

## APPENDIX 7

### TOOL INVENTORY

#### INTRODUCTION

This inventory was created to analyze existing tools available for airports to utilize when developing and implementing a sustainability plan or sustainability initiatives. These tools were derived from numerous sources including Airport Cooperative Research Program (ACRP) Reports, National Cooperative Highway Research Program (NCHRP) Reports, and outside agencies. For organization and enhanced understanding, the identified tools have been sorted into three categories:

- Baseline Assessment
- Initiative Selection
- Other

These categories are meant to help airports identify useful tools for different phases of a sustainability planning project and also corresponds to the content and flow of the Airport Sustainability Guidebook. The Baseline Assessment tools can help airports analyze the current state of sustainability-related characteristics. The Initiative Selection tools can help airports determine which sustainability initiatives will fit best at their airport to help achieve specific goals and objectives. The tools in the Other category can help airports in different ways related to sustainability such as performance monitoring and facility improvements/upgrades. This tool inventory should be utilized by airports during the planning process to ensure a more accurate and efficient sustainability plan.

#### BASELINE ASSESSMENT

##### 1. AIRPORT PERFORMANCE INDICATORS

ACRP Report 19: Developing an Airport Performance Measurement System

Website: <http://www.trb.org/Main/Blurbs/164175.aspx>

and ACRP Report 19A: Resource Guide to Airport Performance Indicators

Website: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_019A.pdf](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_019A.pdf)

ACRP Report 19 details the steps to assist airports in identifying performance measures suitable for their organization and in crafting and implementing a performance measurement program. The Report breaks down the individual steps in developing a performance measurement system, including preparing, planning, developing the structure, implementation and monitoring, management of the program, and technological considerations. Additionally, a CD-ROM with various tools is provided to assist airports with additional guidance and resources when developing a performance measurement system.

The airport performance indicators outlined in ACRP Report 19A present airports with a multitude of sustainability indicators to allow airports to assess numerous metrics based on industry accepted measures. The indicators are broken down into 23 categories including Air

Service, Human Resources, Planning/Construction, and Maintenance. Within each of these categories there are multiple indicators that provide useful information related to that category. As such, each indicator has a devoted page for airports to learn more about the measurement techniques involved with the airports. ACRP Report 19A is used as the foundation for the baseline assessment component of this Guidebook.

### **Tool Application to Sustainability**

These tools can be used by airports to identify key sustainability performance indicators, metrics, and performance targets. Specifically, the performance indicators should be utilized in the baseline assessment stage of a sustainability project.

## **2. Tool for Evaluating Emissions and Costs of Auxiliary Power Units and Alternative Systems (TEECAAS)**

ACRP Report 64: Handbook for Evaluating Emissions and Costs of APUs and Alternative Systems

Website: <http://www.trb.org/main/blurbs/167070.aspx>

TEECAAS Tool CD Download: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_064.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_064.iso)

The Tool for Evaluating Emissions and Costs of Auxiliary Power Units (APUs) and Alternative Systems (TEECAAS) gives airports the ability to evaluate the environmental and economic impact of APU systems at the airport. TEECAAS also provides data related to air conditioning and heating units regarding emissions and power consumption. This tool is useful for airports when evaluating the current costs and environmental impacts of APUs and alternative systems at an airport. The overall goal in the creation of TEECAS was to provide airports a standardized method to quantify APU emissions, especially as a sustainability initiative.

The tabular format of this software allows for airports to follow a standardized progression when calculating APU emissions. Though there are ten interactive tabs for airports to manually enter data, TEECAAS expresses that most of the expected user-supplied data is contained in the first three tabs:

- Study setup
- Airport specific input
- Operations

The TEECAAS provides baseline data for airports to implement into their respective study as needed; however, airports with more data to input into the TEECAAS software will receive more accurate and tailored results. Further, the TEECAAS provides links for airports to obtain specific information depending on the time of the report and the airport's location. For example, under the airport specific input tab, the two primary data entries include annual temperature percentages as well as jet fuel prices, electricity costs, and natural gas costs. The TEECAAS provides two links at the bottom of the page for airports to access local annual temperature data and jet fuel price data online.

### **Tool Application to Sustainability**

The TEECAAS helps airports collect the data needed to focus on the quantification of emissions and associated costs during the daily operations of APUs and alternative systems. Although this tool is specific to aircraft-related emissions quantification, this tool can be useful to airports during the baseline assessment portion of the sustainability planning process.

### **3. Departure Optimization Tool (DOIT)**

ACRP Report 86: Environmental Optimization of Aircraft Departures: Fuel Burn, Emissions, and Noise

Website: <http://www.trb.org/main/blurbs/169059.aspx>

DOIT Download: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_086.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_086.iso)

The Departure Optimization Investigation Tool (DOIT) is an interactive Excel-based file that allows airports to model the environmental impacts of air traffic, including categories such as fuel burn, emissions, and noise. Further, this tool provides mitigation strategies in an interactive spreadsheet format that gives airports the ability to determine the feasibility of implementing various strategies based on the unique conditions at their airport.

The DOIT is most effective when airports are able to input specific information regarding aircraft departures, fleet mix, and other airport-specific information. Inputting this detailed information allows the DOIT to produce the most accurate and tailored information for the airport. This system is based on multiple baseline scenarios and behind-the-scenes calculations that, when combined with airport specific information, provide airports with an in-depth overview of the current status of air traffic environmental impacts. ACRP Report 86 provides detailed instructions on using the tool and the system driving the data output.

### **Tool Application to Sustainability**

The DOIT is beneficial to airports in calculating the environmental footprint of aircraft on departure. In sustainability planning, this tool can be utilized by airports during the baseline assessment process to aid in developing a standardized assessment of the environmental impacts. The results produced by DOIT will help airports compare the current environmental impact from aircraft departures to other airports with similar scenarios.

### **4. Airport Construction Emissions Inventory Tool (ACEIT)**

ACRP Report 102: Guidance for Estimating Airport Construction Emissions

Website: <http://www.trb.org/main/blurbs/170234.aspx>

Airport Construction Emissions Inventory Tool CD Download:  
[http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_102.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_102.iso)

The Airport Construction Emissions Inventory Tool (ACEIT) is a construction emissions data generator developed for airports to analyze the environmental impact, particularly on air quality, of ongoing and past airport construction projects. This tool outputs a summary Excel file with annual totals of Non-Greenhouse Gas and Greenhouse Gas (GHG) emissions including carbon dioxide, methane, nitrous oxide, etc.

The ACEIT tool has multiple tabs for manual data entry to provide the most airport-specific data possible. Basic construction project information is required; however, in-depth data assumptions are provided if the airport is unable to acquire the data. This tool provides information selection boxes for airports to easily find and select information relevant to the characteristics of specific construction projects. For example, the two activity tabs (on road and non-road) provide a drop down menu for airports to select different types of equipment that are being used, such as an asphalt dump truck or a passenger car. Further, drop down menus are provided next to each selection to pick between the fuel type being used, the activity being performed, as well as others. The depth and specificity of the data entry portion of the ACEIT ensures the most accurate and effective emissions calculations possible. Using the data assumptions in lieu of particular airport-specific data will require less effort, but may result in a less accurate output from the ACEIT. Following data entry, the ACEIT uses the information and data to produce the final Excel-based emissions inventory summary.

#### **Tool Application to Sustainability**

The ACEIT is a beneficial tool for airports to utilize during the baseline assessment stage of a sustainability project. Based on construction project frequency, airports should decide on a case-by-case basis if the ACEIT would be applicable to use in their respective baseline assessments.

### **5. General Aviation Airport Preventative Maintenance Checklists**

ACRP Report 138: Preventative Maintenance at General Aviation Airports Volume 2: Guidebook

Website: <http://www.trb.org/Main/Blurbs/172853.aspx>

Checklists Download: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_138.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_138.iso)

This series of 48 Excel-based checklists provides general aviation (GA) airports a tool for evaluating the current status and condition of the airfield and airport. Each checklist is specific to a certain facet of the airport that requires recurring inspection. These checklists give GA airports characteristics to look at and inspect, as well as a column to note remarks and a column to note action taken. Examples of checklists within the series include:

- Irrigation system monthly inspection
- Hangar monthly inspection
- Turf and safety area monthly inspection
- Solar panel inspection

Most GA airports are not required to fulfill a Part 139 daily airfield inspection; thus, these checklists can provide information to those GA airports without required routine airfield inspections. Further, the checklists may provide additional information and areas of interest to airports already performing routine airfield inspections.

### Tool Application to Sustainability

These checklists provide GA airports with information on multiple airfield and airport facilities/properties that may need to be inspected and evaluated. These checklists should be utilized by GA airports during the baseline assessment portion of the sustainability planning process. Although the checklists are not tailored specifically to sustainability, they could provide GA airports with an understanding of areas to inspect for potential deficiencies that may not be included in the daily airfield inspections.

## 6. Airport Terminal Building Energy Use Intensity (ATB-EUI) Benchmarking Tool

ACRP CD-ROM 178: Airport Terminal Building Energy Use Intensity (ATB-EUI) Benchmarking Tool

Website: <http://www.trb.org/Energy/Blurbs/173795.aspx>

The ATB-EUI provides airports with a streamlined process for evaluating terminal energy usage as well as other facility energy usage at an airport. Airports begin this process by downloading the PDF “input form” which asks for specific data relevant to the airport. The categories for data entry on the input form include:

- General information
- Floor Space Information
- Mechanical Systems
- Airport Ground Support Equipment (GSE) Electricity Use
- Alternative Systems (Ground Power & PCA Power)
- External Lighting/Parking Lighting
- Performance and Utilities Information

Based on these inputs, the ATB-EUI presents the energy-usage information in a graphical format for enhanced display and easy interpretation of data. In addition to providing the airport-in-study’s breakdown of energy usage, the ATB-EUI provides a comparison of results to ten other airports of varying roles and sizes who originally participated in the study. By providing a comparison of energy usage, an assessment can be made as to the relative performance of one airport to another.

### Tool Application to Sustainability

The ATB-EUI should be utilized by airports during the baseline assessment stage of sustainability program development. The results can be evaluated and compared to other airports to provide a general understanding of potential energy waste at the airport. The ATB-EUI can also be used during the monitoring phase of an airport’s sustainability program to provide an opportunity to continually evaluate energy-usage and provide continued comparisons to the case study airports.

## INITIATIVE SELECTION

### 7. Airport Greenhouse Gas Emission Assessment and Reduction (GEAR) Tool

ACRP Report 56: Handbook for Considering Practical Greenhouse Gas Emission Reduction Strategies for Airports

Website: <http://www.trb.org/main/blurbs/166519.aspx>

AirportGEAR Tool CD Download: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_056.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_056.iso)

This tool provides airports with numerous Greenhouse Gas (GHG) emission reduction strategies that provide support to airports when measuring and analyzing their GHG “footprint.” Specifically, AirportGEAR describes 125 strategies across 12 categories that aid airports in GHG identification, measurement, and reduction. AirportGEAR is interactive so airports can filter between the emission reduction strategies based on criteria deemed important to the airport. There are also numerous criteria that airports can filter between allowing for the most effective and relevant results based on an airport’s specific goals in terms of GHG reduction strategies.

The AirportGEAR tool also allows airports to prioritize and plan emission reduction strategies based on factors that are relevant to an individual airport. The tool provides an evaluation matrix for each emission reduction strategy that is based on the airport’s specific characteristics and can be adjusted to better represent the airport. This functionality provides airports with the ability to draft an emission strategy implementation plan to begin the installment of the chosen GHG reduction strategy at the airport.

#### Tool Application to Sustainability

The AirportGEAR tool can be utilized by airports during the initiative selection portion of sustainability program development. If the airport identifies the environmental portion (specifically GHG emissions) of the baseline assessment as deficient, the AirportGEAR tool can help by providing reduction emission strategies for consideration during the initiative selection process.

### 8. Airport Sustainability Assessment Tool (ASAT)

ACRP Report 80: Guidebook for Incorporating Sustainability into Traditional Airport Projects

Website: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_080.pdf](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_080.pdf)

Excel tool: [www.trb.org/Publications/Blurbs/168044.aspx](http://www.trb.org/Publications/Blurbs/168044.aspx)

The Airport Sustainability Assessment Tool (ASAT) is an airport-directed sustainability decision-making enhancement tool that aids airports in evaluating the applicability and feasibility of numerous sustainability practices. The practices provided in the ASAT were derived from case studies of over 15 airports and airport authorities including the Chicago Department of Aviation (CDA), Los Angeles International Airport (LAX), and many more.



The ASAT streamlines and guides airports through the selection process in regard to implementing sustainability initiatives into common airport projects. To accomplish this, the ASAT provides two main components to guide airports through the decision-making process:

- Specific technology or procedures
- Exploring technology or procedures to consider

Together, these two components guide airports through a basic decision-making process that will allow them to determine the most appropriate sustainability practices.

### Tool Application to Sustainability

By filtering through sustainability initiatives derived from the numerous case studies within the ASAT, airports can learn how initiatives fit in and operate at airports around the world. Thus, this tool can be implemented in the initial phases of the sustainability planning process, as well as the initiative selection phase. This tool can serve as a launching point for airports to select initiatives at their respective airports based on how well they've performed at others.

## 9. Airport Facility Optimization Ranking Tool

ACRP Report 139: Optimizing Airport Building Operations and Maintenance through Retrocommissioning: A Whole-Systems Approach (Appendix G)

Website: <http://www.trb.org/main/blurbs/172739.aspx>

Airport Facility Optimization Ranking Tool CD Download:

[http://onlinepubs.trb.org/Onlinepubs/acrp/acrp\\_rpt\\_139.iso](http://onlinepubs.trb.org/Onlinepubs/acrp/acrp_rpt_139.iso)

This web-based software provides airports with an Excel-based spreadsheet tool that allows airports to filter between sustainability initiatives based on criteria deemed important to the airport. Two sets of sustainability initiatives are provided; a SIMPLE list and an ADVANCED tool. The SIMPLE list is a basic filterable sheet that lists numerous initiatives broken into 28 categories and further divided into goals. The ADVANCED tool provides the same list, but in a much more customizable interface. Within the spreadsheet, each initiative is scored based on the following criteria:

- |                          |                                |
|--------------------------|--------------------------------|
| ○ Implementation Cost    | ○ Visibility                   |
| ○ Potential Cost Savings | ○ Greenhouse Gas (GHG) Savings |
| ○ Estimated Difficulty   |                                |

The listed sustainability initiatives are ranked 1-5 on the above criteria, which are calculated as part of the overall weighted score. The weighted score is also derived from the percentage of identified importance of each criterion to the individual airport. For example, an airport that highly values low implementation costs, but doesn't value GHG savings as much could rank implementation costs 30 percent and GHG savings five percent. Upon doing so, initiatives with a five in the implementation cost criteria column would increase in weighted score. This way, the airport could identify initiatives that are more relevant to fulfilling the airport's goals and objectives.

### Tool Application to Sustainability

This tool should be utilized by airports during the initiative selection stage of sustainability program development. Using the Facility Optimization tool can help airports identify initiatives that are most relevant to them based on the priorities identified by the sustainability project team/champion.

## 10. Airport Climate Risk Operational Screening (ACROS)

ACRP Report 147: Climate Change Adaptation Planning: Risk Assessment for Airports

Website: <http://www.trb.org/main/blurbs/173554.aspx>

ACROS Tool CD Download: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_147.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_147.iso)

The Airport Climate Risk Operational Screening (ACROS) tool was designed to help airports evaluate climate change and the relevant/potential impacts it could have on the built airport environment. Many Florida airports are located on the coast of the Atlantic Ocean and the Gulf of Mexico. Therefore, the ACROS tool should be considered when evaluating the potential risks of climate change and sea level rise. Further, the ACROS tool presents airports with potential strategies and real-world experiences to help adapt with the changing climate. Using the ACROS tool is as simple as selecting the airport within the database, evaluating current climate hazard data, and inputting details about the airport and its characteristics. The data backing the ACROS tool was derived from the Intergovernmental Panel on Climate Change's AR5 report as well as the 2012 Global Sea Level Rise Scenarios for the United States National Climate Assessment.

### Tool Application to Sustainability

Climate change is a topic that has been deemed critically important by many countries and organizations around the world. In coming years, airports may be tasked with adapting to a changing climate and rising sea levels. Airports can use the ACROS tool as a sustainability initiative within the environmental portion of the sustainability plan to begin strategizing and developing preparations for anticipated climate change.

## 11. Renewable Energy Project Evaluation Criteria Template

ACRP Report 151: Developing a Business Case for Renewable Energy at Airports

Website: <http://www.trb.org/main/blurbs/173554.aspx>

Template: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_147.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_147.iso)

The renewable energy project evaluation tool provides an Excel-based system for analyzing potential renewable energy projects to determine the feasibility and benefits of their implementation. The template is based on four categories which are further broken down into specific factors, or "criteria," for consideration. The four primary categories include:

- Economic
- Investment in Long Term Business
- Environmental/Social
- Other



Each of these categories is worth 25 percent of the renewable energy project's total score. Further, the template provides four columns to note potential alternatives to the renewable energy project under study. These alternatives can then be run through the same criteria and scored accordingly to compare to the project of study.

### Tool Application to Sustainability

This tool can be highly beneficial for airports in pursuing renewable energy projects. This tool should be utilized during the initiative selection stage of the sustainability planning process if the airport determines renewable energy to be an objective. This tool can play a beneficial role to airports when selecting a renewable energy project to pursue.

## OTHER

### 12. Sustainable Facilities Tool

Website: <https://sftool.gov/>

This website is an interactive sustainability database created by the General Services Administration to "put our nation's public servants into efficient, healthy buildings and buy goods and services that provide maximum value to the tax payer."

Though not airport specific, this website provides guidance and information on numerous facets of sustainability planning. The website provides access to information in four primary tabs:

- **Learn** – provides case studies, best practices, legal requirements, as well as various sustainability topics to explore
- **Plan** – provides guidance on life cycle assessments, various project types, and climate adaptation resources
- **Procure** – provides a comprehensive list of sustainable products and services that can be utilized by an airport
- **Share** – provides example case studies that highlight the value of implementing various sustainability initiatives

Through these sections, the Sustainable Facilities (SF) website provides a step-by-step process for organizations to follow to maintain a sustainable environment and implement a sustainability plan. Specifically, the website provides guidance, tools, interactive games, case studies, resources, and many more beneficial aspects to organizations implementing sustainability.

### Tool Application to Sustainability

It is highly recommended that airports visit the SF website at the beginning of the sustainability planning process. This website can provide airports with an abundance of useful information that will aid airports throughout a sustainability planning project. Airport sustainability project teams can familiarize themselves with the SF website to understand many efficient tools and concepts involving effective sustainability planning.

### 13. Energy Star® Portfolio Manager®

Website: <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>

The Environmental Protection Agency (EPA) created this online tool to measure and track energy usage, water consumption, and greenhouse gas emissions. Though this tool was not developed specifically for airports, it provides a simple user interface that would allow for simple measurement of energy outputs. The STAR portfolio manager provides one access point for organizations to evaluate the environmental sustainability of the building or buildings. To get started in the STAR program, all that is needed are energy bills and some basic information about the building. Further, the Energy STAR website provides a benchmarking starter kit to efficiently help organizations integrate into the STAR program. Although this tool was not created specifically for airports, it can be utilized as an organization method and initiative tracking system for airports.

#### **Tool Application to Sustainability**

Airports can use the Energy STAR program to organize and track the progress of selected sustainability initiatives. This program could be most beneficial to airports during the initiative tracking stage of sustainability program development.

### 14. Evaluation Process (EP) and Cost Benefit Tool (CBT)

ACRP Report 110: Evaluating Impacts of Sustainability Practices on Airport Operations and Maintenance (O&M)

User Guide/More Information: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_110.pdf](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_110.pdf)

Website: [www.trb.org/Publications/Blurbs/170580.aspx](http://www.trb.org/Publications/Blurbs/170580.aspx)

The Evaluation Process and Cost Benefit Tool (EP&CBT) was developed to aid airports in determining the financial impacts that implementing sustainability initiatives might have on operations and maintenance (O&M) departments. The tool is broken into two parts: the evaluation process and the cost benefit tool. The evaluation process is designed to help airports collect all relevant economic information pertaining to O&M and related sustainability tools. The cost benefit tool uses the information collected during the evaluation process to develop total cost and individual costs, related to O&M, of implementing specific sustainability initiatives.

Utilization of this tool is designed to help airports determine which sustainability initiatives would be feasible to implement based on conditions at their airport. The results of the EP&CBT are presented in two ways: Budget Output and Graphical Output. The Budget Output shows the annual monetary impact of the sustainability initiative broken into categories, such as personnel, materials and supplies, and contractual services. The Graphical Output presents O&M cost-benefit data in a visually appealing format. The graphical format is an excellent source of information to present to outside parties involved in the sustainability planning process such as local government agencies, airport tenants, and agency stakeholders.

### Tool Application to Sustainability

The EP&CBT should be utilized by airports in the cost-benefit analysis portion of the sustainability planning process. A number of sustainability initiatives require O&M departments to devote labor to ensure successful initiative implementation. This tool will help airports determine the extent to which the O&M department could be affected if chosen initiatives were implemented. Further, this tool can be beneficial in reporting the analysis of sustainability initiatives to outside entities interested in the airport's sustainability project, especially the local community.

## 15. Performance Measures Compendium

NCHRP Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies (Appendix B)

Website: [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_708.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_708.pdf)

Excel Tool: [www.trb.org/Main/Blurbs/166313.aspx](http://www.trb.org/Main/Blurbs/166313.aspx)

Though not aviation specific, this compendium details 11 goals specifically designed to help transportation agencies with performance measures of sustainability initiatives. Each goal is broken into six focus areas which are further broken into numerous sustainability objectives. Measures are detailed for each sustainability objective to provide ideas for objective achievement. More specifically, the measures can be utilized as options for airports to implement and track as part of achieving the sustainability objective. This compendium is designed to support transportation agencies in identifying appropriate objectives and measures for a successful performance measurement system, consistent with the goals set by the agency.

This tool was developed as an Excel spreadsheet to allow users to sort, organize, and filter sustainability measures that are important to the specific organization. This tool is not specifically geared towards aviation; however, it offers insight on sustainability performance measures for all modes of transportation. The eleven goals outlined in the performance compendium are:

- Safety
- Basic Accessibility
- Equity/Equal Mobility
- System Efficiency
- Security
- Prosperity
- Economic Viability
- Ecosystems
- Waste Generation
- Resource Consumption
- Emissions and Air Quality

### Tool Application to Sustainability

The performance measuring compendium can be utilized by airports in the sustainability initiative selection stage as well as the performance monitoring stage of the airport sustainability planning project. Although not specific to airports, this tool can be used to implement sustainability ideas spanning several categories and track those ideas as they develop within the airport system.

## 16. Sustainable Airport Construction Filterable Spreadsheet

ACRP Report 42: Sustainable Airport Construction Practices

Website: <http://www.trb.org/Publications/Blurbs/164240.aspx>

Sustainable Airport Construction Filterable Spreadsheet Tool CD Download:

[http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_042.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_042.iso)

The sustainable airport construction spreadsheet is a list of sustainability initiatives/practices that airports can implement during construction projects. The list is provided a filterable sheet divided into three primary categories of airport construction projects – Pre-construction, Construction, and Commissioning – to aid airports in a specific component of a construction project. Further, each sustainability initiative describes things to be considered for that initiative regarding the four primary categories of sustainability: economic, environmental, operational, and social. This spreadsheet also provides names of airports that have implemented the initiative and whether or not the initiative is recognized by LEED. The primary objective of this spreadsheet is to provide airports with sustainable initiative ideas to pursue during construction projects.

### Tool Application to Sustainability

This spreadsheet can be utilized by airports with ongoing or planned construction during the initiative selection stage of a sustainability project. By analyzing presented initiatives and selecting those deemed applicable, airports can ensure a more sustainable construction project at the airport.

## 17. Airport Sustainability Practices Matrix

ACRP Synthesis 10: Airport Sustainability Practices (Appendix D)

Website: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_syn\\_010.pdf](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_010.pdf)

This list of sustainability practices was created from a survey of 25 domestic and international commercial service airports. The survey contained five sections of questions including:

- General Information
- Organizational Governance
- Existing Sustainability Initiatives
  - Environmental
  - Economic
  - Social
- Other Initiatives and Barriers
- Future Sustainability Priorities

Based on the responses of the 25 airports that participated in the survey, the sustainability practices matrix was developed. The matrix is divided into numerous sustainability subtopics (water quality, air quality, etc.) that display the airport responses to the category based on airport size and category. The airport responses are aggregated into columns based international/domestic and further by hub size. The 18 pages of sustainability initiatives collected from the surveyed airports provide specific and helpful insight to sustainability implementation at airports.

### Tool Application to Sustainability

This matrix can be utilized by airports in the sustainability initiative selection, the baseline assessment, and the organizational readiness assessment phase of sustainability program development. This matrix can provide airports with ideas for sustainability initiative selection as well as provide insight to how other airports are handling sustainability considerations across the globe.

## 18. End Use Water Audit Tool

ACRP Report 154: Water Efficiency Management Strategies for Airports

Website: <http://www.trb.org/ACRP/Blurbs/174444.aspx>

End Use Water Audit Tool Download:

[http://onlinepubs.trb.org/Onlinepubs/acrp/acrp\\_rpt\\_154.xlsx](http://onlinepubs.trb.org/Onlinepubs/acrp/acrp_rpt_154.xlsx)

The End Use Water Audit tool was designed to help airports monitor and track water usage and efficiency at the airport. This tool was developed in an interactive Excel-based platform that gives airports the ability to manually edit initial input data based on the specific characteristics of the airport. The end use water audit tool helps break down the areas on an airport that could use water efficiency reform and benefit from sustainability initiative implementation.

By entering in detailed information regarding the airport, its water usage, and its activity/passenger flow, the tool can present an accurate and descriptive information sheet in Excel. This sheet can be very beneficial to airports when analyzing the water “footprint” of the airport.

### Tool Application to Sustainability

This tool should be utilized by airports during the baseline assessment portion of the sustainability planning process. Analyzing water usage and efficiency can be included in all four aspects of sustainability, but is generally regarded as an environmental or economic measurement.

## 19. The Sustainable Airport Manual

Chicago Department of Aviation

Website: <http://www.airportsgoinggreen.org/sustainable-airport-manual.aspx>

The Chicago Department of Aviation developed a Sustainable Airport Manual (SAM) that incorporates multiple guidebook sections and corresponding checklists to aid in implementation and evaluation of sustainability initiatives at airports. The SAM is broken into five major sections:

- Administrative Procedures
- Planning
- Design and Construction
- Operations and Maintenance
- Concessions and Tenants

Within these categories, the SAM provides ample information for airports to use in developing a sustainability plan. The Appendices of the SAM include several checklists that provide sustainability initiatives and a corresponding numerical rating system. These checklists were designed with the intent enhance organization of airport sustainability initiatives and tracking. The following is a breakdown of the checklists provided with the SAM. Table X details the checklists provided in the SAM.

#### **Tool Application to Sustainability**

The SAM can be used by airports in all phases of sustainability program development, from initiative selection and benchmarking to monitoring and tracking and continuous plan refinement.



Chicago Department of Aviation - Sustainable Airport Manual (SAM)			
Location	Name	Description	Application to Sustainability
Appendix PL-A	Planning Checklist	<p>Designed to aid airports in spurring sustainability and beginning the planning process.</p> <p>Provides attainable goals for airport administration to strive to obtain</p> <p>Includes five corresponding deliverables for airports as part of the procedures</p>	<p>This checklist can be utilized by airports in the early stages of the sustainability planning process.</p> <p>This tool can be used to incorporate basic sustainability ideas into the airport environment early in the planning process</p>
Appendix DC-B	Design & Construction (DC) Checklists	<p>A large Excel-based spreadsheet that details numerous sustainability initiatives for implementation regarding design &amp; construction.</p> <p>The initiatives are divided into eight categories for enhanced organization and understanding.</p> <p>Correlating points column to track the initiatives as they develop</p>	<p>It is recommended that airports consult this checklist during the initiative selection stage of the sustainability planning process.</p> <p>Although this tool is intended for DC use in sustainability progression, it can be utilized across all airport departments for sustainability initiative ideas and as a template for a basic tracking system.</p>

Chicago Department of Aviation - Sustainable Airport Manual (SAM): *Cont.*

Appendix OM-B	Operation & Maintenance (O&M) Checklist	<p>A large Excel-based spreadsheet that details numerous sustainability initiatives for implementation by and for airport operations and maintenance.</p> <p>The initiatives are divided into nine categories for enhanced organization and understanding.</p> <p>The focus of this checklist is to enhance airport operations and maintenance in sustainability activities and collaboration.</p>	<p>It is recommended that airports consult this checklist during the initiative selection stage of the sustainability planning process.</p> <p>Although this tool is intended for O&amp;M department use in sustainability progression, it can be utilized across all airport departments for sustainability initiative ideas and as a template for a basic tracking system.</p>
Appendix CT-B	Concessions & Tenants Checklists	<p>Provides a detailed layout of potential sustainability initiatives regarding concessions and tenants at an airport.</p> <p>The initiatives are broken into two major tabs:</p> <ul style="list-style-type: none"> <li>- Design &amp; Construction</li> <li>- Operations &amp; Maintenance</li> </ul> <p>These tabs contain multiple categories containing initiatives that airports can pursue regarding concessions &amp; tenants</p>	<p>It is recommended that airports consult this checklist during the initiative selection stage of the sustainability planning process.</p> <p>Although this tool is intended for Concessions &amp; Tenants use in sustainability progression, it can be utilized across all airport departments for sustainability initiative ideas and as a template for a basic tracking system.</p>

Source: Chicago Department of Aviation <http://www.airportsgoinggreen.org/sustainable-airport-manual.aspx>

## 20. Environmental Stewardship Practices at Small Airports

ACRP Report 43: Guidebook of Practices for Improving Environmental Performance at Small Airports

Website:

[http://www.trb.org/Publications/Blurbs/Guidebook\\_of\\_Practices\\_for\\_Improving\\_Environment\\_al\\_164885.aspx](http://www.trb.org/Publications/Blurbs/Guidebook_of_Practices_for_Improving_Environment_al_164885.aspx)

Chart Download: [http://onlinepubs.trb.org/onlinepubs/acrp/acrp\\_rpt\\_043.iso](http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_043.iso)

This Excel-based database that provides small airports with over 200 environmental-related sustainability initiatives. The initiatives outlined in the database are directly related to the chapters within ACRP Report 43. Some of the chapters include: air quality, waste minimization practices, energy efficiency, etc. Further, the initiatives are evaluated on four criteria:

- Compliance
- Implementation Feasibility
- Staffing
- Costs

By analyzing the criterion results for each sustainability initiative, small airports can decide which environmental sustainability initiatives would be most appropriate to the specific airport. Although this database was developed to benefit particularly small airports, large airports could also benefit from evaluating proposed sustainability practices.

### **Tool Application to Sustainability**

It is recommended that all small airports consult this database when selecting environmental practices to implement. This database provides useful information about numerous practices that can be filtered based on an airport's identified goals and objectives of sustainability.

# Airport **Sustainability** Guidebook

## Technical Appendices

Source	Tools	Preliminary Study	Baseline Assessment	Initiative Selection	Performance Monitoring	Cost Benefit Analysis
<a href="https://sftool.gov/">https://sftool.gov/</a>	Sustainable Facilities Tool	→				
ACRP Synthesis 10	Airport Sustainability Practices Matrix	→	→	→		
ACRP Report 19	Airport Performance Indicators		→			
ACRP Report 64	Tool for Evaluating Emissions and Costs of Auxiliary Power Units and Alternative Systems (TEECAAS)		→			
ACRP Report 86	Departure Optimization Tool (DOIT)		→			
ACRP Report 102	Airport Construction Emissions Inventory Tool (ACEIT)		→			
ACRP Report 138	General Aviation Airport Preventative Maintenance Checklists		→			
ACRP Report 154	End Use Water Audit Tool		→			
ACRP Report 178	Airport Terminal Building Energy Use Intensity (ATB-EUI) Benchmarking Tool		→			
Chicago Department of Aviation	The Sustainable Airport Manual		→	→	→	
ACRP Report 42	Sustainable Airport Construction Filterable Spreadsheet			→		
ACRP Report 43	Environmental Stewardship Practices at Small Airport			→		
ACRP Report 56	Airport Greenhouse Gas Emission Assessment and Reduction (GEAR) Tool			→		
ACRP Report 80	Airport Sustainability Assessment Tool (ASAT)			→		
ACRP Report 139	Airport Facility Optimization Ranking Tool			→		
ACRP Report 147	Airport Climate Risk Operational Screening (ACROS)			→		
ACRP Report 151	Renewable Energy Project Evaluation Criteria Template			→		
NCHRP Report 708	Performance Measures Compendium			→	→	
ACRP Report 110	Evaluation Process (EP) and Cost Benefit Tool (CBT)			→		→
<a href="http://www.energystar.gov">http://www.energystar.gov</a>	Energy Star® Portfolio Manager®				→	