (N), e.g., Gainesville Regional
- General Aviation = Category & Role
 - National, e.g., Naples Municipal
 - Regional, e.g., Lake City Gateway
 - Local, e.g., Marco Island
 - Basic, e.g., Cross City
 - Unclassified, e.g., Everglades Airpark

See Appendix C, Florida Airport Sustainability Tracking/Monitoring System Website User Guide.

CHAPTER 6 CASE STUDY

Monitoring and tracking are essential components of airport sustainability, and consistency is vital to maintaining or establishing airport sustainable tracking or monitoring. This developed system and Web-based tool will aid in the sustainability reporting process and will help decision-makers in financial and planning decisions for sustainable airport development.

To test and validate the tool, two airports in Florida were selected as case studies:

- Commercial Service airport – St. Pete-Clearwater International Airport (PIE)
- General Aviation airport – Immokalee Regional Airport (IMM)

These airports were selected based on their role in the Florida aviation system and their expressed interest in participation. Initially, data requests were provided by the Project Team, and the airport completed them to their best ability. Thereafter, interviews were conducted in-person and through correspondence to gather consensus on the challenges and benefits of the Airport Sustainability Tracking/Monitoring System. Appendix D includes a list of interview questions provided to the airports and discussed during the interviews.

6.1 ST. PETE-CLEARWATER INTERNATIONAL AIRPORT (PIE)

PIE is a small-hub commercial service airport located on the central west coast of Florida. It is owned and operated by Pinellas County and is currently conducting a Master Plan Update with sustainability planning included.

The Project Team provided PIE with the Microsoft Excel spreadsheet version of the tool for review and to provide feedback on the potential functionality and usefulness of the tool. After providing the PIE with time to review, the Project Team held a follow-up conference call on August 30, 2018, to discuss specific interview questions regarding the tool (see Appendix D). The following feedback was received from PIE.

6.1.1 Benefits

PIE identified the following anticipated benefits with the tool:

- Could decrease time spent manually tracking and monitoring data.
- Helps identify metrics that were not realized previously.

6.1.2 Challenges

PIE identified the following anticipated challenges with the tool:

- Ensuring the tool will be used to benefit the airport tracking and monitoring on a monthly or annual basis.
- Understanding what the airport would attain from the tool's output.
- Additional labor hours for data entry.

6.1.3 Miscellaneous Feedback

PIE identified the metrics that could and could not be tracked based on available data or applicability (**Table 6-1**).

PIE identified several metrics during the interview that were not useful to track:

- Non-aeronautical fuel and equipment use
- Alternative transportation
- Employee culture

PIE expressed interest in tracking the following:

- Heat reduction data
- Human wellness
- Employee performance

PIE's Accounting Department uses Pinellas County's Oracle Project Unified Solutions (OPUS), an accounting program that tracks accounting costs. OPUS does not create graphical outputs or show historical data; it is a method for PIE to report to the County. The Accounting Department uses outputs from OPUS to manually create graphs in Microsoft Excel to understand historical performance. Most Economic Viability and utility data are input from OPUS or recorded through other accounting mechanisms.

Most Operational Efficiency metrics are stored with the Operations Department and Air Traffic Control (ATC). Accident/incident logs are recorded in the computer but are not tracked to determine trends.

PIE asked how the tool might correlate to airports receiving grants from FDOT.

The Project Team asked PIE to provide the applicable data to be uploaded into the tool; however, it declined, as providing the requested information would increase staff workload because the metrics are tracked in multiple systems/departments within the airport.

6.1.4 PIE Sustainability Baseline Summary

Although PIE could not provide the requested data (Appendix D), Appendix E provides PIE's Sustainability Baseline Assessment,⁶ which evaluated water resources, energy, economic impact and community, procurement and operational policies, and tenant sustainability. The following observations were made:

- Total annual passengers increased by 24.9% between 2015 and 2017.
- Average daily water usage per passenger in the terminal decreased by 14.4% between 2016⁷ and 2017.⁸

⁶ <http://www.piemasterplan.com/documents.html>.

⁷ December 16, 2015 through December 15, 2016.

⁸ December 16, 2016 through December 15, 2017.

- Historic energy use was evaluated for the terminal, airfield lighting, other buildings, and landside lighting areas; the results found that overall energy fluctuated with an aggregate increase over time, which can be attributed to annual passenger traffic and seasonal changes. Additionally, an airport closure in September 2017 during Hurricane Irma resulted in a 62.8% increase in electric energy usage per passenger from August 2017 to September 2017.
- PIE’s passenger terminal contains a Building Energy Management system to monitor energy use for enhanced efficiency.
- PIE’s economic impact is attributed to direct airport, visitor spending, new domestic and international routes, non-airline aviation operations, and non-airline jobs.
- PIE adheres to County recycled product procurement policies and has cooperative purchases with government entities.
- Two tenants have formalized sustainability programs/policies and have implemented initiatives to contribute to the sustainability of their business and PIE.

In March 2019, FDOT published the “Florida Statewide Economic Impact Study,” which provides a summary of the economic benefit of every public-owned, public-used airport in Florida. The following summarizes the results of the study for PIE⁹:

- On-airport Impacts: \$464,044,000
- Visitor spending impacts: \$908,946,000
- Total employment: 21,365
- Total payroll: \$827,905,000
- Total output: \$2,579,499,000

6.1.5 Recommendations

PIE staff provided the following recommendations during the interview:

- A defined output or outcome of the tool should be provided.
- Graphical outputs are preferred over tables or text.
- Annual and monthly tracking would be beneficial depending on the metric.
- Synchronization with OPUS and the Sustainable Airport Tracking Tool or utilizing outputs from OPUS into the tool would be more efficient for PIE staff to manage.
- Tool needs to be user-friendly for monitoring and updating data.

⁹ Florida Department of Transportation, “Florida Statewide Economic Impact Study: St. Pete-Clearwater International Airport,” March 2019.

Table 6-1 PIE Tracked and Non-Applicable/Non-Tracked Metrics

Tracked Metrics		Non-Applicable/Non-Tracked Metrics	
Economic Viability			
New non-aeronautical business	Increased local subsidies amount	Local enplaned passengers	
Non-aeronautical revenue	Hangar rental and ground lease income	Social and environmental investments	
Non-passenger-dependent revenue	Airport property	Bond rating	
Non-aeronautical operating rev. per enplanement	Profitable airport property percentage	Job creation	
Parking revenue	Airport debt service	Annual economic activity	
Parking utilization	Cost per enplanement	Regional impact of air cargo operations	
Concession revenue	Operating costs		
Rental car revenue	Non-operating cost expenses		
Airport statistics	Airport debt		
Air cargo tonnage	Debt service coverage ratio		
Number of based aircraft	Contract service		
Increased federal grant amount	Disadvantaged Business Enterprise (DBE) business		
Increased state grant amount			
Natural Resources Conservation			
Water usage		Passenger water usage	Renewable energy sources
Irrigation water usage		Municipal solid waste (sent to landfill per year)	Non-aeronautical vehicles fuel
Permeable area		Municipal solid waste (generated per passenger)	Renewable electricity produced
Potable water consumption		Recyclable waste	Airside equipment energy use
Wildlife		Recycling program	GHG emissions (total and Scopes 1, 2, & 3)
Spills		Waste diversion rate	Hybrid rental cars
Permeable materials coverage		Hazardous waste produced	Indoor air quality improvement
Electricity consumption		Hazardous materials	GSE equipment improvements
Pre-conditioned air		Hazardous materials cost	Preconditioned air units
Natural gas consumption		Airside stormwater quality	Alternative vehicle fuels
		Heat island reduction	
Social Responsibility			
Security breaches and violations		Noise impact area	
Aircraft accidents/incidents		Human wellness	
Hazardous materials incidents		Aircraft Rescue and Firefighting (ARFF) responses	
Environmental notices of violation		Medical emergency response	
Noise complaints		Working time loss	
Non-noise related complaints		Employee performance reviews	
Respond to complaints		Community outreach	
Labor grievances		Workforce development	
Employee injuries		Employee engagement	
Social media involvement			
Internships			
Customer survey			

Operational Efficiency			
Operation maintenance cost per enplanement	Duration of system failures	Green building certification	
Operation and maintenance cost per terminal sf	Customer service improvement	Construction waste diversion	
Runway/taxiway maintenance cost		Preventative maintenance costs	
Jet bridge and airport vehicle maintenance cost		Maintenance inspections	
Maintenance response time		Reduced roadway or curbside congestion	
Maintenance cost per parking space		Improvement of intermodal transportation access	
Gate utilization		Air travel delay reduction	
Practical hourly capacity		Alternative passenger transportation	
Average taxi time		Alternative employee commute	
System failure		Frequency of ground transportation service	

6.2 IMMOKALEE REGIONAL AIRPORT (IMM)

Immokalee Regional Airport is a small General Aviation airport located in southwest Florida. It is owned and operated by the Collier County Airport Authority, which also owns and operates Everglades Airpark and Marco Island Executive Airport. IMM is currently conducting a Master Plan Update and provided information based on its Master Plan efforts.

The Project Team provided IMM with the Microsoft Excel tool input spreadsheet for review and to provide feedback on the potential functionality and usefulness of the metrics. IMM was also provided with a list of interview questions for responses to the Project Team (see Appendix D). The following feedback was received from IMM.

6.2.1 Benefits

IMM identified the following anticipated benefits with the tool:

- Has ability to track certain metrics over time to establish trends while also identifying opportunities to implement various sustainability strategies where appropriate.

6.2.2 Challenges

IMM identified the following anticipated challenges with the tool:

- In entering the various metrics, tool is rather cumbersome, particularly for a small general aviation facility with limited support staff.
- Much of the information not applicable to general aviation, but some metrics required additional research and data-gathering (electric/utility bills, etc.) to determine the figure.

6.2.3 Miscellaneous Feedback

IMM identified metrics that could and could not be tracked based on available data or applicability (**Table 6-2**).

IMM identified additional metrics that would be useful to track in this system:

- Total number and type of employees/full-time equivalents at an airport in relation to total revenues/expenses and activity levels that aim to determine the appropriate level of staffing for a given facility, or whether the airport is under or over staffed, or whether alternative resources could be obtained to fulfill staffing requirements (contract labor/services, inter-agency support, etc.).
- Total aviation fuel flowage (gallon sales) at airport, which is strong indication of activity levels at a non-towered general aviation airport.

IMM identified several metrics that were not useful to track:

- All metrics related to passenger counts
- Heat island performance

- Bond/debt service
- Alternative energy sources
- Emissions
- Permeable area land

In addition, IMM noted that it “must adhere to countywide means of accounting/reporting, which limit the ability to track certain metrics and implement various sustainability strategies (e.g., hybrid/electric vehicles, alternative fuel sources).”

IMM also noted that although it is not specifically tracked, “it could be useful to determine total airport vehicle/equipment fleet fuel gallon usage. Currently, IMM tracks total expenses, and with some additional effort, fuel gallons could be obtained and tracked on an individual vehicle level to determine how/where fuel is utilized in an effort to minimize usage and/or replace inefficient vehicles.”

IMM also noted that the following metrics would be difficult to obtain:

- Heat island performance
- Permeable/non-permeable surface
- Airside equipment energy usage performance

IMM noted that it would be beneficial for the tool to allow airports to compare airports of similar size/operation to determine how and where various sustainability strategies could be employed where appropriate, while also benchmarking certain metrics such as total revenues, expenses, staffing levels, maintenance costs, etc. to identify weaknesses and opportunities.

6.2.4 IMM Sustainability Baseline Summary

The following information was determined from the information provided by IMM for upload into the tool (Appendix G). The Sustainability Baseline Assessment evaluated water resources, energy, economic impact and community, procurement and operational policies, and tenant sustainability. The following observations were made:

- Total annual operations remained consistent at 36,500 from 2017 to 2018.
- Total water usage decreased by 43% between 2017 and 2018.
- Annual electric energy usage at IMM increased by less than 1% from 2017 to 2018.
- IMM’s statewide economic impact:¹⁰
 - On-airport impacts: \$19,361,000
 - Visitor spending impacts: \$1,810,000
 - Total employment: 247

¹⁰ Florida Department of Transportation, “Florida Statewide Economic Impact Study: Immokalee Regional Airport,” March 2019.

- Total payroll: \$11,517,000
- Total output: \$39,056,000
- Airport Authority has taken initiative to implement sustainability into each airport within their system. The Airport Authority emphasizes financial and operational self-sufficiency.

IMM noted the following:

Sustainability of IMM is an important strategy of the Airport Authority's management team, with a primary emphasis on financial and operational self-sufficiency. To that end, financial performance metrics are reviewed at monthly management meetings, and most financial metrics are tracked through the countywide accounting software. In addition, conservative budgeting/staffing techniques are employed, and policies/practices are implemented that aim to foster the growth of both aeronautical/non-aeronautical activity through market-based fee structures, friendly business environment and strategic marketing initiatives. As a result, the Airport is no longer reliant on a general taxpayer contribution to subsidize airport operations as historically required since inception of the Airport Authority in 1993.

Sustainability strategies are evaluated with an ultimate goal of maximizing synergies (social, environmental, operational and economic) for the benefit of the airport and surrounding community. As strategies are identified, the airport's management team determines the viability based on these parameters. As an example, efforts have been made over the last few years to convert lighting from incandescent/fluorescent to energy-efficient LEDs from the airfield lighting system, ramp/hangar lights to the terminal's interior. An ROI analysis was conducted to determine the one-time cost of retrofitting fixtures against the energy savings realized over the course of several years. The result was a savings to the Airport in electricity costs, lower environmental impact, less light pollution of high-output flood lights and increased operational safety.

Although IMM would like to purchase fuel efficient/hybrid vehicles and equipment, the Airport Authority is limited to countywide fleet standards and policies that do not include these types of vehicles and equipment.

Table 6-2 IMM Tracked and Non-Applicable/Non-Tracked Metrics

Tracked Metrics		Non-Applicable/Non-Tracked Metrics	
New non-aeronautical business	Municipal Solid Waste sent to landfill	Annual enplaned passengers	Hazardous waste produced
Rental car revenue	Municipal Solid Waste generated	Passenger airline payment	Hazardous materials recycled
Number of based aircraft	Recycling Program	Non-aeronautical revenue	Landside surface area covered by permeable materials
Increased federal grant amount	Recyclable waste	Non-aeronautical operating revenue	Natural gas consumption
Increased state grant amount	Total waste	Non-passenger-dependent revenue	Amount of unleaded gasoline and/or diesel used for non-aeronautical vehicles
Hangar rental and ground lease income	Onsite electricity consumption	Parking revenue	Total renewable electricity produced on property or from utility offsets
Airport property	Ground Service Equipment	Concession revenue	Indoor Air Quality improvement
Profitable airport property percentage	Aircraft accidents/incidents	Net revenues as defined in airport bond ordinance	Alternately-fueled GSE
Airport debt service	Response time to community complaints	Air cargo service revenue	Airside equipment energy usage performance
Operating costs	Health/Wellness clinics on site ¹		Preconditioned air units
Non-operating cost expenses	Lost work days from employee accidents ¹	Debt service	Gates offering connection to terminal power
Disadvantaged Business Enterprise (DBE) business	Employee injuries ¹	Bond rating	Number of hybrid rental cards in airport area
Fleet fuel cost	Social media likes/follows	Input-output model outcomes	GHG Emissions
Total maintenance cost	Airport service complaints	Total fleet fuel energy purchased annually from alternative sources	
Preventative maintenance cost	Customers surveyed	Jet bridge and airport vehicle maintenance cost	
Non-preventative maintenance costs	Total community events ¹	Runway/taxiway maintenance cost	
Aircraft movements (operations)	Workforce development training sessions	Annual passenger	
Based aircraft	Employees attending annual workforce development training sessions	Air cargo tonnage	
Airport area	Performance reviews	Originating passenger	Successful maintenance inspections
Airport landside area	Amount paid for HAZMAT	Annual destination passenger	Average maintenance response time
Airport property available for lease	Total investment agreements and contracts ¹	Passengers flying within airport service area	Number of system failures
Airport property currently leased	Significant investment agreements and contracts ¹	Number of parking spaces	Duration of system failures
Total water used by airport and terminal	Direct, indirect, and induced jobs and payroll	Total gates	Total employee injuries
Total irrigation water used	Local subsidies ¹	Percentage of enplaned passengers using public transit and airport shuttle	Percent of ARFF responses to emergencies
Labor grievances ¹	Amount paid for hazardous materials ¹	Total permeable area at the site	Percent airport medical emergency responses
Number of Damaging Wildlife Strikes per 100,000 aircraft movements ¹	Does the airport have Indoor Air Quality Improvement ¹	Potable water consumption	Airside stormwater quality performance
Number of security breaches or violations ¹		Annual air travel delay	Heat island reduction performance
Incidents caused by HAZMAT ¹		Average frequency of ground transportation service	Two tiers starting with the lower points: 1) Percent of total building space that achieves a self or 2nd party verified sustainable performance guidelines; and 2) Percent of total building space achieving 3rd party verified green certification; e.g.; LEED; Green Globes; Envision™; etc.

Environmental notices of violation ¹		Average number of operations that can be performed in one hour on a runway with an average delay per operation of four minutes	Construction waste diversion percent of total construction and demolition waste
Noise complaints ¹		Average number of flight departures per day during weekdays	Internship time
Non-noise related complaints ¹		Total airport employee commutes by all full- and part-time employee	
Number and amount of spills annually ¹		Number of alternative employee commutes	
Percentage of annual electricity consumption ¹		Curbside congestion reduction performance	
Does the airport use preconditioned air units ¹		Alternative passenger transportation performance	

1. Metric tracked but marked as “0” for 2017 and 2018.

6.3 CONCLUSION AND RECOMMENDATIONS

Main concerns expressed during the interviews relate to the output of the tool, how the tool will differ from manual data entry separately from the tool, and ease of use for the final Web-based product. Based on the Project Team's review of the tool and interviews with a Commercial Service airport, the following are recommended:

- **Develop graphical outputs from the tool for airports to use to report to executives, stakeholders, and the community.**
- **Consider implications of public release of information through the tool.** Some airports tend to withhold financial information from the public. The alternative would be to design the tool to allow temporary removal of confidential data without affecting the data or use of the tool.
- **Allow airports to enter data from other sources to alleviate time spent manually entering metrics.** Airports emphasize the need for a simple and less time-consuming method to track and monitor metrics, including the ability to input data from other sources without manually calculating metrics.
- **Allow airports to enter data monthly, quarterly, or annually.** The output can show it in each form depending on which output method is selected.
- **Provide an option for airports to select the metrics they would like to track.** Some metrics may not be useful to airports depending on their size. This option can allow them to uncheck boxes and re-check if an airport decides to start tracking.
- **Show the year to which the metric is referring rather than "Previous Year" and "Current Year."**
- **Allow airports to add metrics to the standard list of metrics provided.**
- **Consider showing different metrics for General Aviation airports (i.e., exclude metrics related to passenger data or normalize GA metrics for aircraft operations instead of passengers).**

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APPENDIX A – Airport Sustainability Tracking/Monitoring Metrics

Input Variable Definitions

Code	Input Description	Unit
IN1	Total annual revenue	dollars in thousands
IN2	Total annual operating revenue	dollars in thousands
IN3	Annual non-aeronautical revenue	dollars in thousands
IN4	Annual non-aeronautical operating revenue	dollars in thousands
IN5	Annual non-passenger-dependent revenue	dollars in thousands
IN6	Annual parking revenue	dollars in thousands
IN7	Annual rental car revenue	dollars in thousands
IN8	Annual concession revenue	dollars in thousands
IN9	Annual hangar rental and ground lease revenue	dollars in thousands
IN10	New non-aeronautical businesses	count
IN11	Net revenues as defined in an airport bond ordinance divided by principal and interest requirements for the fiscal year	dollars in thousands
IN12	Contract services, such as police and fire	dollars in thousands
IN13	Revenue generated/associated with air cargo service	dollars in thousands
IN14	Disadvantaged Business Enterprise (DBE) business	count
IN15	Current annually federal grant	dollars in thousands
IN16	Previous annually federal grant	dollars in thousands
IN17	Current annually state grant	dollars in thousands
IN18	Previous annually state grant	dollars in thousands
IN19	Current annually local subsidies	dollars in thousands
IN20	Previous annually subsidies	dollars in thousands
IN21	Annual debt service	dollars in thousands
IN22	Bond rating	
IN23	Net revenue as defined in an airport bond ordinance divided by principal and interest requirements for the fiscal year	percentage
IN24	Input-output model outcomes	percentage
IN25	Total annual expenses	dollars in thousands
IN26	Total annual operating costs	dollars in thousands
IN27	Total annual non-operating expenses	dollars in thousands
IN28	Total passenger airline payment	dollars in thousands
IN29	Total fleet fuel cost	dollars in thousands
IN30	Amount paid for hazardous materials such as solvents; oil; etc.	dollars in thousands
IN31	Total fleet fuel energy purchased annually derived from alternative sources (e.g. ethanol-gasoline blends, biodiesel, compressed natural gas, propane, other low-/no-carbon fuels, electric energy, and hybrid technology.)	dollars in thousands
IN32	Total investment agreements and contracts	count
IN33	Total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening.	count
IN34	Total maintenance cost	dollars in thousands
IN35	Jet bridge and airport vehicle maintenance cost	dollars in thousands
IN36	Runway/Taxiway maintenance cost	dollars in thousands
IN37	Preventative maintenance costs	dollars in thousands
IN38	Non-preventative maintenance costs	dollars in thousands
IN39	Total annual passenger	amounts in thousands
IN40	Total number of aircraft movements (operations)	amounts in thousands

Code	Input Description	Unit
IN41	Total air cargo tonnage	tons in thousands
IN42	Total annual enplanement passengers	amounts in thousands
IN43	Total originating passenger	amounts in thousands
IN44	Total annual destination passenger	amounts in thousands
IN45	Passengers flying from within airport service area	amounts in thousands
IN46	Annual number of based aircrafts	amounts in thousands
IN47	Total number of parking spaces	count
IN48	Total gates	count
IN49	Percentage of enplaned passengers using public transit and airport shuttle, or other airport provided commercial vehicles	percentage
IN50	Total airport area	Acre
IN51	Airport landside area	Acre
IN52	Acres of airport property that are available to be leased; whether improved or vacant; aeronautical or non-aeronautical; leased or not leased currently.	Acre
IN53	Acres of airport property that are currently being leased	Acre
IN54	Total volume of water used by the airport (water footprint)	kgal
IN55	Total volume of water used (in terminal)	kgal
IN56	Total volume of irrigation water used	kgal
IN57	Total permeable area at the site; with specific targets to be developed on a site-specific basis	Acre
IN58	Potable water consumption	kgal
IN59	Municipal Solid Waste (MSW) sent to landfill per year (i.e., not recycled or reused)	ton
IN60	Municipal Solid Waste (MSW) generated	ton
IN61	Does the airport have a Recycling Program?(Yes=1/No=0)	1 or 0
IN62	Recyclables waste	ton
IN63	Total waste	ton
IN64	Total hazardous waste produced	ton
IN65	Amount of hazardous materials recycled	ton
IN66	Number of damaging wildlife strikes per 100,000 aircraft movements.	count
IN67	Number and amount of spills annually	kgal
IN68	Landside surface area covered by permeable materials	Acre
IN69	Total onsite electricity consumption	kWh
IN70	Percentage of annual electricity consumption derived from onsite renewable energy sources	percentage
IN71	Natural Gas Consumption	Therm
IN72	Amount of unleaded gasoline and/or diesel fuel used for non-aeronautical vehicles	kgal
IN73	Total renewable electricity produced on property or from utility offsets	kWh
IN74	Does the airport have Indoor Air Quality Improvement (Yes=1/No=0).	1 or 0
IN75	Number of alternately-fueled Ground Service Equipment (GSE)	count
IN76	Number of Ground Service Equipment (GSE)	count
IN77	Airside equipment energy usage performance is evaluated and points are awarded based on the number of performance actions; for example, vehicle idling, high-efficiency equipment procurement, maintenance and repair schedules, and right-sized vehicle planning, among others.	count
IN78	Does the airport use preconditioned air units (PCA) (Yes=1/No=0).	1 or 0
IN79	Gates offering connection to terminal power and providing pre-conditioned air	count
IN80	Number of hybrid rental cars in airport area	count
IN81	GHG Emission	CO2e in metric tons
IN82	GHG Emission (Scope 1- direct), Scope 1/direct emissions include airport operator emissions associated with (1) fuel necessary to power airport-owned on- and off-road	CO2e in metric tons

Code	Input Description	Unit
	vehicles and (2) direct energy necessary to power airport facilities (i.e., natural gas, fuel oil).	
IN83	GHG Emission (Scope 2- indirect), Scope 2/indirect emissions include purchased electricity	CO2e in metric tons
IN84	GHG Emission (Scope 3-optional), Scope 3/indirect and optional emissions include (1) tenant emissions, (2) public ground travel on- and off-airport, and (3) airport employee commute emissions.	CO2e in metric tons
IN85	Number of security breaches or violations to the air operations area	count
IN86	Number of aircraft accidents/incidents	count
IN87	Number of incidents caused by hazardous materials	count
IN88	Number of environmental notices of violation annually	count
IN89	Noise complaints; each individual call; and not each household	count
IN90	Number of non-noise related complaints; such as temperature; service; comfort; etc.	count
IN91	Average time to respond to community complaints	hour
IN92	Number of Homes subjected to noise resulting from aviation activities of 65 dBA DNL or above	count
IN93	Number of health and wellness clinics on site	count
IN94	Lost work days from employee accidents and injuries	day
IN95	Number of successful maintenance inspections	count
IN96	Average maintenance response time	day
IN97	Number of system failures	count
IN98	Duration of system failures	Hour
IN99	Total employee injuries	count
IN100	Percent of Aircraft Rescue and Fire Fighting (ARFF) responses to emergencies within mandated response times.	percentage
IN101	Percent of airport medical emergency responses within established standards	percentage
IN102	Airside stormwater quality performance is evaluated and scores are awarded based on the number of performance actions pursued that address, for example, deicing fluid management, designated deicing and vehicle washing areas, water filtration systems, biological treatment, and runoff capture, among others beyond compliance standards.	count
IN103	Heat island reduction Performance is evaluated and scores are awarded based on the number of performance actions pursued that address, e.g. high solar reflectance and high albedo building and paving materials, increased vegetation and green roofing, and increased shade and covering.	count
IN104	Two tiers starting with the lower points: 1) Percent of total building space that achieves a self or 2nd party verified sustainable performance guidelines; and 2) Percent of total building space achieving 3rd party verified green certification, e.g.; LEED; Green Globes; Envision™; etc.	count
IN105	Construction waste diversion percent of total construction & demolition waste diverted from a landfill or incinerator; in tons	percentage
IN106	Number of likes or followers for the airports presence on social media platforms (e.g.; Facebook; Twitter; Instagram; etc.)	count
IN107	Number of airport service related complaints in total (within airport terminal area)	count
IN108	Number of customers surveyed	count
IN109	Number of airport service related complaints in total (within airport terminal area)	
IN110	Hours of internship time	hour
IN111	Number of community events held to inform stakeholders about the airport and its sustainability efforts	count
IN112	Number of workforce development training sessions on the airport goals; sustainability initiatives; incentives; and employee's role in achieving these goals.	count
IN113	Number of employees attending annual workforce development training sessions	count
IN114	Number of performance reviews over time for total work force	count

Code	Input Description	Unit
IN115	Number of labor grievances	count
IN116	Number of direct; indirect; and induced jobs and related payroll supported by airports annually.	count
IN117	Total annual air travel delay	hour
IN118	Average frequency of ground transportation service in minutes (e.g., shuttle service; metro)	minute
IN119	During daily peak hour; average occupied parking space	count
IN120	Average time to taxi from the gate to the runway end during peak periods; compared with unimpeded taxi time	minute
IN121	Average number of operations that can be performed in one hour on a runway with an average delay per operation of four minutes	count
IN122	Average number of flight departures per day during weekdays	count
IN123	Total airport employee commutes by all full- and part-time employees	count
IN124	Number of alternative employee commutes	count
IN125	Curbside congestion reduction Performance is evaluated and points are awarded based on reduced travel or curbside waiting actions, e.g. designated TNC area, execute minimum waiting time, first hour parking free, etc.	count
IN126	Alternative passenger transportation performance is evaluated and points are awarded based on activities; for example; parking incentives and infrastructure for alternative; HOV; low-emitting; and pedestrian forms of passenger transportation	count

Performance Metrics

1. EVRG – Economic Viability Revenue Generation (EVGR) Metrics

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
EVRG1	New non-aeronautical businesses	IN10	count	Number of new non-aeronautical businesses attracted to the airport in each calendar year.
EVRG2	Non-aeronautical revenue percentage	IN3/IN1	percentage	Annual non-aeronautical revenue / Total annual revenue
EVRG3	Non-passenger-dependent revenue percentage	IN5/IN1	percentage	Annual non-passenger-dependent revenue / Total annual revenue; such as investment income; industrial development; and other compatible uses of airport-owned land
EVRG4	Non-aeronautical operating revenue per enplanement	IN4/IN39	dollar	Non-aeronautical operating revenue / Total annual passenger
EVRG5	Parking revenue per originating passenger	IN6/IN42	dollar	Parking revenue / Total originating passenger
EVRG6	Parking utilization	IN119/IN47	ratio	During daily peak hour; average occupied parking space / total number of parking spaces
EVRG7	Concession revenue per enplanement	IN8/IN42	dollar	Annual concession revenue / Total annual enplanement passengers
EVRG8	Rental car revenue per destination passenger	IN7/IN44	dollar	Annual rental car revenue/Total annual destination passenger
EVRG9	Local enplaned passengers	IN45	count	Percentage of travelers flying from within their local service area (measured through surveys and airline booking data).
EVRG10	Airport movements	IN40	amounts in thousands	Total number of aircraft movements (operations)
EVRG11	Air cargo tonnage	IN41	tons in thousands	Total amount of cargo tonnage (e.g. metric tons domestic; metric tons international).
EVRG12	Number of based aircraft.	IN46	count	Annual number of based aircrafts
EVRG13	Social and environmental investments ratio	IN33/IN32	percentage	Percent of total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening.
EVRG14	Increased federal grant amount	(IN15-IN16)/IN16	percentage	(Current annually federal grant - Previous annually federal grant) / Previous annually federal grant
EVRG15	Increased state grant amount	(IN17-IN18)/IN18	percentage	(Current annually state grant - Previous annually state grant) / Previous annually state grant
EVRG16	Increased local subsidies amount	(IN19-IN20)/IN20	percentage	(Current annually local subsidies - Previous annually local subsidies) / Previous annually subsidies

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
EVRG17	Hangar rental and ground lease income percentage	IN9/(IN2-IN4)	percentage	Hangar rental and ground lease revenue annually /Total annual aeronautical revenue
EVRG18	Airport property	IN52	Acre	Acres of airport property that are available to be leased; whether improved or vacant; aeronautical or non-aeronautical; leased or not leased currently.
EVRG19	Profitable airport property percentage	IN53/IN52	percentage	Acres of airport property that are currently being leased/ RG18
EVRG20	Airport debt service	IN21/IN2	percentage	Debt service / Total annual operating revenue

2. EVER – Economic Viability Expenses Reduction (EVER) Metrics

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
EVER1	Cost per enplaned passenger (CPE)	IN28/IN42	dollar	Total passenger airline payment / Total annual enplaned passenger
EVER2	Operating costs per enplanement	IN25/IN42	dollar	Total annual operating costs / Total annual enplaned passenger
EVER3	Non-operating expenses percentage	IN27/IN25	percentage	Total annual non-operating expenses / Total annual expenses
EVER4	Bond rating	IN22	tier	Bond credit rating represents the credit worthiness of airport bonds
EVER5	Airport debt per enplanement	IN21/IN42	dollar	Total airport annually debt / Total enplaned passengers
EVER6	Debt service coverage ratio	IN23	percentage	Net revenue as defined in an airport bond ordinance divided by principal and interest requirements for the fiscal year
EVER7	Contract service ratio	IN12/IN26	percentage	Contract services / Total operating cost; such as police and fire

3. EVEC – Economic Viability Regional Economic Contribution (EVEC)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
EVEC1	Jobs creation	IN116	count	Number of direct, indirect, and induced jobs and related payroll supported by airports annually
EVEC2	Annual economic activity	IN24	percentage	Airport input-output model outcomes
EVEC3	Disadvantaged Business Enterprise (DBE) business ratio	IN14/IN32	percentage	Percent of Disadvantaged Business Enterprise (DBE) business over total contract
EVEC4	Direct economic impact of air cargo operations	IN13	dollars in thousands	Revenue generated/associated with air cargo service

4. NRWC – Natural Resource Conservation Water Conservation (NRWC)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
NRWC1	Water usage	IN54	kgal	Total volume of water used by the airport (water footprint); per year.
NRWC2	Passenger water usage	IN55/IN39	Gallon	Total volume of water (in terminal) used per passenger; per year
NRWC3	Irrigation water usage	IN56/IN50	Gallon	Total volume of irrigation water used per total landscape area.
NRWC4	Permeable area	IN57	Acre	Total permeable area at the site; with specific targets to be developed on a site-specific basis
NRWC5	Potable water consumption	IN58	kgal	Potable water consumption in kgal

5. NRWR – Natural Resource Conservation Waste & Recycling (NRWR)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
NRWR1	Municipal Solid Waste (MSW) to landfill	IN59	ton	Tons of Municipal Solid Waste (MSW) sent to landfill per year (i.e., not recycled or reused)
NRWR2	Municipal Solid Waste (MSW) per passenger	IN60/IN39	1/2 pound	Tons of Municipal Solid Waste (MSW) generated per passenger per year; and disposed of at a landfill
NRWR3	Recyclable waste per passenger	IN62/IN39	1/2 pound	Tons of recyclables per passenger
NRWR4	Recycling program	IN61	1 or 0	Does the airport have a Recycling Program (Y/N)
NRWR5	Waste diversion rate	IN62/IN63	percentage	Total recyclables divided by total waste
NRWR6	Hazardous waste produced	IN64	ton	Total hazardous waste produced (tons)
NRWR7	Hazardous materials recycled	IN65	ton	Amount of hazardous materials recycled (tons).
NRWR8	Hazardous materials cost	IN30	dollars in thousands	Amount paid for hazardous materials such as solvents; oil; etc.

6. NRNR – Natural Resource Conservation (NRNR)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
NRNR1	Wildlife	IN66	count	Number of damaging wildlife strikes per 100,000 aircraft movements.
NRNR2	Spills	IN67	kgal	Number and amount of spills annually (kgal)
NRNR3	Permeable materials coverage	IN68/IN51	percentage	Percent of total airport landside area covered by permeable materials
NRNR4	Airside stormwater quality	IN102	count	Performance is evaluated and scores are awarded based on the number of performance actions pursued that address; for example; deicing fluid management; designated deicing and vehicle washing areas; water filtration systems; biological treatment; and runoff capture; among others beyond compliance standards.
NRNR5	Heat island reduction measurements	IN103	count	Performance is evaluated and scores are awarded based on the number of performance actions pursued that address; e.g. high solar reflectance and high albedo building and paving materials; increased vegetation and green roofing; and increased shade and covering.

7. NREC – Natural Resource Conservation Energy Consumption (NREC)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
NREC1	Electricity consumption per passenger	IN69/IN39	Watt	Total onsite electricity consumption (kWh) per passenger.
NREC2	Pre-conditioned air gate ratio	IN79/IN48	percentage	Percentage of gates offering connection to terminal power and providing pre-conditioned air
NREC3	Renewable energy sources	IN70	percentage	Percentage of annual electricity consumption derived from onsite renewable energy sources
NREC4	Natural Gas Consumption	IN71	therms	Natural gas consumption (therms)
NREC5	Non-aeronautical vehicles fuel consumption	IN72	gallon	Amount of unleaded gasoline and/or diesel fuel used for non-aeronautical vehicles (gallons).
NREC6	Renewable electricity produced	IN73	kWh	Total renewable electricity produced on property or from utility offsets (kWh)
NREC7	Airside equipment energy use	IN77	count	Performance is evaluated and points are awarded based on the number of performance actions; for example; vehicle idling; high-efficiency equipment procurement; maintenance and repair schedules; and right-sized vehicle planning; among others.

8. NRAQ – Natural Resource Conservation Air Quality & GHG Emissions (NRAQ)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
NRAQ1	GHG Emission	IN81	CO2e in metric tons	Total GHG emissions measured in mt CO2e
NRAQ2	GHG Emission (Scope 1-direct)	IN82	CO2e in metric tons	GHG emissions measured in mt CO2e
NRAQ3	GHG Emission (Scope 2-indirect)	IN83	CO2e in metric tons	GHG emissions measured in mt CO2e
NRAQ4	GHG Emission (Scope 3-optional)	IN84	CO2e in metric tons	GHG emissions measured in mt CO2e
NRAQ5	Hybrid rental cars	IN80	count	Number of hybrid rental cars in airport area
NRAQ6	Indoor Air Quality Improvement program	IN74	1 or 0	Does the airport have Indoor Air Quality Improvement (Yes=1/No=0)
NRAQ7	GSE Equipment Improvements	IN75/IN76	percentage	Usage of alternately-fueled Ground Service Equipment (GSE) (% of total GSE)
NRAQ8	Preconditioned air units	IN78	1 or 0	Does the airport use preconditioned air units (PCA) (Yes=1/N=0)
NRAQ9	Alternative vehicle fuels percentage	IN31/IN29	percentage	Percent of total fleet fuel energy purchased annually derived from alternative sources (as a portion of total fuel cost).

9. SRHW – Social Responsibility Human Well-being (SRHW)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
SRHW1	Security breaches and violations	IN85	count	Number of security breaches or violations to the air operations area
SRHW2	Aircraft accidents/incidents	IN86	count	Number of aircraft accidents/incidents
SRHW3	Hazardous materials incidents	IN87	count	Number of incidents caused by hazardous materials
SRHW4	Environmental notices of violation	IN88	count	Number of environmental notices of violation annually
SRHW5	Noise complaints	IN89	count	Noise complaints; each individual call; and not each household
SRHW6	Non-noise related complaints	IN90	count	Number of non-noise related complaints; such as temperature; service; comfort; etc.
SRHW7	Respond to complaints	IN91	count	Average time to respond to community complaints
SRHW8	Noise impact area	IN92	count	Number of Homes subjected to noise resulting from AVIATION activities of 65 dBA DNL or above
SRHW9	Human wellness	IN93	count	Number of health and wellness clinics
SRHW10	Aircraft Rescue and Fire Fighting (ARFF) responses	IN100	percentage	Percent of Aircraft Rescue and Fire Fighting (ARFF) responses to emergencies within mandated response times.
SRHW11	Medical emergency responses	IN101	percentage	Percent of airport medical emergency responses within established standards
SRHW12	Working time loss	IN94	day	Lost work days from employee accidents and injuries

SRHW13	Employee performance reviews	IN114	count	Number of performance reviews over time for total work force
SRHW14	Labor grievances	IN115	count	Number of labor grievances
SRHW15	Employee injuries	IN99	count	Total employee injuries

10. SREL – Social Responsibility Engagement & Leadership

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
SREL1	Social media involvement	IN106	count	Number of likes or followers for the airports presence on social media platforms (e.g.; Facebook; Twitter; Instagram; etc.)
SREL2	Internship	IN110	hour	Hours of internship time
SREL3	Community outreach	IN111	count	Number of community events held to inform stakeholders about the airport and its sustainability efforts
SREL4	Workforce development	IN112	count	Number of workforce development training sessions on airport goals; sustainability initiatives; incentives; and employee role in achieving these goals.
SREL5	Employee engagement	IN113	count	Number of employees attending annual workforce development training sessions
SREL6	Customer survey	IN108	count	Number of customers surveyed

11. OEOM – Operational Efficiency Operations & Maintenance (OEOM)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
OEOM1	Operation and maintenance cost per enplanement	(IN34+IN26)/IN42	dollar	Total operation and maintenance cost per enplanement passenger
OEOM2	Operation and maintenance costs per terminal square foot	(IN30+IN25)/IN48	dollar	Total operation and maintenance cost per terminal square foot
OEOM3	Green building certification	IN104	count	Two tiers starting with the lower points: 1) Percent of total building space that achieves a self or 2nd party verified sustainable performance guidelines; and 2) Percent of total building space achieving 3rd party verified green certification (e.g.; LEED; Green Globes; EnvisionTM; etc.)
OEOM4	Construction waste diversion	IN105	percentage	Construction waste diversion percent of total construction & demolition waste diverted from a landfill or incinerator; in tons or cubic yards
OEOM5	Runway/Taxiway maintenance cost	IN36/IN34	percentage	Percent of Runway/Taxiway maintenance cost of total airport maintenance cost.

OEOM6	Jet bridge and airport vehicle maintenance cost	IN35/IN34	percentage	Percent of jet bridge and airport vehicle maintenance cost of total airport maintenance cost
OEOM7	Preventative maintenance costs	IN37/IN34	percentage	Preventative maintenance costs compared to non-preventative maintenance costs (ratio)
OEOM8	Maintenance inspections	IN95	count	Number of successful maintenance inspections
OEOM9	Maintenance response time	IN96	day	Average maintenance response time
OEOM10	Maintenance cost per parking space	IN34/IN47/1000	dollar	Maintenance cost per parking space

12. OEOE – Operation Efficiency (OEOE)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
OEOE1	Gate utilization weekday	IN122/IN48	count	Average number of flight departures per gate per day; measured during weekdays.
OEOE2	Practical hourly capacity	IN121	count	Average number of operations that can be performed in one hour on a runway with an average delay per operation of four minutes
OEOE3	Average taxi time	IN120	minute	Average time to taxi from the gate to the runway end during peak periods; compared with unimpeded taxi time
OEOE4	System failure	IN97	count	Number of system failures
OEOE5	Duration of system failures	IN98	hour	Duration of system failures in hours

13. OETE – Operational Efficiency Transportation Efficiency (OETE)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
OETE1	Reduced roadway or curbside congestion	IN125	count	Performance is evaluated and points are awarded based on reduced travel or curbside waiting actions, e.g. designated TNC area, minimum waiting time, first hour parking free, etc.
OETE2	Improvement of intermodal transportation access	IN49	percentage	Percentage of enplaned passengers using public transit and airport shuttle, or other airport provided commercial vehicles
OETE3	Air travel delay per enplanement	IN117/IN42/1000	hour	Minutes of delay per enplanement passenger
OETE4	Alternative passenger transportation	IN126	count	Performance is evaluated and points are awarded based on activities; for example; parking incentives and infrastructure for alternative; HOV; low-emitting; and pedestrian forms of passenger transportation

OETE5	Alternative employee commute ratio	IN124/IN123	percentage	Percent of employee alternative commutes versus total commutes by all full- and part-time employees
OETE6	Frequency of ground transportation service	IN118	minute	Frequency of ground transportation service in minutes (e.g. shuttle service; metro)

14. OEBO – Operational Efficiency Business Operations (OEBO)

SAT Code	Measurement	Function (linked to inputs)	Unit	Description
OEBO1	Customer Service Improvement	IN107	count	Number of airport service related complaints in total (within airport terminal area)

APPENDIX B – Airport Categories

Airport categories applied in this study and the tracking/monitoring system are from the National Plan of Integrated Airport Systems (NPIAS) Florida Airports (2017–2021 NPIAS Report).

City	Airport	LocID	Owner-ship	Hub	Role	Category	
						Current	Yr 5
Arcadia	Arcadia Municipal	X06	PU		Basic	GA	GA
Belle Glade	Belle Glade State Municipal	X10	PU		Basic	GA	GA
Blountstown	Calhoun County	F95	PU		Basic	GA	GA
Cedar Key	George T Lewis	CDK	PU		Basic	GA	GA
Cross City	Cross City	CTY	PU		Basic	GA	GA
Miami	Dade-Collier Training and Transition	TNT	PU		Basic	GA	GA
Miami	Miami	X44	PU		Basic	GA	GA
Umatilla	Umatilla Municipal	X23	PU		Basic	GA	GA
Apalachicola	Apalachicola Regional-Cleve Randolph Field	AAF	PU		Local	GA	GA
Avon Park	Avon Park Executive	AVO	PU		Local	GA	GA
Bartow	Bartow Municipal	BOW	PU		Local	GA	GA
Bonifay	Tri-County	1J0	PU		Local	GA	GA
Clewiston	Airglades	2IS	PU		Local	GA	GA
De Funiak Springs	Defuniak Springs	54J	PU		Local	GA	GA
Dunnellon	Marion County	X35	PU		Local	GA	GA
Hilliard	Hilliard Airpark	01J	PU		Local	GA	GA
Homestead	Homestead General Aviation	X51	PU		Local	GA	GA
Inverness	Inverness	INF	PU		Local	GA	GA
Keystone Heights	Keystone Airpark	42J	PU		Local	GA	GA
La Belle	La Belle Municipal	X14	PU		Local	GA	GA
Lake Wales	Lake Wales Municipal	X07	PU		Local	GA	GA
Live Oak	Suwannee County	24J	PU		Local	GA	GA
Marathon	The Florida Keys Marathon	MTH	PU		Local	GA	GA
Marco Island	Marco Island	MKY	PU		Local	GA	GA
Marianna	Marianna Municipal	MAI	PU		Local	GA	GA
Milton	Peter Prince Field	2R4	PU		Local	GA	GA
Okeechobee	Okeechobee County	OBE	PU		Local	GA	GA
Pahokee	Palm Beach County Glades	PHK	PU		Local	GA	GA
Palatka	Palatka Municipal-Lt Kay Larkin Field	28J	PU		Local	GA	GA
Perry	Perry-Foley	40J	PU		Local	GA	GA
Plant City	Plant City	PCM	PU		Local	GA	GA
Quincy	Quincy Municipal	2J9	PU		Local	GA	GA
Sebastian	Sebastian Municipal	X26	PU		Local	GA	GA
Titusville	Arthur Dunn Air Park	X21	PU		Local	GA	GA
Valkaria	Valkaria	X59	PU		Local	GA	GA
Wauchula	Wauchula Municipal	CHN	PU		Local	GA	GA
Williston	Williston Municipal	X60	PU		Local	GA	GA
Clearwater	Clearwater Air Park	CLW	PU		Local	R	R
Fort Pierce	St Lucie County International	FPR	PU		National	GA	GA
Naples	Naples Municipal	APF	PU		National	GA	GA
Stuart	Witham Field	SUA	PU		National	GA	GA

Boca Raton	Boca Raton	BCT	PU		National	R	R
Fort Lauderdale	Fort Lauderdale Executive	FXE	PU		National	R	R
Jacksonville	Jacksonville Executive at Craig	CRG	PU		National	R	R
Lakeland	Lakeland Linder Regional	LAL	PU		National	R	R
Miami	Miami Executive	TMB	PU		National	R	R
Miami	Opa-Locka Executive	OPF	PU		National	R	R
Orlando	Executive	ORL	PU		National	R	R
Brooksville	Brooksville-Tampa Bay Regional	BKV	PU		Regional	GA	GA
Crestview	Bob Sikes	CEW	PU		Regional	GA	GA
Crystal River	Crystal River-Captain Tom Davis Field	CGC	PU		Regional	GA	GA
Destin	Destin Executive	DTS	PU		Regional	GA	GA
Fernandina Beach	Fernandina Beach Municipal	FHB	PU		Regional	GA	GA
Immokalee	Immokalee Regional	IMM	PU		Regional	GA	GA
Jacksonville	Cecil	VQQ	PU		Regional	GA	GA
Lake City	Lake City Gateway	LCQ	PU		Regional	GA	GA
Leesburg	Leesburg International	LEE	PU		Regional	GA	GA
Merritt Island	Merritt Island	COI	PU		Regional	GA	GA
Ocala	Ocala International-Jim Taylor Field	OCF	PU		Regional	GA	GA
Palm Coast	Flagler County	FIN	PU		Regional	GA	GA
Pompano Beach	Pompano Beach Airpark	PMP	PU		Regional	GA	GA
Sebring	Sebring Regional	SEF	PU		Regional	GA	GA
Titusville	Space Coast Regional	TIX	PU		Regional	GA	GA
Vero Beach	Vero Beach Municipal	VRB	PU		Regional	GA	GA
Winter Haven	Winter Haven's Gilbert	GIF	PU		Regional	GA	GA
Zephyrhills	Zephyrhills Municipal	ZPH	PU		Regional	GA	GA
DeLand	DeLand Municipal-Sidney H Taylor Field	DED	PU		Regional	R	R
Fort Myers	Page Field	FMY	PU		Regional	R	R
Hollywood	North Perry	HWO	PU		Regional	R	R
Jacksonville	Herlong Recreational	HEG	PU		Regional	R	R
New Smyrna Beach	New Smyrna Beach Municipal	EVB	PU		Regional	R	R
Orlando	Kissimmee Gateway	ISM	PU		Regional	R	R
Ormond Beach	Ormond Beach Municipal	OMN	PU		Regional	R	R
St Petersburg	Albert Whitted	SPG	PU		Regional	R	R
Tampa	Peter O Knight	TPF	PU		Regional	R	R
Tampa	Tampa Executive	VDF	PU		Regional	R	R
Venice	Venice Municipal	VNC	PU		Regional	R	R
West Palm Beach	North Palm Beach County General Aviation	F45	PU		Regional	R	R
West Palm Beach	Palm Beach County Park	LNA	PU		Regional	R	R
Everglades	Everglades Airpark	X01	PU		Unclassified	GA	GA
Daytona Beach	Daytona Beach International	DAB	PU	N		P	P
Fort Lauderdale	Fort Lauderdale/Hollywood International	FLL	PU	L		P	P
Fort Myers	Southwest Florida International	RSW	PU	M		P	P
Gainesville	Gainesville Regional	GNV	PU	N		P	P
Jacksonville	Jacksonville International	JAX	PU	M		P	P
Key West	Key West International	EYW	PU	S		P	P
Melbourne	Melbourne International	MLB	PU	N		P	P
Miami	Miami International	MIA	PU	L		P	P
Orlando	Orlando International	MCO	PU	L		P	P
Orlando	Orlando Sanford International	SFB	PU	S		P	P

Panama City	Northwest Florida Beaches International	ECP	PU	S		P	P
Pensacola	Pensacola International	PNS	PU	S		P	P
Punta Gorda	Punta Gorda	PGD	PU	N		P	P
Sarasota/Bradenton	Sarasota/Bradenton International	SRQ	PU	S		P	P
St Augustine	Northeast Florida Regional	SGJ	PU	N		P	P
St Petersburg-Clearwater	St Pete-Clearwater International	PIE	PU	S		P	P
Tallahassee	Tallahassee International	TLH	PU	N		P	P
Tampa	Tampa International	TPA	PU	L		P	P
Valparaiso/Destin-Ft Walton Beach	Eglin AFB/Destin-Ft Walton Beach	VPS	MA	N		P	P
West Palm Beach	Palm Beach International	PBI	PU	M		P	P

APPENDIX C – Florida Airport Sustainability Tracking/Monitoring System Website User Guide

The **Florida Airport Sustainability Tracking/Monitoring System** was built in the Florida Aviation Database (FAD). This user guide was created to assist the Florida Department of Transportation Aviation Office and designated users with the efficient use of the **Florida Aviation Database Airport Sustainability Module**. This guide will walk you through each step of how to use the module.

Note: Due to differences between Internet browsers, your view may differ slightly from the view in the screenshot used to create this manual. Although Internet browsers may cause a variation in look and feel, all system components should function in all Internet browsers.

User Roles: Access to this module is based on user role permissions and is accessible only to specific users.

Disclaimer: All screenshots in this guide are from our test site; although the names and data may be familiar, the information is test information and is not accurate.

The main function of the system includes:

- Data Input – input of data on website page by four categories
- Data Analysis – comparison performance by year or to peer average
- Data Import – uploading of data using given spreadsheet

1. To access the Airport Sustainability Module:

1.1 Locate the **Florida Aviation Database** login screen at <https://www.florida-aviation-database.com>.

FLORIDA AVIATION DATABASE

Florida Aviation Database

User Name

[Forgot your username?](#)

Password

[Forgot your password?](#)

Remember my Username

www.Florida-Aviation-Database.com

Welcome to the Florida Aviation Database (FAD). Developed and maintained by the Florida Department of Transportation, in cooperation with the Federal Aviation Administration, Florida Airports Council and Florida's Public Airport Sponsors, FAD is the central repository for Florida aviation system data.

For information regarding the Florida Department of Transportation Aviation Office, Florida Aviation System Plan, Florida Aviation Statutes, Florida airports, or other aviation related information, please see the [Aviation Office](#) Web site. You may also contact us at 850-414-4500 or email us at aviation.fdot@dot.state.fl.us.

PRIVATE FACILITY OWNERS / MANAGERS: If you are the owner or manager of a previously approved private-use airport in Florida and need to register or re-register your airport, or you wish to begin the process for a newly proposed private-use airport, go to the [Private Airport Registration & Site Approval](#) Web site.

Safety is an ongoing journey, not a final destination.

1.2 Login to the Florida Aviation Database:

- a) Enter your username.
- b) Enter your password.
- c) Select Log In.

The screenshot shows the login interface for the Florida Aviation Database. On the left is a sidebar with the logo and a login form. On the right is the main content area with a header and several paragraphs of text. Blue arrows point from the text in the main content area to the corresponding input fields in the login form. A red circle highlights the 'Log In' button.

FLORIDA AVIATION DATABASE

Florida Aviation Database

User Name [Forgot your username?](#)

Password [Forgot your password?](#)

Remember my Username

www.Florida-Aviation-Database.com

Welcome to the Florida Aviation Database (FAD). Developed and maintained by the Florida Department of Transportation, in cooperation with the Federal Aviation Administration, Florida Airports Council and Florida's Public Airport Sponsors, FAD is the central repository for Florida aviation system data.

For information regarding the Florida Department of Transportation Aviation Office, Florida Aviation System Plan, Florida Aviation Statutes, Florida airports, or other aviation related information, please see the [Aviation Office Web site](#). You may also contact us at 850-414-4500 or email us at aviation.fdot@dot.state.fl.us.

PRIVATE FACILITY OWNERS / MANAGERS: If you are the owner or manager of a previously approved private-use airport in Florida and need to register or re-register your airport, or you wish to begin the process for a newly proposed private-use airport, go to the [Private Airport Registration & Site Approval Web site](#).

Safety is an ongoing journey, not a final destination.

2. To view the Sustainable Airport Module:

2.1 Select Integrated Facility Module.

FLORIDA AVIATION DATABASE

Florida Aviation Database Switchboard Request Help | Version 2.1.13

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Safety is an ongoing journey, not a final destination.

My Account **Log Out**

User Information Manage
Mainardi, Rebecca
7401 Wiles Rd, Ste 116
Coral Springs, FL 33067
(954) 840-0456 Office Phone
becky@pantherinternational.com

My Bookmarks Manage
Albert Whitted
becky test 1
District 1
District 3
District 4
Saved Lists
test

Alerts/Messages Edit Alert Notification Preferences

Facility Status Change for Tallahassee Commercial Airport : Closed	Posted: 6/26/2012
Airport Comments :Facility is closed pending sale.	
Facility Status Change for Airport Manatee : Closed	Posted: 3/19/2018
Airport Comments :test	
Facility Status Change for Airglades Airport : Emergency Operations Only	Posted: 3/29/2018
Airport Comments :Test 333333	
Facility Status Change for Albert Whitted Airport : Emergency Operations Only	Posted: 3/29/2018
Airport Comments :Suspended TEST	
Facility Status Change for Arcadia Municipal Airport : Commercial Service Suspended	Posted: 3/29/2018
Airport Comments :	
Facility Status Change for Ft Lauderdale/Hollywood International Airport : Closed	Posted: 4/6/2018
Airport Comments :Operations suspended.	

Applications Administration

- Integrated Facility Module**
- Contact Management
- Document Management
- Forecast Management
- Private Airport Registration Administration
- Information Log Tool Data Management
- Information Log Tool
- Inspection Module
- 7 Pre-Inspection Review(s) Pending
- FAD Training Module

2.2 Select Airport and Load Selected or Load All:

FLORIDA AVIATION DATABASE Integrated Facility Module Logout | Support | Version 2.1.13

Search

Basic Search | Graphical Search | Saved Lists

Basic Facility Search Bookmarks | Go to... | Go | New

Facility Ownership: Public Private Military

Facility Use:

Facility Type:

District: All 1 2 3 4 5 6 7

Associated City:

County:

CFASPP Region:

NPIAS Number: 12-

Facility ID:

Facility Name:

Facility Status:

Runway Length: ft

Fly-in Community:

Part 139:

Commercial Service Airports:

License Category:

Last Inspection Date:

Next Inspection Date:

Original License Date:

License Expiration Date:

Original Registration Date:

Registration Expiration Date:

128 Facilities

- Airglades Airport
- Airport Manatee
- Albert Whitted Airport
- Apalachicola Regional - Cleve Randolph Field
- Arcadia Municipal Airport
- Arthur Dunn Air Park
- Avon Park Executive Airport
- Bartow Municipal Airport
- Becky Test
- Belle Glade State Municipal Airport
- Bob Lee Flight Strip
- Bob Sikes Airport
- Bob Sikes Airport
- Bob White Field
- Boca Raton Airport
- Brooksville - Tampa Bay Regional Airport
- Buchan Airport
- Calhoun County Airport
- Carrabelle - Thompson Airport
- Cecil Airport
- Chalet Suzanne Air Strip
- Cleawater Air Park
- Coslin Airport
- Cross City Airport
- Crystal River - Captain Tom Davis Field
- Dade-Collier Training and Transition Airport
- Daytona Beach International Airport
- Defuniak Springs Airport
- DeLand Municipal - Sidney H Taylor Field

Hold down Ctrl to select multiple facilities.

2.2 Select Sustainable Airport tab:

FLORIDA AVIATION DATABASE Integrated Facility Module Airglades Airport Logout | Support | Version 2.1.13

Search Facility Contacts Statistics JACIP Inspection Pavement

General Facility Information Bookmarks Go to... Go New

General Information

UAID	FLO00010
NPIAS No	12-0012
Facility Status	Active
FDOT Facility Name	Airglades Airport
FAA Facility Name	Airglades
Sponsor Name	Hendry County
Facility Type	Airport
Location ID	215
FAA Site No	03118.*A
Ownership	Public
Usage	Public
SIS Status	No
FAR Part 139 Certificated	<input type="checkbox"/>
Commercial Service	<input type="checkbox"/>
GA Type	National
Residential Airpark	<input type="checkbox"/>
Vendor Number	VF5900639039__
DUNS Number	
Discretionary Airport	No
Non-Commercial Landing Fee	Yes
REDI Facility	<input checked="" type="checkbox"/>

Inspection/Registration Information

License Category	Licensed
Last Inspection	5/1/2023
Original License Date	11/1/2001
License Expiration	1/31/2017

Facility Physical Address

Address 3200 Airglades Boulevard
Clewiston, FL 33440
Phone (863) 983-6151
Fax (863) 675-5343
Website www.flyairglades.com

Geographic Data

Associated City	Clewiston
City to Facility (NM)	5 W
County Name	Hendry
Section	16
Township	43S
Range	33E
ARP Latitude	26° 44' 31.23" N Estimated
ARP Longitude	81° 2' 59.24" W Estimated
ARP Elevation	20 ft Estimated
Acreeage	2560
FDOT District	1 - Bartow
FAA Region/ADO	ASO/ORL
CFASPP Region	Southwest Florida Region

Sustainable Airport Edit

FLORIDA AVIATION DATABASE Integrated Facility Module Airglades Airport Logout | Support | Version 2.1.13

Search Facility Contacts Statistics JACIP Inspection Pavement

General Facility Information Bookmarks Go to... Go New

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Commercial Service	<input type="checkbox"/>
GA Type	National
Residential Airpark	<input type="checkbox"/>
Vendor Number	VF5900639039__
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ARP Elevation	20 ft Estimated
Acreeage	2560
FDOT District	1 - Bartow
FAA Region/ADO	ASO/ORL
CFASPP Region	Southwest Florida Region

Sustainable Airport Edit

Helpful Hint: This is where the Commercial Service indication is that carries over to the Sustainable Airport Tab header.

After selecting **Sustainable Airport** tab, the page shows the sustainable airport tracking system:

Integrated Facility Module Airglades Airport Logout | Support | Version 2.1.13

Search Facility Contacts Statistics JACIP Inspection Pavement

General **Sustainable Airport Tracking System** Bookmarks Go to... Go New

Runways/Helipads
Facility Requirements
Services
Remarks
NavCom
FBO
Schedule
Documents/Links
Profile Data
Disaster Preparedness
Infrastructure Assessment
Sustainable Airport

Data Input Data Analysis Import

Select Year

Facility Info

Year: 2018
Facility Name: Airglades Airport
Type: GA, National
GA Operations: 3,444
Based Aircrafts: 33
Number of Runways: 2

Last Modified by Rebecca Mainardi on 11/29/2018 10:02:19 AM

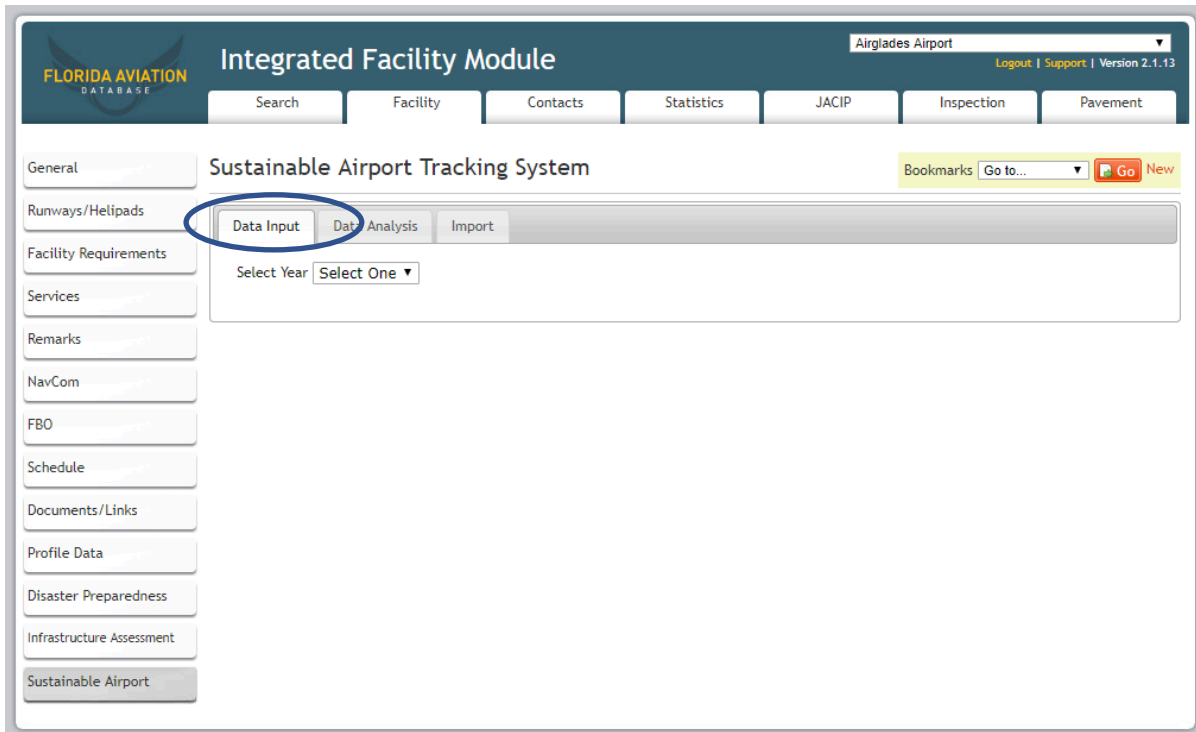
Economic Viability Natural Resource Conservation Social Responsibility Operational Efficiency Data Input

Code	Measurement	Description	Input	Unit
Revenue Generation (RG)				
EVRG1	New non-aeronautical businesses	Number of new non-aeronautical businesses attracted to the airport in each calendar year.	70	count
EVRG2	Non-aeronautical revenue	Annual non-aeronautical revenue / Total annual revenue	0.20	percentage
EVRG3	Non-passenger-dependent revenue	Annual non-passenger-dependent revenue / Total annual revenue, such as investment income, industrial development, and other compatible uses of airport-owned land	0.50	percentage
EVRG4	Non-aeronautical operating revenue per enplanement	Non-aeronautical operating revenue / Total annual passenger	\$6.00	dollar
EVRG5	Parking revenue	Parking revenue / Total originating passenger	\$8.00	dollar
EVRG6	Parking utilization	During daily peak hour, average occupied parking space / total number of parking spaces by parking products (e.g. short-term, long-term and economic parking)	1.00	ratio
		Annual concession revenue / Total annual enplanement		

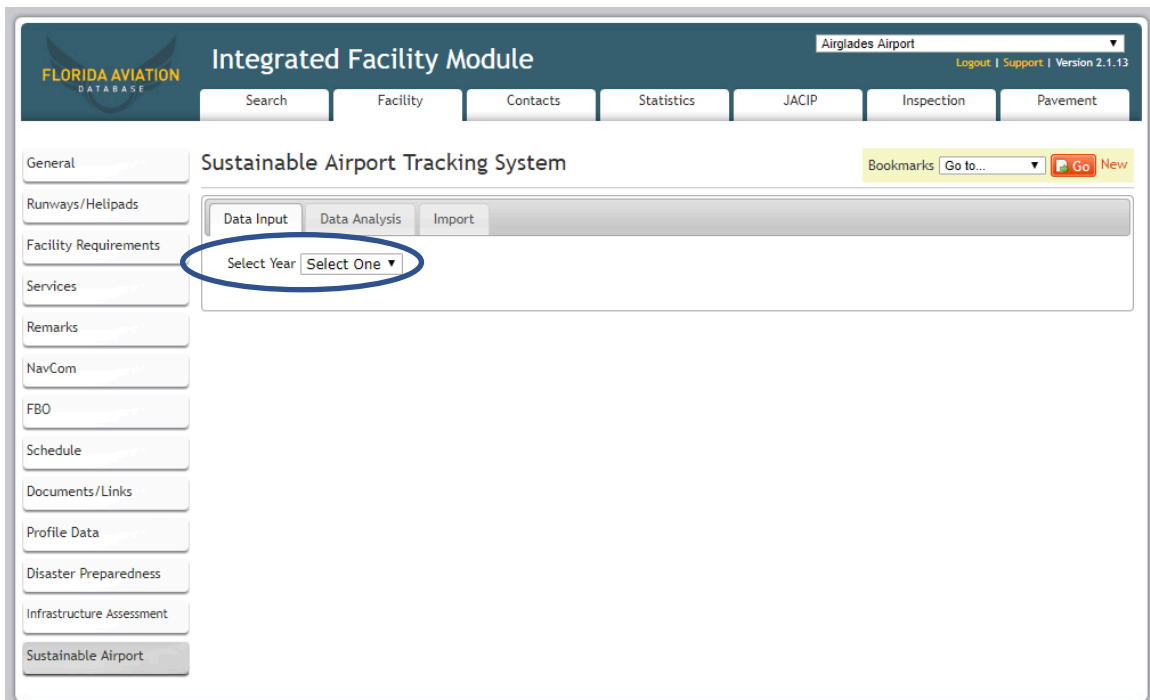
Helpful Hint: The statistical information shown in the header comes from the aircraft, operations, and enplanement counts entered by FDOT for Forecasting and are based on year selected.

3. To use the Sustainable Airport Tracking System:

3.1 Select Data Input.



3.2 Select Year (year of input data).



3.3. Select Data Input subtab.

Economic Viability		Natural Resource Conservation		Social Responsibility		Operational Efficiency		Data Input		
Code	Measurement	Description				Input	Unit			
Revenue Generation (RG)										
EVRG1	New non-aeronautical businesses	Number of new non-aeronautical businesses attracted to the airport in each calendar year.					0	count		
EVRG2	Non-aeronautical revenue	Annual non-aeronautical revenue / Total annual revenue					0.00	percentage		
EVRG3	Non-passenger-dependent revenue	Annual non-passenger-dependent revenue / Total annual revenue, such as investment income, industrial development, and other compatible uses of airport-owned land					0.00	percentage		
EVRG4	Non-aeronautical operating revenue per enplanement	Non-aeronautical operating revenue / Total annual passenger					\$0.00	dollar		
EVRG5	Parking revenue	Parking revenue / Total originating passenger					\$0.00	dollar		
EVRG6	Parking utilization	During daily peak hour, average occupied parking space / total number of parking spaces by parking products (e.g. short-term, long-term and economic parking)					0.00	ratio		
EVRG7	Concession Revenue	Annual concession revenue / Total annual enplanement					\$0.00	dollar		
EVRG8	Rental Car Revenue	Annual rental car revenue/Total annual destination passenger					\$0.00	dollar		
EVRG9	Local enplaned passengers	The percentage of travelers flying from within their local service area (measured through surveys and airline booking data).					0	count		
EVRG10	Airport statistics	Total number of passengers annually (by type, e.g. business, leisure); total number of aircraft movements (operations) and by type of transport (passenger, cargo, general aviation).					0.00	amounts in thousands		
EVRG11	Air cargo tonnage	Total amount of cargo tonnage (e.g. metric tons domestic, metric tons international).					0.00	tons in thousands		
EVRG12	Number of based aircraft.	Annual number of based aircrafts					0	count		
EVRG13	Social and environmental investments	Percent of total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening.					0.00	percentage		
EVRG14	Increased federal grant amount	(Current annually federal grant - Previous annually federal grant) / Previous annually federal grant					0.00	percentage		
EVRG15	Increased state grant amount	(Current annually state grant - Previous annually state grant) / Previous annually state grant					0.00	percentage		
EVRG16	Increased local subsidies amount	(Current annually local subsidies- Previous annually local subsidies) / Previous annually subsidies					0.00	percentage		
EVRG17	Hangar rental and ground lease income	Hangar rental and ground lease revenue annually					0.00	percentage		
EVRG18	Airport property	Acres of airport property that are available to be leased, whether improved or vacant, aeronautical or non-aeronautical, leased or not leased currently.					0.00	Acre		
EVRG19	Profitable airport property percentage	Acres of airport property that are currently being leased/ RG18					0.00	percentage		
EVRG20	Airport debt service	Debt service / Total annual operating revenue					0.00	percentage		
Expenses Reduction (ER)										
EVER1	Cost per enplaned passenger (CPE)	Total passenger airline payment / Total annual enplaned passenger					\$0.00	dollar		
EVER2	Operating costs	Total annual operating costs / Total annual enplaned passenger					\$0.00	dollar		
EVER3	Non-operating expenses	Total annual non-operating expenses / Total annual expenses					0.00	percentage		
EVER4	Bond rating						0.00	tier		
EVER5	Airport debt	Total airport annually debt / Total enplaned passengers					\$0.00	dollar		
EVER6	Debt service coverage ratio	Net revenues as defined in an airport's bond ordinance divided by principal and interest requirements for the fiscal year					0.00	percentage		
EVER7	Contract service	Contract services / Total operating cost, such as police and fire					0.00	percentage		
Regional Economic Contribution (EC)										
EVEC1	Jobs creation	Number of direct, indirect, and induced jobs and related payroll supported by airports annually.					0	count		
EVEC2	Annual economic activity	Input-output model outcomes					0.00	percentage		
EVEC3	Disadvantaged Business Enterprise (DBE) business	Percent of Disadvantaged Business Enterprise (DBE) business over total contract					0.00	percentage		
EVEC4	Regional impact of air cargo operations						0.00	dollars in thousands		

3.4 Enter data as needed and select **Save** at bottom of page.

The screenshot shows the 'Integrated Facility Module' interface for 'Airglades Airport'. The main content area is titled 'Sustainable Airport Tracking System' and is currently in the 'Data Input' tab. A dropdown menu shows '2018' selected. Below this is a 'Facility Info' box containing the following details:

- Year: 2018
- Facility Name: Airglades Airport
- Type: GA, National
- GA Operations: 3,444
- Based Aircrafts: 33
- Number of Runways: 2

Below the facility info, there are tabs for 'Economic Viability', 'Natural Resource Conservation', 'Social Responsibility', 'Operational Efficiency', and 'Data Input'. The 'Data Input' tab is active, displaying a table with the following data:

Code	Description	Expenses	Input	Unit Type
IN25	Total annual expenses		324	dollars in thousands
IN26	Total annual operating costs		5	dollars in thousands
IN27	Total annual non-operating expenses		5	dollars in thousands
IN28	Total passenger airline payment		5	dollars in thousands
IN29	Total fleet fuel cost		5	dollars in thousands
IN30	Amount paid for hazardous materials such as solvents; oil; etc.		5	dollars in thousands
IN31	Total fleet fuel energy purchased annually derived from alternative sources (e.g. ethanol-gasoline blends, biodiesel, compressed natural gas, propane, other low-/no-carbon fuels, electric energy, and hybrid technology.)		4	dollars in thousands
IN32	Total investment agreements and contracts		4	count

Below the table, there is a note: 'Total significant investment agreements and contracts that include social and'.

Helpful Hint: This is where all data are entered and used in various locations on Economic Viability, Natural Resource Conservation, Social Responsibility, and Operational Efficiency.

3.5 Data Calculation and Display – Economic Viability, Natural Resource Conservation, Social Responsibility, and Operational Efficiency tabs show the measurement and description calculations (based on data entered on data input tab) – the Input is the result.

Economic Viability:

Economic Viability		Natural Resource Conservation	Social Responsibility	Operational Efficiency	Data Input
Code	Measurement	Description		Input	Unit
Revenue Generation (RG)					
EVRG1	New non-aeronautical businesses	Number of new non-aeronautical businesses attracted to the airport in each calendar year.		0	count
EVRG2	Non-aeronautical revenue	Annual non-aeronautical revenue / Total annual revenue		0.00	percentage
EVRG3	Non-passenger-dependent revenue	Annual non-passenger-dependent revenue / Total annual revenue, such as investment income, industrial development, and other compatible uses of airport-owned land		0.00	percentage
EVRG4	Non-aeronautical operating revenue per enplanement	Non-aeronautical operating revenue / Total annual passenger		\$0.00	dollar
EVRG5	Parking revenue	Parking revenue / Total originating passenger		\$0.00	dollar
EVRG6	Parking utilization	During daily peak hour, average occupied parking space / total number of parking spaces by parking products (e.g. short-term, long-term and economic parking)		0.00	ratio
EVRG7	Concession Revenue	Annual concession revenue / Total annual enplanement passengers		\$0.00	dollar
EVRG8	Rental Car Revenue	Annual rental car revenue/Total annual destination passenger		\$0.00	dollar
EVRG9	Local enplaned passengers	The percentage of travelers flying from within their local service area (measured through surveys and airline booking data).		0	count
EVRG10	Airport statistics	Total number of passengers annually (by type, e.g. business, leisure); total number of aircraft movements (operations) and by type of transport (passenger, cargo, general aviation).		0.00	amounts in thousands
EVRG11	Air cargo tonnage	Total amount of cargo tonnage (e.g. metric tons domestic, metric tons international).		0.00	tons in thousands
EVRG12	Number of based aircraft.	Annual number of based aircrafts		0	count
EVRG13	Social and environmental investments	Percent of total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening.		0.00	percentage
EVRG14	Increased federal grant amount	(Current annually federal grant - Previous annually federal grant) / Previous annually federal grant		0.00	percentage
EVRG15	Increased state grant amount	(Current annually state grant - Previous annually state grant) / Previous annually state grant		0.00	percentage
EVRG16	Increased local subsidies amount	(Current annually local subsidies- Previous annually local subsidies) / Previous annually subsidies		0.00	percentage
EVRG17	Hangar rental and ground lease income	Hangar rental and ground lease revenue annually		0.00	percentage
EVRG18	Airport property	Acres of airport property that are available to be leased, whether improved or vacant, aeronautical or non-aeronautical, leased or not leased currently.		0.00	Acre
EVRG19	Profitable airport property percentage	Acres of airport property that are currently being leased/ RG18		0.00	percentage
EVRG20	Airport debt service	Debt service / Total annual operating revenue		0.00	percentage
Expenses Reduction (ER)					
EVER1	Cost per enplaned passenger (CPE)	Total passenger airline payment / Total annual enplaned passenger		\$0.00	dollar
EVER2	Operating costs	Total annual operating costs / Total annual enplaned passenger		\$0.00	dollar
EVER3	Non-operating expenses	Total annual non-operating expenses / Total annual expenses		0.00	percentage
EVER4	Bond rating			0.00	tier
EVER5	Airport debt	Total airport annually debt / Total enplaned passengers		\$0.00	dollar
EVER6	Debt service coverage ratio	Net revenues as defined in an airport's bond ordinance divided by principal and interest requirements for the fiscal year		0.00	percentage
EVER7	Contract service	Contract services / Total operating cost, such as police and fire		0.00	percentage
Regional Economic Contribution (EC)					
EVEC1	Jobs creation	Number of direct, indirect, and induced jobs and related payroll supported by airports annually.		0	count
EVEC2	Annual economic activity	Input-output model outcomes		0.00	percentage
EVEC3	Disadvantaged Business Enterprise (DBE) business	Percent of Disadvantaged Business Enterprise (DBE) business over total contract		0.00	percentage
EVEC4	Regional impact of air cargo operations			0.00	dollars in thousands

Natural Resource Conservation:

Economic Viability	Natural Resource Conservation	Social Responsibility	Operational Efficiency	Data Input
Code	Measurement	Description	Input	Unit
Water Conservation (WC)				
NRWC1	Water usage	Total volume of water used by the airport (water footprint), per year.	0.00	kGal
NRWC2	Passenger water usage	Total volume of water (in terminal) used per passenger, per year	0.00	Gallon
NRWC3	Irrigation water usage	Total volume of irrigation water used per total landscape area.	0.00	Gallon
NRWC4	Permeable area	Total permeable area at the site, with specific targets to be developed on a site-specific basis	0.00	Acre
NRWC5	Potable water consumption	Potable water consumption in kGal	0.00	kGal
Waste & Recycling (WR)				
NRWR1	Municipal Solid Waste (MSW)	Pounds of Municipal Solid Waste (MSW) sent to landfill per year (i.e. not recycled or reused)	0.00	ton
NRWR2	Municipal Solid Waste (MSW) generated	Pounds of Municipal Solid Waste (MSW) generated per passenger per year, and disposed of at a landfill	0.00	1/2 pound
NRWR3	Recyclable waste	Pounds of recyclables per passenger	0.00	1/2 pound
NRWR4	Recycling program	Does the airport have a Recycling Program (Yes=1/No=0)	0	1 or 0
NRWR5	Waste diversion rate	Total recyclables divided by total waste	0.00	percentage
NRWR6	Hazardous waste produced	Total hazardous waste produced (tons or gallons)	0.00	ton
NRWR7	Hazardous materials disposed/recycled	Amount of hazardous materials disposed or recycled (tons or gallons).	0.00	ton
NRWR8	Hazardous materials cost	Amount paid for hazardous materials such as solvents, oil, etc.	0.00	dollars in thousands
Natural Resources Conservation (NR)				
NRNR1	Wildlife	Number of damaging wildlife strikes per 100,000 aircraft movements.	0	count
NRNR2	Spills	Number and amount of spills annually (gallons)	0.00	kGal
NRNR3	Permeable materials coverage	Percent of total airport landside surface area covered by permeable materials	0.00	percentage
NRNR4	Airside stormwater quality	Performance is evaluated and scores are awarded based on the number of performance actions pursued that address, for example, deicing fluid management, designated/deicing and vehicle washing areas, water filtration systems, biological treatment, and runoff capture, among others beyond compliance standards.	0	count
NRNR5	Heat island reduction measurements	Performance is evaluated and scores are awarded based on the number of performance actions pursued that address, e.g. high solar reflectance and high albedo building and paving materials, increased vegetation and green roofing, and increased shade and covering.	0	count
Energy Consumption (EC)				
NREC1	Electricity consumption	Total onsite electricity consumption (kWh) per passenger.	0.00	Watt
NREC2	Pre-conditioned air	Percentage of gates offering connection to terminal power and providing pre-conditioned air	0.00	percentage
NREC3	Renewable energy sources	Percentage of annual electricity consumption derived from onsite renewable energy sources	0.00	percentage
NREC4	Natural Gas Consumption	Natural Gas Consumption (Therms)	0.00	Therms
NREC5	Non-aeronautical vehicles fuel consumption	Amount of unleaded gasoline and/or diesel fuel used for non-aeronautical vehicles (gallons).	0.00	gallon
NREC6	Renewable electricity produced	Total renewable electricity produced on property or from utility offsets (kWh)	0.00	kWh
NREC7	Airside equipment energy use	Performance is evaluated and points are awarded based on the number of performance actions, for example, vehicle idling, high-efficiency equipment procurement, maintenance and repair schedules, and right-sized vehicle planning, among others.	0	count
Air Quality & Greenhouse Gas Emissions (AQ)				
NRAQ1	GHG Emission	Total GHG emissions measured in mt CO2e	0.00	CO2e in metric tons
NRAQ2	GHG Emission (Scope 1)	GHG emissions measured in mt CO2e	0.00	CO2e in metric tons
NRAQ3	GHG Emission (Scope 2)	GHG emissions measured in mt CO2e	0.00	CO2e in metric tons
NRAQ4	GHG Emission (Scope 3)	GHG emissions measured in mt CO2e	0.00	CO2e in metric tons
NRAQ5	Hybrid rental cars	Number of hybrid rental cars in airport area	0	count
NRAQ6	Indoor Air Quality Improvement program	Does the airport have Indoor Air Quality Improvement (Yes=1/No=0).	0	1 or 0
NRAQ7	GSE Equipment Improvements	Usage of alternately-fueled Ground Service Equipment (GSE) (% of total GSE)	0.00	percentage
NRAQ8	Preconditioned air units	Does the airport use preconditioned air units (PCA) (Yes=1/No=0).	0	1 or 0
NRAQ9	Alternative vehicle fuels	Percent of total fleet fuel energy purchased annually derived from alternative sources (as a portion of total cost, or energy content of fuel/electricity purchased). Energy content can be converted to British thermal units (Btu). Purchased fuel/electricity is assumed to be consumed in that same year. Electric vehicle charging requires dedicated metering	0.00	percentage

Social Responsibility:

Economic Viability		Natural Resource Conservation		Social Responsibility		Operational Efficiency		Data Input	
Code	Measurement	Description				Input	Unit		
Human well-being (HW)									
SRHW1	Security breaches and violations	Number of security breaches or violations to the air operations area				0	count		
SRHW2	Aircraft accidents/incidents	Number of aircraft accidents/incidents				0	count		
SRHW3	Hazardous materials incidents	Number of incidents caused by hazardous materials				0	count		
SRHW4	Environmental notices of violation	Number of environmental notices of violation annually				0	count		
SRHW5	Noise complaints	Noise complaints, each individual call, and not each household				0	count		
SRHW6	Non-noise related complaints	Number of non-noise related complaints, such as temperature, service, comfort, etc.				0	count		
SRHW7	Respond to complaints	Average time to respond to community complaints				0	count		
SRHW8	Noise impact area	Number of Homes subjected to noise resulting from aviation activities of 65 dBA DNL or above				0	count		
SRHW9	Human wellness	Number of health and wellness clinics				0	count		
SRHW10	Aircraft Rescue and Fire Fighting (ARFF) responses	Percent of ARFF responses to emergencies within mandated response times.				0.00	percentage		
SRHW11	Medical emergency responses	Percent of airport medical emergency responses within established standards				0.00	percentage		
SRHW12	Working time loss	Lost work days from employee accidents and injuries				0.00	day		
SRHW13	Employee performance reviews	Number of performance reviews over time for total work force				0	count		
SRHW14	Labor grievances	Number of labor grievances				0	count		
SRHW15	Employee injuries	Total employee injuries				0	count		
Engagement & Leadership (EL)									
SREL1	Social media involvement	Number of "likes" or "follows" for the airport's presence on social media platforms (e.g., Facebook, Twitter, Instagram, etc.)				0	count		
SREL2	Internship	Hours of internship time				0.00	hour		
SREL3	Community outreach	Number of community events held to inform stakeholders about the airport and its sustainability efforts				0	count		
SREL4	Workforce development	Number of workforce development training sessions on the airport's goals, sustainability initiatives, incentives, and				0	count		

Operational Efficiency:

Economic Viability		Natural Resource Conservation		Social Responsibility		Operational Efficiency		Data Input	
Code	Measurement	Description	Input	Unit					
Operations & Maintenance (OM)									
OEOM1	Operation and maintenance cost per enplanement	Total operation and maintenance cost per enplanement passenger	\$0.00	dollar					
OEOM2	Operation and maintenance costs per terminal square foot	Total operation and maintenance cost per terminal square foot	\$0.00	dollar					
OEOM3	Green building certification	Two tiers starting with the lower points: 1) Percent of total building space that achieves a self or 2nd party verified sustainable performance guidelines, and 2) Percent of total building space achieving 3rd party verified green certification - e.g., LEED, Green Globes, EnvisionTM, etc.	0	count					
OEOM4	Construction waste diversion	Construction waste diversion percent of total construction & demolition waste diverted from a landfill or incinerator, in tons or cubic yards	0.00	percentage					
OEOM5	Runway/Taxiway maintenance cost	Percent of Runway/Taxiway maintenance cost of total airport maintenance cost.	0.00	percentage					
OEOM6	Jet bridge and airport vehicle maintenance cost	Percent of jet bridge and airport vehicle maintenance cost of total airport maintenance cost	0.00	percentage					
OEOM7	Preventative maintenance costs	Preventative maintenance costs compared to non-preventative maintenance costs (ratio)	0.00	percentage					
OEOM8	Maintenance inspections	Number of successful maintenance inspections	0	count					
OEOM9	Maintenance response time	Average maintenance response time	0.00	day					
OEOM10	Maintenance cost per parking space	Maintenance cost per parking space	\$0.00	dollar					
Operation Efficiency (OE)									
OEOE1	Gate utilization	Average number of flight departures per gate per day, measured separately during weekdays and the weekend.	0	count					
OEOE2	Practical hourly capacity	Average number of operations that can be performed in one hour on a runway with an average delay per operation of four minutes	0	count					
OEOE3	Average taxi time	Average time to taxi from the gate to the runway end during peak periods, compared with unimpeded taxi time	0.00	minute					
OEOE4	System failure	Number of system failures	0	count					
OEOE5	Duration of system failures	Duration of system failures in hours	0.00	hour					
Transportation Efficiency (TE)									
OETE1	Reduced roadway or curbside congestion	Performance is evaluated and points are awarded based on reduced travel or curbside waiting	0	count					
OETE2	Improvement of intermodal transportation access	Number of intermodal transportation modes, and percentage of enplaned passengers with each transportation mode	0.00	percentage					
OETE3	Air travel delay reduction	Minutes of delay per passenger compared with previous year	0.00	hour					
OETE4	Alternative passenger transportation	Performance is evaluated and points are awarded based on activities, for example, parking incentives and infrastructure for alternative, HOV, low-emitting, and pedestrian forms of passenger transportation	0	count					
OETE5	Alternative employee commute	Percent of employee alternative commutes versus total commutes by all full- and part-time employees	0.00	percentage					
OETE6	Frequency of ground transportation service	Frequency of ground transportation service in minutes (e.g. shuttle service, metro)	0.00	minute					
Business Operations (BO)									
OEB01	Customer Service Improvement	Number of airport service related complaints in total (within airport terminal area)	0	count					

4. To complete a Data Analysis:

4.1 Select Data Analysis.

The screenshot shows the 'Integrated Facility Module' interface for 'Airglades Airport'. The page title is 'Sustainable Airport Tracking System'. On the left is a sidebar with various menu items: General, Runways/Helipads, Facility Requirements, Services, Remarks, NavCom, FBO, Schedule, Documents/Links, Profile Data, Disaster Preparedness, Infrastructure Assessment, and Sustainable Airport. The main content area has three tabs: 'Data Input', 'Data Analysis', and 'Import'. The 'Data Analysis' tab is circled in blue. Below the tabs is a 'Select Year' dropdown menu currently set to 'Select One'. At the top right, there are 'Bookmarks', 'Go to...', and 'Go New' buttons. The top navigation bar includes 'Search', 'Facility', 'Contacts', 'Statistics', 'JACIP', 'Inspection', and 'Pavement'.

4.2 Select data as needed.

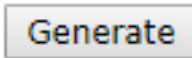
a) View of State User:

This screenshot shows the 'Sustainable Airport Tracking System' page with the 'Data Analysis' tab selected. The 'Years' section contains checkboxes for years from 2018 down to 2010. Below this, there are dropdown menus for 'Airport Comparison', 'Hub Type/GA Type', 'District', and 'CFASPP Region'. A 'Facilities' section has a 'Select All' checkbox. A 'Generate' button is located at the bottom of the form. The rest of the interface, including the sidebar and top navigation, is identical to the previous screenshot.

b) View of Airport User:

The screenshot displays the 'Integrated Facility Module' for 'Airglades Airport'. The interface includes a top navigation bar with tabs for Search, Facility, Contacts, Statistics, JACIP, Inspection, and Pavement. A left sidebar lists various menu items such as General, Runways/Helipads, Facility Requirements, Services, Remarks, NavCom, FBO, Schedule, Documents/Links, Profile Data, Disaster Preparedness, Infrastructure Assessment, and Sustainable Airport. The main content area is titled 'Sustainable Airport Tracking System' and features sub-tabs for Data Input, Data Analysis, and Import. Under the Data Analysis tab, there are checkboxes for years from 2010 to 2018, with 'Airport Comparison' checked. A 'Generate' button is present below these options. A 'Request a change' link is also visible.

4.3 Select **Generate**.



4.4 View the **Data Analysis** (will display at bottom of page).

a) View of State User:

Economic Viability				
Year: 2018				
Revenue Generation (RG)				
Code	Measurement	Airglades Airport	Peer Average	Difference
EVRG1	New non-aeronautical businesses	5		5
EVRG2	Non-aeronautical revenue	1		1
EVRG3	Non-passenger-dependent revenue	1		1
EVRG4	Non-aeronautical operating revenue per enplanement	1		1
EVRG5	Parking revenue	1		1
EVRG6	Parking utilization	1		1
EVRG7	Concession Revenue	1		1
EVRG8	Rental Car Revenue	1		1
EVRG9	Local enplaned passengers	5		5
EVRG10	Airport statistics	5		5
EVRG11	Air cargo tonnage	5		5
EVRG12	Number of based aircraft.	5		5
EVRG13	Social and environmental investments	1.25		1.25
EVRG14	Increased federal grant amount	0		0
EVRG15	Increased state grant amount	0		0
EVRG16	Increased local subsidies amount	0		0
EVRG17	Hangar rental and ground lease income	8		8
EVRG18	Airport property	5		5
EVRG19	Profitable airport property percentage	1		1
EVRG20	Airport debt service	1		1
Expenses Reduction (ER)				
Code	Measurement	Airglades Airport	Peer Average	Difference
EVER1	Cost per enplaned passenger (CPE)	1		1
EVER2	Operating costs	64.8		64.8
EVER3	Non-operating expenses	0.0154320987654321		0.0154320987654321
EVER4	Bond rating	5		5
EVER5	Airport debt	1		1
EVER6	Debt service coverage ratio	5		5
EVER7	Contract service	1		1
Regional Economic Contribution (EC)				
Code	Measurement	Airglades Airport	Peer Average	Difference
EVEC1	Jobs creation	5		5
EVEC2	Annual economic activity	5		5
EVEC3	Disadvantaged Business Enterprise (DBE) business	1.25		1.25
EVEC4	Regional impact of air cargo operations	5		5

Export

Helpful Hint: Select the tab for the type of data analysis to be reviewed.

b) View of Airport User:

Sustainable Airport Tracking System

Bookmarks Go to...

Data Input | Data Analysis | Import

Years 2018 2017 2016 2015 2014 2013
 2012 2011 2010

Airport Comparison

Generate

Economic Viability | Natural Resource Conservation | Social Responsibility | Operational Efficiency

Economic Viability

Year: 2018

Revenue Generation (RG)				
Code	Measurement	Airglades Airport	Peer Average	Difference
EVRG1	New non-aeronautical businesses	70		70
EVRG2	Non-aeronautical revenue	0.2		0.2
EVRG3	Non-passenger-dependent revenue	0.5		0.5
EVRG4	Non-aeronautical operating revenue per enplanement	6		6
EVRG5	Parking revenue	8		8
EVRG6	Parking utilization	1		1
EVRG7	Concession Revenue	2.8		2.8
EVRG8	Rental Car Revenue	2.4		2.4
EVRG9	Local enplaned passengers	5		5
EVRG10	Airport statistics	5		5
EVRG11	Air cargo tonnage	5		5
EVRG12	Number of based aircraft	5		5
EVRG13	Social and environmental investments	0.625		0.625
EVRG14	Increased federal grant amount	0		0
EVRG15	Increased state grant amount	0		0
EVRG16	Increased local subsidies amount	0		0
EVRG17	Hangar rental and ground lease income	0.222222222222222		0.222222222222222
EVRG18	Airport property	5		5
EVRG19	Profitable airport property percentage	1		1
EVRG20	Airport debt service	0.041666666666667		0.041666666666667

Expenses Reduction (ER)				
Code	Measurement	Airglades Airport	Peer Average	Difference
EVER1	Cost per enplaned passenger (CPE)	1		1
EVER2	Operating costs	64.8		64.8
EVER3	Non-operating expenses	0.0154320987654321		0.0154320987654321
EVER4	Bond rating	5		5
EVER5	Airport debt	1		1
EVER6	Debt service coverage ratio	5		5
EVER7	Contract service	0.5		0.5

Regional Economic Contribution (EC)				
Code	Measurement	Airglades Airport	Peer Average	Difference
EVEC1	Jobs creation	5		5
EVEC2	Annual economic activity	10		10
EVEC3	Disadvantaged Business Enterprise (DBE) business	0.625		0.625
EVEC4	Regional impact of air cargo operations	5		5

Export

Request a change

5. To Bulk Import Data:

5.1 Select Import.

The screenshot displays the 'Integrated Facility Module' interface for 'Airglades Airport'. The top navigation bar includes 'Search', 'Facility', 'Contacts', 'Statistics', 'JACIP', 'Inspection', and 'Pavement'. The main content area is titled 'Sustainable Airport Tracking System' and features a sidebar with various menu items: General, Runways/Helipads, Facility Requirements, Services, Remarks, NavCom, FBO, Schedule, Documents/Links, Profile Data, Disaster Preparedness, Infrastructure Assessment, and Sustainable Airport. The main content area has a 'Data Input' tab selected, with sub-tabs for 'Data Analysis' and 'Import'. The 'Import' tab is circled in blue. Below the tabs, there is a 'Select Year' dropdown menu set to 'Select One'. A 'Bookmarks' section with a 'Go to...' dropdown and 'Go' and 'New' buttons is located in the top right corner. The version number 'Version 2.1.13' is visible in the top right corner.

5.2 Select Download.

Integrated Facility Module

Airglades Airport

Search Facility Contacts Statistics JACIP Inspection Pavement

General Runways/Heliports Facility Requirements Services Remarks NavCom FBO Schedule Documents/Links Profile Data Disaster Preparedness Infrastructure Assessment Sustainable Airport

Sustainable Airport Tracking System

Data Input Data Analysis Import

Step 1. Download Sustainable Airport Tracking Spreadsheet (blank) **Download**

Step 2. Upload Sustainable Airport Tracking Spreadsheet (csv) Choose File No file chosen Import File

Import Data

	Import Type	File Name	Upload Date	Status
📄	↓ SAT	Airport Sustainability Template.csv	9/18/2018 11:32:39 AM	1 Records Imported
📄	↓ SAT	Airport Sustainability Template.csv	9/18/2018 11:33:52 AM	1 Records Imported
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:25:25 PM	Unknown File Type
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:26:52 PM	124 Records Saved
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:28:03 PM	124 Records Saved
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:31:04 PM	124 Records Saved
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:35:18 PM	124 Records Imported

5.3 Select the file.

Integrated Facility Module

Airglades Airport

Search Facility Contacts Statistics JACIP Inspection Pavement

General Runways/Heliports Facility Requirements Services Remarks NavCom FBO Schedule Documents/Links Profile Data Disaster Preparedness Infrastructure Assessment Sustainable Airport

Sustainable Airport Tracking System

Data Input Data Analysis Import

Step 1. Download Sustainable Airport Tracking Spreadsheet (blank) **Download**

Step 2. Upload Sustainable Airport Tracking Spreadsheet (csv) Choose File No file chosen Import File

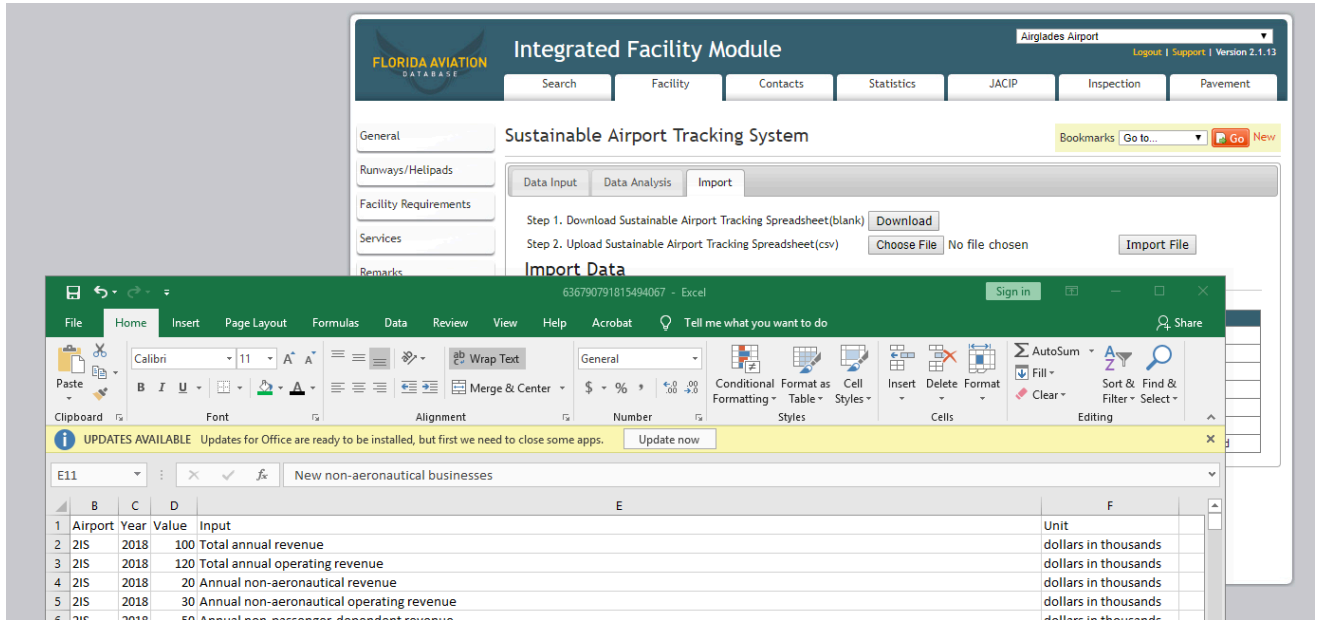
Import Data

	Import Type	File Name	Upload Date	Status
📄	↓ SAT	Airport Sustainability Template.csv	9/18/2018 11:32:39 AM	1 Records Imported
📄	↓ SAT	Airport Sustainability Template.csv	9/18/2018 11:33:52 AM	1 Records Imported
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:25:25 PM	Unknown File Type
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:26:52 PM	124 Records Saved
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:28:03 PM	124 Records Saved
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:31:04 PM	124 Records Saved
📄	↓ SAT	636755545021807796.csv	10/19/2018 6:35:18 PM	124 Records Imported

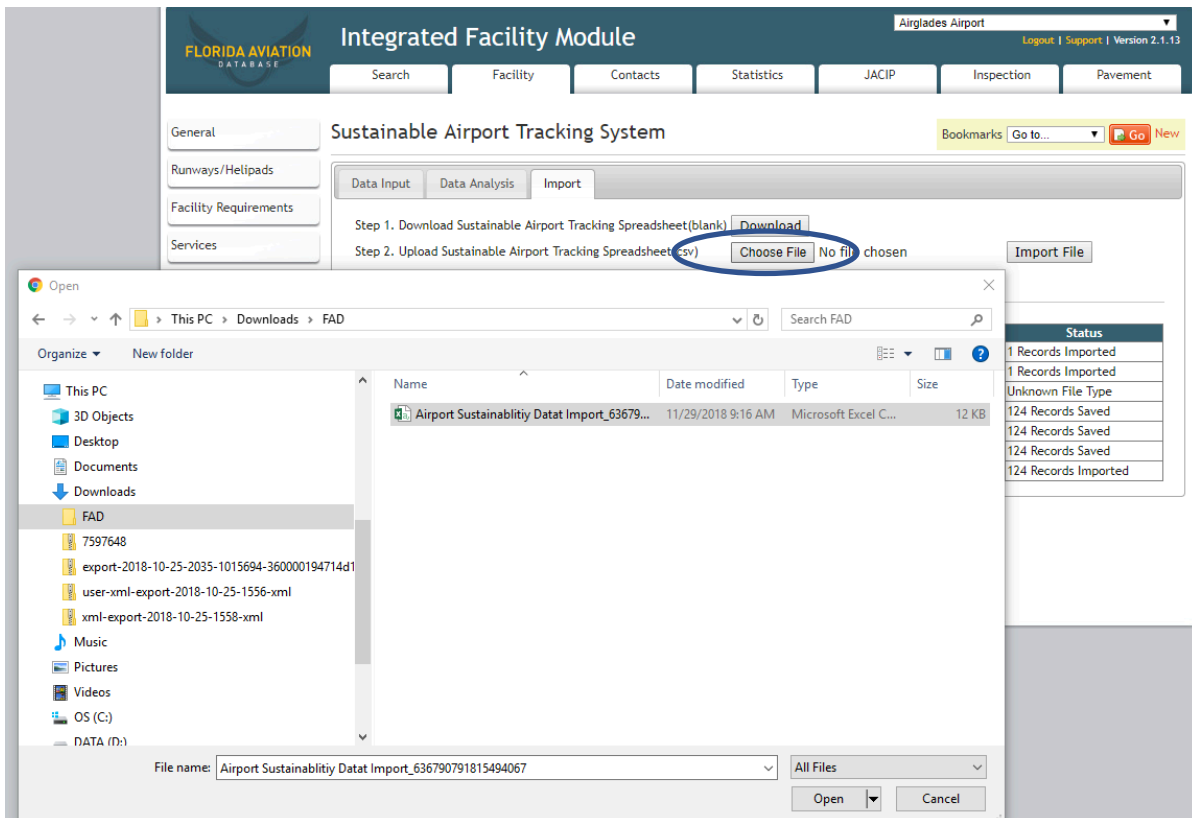
Helpful Hint: Depending on your computer's download settings, it may show in another location (your PC's download folder).

636790791815494...csv

5.4 Enter data in downloaded file (.csv) and save file to your computer. File MUST be saved in .csv format.



5.5 In the system, select Step 2, **Choose File**.



5.6 Select Open.

The screenshot shows the 'Integrated Facility Module' for 'Airglades Airport'. The main interface is titled 'Sustainable Airport Tracking System' and has tabs for 'Data Input', 'Data Analysis', and 'Import'. An 'Open' file dialog is open, showing the file 'Airport Sustainability Datat Import_63679...' selected in the 'Downloads' folder. The file name is also visible in the 'File name' field at the bottom of the dialog.

5.7 File name will now display; select Import File.

The screenshot shows the 'Integrated Facility Module' for 'Airglades Airport'. The main interface is titled 'Sustainable Airport Tracking System' and has tabs for 'Data Input', 'Data Analysis', and 'Import'. The 'Import' tab is active, and the 'Import File' button is circled in blue. Below the buttons is a table titled 'Import Data' showing a list of imported files.

	Import Type	File Name	Upload Date	Status
	SAT	Airport Sustainability Template.csv	9/18/2018 11:32:39 AM	1 Records Imported
	SAT	Airport Sustainability Template.csv	9/18/2018 11:33:52 AM	1 Records Imported
	SAT	636755545021807796.csv	10/19/2018 6:25:25 PM	Unknown File Type
	SAT	636755545021807796.csv	10/19/2018 6:26:52 PM	124 Records Saved
	SAT	636755545021807796.csv	10/19/2018 6:28:03 PM	124 Records Saved
	SAT	636755545021807796.csv	10/19/2018 6:31:04 PM	124 Records Saved
	SAT	636755545021807796.csv	10/19/2018 6:35:18 PM	124 Records Imported

5.8 Imported file will display at bottom of page.

FLORIDA AVIATION DATABASE Integrated Facility Module Airglades Airport Logout | Support | Version 2.1.13

Search Facility Contacts Statistics JACIP Inspection Pavement

General **Sustainable Airport Tracking System** Bookmarks Go to... Go New

Runways/Helipads

Facility Requirements

Services

Remarks

NavCom

FBO

Schedule

Documents/Links

Profile Data

Disaster Preparedness

Infrastructure Assessment

Sustainable Airport

Data Input Data Analysis **Import**

Step 1. Download Sustainable Airport Tracking Spreadsheet(blank) Download

Step 2. Upload Sustainable Airport Tracking Spreadsheet(csv) Choose File No file chosen Import File

Import Data

	Import Type	File Name	Upload Date	Status
	↓ SAT	Airport Sustainability Template.csv	9/18/2018 11:32:39 AM	1 Records Imported
	↓ SAT	Airport Sustainability Template.csv	9/18/2018 11:33:52 AM	1 Records Imported
	↓ SAT	636755545021807796.csv	10/19/2018 6:25:25 PM	Unknown File Type
	↓ SAT	636755545021807796.csv	10/19/2018 6:26:52 PM	124 Records Saved
	↓ SAT	636755545021807796.csv	10/19/2018 6:28:03 PM	124 Records Saved
	↓ SAT	636755545021807796.csv	10/19/2018 6:31:04 PM	124 Records Saved
	↓ SAT	636755545021807796.csv	10/19/2018 6:35:18 PM	124 Records Imported
	↓ SAT	Airport Sustainability Datat Import_636790791815494067.csv	11/29/2018 2:21:41 PM	12 Records Imported

5.9 Data will populate on **Data Input** tab.

The screenshot displays the 'Integrated Facility Module' interface for 'Airglades Airport'. The main content area is titled 'Sustainable Airport Tracking System' and features a 'Data Input' tab. A 'Select Year' dropdown is set to 2018. Below this, a 'Facility Info' box lists: Year: 2018, Facility Name: Airglades Airport, Type: GA, National, GA Operations: 3,444, Based Aircrafts: 33, and Number of Runways: 2. A secondary tabbed interface includes 'Economic Viability', 'Natural Resource Conservation', 'Social Responsibility', 'Operational Efficiency', and 'Data Input'. The 'Data Input' tab contains a table with the following data:

Code	Description	Expenses	Input	Unit Type
IN25	Total annual expenses		324	dollars in thousands
IN26	Total annual operating costs		5	dollars in thousands
IN27	Total annual non-operating expenses		5	dollars in thousands
IN28	Total passenger airline payment		5	dollars in thousands
IN29	Total fleet fuel cost		5	dollars in thousands
IN30	Amount paid for hazardous materials such as solvents; oil; etc.		5	dollars in thousands
IN31	Total fleet fuel energy purchased annually derived from alternative sources (e.g. ethanol-gasoline blends, biodiesel, compressed natural gas, propane, other low-/no-carbon fuels, electric energy, and hybrid technology.)		4	dollars in thousands
IN32	Total investment agreements and contracts		4	count

5.10 For data analysis, repeat section 4.

APPENDIX D – Case Study Interview Questions

The following are questions for the FDOT/USF Sustainable Airport Tracking Tool case study surveys. The case studies in this report were based on a Commercial Service airport and a General Aviation airport in Florida. Responses shown assisted in development of the tool to fit airport needs and improve overall usefulness of the screening and monitoring tool. The product is a Web-based tool that allows airports to input manual annual calculations into the spreadsheet for each metric. The purpose of this survey was to collect feedback on the expected benefits and challenges of the tool and potential output features that airports would find beneficial.

Please respond to the questions below, if applicable:

1. Which metrics would you recommend adding that would be useful for your airport as well as others?
2. Are there any metrics you would consider less useful or that your airport does not/would not track?
3. What current strategies are used to keep track of, and monitor some of the metrics listed in the tool?
4. Which sustainability strategies/means of monitoring would your airport like to implement?
5. Which aspects of this tool is your airport most likely to utilize, and why?
6. How are sustainability strategies evaluated at your airport?
7. Is there information/data that would be difficult to attain? If so, which information/data would be the most difficult to attain, and why?
8. Do you anticipate any challenges with utilizing this tool at your airport? If so, what challenges would you experience?
9. Do you foresee benefits to using this tool at your airport? If so, what benefits do you anticipate?
10. What types of features/outputs would you like to see in a sustainability tracking tool?

Do you have any additional comments, recommendations, or concerns?

APPENDIX E – PIE Sustainability Baseline Assessment

This attachment provides the sustainability baseline assessment for the St. Pete-Clearwater International Airport (PIE) in support of the ongoing Airport Master Plan. Comprehension of the sustainability performance and information provided will facilitate evaluation and measurement of sustainability metrics and initiatives for prospective implementation. Where applicable, resource use is correlated with the number of passengers using PIE. Historical passenger use is listed in Table E-1. Figures referenced throughout the memorandum are also provided in the end of this attachment.

The Sustainability Baseline Assessment included the following topics:

- Water Resources
- Energy
- Economic Impact and Community
- Procurement and Operational Policies
- Tenant Sustainability

Table E-1 PIE Annual Passengers (2015-2017)

Month	2015	2016	2017
January	109,628	124,742	150,112
February	116,483	137,907	151,795
March	167,263	184,454	206,806
April	143,657	146,723	181,649
May	135,022	150,421	166,314
June	157,220	175,787	195,060
July	173,743	194,243	204,853
August	133,846	142,458	156,983
September	91,607	118,304	100,249
October	136,718	153,677	178,372
November	134,860	144,394	171,040
December	145,355	163,925	192,036
Total Annual Passengers	1,645,402	1,837,035	2,055,269

Source: PIE Total Passengers Spreadsheet, April 2018.

Water Resources

Water resources are categorized into Water Use, Stormwater and Water Quality, and Water-Based Natural Resources. PIE implements potable water reduction practices and uses reclaimed water for irrigation to conserve local water resources. PIE minimizes potential stormwater and pollution impacts by implementing a Stormwater Management Plan, Stormwater Pollution Prevention Plan (SWPPP), and Spill Prevention, Control, and Countermeasure (SPCC) Plan.

Water Use

Pinellas County provides potable water to PIE through 14 meters divided into Terminal and Other Buildings categories (see Table E-2). Irrigation is conducted with reclaimed water from the City of Largo (see Table E-2). Tracking of water use data in this baseline assessment is from December 2015 through February 2018. Overall water usage decreased at PIE during this time period (see Figure E-1).

The Terminal (passenger use) average daily water usage fluctuated monthly with an overall decrease in comparison to the constant average daily water usage for Irrigation (reclaimed water) and Other Buildings (see Figure E-2). Daily potable water usage in the Terminal averaged 14.47 kilogallons (kgal), daily irrigation water usage averaged 8.68 kgal, and water usage in Other Buildings averaged 0.46 kgal daily. Passenger traffic fluctuates seasonally; therefore, historical passenger data were used to determine Terminal building water usage per passenger (see Figure E-3).

Water Quality

Maintaining and enhancing water quality plays a vital role in PIE's sustainability performance. PIE has formed several plans that aim to protect and enhance water quality, including the following:

1. Stormwater Pollution Prevention Plan (SWPPP)
 - Erosion and sediment control
 - Structural development to prevent exposed soil, and divert pollutant discharge (drainage fixtures, silt fences, lining of existing culverts to seal cracks at pipe joint dislocations, etc.)
 - Stormwater management
2. Spill Prevention, Control, and Countermeasure Plan (SPCC)
 - Prevention of oil discharge of oil into waterbodies
 - Control measures to prevent oil spills from entering waterbodies
 - Countermeasure procedures to clean, restrain, and mitigate areas affected by oil spills
3. Stormwater Management Plan
 - Maintenance of safe, economic, and efficient stormwater operations separate storm sewer system
 - Treatment of stormwater runoff before it leaves the storm drainage system and enters waterbodies
4. Surface Water Management Plan
 - Addresses flooding, water quality, and county-owned stormwater systems

- Includes assessment of impervious surfaces which increase stormwater runoff and cause pollution and flooding issues

As part of its commitment to develop PIE in a manner that protects the built environment and natural resources, a Storm Water Management Plan is being developed as part of the Master Plan.

Water-based Natural Resources

Southwest Florida Water Management District provided PIE with a Seagrass Permit (see Figure E-4.), which allowed for completion of the Seagrass Marsh Habitat Oyster Bar Mitigation effort. The mitigation effort allowed PIE to conduct grading and excavation for development north of the T-Hangar area.

Energy

A review of historic energy use was conducted for the following areas:

- Terminal
- Airfield lighting
- Landside lighting
- Other buildings¹¹

Electric energy usage was evaluated using billing data from Duke Energy for January through December 2017. Overall average daily electrical energy use at PIE increased slightly since 2017 (see Figure E-6). Average electrical energy use per month fluctuated, with an aggregate increase over time (see Figure E-5). To account for seasonal changes in passenger use of the Terminal facility, the average monthly electric energy use per passenger in the Terminal is provided in Figure E-7. A notable increase of average monthly energy use per passenger in the Terminal occurred in September 2017, likely due to the fact that PIE was closed to passenger traffic during Hurricane Irma (resulting in overall reduction in passengers; see Table E-1) while continuing to use energy with cooling and lighting. Average daily energy use in the Terminal fluctuated monthly, with an overall increase over time (see Figure E-7), which could be due to increases in passenger use (see Table E-1).

PIE reduced energy usage in the passenger terminal facility through use of a Building Energy Management system. Energy reduction is attributed, but is not limited, to a system-controlling HVAC system and room occupancy light sensors. There is currently one PIE-owned hybrid vehicle, GemCar¹², which is used for traffic enforcement within PIE property. Additionally, two gates use 400Hz connections and/or pre-conditioned air, which increase terminal energy use but decrease air emissions from idling aircraft.

¹¹ Term refers to all buildings other than the terminal—Fixed Base Operator buildings, Aircraft Rescue and Firefighting facility, and any unidentified buildings.

¹² <https://gem.polaris.com/en-us/>.

Economic Impact and Community

PIE is home to a variety of businesses and organizations that result in an important employment center for the region. A recent Airport Economic Activity and Economic Impact Study¹³ noted that PIE contributed to 7,020 full-time equivalent (FTE) jobs in 2016, including direct airport, visitor spending, new domestic routes, new international routes, non-airline aviation operations, and non-airline (General and Military Aviation) jobs.

In addition to aeronautical activity, PIE provides a variety of non-aeronautical facilities and services, attributing to the economy and tourism of Pinellas County. The total economic impact of non-aeronautical activity is approximated at 1,417.1 FTE, an estimated \$1.044 billion, and labor income of \$81.275 million per FTE of \$59,355.¹⁴

PIE is involved in an array of community activities; examples include:

- Big Brothers Big Sisters Workplace Monitoring Program (since 2016)
- Pinellas County Schools Lunch Pal Mentors
- Food & Supply Drive for Hispanic Outreach Network Puerto Rico Evacuee Families (since 2017)
- Pinellas County Schools Executive Internship Program
- Quarterly Mobile Blood Drive
- Airport employee food drives (various charities)
- World War II Veteran Honor Flights
- Tony Jannus Distinguished Aviation Society members

Procurement and Operational Policies

Procurement and Purchasing

PIE seeks opportunities for cooperative purchases with government entities and adheres to County recycled product procurement policies to decrease the volume of paperwork (moving to electronic documentation). Procurement policies for recycled materials is encouraged under the Pinellas County Guidelines.¹⁵ The Pinellas County Director of Purchasing requires bidders to specify products made of recycled materials.

PIE's diversity program includes consideration of Disadvantaged Business Enterprises (DBE), Small Business Enterprises (SBE), and Airport Concession Disadvantaged

¹³ St. Pete-Clearwater International (PIE) (May 2018). PIE Economic Impact. Retrieved May 20, 2018, from https://fly2pie.com/docs/default-source/news/press-releases/2018/pie-economic-impact-report.pdf?sfvrsn=23cb4ddb_2&p=DevEx.LB.1,5037.1%205%20bid.

¹⁴ *Ibid.*

¹⁵ Pinellas County. (n.d.). Purchasing Policies – Existing Procurement Procedures [PDF]. Pinellas County. [http://www.pinellascounty.org/purchase/PolicyandProcedureManual%2008-2017%20\(Section%2015%20Revised\).pdf](http://www.pinellascounty.org/purchase/PolicyandProcedureManual%2008-2017%20(Section%2015%20Revised).pdf)

Business Enterprises (ACDBE), which is encouraged by the County for employee hiring diversity practices, as well as seeking to do business with companies who are owned by historically disadvantaged populations.¹⁶

Operations

Minimum standards apply to any person or entity that provides one or more commercial aeronautical services or operates a private or commercial hangar at PIE. These include minimum standards of fair and reasonable opportunity without discrimination and honoring the noise abatement and mitigation procedures.¹⁷ Minimum standards are implemented to ensure a consistent standard and quality for all PIE tenants. All tenants are required to enter into an agreement, permit, license, or lease with the County to operate at PIE. These standards support sustainability efforts of PIE through policies that foster promotion of orderly development of airport land, protection from unlicensed and unauthorized products and services, and provision of service providers with a satisfactory level of service.

Tenant Sustainability

An online Sustainability Planning Questionnaire Survey was distributed by email to PIE's tenants on April 6, 2018. The survey was intended to gain information on current tenant sustainability practices, and to solicit ideas regarding PIE's prospective sustainability efforts which could be leveraged by tenants (see Figure E-8).

Tenants were surveyed on current sustainability practices, initiatives, activities, and were asked to provide any useful documentation or suggestions to the Consultant Team.

The survey results reflected the following:

- Two tenants have formalized sustainability programs/policies.
- All survey participants implement initiatives to contribute to the sustainability of their business or PIE.
- Two tenants provided various suggestions to enhance the sustainability of PIE facilities:
 - LED lights in all the parking locations
 - Electric charging stations
 - Alternative fuel vehicles for the shuttle programs
 - Upgrade fixtures and motion activated on/off switches
 - Waterless/flushless toilets
 - Drought tolerant landscaping
 - Energy Efficient windows

¹⁶ Pinellas County. (n.d.). Training & Development. Retrieved May 19, 2018, from http://www.pinellascounty.org/hr/training_development.htm.

¹⁷ St. Pete-Clearwater international Airport (PIE). (n.d.). Airport Projects Information [PDF]. St. Pete-Clearwater International Airport (PIE). <http://www.fly2pie.com/docs/default-source/news/airport-projects-information/1628-pie - airport min stand 5-01-12 final.pdf?sfvrsn=2>.

- Solar panels on airport roofs
- Favorable lease terms and rent credits for sustainable renovation/construction

Tenant Sustainability Highlight

In the survey, tenants were offered the opportunity to showcase their sustainability programs, activities, and policies. Following are tenant sustainability programs, activities, and policies.

1. BBA Aviation

Sustainability is embedded in its Corporate Social Responsibility (CSR) Approach:

- Management of societal and environmental impacts by taking the responsible approach to the operations and conduct of the company.
- Commitment to limiting business activity impacts on the environment.
- Commitment to continuous improvement in environmental performance each year, including elimination of environmental incidents.
- Reduction of environmental impact through use of resources.
- Use of technology that supports business objectives in conjunction with environmental benefits.
- Commitment to reducing and preventing pollution and reducing emissions.
- Work with customers and supply chains that develop effective and sustainable products.
- Compliance with international and local environmental legislation.
- Provision of information to personnel in order to meet the company's environmental goals.

2. Signature Flight Support¹⁸

Sustainability is embedded in the company's Corporate Responsibility Policy:

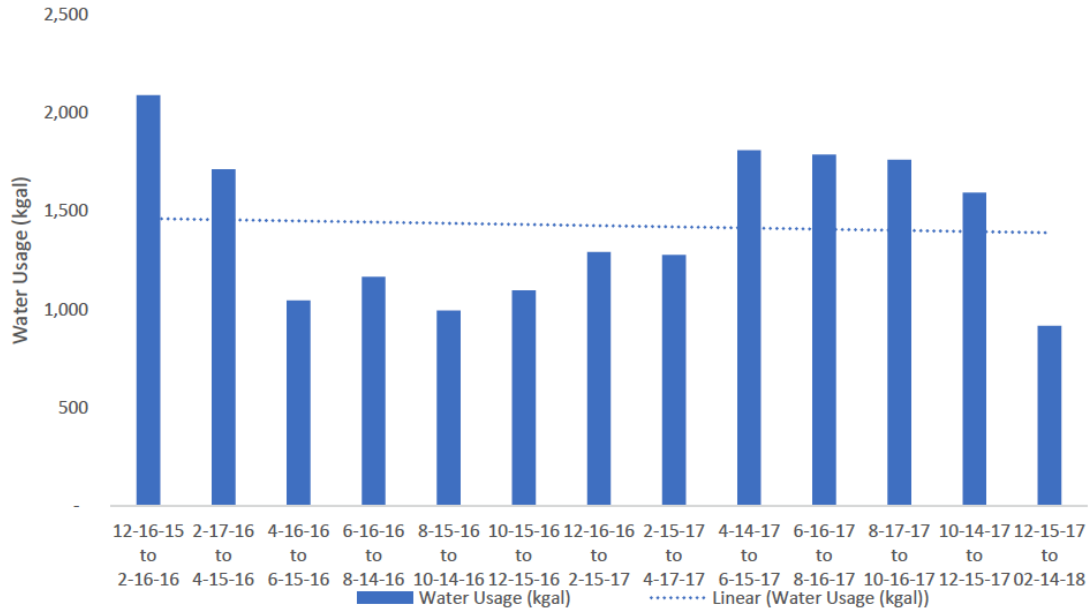
- Commitment to innovation in both local community and environmental aspects.
- Eco-friendly facility design, construction, and operations (\$100 million dollars spent towards the design over a period of five years).
- Ecological responsibility achievements include being the first LEED-certified FBO and LEED-certified hangar¹⁹, conscious purchase of low emissions equipment, and a network-wide recycling initiative.
- Positive impact on society and environment through delivery of services, and personnel conduct.

¹⁸ Expressed interest in submitting additional information. Current information retrieved from company website.

¹⁹ LEED-certified FBO and LEED-certified hangar currently at San Francisco International Airport and Norman Y. Mineta San Jose International Airport only.

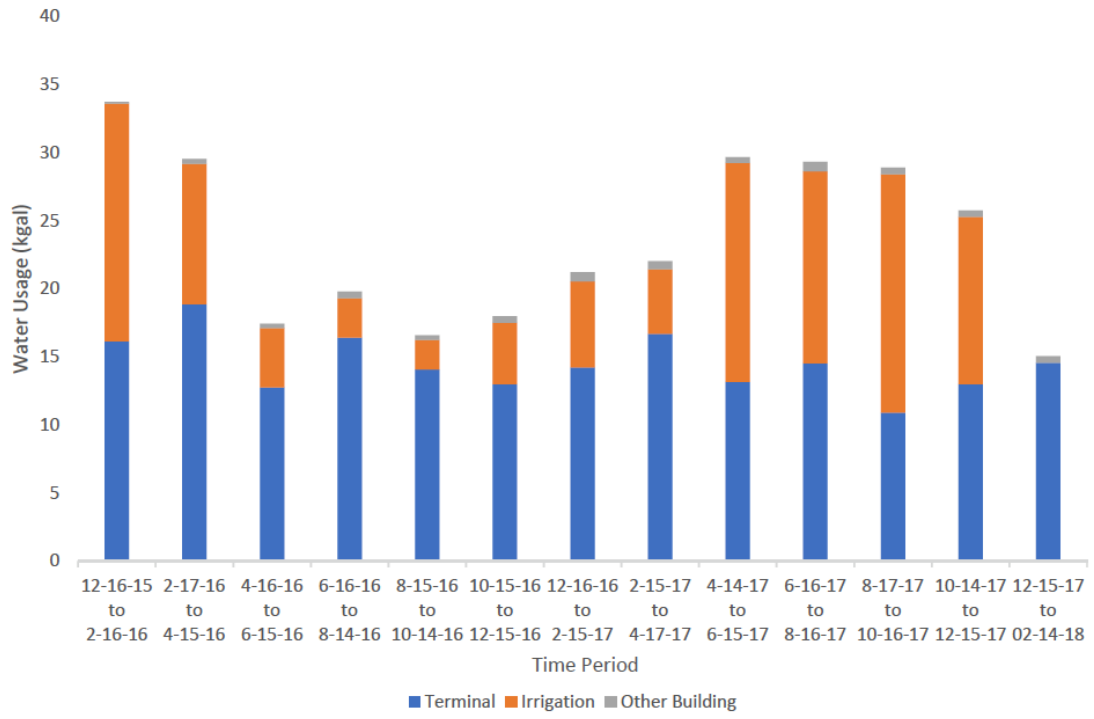
- Participation in Carbon Disclosure Project.
- Commitment to monitoring and reporting efficiency to improve environmental performance.
- Use of electric crew cars and charge stations.

Figure E-1 Overall Water Use at PIE (December 2015–February 2018)



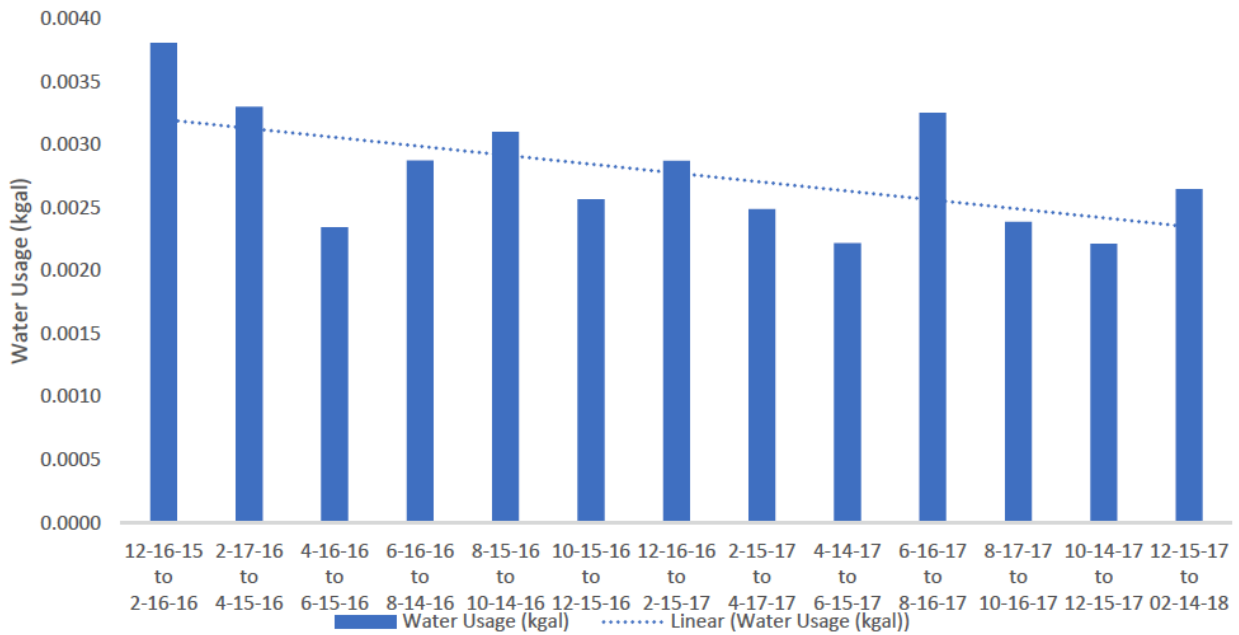
Note: Two months of data used for each time period within water usage graphs, except July–October 2017, which was adjusted proportionally due to missing July utility bills and overlapping billing.
 Source: Pinellas County, City of Largo. [PIE Energy and Water Input Spreadsheet].

Figure E-2 Average Daily Water Use at PIE (December 2015– February 2018) – Terminal, Irrigation, Other Buildings



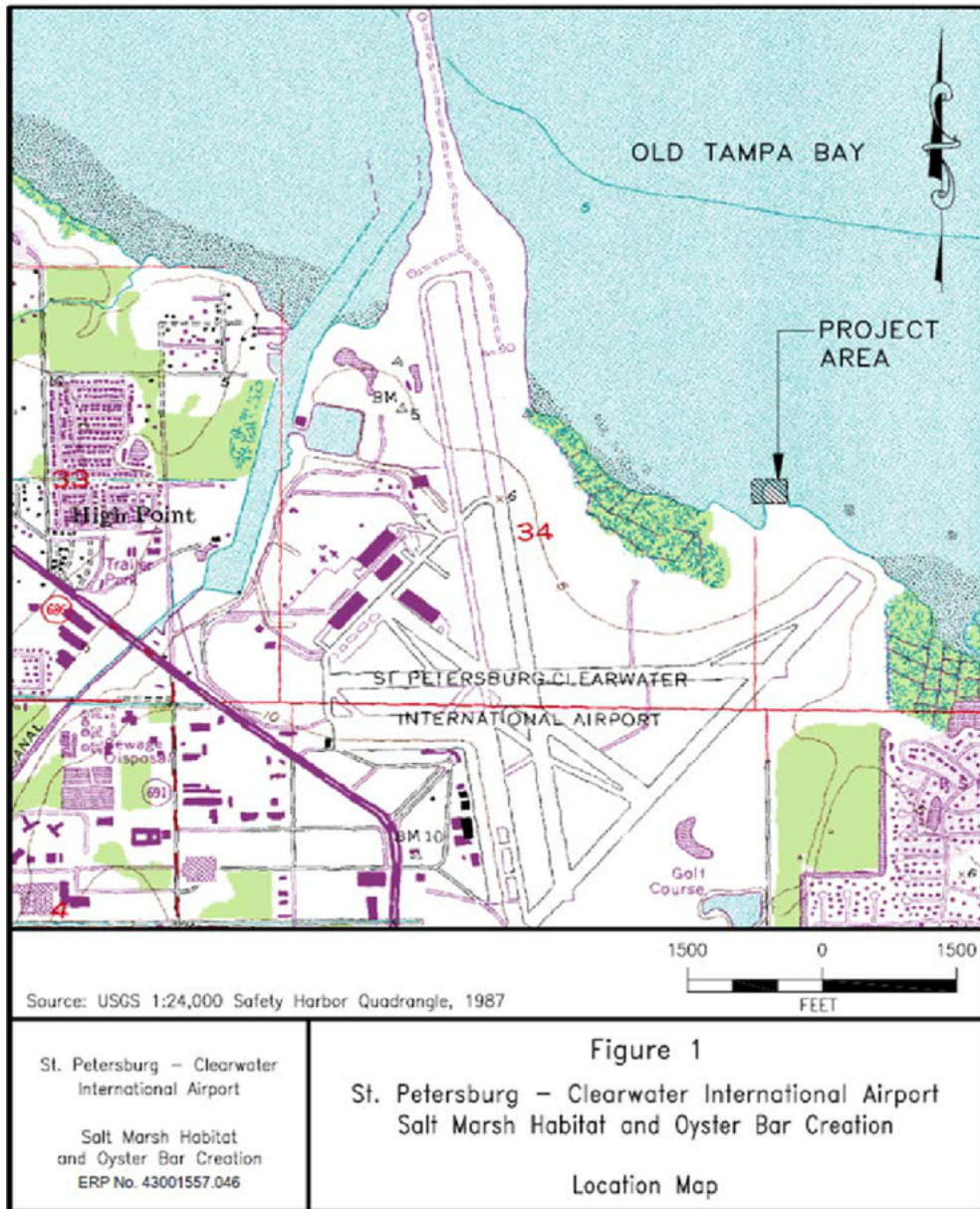
Note: Two months of data used for each time period within water usage graphs, except July–October 2017, which was adjusted proportionally due to missing July utility bills and overlapping billing periods.
 Source: Pinellas County, City of Largo. (2018, April). [PIE Energy and Water Input Spreadsheet].

**Figure E-3 Average Daily Water Use per Passenger at PIE
(December 2015– February 2018) –Terminal**



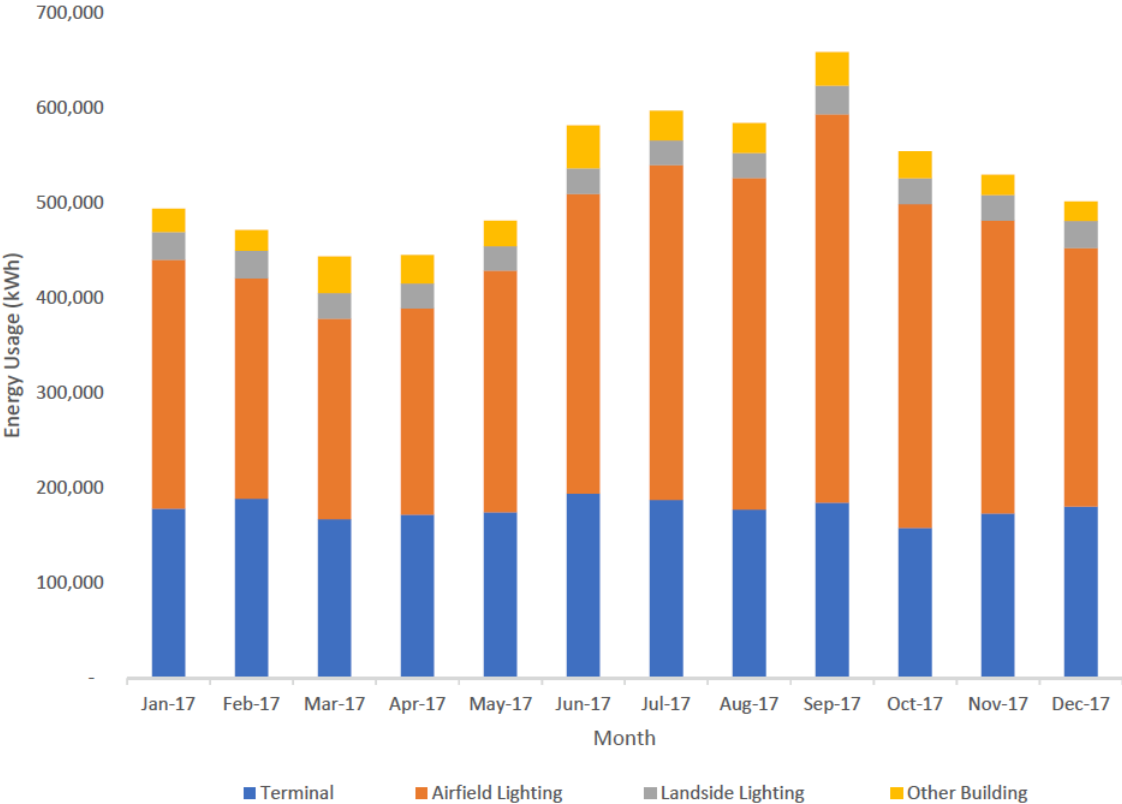
Note: Two months of data used for each time period within water usage graphs, except July–October 2017, which was adjusted proportionally due to missing July utility bills and overlapping billing periods.
 Source: Pinellas County, St. Pete-Clearwater International Airport. (2018, April). [PIE Total Passengers Spreadsheet]. Unpublished raw data.

Figure E-4 PIE Salt Marsh–Oyster Bar Mitigation Area



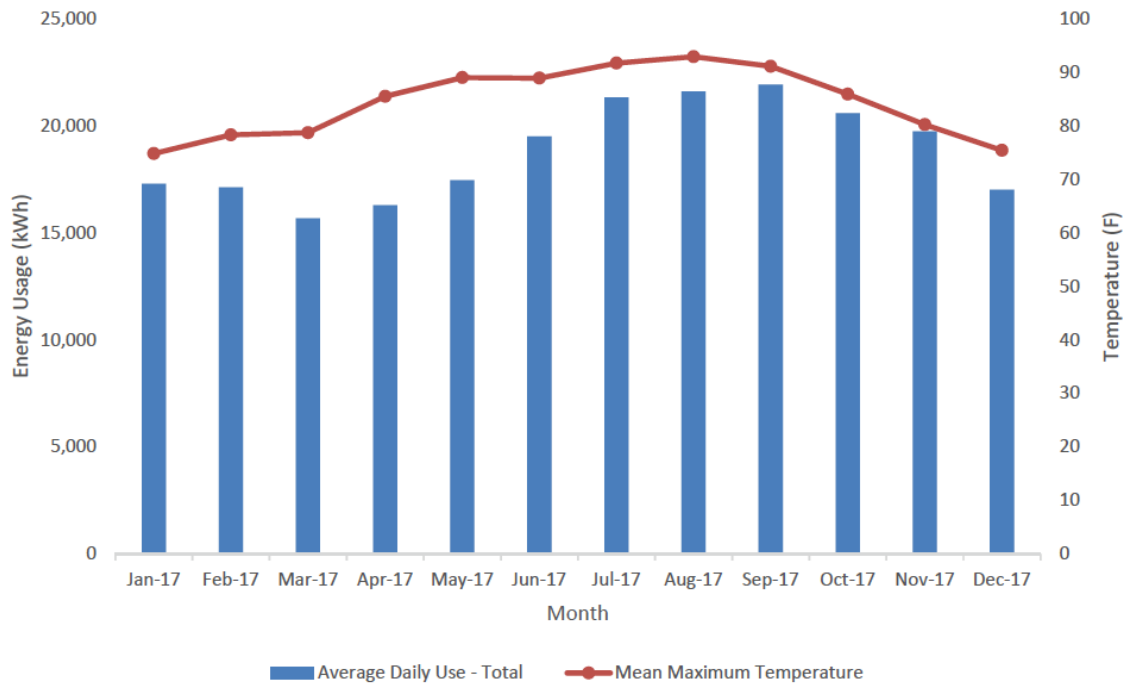
Source: St. Pete-Clearwater International Airport (1987). Salt Marsh-Oyster Bar Mitigation Area Completion Report [PDF].

Figure E-5 Electrical Energy Use per Month at PIE (January 2017–December 2017) – Terminal, Airfield Lighting, Landside Lighting, Other Building



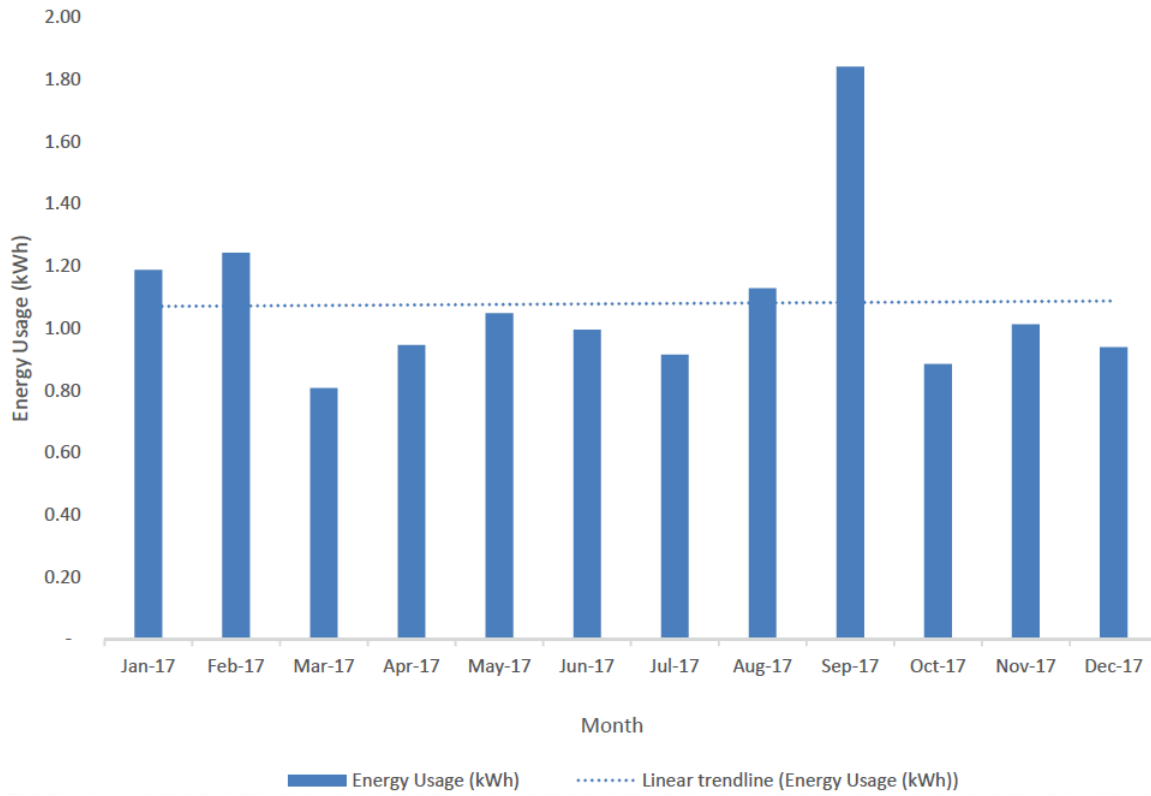
Source: Duke Energy, April 2018. [PIE Energy and Water Input Spreadsheet]. Unpublished raw data.

**Figure E-6 Overall Average Daily Electrical Energy Use at PIE
(January 2017–December 2017)**



Source: Duke Energy, April 2018. [PIE Energy and Water Input Spreadsheet]. Unpublished raw data.

**Figure E-7 Average Daily Electrical Energy Use per Passenger at PIE
(January 2017–December 2017) – Terminal**



Note: Passenger data obtained from PIE (April 2018).

Source: Duke Energy, April 2018. [PIE Energy and Water Input Spreadsheet]. Unpublished raw data.

Figure E-8 St. Pete-Clearwater International Airport (PIE) Master Plan Sustainability Questionnaire

St. Pete-Clearwater International Airport (PIE) Master Plan- Sustainability Planning Questionnaire

Purpose and Background

As part of the ongoing PIE Master Plan (piemasterplan.com), sustainability is being considered. Sustainability is generally defined 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 of the airport.

Purpose of this Questionnaire:

1. To collect information on any sustainability activities your company is planning or has initiated.
2. To better understand if there are opportunities for the Airport's sustainability initiatives to support your efforts.

PIE Sustainability Study Background:

Due to rising concerns regarding resource conservation, environmental protection, and fiscal responsibility, airports worldwide are part of a growing debate regarding airport growth and the environmental consequences of aviation. To address these issues, the ongoing PIE Master Plan includes a sustainability and resiliency planning aspect. The sustainability planning portion of the Master Plan is generally comprised of the following components:

- Baseline Assessment
- Sustainability Goals & Objectives
- Identification and evaluation of potential sustainability strategies at PIE
- Implementation Strategy

PIE Master Plan Background:

PIE and the Pinellas County Board of County Commissioners are preparing for a comprehensive Airport Master Plan. The primary goal is to create a 20-year airport development program to maintain a safe, efficient, economical, and environmentally acceptable airport facility for the Tampa Bay community. To achieve this goal, it is essential to receive input from key stakeholders, including the interested public, surrounding community, and users and tenants of the airport's facilities.

The following questionnaire is an important component of the PIE Master Plan, and should take approximately 5 - 15 minutes to complete.

You can assist PIE with this effort by completing the questionnaire by Friday, April 27.

It is important to understand that sustainability does not only address environmental issues. The most effective sustainability strategies have varying levels of economic, social *and* environmental benefits. Please keep this in mind when completing the questionnaire.

Thank you in advance for your participation.

For questions or concerns, please contact Ben Siwinski at BSiwinski@VHB.com. Ben is with VHB, a sub consultant to ESA- the prime consultant conducting the Master Plan.

1. Does your organization have a formalized sustainability program / policy / goals?

Yes

No

If yes, please describe below and/or provide relevant documents to Ben Siwinski at BSiwinski@VHB.com

2. Is your organization implementing any initiatives to contribute to the sustainability of your business or of the airport?

Yes

No

If yes, please describe below and/or provide relevant documents to Ben Siwinski at BSiwinski@VHB.com

3. Is your organization considering any other potential sustainability-related activities?

Yes

No

If yes, please describe below and/or provide relevant documents to Ben Siwinski at BSiwinski@VHB.com.

4. Please provide any ideas/suggestions to enhance the energy efficiency of PIE facilities (including passenger terminal, airfield, and other airport buildings).

5. Please describe any ways in which the St. Pete-Clearwater International Airport could aid your organization in accomplishing its sustainability goals.

6. PIE would like to acknowledge the sustainability efforts of its tenants. Would you be willing to have your sustainability practices or activities identified to the sustainability

willing to have your sustainability projects or activities identified in the sustainability planning portion of the PIE Master Plan? If so, whom shall we contact to get further information?

Name	<input type="text"/>
Company	<input type="text"/>
Address	<input type="text"/>
Address 2	<input type="text"/>
City/Town	<input type="text"/>
State/Province	<input type="text" value="-- select state --"/> <input type="button" value="v"/>
ZIP/Postal Code	<input type="text"/>
Country	<input type="text"/>
Email Address	<input type="text"/>
Phone Number	<input type="text"/>

Table E-2 Water Usage Spreadsheet and Calculations

Account Number	Meter Number	Service Address	Monthly Totals (kgal)													Calendar Total
			12-16-15 to 2-16-16	2-17-16 to 4-15-16	4-16-16 to 6-15-16	6-16-16 to 8-14-16	8-15-16 to 10-14-16	10-15-16 to 12-15-16	12-16-16 to 2-15-17	2-15-17 to 4-17-17	4-14-17 to 6-15-17	6-16-17 to 8-16-17	8-17-17 to 10-16-17	10-14-17 to 12-15-17	12-15-17 to 02-14-18	
100103652113		3650 Old Roosevelt Blvd	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0	0
100107491996		4401 144th Ave N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0	0
100115919983		4455 144th Ave N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0	0
100106554130	47576993	4600 142nd Ave N	7	20	8	6	8	7	6	7	7	8	8	8	6	106
100104903312	60831401	4660 Rescue Way	19	18	17	19	16	16	15	15	14	15	19	17	15	215
100106177749	52865272	15295 Fairchild Drive	95	46	34	28	123	26	42	27	21	16	14	15	14	501
100106555039	60810840	St Pete CLW Airport	437	518	293	433	334	352	396	499	424	459	319	383	409	5,256
100108182518	60810885	14700 Terminal Blvd	163	187	155	183	127	134	142	149	110	136	96	130	153	1,865
100116989108	60839537	14700 Terminal Blvd	277	301	256	296	234	253	264	268	225	248	207	250	289	3,368
100118862622	91920732	14700 Terminal Blvd	2	3	2	3	2	3	2	2	1	2	2	1	2	27
100123228733	52865276	14695 Airport Pkwy	8	20	18	26	18	29	41	32	23	26	24	26	27	318
100108069754	52865279	St Pete CLW Airport	0	0	0	0	0	0	0	0	0	1	0	0	0	1
100106445309	94442500	4501 42nd St N	0	0	0	1	0	0	0	0	1	14	1	0	1	18
100102271073	52865277	13746 Stoney Brook Dr.	0	2	2	2	3	2	0	2	2	3	5	2	1	26
00000000174 0000371526		Roosevelt Blvd	275.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	275.2
00000001248 0000280008		13690 Stoney Brook Dr.	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
00000000174 0000520163		Roosevelt Blvd	808	N/A	N/A	N/A	N/A	N/A	385.3	N/A	N/A	N/A	N/A	N/A	N/A	1193.3
00000001248 0000350009		13690 Stoney Brook Dr.	0	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	N/A	0
00000000174 0000373282		Roosevelt Blvd	N/A	598.7	N/A	N/A	N/A	N/A	N/A	276.5	N/A	N/A	N/A	N/A	N/A	875.2
00000001248 0000420000		13690 Stoney Brook Dr.	N/A	0	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	0
00000000174 0001326115		Roosevelt Blvd	N/A	N/A	260.9	N/A	N/A	N/A	N/A	N/A	982.3	N/A	N/A	N/A	N/A	1243.2
00000001248 0000070003		13690 Stoney Brook Dr.	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0
00000000174 0001441534		Roosevelt Blvd	N/A	N/A	N/A	170.1	N/A	N/A	N/A	N/A	N/A	N/A	1067.8	N/A	N/A	1237.9
00000001248 0000700003		13690 Stoney Brook Dr.	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A	0
00000000174 0001161686		Roosevelt Blvd	N/A	N/A	N/A	N/A	130.2	N/A	N/A	N/A	N/A	860.5	0	N/A	N/A	990.7
00000000174 0001031004		Roosevelt	N/A	N/A	N/A	N/A	N/A	275.2	N/A	N/A	N/A	N/A	N/A	763.7	N/A	1038.9
All Meters (Total)			2,091	1,714	1,046	1,167	995	1,097	1,293	1,278	1,810	1,789	1,763	1,596	917	18, 555

Water Use Calculations

	12-16-15 to 2-16-16	2-17-16 to 4-15-16	4-16-16 to 6-15-16	6-16-16 to 8-14-16	8-15-16 to 10-14-16	10-15-16 to 12-15-16	12-16-16 to 2-15-17	2-15-17 to 4-17-17	4-14-17 to 6-15-17	6-16-17 to 8-16-17	8-17-17 to 10-16-17	10-14-17 to 12-15-17	12-15-17 to 02-14-18	Calendar Total
Days	62	58	60	59	60	61	61	58	61	61	61	62	61	785
Average Daily Use – Total (gallons)	34	30	17	20	17	18	21	22	30	29	29	30	15	24*
Terminal (kgal)	1,000	1,093	765	968	844	791	867	967	802	885	665	804	888	11,339
Irrigation (kgal)	1,083	599	261	170	130	275	385	277	982	861	1,068	1,039	0	6,854
Other Building (kgal)	8	22	20	29	21	31	41	34	26	43	30	28	29	362
Average Daily Use (kgal) - Terminal	16	19	13	16	14	13	14	17	13	15	11	13	15	14.47*
Average Daily Use (kgal) - Irrigation	17	10	4	3	2	5	6	5	16	14	18	17	0	8.681
Average Daily Use (kgal) - Other Building	0	0	0	0	0	1	1	1	0	1	0	0	0	0.46*
Passengers	262,649	331,177	326,208	336,701	271,981	308,319	301,907	388,455	361,374	271,981	278,621	363,076	335,298	4,137,747
Dates used from Total PAX	Jan-Feb 2016	Mar-Apr 2016	May-Jun 2016	Jul-Aug 2016	Sep-Oct 2016	Nov - Dec 2016	Jan-Feb 2017	Mar-Apr 2017	May-Jun 2017	Jul-Aug 2017	Aug-Oct 2017	Nov-Dec 2017	Jan-Feb 2018	
Average Use (kgal) per PAX - Terminal	0.0038	0.0033	0.0023	0.0029	0.0031	0.0026	0.0029	0.0025	0.0022	0.0033	0.0024	0.0022	0.0026	0.0027*

Values are average of row total.

APPENDIX F – PIE Sustainability Tracking Tool Data

SATCode	Airport	2017	2016	Input	Unit
IN1	PIE			Total annual revenue	dollars in thousands
IN2	PIE			Total annual operating revenue	dollars in thousands
IN3	PIE			Annual non-aeronautical revenue	dollars in thousands
IN4	PIE			Annual non-aeronautical operating revenue	dollars in thousands
IN5	PIE			Annual non-passenger-dependent revenue	dollars in thousands
IN6	PIE			Annual parking revenue	dollars in thousands
IN7	PIE			Annual rental car revenue	dollars in thousands
IN8	PIE			Annual concession revenue	dollars in thousands
IN9	PIE			Annual hangar rental and ground lease revenue	dollars in thousands
IN10	PIE			New non-aeronautical businesses	count
IN11	PIE			Net revenues as defined in an airport bond ordinance divided by principal and interest requirements for the fiscal year	dollars in thousands
IN12	PIE			Contract services; such as police and fire	dollars in thousands
IN13	PIE			Revenue generated/associated with air cargo service	dollars in thousands
IN14	PIE			Disadvantaged Business Enterprise (DBE) business	count
IN15	PIE			Current annually federal grant	dollars in thousands
IN16	PIE			Previous annually federal grant	dollars in thousands
IN17	PIE			Current annually state grant	dollars in thousands
IN18	PIE			Previous annually state grant	dollars in thousands
IN19	PIE			Current annually local subsidies	dollars in thousands
IN20	PIE			Previous annually subsidies	dollars in thousands
IN21	PIE			Annual debt service	dollars in thousands
IN22	PIE			Bond rating	
IN23	PIE			Net revenue as defined in an airport bond ordinance divided by principal and interest requirements for the fiscal year	percentage
IN24	PIE			Input-output model outcomes	percentage
IN25	PIE			Total annual expenses	dollars in thousands
IN26	PIE			Total annual operating costs	dollars in thousands
IN27	PIE			Total annual non-operating expenses	dollars in thousands
IN28	PIE			Total passenger airline payment	dollars in thousands
IN29	PIE			Total fleet fuel cost	dollars in thousands
IN30	PIE			Amount paid for hazardous materials such as solvents; oil; etc.	dollars in thousands
IN31	PIE			Total fleet fuel energy purchased annually derived from alternative sources (e.g. ethanol-gasoline blends; biodiesel; compressed natural gas; propane; other low-/no-carbon fuels; electric energy; and hybrid technology.)	dollars in thousands
IN32	PIE			Total investment agreements and contracts	count
IN33	PIE			Total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening.	count
IN34	PIE			Total maintenance cost	dollars in thousands
IN35	PIE			Jet bridge and airport vehicle maintenance cost	dollars in thousands

SATCode	Airport	2017	2016	Input	Unit
IN36	PIE			Runway/Taxiway maintenance cost	dollars in thousands
IN37	PIE			Preventative maintenance costs	dollars in thousands
IN38	PIE			Non-preventative maintenance costs	dollars in thousands
IN39	PIE	2,055,269	1,837,035	Total annual passenger	amounts in thousands
IN40	PIE	114,582	113,103	Total number of aircraft movements (operations)	amounts in thousands
IN41	PIE			Total air cargo tonnage	tons in thousands
IN42	PIE	1,027,635	915,117	Total annual enplanement passengers	amounts in thousands
IN43	PIE			Total originating passenger	amounts in thousands
IN44	PIE			Total annual destination passenger	amounts in thousands
IN45	PIE			Passengers flying from within airport service area	amounts in thousands
IN46	PIE	183	183	Annual number of based aircrafts	amounts in thousands
IN47	PIE	2,359	2,359	Total number of parking spaces	count
IN48	PIE	12	12	Total gates	count
IN49	PIE			Percentage of enplaned passengers using public transit and airport shuttle; or other airport provided commercial vehicles	percentage
IN50	PIE	1,900	1900	Total airport area	Acre
IN51	PIE			Airport landside area	Acre
IN52	PIE			Acres of airport property that are available to be leased; whether improved or vacant; aeronautical or non-aeronautical; leased or not leased currently.	Acre
IN53	PIE			Acres of airport property that are currently being leased	Acre
IN54	PIE	9,528	8,110	Total volume of water used by the airport (water footprint)	kgal
IN55	PIE	4,990	5,461	Total volume of water used (in terminal)	kgal
IN56	PIE	4,336	2,518	Total volume of irrigation water used	kgal
IN57	PIE			Total permeable area at the site; with specific targets to be developed on a site-specific basis	Acre
IN58	PIE	5,192	5,592	Potable water consumption	kgal
IN59	PIE			Municipal Solid Waste (MSW) sent to landfill per year (i.e., not recycled or reused)	ton
IN60	PIE			Municipal Solid Waste (MSW) generated	ton
IN61	PIE			Does the airport have a Recycling Program?(Yes=1/No=0)	1 or 0
IN62	PIE			Recyclables waste	ton
IN63	PIE			Total waste	ton
IN64	PIE			Total hazardous waste produced	ton
IN65	PIE			Amount of hazardous materials recycled	ton
IN66	PIE			Number of damaging wildlife strikes per 100,000 aircraft movements.	count
IN67	PIE			Number and amount of spills annually	kgal
IN68	PIE			Landside surface area covered by permeable materials	Acre
IN69	PIE	6,852,327		Total onsite electricity consumption	kWh
IN70	PIE			Percentage of annual electricity consumption derived from onsite renewable energy sources	percentage
IN71	PIE			Natural Gas Consumption	Therm
IN72	PIE			Amount of unleaded gasoline and/or diesel fuel used for non-aeronautical vehicles	kgal
IN73	PIE			Total renewable electricity produced on property or from utility offsets	kWh
IN74	PIE			Does the airport have Indoor Air Quality Improvement (Yes=1/No=0).	1 or 0

SATCode	Airport	2017	2016	Input	Unit
IN75	PIE			Number of alternately-fueled Ground Service Equipment (GSE)	count
IN76	PIE			Number of Ground Service Equipment (GSE)	count
IN77	PIE			Airside equipment energy usage performance is evaluated and points are awarded based on the number of performance actions; for example; vehicle idling; high-efficiency equipment procurement; maintenance and repair schedules; and right-sized vehicle planning; among others.	count
IN78	PIE			Does the airport use preconditioned air units (PCA) (Yes=1/No=0).	1 or 0
IN79	PIE			Gates offering connection to terminal power and providing pre-conditioned air	count
IN80	PIE			Number of hybrid rental cars in airport area	count
IN81	PIE			GHG Emission	CO2e in metric tons
IN82	PIE			GHG Emission (Scope 1- direct); Scope 1/direct emissions include airport operator emissions associated with (1) fuel necessary to power airport-owned on- and off-road vehicles and (2) direct energy necessary to power airport facilities (i.e.; natural gas; fuel oil).	CO2e in metric tons
IN83	PIE			GHG Emission (Scope 2- indirect); Scope 2/indirect emissions include purchased electricity	CO2e in metric tons
IN84	PIE			GHG Emission (Scope 3-optional); Scope 3/indirect and optional emissions include (1) tenant emissions; (2) public ground travel on- and off-airport; and (3) airport employee commute emissions.	CO2e in metric tons
IN85	PIE			Number of security breaches or violations to the air operations area	count
IN86	PIE			Number of aircraft accidents/incidents	count
IN87	PIE			Number of incidents caused by hazardous materials	count
IN88	PIE			Number of environmental notices of violation annually	count
IN89	PIE			Noise complaints; each individual call; and not each household	count
IN90	PIE			Number of non-noise related complaints; such as temperature; service; comfort; etc.	count
IN91	PIE			Average time to respond to community complaints	hour
IN92	PIE			Number of Homes subjected to noise resulting from aviation activities of 65 dBA DNL or above	count
IN93	PIE			Number of health and wellness clinics on site	count
IN94	PIE			Lost work days from employee accidents and injuries	day
IN95	PIE			Number of successful maintenance inspections	count
IN96	PIE			Average maintenance response time	day
IN97	PIE			Number of system failures	count
IN98	PIE			Duration of system failures	Hour
IN99	PIE			Total employee injuries	count
IN100	PIE			Percent of Aircraft Rescue and Fire Fighting (ARFF) responses to emergencies within mandated response times.	percentage
IN101	PIE			Percent of airport medical emergency responses within established standards	percentage
IN102	PIE			Airside stormwater quality performance is evaluated and scores are awarded based on the number of performance actions pursued that address; for example; deicing fluid management; designated deicing and vehicle washing areas; water filtration systems; biological treatment; and runoff capture; among others beyond compliance standards.	count
IN103	PIE			Heat island reduction Performance is evaluated and scores are awarded based on the number of performance actions pursued that address; e.g. high solar reflectance and high albedo building and paving materials; increased vegetation and green roofing; and increased shade and covering.	count
IN104	PIE			Two tiers starting with the lower points: 1) Percent of total building space that achieves a self or 2nd party verified sustainable performance guidelines; and 2) Percent of total building space achieving 3rd party verified green certification; e.g.; LEED; Green Globes; EnvisionTM; etc.	count
IN105	PIE			Construction waste diversion percent of total construction & demolition waste diverted from a landfill or incinerator; in tons	percentage
IN106	PIE			Number of likes or followers for the airports presence on social media platforms (e.g.; Facebook; Twitter; Instagram; etc.)	count

SATCode	Airport	2017	2016	Input	Unit
IN107	PIE			Number of airport service related complaints in total (within airport terminal area)	count
IN108	PIE			Number of customers surveyed	count
IN109	PIE			Number of airport service related complaints in total (within airport terminal area)	count
IN110	PIE			Hours of internship time	hour
IN111	PIE			Number of community events held to inform stakeholders about the airport and its sustainability efforts	count
IN112	PIE			Number of workforce development training sessions on the airport goals; sustainability initiatives; incentives; and employees role in achieving these goals.	count
IN113	PIE			Number of employees attending annual workforce development training sessions	count
IN114	PIE			Number of performance reviews over time for total work force	count
IN115	PIE			Number of labor grievances	count
IN116	PIE	3,848		Number of direct, indirect, and induced jobs and related payroll supported by airports annually.	count
IN117	PIE			Total annual air travel delay	hour
IN118	PIE			Total originating passenger	amounts in thousands
IN119	PIE			During daily peak hour; average occupied parking space	count
IN120	PIE			Average time to taxi from the gate to the runway end during peak periods; compared with unimpeded taxi time	minute
IN121	PIE			Average number of operations that can be performed in one hour on a runway with an average delay per operation of four minutes	count
IN122	PIE			Average number of flight departures per day during weekdays	count
IN123	PIE			Total airport employee commutes by all full- and part-time employees	count
IN124	PIE			Number of alternative employee commutes	count
IN125	PIE			Curbside congestion reduction Performance is evaluated and points are awarded based on reduced travel or curbside waiting actions; e.g. designated TNC area; execute minimum waiting time; first hour parking free; etc.	count
IN126	PIE			Alternative passenger transportation performance is evaluated and points are awarded based on activities; for example; parking incentives and infrastructure for alternative; HOV; low-emitting; and pedestrian forms of passenger transportation	count

APPENDIX G – IMM Sustainability Tool Data

SATCode	Airport	2018	2017	Input	Unit
IN1	IMM	1,313,350.72	1,124,950.29	Total annual revenue	dollars in thousands
IN2	IMM	1,313,350.72	1,124,950.29	Total annual operating revenue	dollars in thousands
IN3	IMM	N/A	N/A	Annual non-aeronautical revenue	dollars in thousands
IN4	IMM	N/A	N/A	Annual non-aeronautical operating revenue	dollars in thousands
IN5	IMM	N/A	N/A	Annual non-passenger-dependent revenue	dollars in thousands
IN6	IMM	N/A	N/A	Annual parking revenue	dollars in thousands
IN7	IMM	494.82	1,150.21	Annual rental car revenue	dollars in thousands
IN8	IMM	N/A	N/A	Annual concession revenue	dollars in thousands
IN9	IMM	115,171.44	145,890.26	Annual hangar rental and ground lease revenue	dollars in thousands
IN10	IMM	1	2	New non-aeronautical businesses	count
IN11	IMM	N/A	N/A	Net revenues as defined in an airport bond ordinance divided by principal and interest requirements for the fiscal year	dollars in thousands
IN12	IMM	18,433.42	16,237.30	Contract services; such as police and fire	dollars in thousands
IN13	IMM	N/A	N/A	Revenue generated/associated with air cargo service	dollars in thousands
IN14	IMM	2	2	Disadvantaged Business Enterprise (DBE) business	count
IN15	IMM	983,920.00	220,028.00	Current annually federal grant	dollars in thousands
IN16	IMM	N/A	N/A	Previous annually federal grant	dollars in thousands
IN17	IMM	93,395.00	12,000.00	Current annually state grant	dollars in thousands
IN18	IMM	N/A	N/A	Previous annually state grant	dollars in thousands
IN19	IMM	0	0	Current annually local subsidies	dollars in thousands
IN20	IMM	0	0	Previous annually subsidies	dollars in thousands
IN21	IMM	N/A	N/A	Annual debt service	dollars in thousands
IN22	IMM	N/A	N/A	Bond rating	
IN23	IMM	N/A	N/A	Net revenue as defined in an airport bond ordinance divided by principal and interest requirements for the fiscal year	percentage
IN24	IMM	Not Tracked	Not Tracked	Input-output model outcomes	percentage
IN25	IMM	1,134,942.30	1,044,598.69	Total annual expenses	dollars in thousands
IN26	IMM	1,077,100.11	980,765.69	Total annual operating costs	dollars in thousands
IN27	IMM	57,842.19	63,833.00	Total annual non-operating expenses	dollars in thousands
IN28	IMM	N/A	N/A	Total passenger airline payment	dollars in thousands
IN29	IMM	6,348.11	7,255.20	Total fleet fuel cost	dollars in thousands
IN30	IMM	0	0	Amount paid for hazardous materials such as solvents; oil; etc.	dollars in thousands
IN31	IMM	Not Tracked	Not Tracked	Total fleet fuel energy purchased annually derived from alternative sources (e.g. ethanol-gasoline blends; biodiesel; compressed natural gas; propane; other low-/no-carbon fuels; electric energy; and hybrid technology.)	dollars in thousands
IN32	IMM	0	0	Total investment agreements and contracts	count
IN33	IMM	0	0	Total significant investment agreements and contracts that include social and environmental stipulations or that have undergone social and environmental screening.	count
IN34	IMM	64,173.56	67,226.32	Total maintenance cost	dollars in thousands
IN35	IMM	Not Tracked	Not Tracked	Jet bridge and airport vehicle maintenance cost	dollars in thousands

SATCode	Airport	2018	2017	Input	Unit
IN36	IMM	Not Tracked	Not Tracked	Runway/Taxiway maintenance cost	dollars in thousands
IN37	IMM	31,517.07	28,027.60	Preventative maintenance costs	dollars in thousands
IN38	IMM	32,656.49	39,198.72	Non-preventive maintenance costs	dollars in thousands
IN39	IMM	N/A	N/A	Total annual passenger	amounts in thousands
IN40	IMM	36,500	36,500	Total number of aircraft movements (operations)	amounts in thousands
IN41	IMM	N/A	N/A	Total air cargo tonnage	tons in thousands
IN42	IMM	N/A	N/A	Total annual enplanement passengers	amounts in thousands
IN43	IMM	N/A	N/A	Total originating passenger	amounts in thousands
IN44	IMM	N/A	N/A	Total annual destination passenger	amounts in thousands
IN45	IMM	N/A	N/A	Passengers flying from within airport service area	amounts in thousands
IN46	IMM	53	48	Annual number of based aircrafts	amounts in thousands
IN47	IMM	N/A	N/A	Total number of parking spaces	count
IN48	IMM	N/A	N/A	Total gates	count
IN49	IMM	N/A	N/A	Percentage of enplaned passengers using public transit and airport shuttle or other airport provided commercial vehicles	percentage
IN50	IMM	1,333	1,333	Total airport area	Acre
IN51	IMM	692	692	Airport landside area	Acre
IN52	IMM	824	824	Acres of airport property available for lease, whether improved or vacant, aeronautical or non-aeronautical; leased or not leased currently.	Acre
IN53	IMM	18	18	Acres of airport property currently being leased	Acre
IN54	IMM	306	537	Total volume of water used by airport (water footprint)	kgal
IN55	IMM	22	36	Total volume of water used (in terminal)	kgal
IN56	IMM	79	-	Total volume of irrigation water used	kgal
IN57	IMM	Not Tracked	Not Tracked	Total permeable area at site with specific targets to be developed on a site-specific basis	Acre
IN58	IMM	Not Tracked	Not Tracked	Potable water consumption	kgal
IN59	IMM	109	109	Municipal Solid Waste (MSW) sent to landfill per year (i.e., not recycled or reused)	ton
IN60	IMM	109	109	MSW generated	ton
IN61	IMM	1	1	Does airport have a Recycling Program? (Yes=1/No=0)	1 or 0
IN62	IMM	25	25	Recyclables waste	ton
IN63	IMM	134	134	Total waste	ton
IN64	IMM	N/A	N/A	Total hazardous waste produced	ton
IN65	IMM	N/A	N/A	Amount of hazardous materials recycled	ton
IN66	IMM	0	0	Number of damaging wildlife strikes per 100,000 aircraft movements	count
IN67	IMM	0	0	Number and amount of spills annually	kgal

SATCode	Airport	2018	2017	Input	Unit
IN68	IMM	N/A	N/A	Landside surface area covered by permeable materials	Acre
IN69	IMM	132,815	132,378	Total onsite electricity consumption	kWh
IN70	IMM	0	0	Percentage of annual electricity consumption derived from onsite renewable energy sources	percentage
IN71	IMM	N/A	N/A	Natural gas consumption	Therm
IN72	IMM	Not Tracked	Not Tracked	Amount of unleaded gasoline and/or diesel fuel used for non-aeronautical vehicles	kgal
IN73	IMM	N/A	N/A	Total renewable electricity produced on property or from utility offsets	kWh
IN74	IMM	0	0	Does airport have indoor air quality improvement (Yes=1/No=0)	1 or 0
IN75	IMM	N/A	N/A	Number of alternately-fueled Ground Service Equipment (GSE)	count
IN76	IMM	5	5	Number of GSE	count
IN77	IMM	Not Tracked	Not Tracked	Airside equipment energy usage performance evaluated and points awarded based on number of performance actions; e.g., vehicle idling, high-efficiency equipment procurement, maintenance and repair schedules, right-sized vehicle planning, etc.	count
IN78	IMM	0	0	Does airport use preconditioned air units (PCA) (Yes=1/No=0)	1 or 0
IN79	IMM	N/A	N/A	Gates offering connection to terminal power and providing pre-conditioned air	count
IN80	IMM	Not Tracked	Not Tracked	Number of hybrid rental cars in airport area	count
IN81	IMM	Not Tracked	Not Tracked	GHG emission	CO2e in metric tons
IN82	IMM	Not Tracked	Not Tracked	GHG emission (Scope 1- direct); Scope 1/direct emissions include airport operator emissions associated with (1) fuel necessary to power airport-owned on- and off-road vehicles and (2) direct energy necessary to power airport facilities (i.e., natural gas; fuel oil).	CO2e in metric tons
IN83	IMM	Not Tracked	Not Tracked	GHG Emission (Scope 2- indirect); Scope 2/indirect emissions include purchased electricity	CO2e in metric tons
IN84	IMM	Not Tracked	Not Tracked	GHG Emission (Scope 3-optional); Scope 3/indirect and optional emissions include (1) tenant emissions; (2) public ground travel on- and off-airport; and (3) airport employee commute emissions	CO2e in metric tons
IN85	IMM	0	0	Number of security breaches or violations to air operations area	count
IN86	IMM	4	1	Number of aircraft accidents/incidents	count
IN87	IMM	0	0	Number of incidents caused by hazardous materials	count
IN88	IMM	0	0	Number of environmental notices of violation annually	count
IN89	IMM	0	0	Noise complaints (per individual call, not household)	count
IN90	IMM	0	0	Number of non-noise related complaints; such as temperature, service, comfort, etc.	count
IN91	IMM	24	24	Average time to respond to community complaints	hour
IN92	IMM	Not Tracked	Not Tracked	Number of Homes subjected to noise resulting from aviation activities of 65 dBA DNL or above	count
IN93	IMM	0	0	Number of health and wellness clinics on site	count
IN94	IMM	0	0	Lost work days from employee accidents and injuries	day
IN95	IMM	Not Tracked	Not Tracked	Number of successful maintenance inspections	count
IN96	IMM	Not Tracked	Not Tracked	Average maintenance response time	day
IN97	IMM	Not Tracked	Not Tracked	Number of system failures	count
IN98	IMM	Not Tracked	Not Tracked	Duration of system failures	Hour
IN99	IMM	0	0	Total employee injuries	count
IN100	IMM	N/A	N/A	Percent of Aircraft Rescue and Fire Fighting (ARFF) responses to emergencies within mandated response times	percentage
IN101	IMM	Not Tracked	Not Tracked	Percent of airport medical emergency responses within established standards	percentage

SATCode	Airport	2018	2017	Input	Unit
IN102	IMM	Not Tracked	Not Tracked	Airside stormwater quality performance evaluated and scores awarded based on number of performance actions pursued at that address, e.g., deicing fluid management, designated deicing and vehicle washing areas, water filtration systems, biological treatment, runoff capture, etc., beyond compliance standards	count
IN103	IMM	N/A	N/A	Heat island reduction performance evaluated and scores awarded based on number of performance actions pursued at that address; e.g., high solar reflectance and high albedo building and paving materials, increased vegetation and green roofing, increased shade and covering	count
IN104	IMM	N/A	N/A	Two tiers starting with lower points: 1) Percent of total building space that achieves a self or second party verified sustainable performance guidelines; and 2) Percent of total building space achieving third party verified green certification, e.g., LEED, Green Globes, Envision™, etc.	count
IN105	IMM	N/A	N/A	Construction waste diversion percent of total construction and demolition waste diverted from a landfill or incinerator; in tons	percentage
IN106	IMM	205	200	Number of likes or followers for the airports presence on social media platforms (e.g., Facebook, Twitter, Instagram, etc.)	count
IN107	IMM	1	1	Number of airport service related complaints in total (within airport terminal area)	count
IN108	IMM	42	39	Number of customers surveyed	count
IN109	IMM	1	1	Number of airport service related complaints in total (within airport terminal area)	count
IN110	IMM	N/A	N/A	Hours of internship time	hour
IN111	IMM	1	0	Number of community events held to inform stakeholders about airport and its sustainability efforts	count
IN112	IMM	3	3	Number of workforce development training sessions on airport goals; sustainability initiatives; incentives; and employee role in achieving these goals	count
IN113	IMM	2	1	Number of employees attending annual workforce development training sessions	count
IN114	IMM	3	4	Number of performance reviews over time for total work force	count
IN115	IMM	0	0	Number of labor grievances	count
IN116	IMM	8	9	Number of direct, indirect, and induced jobs and related payroll supported by airports annually	count
IN117	IMM	N/A	N/A	Total annual air travel delay	hour
IN118	IMM	N/A	N/A	Average frequency of ground transportation service in minutes (e.g., shuttle service, metro)	minute
IN119	IMM	N/A	N/A	During daily peak hour; average occupied parking space	count
IN120	IMM	N/A	N/A	Average time to taxi from gate to runway end during peak periods compared with unimpeded taxi time	minute
IN121	IMM	Not Tracked	Not Tracked	Average number of operations that can be performed in one hour on runway with average delay per operation of 4 minutes	count
IN122	IMM	N/A	N/A	Average number of flight departures per day during weekdays	count
IN123	IMM	Not Tracked	Not Tracked	Total airport employee commutes by all full- and part-time employees	count
IN124	IMM	Not Tracked	Not Tracked	Number of alternative employee commutes	count
IN125	IMM	N/A	N/A	Curbside congestion reduction performance evaluated and points awarded based on reduced travel or curbside waiting actions, e.g., designated TNC area, executed minimum waiting time, first hour parking free; etc.	count
IN126	IMM	N/A	N/A	Alternative passenger transportation performance evaluated and points awarded based on activities, e.g., parking incentives and infrastructure for alternative, HOV, low-emitting, pedestrian forms of passenger transportation	count

APPENDIX H – References

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