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## Technical Report

# Virginia Airports Sustainability Management Plan

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July 22, 2016

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Prepared For  
Virginia Department of Aviation  
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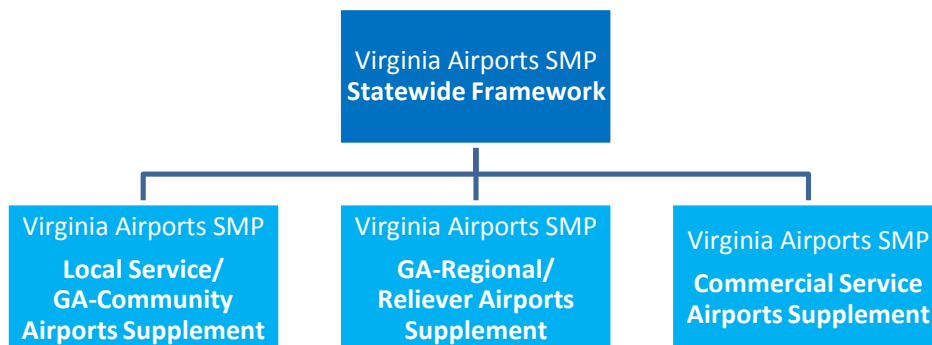
## INTRODUCTION

Virginia residents depend on an efficient, high-performing air transportation system that connects businesses, promotes economic development, provides access to recreation, and facilitates tourism. Optimizing such a system requires a holistic, long-term approach to airport planning that maximizes environmental, social, and economic opportunities while minimizing the risks created by new challenges.

To that end, the Virginia Department of Aviation (DOAV) commissioned the Virginia Airports Sustainability Management Plan (SMP), which provides a voluntary framework for the 66 public-use airports in Virginia to undertake tailored sustainability planning to meet their local priorities, needs, and abilities. The SMP is designed to emphasize real-world usability and help airport managers integrate sustainability into all aspects of their business, including planning, design, construction, operations, and maintenance. The SMP provides a menu of sustainability initiatives from which an airport can select information and resources that work for them. The SMP also provides a number of resources and tools that Virginia airport managers can use if and when they need them.

The purpose of this document is to describe the methodology behind the development of the Virginia Airports SMP. These details may be helpful in the development of future airport SMPs and will provide a useful reference for future editions and updates of the Virginia Airports SMP.

The Sustainability Management Plan includes a **Statewide Framework** document that sets the overall vision for sustainability in the Commonwealth and introduces the SMP’s main sustainability categories. Additionally, to make the resources relevant to the various types and sizes of airports in Virginia, the SMP project team developed SMP **Supplements** that further define specific goals, metrics, targets, and possible sustainability initiatives for the three general categories of airports, as shown in Figure 1. Each supplement is accompanied by additional documents providing guidance on funding opportunities, stakeholder engagement, and utility performance tracking specific to the particular airport category.



**Figure 1: Organization of the Virginia Airports Sustainability Management Plan (SMP)**

Figure 2 on the next page shows how each of the required elements of the Federal Aviation Administration’s (FAA) guidance on sustainability management plans is reflected in the Virginia Airports SMP Statewide Framework and each of the SMP Supplements. These elements are described in more detail in the tasks that make up the project methodology (see following section). The elements that FAA requires in an airport SMP include:

- Sustainability policy, mission statement, or **vision**—these components provide the high-level rationale, context, and background for the SMP

- Defined sustainability **categories** in various economic, environmental, social, and operational areas applicable to airports
- **Goals** or more measurable **targets** customized for each airport
- Performance **metrics** to track and manage performance
- Identified **initiatives** that will be implemented to make progress towards the goals

Additional elements include guidance and strategies to communicate and engage with internal and external stakeholders and guidance on available funding opportunities.

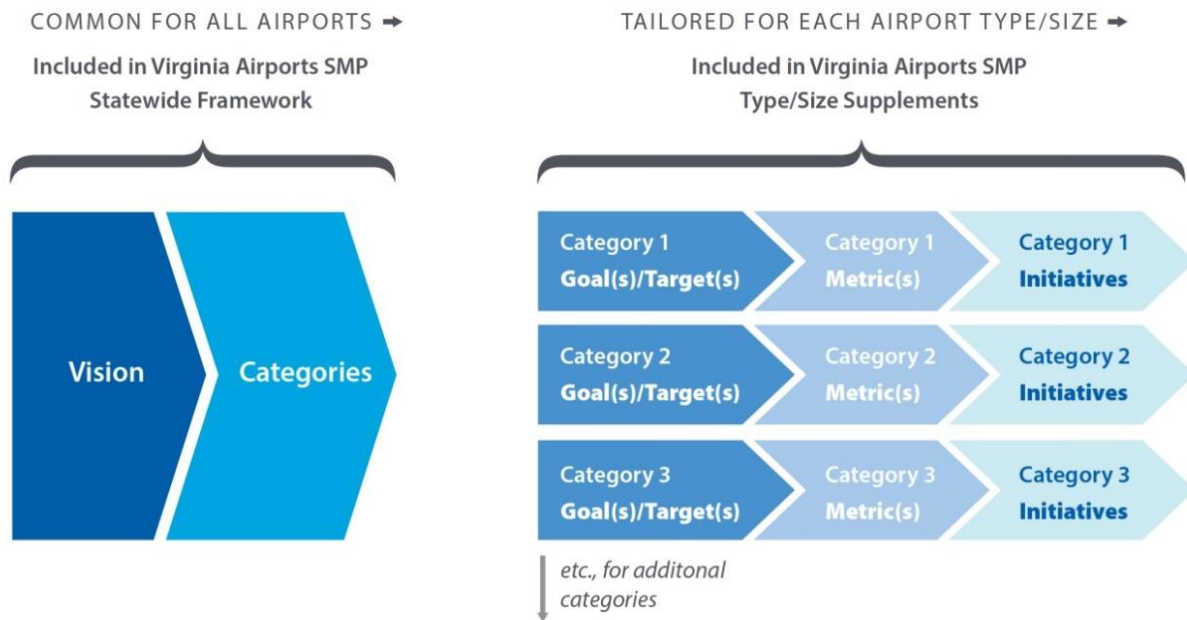


Figure 2: Relationship of the sustainability vision, categories, goals, metrics, and explicit initiatives

## CONTRIBUTORS TO SMP

During the 18-month development process of the Virginia Airports SMP, a number of individuals and organizations contributed to its planning, structure, content, and roll-out. At the onset of the project, DOAV assembled a Steering Council including representatives from six airports of varying types, sizes, and geographic locations, as well as members of DOAV, other branches of Virginia state government, the FAA, and an industry association. The Steering Council members and airport/organization affiliations are shown below.

- **P. Clifford Burnette, Jr.**, Director, Airport Services Division, DOAV
- **J. Michael (Mike) Swain**, Manager, Engineering Section, DOAV
- **R.N. (Rusty) Harrington**, Manager, Planning and Environmental Section, DOAV
- **Jeffrey Breeden**, Aviation Planner, Federal Aviation Administration (FAA) Washington Airport District Office (WADO)
- **Sharon Baxter**, Director, Division of Environmental Enhancement Director, Virginia Department of Environmental Quality (DEQ)
- **David Young**, President, Virginia Aviation Business Association (VABA)
- **E.M. (Buzz) Jarrell**, Manager, Orange County Airport (OMH)
- **Duane Goss**, Manager, New Kent County Airport (W96)
- **Barbara Haxter**, Manager, Accomack County Airport (MFV)
- **Jeremy Wilkinson**, Operations and Facilities Manager, Richmond Executive Airport-Chesterfield County (FCI)
- **Theodore (Ted) Kitchens**, former Assistant Airport Director, Planning and Development, Newport News/Williamsburg International Airport (PHF)
- **Ken Spirito**, Executive Director, Newport News/Williamsburg International Airport (PHF)
- **Diana Lewis**, Director of Planning and Engineering, Roanoke-Blacksburg Regional Airport (ROA)

Additional input was provided by more than 50 Virginia airports. This input was collected in the form of responses to an online survey regarding airport sustainability practices, follow-up phone conversations, and in-person participation in presentations and workshops facilitated by DOAV and the project team across the state.

The contractor team was led by the Cadmus Group, Inc. and included four firms with additional expertise in airport development, airport sustainability, communications, and environmental compliance: Talbert & Bright, VHB, Cordell & Crumley, and SC&A.

## METHODOLOGY AND DEVELOPMENT PROCESS

### Task 1: Stakeholder involvement and information gathering

**Task objective:** Ensure a clear understanding of DOAV’s goals for the project, develop a strategy for engaging key stakeholders, create a governance structure for airport sustainability in Virginia, and engage and gather information from the 66 public-use airports in Virginia.

#### Subtask 1a: Kickoff meeting with DOAV

DOAV and the project team initiated the project with an in-person kickoff meeting that provided an opportunity for principal members of the contractor and client teams to discuss the project objectives, goals, and products, and to establish the technical, operational, and procedural framework for project execution, monitoring, and control.

Attendees reviewed the project scope and detailed expectations for project phases, deliverables, and assumptions. The meeting also provided a chance for all parties to review and discuss the Project Work Plan (PWP), containing the management approach, staffing plan, and detailed schedule needed to complete the tasks. The PWP subsequently served as the basis for ongoing project reporting and overall assessment of progress and results.

#### Subtask 1b: Group airports by type/size tier

One major element of the methodology for producing the Virginia airports statewide SMP was the development of tools and resources tailored for use by airports of differing types and sizes. To lay the groundwork for this portion, the project team grouped the 66 public-use airports in Virginia into three type/size tiers that reflect commonalities of airport function, types of operations, and resources available. The type/size tiers were based on the defined airport roles as anticipated in the 2016 Virginia Air Transportation System Plan (VATSP) study update, as follows:

- Local Service and General Aviation–Community
- General Aviation–Regional and Reliever
- Commercial Service

#### Subtask 1c: Develop Communication and Outreach Plan

An important part of developing a sustainability program is engaging key stakeholders, both internal and external to the organization. Best practice for this engagement includes gathering necessary input, encouraging buy-in, and clearly communicating outcomes. In this subtask, DOAV and the contractor team developed a Communication and Outreach Plan (COP) to guide the project team’s engagement with stakeholders throughout the SMP development project. The stakeholder engagement process outlined in the COP included the following elements:

- Articulation of the goal, objectives, and strategies for SMP outreach
- Roles and relationships of project team members regarding outreach and communications
- Relevant project milestones



**Figure 3: Sustainability logo developed by DOAV and the project team**

- Branding and messaging strategy, including the development of a project logo (Figure 3)
- Identification of primary and secondary audiences for project communications
- News media strategy
- Engagement and informational materials to be created, including letters, a survey, web page content, email communications, fact sheets, and an executive summary brochure
- Strategy for in-person and web-based stakeholder meetings and presentations

#### Subtask 1d: Convene Statewide Steering Council

DOAV and the contractor team formed an oversight and advisory group early in the development process of the SMP. The project team assisted DOAV in convening a formal Steering Council for the Virginia Airports SMP, comprised of personnel from DOAV, FAA Washington Airports District Office (WADO), and six representatives from airports across all three type/size tiers, along with representatives from the Virginia Aviation Business Association (VABA) and the Virginia Department of Environmental Quality (DEQ). The purpose of the Steering Council was to validate the project team's assumptions and approach to the statewide SMP, to discern its feasibility, and to guide the implementation of specific recommendations. In particular, a primary role of the Steering Council was to help maintain focus on the usability and practicality of products for airport practitioners, especially when reviewing draft deliverables and providing feedback. The Steering Council met six times through in-person meetings and web-enabled teleconferences, at key milestones through the project's duration.

#### Subtask 1e: Conduct initial airport stakeholder involvement and information gathering

Following the framework in the finalized Communication and Outreach Plan, the project team conducted the initial airport stakeholder involvement and information gathering. The overall objective of this subtask was to gather information on existing sustainability-related efforts; undertake a general assessment of the current state of sustainability practice at Virginia airports; and collect input on airport sustainability needs, priorities, challenges, and opportunities to support maximum implementation and functionality of the tools and resources to be developed.

To begin, the project team developed an introductory letter to airport stakeholders across the Commonwealth introducing the project, the potential role for individual airports, and the benefits of involvement. DOAV distributed the letter to airport managers. Included with the letter was a link to a short online survey to identify sustainability-related practices at the airports, identify issues that affect sustainability performance at the airports, determine barriers to implementing sustainable practices at their airports, and discuss willingness to serve as case studies for this project. Based on survey responses, the project team subsequently contacted some of the airport managers through brief follow-up telephone interviews to obtain additional input regarding sustainability categories and the level of usefulness to their specific airports, as well as their interest in or concerns regarding specific practices.

The project team and DOAV then prepared and presented an interactive presentation and information session for airport stakeholders at the Virginia Airport Operators Council (VAOC) 2015 Spring Workshop. The session included the use of handheld electronic polling devices that allowed the team to collect and display audience responses in real time. The project team also distributed an informational handout about the Virginia Airports SMP for VAOC Spring Workshop attendees. DOAV and the project team also prepared and delivered a presentation on "The Virginia Air Transportation

System and Statewide Airports Sustainability Plan” at the May 2015 Transportation Research Board (TRB) National Aviation System Planning Symposium.

The final step was to synthesize the information gathered, document existing sustainability initiatives at Virginia airports, and assess materiality to inform where and how sustainability efforts can be optimally applied. The project team synthesized all results in a memo for review by DOAV.

#### Subtask 1f: Research latest industry progress

Building on its ongoing experience with airport planning and communications in Virginia, and sustainability planning and implementation support at airports across the country, the project team conducted a detailed review of the latest applicable industry resources on aviation sustainability. Sources and materials examined included those from:

- The Sustainable Aviation Guidance Alliance (SAGA)
- The Airports Council International – North America
- The Transportation Research Board’s Airport Cooperative Research Program (ACRP)
- The Federal Aviation Administration (FAA)
- The Global Reporting Initiative (GRI)
- Sustainability Management Plans from other airports, including participants in FAA’s Sustainability Plan Pilot Program

The project team summarized the results of this review in a technical memorandum.

### Task 2: Sustainability visioning

**Task objective:** To develop the overall vision and framework for airport sustainability in Virginia, including recommended sustainability categories.

#### Subtask 2a: Develop DOAV sustainability mission statement

In this subtask, the project team assisted DOAV in developing vision and mission statements for airport sustainability in Virginia. Initial draft vision and mission statements were developed based on a number of inputs, including:

- Discussions on the topic held during the first Steering Council meeting
- Information gathered during the initial airport stakeholder involvement, which helped to understand the specific priorities and concerns of Virginia airports
- Applicable vision and mission statement language used by other airports and similar institutions in their sustainability planning efforts

DOAV decided on the following definition of sustainability to guide its efforts going forward:

*“Sustainability is a strategic approach to airport planning, development, asset management, and resource protection—including financial, environmental, community relations, and other factors—that prioritizes current operational needs while best preparing Virginia’s airports for continued success in the future.”*

To support the integration of sustainability planning into organizational priorities, rather than adopting separate vision and mission statement, DOAV decided to update its existing mission statement to reflect the emerging emphasis on an aviation system that is sustainable for generations to come. This update was accomplished by adding the phrase “and sustainable” to the existing statement.



DOAV’s mission is to:

- Cultivate an advanced and sustainable aviation system that is safe, secure, and provides for economic development
- Promote aviation awareness and education
- Provide the safest and most efficient flight services for the Commonwealth leadership and state agencies

**Subtask 2b: Define recommended sustainability categories**

The identification of sustainability categories (i.e., focus areas or classifications) is a standard industry practice for sustainability program development, and is required in sustainability management plans and sustainable master plans under FAA’s Interim Guidance for its Sustainable Master Plan Pilot Program. Categories are useful for providing a general organization and framework by which participants and stakeholders can visualize how different efforts interrelate.

In this subtask, the project team researched and generated proposed sustainability categories for DOAV and Steering Council discussion and approval. The list of categories was informed by work undertaken in Task 1, including the discussions with the Steering Council, information gathered from Virginia airports (including Newport News/Williamsburg International Airport, which had recently developed design and sustainability guidelines for airport development in its “Project Green Skies” initiative), and the latest sustainability planning work at other airports in the United States. A draft list of categories and subcategories, along with a rationale for their selection, was presented for DOAV and Steering Council review and comment, and then revised and finalized for use in subsequent tasks. The final list of five sustainability categories and twelve subcategories is presented in Table 1.

**Table 1: Final sustainability categories and subcategories covered in the Virginia Airports SMP**

Category	Subcategory
<b>Economic Performance</b>	Air Service and Business Development
	Non-Aeronautical Development
	Asset Management and Resilience
<b>Airport Community</b>	Airport Workforce
	Public Outreach
<b>Energy and Emissions</b>	Energy Efficiency
	Transportation Fuels
	Energy Generation
<b>Waste</b>	Waste Management and Recycling
	Chemical and Hazardous Waste Management
<b>Natural Resources</b>	Stormwater Management
	Water Efficiency

**Subtask 2c: Develop draft “Virginia Airports SMP – Statewide Framework”**

The final step in Task 2 was to “package” the work generated up to this point into a draft of the Statewide Framework portion of the Virginia Airports SMP. The Statewide Framework presents the foundational elements of the SMP. These include the characteristics of the Virginia aviation system, the current state of sustainability initiatives at airports in the United States, including those participating in the FAA’s Sustainability Master Plan Pilot Program, existing efforts at Virginia airports, and the rationale

for sustainability-focused planning at Virginia airports. It introduces the categories and subcategories that create the basis for the content of the SMP, and defines the three type/size tier groupings of airports used. The project team provided the Draft Virginia Airports SMP – Statewide Framework to DOAV and the Steering Council for review.

### Task 3: Sustainability goal-setting and metric development

**Task objective:** To develop a menu of suggested goals, metrics, and performance targets for each sustainability category, guidance for data collection, and a portfolio of potential sustainability initiatives. These would later form the basis of the SMP Supplements for each airport type/size tier.

Subtask 3a: Develop suggested goals and performance targets in each category; and  
Subtask 3b: Define recommended metric(s) for each category

For each of the 12 sustainability subcategories previously identified, the project team developed 1–4 general goals in conjunction with DOAV, drawing on the information collected and the planning framework generated in earlier tasks. The purpose was to develop a “menu” of possible goals from which airports can select individual goals most appropriate for their context. Accompanying the goals, recommended metrics were included for measuring performance, as were specific suggested targets to provide points of comparison for progress over time. Finally, the team compiled specific examples of tangible initiatives that represent best practice in airport sustainability management within each subcategory.

The team undertook focused fact finding efforts to assess the current state of airport performance with regards to each sustainability category and subcategory, drawing in part on the professional expertise of in-house subject-matter experts in each area. The development process also drew on project team members’ prior experience with other recent airport sustainability plans. The team combined information from these high-level assessments with stakeholder feedback collected under the stakeholder engagement and information gathering work, as well as from key industry resources for both general and sustainability-specific airport benchmarking and performance measurement such as ACRP Report 19A, *Resource Guide to Airport Performance Indicators*. The criteria for topic selection was also informed by metrics identified in the GRI *Airport Operators Sector Disclosures* guidance and ACRP Report 119, *Prototype Airport Sustainability Rating System—Characteristics, Viability, and Implementation Options*.

The goals and performance targets (Subtask 3a) were developed in parallel to the metrics (Subtask 3b) and recommended initiatives, as each component informed and built on each other to result in a single set of cohesive deliverables. Definitions of goals, targets, metrics, and initiatives, along with examples of each for the *Energy Efficiency* subcategory of the *Energy and Emissions* category, are shown in Table 2. The relationship can be considered a progression, with overall sustainability management as the framework, and the category/subcategory driving the selection of goals, metrics, and targets, which in turn drive the implementation of specific sustainability initiatives intended to result in progress towards the goals.

**Table 2: Definitions and examples of suggested goals, metrics, targets, and initiatives**

Definition	Example
<b>Goal:</b> An overarching objective that an airport is pursuing	<i>Reduce operating costs by decreasing electricity usage</i>
<b>Metric:</b> Quantitative standard of measurement to calculate performance towards goal	<i>Intensity of electricity consumption measured in kWh/sqft</i>

<b>Target:</b> Finite, quantitative result to which airports can aim	<i>Reduce total onsite electricity consumption intensity by 10% by 2020</i>
<b>Initiative:</b> Concrete, specific and detailed steps to implement the attainment of targets and goals	<i>Monitor and track energy use over time; Conduct a retro-commissioning project to optimize building system performance; Incorporate energy efficiency strategies into new construction and renovation projects</i>

The project team presented the draft goals, metrics, targets, and initiatives to DOAV and to the Statewide Steering Council, which reviewed and discussed the draft in an in-person meeting with DOAV and the project team.

#### Task 4: Sustainability tool and resource development

**Task objective:** To present a suite of sustainability tools and resources, tailored for each airport type/size tier, to form the remaining sections of the SMP Supplements.

##### Subtask 4a: Identify existing tools, calculators, checklists, guidance, and other resources

Airport managers can benefit from a variety of tools, checklists, case studies, and other resources to help them implement sustainability initiatives at their facilities and in their operations. In this subtask, the project team worked to identify the best existing sustainability resources across many disciplines and applications, including tools like the U.S. Green Building Council's (USGBC's) Leadership in Energy & Environmental Design (LEED) rating system, guidance such as GRI's G4 Airport Operators Sector Disclosures, online databases such as the Sustainable Aviation Guidance Alliance (SAGA), and ACRP resources.

In assessing currently available resources, the project team was conscious of the specific needs of various airport types/sizes. For example, smaller airports (especially General Aviation-Community and Local Service) may benefit from simple, user-friendly tools and checklists that do not require significant staff resources to implement. Larger airports (for example, Commercial Service and Reliever) may derive more value from additional, more comprehensive tools that could be implemented by on-staff technical specialists or other practitioners. In all cases, the project team gave preference to the most effective, easy-to-use tools and resources that allow airports to implement and manage initiatives that provide financial benefits and immediate return on investment in terms of resources saved.

The deliverable for this subtask was an annotated spreadsheet, comprising an inventory of more than 115 current resources for both overall airport sustainability management, for planning and implementation of initiatives in specific sustainability subcategories, and for each previously identified goal within each subcategory. Each resource was also given a priority ranking based on its perceived usefulness in the SMP Supplements, and identified by its relevance to particular airport type/size tiers.

### Subtask 4b: Develop Project-Specific Tool

In addition to the “off-the-shelf” resources identified and compiled in the preceding subtask, DOAV commissioned the project team to create a Microsoft Excel-based Utility Performance Tracker Tool. The tool enables airports to easily track electricity, natural gas, and water use on a monthly and annual basis. The intended user is the individual or group who is responsible for sustainability or environmental reporting at the airport, has access to airport utility records (such as monthly electricity bills), and can update the necessary utility data on a regular basis. A user guide was written to accompany the Tracker, and is included as an appendix to each SMP Supplement.



Figure 4: Screenshots of the Utility Performance Tracker Tool

### Subtask 4c: Develop related guidance materials

In addition to the more quantitative resources developed in the preceding subtasks, the project team identified two additional areas of need not met by existing airport sustainability resources, and subsequently researched and developed additional resources to meet these needs. These resources include a guide to best practice in sustainability stakeholder engagement for airports, and a guidance document that identifies funding resources.

#### Guidance for internal and external stakeholder engagement.

Stakeholder engagement is an important part of any sustainability program. An airport’s internal staff must be involved in the development of goals and the identification of potential initiatives. Airport tenants, users, and suppliers must have input to initiatives that may affect their operations or experience at an airport. Members of the general public, including neighboring community members, must be engaged in identifying areas of social and environmental impact that should be addressed. Some of these stakeholders can be engaged in similar ways, but some require unique engagement strategies to generate actionable information, encourage trust, and secure ongoing participation. The project team developed simple and succinct guidance to help airports effectively engage with critical stakeholders when developing and implementing future sustainability plans, including practical advice on using social media to amplify an airport’s online presence. Stakeholder groups considered in the guidance include:

- Airport personnel across divisions
- Airport tenants
- Airport users, including passengers
- Suppliers
- Neighboring community members (i.e., public outreach plan)
- Nonprofits and advocates

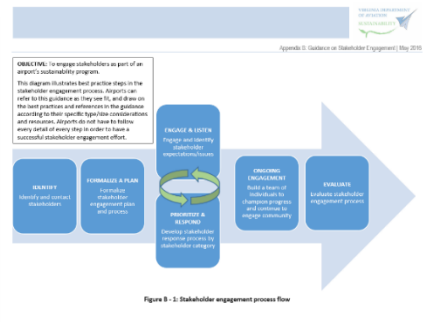


Figure 5: Process diagram for stakeholder engagement

- Local elected officials
- Regulatory agencies

**Guidance on funding opportunities.** In addition to providing clear information on existing FAA sustainability support initiatives such as the Voluntary Airport Low Emissions (VALE) program and the Airport Improvement Program (AIP) and Passenger Facility Charges (PFCs), the project team identified and evaluated non-traditional funding sources for sustainability initiatives.

Funding sources are organized by sustainability category, and include information on the funder, program name, eligibility criteria, examples of eligible projects, form and quantity of available funding, and website for each. The team conducted internet searches and used its own expertise to identify resources for sustainability funding from grants, loans, and tax credits, and from sources including state and federal government agencies, energy and water utilities, and other entities. Finally, the Guidance on Funding Opportunities document also provides broader advice on how to explore partnerships with local governments, businesses, and other non-governmental organizations, and links to external resources on strategies to increase and diversify airport revenue.

#### Subtask 4d: Develop draft “Virginia Airports SMP” Supplements for each type/size tier

The final step in Task 4 “packaged” the work generated in Tasks 3 and 4 into a set of draft SMP Supplements for each of the airport type/size tiers. The final Supplements compile sustainability best management practices and resources, tailored to the size and institutional capacities of the airports in each of the established airport type/size tiers.



**Figure 6: Supplements to Virginia Airports SMP**

Each of the three SMP Supplements has the following main sections:

1. Background and Introduction to the Virginia Airports SMP
2. Guidance for Implementing Sustainability
3. Sustainability Goals, Targets, Metrics, and Initiatives
4. Appendix A: Guidance on Funding Opportunities
5. Appendix B: Guidance on Stakeholder Engagement
6. Appendix C: Utility Performance Tracker Tool – User Guide

The project team submitted the draft Virginia Airports SMP Supplements for review by DOAV and the Steering Council, and collected feedback in an in-person Steering Council meeting.

## Task 5: Ground truth the tools and resources through case studies

**Task objective:** To work with representative case study airports representing different type/size tiers to “ground truth” the application of the SMP Supplements, gather lessons learned, and set the foundation for the full development of SMPs at those airports.

### Subtask 5a: Identify case study airports

Using the results of the airport online survey conducted in Subtask 1e, the project team identified potential case study airports interested in testing the draft materials. Working with the Steering Council, DOAV and the project team selected three airports from this initial list for case study engagements: Orange County Airport (OMH, General Aviation-Community), Richmond Executive Airport-Chesterfield County Airport (FCI, Reliever), and Newport News/Williamsburg International Airport (PHF, Commercial Service). The decision was based on a variety of factors including the airports’ expressed interest in particular sustainability issues, geographic location, and type/size tier.

### Subtask 5b: Apply the tools and resources to specific airport contexts

In this subtask, the project team ground-truthed the tools, templates, and other resources developed in the SMP material, provided technical assistance on topics of interest to the airport, gathered lessons learned, and submitted summary case study notes to each airport.

At OMH and FCI, the project team conducted in-person kick-off meetings with airport managers, which improved the project team’s understanding about each airport’s near-term sustainability goals and helped to identify specific topics of interest for the case study effort. The project team conducted two additional site visits at each airport and held multiple teleconferences during the case studies.

The approach was slightly different at PHF because the airport has an existing Sustainability Management Plan, which was completed in 2014. Accordingly, the project team engaged with PHF airport managers through teleconferences to populate the SMP Utility Performance Tracker Tool with historical data from airport utilities, and to identify new revenue sources from the SMP Guidance on Funding Opportunities. For the latter, the project team matched sustainability initiatives from the Guidance on Funding Opportunities with sustainability goals in the airport’s 2010 Master Plan Update. This Master Plan Update had identified 35 sustainability initiatives programmed for short-term, intermediate-term, and long-term implementation. Airport staff members were largely unaware of many of the funding sources available in the guidance document, suggesting the SMP material could play an important role for Virginia airports in implementing sustainability projects.

The tables below briefly describe the topics of interest and the rationale behind choosing each topic.

**Table 3: Sustainability topics of interest in the Orange County Airport case study**

Topic of Interest	Description	Rationale	Category from SMP Supplement	Subcategory from SMP Supplement
<b>Crisis Communication Plan and Social Media Outreach</b>	Help Orange County Airport prepare a communication plan for use during crises; assist airport in bolstering social media outreach.	Orange County Airport seeks to strengthen relationship with community and has expressed a need for media guidelines, as well as guidance on possible opportunities using social media.	Airport Community	Public outreach; Airport workforce
<b>Solar Feasibility Assessment</b>	Assist Orange County Airport with preliminary solar development project including sizing, placement, and economics.	Orange County Airport is interested in installing solar PV to reduce utility bills and strengthen community image.	Energy and Emissions	Energy efficiency; Energy generation
			Airport Community	Public outreach
<b>Lighting Savings Analysis</b>	Assess savings potential/payback of installing efficient lighting indoors.	The airport would like guidance on highest return-on-investment lighting opportunities and hopes to save money on utilities.	Energy and Emissions	Energy efficiency; Energy generation

**Table 4: Sustainability topics of interest in the Richmond Executive Airport-Chesterfield County case study**

Topic of Interest	Description	Rationale	Category from SMP Supplement	Subcategory from SMP Supplement
<b>Waste Audit and Recycling Report</b>	Conduct waste audit to understand quantities of daily waste generated at airport. Provide assistance on potential recycling opportunities.	Despite considerable waste generation at the airport, there is only limited recycling. Tenants may be able to better coordinate waste management to increase recycling, increase composting, and minimize landfill waste.	Waste	Waste management and recycling
<b>Standard Operating Procedures</b>	Create standard operating procedures to improve airport workforce development.	Certain sustainability SOPs are unofficially passed down between staff members.	Airport Community	Airport workforce

Topic of Interest	Description	Rationale	Category from SMP Supplement	Subcategory from SMP Supplement
<b>Community Outreach</b>	Support transition planning through high school and community college engagement.	Opportunities exist to better engage local high schools and community colleges for workforce development and to raise awareness about the airport.	Airport Community	Public outreach
<b>Solar Farm Development Assistance</b>	Provide high-level advice and guidance to airport's solar development plans.	Airport is actively pursuing development of a solar farm and may benefit from the project team's expertise and experience in this area.	Airport Community	Public outreach
			Energy and Emissions	Energy efficiency; Energy generation

**Table 5: Sustainability topics of interest in the Newport News/Williamsburg International Airport case study**

Topic of Interest	Description	Rationale	Category from SMP Supplement	Subcategory from SMP Supplement
<b>Utility Performance Tracker Tool</b>	Examine multiple years of utility data.	Airport is interested in understanding long-term utility use patterns to identify high consumption areas of the airport and high consumption time periods of the year.	Energy and Emissions	Energy efficiency
<b>Funding Opportunities for Sustainability Initiatives</b>	Identify funding opportunities for the airport.	Airport is interested identifying funding sources for initiatives in its 2010 Airport Master Plan Update.	All	All

#### Subtask 5c: Document lessons learned

The project team analyzed the case study notes and documented the road testing experience in a lessons learned technical memorandum. The memorandum provided a full analysis and documentation of the lessons learned, with specific recommendations for modifications to the Statewide Framework and each type/size Supplement. The lessons learned in the course of conducting the case studies and overall lessons learned from the rest of the Virginia Airports SMP project are presented in the final section of this Technical Report.



## Task 6: Final documentation and dissemination

**Task objective:** Refine and finalize the SMP Statewide Framework and the type/size Supplements, and ensure widespread awareness of the available resources and the benefits of implementation.

### Subtask 6a: Revise SMP Statewide Framework and Supplements, and create Fact Sheets

Working with DOAV, the project team revised the SMP Statewide Framework and SMP Supplements based on the insights from the airport case studies. The proposed revisions to the SMP Statewide Framework and Supplements were discussed with DOAV and the Steering Council during a web-enabled teleconference.

The project team also developed full-color two-page Fact Sheet handouts describing the SMP Statewide Framework and Supplements for each of the three type/size tiers. The Fact Sheets provide key information regarding the contents of the SMP documents, and describe example sustainability initiatives based on those implemented during the case study road testing.

### Subtask 6b: Rollout and dissemination

The project team developed a Public Outreach Plan for the Virginia Airports SMP, working in coordination with DOAV and the Steering Council. The Public Outreach Plan incorporated a multi-step process for rollout and dissemination of the final SMP, focusing on three main modes of engagement: an online webinar; three in-person training workshops at locations across Virginia; and a live presentation at the annual Virginia Aviation Conference in August, 2016. DOAV sent invitations to the webinar and the workshops to all airports in Virginia.

Shortly after the Virginia Airports SMP was finalized, DOAV and the project team hosted a 1.5-hour webinar that provided a high-level overview of the SMP and its application and value for airports. During the webinar, the project team held a Q&A session for participants, giving them an opportunity to pose their questions and comments.

Following the webinar, DOAV and the project team facilitated three in-person training workshops in Richmond, Orange, and Roanoke, Virginia. The workshop content was standardized across all three workshops. The agenda is shown below.

**Table 6: Agenda for each of three in-person workshops**

Time	Session
10:00 AM	<b>Welcome and Introductions</b> <i>DOAV</i>
10:15 AM	<b>Development of the Virginia Airports Sustainability Management Plan</b> <i>Contractor team</i>
10:30 AM	<b>How to Use the Virginia Airports Sustainability Management Plan</b> <i>Contractor team facilitate group exercise: exploring the plan's sustainability categories</i>
12:00 PM	<b>Lunch</b>
1:00 PM	<b>Sustainability at Virginia Airports; Case Study Examples</b> <i>Contractor team</i>
1:45 PM	<b>Funding Sustainability at Your Airport</b> <i>Contractor team</i>

2:15 PM	<b>Moving Forward with the Virginia Airports SMP</b> <i>Group discussion</i>
3:00 PM	<b>Adjourn</b>

At the conclusion of the project, members of the project team provided a presentation at the Virginia Aviation Board workshop during the Virginia Aviation Conference on Thursday August 18, 2016, in Hot Springs, VA. Additionally, opportunities for presentations at other industry conferences were explored, such as at the ACC/AAAE Airports Planning, Design & Construction Symposium on February 21-23, 2017, New Orleans, LA.

#### Subtask 6c: Develop Technical Report, including Executive Summary and lessons learned

This Technical Report, the associated Executive Summary, and lessons learned highlighted below were developed in this subtask. This Technical Report documents the development process of the Virginia Airports SMP Statewide Framework and Supplements. The primary intent of the document is to provide DOAV and FAA with clear documentation of how the project team arrived at the specific guidelines and recommendations included in the SMP, and the information on which those recommendations are based.

As part of the Technical Report, the project team produced a 12-page Executive Summary designed as a highly visual promotional piece to be shared with high-level airport decision makers, government officials, or other interested parties. The document outlines the key findings and recommendations in the Sustainability Management Plan, and explains the value of the Plan for airports as well as for the Commonwealth of Virginia. The intent of the Executive Summary is also to support FAA in easily incorporating key findings from the Virginia Airports SMP into its own reports for the Sustainable Master Plan Pilot Program.

The team prepared a draft of the Technical Report and Executive Summary for DOAV and Steering Council review and discussed the documents during a final “wrap up” meeting before finalizing the documents.

#### Subtask 6d: Post materials to DOAV website

All final materials were posted to the DOAV website. These materials include the final SMP Statewide Framework, the final SMP Supplements, and the final Technical Report and Executive Summary.

## KEY LESSONS LEARNED

The development of the Virginia Airports SMP revealed a number of key lessons for future airport sustainability planning efforts. These findings may be especially relevant to FAA and to state-level aviation agencies in developing future Sustainability Management Plans and related efforts, and to the broader literature on airport sustainability planning. They may also be of interest to airport managers responsible for implementing sustainability practices, and to other sustainability experts, regulators, and planners who seek to improve the processes through which airport SMPs are developed. Key lessons include:

- **Utilize case studies.** Road-testing of the SMP helped ensure the SMP material was both relevant and user-friendly. Building in time and resources for case study work improves confidence that the final SMP material will be useful in real-world situations and provides an opportunity for mid-course corrections if needed.
- **Customize resources.** Tailoring an SMP to various sizes and categories of airports provides more specific and useful guidance than a “one-size-fits-all” approach.
- **Provide funding guidance.** Guidance on financial opportunities proved to be a popular component of the Virginia Airports SMP. Individual airports are sometimes unaware of the large number of funding and financing resources related to sustainability, particularly resources not related exclusively to the aviation sector.
- **Increase efficiency of sustainability planning.** One key challenge for airports is sorting through the large volume of available information on sustainability issues to find the most relevant content. Airport sustainability guidance that curates existing materials and points airport staff toward the most useful resources for their particular circumstances is particularly useful.
- **Prioritize initiatives.** Feedback from the case studies illustrated that some sustainability opportunities help realize near-term monetary savings, while others require longer timeframes. This feedback suggests that airport SMPs should include guidance on prioritizing initiatives and deciding between those that yield more immediate benefit and those with a longer payback period.
- **Engage airport tenants.** Discussions with airport staff underscored the important role that airport tenants play in an airport’s overall consumption of resources, generation of waste, and production of emissions. Airport SMPs should provide guidance on how to integrate sustainability language into airport contracts with tenants, through restructuring or amending contracts. Additionally, the airports’ individual SMPs should discuss the importance of airport owners “leading by example” so that sustainability initiatives trickle down to tenants.
- **Integrate sustainability with existing airport planning.** The case studies revealed that the SMP was most valuable when an airport approached it with the intent to integrate sustainability initiatives with other airport plans, such as an Airport Master Plan, Emergency Plan, Strategic Business Plan, or other related documents and checklists. This finding suggests that individual airport sustainability management plans may be most effective when explicitly developed within an airport’s existing planning context.
- **Leverage new construction projects.** Airport SMPs should emphasize that cost savings can be achieved in sustainability initiatives if they are implemented at the time of new capital construction. For example, if an airport is considering the construction of a new hangar

building, that is the best time to consider installing rooftop solar photovoltaic cells, rather than after the building is already operational.

- **Build momentum for projects.** The sequencing of initiatives can be an important factor in building a strong airport sustainability program. One way to maximize success is to begin with projects that have many champions and a clear return on investment, and then move on to more involved initiatives by leveraging the momentum that was gained.