

---

# Chapter 1

## Introduction

In an effort to establish a solid plan for the future development of the University Park Airport (Airport), The Pennsylvania State University (Penn State), owners and operators of the Airport, in conjunction with the Federal Aviation Administration (FAA), elected to prepare a sustainable master plan. This sustainable master planning effort was part of an FAA pilot program that was designed to help airports identify ways to plan for future development while reducing energy consumption, environmental impacts, and carbon footprints. In addition, this sustainable master plan will also address areas of interest that will have a bearing on the management and development of the Airport in the future. Through this effort, the Airport will become a more environmentally friendly neighbor while having an established plan to direct the future development so that existing and anticipated needs are met over the next 20 years.

A structured and measured approach is critical in preparing an effective plan of what will be needed at the Airport to meet future aviation demand. This chapter, organized in the following sections, outlines the approach that was taken to prepare the Airport's master plan and describes its purpose, objectives, and the importance of involving key stakeholders and the public throughout the planning process.

- 1.1 Purpose
- 1.2 Objectives
- 1.3 Master Planning Process
- 1.4 Stakeholder and Public Involvement
- 1.5 Conclusion

### 1.1 Purpose

Sustainable airport master plans are comprehensive evaluations that review the short- (5-year), medium- (10-year), and long-term (20-year) infrastructure needs of an airport to identify cost-effective and environmentally friendly solutions that will be necessary to meet projected aviation demand. While traditional airport master plans vary in complexity and scope based on the size, function, issues, and challenges of an airport, each is comprised of fundamental elements that are presented in FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*. Sustainable airport master plans also are held to guidelines that were issued by the FAA in a memorandum dated May 27, 2010 (see **Appendix A**), that provide preliminary guidance on airport sustainability planning and further define sustainability principles of the pilot program. It should be noted that, while airport master plans are primarily intended for use by an airport sponsor, its staff, consultants, the FAA, and state aviation officials, they are also beneficial planning documents for board members, municipal officials, community planners, and the general public.

The purpose of a sustainable master plan is to provide the framework necessary to guide the future development of an airport, considering environmental and socioeconomic issues while evaluating costs associated with alternative concepts, so a timeline can be established for their implementation. Master plans also help provide preliminary information needed to further evaluate environmental and socioeconomic impacts of each proposed alternative while providing justification for the selection of the recommended development actions.

It is important to note that sustainable airport master plans are intended to be fluid documents that are to be updated periodically as infrastructure needs are met. Recommendations and findings from the planning effort are not intended to be concrete and may need to be revised during the planning period as other variable factors, such as activity levels, industry trends, user demands, environmental practices, and types of airport users, can change. It is recommended that the master planning document be evaluated periodically and updated as needed to provide the Airport with an effective planning document that adequately guides future development decisions while limiting potential environmental impacts.

## 1.2 Objectives

An airport master plan identifies the long-term development goals of an airport and the infrastructure improvements that will be necessary to meet future aviation demand. Additionally, master plans justify the purpose and need for each improvement and establish a timeline and financial schedule for their implementation. Guidance provided by FAA AC 150/5070-6B, *Airport Master Plans*, states master plans should:

- Document the issues that the proposed development actions will address.
- Justify the proposed development actions through technical, economic, and environmental investigation of concepts and alternatives.
- Provide an effective graphic presentation of the proposed development at an airport and anticipated land uses within its vicinity.
- Establish a realistic schedule for the implementation of the proposed developments, particularly through a short-term capital improvement program.
- Propose an achievable financial plan to support the implementation schedule of the proposed developments.
- Provide sufficient definition and detail for subsequent environmental evaluations that may be required before recommended development actions are approved.
- Present a plan that adequately addresses any issues to satisfy local, state, and federal regulations.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls, and other policies necessary to preserve the integrity of an airport and its surroundings.
- Establish the framework for a continuing planning process. This process should monitor key conditions and permit changes in plan recommendations as required.

### 1.3 Master Planning Process

Airport master plans are comprised of a series of fundamental elements that help determine what infrastructure developments will be needed throughout the planning period to meet future aviation demand. While some of these elements may vary in complexity based upon the scope of the study and the development needs of an airport, all play an essential role in the master planning process. Each element is defined as a task in the study effort and may be presented as a standalone chapter in the master plan report. The following elements comprise the planning process for this sustainable master plan:

- **Study Design** – The study design includes development of a comprehensive scope of services, definition of the effort necessary to accomplish the work, and preparation of realistic project effort and budgets for completing the work. It also serves to organize the project planning team so that the necessary study efforts are completed and roles and responsibilities are clearly defined.
- **Public Information, Education, and Outreach** – It is important that efforts are made to keep the community informed of the planning process and the needs of the Airport through the course of the study. This element focuses on positive communication with the public and providing education on Airport needs, benefits, opportunities, and project rationale. Informational workshops, as well as a project website, will provide the public with forums to comment and address concerns about the planning effort in a proactive manner.
- **Data Collection / Inventory** – Information on the condition of existing facilities will be collected so that an inventory can be prepared for subsequent plan elements. Data collected for this effort will be obtained through a variety of means that includes, but is not limited to, the existing master plan, recent environmental documents, the existing airport layout plan (ALP), Penn State Geographic Information System (GIS) database, aerial photography, mapping, FAA databases, Airport records, and user surveys.
- **Pavement Evaluations and Recommendations** – An evaluation of the condition of existing airfield pavements will be conducted so that Pavement Condition Index (PCI) and Pavement Classification Number (PCN) values can be assigned to all runway, taxiway, and apron surfaces. Recommendations developed at the conclusion of this element will help direct the pavement management, maintenance, and repair needs of the Airport for the planning period.
- **Projections of Aviation Demand** – Projections of short- (5-year), intermediate- (10-year), and long-term (20-year) demand will be developed to determine future needs for airside, landside, and support infrastructure. Standard forecasting methodologies, such as market share, regression analysis, time series analysis, and trend line analysis, will be used to forecast passenger enplanements, aircraft operations, fleet mix, and air cargo activity.
- **Demand Capacity Analysis** – This element will develop a realistic estimate of demand potential as it relates to airline passenger demand based upon information obtained about the Airport's catchment area. A full report will be prepared that will include information on passenger retention, diversion by destination, Airport use by community, regional distribution of travel, airline use by airport, average airfares, air service gaps, and other market specific information.
- **Facility Requirements** – The facility requirement element focuses on a number of specific issues and improvements to existing airside and landside facilities that will be needed to satisfy projected

demand. Particular focus will be made during the planning effort for a new snow removal equipment (SRE) / aircraft rescue and firefighting facility (ARFF).

- **Alternatives Analysis** – Feasible alternatives for the development of the Airport’s facilities will be developed and analyzed to determine the recommended action that should be taken to address each of the Airport’s facility needs. Sustainability, operational, economic, environmental, and implementation factors will be considered as a part of this evaluation.
- **Environmental Overview and Land Use Plan** – A summary of the environmentally sensitive features of the Airport and the potential impacts of the proposed development will be prepared as a part of this task. An inventory will include information on the significance of the environmental impacts and possible abatement and mitigation measures that could be taken to reduce or eliminate any potential impacts. Likewise, a review of existing and projected land use compatibility issues will be conducted so that a land use plan can be developed to depict existing and recommended land uses for all land within the vicinity of the Airport.
- **Sustainability Planning** – Although identified as an individual element, sustainability will be incorporated throughout all project elements. The goal of this element is to conduct a baseline assessment of activities and resource consumption at the Airport in order to identify opportunities for improvements. Assessments will be conducted of air quality, greenhouse gas emissions, natural resource consumption, and energy usage so that sustainability goals, initiatives, and improvements can be identified for daily activities and infrastructure improvement projects that occur throughout the planning period.
- **Financial Feasibility Analysis** – A preliminary financial analysis will be conducted to identify potential funding sources for recommended alternatives considering the capability of the Airport to fund capital improvements and finance day-to-day operations. A detailed financial plan for implementation of the recommended alternatives will also be prepared to present reasonable guidelines for matching projected financial resources with identified needs.
- **ALP and electronic Airport Layout Plan (eALP)** – The Airport’s ALP will be updated to show existing facilities and illustrate development that is recommended from the master planning effort. Likewise, an eALP will be created of the ALP drawing set using approved GIS data through tools made available by the FAA.

While the FAA will review all elements to ensure sound planning techniques have been applied, it only approves the ALP drawing set to indicate the proposed developments are safe, efficient, and conform to airport design standards; in addition, the forecasts are also approved to maintain consistency with the Terminal Area Forecasts (TAF) that are prepared by the FAA.

## **1.4 Stakeholder and Public Involvement**

The involvement of major airport stakeholders and the general public is crucial when drafting an effective plan that addresses the future development needs of an airport. Master Plan Advisory Committees (MPACs) and public information meetings offer tools to collect input on the needs, concerns, and issues of airport users, tenants, resource agencies, public officials, and the community. This input helps the project

team identify the critical infrastructure needs of an airport and to develop a set of feasible alternatives. Each method to collect input on the needs of an airport offers an opportunity to exchange information appropriate to the technical expertise of the audience. The following describes the public involvement methods that were used in the preparation of the University Park Airport Sustainable Master Plan.

#### **1.4.a Master Plan Advisory Committee (MPACs)**

An MPAC is typically assembled for airport stakeholders to provide input and insight on technical issues and provide feedback on proposed development actions. MPACs are often comprised of key airport tenants, users, local business leaders, community officials, and the general public. MPACs offer technical advice and help foster the exchange of information between the interest groups they represent and the project team.

MPACs serve an advisory role as a part of the planning process and are granted no project decision making power on their own. MPACs will typically meet with the project team during critical project decision points, such as the review of existing facilities, projections of aviation demand, development of alternatives, and selection of recommendations. The number of members that comprise an MPAC varies with the size of the airport, complexity of the project, and number of vested stakeholders. The 18-member MPAC for the University Park Airport Sustainable Master Plan is comprised of representatives from the Airport, Penn State, Centre County Airport Authority, tenants, and community planning representatives. Summaries of the MPAC meetings are presented in **Appendix B**.

#### **1.4.b Public Information Meetings and Outreach**

It is also important to gather the public perception of future airport development needs in addition to understanding the needs of stakeholders. Holding public information meetings is one method to offer an interactive forum for the project team to collect input from the local community on infrastructure needs while providing them an opportunity to comment on proposed development plans. These meetings vary from a traditional formal hearing format with presentations made by members of the project team to an informal open house format where staff members are available at interactive stations to provide information and receive feedback. Traditionally, open house formats have often proven to be the most effective method to engage the public as it provides an informal method for the local community to share their needs and concerns with the project team about infrastructure needs at the Airport.

Several factors determine the number of public information meetings that will be held during the planning process, such as the size of an airport, the population size of the surrounding community, and the level of interest or controversy anticipated with proposed development actions. Meetings are typically held in conjunction with critical project decision points (often to review forecasts and proposed alternatives) and during the recommendations selection process. There were two public information meetings held as a part of the process to prepare the sustainable master plan for the Airport. The first meeting focused on collecting input from the community about the proposed alternatives while the second meeting was held at the conclusion of the study process to collect comments on the findings of the master plan study.

Other methods of public involvement were also utilized to collect input and inform the community about the sustainable master plan study. A project website was created to offer an interactive forum for the public to

comment about the sustainable master planning process and follow the progress of the study. Handouts distributed at the public information meetings allowed attendees to take home information about the proposed developments and findings of the study to share with members of the community who were not able to attend. Finally, presentations were also given to local organizations such as the Centre County Chamber of Business & Industry, Benner Township Planning Commission, and the Patton Township Planning Commission to provide a briefing of the study progress and results, and to offer an opportunity for community officials to ask questions and submit comments to the project team.

## **1.5 Conclusion**

Sustainable airport master plans provide airport officials, state aviation agencies, the FAA, community planners, and local governmental officials with a valuable tool to not only guide future development at an airport, but also help direct decisions to increase the environmental sustainability of its operation. A successful comprehensive planning process that evaluates the condition of existing infrastructure and measures its ability to meet future demand while focusing on sustainability initiatives can help identify environmentally conscious infrastructure improvements that will be needed over the next 20 years. Input received from stakeholders and the local community can help identify alternatives that are recommended to address the future capacity needs of an airport while limiting environmental and other socioeconomic impacts. Financial and project implementation approaches identified through the planning process allow sufficient time for airport officials to coordinate the resources necessary prior to the implementation of each recommended project. In conjunction with the objectives and sustainability initiatives identified through the planning process, an effective sustainable master plan can help an airport realize long-term development goals while becoming a stronger environmental steward.