

CHAPTER ONE SYSTEM GOALS AND PERFORMANCE MEASURES

OVERVIEW

This chapter represents the first in a series of technical chapters that document the Maine Aviation Systems Plan Update. Prior to this document, the State Aviation Systems Plan was last updated in 1996. This report provides a comprehensive assessment focusing on aviation conditions in Maine over the past several years.

The FAA updates its National Plan of Integrated Airport Systems (NPIAS) twice each year. State system plans, such as this, are used to develop NPIAS recommendations. The FAA draws money for eligible airport development projects from the Airport Improvement Program (AIP). AIP funding is derived from the Aviation Trust Fund; the source for this trust fund is a dedicated stream that is derived from taxes on the aviation fuel and commercial airline tickets. Airports must be included in the NPIAS for their projects to be eligible for AIP funding. While there are a variety of criteria that are considered for an airport to be included in the NPIAS, generally speaking, to be in the NPIAS, an airport must:

- Be more than 30 miles from the closest NPIAS airport
- Have at least 10 based aircraft
- Have a willing public sponsor

Recommendations from this Systems Plan Update will be coordinated with both the NPIAS and individual master plans that are developed for system airports.

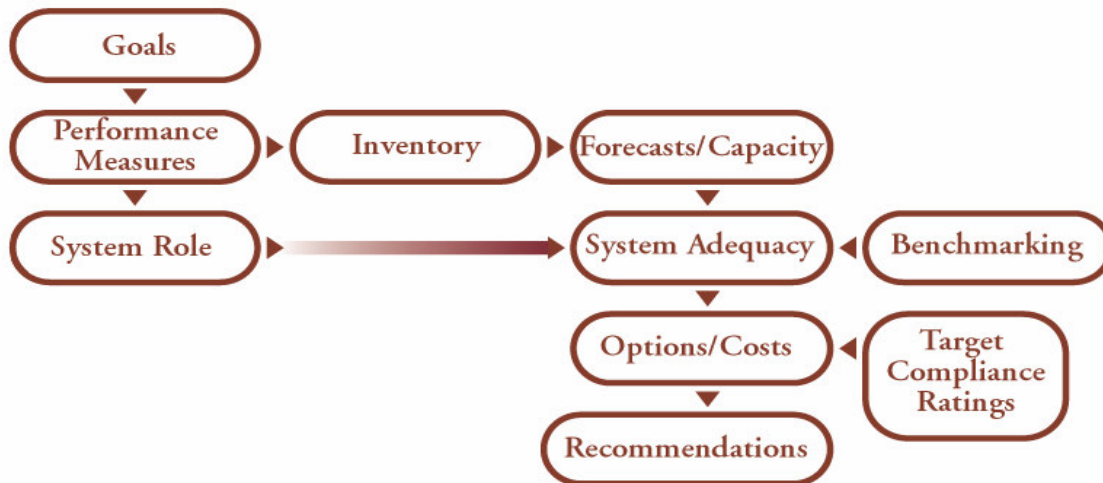
System plans examine airports on a macro level. The Maine Aviation Systems Plan Update provides a general assessment of aviation needs within the State. This Update provides a blueprint for future airport-specific planning that may be undertaken for airports throughout Maine. Individual airport planning takes place in the form of an airport master plan or an airport layout plan (ALP).

The State Aviation Systems Plan Update is being conducted in a series of separated, but related, technical steps in three phases. The first step in the analysis establishes system goals. Once goals for the system are identified, they are translated into performance measures. System performance measures are subsequently used to evaluate the adequacy of Maine's Airport System. To facilitate the evaluation process, benchmarks that are specific to each performance measure are employed. The Systems Plan Update first identifies system goals that are then translated into system performance measures. Benchmarks for each performance measure are also identified. This process provides the foundation for a "report card" that will ultimately be used in the Systems Plan Update to determine how well the Maine Airport System is currently performing. For this analysis, the performance measures are reflective of the "categories" in which the Maine Airport

System will be evaluated, while the benchmarks are the actual “tests” that will be used in each category to determine the system’s adequacies, deficiencies, and potential surpluses.

The Maine Aviation Systems Plan Update will be accomplished in a series of phases. The overall study process is graphically depicted in **Exhibit 1-1**. As shown in this exhibit, in addition to the aforementioned steps to identify system goals and to establish system performance measures and benchmarks, one of the initial steps in the Systems Plan Update is the inventory effort. For this study, on-site visits were conducted to all publicly owned and most privately owned airports in Maine that are open to the public. The focus of these visits was to collect information on airport facilities and aviation activity patterns and volumes. In addition, the visits provided an opportunity to gain a firsthand understanding of the issues and needs that are specific to each airport being analyzed in the Systems Plan Update.

**EXHIBIT 1-1
STUDY PROCESS**



Following the completion of the inventory effort, projections of demand for all study airports are prepared. These projections consider a variety of demand components, but focus on enplaning (boarding) passengers at Maine’s commercial airports, based general aviation aircraft, and annual operational levels at all study airports. These projections of demand are important when determining the system’s ability to comply with capacity-related performance measures.

While all airports contribute in some way to meeting Maine’s transportation or economic needs, airports contribute in different ways. In any airport system, airports contribute at varying levels. Hence, all airports do not need to have comparable service capabilities; facilities and services needed at Maine airports will be determined based on each airport’s role in the system. Within any airport system, there is typically a core group of airports that are considered essential to meeting transportation needs and economic objectives. As part of Maine’s prior State Aviation Systems Plan, Maine’s airports were stratified and assigned to importance levels, I, II, or III. As part of the Systems Plan Update, additional criteria will be used to identify how airports are currently contributing to the system, and based on this current contribution the stratification of Maine’s Airport System will be updated and revised as needed.

The final step in the Phase I analysis will be to use the system performance measures and benchmarks established in the Systems Plan Update to evaluate Maine’s Airport System. This evaluation will focus on identifying system adequacies, deficiencies, and surpluses. The need to provide a new or an upgraded airport to serve the aviation needs of Western Maine will be explored as part of this system wide evaluation process. Phase I of the Maine Aviation Systems Plan Update will culminate with the issuance of a “report card” for the Maine Airport System.

Phase II of the Systems Plan Update develops recommendations to meet future needs of the system. This includes recommended changes in airport roles to fill gaps and target recommendations for each benchmark. As part of Phase III of the study, future funding needs are estimated and the Implementation of the Plan is outlined.

The remainder of this chapter is devoted to describing system goals, performance measures, and benchmarks for the Maine Aviation Systems Plan Update.

SYSTEM GOALS

States, as well as individual communities within those states, recognize the importance of an airport system to their statewide and local economic and transportation infrastructures. The need to plan for an efficient and effective collection of airports is essential to the aviation system planning process. The first step in the Maine Aviation Systems Plan Update was to identify specific goals for the airport system that serves the State of Maine.

To guide the development of the Systems Plan Update, a Project Advisory Committee was established. Prior to the actual commencement of the Systems Plan Update, this Committee met to discuss and identify goals for the Maine Airport System. A workshop for the Project Advisory Committee was held in March 2001. At this workshop, the Project Advisory Committee provided valuable input into the identification and refinement of goals for the Maine Airport System. The March 2001 Project Advisory Committee workshop also yielded a foundation for establishing system performance measures and their associated benchmarks.

Chapter One – System Goals and Performance Measures

Using Federal and State objectives, input from the prior Maine Aviation Systems Plan, guidance from the Project Advisory Committee, and input from Office of Passenger Transportation (OPT) and Federal Aviation Administration (FAA) staff, seven (7) goals for the Maine Airport System were identified and adopted for use in the Maine Aviation Systems Plan Update. These goals included the following:

- To promote an airport system that improves Maine’s quality of life by supporting health, welfare, and safety-related services and activities.
- To have an airport system that adequately serves current and forecast demand.
- To encourage and recognize system airports that support aviation programs and outreach opportunities in Maine.
- To provide for a safe airport system, as measured by compliance with applicable FAA standards.
- To advance a system of airports that is supportive of Maine’s economy, ensuring that the airport system is matched to Maine’s socioeconomic and demographic characteristics.
- To protect and support an airport system that maintains the flexibility to respond to changes in future needs in Maine, while considering the environment.
- To provide an airport system that is easily accessible from both the ground and the air.

As part of the system planning process, these seven goals for the airports that serve the State of Maine were translated into system performance measures. As previously noted, the system performance measures are the categories that will be used subsequently in the Systems Plan Update to evaluate the system’s adequacy, as well as to identify any deficiencies or potential surpluses within the system. For the Maine Aviation Systems Plan Update, the following performance measures will be considered:

- Quality of Life
- Capacity
- Aviation Outreach
- Standards/Safety
- Economic Support
- Flexibility
- Accessibility

Each of these seven performance measures is discussed in the following sections of this chapter. In addition, the specific benchmarks that will be used for each of the

performance measures to test the system’s adequacies and deficiencies and to identify its potential surpluses are noted.

SYSTEM PERFORMANCE MEASURES AND BENCHMARKS

QUALITY OF LIFE

Within any airport system, airports are often seen as important contributors to the economy, supporting many jobs and their associated payrolls and creating waves of successive economic benefits. Airports, however, can also often play critical health, welfare, and safety roles. For states such as Maine, the ways in which airports in the state system contribute to the State’s quality of life can be ranked as equally important to the economic benefits that stem from the airport system.

Given Maine’s expansive geography, with many areas that are relatively unpopulated, airports in Maine can play important safety, emergency, and medical roles. Airports are often used to transport injured or critically ill persons to hospitals in urban areas; conversely, airports are often used by medical personal when traveling to rural and less densely population areas of the State to hold clinics or visit patients.

Aviation provides the only means of quick access to Maine’s island areas. Aviation also plays an important environmental role in the State. Aircraft are used in forest firefighting, in spraying Maine’s timberlands to protect them from insects and disease, and for performing other types of environmental patrols.

Airports in the Maine system that help to support the State’s quality of life by accommodating these and other related activities are important. As Maine’s airport system is evaluated in subsequent portions of this Systems Plan Update, the following benchmarks will be used to determine how Maine’s airports are presently contributing to the State’s quality of life:

- Percent of State’s remote areas that are served by a system airport.
- Percent of island areas that are served by fixed-wing public-use airports or public-use heliports/helistops.
- Percent of the State, its population, and employment centers that are within 30 minutes of a system airport that supports forest firefighting activities.
- Percent of the State, its population, and employment centers that are within 30 minutes of a system airport that supports flights by fixed-wing, twin-engine emergency/medical aircraft (LifeFlight).

CAPACITY

Capacity equates with the efficiency necessary in a good aviation system. An airport's ability to process operational demand is influenced by many factors. In the FAA's advisory circular on capacity (AC 150.5060-5), the FAA recognizes that, as demand begins to saturate an airport's operational capacity, delays to planes on the ground and in the air increase. FAA guidelines indicate that an airport should begin planning for some measure of resolve when its demand reaches 60 percent of its calculated annual operating capacity. If demand reaches 80 percent of capacity, then planned capacity-enhancing measures should be implemented.

Airfield facilities, which equate to an airport's operational capacity, are not the only indicators of a system's ability to provide sufficient capacity. Adequate landside facilities should also be available to satisfy existing and forecast demand levels. For the Maine Aviation Systems Plan Update, system airports will ultimately be reviewed for their ability to meet study facility objectives as they relate to hangars, auto parking, and terminal/administration space. Generally speaking, based aircraft and annual operational demand levels are the components that drive the need for various landside facilities.

Benchmarks that will be used to evaluate the adequacy of the Maine Airport System, as it relates to the capacity performance measure, include the following:

- Percent of system airports, by category, that operates at 60 percent or more of their annual operational capacity (ASV), current and 2020.
- Percent of State, its population, and employment centers that are within a 30-minute drive time of a system airport exceeding 60 percent demand/capacity, current and 2020.
- Percent of system airports, by category, that operates at 80 percent or more of their annual operational capacity (ASV), current and 2020.
- Percent of State, its population, and employment centers that are within a 30-minute drive time of a system airport exceeding 80 percent demand/capacity, current and 2020.
- Percent of system airports, by category, whose hangar facilities meet facility/service objectives.
- Percent of system airports, by category, whose auto parking facilities meet facility/service objectives.
- Percent of system airports, by category, whose terminal/administration facilities meet facility/service objectives.

AVIATION OUTREACH

Airports in Maine are important resources. Sometimes, however, the benefits that all residents of Maine receive from the public airport system are not apparent. Further, system airports can be valuable learning resources and centers. There are many careers in the aviation industry. Traditional education programs and curricula typically do not prepare students for the wide variety of careers that exist in the field of aviation.

Maine recognizes that its system airports are in fact aviation “classrooms.” As more people learn about and understand airports and aviation, as well as the role that each plays in the State’s transportation and economic infrastructures, the more equipped these individuals will be to understand the development and expansion needs of airports throughout the State.

By using a performance measure associated with aviation outreach to evaluate the Maine Airport System, OPT will have a better understanding of the role that it can play in the future in working with system airports to promote their educational opportunities. To evaluate the aviation outreach performance measure, the following benchmarks will be used:

- Percent of the State, its population, and employment centers that are within 30 minutes of a system airport with a full-time flight school/flight instructor.
- Percent of system airports that have aviation maintenance and repair.
- Percent of system airports that have established public outreach or community educational programs.
- Percent of system airports that have educational programs that are affiliated with local elementary/secondary schools, community colleges, or technical/vocational schools.

STANDARDS/SAFETY

Development standards for all airports included in the federal aviation system are established by the FAA. These standards are established to ensure that airports are planned and developed to meet the operational characteristics of the types of planes that most frequently operate at an airport. Development standards and guidelines were developed by the FAA specific to different types of airports, and it is compliance with these FAA standards and guidelines that helps to ensure a safe and an efficient airport system. System wide airport compliance with applicable standards is maintained as part of the master planning process. Any proposed airfield improvement that is eligible for Federal funding undergoes detailed and rigorous FAA review before it is approved.

Chapter One – System Goals and Performance Measures

The FAA has standards for a number of surfaces around an airport that should be clear from all or certain types of development. In particular, the FAA has standards that are applicable to the areas that lay in the approach to each active runway end. The area off each runway end that should be free of obstructions is referred to as the Runway Protection Zone (RPZ). As part of FAR Part 77, the FAA details the area around each airport that should be free of objects which violate applicable height restrictions.

OPT, through its planning efforts for the Maine Airport System, has also established standards for maintaining pavements at system airports to their optimum level. These standards were also used in the Maine Aviation Systems Plan Update to evaluate the adequacy of the Maine Airport System.

OPT also recognizes that there are steps that system airports can and should take to maximize the safety of their operating environment. As part of this performance measure, the number of system airports that now have procedures in place to make them compliant with these steps will be determined.

To evaluate the adequacy of Maine's Airport System as it relates to its ability to comply with applicable standards, the following benchmarks have been identified:

- Percent of system airports that have clear approaches.
- Percent of system airports that have active programs (including vegetation management plans) to clear obstructions from their approaches.
- Percent of system airports that meet runway/taxiway separation criteria for their current ARC.
- Percent of system airports that have achieved a PCI of 70 or greater on their primary runway.
- Percent of system airports that have RSAs on their primary runway that meet the standards for their current ARC.
- Percent of system airports that have established procedures, within an operations manual, for accident reporting¹.
- Percent of system airports that have a written emergency response plan.
- Percent of system airports that have a wildlife management plan.
- Percent of system airports that have procedures in place to conduct self-inspections on a regular basis.

¹ Note airports that have reported incidents that have resulted in injury or damage.

- Percent of system airports that have fuel farms that comply with NEPA guidelines.

ECONOMIC SUPPORT

Air transportation is important to Maine's economic infrastructure. Employers throughout the State consider the existence and efficiency of air transportation facilities when expanding or developing in a given geographic area. But airports in and of themselves do not spur economic growth and diversification. In addition to adequate airport facilities, market areas that airports serve must possess other characteristics that make them candidates for the retention and attraction of various economic and development activities.

Within the Aviation Systems Plan Update, this performance measure will provide OPT with information that will help to identify areas of the State that possess characteristics that make those locales potential candidates for economic growth and diversification. Market areas that are characterized by economic factors, analyzed in this performance measure, signal a higher potential for economic return from State/Federal investment.

This performance measure also enables OPT to determine if airport facilities at each system airport are matched, overmatched, or undermatched to the economic characteristics of the market area that the airport serves.

Benchmarks that will be used in the Aviation Systems Plan Update to evaluate the system for its ability to adequately support economic growth and diversification are as follows:

- 30-minute airport service areas that have the highest concentrations of hotel/motel rooms.
- 30-minute airport service areas that have the highest concentrations of employment.
- 30-minute airport service areas that have the highest rates of population growth projected for the 20-year forecast period or the highest concentrations of population.
- 30-minute airport service areas that are in closest proximity to four-lane highways.
- 30-minute airport service areas that have the highest concentrations of post-secondary enrollment.
- 30-minute airport service areas that are in closest proximity to intermodal transfer facilities (ports or rail).

- 30-minute airport service areas that are in proximity to one of Maine’s 69 “service center communities.”

FLEXIBILITY

The FAA recognizes and stresses the importance of planning to increase the long-term flexibility of the nation’s airport system. The identification of future airport development needs is important to ensuring that an airport system is adequate to meet future demand levels. It is important for airports to understand and identify local issues and to maintain good relationships with their host communities to enhance their opportunities for growth and expansion. Proactive land use planning provides one mechanism for minimizing adverse airport-related impacts in the airport environs, thereby increasing long-term flexibility.

The FAA and the Department of Housing and Urban Development (HUD) have developed standards, which delineate specific types of land use that are compatible or incompatible with certain levels of cumulative noise exposure. Generally speaking, all noise-sensitive land uses should be discouraged in areas that are in proximity to an airport’s operational area or its flight tracks. Further, development of objects around airports that pose a hazard to navigation from the standpoint of height should be restricted through active planning and zoning activities. Planning and zoning to implement appropriate land use controls represent the best mechanisms for promoting compatibility in the airport environs and for increasing flexibility to respond to longer-term needs.

Airports that are protected from the encroachment of activities or land uses that are not compatible with day-to-day operations and activities generally have a greater potential to be able to be expanded in the future. Proper planning on and around system airports generally increases the flexibility of that system to respond to both foreseen and unforeseen development needs.

In addition, airports that have full-time on-site staff tend to be more proactive in planning for the future. Airports that maintain financial and aviation activity records and practice some level of financial planning also increase their longevity, and thereby their flexibility to respond to changing conditions over an extended planning horizon.

Specific benchmarks that will be used to evaluate the adequacy of the aviation system as it relates to the flexibility performance measure include the following:

- Percent of system airports that have current (past five years) airport master plans/ALPs.
- Percent of system airports with surrounding municipalities that have adopted controls/zoning to make land use in the airport environs compatible with airport operations and development.

- Percent of system airports that are recognized in local comprehensive plan.
- Percent of system airports with financial/accounting records and/or a business plan.
- Percent of system airports that have a system in place to maintain, update, and report annual aviation activity statistics to OPT.

ACCESSIBILITY

For an airport system to adequately serve a state, it should provide convenient and reasonable access, from both the ground and the air. The ability of any airport system to meet the accessibility performance measure can be determined in several ways. One way is the level of scheduled airline service that is available at system airports. Scheduled airline service to most markets in the U.S. has undergone a variety of complex and continued changes since the deregulation of the U.S. carriers in the late 1970s. More recently, the events of September 11, 2001 have led to changes, including the bankruptcy of several major U.S. carriers. To understand how accessibility to Maine, as expressed by commercial airline service, has changed, service histories for all commercial airports in the Maine Airport System will be indexed.

An airport system's ability to provide access can also be determined, in part, based on the number of airports in the system that have Part 135 operators who provide on-demand charter service. In recent years, corporate use of general aviation for business travel has seen resurgence. Programs, such as fractional ownership, have been largely responsible for general aviation's renewed role in meeting the travel needs of corporate America. Within the system planning process, the presence of a Part 135 operator at a system airport serves as a proxy for that airport's ability to meet the accessibility needs of general aviation aircraft.

To meet this particular performance measure, airports in the Maine system should be accessible from both the ground and the air. Ground accessibility can be measured by determining the coverage that system airports provide to all geographic areas of the State, and by determining the percentages of the State's population and employment centers that are within established drive times of system airports. System accessibility can also be determined by measuring the effective coverage provided by airports that accommodate special use aviation activities including air cargo movements or operations by helicopters.

Air accessibility is also an important factor in measuring system performance. Air accessibility is influenced by factors such as the airport's type of approach (precision, non-precision, or visual) and the presence or lack of on-site weather-reporting equipment. Airports that are equipped and capable of operating in all-weather conditions also help to determine a system's air accessibility.

Benchmarks that will be used to evaluate the system's ability to provide adequate air and ground access include the following:

Ground Accessibility

- Airport-specific commercial air service characteristics, 1980, 1990, and 2000/2001 (number of carriers, top O&D points, average fares, non-stop hubs served, and equipment types).
- Percent of the State, its population, and employment centers that are within 30 minutes of a system airport that has a Part 135 Certified air taxi/charter operator.
- Percent of the State, its population, and employment centers that are within 60 minutes of an airport with major/national scheduled commercial airline service.
- Percent of the State, its population, and employment centers that are within 30 minutes of an airport with regional/commuter scheduled commercial airline service.
- Percent of the State, its population, and employment centers that are within 30 minutes of any system airport.
- Percent of the State, its population, and employment centers that are within 30 minutes of system airports accommodating all air cargo activity.
- Percent of the State, its population, and employment centers that are within 30 minutes of public-use heliports/helistop.
- Percent of the State, its population, and employment centers that are within 30 minutes of an attended seaplane base with facilities.
- Percent of the State, its population, and employment centers that are within 30 minutes of an airport serving special use aviation activities (balloons, ultralights, model airplanes, others).

Air Accessibility

- Percent of the State, its population, and employment centers that are within 30 minutes of a system airport that has on-site weather-reporting equipment (AWOS or ASOS).
- Percent of the State, its population, and employment centers that are within 30 minutes of a system airport that has a precision approach.
- Percent of the State, its population, and employment centers that are within 30 minutes of a system airport that has a non-precision approach.
- Percent of the State, its population, and employment centers that are within 30 minutes of an all-season system airport (paved, snow removal, and de-icing).

SUMMARY

This chapter of the Maine Aviation Systems Plan Update provides a foundation for subsequent analysis. Information presented in this chapter will be used to:

- Guide the collection of data and information at system airports during the inventory phase of the study.
- Determine how well Maine’s system of public airports is currently performing.
- Identify where Maine’s Airport System is currently adequate, as well as where it is presently deficient.
- Determine if there are redundancies or surpluses in the current aviation system.
- Identify the need for new or upgraded airport facilities to meet Maine’s future aviation needs.