

SYSTEM DESCRIPTION

There are three areas which will be examined in regard to the description of the airport system in Michigan. These are...

- Number and Location of Existing Airport Facilities
- Airport Classifications
- Airport Service Areas

Number and Location of Existing Airport Facilities

There are 236 public use airport facilities throughout Michigan in 1999. Not included in the *MASP 2000* are private use airfields, seaplane bases, heliports, and military facilities, although joint use public/military facilities are included in the system plan. Of the 236 public use airports, 129 or 54.7 percent are publicly owned with the balance, 107 or 45.3 percent privately owned. Although both types of facilities are open to the public, ownership plays an important role in at least two ways. First, publicly owned airports tend to continue functioning as airports over the long haul with a sense of stability that is important to users of the airports. They are more readily accepted as a community asset. Privately owned airports are far more likely to drift into and out of public use and consequently are less reliable as a long term transportation resource. Additionally, privately owned airports are often under extreme pressure from developers and others for conversion into non aviation uses such as housing or commercial developments. Once converted to another use, the likelihood of replacing one airport with another is remote at best.

Table 1 identifies the number of public use airports in each county by ownership in 1999. Two counties, Baraga and Keweenaw, both located in the upper peninsula, are without public use airports. One

additional county, Missaukee, does not have a public owned airport. Clinton county, with twelve, has more public use airports than any other county.

Map 1
Public Use Airports in Michigan, 1999

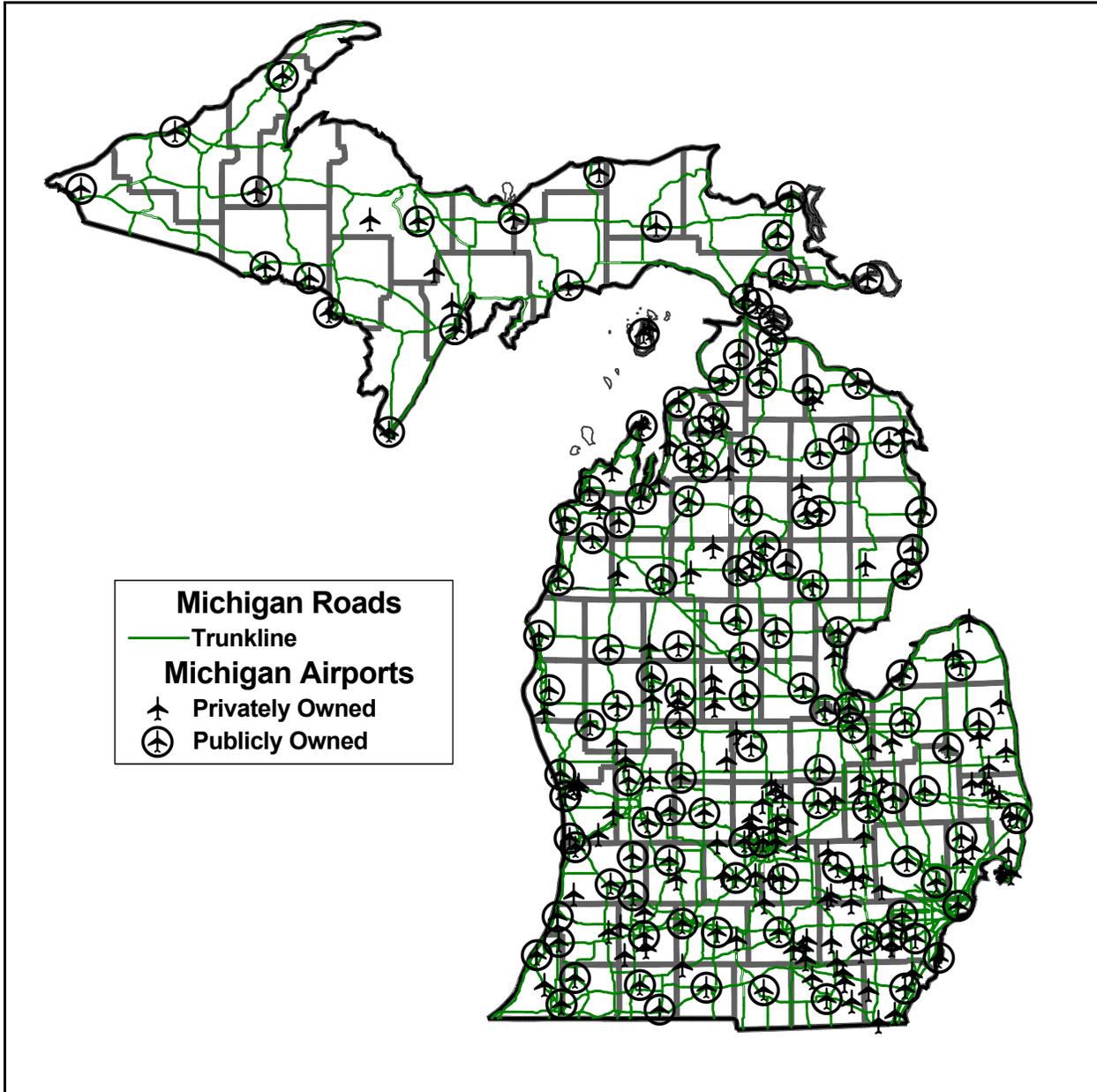


Table 1 Public Use Airports by County, 1999							
County	Public	Private	Total	County	Public	Private	Total
Alcona	1	0	1	Lake	1	0	1
Alger	2	0	2	Lapeer	1	0	1
Allegan	3	2	5	Leelanau	2	1	3
Alpena	1	1	2	Lenawee	1	5	6
Antrim	2	2	4	Livingston	1	5	6
Arenac	1	0	1	Luce	1	0	1
Baraga	0	0	0	Mackinac	4	0	4
Barry	1	0	1	Macomb	1	2	3
Bay	1	1	2	Manistee	1	0	1
Benzie	2	1	3	Marquette	1	2	3
Berrien	3	1	4	Mason	1	0	1
Branch	1	1	2	Mecosta	2	2	4
Calhoun	2	1	3	Menominee	1	0	1
Cass	1	0	1	Midland	1	0	1
Charlevoix	4	2	6	Missaukee	0	2	2
Cheboygan	2	2	4	Monroe	1	4	5
Chippewa	3	0	3	Montcalm	2	1	3
Clare	2	0	2	Montmorency	2	0	2
Clinton	2	10	12	Muskegon	1	0	1
Crawford	1	0	1	Newaygo	2	1	3
Delta	1	1	2	Oakland	2	1	3
Dickinson	1	0	1	Oceana	1	1	2
Eaton	1	3	4	Ogemaw	1	0	1
Emmet	2	0	2	Ontonagon	1	0	1
Genesee	2	4	6	Osceola	1	1	2
Gladwin	1	0	1	Oscoda	2	1	3
Gogebic	1	0	1	Otsego	1	0	1
Grand Traverse	2	1	3	Ottawa	2	5	7
Gratiot	1	1	2	Presque Isle	2	0	2
Hillsdale	1	0	1	Roscommon	4	0	4
Houghton	2	0	2	Saginaw	3	1	4
Huron	2	2	4	Sanilac	2	4	6
Ingham	1	3	4	Schoolcraft	1	0	1
Ionia	1	0	1	Shiawassee	1	1	2
Iosco	2	1	3	St. Clair	1	7	8
Iron	2	0	2	St. Joseph	2	0	2
Isabella	2	2	4	Tuscola	1	1	2
Jackson	1	4	5	Van Buren	1	1	2
Kalamazoo	1	4	5	Washtenaw	1	4	5
Kalkaska	1	0	1	Wayne	5	0	5
Kent	3	3	6	Wexford	1	1	2
Keweenaw	0	0	0	TOTAL	129	107	236

Airport Classifications

Airports are classified based on the operating and physical characteristics of the aircraft using the airport. The FAA uses an Airport Reference Code (ARC) system that classifies airports by the operational and physical characteristics of the most demanding aircraft intended to operate at the facility. This system has two components -- *approach category* which relates to the operational characteristics of aircraft and *design group* which relates to the physical characteristics of aircraft.

Approach Category

An aircraft approach category is a grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certified landing weight. This aircraft group must generate or be forecasted to generate at least 500 total annual operations. The highest category of aircraft to meet this standard is established as the critical aircraft at that airport.

Table 2 Approach Category Standards	
FAA Approach Category	Approach Speed
A	less than 91 knots
B	91 to 120 knots
C	121 to 140 knots
D	141 to 165 knots
E	166 knots or more

Design Group

Airplane design group is a grouping of airplanes based on wingspan of an airport’s critical aircraft. This, in turn, determines the geometrics at an airport. Runway and taxiway widths, apron sizes, turning radii, and other airport physical characteristics are based on design group designation.

Table 3 Design Group Standards	
FAA Design Group	Wingspan
I	less than 49 feet
II	49 to 78 feet
III	79 to 117 feet
IV	118 to 170 feet
V	171 feet to 213 feet
VI	214 feet to 261 feet

FAA Common Airport Classification

Airports are commonly classified as utility or transport. The utility category is further subdivided into four categories.

Basic Utility -- Stage I These airports serve approximately 75 percent of the single-engine airplanes used for personal and business purposes. Precision or non-precision Instrument Flight Rules (IFR) approach operations are not usually anticipated. This airport would have an ARC of A-I. In Michigan this category would include all airports with only turf runways.

Basic Utility -- Stage II These airports serve all airplanes of stage I plus high performance single engine aircraft and light twin engine aircraft typically used for business and air-taxi purposes. Precision approach operations are not usually anticipated. This airport would have an ARC of B-I. In Michigan this category would include airports with a paved primary runway up to 3,500 feet in length.

General Utility -- Stage I These airports serve all small airplanes. Non-precision approach operations are usually anticipated. This airport would have an ARC of B-II. In Michigan this category would typically include airports with primary runways between 3,500 and 4,300 feet in length.

General Utility -- Stage II These airports serve large airplanes in approach category C and usually have the capability for precision approach operations. This airport would have an ARC of C-II. In Michigan this category would

typically include airports with primary runways up to 5,000 feet in length.

Transport These airports serve airplanes in approach category C and D. Precision operations could be accommodated at this type of airport. This airport would have an ARC of C-III, C-IV, D-III or D-IV. In Michigan this category would typically include airports with primary runways over 5,000 feet in length.

MASP Airport Classification

For the MASP all airports are classified by approach category and design group of the primary runway. The following summarizes the classification of Michigan’s 236 public use airports by approach category-design group and by public or private ownership.

Table 4 Approach Category - Design Group Combinations					
Approach Category	Design Group	Runway Length	Runway Surface	NumAirports	
				Pub	Pri
A	I	Less than 2,500 feet	Turf	14	93
B	I	Less than 3,500 feet	Paved	28	14
B	II	3,500 to 4,300 feet	Paved	39	7
C	II	4,300 to 5,000 feet	Paved	14	0
C	III or IV	5,000 feet or more	Paved	7	0
D	III or IV	6,000 feet or more	Paved	20	0

Other approach category-design group combinations are possible. Actual and recommended airport designations are based upon the fleet mix of aircraft currently operating, or forecasted to operate, at a particular airport.

Examples of common aircraft found in each Airport Reference Code (ARC) follow...

- A-I Beech Bonanza, Cessna 172, Piper Cherokee
- B-I Cessna 310, Beech Baron, Piper Navajo
- B-II Beech King Air 200, Cessna Citation II, Dassault Falcon 20
- C-II Grumman Gulfstream II, Learjet 25 & 55, Hawker

- 125, Canadair Challenger
- C-III Boeing 727 & 737, McDonnell Douglas DC-9
- D-III Boeing 747, McDonnell Douglas DC-10, L-1011

MASP Classification and Priorities

The *MASP 2000*, from a state perspective, assigns airports to one of three tiers based on an airport's ability to respond to state goals and objectives as described in Chapter 5.

Tier 1 airports respond to essential/critical state airport system goals and objectives. These core airports should be developed to their full and appropriate level.

Tier 2 airports complement the essential/critical state airport system and/or respond to local community needs. Focus at these facilities should be on maintaining infrastructure with a lesser emphasis on facility expansion.

Tier 3 airports duplicate services provided by other airports and/or respond to specific needs of individuals and/or small businesses. These facilities are secondary to meeting the overall state system goals and only receive minimal safety enhancements such as runway cones and wind socks.

Airport Service Areas

The value of aviation facilities is related to its proximity to population centers, business centers, tourism/convention centers, and other aviation related traffic generators. The closer an airport is located to these areas, the greater its value as a transportation resource. Beyond certain travel thresholds, airports may have a reduced transportation value.

The analytical tool used in alternative development and analysis within *MASP 2000* utilizes the Statewide Travel Demand Model used historically for highway analysis within Michigan. This model divides the state into 2,307 Transportation Analysis Zones (TAZ), each generally a township or smaller in size. Each of these zones has a variety of socio-economic data assigned to it including current and forecasted population, employment, etc. Each travel analysis zone is connected to all other zones using the actual highway network with appropriate speeds and travel times. This permits an analysis of

travel time between all zones.

Early in the *MASP 2000* development all of the public use airports were inserted into the Statewide Model Network. This entailed locating the airports in system, attaching physical and operational characteristics to them, and building a link to the highway network. This enabled planning professionals to evaluate alternative system plan goals utilizing Geographic Information System (GIS) technology..