New Hampshire State Airport System Plan

McFarland Johnson

The Louis Berger Group, Inc.

NH STATE AIRPORT SYSTEM PLAN
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
<table>
<thead>
<tr>
<th>Airport Name</th>
<th>NPIAS Role</th>
<th>ASSET Role</th>
<th>NHASRP Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berlin Regional</td>
<td>General Aviation</td>
<td>Local</td>
<td>Regional</td>
</tr>
<tr>
<td>Boire Field</td>
<td>Reliever</td>
<td>National</td>
<td>National</td>
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<tr>
<td>Claremont Municipal</td>
<td>General Aviation</td>
<td>Local</td>
<td>Local</td>
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<td>Concord Municipal</td>
<td>General Aviation</td>
<td>Regional</td>
<td>Regional</td>
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<tr>
<td>Dean Memorial</td>
<td>General Aviation</td>
<td>Basic</td>
<td>Basic</td>
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<tr>
<td>Dillant-Hopkins</td>
<td>General Aviation</td>
<td>Regional</td>
<td>Regional</td>
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<tr>
<td>Laconia Municipal</td>
<td>General Aviation</td>
<td>Regional</td>
<td>Regional</td>
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<tr>
<td>Lebanon Municipal</td>
<td>Commercial Service</td>
<td>Regional</td>
<td>Primary</td>
</tr>
<tr>
<td>Manchester-Boston Regional</td>
<td>Primary</td>
<td>N/A</td>
<td>Primary</td>
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<td>Mount Washington Regional</td>
<td>General Aviation</td>
<td>Local</td>
<td>Local</td>
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<td>Portsmouth International at Pease</td>
<td>General Aviation</td>
<td>National</td>
<td>Primary</td>
</tr>
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<td>Skyhaven</td>
<td>General Aviation</td>
<td>Local</td>
<td>Local</td>
</tr>
<tr>
<td>Alton Bay</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
</tr>
<tr>
<td>Enfield</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
</tr>
<tr>
<td>Franconia</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
</tr>
<tr>
<td>Gifford Field</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
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<tr>
<td>Gorham</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
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<tr>
<td>Hampton Airfield</td>
<td>N/A</td>
<td>N/A</td>
<td>Local</td>
</tr>
<tr>
<td>Hawthorne-Feather Airpark</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
</tr>
<tr>
<td>Jaffrey Airport-Silver Ranch</td>
<td>General Aviation</td>
<td>Basic</td>
<td>Local</td>
</tr>
<tr>
<td>Moultonboro</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
</tr>
<tr>
<td>Seahaven</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
</tr>
<tr>
<td>Parlin Field</td>
<td>General Aviation</td>
<td>Local</td>
<td>Local</td>
</tr>
<tr>
<td>Plymouth Municipal</td>
<td>General Aviation</td>
<td>Basic</td>
<td>Basic</td>
</tr>
<tr>
<td>Twin Mountain</td>
<td>N/A</td>
<td>N/A</td>
<td>Basic</td>
</tr>
</tbody>
</table>

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

**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

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

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
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

ATTRIBUTE DATA

SYSTEM INPUTS

FEATURE INPUTS
- AIRPORT FACILITIES
- GEOGRAPHIC SERVICE AREA

LAND AREA

ANALYSIS

POPULATION

ECONOMIC SUPPORT

GEOPGRAPHIC SERVICE AREA

SYSTEM ROLE

SYSTEM PERFORMANCE
Critical Access Features Measured

- Runway Length
  - 5,000 ft & 3,200 ft Measurements
- Fuel: Jet-A and AVGAS
- Instrument Approaches
  - Precision/Non-Precision
- Weather Reporting

Performance: On-Site Weather Reporting Coverage

- Geographic & Population Gap: 19% and 5%, Respectively
- Only 1 Top Employer Not Covered
**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
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

### Basic


### Local


### Regional

| Facility Length | Airport Parking Area | Instrument Approaches | Pavement Strength | Pavement Lighting | Airport Manager Contact Person | Posted Emergency Contact List | Open Year | Public Phone | Windsock (Visual Aid) | Runway Length | Full | Pavement Strength | Pavement Lighting | Instrument Approaches | Pavement Strength | Pavement Lighting | Instrument Approaches | Pavement Strength | Pavement Lighting | Instrument Approaches | Pavement Strength | Pavement Lighting | Instrument Approach to All Runways, at Least Two Vertically Guided Approaches

### Primary

| Facility Length | Airport Parking Area | Instrument Approaches | Pavement Strength | Pavement Lighting | Airport Manager Contact Person | Posted Emergency Contact List | Open Year | Public Phone | Windsock (Visual Aid) | Runway Length | Full | Pavement Strength | Pavement Lighting | Instrument Approach to All Runways, at Least Two Vertically Guided Approaches

### National

| Facility Length | Airport Parking Area | Instrument Approaches | Pavement Strength | Pavement Lighting | Airport Manager Contact Person | Posted Emergency Contact List | Open Year | Public Phone | Windsock (Visual Aid) | Runway Length | Full | Pavement Strength | Pavement Lighting | Instrument Approach to All Runways, at Least Two Vertically Guided Approaches

**Notes:**
- Instrument Approaches: In Instrument, Precision, Full (for all runways, at least two vertically guided approaches)
- Pavement Strength: 5,000 lbs (Single Wheel Landing Gear Configuration)
- Pavement Lighting: Medium Intensity Approach Light System (Flashers)
Based on Historical Data, Airports were put into One of Two Categories
- Negative Average Annual Growth (-0.3%): Based on the Projected Decrease of Piston Powered Aircraft
- Positive Average Annual Growth (+0.5%): 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

**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

**Economic Impact**
- Consistent with AC 150/5070-7
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)

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

- 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

<table>
<thead>
<tr>
<th>Coverage Type</th>
<th>Land Area Coverage</th>
<th>Population Coverage</th>
<th>Employment Center Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Time Coverage in New Hampshire</td>
<td>560 SQM / 6%</td>
<td>139,436 / 10.6%</td>
<td>4 Top Employers</td>
</tr>
<tr>
<td>Drive Time Coverage of New Hampshire Gap Areas</td>
<td>130 SQM / 1.4%</td>
<td>11,113 / 0.8%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coverage Type</th>
<th>Land Area Coverage</th>
<th>Population Coverage</th>
<th>Employment Center Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Access Coverage in New Hampshire</td>
<td>3,290SQM / 36.2%</td>
<td>680,774 / 51.7%</td>
<td>22 Top Employers</td>
</tr>
<tr>
<td>Air Access Coverage of New Hampshire Gap Areas</td>
<td>252 SQM / 46.5%</td>
<td>12,870 / 94.5%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Weather Reporting

- FUTURE PERFORMANCE: 20 NAUTICAL MILES: ON-SITE WEATHER REPORTING
- 15 NM: Northern Airports
- 20 NM: Southern Airports
- Neighboring State Airports
- No Weather Reporting
- Claremont Coverage
- 15NM Rings
- 20NM Rings

Date: September, 2014

Prepared by: McFarland Johnson

Source: ORNUT Natural Earth
Runways 3,200’ or Greater

Runways 5,000’ or Greater
System Plan = Supporting Planning Document

- Master Plans Provide Detail & Justification
  - Approved ALP Still Required to Fund Projects

### Airport Recommendations

**Phase I (1-5 Years): Minimum Objectives**

<table>
<thead>
<tr>
<th>Role</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Basic (9)</td>
<td>$173,000</td>
</tr>
<tr>
<td>Local (7)</td>
<td>$8,863,000</td>
</tr>
<tr>
<td>Regional (4)</td>
<td>$4,462,000</td>
</tr>
<tr>
<td>National (2)</td>
<td>$5,076,000</td>
</tr>
<tr>
<td>Primary (3)</td>
<td>$13,629,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$32,203,000</strong></td>
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</table>

**Phase II (6-10 Years): Recommended Objectives**

<table>
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<tr>
<th>Role</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Basic (9)</td>
<td>$77,000</td>
</tr>
<tr>
<td>Local (7)</td>
<td>$14,988,000</td>
</tr>
<tr>
<td>Regional (4)</td>
<td>$4,638,000</td>
</tr>
<tr>
<td>National (2)</td>
<td>$2,566,000*</td>
</tr>
<tr>
<td>Primary (3)</td>
<td>$0*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$22,269,000</strong></td>
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</tbody>
</table>

**Phase III (11-20 Years): Recommended Objectives**

<table>
<thead>
<tr>
<th>Role</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic (9)</td>
<td>$926,000</td>
</tr>
<tr>
<td>Local (7)</td>
<td>$9,265,000</td>
</tr>
<tr>
<td>Regional (4)</td>
<td>$5,536,000</td>
</tr>
<tr>
<td>National (2)</td>
<td>$100,000*</td>
</tr>
<tr>
<td>Primary (3)</td>
<td>$7,158,000*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$22,985,000</strong></td>
</tr>
</tbody>
</table>

*(X) = Number of Airports within Role

* Non-SASP Projects Not Included
Development Costs Breakdown

Top Projects by Phase

Other Airport Funding Needs

- **Projects in Addition to SASP: $372,250,000**
  - $138.9 Million Primary, $94.4 Million Block Grant
  - Examined 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**
Funding Program Needs & Recommendations

- **FAA Funding**
  - NH Has 11% of NPIAS Airports and 10% of Funding in NE
  - $15M Annual Average (2009 – 2014)

- **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

System Recommendations

- **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

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
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

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

Source: McFarland Johnson, Inc.

Prioritization of Recommendations

Ensure: **MINIMUM FACILITIES & SERVICES**

Maximize: **RECOMMENDED FACILITIES & SERVICES**

Deliver: **AIRCRAFT OPERATOR & PASSENGER ACCOMMODATIONS**