

**CHAPTER ONE  
SYSTEM PERFORMANCE CRITERIA**

**I. INTRODUCTION**

The Pennsylvania Department of Transportation (PennDOT) has long recognized the importance of proactive planning to address the Commonwealth’s expansive airport system. To continue to proactively plan for the future, the adequacy of the Commonwealth’s airport system needs to be examined to determine the ability of that system to meet many objectives on a statewide basis. The first step in developing a comprehensive Statewide Airport System Plan (SASP) for the Commonwealth of Pennsylvania is the identification of a set of performance criteria that can be used to characterize and guide the development of an adequate airport system.

Performance criteria categories were developed to describe the general characteristics that define a good aviation system. These categories are broad in nature. Objectives are used to state the goals of the study within each of the general performance criteria categories. In a subsequent chapter, benchmarks will be developed to provide a means to evaluate the specific objectives, using data about the airports, communities, and facilities. Benchmarks are used to clarify and define the meaning of the objectives and to provide a method for measuring how well the objectives are being addressed in the aviation system. The use of benchmarks also provides a process that allows for the evaluation of alternative development scenarios showing the costs and benefits associated with meeting the objectives set for the study.

The process to establish system performance criteria was initially based on FAA guidelines and supplemented through the review of criteria used by other states and planning agencies. With an initial base of criteria categories, input from the Project Oversight Committee (POC), established by PennDOT to review and comment on the SASP, was sought during the kick-off meeting for the study.

The five general system performance categories that were established through this process include:

- Accessibility
- Optimization Potential
- Activity/Demand
- Support/Commitment
- Facilities

These performance criteria will be used to establish functional levels and roles for each system airport. The criteria will also be used subsequently to evaluate how well Pennsylvania’s existing airport system is operating, based on the specific benchmarks that are developed to measure the system’s performance.

With these general characteristics of a good aviation system established, the process to refine and prioritize the categories was undertaken. The refinement process included establishing specific objectives within each of the categories that could be used to assess the airport system, as well as prioritizing the categories in terms of how important each criterion is to the overall airport system. Each performance criterion category, the specific objectives developed through the interactive process with the POC, and the priorities of the categories are discussed in the following sections.

## **II. ACCESSIBILITY**

Providing adequate access is an important goal for the Commonwealth’s airport system. Accessibility to an airport can be defined in terms of access from the ground and from the air. Air access relates to a number of factors, including the ability to access airports during all weather conditions, as well as the location of airports to accommodate air emergencies. Ground access is usually defined in terms of the time it takes for an aviation user to reach an airport. Airports must be accessible via the road network and must be located in proximity to the users. The FAA, through the National Plan of Integrated Airport Systems (NPIAS), has established guidelines that can be used to evaluate the location of airports. These guidelines, along with input provided by members of the Project Oversight Committee (POC), will be considered in the analysis of the ground access needs for the Pennsylvania airport system. Intermodal access is also an important consideration in the evaluation of the airports’ abilities to meet the access needs of the users.

Specific objectives that will be analyzed for the Pennsylvania airport system in terms of accessibility include the following:

- 1) Business class airports should be located within 30 minutes of major business centers
- 2) Commercial service airports should be located within 60 minutes of significant population centers
- 3) Business class airports should be accessible from a limited access highway
- 4) Commercial service airports should be accessible from an interstate
- 5) Intermodal access should be provided at business class and commercial service airports, including rail and shuttle/limo service
- 6) All weather airport coverage should be provided throughout the Commonwealth
- 7) Airport facilities should be provided to accommodate emergency medical and life flight services throughout the Commonwealth

## **III. OPTIMIZATION POTENTIAL**

An analysis of the Commonwealth’s aviation system must include an examination of the ability of the airports to meet the demands of the users, including optimizing the airport facilities. Optimization of the facilities includes providing a sufficient land envelope for expansion to accommodate needs for additional hangars, ramps, buildings, and runway/taxiway systems. The need to provide these facilities must be considered in tandem with the human and natural environment. Environmental concerns that limit the optimization of the airport facilities must be recognized in the overall planning effort. Identifying where land use planning techniques are in place to minimize impacts in the airport environment is also important to providing airports with the

ability to optimize their facilities. These techniques include the adoption of zoning and land use controls per *Act 164, Pennsylvania Laws Relating to Aviation, Subchapter B, “The Airport Zoning Act.”*

Specific objectives that will be analyzed for the Pennsylvania airport system in terms of optimization potential include the following:

- 1) Identification of airport-related zoning regulations in impacted municipalities, and ownership and/or control of necessary land areas by airport sponsor
- 2) Identification of environmental concerns that limit the optimization of airport facilities
- 3) Provision of sufficient space to accommodate additional facility needs to meet user needs

#### **IV. ACTIVITY/DEMAND**

The primary mission of all system airports is the quick, convenient, and safe transportation of people and goods. An adequate system of airports must have ample airside and landside facilities to process the movement and storage of aircraft, as well as to meet the needs of people who use the airport. There are many factors that influence demand levels at system airports. Included among these factors are the geographic size of the Commonwealth, its seasonal weather, the large variations in population concentrations and distributions, and varied economic conditions that drive the need for air transportation.

While aviation activity is generated at varying levels throughout the Commonwealth, the provision of adequate airport facilities and services is an important evaluation factor. Capacity is one factor that is used to determine an airport’s ability to process demand for both airside and landside facilities. Airside capacity is most often defined as the maximum physical ability of a runway system to process aircraft. Measuring an airport’s capability to accommodate demand on an annual basis is a standard capacity measure. Annual service volume (ASV) estimates the number of annual operations an airport can serve before operational delays are experienced. Airside capacity, or an airport’s ability to process operational demand, is influenced by many factors.

For some system airports, operational capacity may be the most important capacity measure; for other airports, especially in the urban areas of the Commonwealth, having ample storage facilities, FBO areas, fuel, and terminal space may be equally or more important. These factors will all be considered as they relate to developing a future plan for Pennsylvania’s aviation system. Having a system of airports in place that can serve varying types and volumes of aviation demand is one of the factors that will be considered in determining the role or function of system airports, as well as one factor used for measuring the adequacy of the system.

The provision of adequate services is also important in the analysis of the Commonwealth’s aviation system. Scheduled passenger service via traditional airlines and charter carriers should be provided to meet the needs of the major population and business centers of the Commonwealth. Cargo services are also necessary to meet demand from businesses throughout Pennsylvania. The role of recreational airports, their needs, and how these needs are accommodated in the aviation system must also be examined to ensure adequate facilities are available to meet recreational user needs.

Specific objectives that will be analyzed for the Pennsylvania airport system in terms of activity/demand include the following:

- 1) Activity measures should be used to derive the function of the airports in the system
- 2) Demand for cargo services and facilities should be met
- 3) Adequate passenger service should be provided throughout the Commonwealth
- 4) Recreational aviation needs should be recognized and met
- 5) Facilities should be provided in the system to meet landside and airside demand

## **V. SUPPORT/COMMITMENT**

Support and/or commitment for a local airport are vital to its ultimate success. While many of the Commonwealth's airports are privately owned, it is important that each airport have support from the community. Airport sponsors show their support in the form of financial resources, adoption of land use controls, and participation in planning efforts. The required level of support varies based on the size of the airport and the role it plays in the aviation system. Airports represent major investments both in land ownership and actual facility development. Whether a public sponsor or a private entity makes this investment, the initial investment still represents only a small portion of what will be required in the long-term to maintain the facilities. Maintenance of airport facilities requires a substantial financial commitment, as well as commitment by airport management to ensure the airport is operated in a fiscally responsible manner.

One of the major gauges of support for each airport was the participation by the airports in the Commonwealth's aviation system planning process. As part of the SASP, meetings were scheduled in each of the 143 airport communities to gather information on the airport and the community. These meetings provided an opportunity for discussion of the SASP, its products, the current trends in aviation, and airport- and community-specific issues. This significant outreach program afforded the opportunity to visit the community, see the airport, and provide input into the study's process. While each community meeting will be approached in the same manner, the results of the meetings will vary based on the number of participants and the level of discussion generated by the attendees.

Specific objectives that will be analyzed for the Pennsylvania airport system in terms of support/commitment include the following:

- 1) Local and regional support should be provided to the airports
- 2) Funding support should be provided to support airport development needs
- 3) Communities should adopt airport land use controls to support the airport's development
- 4) Airport management should be in place to support the airport

## **VI. FACILITIES**

The adequacy of an aviation system is largely determined based on the facilities that are provided. The types of facilities at airports throughout the Commonwealth vary, as would be expected, based on the activity levels and needs of system users. Through the stratification of the airport system into

various airport functional levels, a set of facilities and services that should ideally be in place at airports in each functional grouping can be established. The adequacy of the airport system will be determined by comparing the existing facilities to the facility and service objectives of the different airport functional groups. This comparison will include compliance with applicable Federal Aviation Administration (FAA) design and PennDOT licensing standards. In addition to specific facility needs, amenities should be examined to determine if the airport system is accommodating the service needs of the aviation users. These would include items such as fuel, rental/loaner cars, pilot lounge/terminal areas, etc.

Specific objectives that will be analyzed for the Pennsylvania airport system in terms of facilities include the following:

- 1) Facilities should be provided to meet the various needs of the airports depending on the functional role in the system
- 2) Airports should provide appropriate amenities to accommodate user needs
- 3) System airports should meet the Commonwealth’s licensing requirements
- 4) NPIAS airports should meet FAA design standards

## **VII. PRIORITIZATION PROCESS**

With the general performance criteria and specific objectives of a good aviation system established, the POC members were then asked to identify the importance of the criteria to the long-term development of the Commonwealth’s airport system. These “importance weightings” were requested for each of the five major criteria categories. The POC members were instructed to use a weighting between 1 (low importance) and 10 (high importance). The tabulated, cumulative results from this process resulted in the following ranking of the general criteria categories, from most important to least important:

- 1) Activity/Demand
- 2) Accessibility
- 3) Support/Commitment
- 4) Facilities
- 5) Optimization Potential

These results indicate that activity levels and the demand for aviation facilities should be the most important criterion examined in this study. This criterion should also be used as a primary factor in the stratification of the airport system to determine the various functional roles that are played by system airports. These rankings will be used as weights in the establishment of functional levels for the airports and in the adequacy analysis.

## **VIII. SUMMARY**

The performance criteria and objectives defined as part of this system planning process for Pennsylvania’s airport system are intended to help establish the long-term vision for aviation in the Commonwealth. Through the subsequent use of specific benchmarks that will both quantify and

qualify system performance criteria and objectives, a plan for determining the best means to develop the Pennsylvania aviation system will be prepared.