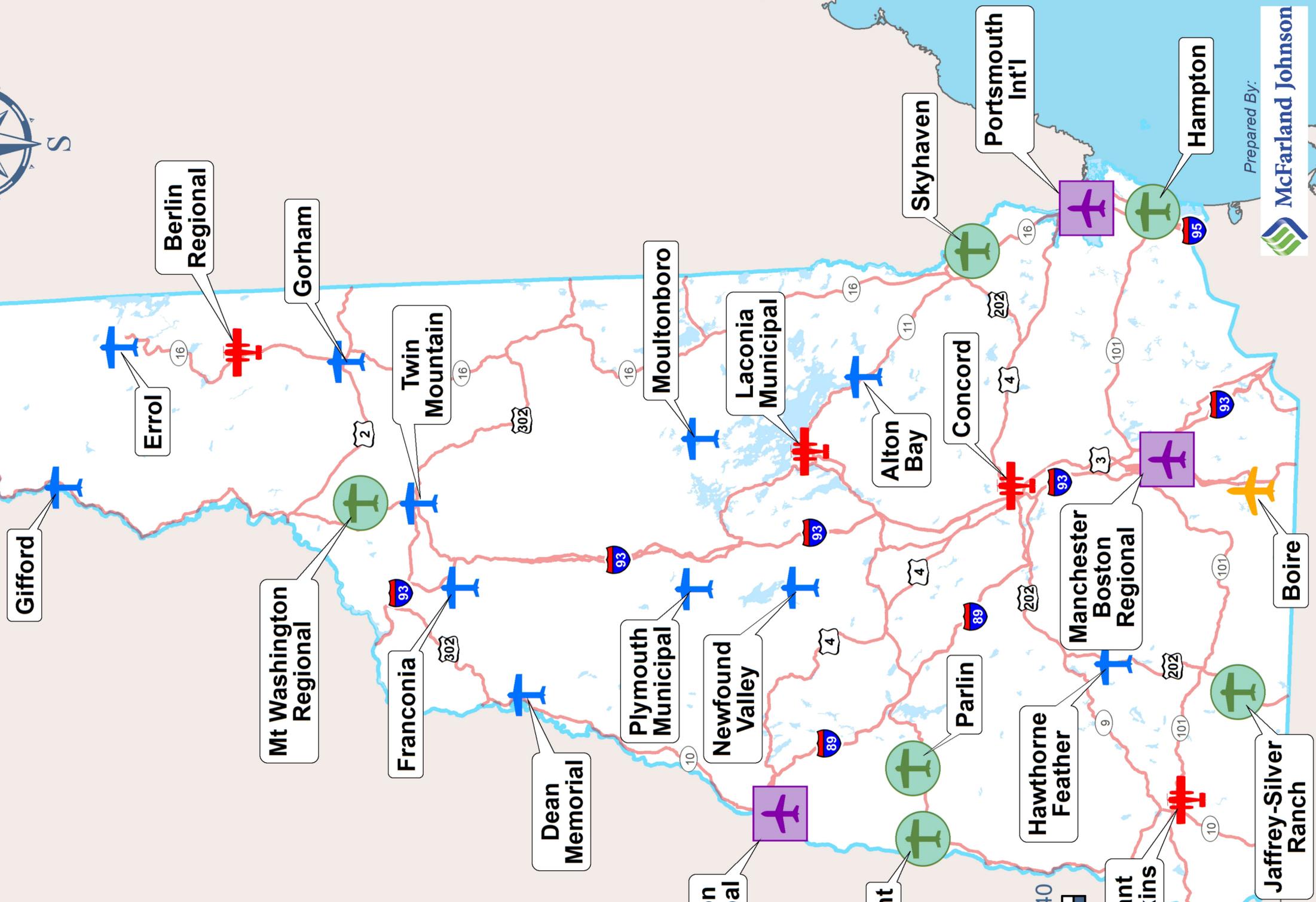
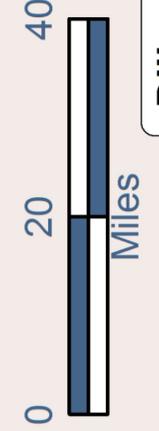


SYSTEM OF PUBLIC-USE AIRPORTS IN NEW HAMPSHIRE



	Basic
	Local
	Regional
	National
	Primary



Prepared By:
McFarland Johnson

New Hampshire State Airport System Plan



McFarland Johnson



THE Louis Berger Group, INC.

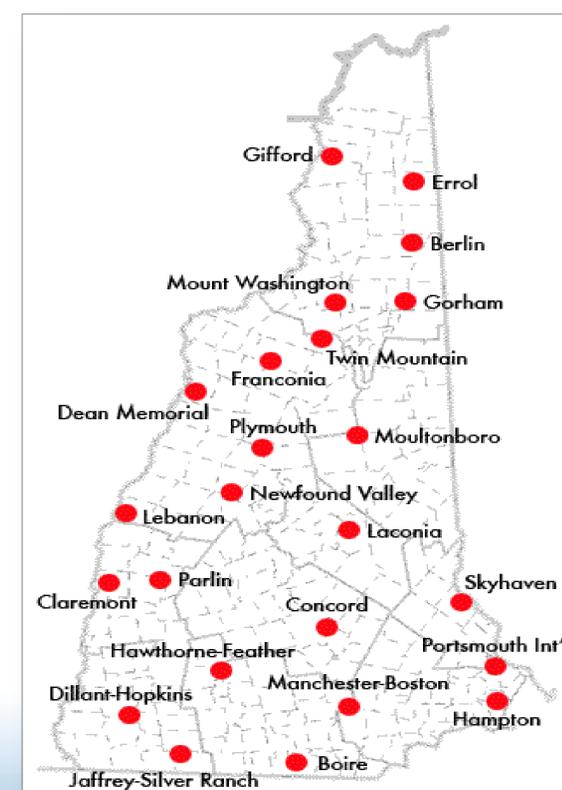


NHSASP Goals & Objectives

- Maximize Economic Value of NH's Airport System
- Provide a Safe, Secure & Efficient Aviation System
- Promote & Educate the Importance of the State's Aviation System
- Enhance, Preserve, & Maintain State Aviation System Assets
- Maximize Diverse Connectivity for State's Aviation Users

Uses & Benefits

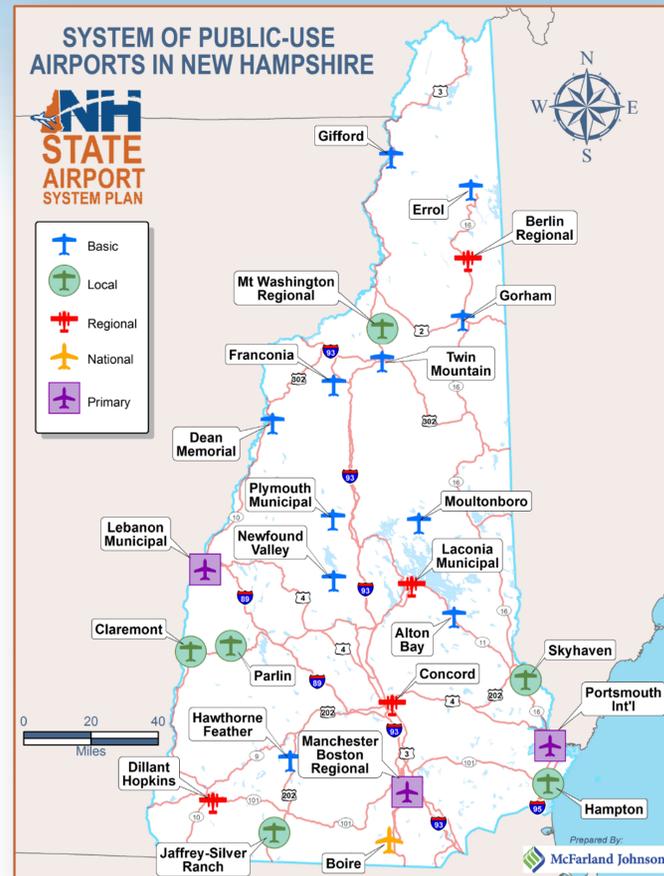
- Defines System of Airports
- Identifies Baseline Performance
- Informs Capital Planning/ Programming
- Develops Guidance & Policy
- Identifies Unique Tools & Resources for Airport System



NH State Airport System

Airport Roles

Public Use Airport Categories



Airport Name	NPIAS Role	ASSET Role	NHSASP Role
Berlin Regional	General Aviation	Local	Regional
Boire Field	Reliever	National	National
Claremont Municipal	General Aviation	Local	Local
Concord Municipal	General Aviation	Regional	Regional
Dean Memorial	General Aviation	Basic	Basic
Dillant-Hopkins	General Aviation	Regional	Regional
Laconia Municipal	General Aviation	Regional	Regional
Lebanon Municipal	Commercial Service	Regional	Primary
Manchester-Boston Regional	Primary	N/A	Primary
Mount Washington Regional	General Aviation	Local	Local
Portsmouth International at Pease	General Aviation	National	Primary
Skyhaven	General Aviation	Local	Local
Alton Bay	N/A	N/A	Basic
Errol	N/A	N/A	Basic
Franconia	N/A	N/A	Basic
Gifford Field	N/A	N/A	Basic
Gorham	N/A	N/A	Basic
Hampton Airfield	N/A	N/A	Local
Hawthorne-Feather Airpark	N/A	N/A	Basic
Jaffrey Airport-Silver Ranch	General Aviation ^{1/}	Basic	Local
Moultonboro	N/A	N/A	Basic
Newfound Valley	N/A	N/A	Basic
Parlin Field	General Aviation ^{1/}	Local	Local
Plymouth Municipal	General Aviation ^{1/}	Basic	Basic
Twin Mountain	N/A	N/A	Basic

^{1/} Airport has NPIAS Number, but Does Not Receive Federal Funding

Airport Category	Facility and Services Standards
Basic Airport	Minimum Facilities/Services Runway - Gravel, Turf, Water, Ice, or Paved Runway Length ≥ 1,500 Feet Aircraft Parking Area Windsock Open Seasonally Airport Manager Contact Info Available Posted Emergency Contact List Basic Shelter - 100 SF Public Telephone
	Recommended Facilities/Services Open All Year 100LL Fuel on Site Rotating Beacon Terminal Building - Heated 15:1 Clear Approach Slope Plan for Ensuring Safe Operating Environment (Hazard/Facility Inspections)
Local Airport	All Minimum Facility Standards Plus Recommended Facilities/Services of GA Basic Runway - Paved Runway Length ≥ 2,500 Feet Pavement Strength - 6,000 lbs. (Single Wheel Landing Gear Configuration) Paved Aircraft Parking Area - 4 Aircraft Spaces Hangar Storage for Winter-Based Aircraft Runway Lights Taxiway Reflectors Rotating Airport Beacon Lighted Windsock Open All Year Part-Time Airport Manager Available During Normal Working Hours Basic Terminal Building - 250 SF 100LL Fuel on Site
	Recommended Facilities/Services Runway Length 3,200 feet Pavement Strength of 12,000 lbs (Single Wheel Landing Gear Configuration) Paved Aircraft Parking Area - 6 Aircraft Spaces Runway Lights - Pilot Controlled Low Intensity Taxiway Lights Basic Terminal Building 500 SF One Instrument Approach Procedure Self-Serve 100LL Fuel available 24/7 Jet-A Fuel VGSI (Vertical Glide Slope Indicator) to Primary Runway End 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
Regional Airport	All Minimum Facility Standards & Recommended Facilities/Services of GA Local Runway Length ≥ 4,200 feet Pavement Strength - 12,000 lbs (Single Wheel Landing Gear Configuration) Emergency Contact List - Posted and Distributed Terminal Building of Moderate Size - 500 SF One Straight-In Instrument Approach Procedure Medium Intensity Runway/Taxiway Lights Snow Removal Equipment Storage Building Full-Time Airport Manager On Site During Normal Working Hours, Available 24/7 Full Service Fixed Based Operator Secure Aircraft Parking Apron - 10 Jet/Turboprop Aircraft Partially Fenced Perimeter
	Recommended Facilities/Services Runway Length ≥ 4,600 feet Pavement Strength of 30,000 lbs (Single Wheel Landing Gear Configuration) Terminal Building of Moderate Size 1,000 SF 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 Perimeter Fencing Part-time Airport Operations & Maintenance Staff Local Fire Department Trained in Basic Airport Rescue and Fire Fighting (ARFF) Procedures Hangar Parking for Transient Aircraft 20:1 Clear Approach Slope
National Airport	All Minimum Facility Standards & Recommended Facilities/Services of GA Regional Runway Length ≥ 5,000 feet Pavement Strength of 30,000 lbs (Single Wheel Landing Gear Configuration) Medium Intensity Runway/Taxiway Lights Medium Intensity Approach Lighting System Full-Time Airport Professional Manager On Site During Business Hours, Available 24/7 Terminal Building - 2,500 SF Emergency Contact List - Posted and Distributed 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 Instrument Approach Procedures to All Runways, at Least One Vertically Guided Full-Time Airport Operations & Maintenance Staff
	Recommended Facilities/Services Runway Length ≥ 6,000 feet Pavement Strength - 60,000 lbs High Intensity Runway Lights/Medium Intensity Taxiway Lights Medium Intensity Approach Light System w/Sequenced Flashers Terminal Building - 5,000 SF Full-Time On-Site Airport Security Secure Aircraft Parking Apron - 40 Jet/Turboprop Aircraft Instrument Approach Procedures to All Runways, at Least Two Vertically Guided 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
Primary Airport	All Minimum Facility Standards & Recommended Facilities/Services of GA National Runway Length ≥ 7,000 feet Pavement Strength - 250,000 lbs (Dual Tandem Landing Gear Conf.) High Intensity Runway Lights/Medium Intensity Taxiway Lights Full-Time Airport Professional Manager On Site During Business Hours, 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 Procedures to All Runways, at Least Two Vertically Guided Complete Perimeter Fence Rental Cars On-Site Terminal Building - 5,000 SF Full-Time On-Site Airport Security Secure Aircraft Parking Apron - 40 Jet/Turboprop Aircraft Intermodal Ground Transportation Options ARFF - On Site 24/7 Access to Customs Airport Emergency Plan 34:1 Clear Approach Slope
	Recommended Facilities/Services Runway and Taxiway Characteristics Determined by Users (Minimum B757/B767) Category III Instrument 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

Facility & Service Objectives

- Establish System Goals
- Facility Targets by Role
 - Airside
 - Runways/Taxiways/Approaches
 - Landside
 - Hangars/Fuel/Services



Airside Facilities

▪ Runways

- 8 Runways over 5,000' (Jet Activity)
- 5 Airports Have Crosswind Runways
- 5 Turf Runways: All Non-NPIAS, 1 Seasonal Ice Runway

▪ Taxiways

- 10 Airports have Full Parallel Taxiways

▪ Runway Lighting

- 18 Airports have Runway Edge Lights

Landside

▪ Tiedowns

- Laconia (82), Concord (78), Dillant-Hopkins (54), Boire (252)

▪ Hangars (Multi and Single Unit)

- Dillant-Hopkins, Claremont (12), Mt. Washington (14), Laconia (17)

▪ T-Hangars

- Pease, Skyhaven, Lebanon (30+), Laconia (47), Dillant-Hopkins (52)

▪ Airports with Hangar Wait Lists: 5 Airports

▪ Airport without Hangars: 15 Airports

Services

▪ Fuel

- AvGas : 17 Airports
- Jet-A: 8 Airports (Mostly Lakes Region South)
- 24 Hour Fuel: 13 Airports (Self-Serve Tanks)
- Berlin is Only Great North Woods Airport with Both AvGas & Jet-A
- Hampton is Only NH Airport Offering Mogas (No Ethanol)

▪ FBO Services: 15 Airports Provide Aviation Services

▪ Flight Instruction: 12 Airports

▪ Aircraft Maintenance: 15 Airports

Top Activity Highlights

▪ Based Aircraft:

- Concord (90), Pease (114), Lebanon (161), Boire (234)

▪ Aircraft Operations:

- Boire (55,764), Concord (60,000), Manchester (63,955)

Approach Support

▪ Air Traffic Control Towers: 4 Airports

▪ Instrument Approaches

- 7 Precision
- 13 Non-Precision

▪ Visual Glide Slope Indicators: 11 Airports

▪ Weather Reporting: 12 Airports

▪ Airport Beacons: 15 Airports

Primary Coverage

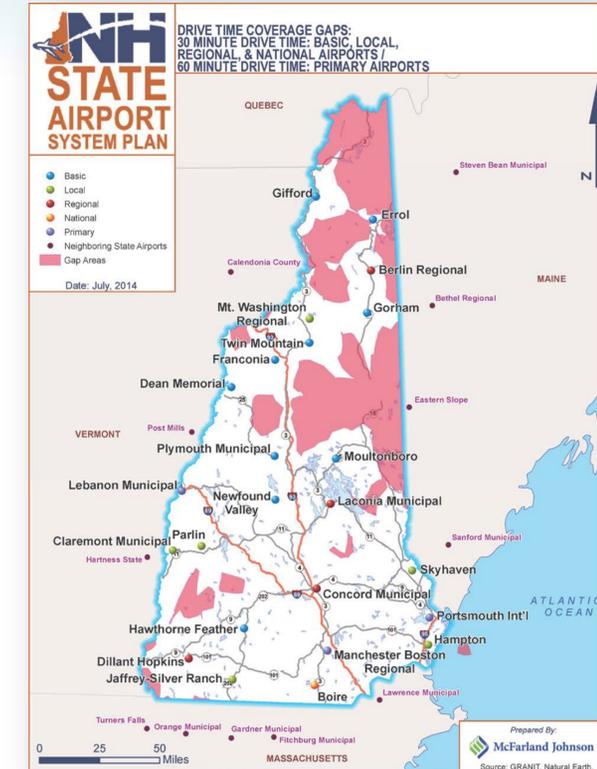
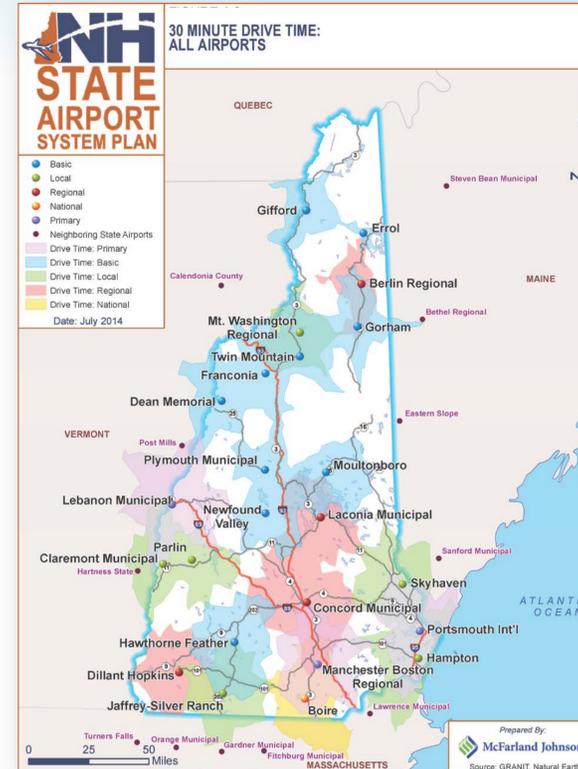
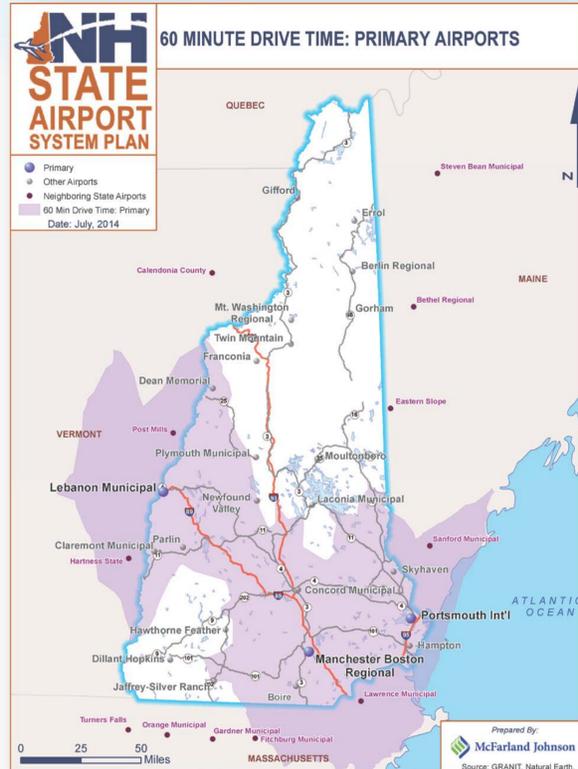
- Coverage: 80% of the Population
- Coverage: 42 of 50 Top Employers

GA Coverage

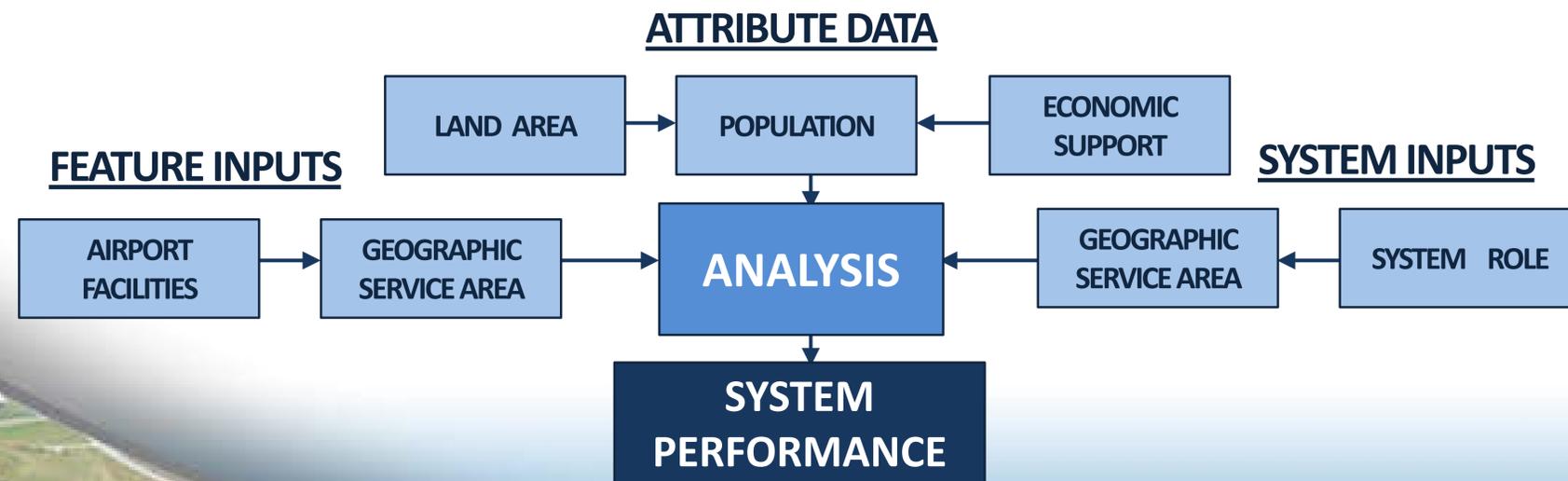
- Coverage: 85% of the Population
- Coverage: 49 Top Employers

System-Wide Coverage

- Population Gap: 10% of the Population
- Employer Gap: Top 1 Employer



Performance Analysis Process



Current System Performance

5,000' + Runways Coverage

- Geographic & Population Gap: 27% and 8%, Respectively
- Covers 47 of Top Employers



Runway 3,200'+

- Geographic & Population Gap: 14% and 5%, Respectively
- Top 50 Employers Covered



Jet A

- Geographic & Population Gap: 27% and 8%, Respectively
- 3 of Top Employers Not Covered



Current System Performance

AVGAS

- Geographic & Population Gap: 8% and 2%, Respectively
- All 50 Top Employers Covered

Precision Approach

- Geographic & Population Gap: 39% and 9%, Respectively
- 3 of 50 Top Employers Not Covered

Non-Precision Approach

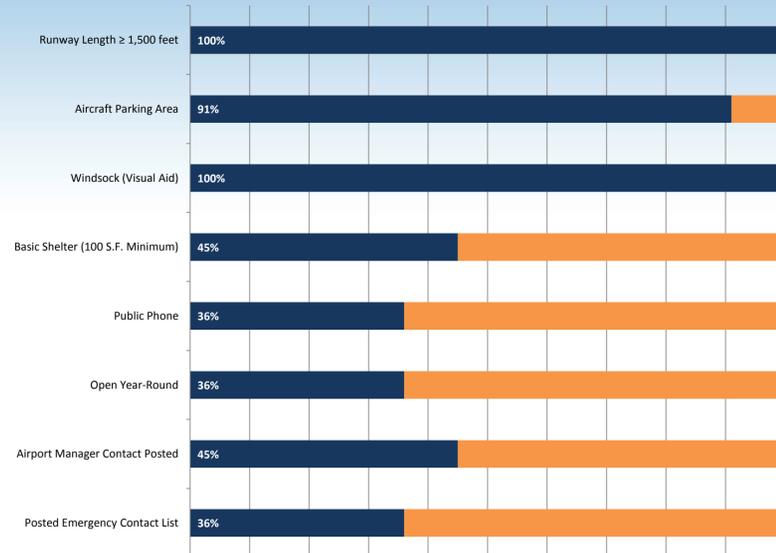
- Geographic & Population Gap: 12% and 4%, Respectively
- All Top Employers Covered



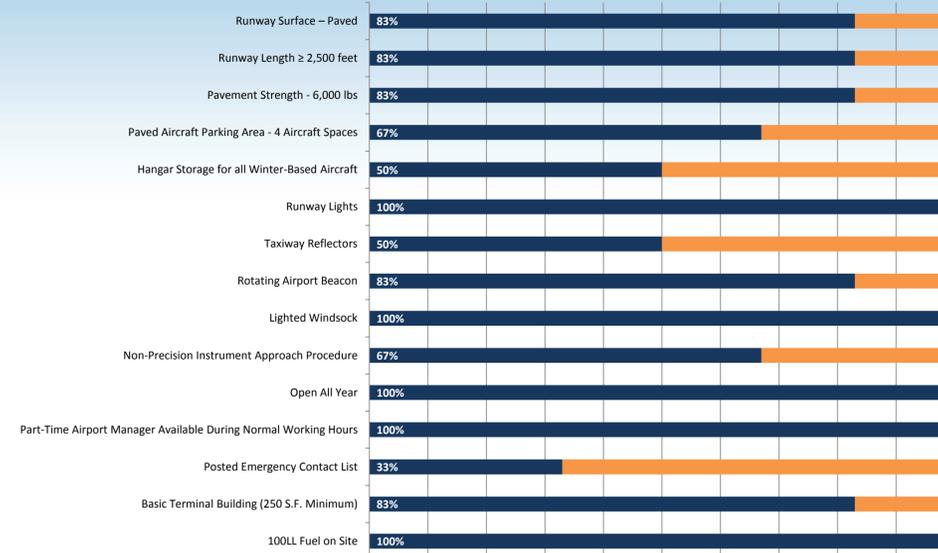
Report Cards: Facility and Service Objectives

Current System Performance

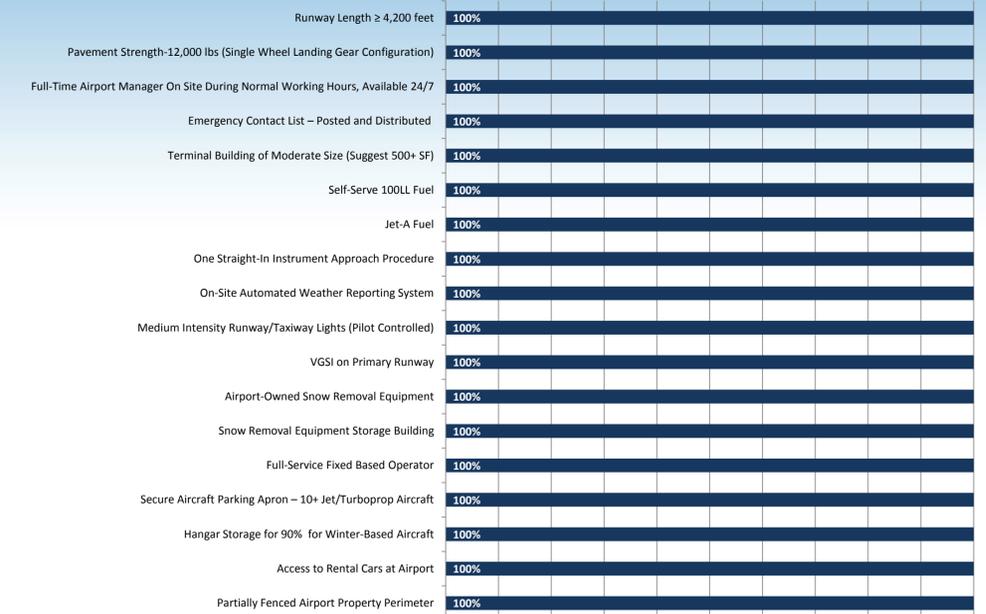
Basic



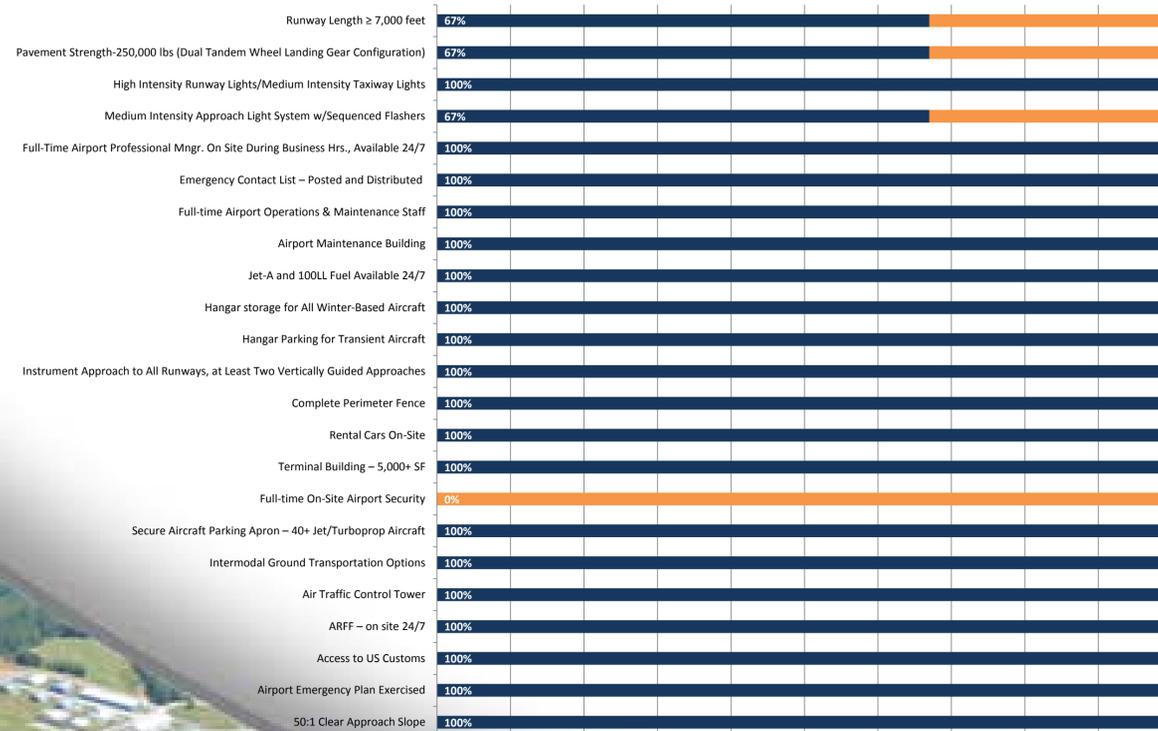
Local



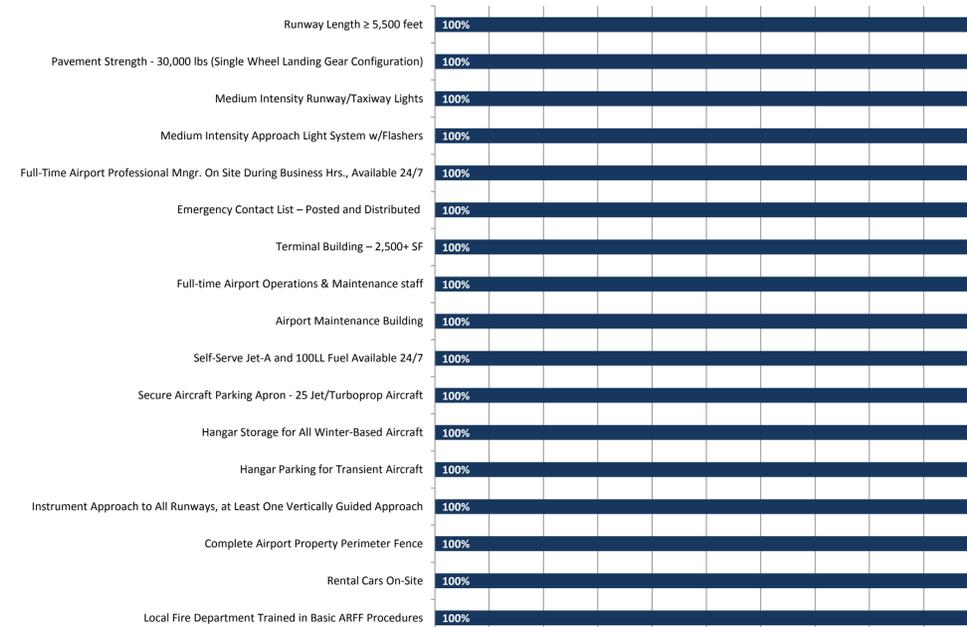
Regional



Primary



National



NH Airport System Forecasts

■ Identified Aviation Activity Parameters & Measures to Forecast

- Based Aircraft
- Operations

■ Reviewed Previous Airport Forecasts

- Terminal Area Forecast
- FAA Aerospace Forecast
- NERASP-GA Findings

■ Identified Data Sources & Gather Data

- State Data
- TAF Data
- Historical Fuel Data

■ Applied Forecast Methods & Evaluate Results

- Trend Analysis

■ Based on Historical Data, Airports were put into One of Two Categories

- Negative Average Annual Growth (-.3%): Based on the Projected Decrease of Piston Powered Aircraft
- Positive Average Annual Growth (+.5%): Based on the Overall Projected Growth of the Aviation Fleet through 2034

■ Operations Forecasts Utilized Operations per Based Aircraft (OPBA) to Determine Projected Operations for 5,10, and 20 Year Periods

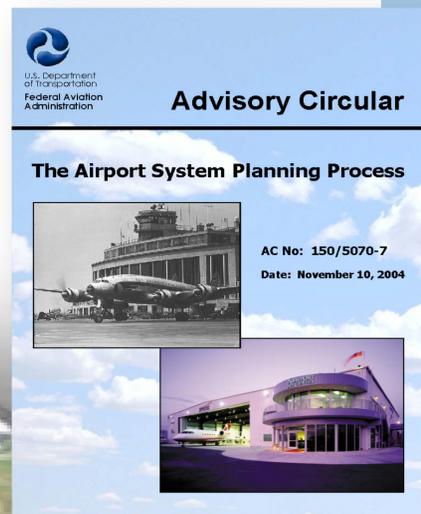
■ Aviation Forecast Summary

- 7.5% Forecasted Increase in Operations through 2018
- Relatively Flat Growth Beyond 2018
- Due to Multiple Variables:
 - Overall Economic Uncertainty
 - Cost of Operation (the Price of Aviation Fuel)
 - Fractional Ownership
 - Percentage of Piston Driven Aircraft that make up the Entire Statewide Fleet



Economic Data Collection

- Number of Employees, including Full- and Part-Time Employees; by Employee County of Residence;
- Employee Compensation, which includes Salaries, Wages and Benefits; by Employee County of Residence;
- Airport Operation and Maintenance Expenditures ;
- Airport Capital Expenditures in 2008, 2009 and 2010;
- List of On-Airport Businesses;
- List of Major Airport Users & Off-Airport Dependent Businesses; and
- Airport Activities



Economic Methodology

- **On-Airport Economic Activity**
 - Airport Management Surveys
 - Airport Tenant Surveys
 - Visitor Surveys
 - Interviews
 - Airport Management/Maintenance Jobs
 - Airport Tenant Jobs
- **Spending Impacts (Multiplier Effect)**
 - Airport Management
 - Airport Tenants
 - Airport Employees
 - Airport Visitors
- **Travel Time Savings for GA Business Travelers**
 - Enhanced Productivity, More Convenient, Less Restrictive
 - Calculated based on:
 - Number of Business Flights;
 - Average Number of Passengers/Flight;
 - Hours Saved per Flight; and
 - The Value of One Hour Saved

Consistent with AC 150/5070-7

- Special Studies

Economic Impact

Data Sources & Assumptions

- On-Airport Employment - Surveys
- Airport Capital Spending - NHDOT & Airport Management Survey
- Airport and Tenant Operations and Maintenance spending; Surveys & Similar Airport Data
- Visitors and Visitor Spending - Visitor Surveys & MHT Data (Extrapolated)
- Travel Time Savings
- Average Number of Passengers per Business Flight: 3.4
- Travel Time Savings
 - 2 Hours To and From their Destination
 - Value of Travel Time : \$59/Hour



IMPLAN Model

- An Input-Output Modeling System that was Originally Created by the US Forest Service to Help Gauge the Effects of its Policies.
- **Multiplier Effect: The Multiplier Effect consists of Three Distinct Effects**
 - The Direct Effect of the NH Airport System is the On-Airport Economic Activity Including the Airport Employment, and Employment at Airport Tenants.
 - The Indirect Impact is the Change in Economic Activity in those Sectors that Supply Services, Materials, and Machinery Necessary to Support the Directly Affected Industries.
 - The Induced Impact is the Effect of Increased Consumer Spending by Wage Earners in the Directly and Indirectly Affected Industries.
 - Tax Revenues - Business Profit Tax: 8.5%; Business Enterprise Tax: 0.75%; Meals & Rooms Tax: 9%

Primary Airports & General Aviation Airports (Including the Multiplier Effect)

	New Hampshire Businesses	Jobs	Travel Time Savings	NH State Tax Revenues
	Output/Sales Revenue			
Primary Airports	\$1,054,580,000	8,451	\$3,620,000	\$25,200,000
General Aviation Airports	\$100,840,000	780	\$10,470,000	\$1,340,000
National	\$46,400,000	351	\$3,200,000	\$770,000
Regional	\$45,520,000	357	\$6,230,000	\$450,000
Local	\$4,930,000	40	\$940,000	\$60,000
Basic	\$910,000	9	\$90,000	\$50,000
Aircraft Registration				\$1,100,000
Total NHSAS	\$1,155,420,000	9,231	\$14,090,000	\$27,640,000
Aerospace Manufacturing	\$998,900,000	3,671		\$4,230,000
Grand Total	\$ 2,154,320,000	12,902	\$14,090,000	\$31,870,000

- Note: General Aviation Total exceeds sum of national, regional, local and basic airports due to the impact of the statewide Pavement Maintenance Program

Neighboring State Airports

Coverage Type	Land Area Coverage	Population Coverage	Employment Center Coverage
Drive Time Coverage in New Hampshire	560 SQMI / 6%	139,436 / 10.6%	4 Top Employers
Drive Time Coverage of New Hampshire Gap Areas	130 SQMI / 1.4%	11,113 / 0.8%	N/A
Coverage Type	Land Area Coverage	Population Coverage	Employment Center Coverage
Air Access Coverage in New Hampshire	3,290 SQMI / 36.2%	680,774 / 51.7%	22 Top Employers
Air Access Coverage of New Hampshire Gap Areas	232 SQMI / 46.5%	12,870 / 94.5%	N/A



Weather Reporting



Future System Performance

Runways 3,200' or Greater

Runways 5,000' or Greater



Future System Performance Jet A Fuel

AVGAS Fuel



Non-Precision Approach



Precision Approach



Airport Recommendations

Phase I (1-5 Years): Minimum Objectives

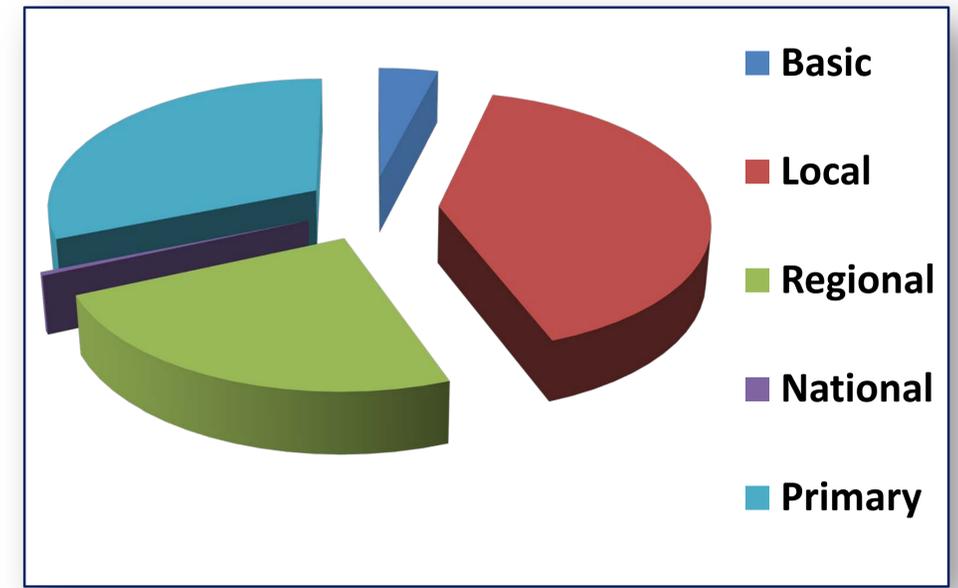
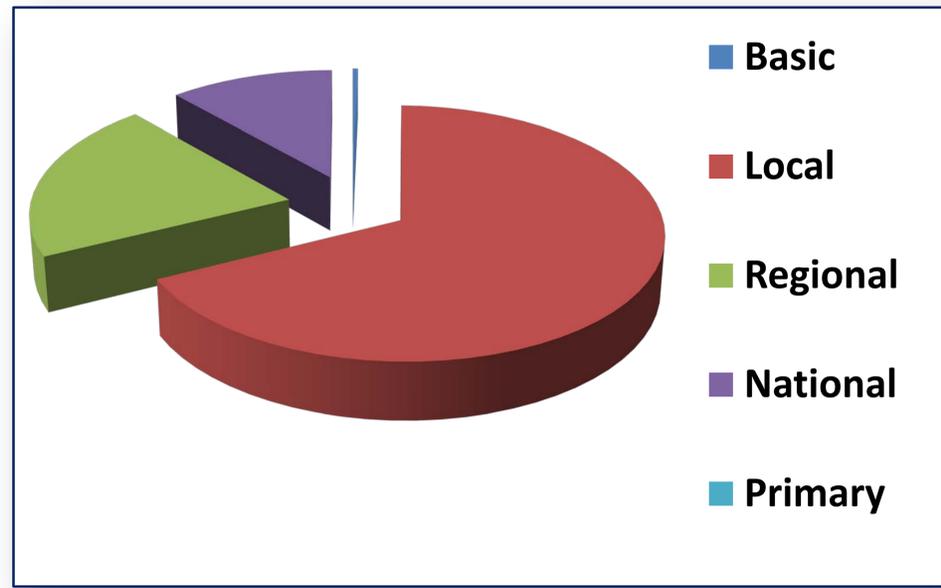
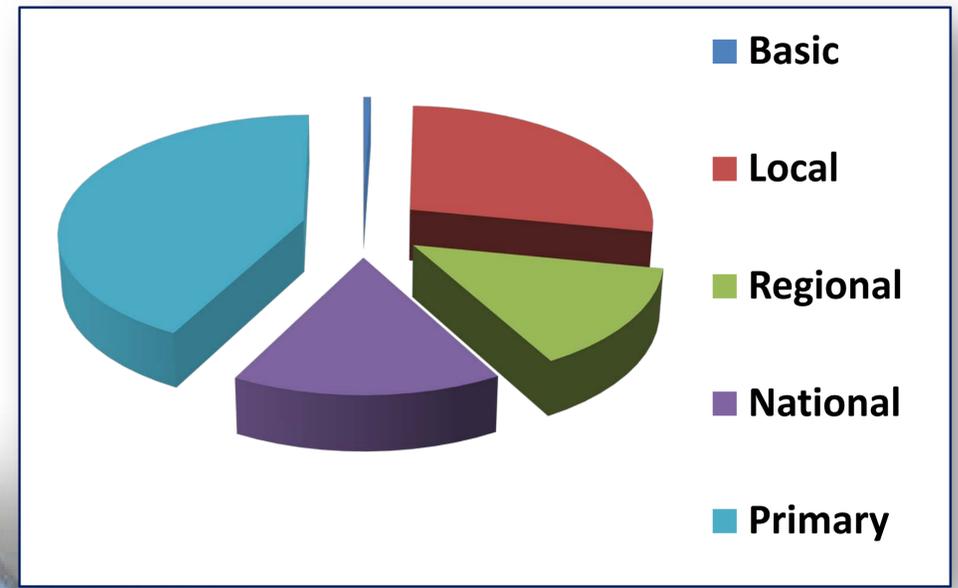
Basic (9)	\$173,000
Local (7)	\$8,863,000
Regional (4)	\$4,462,000
National (2)	\$5,076,000
<u>Primary (3)</u>	<u>\$13,629,000</u>
Total	\$32,203,000

Phase II (6-10 Years): Recommended Objectives

Basic (9)	\$77,000
Local (7)	\$14,988,000
Regional (4)	\$4,638,000
National (2)	\$2,566,000*
<u>Primary (3)</u>	<u>\$0*</u>
Total	\$22,269,000

Phase III (11-20 Years): Recommended Objectives

Basic (9)	\$926,000
Local (7)	\$9,265,000
Regional (4)	\$5,536,000
National (2)	\$100,000*
<u>Primary (3)</u>	<u>\$7,158,000*</u>
Total	\$22,985,000



(X) = Number of Airports within Role

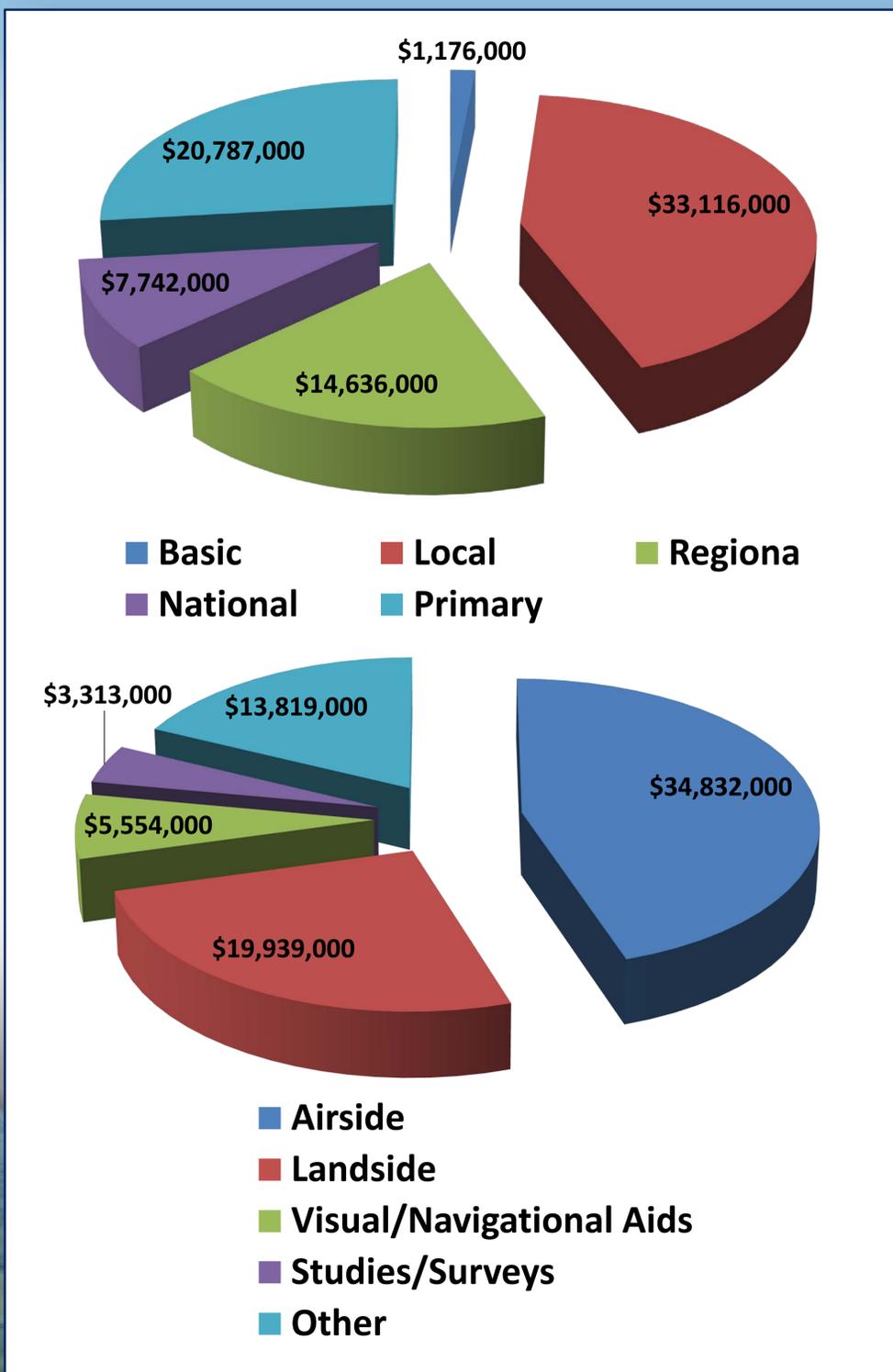
* Non-SASP Projects Not Included

- System Plan = Supporting Planning Document
- Master Plans Provide Detail & Justification
 - Approved ALP Still Required to Fund Projects



Development Costs Breakdown

Top Projects by Phase



Phase I		
PORTSMOUTH	Category-III Instrument Landing System Approach to One Runway	\$13,129,000
MT WASHINGTON	Hangar Storage for 90% of Winter Based Aircraft	\$2,850,000
HAMPTON	Hangar Storage for All Winter-Based Aircraft	\$2,625,000
DILLANT-HOPKINS	Hangar Storage for All Winter-Based Aircraft	\$2,400,000
DILLANT-HOPKINS	Secure Aircraft Parking Apron – 40+ Jet/Turboprop Aircraft	\$2,216,000
Total		\$23,220,000

Phase II		
DEAN MEMORIAL	Pavement Strength 12,000 lbs. (SW)	\$3,450,000
HAMPTON	Pavement Strength 12,000 lbs. (SW)	\$2,398,000
MOULTONBORO	Pavement Strength 12,000 lbs. (SW)	\$2,398,000
BOIRE	Terminal Building – 5,000 SF	\$1,875,000
BERLIN	Hangar Parking for Transient Aircraft	\$1,250,000
Total		\$11,371,000

Phase III		
LEBANON	Runway Length of 7,000 Feet or Greater	\$7,158,000
BERLIN	Secure Aircraft Parking Apron – 15+ Jet/Turboprop Aircraft	\$2,216,000
CONCORD	Vertical Glide Slope Indicator on Each Runway End	\$863,000
MT WASHINGTON	Secure Aircraft Parking Apron – 15+ Jet/Turboprop Aircraft	\$739,000
MT WASHINGTON	Runway Length of 5,000 Feet or Greater	\$658,000
Total		\$11,634,000

Other Airport Funding Needs

Projects in Addition to SASP: \$372,250,000

- \$138.9 Million Primary, \$94.4 Million Block Grant

- Examples of Projects in Addition to the SASP:

- Additional Hangars/Aprons/Taxiways
- Passenger Terminal Facilities/Infrastructure
- Additional Vehicles/Equipment (ARFF/SRE)

Pavement Maintenance: \$51,500,000

- Notable Cost Over 20-Year Period

Planning/Enviro./Specialty Studies: \$8,000,000

**TOTAL 20-YEAR AVIATION NEED IS APPROXIMATELY:
\$500,000,000**

Funding Program Needs & Recommendations

FAA Funding

- NH Has 11% of NPIAS Airports and 10% of Funding in NE
- \$15M Annual Average (2009 – 2014)
- Annual Levels Fluctuate \$4M (2014), \$30M (2011)

Other Funding (Non-NPIAS)

- RSA 422:36 Airways Toll Moneys; Aircraft Operating Fee Revenues : ¼ Turnback
- 80/20 Funding Program: Unfunded
- Airport Tax Reimbursement Program: Unfunded
- Fuel Revenue: General Fund
- State Aeronautical Fund: Donations Only (\$1,100)

Recommendations:

- Plan on Limited Funding Being A Reality
- Prioritize Projects: Meet Both System Recommendations and Local Needs
- Maintain Registration Fee Turnback: Airports Depend on for Budgeting
- Refocus Efforts to Refund 80/20 Program (Legislative)
- Research Other State Funding Programs

Policy Development

North Conway Airport Coverage Gap Options

- Modify Bi-State Authority
- Build New Airport (\$15M - \$20M Investment)

Land Use Planning and Zoning

Airport Design Standards Recommendations for Non-NPIAS Airports

Equipment Purchases: Evaluate Options to Purchase for System Use

Statewide Initiatives

- Funding Programs
- Best Practices
- System Tools

- **Airport Strategy Guidance: Maximize Aviation & Non-Aviation Revenue Generation**
- **Environmental Background: Understand the Federal & State Level Processes, Wildlife Hazards, Vegetation Management**
- **Airport Management: Guidance on Strategies to Manage & Operate Airports**
- **Safety & Security: Best Practices Including TSA Recommendations**
- **Checklists for All Airports**
 - Airport Emergency Plans
 - Airport Self Inspections

Airport Role Change Candidates

- **Dean Memorial (Basic to Local)**
 - NPIAS Airport, Local Business Center
- **Dillant-Hopkins (Regional to National)**
 - Regional Economic Center, Key State Employers
 - Limited Ground Access (Higher Aviation Dependence)
- **Moultonboro (Basic to Local)**
 - Support Lakes Region Growth
- **Mount Washington Regional (Local to Regional)**
 - Support Tourism Growth, Berlin Alternate

Facility & Service Objectives

Airport Role	Minimum Facility & Service Objectives Not Met
General Aviation Basic Airports	Aircraft Parking Area Basic Shelter (100 S.F.) Public Phone Open Year-Round Airport Manager Contact Available Posted Emergency Contact List
General Aviation Local Airports	Paved Aircraft Parking Area (4 spaces) Hangar Storage for all Winter-Based Aircraft Runway Lights Taxiway Reflectors Lighted Windsock Non-Precision Instrument Approach Procedure Posted Emergency Contact List
General Aviation Regional Airports	100% of Minimum Facility & Service Objectives Currently Met
General Aviation National Airports	100% of Minimum Facility & Service Objectives Currently Met
Primary Commercial Service Airports	Runway Length > 7,000 Feet Pavement Strength (250,000 lbs, Dual Tandem Wheel) Medium Intensity Approach Light System with Sequential Flashers Full-Time On-Site Airport Security Access to US Customs 34:1 Clear Approach Slope

Source: McFarland Johnson, Inc.

Prioritization of Recommendations

