Minnesota GO

A Collaborative Vision for Transportation

State Aviation System Plan

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Minnesota**GO**
A Collaborative Vision for Transportation

State
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Chapter 2

INVENTORY

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INVENTORY

To properly plan for the future of an airport, or a system of airports, it is necessary to have a comprehensive understanding of the existing conditions. This inventory of Minnesota's aviation system achieves that goal and serves as the foundation for understanding and developing an analysis of the future needs of each airport. Completion of the inventory also assists this Plan in meeting certain FAA requirements.

Inventory data was collected via an on-line survey (made available in hard copy upon request) distributed to airport owners and/or managers at all 135 airports in the system. The survey included more than 400 questions ranging from based aircraft types to trends in airport activity. Certain data collected in the survey was reconciled and/or supplemented with MnDOT Aeronautics and FAA sources. This was necessary for quality control purposes, as survey recipients had varying degrees of familiarity with the requested data. These additional sources included FAA 5010 safety inspection airport data sheets, MnDOT Office of Aeronautics pavement condition index (PCI) and zoning databases, and the Research and Innovative Technology Administration's Federal Bureau of Transportation Statistics.

The survey was distributed in April of 2011 and collected data in the following 12 subject areas:

Table 2-1: Inventory Survey Subject Areas

General Information	Current Based Aircraft
Airport Characteristics	Current Operational Data
Current Airport Usage	Airport Trends
Services Provided at Airport	Airport Planning
Airside Facilities	Airport Adequacy
Landside Facilities	Additional Comments

The remainder of this chapter is organized by the 12 sections of the survey and highlights both the importance of the data collected and provides a high-level analysis of responses. A copy of the inventory survey is included as **Appendix B: Inventory Survey.** The bulk of the information collected is found primarily in **Appendix E: Airport Facility Needs Sheets and Report Cards**.
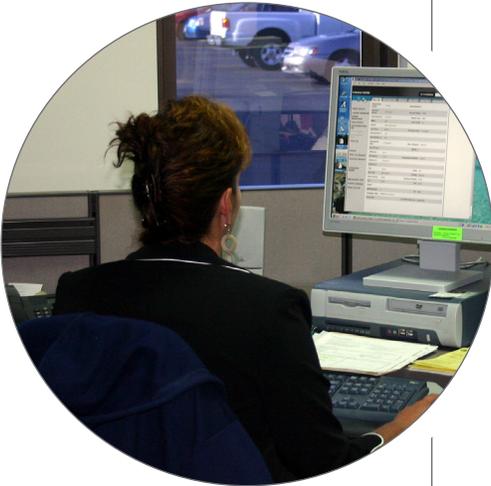
General Information

The key data collected in this section of the survey included airport manager contact information and total airport acreage. According to the data collected, the state's system is comprised of 135 airports that own nearly 64,000 acres of land. This is nearly equal to the total land area within the city limits of Minneapolis and St. Paul combined.

Airport Characteristics

The Airport Characteristics section collected information about weather reporting capabilities at system airports, the type of aircraft an airport is designed to accommodate, airport design categories, wind cones, beacons, and segmented circles. Ninety-six airports have on-site weather reporting capabilities which provide weather condition information to pilots. Automated Weather Observation Systems (AWOS) and Automated Surface Observation Systems (ASOS) report wind speed and direction, temperature, dew point, and cloud cover. Up-to-the-minute weather information is critical to pilots as they travel throughout the state. The importance of weather reporting, wind cones, segmented circles, and beacons are discussed further in **Chapter 6: Performance Report**. A summary of this section's survey results is included in **Table 2-2**.

Table 2-2: Airport Characteristics

AIRPORT CHARACTERISTIC	NUMBER OF AIRPORTS	PERCENT OF SYSTEM
Airports with Weather Reporting	96	71%
Airports with Wind Cones	135	100%
Airports with Segmented Circles	26	19%
Aiports with Rotating Beacons	120	89%

Current Airport Usage

The Current Airport Usage section of the survey gathered information concerning the businesses, industrial parks, recreational users, flight training, firefighting, and law enforcement operations which use the airport for air transportation needs. This section also requested data about the proximity of industrial parks to airports, specific business users, and off-airport aviation dependent businesses.

Information collected in this section provides a better understanding of the diverse users of the state's airports. Some airports primarily support local businesses (e.g. agricultural, manufacturing, technology) while others serve their community by hosting medical and emergency services.

As indicated in **Table 2-3** there are twenty-five categories of on-airport users. The survey also identified off-airport users including the number of industrial parks near a system airport. Survey results revealed that 27 industrial parks are within one mile of an airport and 114 are within five miles. Almost half of the industrial parks are near intermediate airports.

Table 2-3: Airport Use

AIRPORT USE	NUMBER OF AIRPORTS	PERCENT OF SYSTEM	AIRPORT USE (CONT.)	NUMBER OF AIRPORTS	PERCENT OF SYSTEM
Recreational Flying	122	90%	Environmental Patrol	27	20%
Flight Training	86	64%	Forest Fire Fighting	25	19%
Corporate Flights	84	62%	Community Facilities	23	17%
Emergency Medical	76	56%	Real Estate Tours	20	15%
Agricultural Spraying	72	53%	Traffic/News Reporting	16	12%
Aerial Photography	57	42%	Perishable Good Transport	15	11%
Aerial Inspections	47	35%	Scheduled Cargo Flights	14	10%
On-Demand Charter	44	33%	Airline Service	8	6%
VIP/High Profile	42	31%	Skydiving	8	6%
Civil Air Patrol	39	29%	Aerial Advertising	7	5%
Police Law Enforcement	37	27%	Prisoner Transport	7	5%
Search and Rescue	35	26%	Aviation Museum	4	3%
Community Staging	34	25%			

Services Provided at Airport

Data were collected to establish the services each airport provides to the flying and non-flying public. Twenty-three different services were collected in the survey, including fuel type provided, public restroom facilities, aircraft tie downs, automobile rental, aircraft maintenance facilities, and airport access by public transportation. A summary of these services are shown in **Table 2-4**.

Table 2-4: Services Provided

AIRPORT CHARACTERISTIC	NUMBER OF AIRPORTS	PERCENT OF SYSTEM
Major Aircraft Repair	52	39%
Minor Aircraft Repair	67	50%
Avionics Repair	18	13%
Jet A Fuel	62	46%
100LL Fuel	112	83%
Mogas Fuel	9	7%
Hangar Rental	89	66%
Tie Downs	120	89%
Aircraft Rental	36	27%
Aircraft Sales	28	21%
Air Taxi	15	11%
GA Facilities	77	57%
Pilot Lounge	105	78%
Restroom	119	88%
Public Telephone	103	76%
Customs	10	7%
Restaurant	8	6%
Vending Machines	61	45%
Courtesy Vehicle	62	46%
Car Rental	35	26%
Taxis	35	26%
Public Transportation	22	16%
Other Service	9	7%

Airside Facilities

This section collected data on each airport's airside facilities including runway designations, runway lengths and widths, parallel taxiway features, pavement condition index (PCI), lighting and navigation systems. An airport's airside is defined as the portion of the airport within the aircraft operations area (AOA). At larger airports, this is the area within the security fence. At smaller airports, the AOA is typically identified through the use of signs or pavement markings. Arrival/departure buildings, automobile parking, and entrance roads are considered landside facilities and are covered in the next section (Landside Facilities). Airside facilities data are presented individually for each airport on the Airport Data Sheets found in **Appendix E: Airport Facility Needs Sheets and Report Cards.**

Landside Facilities

An airport's landside facilities may include arrival/departure buildings for air carriers or general aviation, hangar or air cargo facilities, automobile parking spaces, perimeter fencing, and entrance roads. These features are located on airport property, but are intended to support use of the airport by the public. Data collected through the survey included, among others, the size of these types of facilities as well as their construction and/or reconstruction date.

Of the airports which provided data concerning their arrival/departure building, Fosston Municipal Airport was the first Minnesota airport to construct such a building for general aviation purposes in 1956. Interestingly, this was six years before the first Lindbergh Terminal at the Minneapolis-St. Paul International Airport opened.[1]

Today there are a total of 129 arrival/departure and administration buildings located at 75 of the airports in the state's system. Some airports can accommodate all their needs with just one building, while larger airports may require multiple buildings to serve the needs of their customers. Fifty-two new buildings were constructed in the state between 1956 and 1989. Since 1989, however, 77 new facilities have been constructed.

In 1990 the first major building renovation in the state was completed. Since 1990, 33 airport buildings throughout the state have been renovated.

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[1] Minneapolis-St. Paul Airport History. http://www.mspairport.com/about-msp/history.aspx; Accessed 17-October, 2011

Current Based Aircraft

An aircraft that uses a particular airport as the primary location from which to begin or end a flight, or is stored at the airport on a permanent basis, is known as a "Based Aircraft" for that airport. The survey collected based aircraft data for each airport by asking respondents how many aircraft in the following categories were based at their airport:

Table 2-5: Aircraft Categories

Single Engine Piston	Multi-Engine Piston
Turboprop	Jet
Helicopter	Glider
Ultralight	Military Fixed Wing
Military Helicopter	Other

It is important to know what categories of airplanes are based at each airport because an airport's facility needs, like runway length or size of hangars, are directly related to the types of aircraft that utilize the airport (see **Chapter 5: Airport Facility Requirements**). The based aircraft data are also utilized in the Plan's forecasts (**Chapter 3: Forecast**). **Figure 2-1** illustrates a typical aircraft in each category. A list of the based aircraft by airport is found in **Appendix C: Forecast Technical Report**.

Figure 2-1: Aircraft Categories

Figure 2-1: Aircraft Categories

Multi-Engine Piston

Single Engine Piston

Glider

Military Fixed Wing

Military Helicopter

Ultralight

Non-Military Helicopter

Jet

Turboprop
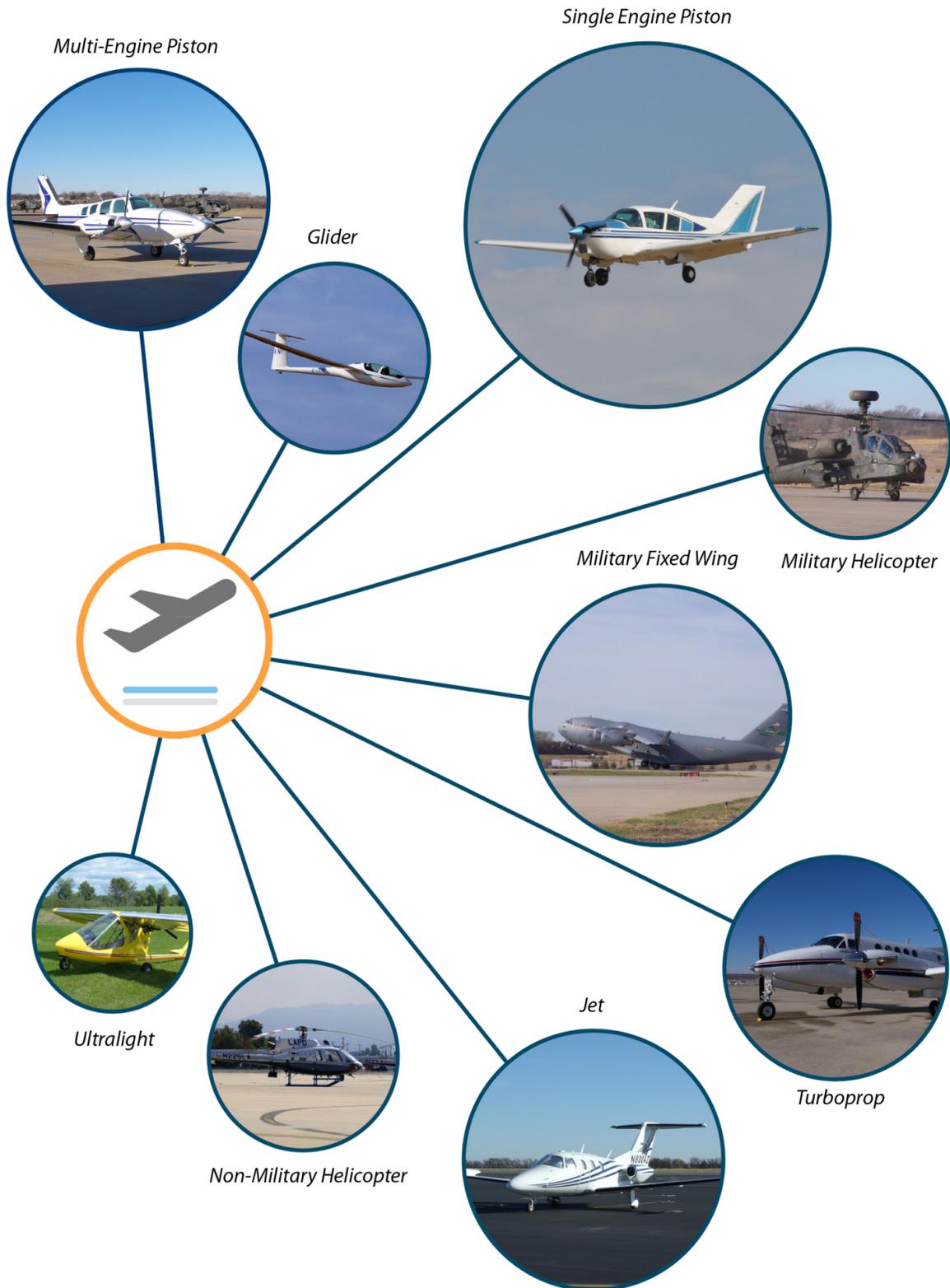
Source: HNTB

Current Operational Data

The primary means of measuring aircraft activity at an airport is determining the number of aircraft operations that occur over a specified period of time. As such, operational data were collected for each airport. An aircraft operation is one of the distinct actions shown in **Table 2-6**.

Table 2-6: Aircraft Operations

AIRCRAFT ACTION	# OF OPERATIONS
Aircraft taking off from an airport	1 operation
Aircraft landing at an airport	1 operation
An aircraft touch-and-go	2 operations
An instrument departure	1 operation
A missed approach	1 operation

A touch-and-go occurs when an aircraft flies to and approaches the airport, briefly touches down on the runway, and then intentionally becomes airborne again with no intent to remain on the ground. A missed approach occurs when a pilot makes a decision not to land during an instrument approach to the runway. These unique operation types are often characteristic of pilot training exercises.

Operation types were collected, cross checked against the other data sources at MnDOT and FAA, and finally summarized by the airport classifications defined in **Chapter 1: Introduction and System Goals** (Key, Intermediate, Landing Strip). Similar to the based aircraft data, current operational data is utilized in the Plan's forecasts (**Chapter 3: Forecast**) and facility needs analysis (**Chapter 5: Airport Facility Requirements**). An airport by airport breakdown of the operations data is found in **Appendix C: Forecast Technical Report**.

Figure 2-2 presents the percent of operations in the state by certain use types according to the survey results. These possible types are shown in **Table 2-7**.

Table 2-7: Types of Aircraft Operations

Local	An operation in which the aircraft remains in or around the airport's general vicinity.
Itinerant	An operation in which the aircraft originated or is terminating at a different airport.
Business	An operation which is the sole result of a business need.
Leisure	An operation which is for the purpose of personal travel or casual flying.
Training	An operation utilized for teaching new pilots how to fly or to keep an existing pilot certified.

Figure 2-2: Percent of Aircraft Operations by Type

Figure 2-2: Percent of Aircraft Operations by Type
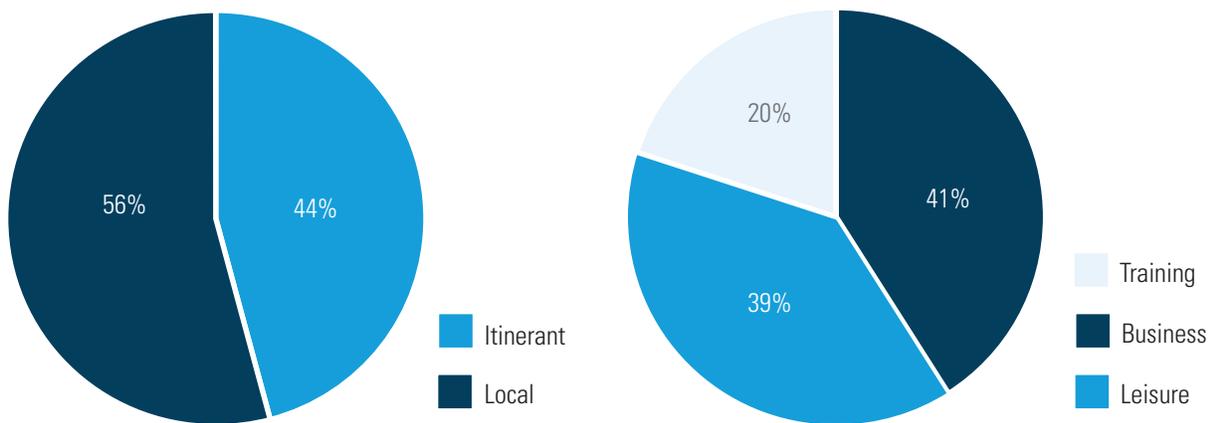
Airport Trends

This section asked survey respondents to identify certain aviation activity trends over the previous five years and how they anticipate the same activity levels to look over the next five years. This information was sought for the five major airport uses shown in **Table 2-8**.

Table 2-8: Major Airport Uses

Airline Passenger Activity	Cargo Activity
General Aviation Business Activity	General Aviation Training Activity
General Aviation Recreational Activity	

Survey respondents were generally more optimistic about anticipated industry trends over the coming five years then they were concerning the trends over the previous five years. **Figure 2-3** shows a breakdown of these trends.

Figure 2-3: Airport Trends for Major Acitivities

Airports that experienced an increase in aircraft activity levels over the last five years

Airports that expect to experience an increase in aircraft activity levels over the next five years
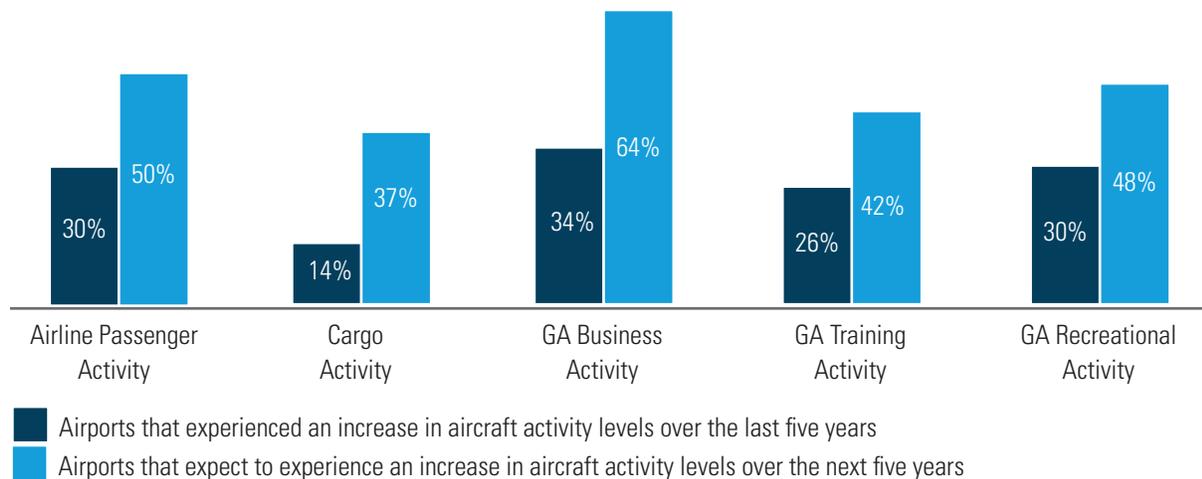
Airport Planning

MnDOT Aeronautics gathered data concerning the approval status of Airport Master Plans, Airport Layout Plans (ALPs), Long Term Comprehensive Plans (LTCPs) and the adequacy of an airport's zoning ordinance. For a majority of the airports in the state's system the FAA and MnDOT share the responsibility for approving Master Plans and ALPs, while it is solely the responsibility of the MnDOT Commissioner to ensure that zoning ordinances meet state required standards. Collectively, these planning documents help both the communities that support airports and MnDOT to protect the airport from incompatible land use decisions and to determine a need for future airport growth or development (e.g., a longer runway capable of handling more and larger airplanes). **Table 2-9** identifies how many of the system airports have approved and/or adequate planning documents.

Table 2-9: Airport Planning

PLANNING DOCUMENT	NUMBER OF AIRPORTS	PERCENT OF SYSTEM
Airports with Airport Layout Plans	111	82%
Airports with Master Plans/LTCPs	61	45%
Aiports with Adequate Zoning	109	81%

Airport Adequacy

This section allowed respondents the opportunity to share perceptions of the adequacy of their airport in a variety of different areas. Some of the areas included were aircraft parking and storage capacity, airfield capacity, auto parking, taxiway conditions and configurations, and airfield signage and lighting. The results of this section provide additional insight as funding and/or future development decisions are made.

Additional Comments

In the survey's final section respondents were encouraged to provide qualitative comments on topics for which there may not have been an appropriate place in the preceding eleven sections. This data was taken into consideration as the Plan was developed.

Interactive Website

As noted at the beginning of the chapter, much of the data collected through the inventory survey is found in **Appendix E: Airport Facility Needs Sheets and Report Cards**. Additionally, the information is available electronically at the following interactive website: http://www.dot.state.mn.us/aero/planning/sasp.html.

Readers and users of this Plan are encouraged to review the information provided for the airports in which they have an interest.

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