CHAPTER 2: FACILITY ROLES AND OBJECTIVES

2.1 INTRODUCTION

As part of a statewide air transportation system, each airport performs at varying levels based on a variety factors. The primary factors that affect an airport's ability to meet demand are the facility's infrastructure, service offerings, and location. Together, each system airport in the State of New Hampshire contributes to a functioning system within a regional, national, and international context. It is from this overarching perspective that this New Hampshire State Airport System Plan (NHSASP) addresses system-wide performance of all system airports.

To evaluate the New Hampshire airport system's performance, the system planning process dictates that performance parameters be objective and impartial to the functioning of the current system. This means that parameters are to be determined based upon the State's vision and goals for their airport system, rather than existing conditions at system airports. In this way, the NHSASP charts the course for the future of the statewide airport system. Therefore, the final plan presents research, analysis, and the framework of minimum facility infrastructure and service offerings necessary for individual airports to adequately meet demand as part of the statewide system. Recommended additional facilities and services will also be included.

This chapter provides an overview of the current NHSASP, defines the parameters that will be utilized to measure the current system's performance and identifies each airport's category and role. Each system airport role is a snapshot of conditions at this time (2014) and should be considered the baseline, or starting point for the system planning process.

2.2 AIRPORT CATEGORIES

All airports provide important access to their respective region, whether that access is utilized for recreation, business, or emergency medical or relief purposes. Recreational purposes include individual use for vacation travel, sightseeing, or to access second homes. Business uses include visits to manufacturing sites, clients, government officials, and industry partners.

Understanding and defining each of New Hampshire's system airports' categories and roles is an important step in this NHSASP. These roles will be defined by infrastructure and operational objectives that underscore each airport's ability to perform at a level that provides access and services to meet the demands of users that rely on them. While the focus of this effort is based on the unique airport system for New Hampshire, it is important that this plan also be consistent with regional and national plans as well. The FAA recently completed a study focused on the varied roles that General Aviation (GA) airports serve. The FAA's *General Aviation Airports: A National Asset study (ASSET),* considered a variety of factors in the categorization of GA airports.



These categories and roles are consistent with those used in the New England Regional Airport System Plan (NERASP). The following section capitalizes on the data and research efforts included in those studies and expands the scope of those categories based on the characteristics that define the airport system in New Hampshire (see **Table 2-1**). While the ASSET study included only GA airports, the NHSASP establishes a role of Primary for those airports with scheduled commercial service (Manchester, Lebanon, and Portsmouth).

Table 2-1 – NHSASP – Airport Categories & Roles

AIRPORT CATEGORY	AIRPORT ROLE
GENERAL AVIATION	BASIC
	LOCAL
	REGIONAL
	NATIONAL
COMMERCIAL SERVICE	PRIMARY

Source: McFarland Johnson, Inc.

For the NHSASP, airport roles are defined as follows:

- General Aviation Basic Airports: Airports in the General Aviation - Basic role are those that provide the essential elements necessary to support aviation users in the State. Such Basic Airports can be located within the service area of larger airports but are most commonly in remote areas of the State, sometimes providing the only public landing site for many miles. Therefore, facilities and services at Basic Airports typically focus on serving smaller aircraft for clear weather flying. Users that rely on these airports as a base of operations often support other system airports by purchasing fuel and/or maintenance services elsewhere in the system.
- General Aviation Local Airports: Airports in the General Aviation -Local role are similar to Basic Airports in that they provide vital access to the air transportation system for their local community. However, in addition to providing all the essential services and facilities of a General Aviation Basic Airport, Local Airports offer a greater diversity of additional services that might include a combination of flight training, recreation, medical evacuation, tourism and/or business aviation services. Local Airports typically serve a greater diversity of aircraft than Basic Airports, experience higher activity levels by twin-engine piston aircraft and may accommodate occasional light turbine aircraft.
- General Aviation Regional Airports: General Aviation Regional Airports are those that provide all the services and facilities of Basic and Local Airports, with more advanced accommodations for an even greater variety and volume of aviation users as well as a more multifaceted interface with the general public. Regional Airports accommodate a range of activities and aircraft, from recreational use and flight training to more sophisticated corporate aviation activities. General Aviation Regional Airports are also typically located proximate to more populated areas, providing an alternative to larger airports for access to economic centers desired by active business and recreational travelers.

- General Aviation National Airports: Building on the roles discussed thus far, General Aviation National Airports are those that have the capability to provide all services and facility infrastructure required by users and communities served by General Aviation Basic, Local, and Regional Airports. More importantly, National Airports can also provide aircraft access to national and sometimes international markets, depending upon the local business climate and the needs of their most sophisticated based and transient aircraft operators. Typically, General Aviation National Airports are those where growth and expansion have driven improvements to airside and landside facilities in order to accommodate increases in demand by sophisticated aircraft and business/corporate aircraft operators.
- Primary Commercial Service Airports: Primary Airports in the state fulfill the highest level of access for aviation users in the state, with a main focus on providing access to air transportation for passengers through scheduled airline commercial service. Additionally, Primary Airports also provide all the capabilities and facilities of the other General Aviation airports in the system, and may also provide commercial air cargo services.

Figure 2-1 illustrates NHSASP system airports by these roles.

The minimum and recommended facilities for each role of system airport are presented in the sections that follow. These minimums serve as the primary factors for determining New Hampshire system airports' category and role. Facilities and services shown include those offered by the airport sponsor, Fixed Base Operators (FBO), Specialized Aviation Service Operations (SASO), or other tenants. FBO's traditionally provide fuel and other aircraft services, where as a SASO will focus on specific areas such as maintenance, avionics or aircraft painting.

As a nationwide effort, the ASSET Study considered a variety of factors on the macro-level in the categorization of airports. While there are benefits to having airport roles and categories consistent with those used in the regional and national plans, some features and characteristics are unique to New Hampshire. As such, a number of system airports do not meet all minimum recommended facilities. The purpose of these objectives is to provide a set of baseline and desirable facilities and services that can accommodate the types of users each airport is best positioned to serve.

2.3 FACILITY AND SERVICE OBJECTIVES

2.3.1 GENERAL AVIATION - BASIC AIRPORTS

General Aviation - Basic Airports should have a minimum runway length of 1,500 feet, which may or may not be paved, and a 20:1 clear approach slope from the runway threshold. Some airports in this role have a more specialized set of services that cater to a unique niche of aviation operations, such as gliders, skydiving, or agricultural aviation. As such, some Basic Airports operate seasonally and the facilities and services are specific to their users' unique operational activities. These airports do not typically have a full-time airport manager or support staff and instead rely heavily on volunteer efforts for airport operations and maintenance.





General Aviation - Basic Airports should also strive to provide basic public facilities that include a modest shelter, restroom, and telephone if cell phone service is spotty at the airport. A detailed list of desired facilities and services are presented in **Table 2-2**.

Table 2-2 – NHSASP – General Aviation Basic Airports – Facilities and Service Objectives

MINIMUM AIRPORT FACILITIES Runway - Gravel, Turf, Water, Ice or Pavement Runway Length \geq 1,500 feet Aircraft Parking Area Windsock (Visual Aid) **Open Seasonally** Airport Manager Contact Information Available Posted Emergency Contact List Basic Shelter - 100 square feet Public Phone **RECOMMENDED ADDITIONAL AIRPORT FACILITIES Open All Year** 100 Low Lead Aviation Fuel on Site Rotating Airport Beacon (Visual Aid) - (Where Runway Lights are Available) Terminal Building - Heated 20:1 Clear Approach Slope Source: McFarland Johnson, Inc.

New Hampshire system airports classified in the General Aviation Basic Airport role are:

- Alton Bay
- Dean Memorial
- Errol
- Franconia
- Gifford
- Gorham
- Hawthorne Feather Airpark
- Moultonboro
- Newfound Valley
- Plymouth Municipal
- Twin Mountain

2.3.2 GENERAL AVIATION - LOCAL AIRPORTS

General Aviation - Local Airports have increased activity and diversity of aircraft than Basic Airports. Therefore, Local Airports should have airfield facilities and aviation services that can adequately meet the needs of more sophisticated aircraft and their users. As such, a minimum paved runway length of 2,500 feet or greater (3,200 feet is recommended),



with a non-precision instrument approach and taxiway infrastructure is required. Self-service fueling for 100LL (used by single and multi-engine piston engine aircraft) is recommended and, if business conditions permit, Jet-A fuel (used by jet and turboprop aircraft) is desired for airports in this role. Local Airports should offer a modest improvement in public facilities over that of Basic Airports, with well-maintained restrooms, telephone and pilot rest area. These airports may have a full- or part-time airport manager but may not have support staff. A detailed list of desired facilities and services for Local Airports is presented in **Table 2-3**.

New Hampshire system airports classified in the General Aviation Local

Table 2-3 – NHSASP – General Aviation Local Airports – Facilities and Service Objectives

MINIMUM AIRPORT FACILITIES

Includes all minimum requirements of General Aviation Basic Airports plus or superseded by:

Runway - Paved

Runway Length \geq 2,500 feet

Pavement Strength - 6,000 lbs (Single Wheel Landing Gear Configuration)

Paved Aircraft Parking Area – 4 Aircraft Spaces

Hangar Storage for all Winter-Based Aircraft

Runway Lights

Taxiway Reflectors

Rotating Airport Beacon

Lighted Windsock

Non-Precision Instrument Approach Procedure

Open All Year

Part-Time Airport Manager Available During Normal Working Hours

Posted Emergency Contact List

Basic Terminal Building - 250 square feet

100LL Fuel on Site

RECOMMENDED ADDITIONAL AIRPORT FACILITIES

Runway Length 3,200 feet

Pavement Strength -12,000 lbs (Single Wheel Landing Gear Configuration) Paved Aircraft Parking Area - 6 Aircraft Spaces Runway Lights - Pilot Controlled Low Intensity Taxiway Lights VGSI (Vertical Glide Slope Indicator) to Primary Runway End Basic Terminal Building - 500 square feet One Instrument Approach Procedure Self-Serve 100LL Fuel available 24/7 Jet-A Fuel Aircraft Maintenance on Site Airport-Owned Snow Removal Equipment Snow Removal Equipment Storage Building Access to Rental Cars at Airport Parking for Transient Aircraft On-Site Automated Weather Reporting System 20:1 Clear Approach Slope

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Source: McFarland Johnson, Inc.

Airport role are:

- Claremont Municipal
- Hampton Airfield
- Jaffrey Airport Silver Ranch
- Mt. Washington Regional
- Parlin Field
- Skyhaven

2.3.3 GENERAL AVIATION - REGIONAL AIRPORTS

General Aviation - Regional Airports maintain a more robust airside infrastructure that includes a paved runway of 4,200 feet or greater with a partial or full parallel taxiway. Flight operations are supported by an Instrument Landing System (ILS) or satellite-based vertically guided Geographic Positioning System (GPS) approaches with on-site weather reporting capabilities. Additionally, Regional Airports may offer additional operational capacity during inclement weather with the availability of a crosswind runway. Another common component of these airports is on-site full-service FBOs that provide aircraft fueling (both Jet-A and 100LL), with self-service being preferred. If demand warrants, a SASO providing aircraft airframe, powerplant, and avionics maintenance services are often desirable for Regional Airports, as well as a fulltime professional airport manager and support staff to accommodate the needs of a diverse and active client base. A detailed list of desired facilities and services are presented in the **Table 2-4**.



Table 2-4 – NHSASP – General Aviation Regional Airports – Facilities and Service Objectives

MINIMUM AIRPORT FACILITIES

Includes all minimum requirements of General Aviation Basic Airports plus or superseded by:

Runway Length \geq 4,200 feet

Pavement Strength-12,000 lbs (Single Wheel Landing Gear Configuration)

Full-Time Airport Manager On Site During Normal Working Hours, Available 24/7

Emergency Contact List – Posted and Distributed

Terminal Building of Moderate Size (Suggest 500+ square feet)

Self-Serve 100LL Fuel

Jet-A Fuel

One Straight-In Instrument Approach Procedure

On-Site Automated Weather Reporting System

Medium Intensity Runway/Taxiway Lights (Pilot Controlled)

VGSI on Primary Runway

Airport-Owned Snow Removal Equipment

Snow Removal Equipment Storage Building

Full-Service Fixed Based Operator

Secure Aircraft Parking Apron - 10+ Jet/Turboprop Aircraft

Hangar Storage for 90% for Winter-Based Aircraft

Access to Rental Cars at Airport

Partially Fenced Airport Property Perimeter

RECOMMENDED ADDITIONAL AIRPORT FACILITIES

Runway Length \geq 4,600 feet

Pavement Strength - 30,000 lbs (Single Wheel Landing Gear Configuration)

Terminal Building of Moderate Size 1,000± square feet

Straight-In Instrument Approach Procedure to Two Runway Ends

Secure Aircraft Parking Apron – 15+ Jet/Turboprop Aircraft

Self-Serve Jet-A Fuel Available 24/7

VGSI on Each Runway End

Complete Airport Property Perimeter Fencing

Source: McFarland Johnson, Inc.

New Hampshire system airports classified in the General Aviation Regional Airport role are:

- Berlin Regional
- Concord Municipal
- Dillant-Hopkins
- Laconia Municipal

2.3.4 **GENERAL AVIATION - NATIONAL AIRPORTS**

General Aviation - National Airports have a well-developed and maintained infrastructure, including a minimum paved runway length of at least 5,500 feet and a full parallel taxiway. With this runway length, National Airports can support operations by sophisticated aircraft in the general aviation fleet, including long-haul international flights. At these airports, ILS approach capability with advanced vertical guidance and on-site weather reporting capabilities to provide maximum poor weather accessibility is the standard. Additionally, with more sophisticated aircraft operations comes the demand for a full-service FBO offering facilities and services on par with nationally recognized FBO's found at larger airports across the country. Specialized services are also more common at General Aviation - National Airports, providing aircraft operators a reliable source for routine checks on aircraft airframe, powerplant, and avionics systems. Finally, a professional airport manager, support and operations staff, and FBO typically provide coverage 24 hours per day, 7 days per week to respond quickly to the volume and diversity of unique needs of tenants and itinerant travelers. A detailed list of desired facilities and services are presented in Table 2-5.

Table 2-5 – NHSASP – General Aviation National Airports – Facilities and Service Objectives

MINIMUM AIRPORT FACILITIES

Includes all minimum requirements of General Aviation Basic Airports plus or superseded by: Runway Length \geq 5,500 feet Pavement Strength - 30,000 lbs (Single Wheel Landing Gear Configuration) Medium Intensity Runway/Taxiway Lights Medium Intensity Approach Light System w/Flashers Full-Time Airport Professional Mngr. On Site During Business Hrs., Available 24/7 Emergency Contact List – Posted and Distributed Terminal Building - 2,500+ square feet Full-time Airport Operations & Maintenance staff Airport Maintenance Building Self-Serve Jet-A and 100LL Fuel Available 24/7 Secure Aircraft Parking Apron - 25 Jet/Turboprop Aircraft Hangar Storage for All Winter-Based Aircraft Hangar Parking for Transient Aircraft Instrument Approach to All Runways, at Least One Vertically Guided Approach **Complete Airport Property Perimeter Fence** Rental Cars On-Site Local Fire Department Trained in Basic ARFF Procedures Source: McFarland Johnson, Inc.

Table 2-5 – NHSASP – General Aviation National Airports – Facilities and Service Objectives (Continued)

RECOMMENDED ADDITIONAL AIRPORT FACILITIES

Runway Length \geq 6,000 feet Pavement Strength - 60,000 lbs (Single Wheel Landing Gear Configuration) High Intensity Runway Lights/Medium Intensity Taxiway Lights Medium Intensity Approach Light System w/Flashers Terminal Building - 5,000 square feet Full-Time On-Site Airport Security Secure Aircraft Parking Apron - 40± Jet/Turboprop Aircraft Instrument Approach to All Runways, at Least Two Vertically Guided Approaches Intermodal Ground Transportation Options Air Traffic Control Tower ARFF – On Site 24/7 Access to Customs Airport Emergency Plan 34:1 Clear Approach Slope Other Facilities and Services as Required by Users Source: McFarland Johnson. Inc.

New Hampshire system airports classified in the General Aviation National Airport role are:

Boire Field

2.3.5 PRIMARY COMMERCIAL SERVICE AIRPORTS

Airside facilities at Primary Airports typically include the most robust runway configurations, advanced instrument approach systems, all-weather instrumentation and weather reporting. The infrastructure allows Primary Airports to support all general aviation aircraft and a wide array of commercial aviation aircraft. Similar to General Aviation National Airports, aviation services at Primary Airports are likely to include multiple full-service FBOs, full-service and self-service 100LL and Jet-A fueling and could include larger aircraft Maintenance, Repair, and Overhaul (MRO) operations and capabilities. Desired services include US Customs, foreign trade zones, and multi-modal connectivity with public and private transportation systems. Primary Airports have a broad complement of full-time professional management, operations, support, and specialty trained staff commensurate with the expectations of paying aviation customers. A detailed list of desired facilities and services are presented in the following **Table 2-6**.

Table 2-6 – Primary Commercial Service Airports – Facilities and Service Objectives

MINIMUM AIRPORT FACILITIES

Includes all minimum requirements of General Aviation Basic Airports plus or superseded by:

Runway Length ≥ 7,000 feet

Pavement Strength-250,000 lbs (Dual Tandem Wheel Landing Gear Configuration)

High Intensity Runway Lights/Medium Intensity Taxiway Lights

Medium Intensity Approach Light System w/Sequenced Flashers

Full-Time Airport Professional Mngr. On Site During Business Hrs., Available 24/7

Emergency Contact List – Posted and Distributed

Full-time Airport Operations & Maintenance Staff

Airport Maintenance Building

Self-Serve Jet-A and 100LL Fuel Available 24/7

Hangar storage for All Winter-Based Aircraft

Hangar Parking for Transient Aircraft

Instrument Approach to All Runways, at Least Two Vertically Guided Approaches

Complete Perimeter Fence

Rental Cars On-Site

Terminal Building – 5,000+ square feet

Full-time On-Site Airport Security

Secure Aircraft Parking Apron - 40+ Jet/Turboprop Aircraft

Intermodal Ground Transportation Options

Air Traffic Control Tower

ARFF – on site 24/7

Access to US Customs

Airport Emergency Plan Exercised

34:1 Clear Approach Slope

RECOMMENDED ADDITIONAL AIRPORT FACILITIES

Runway and Taxiway Characteristics Determined by Users (Minimum B757/B767) Category-III Insurgent Landing System Approach to One Runway 50:1 Clear Approach Slope High Intensity Approach Lighting System With Sequenced Flashing Lights Air Traffic Control Tower 24/7 Scheduled Airline Passenger Service (Passenger/Baggage Security Screening) Passenger Terminal Building with Concessions Aircraft Cargo Handling Facilities US Customs and Border Protection Facility On-Site Other Facilities and Services as Required by Users

Source: McFarland Johnson, Inc.

As of calendar year 2014, the following airports have been defined as a Primary Commercial Service Airports:

- Lebanon Municipal Airport
- Manchester-Boston Regional Airport
- Portsmouth International Airport at Pease

2.4 PERFORMANCE METRICS

A series of performance metrics were established to evaluate the performance of New Hampshire's existing airport system. In airport system planning, the most common denominator for evaluating a system's performance is geography, or geographic coverage. In this regard, each airport in a system has a primary geographic service area that attracts users (i.e., pilots, passengers, aircraft owners, businesses, etc.) located in proximity to each airport. Service areas for airports can be defined by automobile drive times and nautical miles. For the NHSASP, both drive times and nautical mile service areas were utilized.

Geographic service areas for the NHSASP are determined utilizing a Geographic Information System (GIS). GIS is a computer software package that can evaluate spatial relationships such as drive times or distances between airports and geographic features in New Hampshire such as population centers, land area or top employers. The area analyzed using GIS is referred to as the Geographic Service Area for the SASP.

Airports and features were evaluated from both the Ground Access and Air Access perspective. They are defined as follows:

 Ground Access – The Geographic Service Area for ground access identifies the area within which the airport is likely to be most effective in serving local user demand at the airport.

A 30-minute drive time analysis is used for each NHSASP general aviation airport. The 30-minute drive time is consistent with guidance from the FAA used to evaluate a general aviation airport's eligibility for inclusion in the NPIAS per FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*. This may be adjusted to meet geographic or airport capabilities as appropriate.

 Air Access – The Geographic Service Area for air access identifies the area of the airport feature/service that is likely to be most effective in serving aircraft flying to an airport whether it is intended or unintended (diversion/emergency).

To accomplish this, a 20-nautical mile distance surrounding each airport was identified and analyzed for each airport and specific airport features applicable to airborne aircraft where 30-minute drive time may not be the most accurate assessment (i.e. automated weather reporting systems). This measure is also consistent with guidance in FAA Order 5090.3C, and may also be adjusted to meet geographic or airport capabilities as appropriate.

In all instances the actual service area is not finite to the geographic service area shown. Airport use is at the discretion of the pilot in command and can be based on a variety of factors such as fuel prices, tie-down fees, familiarity, weather conditions, ground transportation, or simply a general preference. Since many of these discretionary factors can change or fluctuate, the NHSASP will use the finite measurement of a specific drive time and/or nautical mile distance from the airport to facilitate further evaluations with all other factors being equal. There is no FAA service area standard for specific airport features such as runway length or fuel so the NHSASP will consider the same geographic service areas (30-mile ground or 20-NM air) as the baseline for the analysis.

2.4.1 GEOGRAPHIC ADJUSTMENTS

The geography and topography of New Hampshire are notably different from the northern part of the state to the southern part of the state. In discussions with aviation users in New Hampshire, it was noted that the weather can change more rapidly in the mountainous parts of the state north of the Lakes Region. In addition, the density of the mountainous terrain limits the weather reporting stations that use FM radio frequency (line of sight) reception, which results in transmission limitations. Based on this limitation, a 20-nautical mile geographic service area will be utilized for airports outside of the mountainous areas. In mountainous areas, the service area was adjusted to a 15-nautical mile service area to account for the inherent limitations created by the mountainous terrain and approximate the average limits of coverage for these line-of-sight facilities.

2.4.2 COMMERCIAL SERVICE ADJUSTMENTS

Airports with scheduled passenger service (Manchester, Pease and Lebanon) provide an additional level of service not found at other airports in the New Hampshire system. These airports connect New Hampshire to cities across the US with non-stop flights to other cities and connecting opportunities throughout the world. For system-wide analyses not related to specific airport features (i.e., runway length, weather reporting, or fuel type), commercial service airports will be shown with a 60-minute drive time geographic service area to reflect the additional level of service provided by these airports and the average drive-time distance most passengers will drive to use commercial airline services. Specific airport features will be represented with the same 30-minute drive time as the rest of the system airports, reflecting the general aviation components of these airports.

Utilizing the two coverage areas described in the previous sections, the GIS analysis results in a quantifiable geographic service area for each system airport that represents the area of the state that is served by each system airport or airport feature. Conversely, the analysis also identifies areas of gaps in coverage that are not influenced by system airports/airport features. The analysis uses the geographical analysis to develop a "report card" that illustrates how the existing statewide system of airports performs and where improvements may be warranted.



2.4.3 GIS ANALYSIS PROCESS

The evaluation of the New Hampshire State Airport System is performed by populating the GIS with specific data relative to individual airports and the system as a whole. Once the GIS captures this data, various analyses can be performed and results can be interpreted.

Figure 2-2 illustrates the three types of inputs that are used in the analysis: socioeconomic attribute data, airport-specific facility infrastructure and services data, and NHSASP-specific inputs regarding each airport's role.



Source: McFarland Johnson, Inc.

This data is aggregated into a robust GIS database that can be queried and quantified to produce outputs such as illustrated map figures and statistics that represent geographic service area coverage and system performance.

2.5 SUMMARY

As described in the introduction of this chapter, each airport in the statewide system performs at varying levels based on a variety factors. The primary factors that affect an airport's ability to meet demand are the facility's infrastructure, service offerings and location.

Chapter 4 evaluates the New Hampshire airport system's performance based upon the inventory data presented in *Chapter 3 - System Inventory* and the performance metrics described in this chapter, to determine the system's coverage in terms of population, employment, land area, and overall access.



Based on the analysis of system coverage contained in this chapter and the ability of system airports to meet minimum facility objectives, both currently and under future demand conditions, recommendations will be presented that can enhance the New Hampshire state airport system.

Statewide recommendations are intended to complement and support local airport planning efforts. Local airport planning efforts include airport master plans, environmental assessments and/or development plans are crucial for determining airport-specific facility needs for each system airport. The NHSASP can, however, assist in validating elements of those plans and highlighting facility needs at a system level.