Chapter 2. Phase I Validation and Framework

2.1. Introduction

The Minnesota Department of Transportation, Office of Aeronautics (MnDOT Aeronautics) conducted the 2022 Minnesota Aviation System Plan (MnSASP or 2022 MnSASP) in two phases. Phase I was primarily designed to identify those trends and issues most relevant to Minnesota's aviation stakeholders and establish the framework to assess system performance. Phase II implemented that framework. This included a comprehensive data collection process and assessment of the system's ability to meet the needs of current and potential future aviation demands. Phase II also provided an in-depth evaluation of key policies affecting aviation in Minnesota and develops a plan for continuous performance monitoring over time.

This chapter provides an overview and assessment of the MnSASP framework developed during Phase I. Each of the Phase I deliverables was evaluated in terms of continued alignment with the current needs of MnDOT Aeronautics, Minnesota airports, and state and federal requirements. The MnSASP Phase II planning team closely considered the framework developed during Phase I. In this way, this Phase I validation serves as the architecture for all other MnSASP Phase II tasks. In some cases, recommendations were made to enhance the MnSASP's ability to assess and provide guidance for current and future system development. MnDOT Aeronautics reviewed and confirmed all suggested revisions offered during this Phase II validation.

The Phase I outcomes evaluated in this chapter are as follows:

- Airport Classifications (Section 2.2.1)
- Objectives and Strategies (Section 2.3.1)
- Airport Metrics (Section 2.3.2)
- System Metrics (Section 2.3.3)

Additionally, this chapter summarizes the review of MnDOT Aeronautics' existing environmental justice (EJ) methodology and tool (Section 2.4). Recommendations have been developed to improve the implementation of this tool during airport planning and development projects throughout Minnesota. A step-by-step EJ Analysis Tool Update Guide was also developed as part of the 2022 MnSASP. This document is for internal MnDOT Aeronautics purposes only and was not distributed in conjunction with the other plan deliverables.

All airport-specific tables included in this chapter are provided in Section 2.6 to maintain the flow of the narrative, with summaries and statewide-level reporting provided within the text.

2.2. Minnesota State Aviation System Airports

The Minnesota state aviation system is composed of 133 publicly owned, public-use airports eligible to receive grants through the State Airport Fund. The system is officially designated by the Commissioner of Transportation and approved by the Governor. [1] The Minnesota state aviation system airports within the scope of Phase II of the MnSASP are listed in Table 2.45 of Section 2.6. Individual Airport Tables. It is important to note that Phase I recognized 135 system airports. Since that time, Silver Bay Municipal (BFW) and Murdock Municipal (23Y) airports closed and thus removed from the Minnesota state aviation system.

2.2.1. AIRPORT CLASSIFICATIONS

Each of the 133 airports within the Minnesota state system serves a unique role within the aviation community, driven by available facilities, geographic service areas, the most common types of activities supported, and other factors that contribute to their development and functionalities. The classification of airports is a fundamental component of the system planning process. This step helps align recommended facilities and services at each airport with the type and frequency of activities it typically supports. Further, by planning at the system level, each airport can effectively support a sub-set of activities, with the statewide system of airports accommodating all aviation-related needs.

This section of the Phase I validation presents the current classifications of Minnesota's 133 system airports at federal and state levels, as well as highlights the ways in which these classifications are applied during subsequent analyses. An overview of each methodology is presented below, with airport-specific classification tables provided in Section 2.6.

2.2.1.1. Federal Classifications

The Federal Aviation Administration (FAA) is responsible for planning a safe, efficient, and integrated system of airports to support the needs of the civil aviation industry. To accomplish this overarching goal, the FAA identifies all airports deemed critical to the National Airspace System (NAS) in the National Plan of Integrated Airport Systems (NPIAS). The NPIAS categorizes airports in terms of the roles they currently serve in the system, as well as documents the amount and type of airport development projects eligible for federal funding under the Airport Improvement Program (AIP). Approximately 65 percent of all public-use airports in the United States (U.S.) are recognized in the NPIAS, including all commercial service airports and some general aviation (GA) facilities that meet minimum entry criteria and other programmatic requirements.

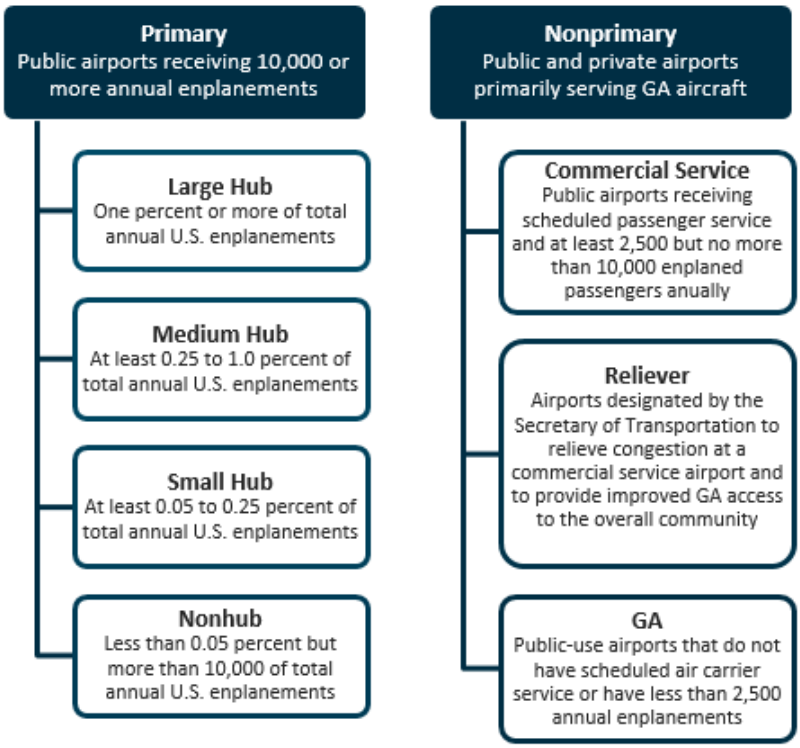
Prepared every two years, the current *NPIAS for Fiscal Year (FY) 2021 – 2025* (*NPIAS 2021 – 2025*) was published on September 30, 2020. The *NPIAS 2021 – 2025* contains 3,304 existing and six new airports anticipated for construction within the next five years. [2] The report identifies $43.6 billion in AIP-eligible

[1] *MnDOT Aeronautics. (no date [n.d.]). "Funding and Grants." Available online at https://www.dot.state.mn.us/aero/airportdevelopment/fundingandgrants.html.*
[2] *FAA (September 2020). NPIAS 2021 – 2025. Available online at https://www.faa.gov/airports/planning_capacity/npias/ (accessed October 2020) p.5.*

projects between 2021 and 2025, an increase of $8.5 billion (24 percent) from just two years ago.[3] Airports in the NPIAS fulfill diverse roles within the NAS, including transporting goods and cargo; serving agricultural, emergency preparedness, and other specific needs; offering access and mobility to remote communities; and supporting manufacturing and other commercial functions.

As shown in Figure 2.1, the FAA categorizes airports as Primary or Nonprimary, defined in terms of whether they have service from a scheduled air carrier and receive at least 10,000 annual enplanements.[4] Primary airports are further subcategorized as Large Hub, Medium Hub, Small Hub, and Nonhub based on percent of annual U.S. enplanements. Nonprimary airports are subcategorized as Commercial Service, Reliever, and GA. Figure 2.1 depicts NPIAS classifications and provides a definition for each associated category.

Figure 2.1. NPIAS Classifications by Category



Sources: FAA NPIAS 2021 – 2025 (Appendix C); Kimley-Horn, 2020

Mainly used by GA aircraft, Nonprimary airports represent a small portion of total U.S. operations but are often critical in meeting local and regional aviation needs. Nonprimary airports are further grouped into five roles to more clearly indicate their functions within the system. The FAA's Nonprimary airport roles are defined in Table 2.1.[5]

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[3] *Ibid. p.1.*
[4] *Enplanements are defined as revenue-paying passengers boarding an aircraft.*
[5] *Role criteria are defined in NPIAS 2021 – 2025, Appendix C: Statutory and Policy Definitions, Data Sources, and NPIAS Process. Available online at https://www.faa.gov/sites/faa.gov/files/airports/planning_capacity/npias/current/NPIAS-2021-2025-Appendix-A.pdf.*

Table 2.1. Nonprimary Airport Roles

Nonprimary Role	Role in the System
National	Support the national airport system by providing communities access to national and international markets in multiple states and throughout the U.S. National airports have very high levels of aviation activity with many jets and multiengine propeller aircraft.
Regional	Support regional economies by connecting communities to regional and national markets. They are generally located in metropolitan areas and serve relatively large populations. Regional airports have high levels of activity with some jets and multiengine propeller aircraft. The metropolitan areas in which regional airports are located can be Metropolitan Statistical Areas with an urban core population of at least 50,000 or Micropolitan Statistical Areas with a core urban population between 10,000 and 50,000.
Local	Supplement local communities by providing access to markets within a state or immediate region. Local airports are most often located near larger population centers, but not necessarily in metropolitan or micropolitan areas. Most of the flying at local airports is by piston aircraft in support of business and personal needs. These airports typically accommodate flight training, emergency services, and charter passenger service.
Basic	Provide a means for general aviation flying and link the community to the national airport system. These airports support general aviation activities such as emergency response, air ambulance service, flight training, and personal flying. Most of the flying at basic airports is self-piloted for business and personal reasons using propeller-driven aircraft. They often fulfill their role with a single runway or helipad and minimal infrastructure.
Unclassified	Currently in the NPIAS but with limited activity. If the next review of an unclassified airport's activity shows levels that meet the criteria for one of the classifications, the airport will be reclassified in the next published NPIAS.

Source: FAA NPIAS 2021 – 2025 (Appendix C)

Minnesota has 97 airports identified in the *NPIAS 2021 – 2025*, including Silver Bay Municipal (BFW). The airport is now closed and will be removed from the next report iteration. The number of Minnesota airports by NPIAS Primary category and Nonprimary role is provided in Table 2.2. The state has three unclassified airports including Ortonville Municipal-Martinson Field (VVV), Springfield Municipal (D42), and Wheaton Municipal (ETF). Table 2.46 at the end of this chapter provides a listing of NPIAS airports by Primary category and Nonprimary role (as applicable).

Table 2.2. Number of Minnesota Airports by NPIAS Category and Role

Primary Category	No. of MN Airports	Nonprimary Role	No. of MN Airports
Large	1	National	3
Medium	0	Regional	9
Small	0	Local	51
Nonhub	7	Basic	23
Total	8	Unclassified	3
		Total	89*

Note: This includes Silver Bay Municipal, which has since closed and will be removed from the next NPIAS report.
Source: FAA NPIAS 2021 – 2025

Figure 2.2 depicts the 96 NPIAS airports in the Minnesota state aviation system by category and role. Silver Bay Municipal Airport is not depicted because it is no longer in the state system.

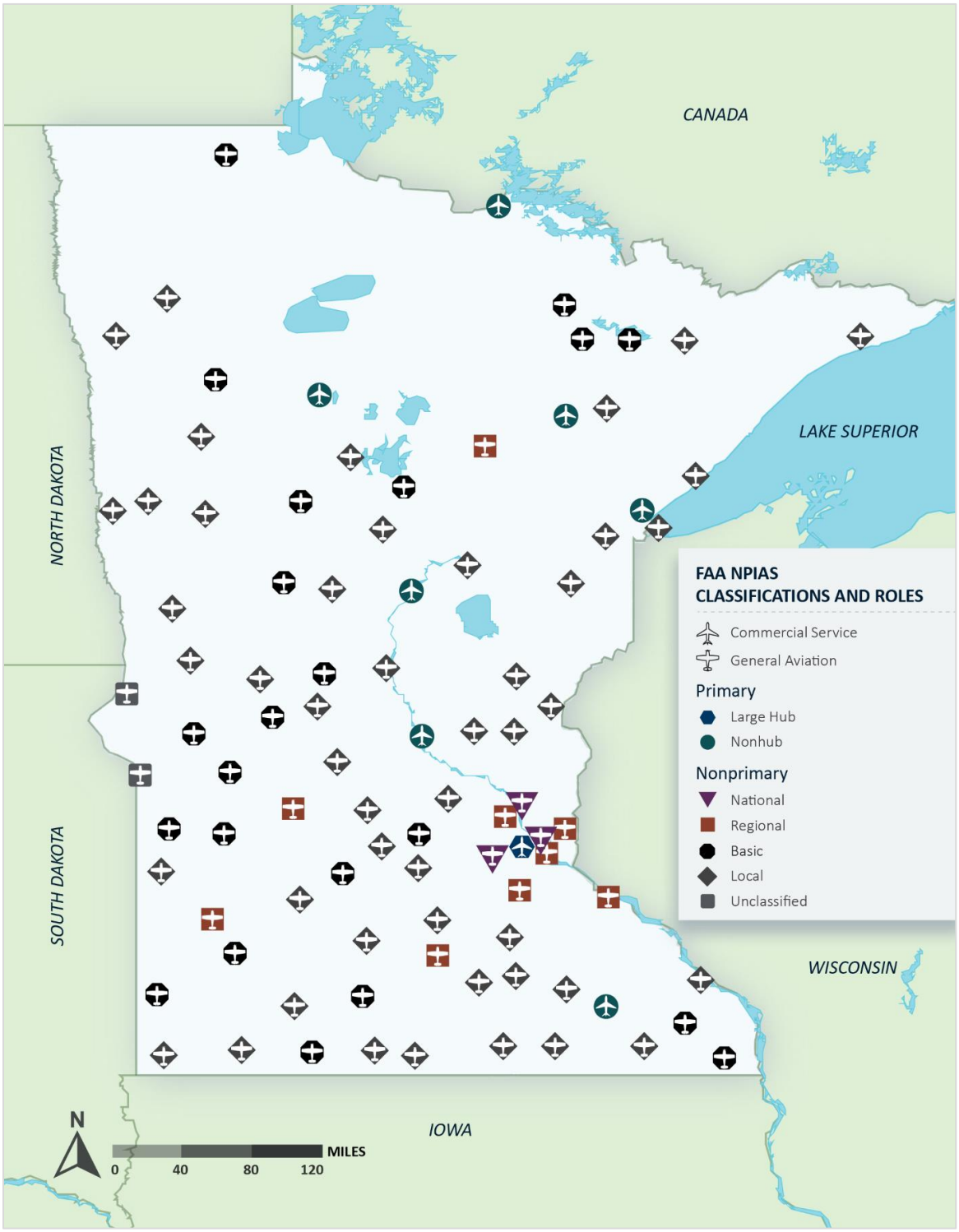


Figure 2.2. Minnesota Airports by NPIAS Category and Role

Source: FAA NPIAS 2021 – 2025

2.2.1.2. State Classifications

Airports are also classified at the state level to define their functions within local, regional, and statewide spheres. Minnesota Statutes Chapter 630.305 (Subdivision 2) requires airports have a classification designation before the airports can receive state investment into airport projects. The state system of airports is composed of 133 publicly owned, public-use airports, including 96 NPIAS airports and 37 non-NPIAS airports. While these non-NPIAS facilities are not considered critical to the NAS, they often provide valuable services within their communities in terms of economic support and quality of life. This may include access to remote communities, business/corporate aviation, emergency preparedness and disaster response, medical flights, and agricultural services.

Phase I updated the previous state classification methodology, which was first established in 1974 and most recently confirmed in the previous 2012 MnSASP. The Phase I plan conducted a series of outreach meetings to obtain feedback from MnDOT Aeronautics and the system plan advisory and technical advisory committees. An Aviation Consultant Community Workshop was also conducted. Meeting participants indicated that the existing state classification methodology inadequately described the functions of airports within the system. Additionally, stakeholders stated that the existing methodology did not easily allow for the inclusion of seaplane bases.[6] Although no seaplane bases without a collocated turf or paved runway are currently in the system, they may be included in the future and should be properly identified within the classification methodology.

As such, Phase I subdivided the previous airport classifications as shown in Table 2.3. The updated Phase I classification methodology primarily organizes airports in terms of Part 139 certifications, primary runway length, and surface type and defines facilities in terms of the types of aircraft and aviation functions typically supported.

Table 2.3. Minnesota State Classification Definitions

Previous Classifications (1974 – 2012)	Phase I Classifications (2019)	Criteria	Types of Aircraft Primarily Supported	Primary Functions and Users
Key	Key Commercial Service	Part 139 certificate and paved runway ≥4,900 feet	Commercial and GA jets	Same functions as key GA airports and regular airline service
	Key General Aviation	Paved runway ≥4,900 feet	Most business jets, all single-engine aircraft, and larger multiengine aircraft	Primary landing facilities for GA jets that serve business and air freight activity

[6] The Minnesota state airport system does not currently include seaplane bases that do not have a collocated turf or paved runway. Phase I recommended that in the future the state consider including seaplane bases without a collocated turf or paved runway in the state system. Minnesota currently has 11 publicly owned seaplane bases. These airports would need to be officially designated by the Commissioner of Transportation and approved by the Governor for inclusion in the state system (Minnesota Statutes, Chapter 360). State statute allows no more than 195 airports to be in the state airport system.

Previous Classifications (1974 – 2012)	Phase I Classifications (2019)	Criteria	Types of Aircraft Primarily Supported	Primary Functions and Users
Intermediate	Intermediate Large	Paved and lighted runway ≥3,800 feet and <4,900 feet	Small aircraft with approach speeds of greater than 50 knots and 10 or more passenger seats	Recreational flights, flight training, emergency medical transports, business flights, agricultural flights, cargo distribution, and other GA uses
	Intermediate Small	Paved runway <3,800 feet	Small single and multiengine aircraft with less than 10 passenger seats	Recreational flights, flight training, emergency medical transport, business flights, agricultural flights, and other GA uses
Landing Strip	Landing Strip Turf	Unpaved turf runway of any length	Single-engine aircraft and some multiengine aircraft	Agricultural activities such as crop seeding and spraying services and recreational GA uses
	Landing Strip Seaplane Base*	Water runway	Single-engine and multiengine seaplanes	Recreational use and access to remote areas only accessible by seaplane

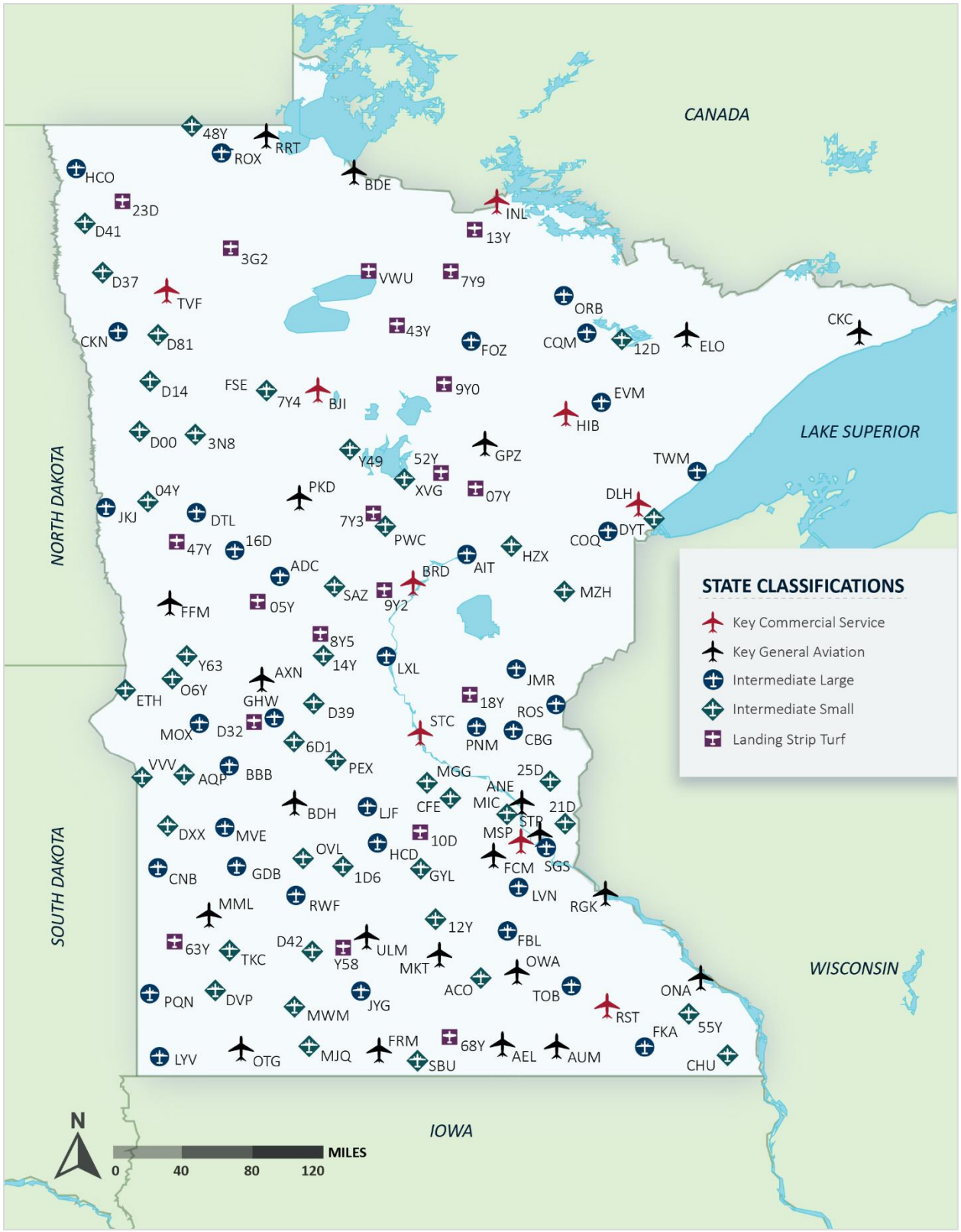
**Note: Seaplane bases are not included in the 2020 state aviation system. MnDOT reports that the state is home to 11 publicly owned seaplane facilities. Source: MnSASP Phase I, 2019*

MnSASP Phase II applied the methodology defined in Phase I to classify Minnesota's 133 state system airports. Runway and Part 139 certification data were obtained from the FAA's Airport Data and Information Portal (ADIP) (accessed November 2020). The total number of Minnesota system airports by classification is provided in **Table 2.4**. Airports by state classification are depicted in **Figure 2.3** and listed by state classification in **Table 2.47** at the end of this chapter.

Table 2.4. Number of Minnesota Airports by State Classification

State Classifications	No. of MN Airports	Example AirportS
Key Commercial Service	9	Bemidji Regional Airport (BJI) Duluth International Airport (DLH)
Key General Aviation	24	Fairmont Municipal Airport (FRM) New Ulm Municipal Airport (ULM) Red Wing Regional Airport (RGK)
Intermediate Large	36	Cook Municipal Airport (CQM) Hallock Municipal Airport (HCO) Pipestone Municipal Airport (PQN)
Intermediate Small	43	Buffalo Municipal Airport (BFE) Forest Lake Airport (25D) Minneapolis Crystal Airport (MIC)
Landing Strip Turf	20	Pelican Rapids Municipal Airport (47Y) Sleepy Eye Municipal Airport (Y58) Starbuck Municipal Airport (D32)
Total	133	NA

Figure 2.3. Minnesota State Aviation System by Classification



Sources: MnSASP Phase I, 2019; FAA ADIP, 2020; Kimley-Horn, 2020

2.2.1.3. Phase II Applications

Because airport classifications provide a mechanism for planning airports in alignment with the aviation functions and users most typically supported, they have widespread applicability in Phase II. The Airport Metrics discussed in Section 2.3.2 are established by state airport classification (see Table 2.5). As such, airport performance is evaluated in terms of achieving classification-specific targets. MnDOT Aeronautics could choose to prioritize state funding by classification to close any performance gaps identified during this process.

In addition to the fundamental role that classifications play in ensuring airports can optimally support the needs of all aviation users, policy recommendations may be established by state and/or federal classifications. Classifications play the most important role in the operations and forecasting task documented in Chapter 3. The 2022 MnSASP only projected future aircraft operations at non-towered GA facilities. The preferred methodology applied a different growth rate by state airport classification to most effectively align drivers of aviation demand with operational activity levels.

2.3. System Performance Framework

Airport classifications play an important role in assessing the system's ability to meet current and potential future aviation-related needs in Minnesota. The system performance framework identifies what those specific needs are, as well as provides the mechanisms by which performance is measured and tracked over time. The framework is composed of multiple interrelated elements as depicted in Figure 2.4.

Figure 2.4. MnSASP System Performance Framework

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

A vision statement is a strategic goal that clearly and concisely articulates an organization's aspirations for its future. Visions communicate purpose and intent and serve as an important strategic decision-making tool. Defined during the 2012 MnSASP and confirmed during Phase I of the 2022 MnSASP, Minnesota's vision for aviation is as follows:

Minnesota's aviation system will enable safe, fast, and reliable air transportation for the citizens and businesses of Minnesota through partnership and innovation.

Based on this vision, objectives and strategies provide specific definitions of what an aviation system looks like in actionable terms to meet the vision. Objectives and strategies offer guidance and direction: a tangible means by which the aviation vision can be advanced. Finally, metrics directly relate to measuring the system's and airports' performance in meeting specific strategies. Metrics are categorized by "measures" and "indicators." Measures are items that MnDOT Aeronautics or airports can influence through funding, policy changes, or other action. Indicators are informational—they are used to monitor progress but can neither be controlled nor influenced with a specific action. The MnSASP system performance framework provides a direct link between what MnDOT Aeronautics is trying to achieve at the systemwide level and the specific targets airports should meet to realize that aspiration.

In the following sections, each element of the system performance framework as developed/confirmed during Phase I is evaluated. In some cases, elements have been recommended for modification or deletion to enhance the framework's alignment with the current needs of MnDOT Aeronautics and/or airports. These sections also highlight the ways each element is applied during the Phase II analyses.

2.3.1. VISION, OBJECTIVES, AND STRATEGIES

Minnesota's aviation vision was developed during the 2012 MnSASP to describe the desired future air transportation system in the state. The development of the vision entailed extensive stakeholder engagement and was designed to advance Minnesota GO's 50-year vision as well as align with the 2022 Statewide Multimodal Transportation Plan. As such, the 2022 MnSASP maintains this aviation vision without modification.

Phase I identified five objectives and 17 strategies to provide guidance on how MnDOT Aeronautics can advance its vision. Objectives were adopted from the 2017 Statewide Multimodal Transportation Plan (SMTP) and replaced the "goals" developed during the 2012 MnSASP. Phase I also consolidated many of the strategies developed during the 2012 MnSASP (31 in 2012 to 17 in 2022). This consolidation allows MnDOT Aeronautics to focus on those elements most critical to system performance. Other strategies were modified to allow for greater flexibility during implementation.

It is important to note that Phase I was completed before the SMTP was updated in 2022. Phase II of the MnSASP adopted the 2022 SMTP updates including a new objective (Climate Action). The following subsections summarizes the objectives and strategies identified during Phase I of the 2022 MnSASP and was updated in Phase II to reflect the 2022 SMTP. The table notes any associated system and airport metrics (used to measure progress towards each strategy) and indicates if and how each strategy is carried forward into Phase II. Phase II applicability, purpose, and recommendations are provided for each strategy.

The 2022 MnSASP comprises the following tasks referenced throughout **Section 2.3** (the 2022 MnSASP Technical Report section that documents the outcomes of each task is provided in parathesis):[7]

- Task 4 - Analyze Policy Issues (Chapter 3. Baseline Operations and Forecasting, Chapter 5. Key State Focus Areas, and Attachments 1 - 7)
  - Task 4.1 - Operations Counting and Forecasting
  - Task 4.2 - Through-the-Fence (TTF) Operations
  - Task 4.3 - Hangar Availability and Funding Participation
  - Task 4.4 - Airport Closures
  - Task 4.5 - Crosswind Runway Analysis
  - Task 4.6 - Clear Zone Policy and Ownership
  - Task 4.7 - Last-mile Connectivity
- Task 5 - Validate and Modify Phase I Acquisition Plan (Chapter 2. Phase I Validation)
- Task 6 - Acquire Data (Chapter 4. Systemwide Costs & Implementation Plan
- and Chapter 6. Continuous Aviation Planning)
- Task 7 - Develop Data Management Plan (Chapter 6. Continuous Aviation Planning)
- Task 8 - Database and Display Dashboard (Chapter 6. Continuous Aviation Planning and the MnSASP Hub at mnsasp-mndot.hub.arcgis.com)
- Task 9 - Conduct Public Involvement (Appendix B. Public Involvement)
- Task 10 - Develop Implementation Plan (Chapter 4. Systemwide Costs & Implementation Plan, Attachments 1 – 7, Appendix E. Implementation Plan)
  - Task 10.1 - Investment Plan
  - Task 10.2 - Policy Plan
  - Task 10.3 - Action (Work) Plan
- Task 11 - Public and Produce the MnSASP Document (2022 MnSASP Technical Report, Executive Summary, Overview Primer, Key State Focus Areas Primer)
- Task 12 - Navigational Aids (NAVAIDs) Plan (Appendix C. Minnesota NAVAIDs)
- Task 13 - Drones and Advanced Air Mobility (AAM, Appendix B. Public Involvement)

2.3.1.1. Objective 1: Transportation Safety

Safeguard aviation users as well as the communities the system travels by applying proven strategies to reduce fatalities and serious injuries for aviation. Foster a culture of aviation safety in Minnesota.

[7] Task 1 through 3 generally address project management and plan design, as well as the topics addressed in this chapter (Phase I Validation, also covered in Task 5). For more information about the Phase I and II components of the MnSASP, see Chapter 1. Introduction and Design. Additionally, the names indicated in the bulleted list refer to the task names identified in the scope of work. Some nomenclature was updated to more clearly indicate the topics covered but the intent of the tasks remained unchanged (e.g., the Display Dashboard identified by Task 8 was renamed the "MnSASP Hub" during project implementation. The policy issues in Task 4 are now referred to as "key state focus areas," with minor title changes in nearly all subtopics addressed in Task 4.1 through 4.7).

Strategy 1: Approach Airspace Obstructions

Obstructions within an airport's approach airspace presents a safety risk towards aircraft operations and may force the instrument approach minimums to be raised. There are several system metrics associated with this strategy: Adequate Approaches to Airports, Airport Surfaces Clear of Obstructions, Adequate Safety Zoning Ordinances, Aviation Related Accidents, Aviation Fatalities. There are several airport metrics associated with this strategy: Primary Runway Approaches, Airport Surfaces, Airport Zoning, Minimum Standards.

This strategy will proceed into Phase II. Airspace obstructions represent a significant hazard to pilots and passengers in the air as well as people and property on the ground. The Clear Zone Policy and Ownership analysis (Task 4.6) maps all FAA Part 77 approach surfaces, which can be used to identify natural and manmade objects that exceed federal height restrictions. FAA 5010 Master Records will also be reviewed to obtain data regarding displaced thresholds and close-in-obstructions. Airports located in jurisdictions with airport compatible land use zoning and with clear zones depicted on their Airport Layout Plans (ALP) were also identified during the airport inventory process.

Strategy 2: Clear Zone Policy

Obstructions within the clear zones beyond airport runways are hazardous towards aircraft operations, people and property within the runway approach area. There are several system metrics associated with this strategy: Adequate Approaches to Airports, Airport Surfaces Clear of Obstructions, Aviation Related Accidents, Aviation Fatalities. There are several airport metrics associated with this strategy: Primary Runway Approaches, Airport Surfaces, Clear Zone Ownership.

This strategy will proceed into Phase II. Clear zones have been established by MnDOT to protect life and property in runway approach areas. This policy is comprehensively evaluated during the Clear Zone Policy and Ownership analysis (Task 4.6).

Strategy 3: Safety Initiatives

Educational initiatives and workshops of the hazards towards transportation safety help to increase the promotion of safety throughout the Minnesota transportation system.

This strategy will proceed into Phase II. As often said in the aviation world, "safety first." All policies and recommendations developed during the MnSASP will be designed to uphold the highest level for all aviation users as well as people and property on the ground. The educational tools developed as part of the Clear Zone Policy and Ownership analysis (Task 4.6) will be specifically designed to enhance users' knowledge about and understanding of a land acquisition policy intended to enhance the safety of aircraft operations and people and property on the ground. The executive summary and audience-specific primers developed as part of the Publish and Produce the MnSASP Document (Task 11) will likely include information regarding aviation safety. The MnSASP Hub (Task 8) also includes metrics regarding safety incidents recorded at airports such as runway incursions and aviation-related fatalities. Additionally, the Drone and AAM task (Task 13) presents an opportunity to educate AAV users and airports about their responsibilities associated with this transformative technology.

2.3.1.2. Objective 2: System Stewardship

Strategically build, manage, maintain, and operate all transportation assets using system data analysis, performance measures and targets, and achieving stakeholder needs.

Strategy 1: Technology Use

MnDOT Aeronautics should explore ways to integrate technology into existing asset management techniques to better maintain the airport system. There are two system metrics associated with this strategy: Pavement Condition Index (PCI), Adequate Arrival/Departure Terminal Building. There are two airport metrics associated with this strategy: Based Aircraft, Airport Operations.

This strategy will proceed into Phase II. Asset management refers to the ongoing tracking and monitoring of physical property and systems owned or managed by MnDOT Aeronautics or airport sponsors. A coordinated asset management approach supports funding and investment decisions, extends asset life, reduces downtime, achieves better control over performance, and reduces lifecycle costs. The MnSASP Hub (Task 8) is a key element in MnDOT's asset management strategy. The airport inventory process included as part of the Acquire Data task (Task 6) provides MnDOT Aeronautics with baseline data to be integrated into this system.

Strategy 2: Airport System Workforce Promotion

The use of marketing, education, and outreach will help increase the system user base and workforce to build resiliency within the airport system. There is one system metric associated with this strategy: Licensed Pilots. There is one airport metric associated with this strategy: Certified Pilots within 30 miles of an Airport.

This strategy will be modified for Phase II. This strategy is not explicitly addressed in Phase II of the MnSASP. However, it is recognized that cultivating interest in aviation helps ensure a pipeline of new talent entering the workforce, including a stream of pilots entering the field. MnDOT Aeronautics and airports can employ several marketing, outreach, and educational strategies to promote aviation. Information regarding airports' outreach and educational efforts is obtained during the airport inventory process. The FAA also maintains a database of all aviation-related training programs in the U.S. (including air traffic control, Part 65 Aircraft Dispatcher Certification, maintenance schools, and pilot schools).

Strategy 3: Right-sizing the System

MnDOT should reorient system investment and infrastructure through right sizing (i.e., consolidating services and investment). There are several system metrics associated with this strategy: PCI, Up-to-Date Planning Documents, Adequate Arrival/Departure Terminal Building, Registered Aircraft. There are several airport metrics associated with this strategy: Based Aircraft, Primary Runway Width, Runway Lighting, Parallel Taxiway, Navigation Systems, Weather Reporting, Aircraft Parking, Automobile Parking, Fencing, Fuel, Transient Aircraft Storage, ALPs.

This strategy will proceed into Phase II. Right-sizing an airport refers to the alignment of the services and facilities provided with current aviation demands at that facility. This same concept can also be applied at the system level. When planned as a system, each airport needs only to support a sub-set of specific aviation activities. The system as a whole provides adequate and equitable access to aviation services for

residents, visitors, and businesses across the state while minimizing duplication of services. As such, the MnSASP inherently supports the right-sizing of Minnesota's airport system. On a more specific level, the classification-specific airport metrics provide facility and service recommendations aligned with the type and frequency of aviation activities that typically occur within that classification. The Airport Closure analysis (Task 4.4) looks specifically at airport closures and entry into the state system. This task provides a framework for evaluating airport closures and system entry in terms of impacts to the system – including nearby communities that may rely on a facility for "quality of life" aviation activities. Sound resource allocation and project prioritization is addressed in the Policy Plan (Task 10.2).

Strategy 4: Airport Self-Sufficiency

MnDOT Aeronautics should support the ability of airports to be financially self-sufficient rather than relying on existing federal/state funding. There are two system metrics associated with this strategy: PCI, Registered Aircraft. There are several airport metrics associated with this strategy: Fuel, Courtesy Car/Rental Car, Transient Aircraft Storage, ALPs.

This strategy will be modified for Phase II. Airport self-sufficiency is the ability of an airport to operate without additional contributions from the airport sponsor (from the general fund or other source) or third-party source. Airport revenue typically comes from rents and leases of property and facilities, as well as user fees, fuel flowage fees, and sales of goods and services provided by the airport. Specifically, hangar leases often provide an important source of revenue for airports, although many airports cannot access sufficient funds for new hangar development. This issue is addressed in the Hangar Availability and Funding Participation analysis (Task 4.3). The MnSASP airport inventory is obtaining data regarding rates and charges assessed by each facility. It is further recommended that revenue generation, diversification, and self-sufficiency be included in the Action (Work) Plan (Task 10.3) as a topic for further investigation.

2.3.1.3. Objective 3: Climate Action

Advance a sustainable and resilient transportation system, enhance transportation options and technology to reduce greenhouse gas emissions, and adapt Minnesota’s transportation system to a changing climate.

Following completion of Phase I, Climate Action was added as a new objective to the SMTP. Phase II of the MnSASP incorporates this new objective along with any other updates to the SMTP published in 2022. As the SMTP was updated after completion of Phase I, no strategies were developed for Climate Action.

2.3.1.4. Objective 4: Critical Connections

Maintain and improve multimodal transportation connections essential for Minnesotans’ prosperity and quality of life, strategically consider new connections that help meet performance targets and maximize social, economic and environmental benefits.

Strategy 1: Last-mile Connections

Last-mile connections allow airport users to reach their final destinations from the airport via non-aviation modes. This can include rental cars, courtesy cars, public transit, shuttles, etc. There is one system metric associated with this strategy: Courtesy and Rental Cars. There are several airport metrics associated with this strategy: Automobile Parking, Courtesy Car/Rental Car, Minimum Standards.

This strategy will proceed into Phase II. Last-mile connectivity refers to the ability of an airport user to leave airport property and reach their final destinations. This ground connectivity helps the airport bolster economic activity in surrounding areas, as visitors can spend money at local restaurants, hotels, retail establishments, and other sectors within the hospitality industry. Many airports facilitate the movement of visitors by providing a courtesy car; other options include public transit, transportation network companies (TNCs), rental cars, and shuttle service. The Last-mile Connection Opportunity analysis (Task 4.7) offers information regarding the state of last-mile connectivity between Minnesota airports and surrounding communities. State policy guidance addressing courtesy cars is also provided. This information can be disseminated in the outreach materials developed in Task 11.

Strategy 2: Awareness and Promotion

MnDOT Aeronautics and airports should collaborate with state and local tourism entities to promote the use of the Minnesota aviation system throughout the state. There are several system metrics associated with this strategy: Population Access to an Airline Service Airport, Courtesy and Rental Cars, Licensed Pilots, Registered Aircraft. There are two airport metrics associated with this strategy: Courtesy Car/Rental Car, Certified Pilots within 30 miles of an Airport.

This strategy will not proceed into Phase II. Phase II of the MnSASP does not include a specific analysis focusing on the use of Minnesota airports as gateways to exploring the state. The implementation of this strategy is difficult to measure, as it is not feasible to assess if travelers utilize Minnesota airports because of a MnDOT initiative (i.e., collaboration with state and local tourism entities) or if they would have done so regardless of MnDOT action. While "collaboration" itself can be measured (e.g., number of meetings with state and local tourism entities), the outcomes of that collaboration are significantly more difficult to quantitatively assess, particularly at the statewide level. Additionally, it is assumed that most travelers who visit locations across Minnesota move by ground transportation because of a barrier to air service (e.g., cost, access to ground transportation upon arrival, etc.), as most travelers prefer air travel when other variables are equal. Hence, it is recommended that this strategy be removed for Phase II of the MnSASP.

Strategy 3: Community Connections

MnDOT Aeronautics should support new methods of connecting airports to their associated communities through new transportation modes and/or partnerships. There are several system metrics associated with this strategy: Emergency Medical Response, Population Access to an Airline Service Airport, Courtesy and Rental Cars. There are two airport metrics associated with this strategy: Automobile Parking, Courtesy Car/Rental Car.

This strategy will be modified for Phase II. Transportation technologies and travel choices and behaviors have evolved over the past decade. Automobiles are more advanced and comfortable, and semi-autonomous functions are already entering the market (e.g., vehicles can automatically detect impending collisions or dangerous driving behaviors). Younger generations are showing less affinity for private car ownership, often preferring to rely on TNCs or other modal options to move between destinations. These and other transportation trends affect the long-term planning efforts of other modal types and may be reflected in local/regional comprehensive or transportation plans. As such, Phase II recommends modifying this strategy to assess the number of airports that are included in local/regional planning

efforts. The relationship between aviation and other modes in the context of evolving transportation technologies and trends may also be considered as an additional study as documented in the Action (Work) Plan (Task 10.3).

Additionally, the system indicator of emergency medical response is recommended for modification. Phase II of the MnSASP posed questions that are unable to be answered within the scope of the plan. These questions are as follows: (1) Ability of the existing weather reporting system to adequately serve the aeromedical needs of the state. (2) Average response time for aeromedical service by region. Approximating answers to these questions would require extensive outreach to state hospitals, air medical flyers, and likely other stakeholders generally beyond the data collection efforts of the 2022 MnSASP. Instead, the Phase II recommends modifying this indicator to assess the percent of system airports that support air medical operations.

Strategy 4: Transportation Infrastructure Investment

MnDOT should increase transportation investment that aims to support net-positive economic opportunities throughout the Minnesota economy. There is one system metric associated with this strategy: Economic Impact. There are two airport metrics associated with this strategy: Courtesy Car/Rental Car and Available Services.

This strategy will proceed into Phase II. Airports can be significant engines of economic activity within communities. Many airports host aeronautical- and non-aeronautical-related tenants who employ workers. On-airport workers, including those hired directly by the airport sponsor, spend their wages within their communities on retail purchases, living expenses, educational costs, and countless other expenses, which generate additional economic impacts within local regions and statewide. Airports also conduct large-scale capital improvement projects, which generate economic impacts in terms of temporary construction jobs and the purchasing of construction supplies. These are just a few examples of how airports support the economic vitality, diversity, and strength of Minnesota communities. Airports and MnDOT can take actionable steps to support the role of airports as economic engines and enhance the economic opportunities generated by aviation facilities. For example, some states include criteria in their project prioritization methodology to fund improvement projects that have a net-positive economic impact in the state. This and other strategies are evaluated in the Policy Plan analysis (Task 10.2).

2.3.1.5. Objective 5: Healthy Equitable Communities

Foster healthy and vibrant places that reduce disparities and promote healthy outcomes for people, the environment and out economy.

Strategy 1: Airport Zoning Ordinances

MnDOT Aeronautics should support airport sponsor, community, and joint airport zoning board (JAZB) efforts to understand, adopt, and enforce airport zoning ordinances. There are two system metrics associated with this strategy: Adequate Safety Zoning Ordinances, Aviation Fatalities. There are two airport metrics associated with this strategy: Airport Zoning, Minimum Standards.

This strategy will proceed into Phase II. Airport compatible land use zoning and height restrictions are an important element of airport safety and are designed to protect against airspace obstructions, uses that interfere with aircraft flight, and land uses that put people at risk should an incident occur. Land use

compatibility restrictions also help reduce noise and other nuisance complaints that can arise when sensitive land uses such as residential, schools, and churches are located in the vicinity of airports.

MnDOT is recognized as a leader in terms of the proactive role it has taken to support land use compatibility. The state has both a clear zone policy for airports, as well as land use safety zoning standards for communities within airport influence areas. Phase II of the MnSASP furthers the agency's continued support for this critical issue in Clear Zone Policy and Ownership (Task 4.6). This task clarifies and updates existing policies, as well develops a suite of educational tools for airports, planners, and developers. The task also clarifies MnDOT's policies in terms of each party's responsibility in supporting the safe and peaceful coexistence of airports and their neighboring communities. The audience-specific primers developed in Publish and Produce the MnSASP Document task (Task 11.3) also provide the opportunity to educate airports about this important topic.

Strategy 2: Compatible Land Use

Maintain compatible uses near airports through comprehensive planning and zoning efforts. Compatible land uses near airports can help ensure that transportation and the surrounding context improve safety and work together in promoting community, economic, and environmental health while limiting the long-term costs of potential discrepancies.

This strategy will proceed into Phase II. Airports, MnDOT, and local planning officials all have important roles to play in land use compatibility. This strategy addresses the role of the local zoning authority, including airports in comprehensive planning processes and depicting airport safety zones on official zoning maps. In addition to the education materials developed as part of Clear Zone Policy and Ownership analysis (Task 4.6), information about land use zoning is provided in the MnSASP Hub (Task 8) and primer included in the Publish and Produce the MnSASP Document task (Task 11.3).

Strategy 3: Unleaded Aviation Fuel

MnDOT Aeronautics should support the transition towards unleaded aviation fuel to align with the efforts of the FAA and U.S. Environmental Protection Agency (EPA). There is one airport metric associated with this strategy: Fuel.

The environmental and health concerns associated with emissions from piston aircraft fueled with 100LL (100 Low Lead, often referred to as AvGas) have motivated the FAA and EPA to phase out AvGas usage as soon as possible. However, while research is ongoing, an acceptable alternative has not yet been identified. The impacts of phasing out AvGas prior to having clear alternative solutions in-place would pose major challenges to the GA community. Conversely, considerable advances have been made to replace Jet A with sustainable biofuels for use in turbine engines. Phase II of the MnSASP identifies airports that offer or plan to offer sustainable Jet A alternative biofuels. It is further recommended this topic is considered for inclusion in the Action (Work) Plans (Task 10.3).

2.3.1.6. Objective 6: Open Decision-making

Open decision-making is defined as making transportation system decisions through processes that are inclusive, engaging, and supported by data and analysis. It provides for and supports coordination, collaboration, and innovation. It ensures efficient and effective use of resources.

Strategy 1: Outreach and Collaboration

Collaborate and aid aviation stakeholders through education, outreach, and advocacy. There are no system and airport metrics associated with this strategy.

This strategy will proceed into Phase II. Outreach and collaboration has been fundamental to the development of the scope of work for Phase II. That level of commitment continues through the implementation phase of this plan. Most notably, the Focus Area Working Groups (Task 9) provide input on current policy issues affecting Minnesota airports and the aviation system. The MnSASP Hub (Task 8) provides a user-friendly and accessible tool to obtain airport data. Public outreach documents (Task 11), including the executive summary and audience-specific primers, are specifically designed to communicate key plan findings to diverse audiences including airport sponsors, pilots, travelers, aircraft owners, aviation businesses, and other stakeholders. Clear Zone Policy and Ownership (Task 4.6) provides for the development of a suite of education tools related to clear zones.

Strategy 2: Disseminating Airport Activity Information

Explore new means of measuring and communicating airport activity levels. There are two airport metrics associated with this strategy: Based Aircraft and Airport Operations.

This strategy will proceed into Phase II. Tracking operations at non-towered airports is a significant challenge in aviation planning. Available technologies can be inaccurate, expensive to install or maintain, or both. Manual counts require significant personnel time to implement and accounting for seasonal changes in activity levels may be difficult. Accurate operations data are critical during planning efforts conducted by the airport, MnDOT Aeronautics, and the FAA, as this information is one of the most crucial drivers of future airport infrastructure needs. Task 4.1 specifically addresses this issue by identifying proposed methods to track and estimate airport activity levels. This includes a discussion regarding the transformative role that ADS-B may play in the future of airport operations counting and forecasting at non-towered facilities. Additionally, the MnSASP Hub (Task 8) provides an effective platform for communicating airport activity levels. Data can be regularly updated to improve decision-making, increase transparency, and promote understanding of the system's usage and value.

Strategy 3: Review of Funding and Selection Criteria

Continuous evaluation of the project prioritization formula, selection criteria, and funding rates to assess effectiveness and public understanding. There are several airport metrics associated with this strategy: Primary Runway Width, Runway Lighting, Parallel Taxiway, Taxiway Width, Navigational Systems, Weather Reporting, Airport Parking, GA Terminal / Administration Building, Fencing, Minimum Standards.

This strategy will proceed into Phase II. As often said in the aviation world, "safety first." All policies and recommendations developed during the 2022 MnSASP uphold the highest level of safety for all aviation users as well as people and property on the ground. The educational tools developed as part of the Clear Zone Policy and Ownership analysis (Task 4.6) enhance users' knowledge about and understanding of a land acquisition policy intended to enhance the safety of aircraft operations and people and property on the ground. The executive summary and audience-specific primers developed as part of the Publish and Produce the MnSASP Document (Task 11) include information regarding aviation safety. The MnSASP Hub (Task 8) addresses metrics regarding safety incidents recorded at airports such as runway incursions and

aviation-related fatalities. Additionally, the Drone and AAM task (Task 13) presents an opportunity to educate unmanned aerial vehicle (UAV) pilots and airports about their responsibilities associated with this transformative technology.

2.3.2. AIRPORT METRICS

Airport metrics measure progress toward each strategy at the airport level and encompass airport measures and indicators. Measures are actionable items and can be influenced by MnDOT Aeronautics or airport actions. Airport measures comprise facility, service, and administrative items that each classification of airport should provide to optimally support the type and frequency of aviation activities that typically occurs at a given type of airport. Measures provide planning-level guidance for airports regarding how to improve their abilities to serve users and enhance the statewide aviation system. Airports may provide facilities, services, and administrative items that exceed or are below the guidance offered for their classification and still be fulfilling their roles based on local needs and conditions. However, airports that do not achieve measures may negatively impact the efficacy and performance of the statewide system and ultimately the ability of MnDOT Aeronautics to achieve its vision for aviation in the state. It is important to note that these measures do not replace the need for individual airport and project-specific planning efforts. Airports are still required to show project justification to request state or federal funding.

ACRONYMS

The acronyms used in the table are defined as follows:

ALP	Airport Layout Plan
ASOS	Automated Surface Observation System
AWOS	Automated Weather Observation System
HIRLs	High Intensity Runway Lights
LIRLs	Low Intensity Runway Lights
LPV	Localizer Performance with Vertical Guidance
MIRLs	Medium Intensity Runway Lights
MP	Master Plan
NAVAIDs	Navigational Aids
REILs	Runway End Identifier Lights
RDC	Runway Design Code
TDG	Taxiway Design Group
VGSI	Visual Glideslope Indicator

Phase I established 19 airport measures, with specific targets indicated as “required,” “recommended,” and “as needed” by classification (see Table 2.5). These targets were defined based on stakeholder feedback, and no additional recommendations or modifications have been identified during Phase II. As such, the analysis of system performance conducted during Phase II applies the targets as shown (as reported in the Hub and documented in Chapter 4. System Performance and Cost Estimates). Phase I also developed targets for Landing Strip Seaplane Bases should this type of airport be included in the state airport system in the future.

Table 2.6 through Table 2.24 present each of the 19 airport measures identified during Phase I of the MnSASP, including an overview of the measure, category (airport facility/service/administrative item), and description/purpose of each. These tables provide the strategy for the collection, manipulation, and application of each data point during Phase II, as well as any additional insight into how MnDOT Aeronautics can use the data to improve system performance in the future.

Table 2.25 through Table 2.28 address the four airport indicators identified during Phase II. Informational in nature, indicators cannot be directly influenced or controlled by MnDOT Aeronautics or airport actions.

Instead, indicators provide important data points to collect and monitor to help identify trends affecting aviation demand over time. The tables summarize the Phase II plan to collect and apply the data for each indicator.[8] Indicators are not categorized by facility/service/administrative items like airport measures, so they are organized differently in the section below.

It is important to highlight that the information presented in this chapter represents the plan to collect data during the 2022 MnSASP. During the data collection and analysis phases of the study, some of the details changed due to various circumstances, such as data quality, availability, or and other sources factors that arose during implementation. Chapter 6. Continuous Aviation Planning of the 2022 MnSASP provides detailed descriptions of final data sources, manipulation required, and other important information to allow MnDOT Aeronautics to maintain current data over time.

*[8] The actual (i.e., final) data collection methodology is presented in **Chapter 6. Continuous Planning**, including data sources and manipulation. While the plan generally aligned with the actual methodology employed, there were some differences based on data availability, quality, accessibility, and other factors that arose during actual data collection processes.*

Table 2.5. MnSASP Airport Measure Targets by Classification

Metric	Targets by State Classification - Key Commercial Service	Targets by State Classification - Key General Aviation	Targets by State Classification - Intermediate Large	Targets by State Classification - Intermediate Small	Targets by State Classification - Landing Strip Turf
FACILITY METRICS	KEY COMMERCIAL SERVICE Targets	KEY GENERAL AVIATION Targets	INTERMEDIATE LARGE Targets	INTERMEDIATE SMALL Targets	LANDING STRIP TURF Targets
Primary Runway Width	Required: At least 100 feet minimum, corresponding to RDC C-II and B-II with a ½ mile approach procedure and FAA standards for visibility minimums < ¾ mile Recommended: A width of 150 feet is recommended for RDC C-III to accommodate large regional jets	Required: At least 100 feet minimum, corresponding to FAA design standards for RDC C-II and B-II with visibility minimums < ¾ mile to accommodate instrument approaches < ½ mile visibility minimum	Required: At least 60 feet minimum, corresponding to the minimum width of a hard surface runway in Minnesota Administrative Rules Recommended: A width of 75 feet is recommended to align with RDC B-II runways with one-mile visibility minimums	Required: At least 60 feet minimum, corresponding to the minimum width of a hard surface runway in Minnesota Administrative Rules Recommended: A width of 75 feet is recommended to align with RDC B-II runways with one-mile visibility minimums	Required: At least 75 feet minimum, corresponding to the minimum width of turf runway provided in Minnesota Administrative Rules
Runway Lighting	Required: HIRLs	Required: MIRLs Recommended: HIRLs	Required: MIRLs	Required: MIRLs	Required: Edge markers for turf runways without lighting Recommended: LIRLs
Primary Runway Approaches	Required: Precision approach with minimums of ½ mile to at least one primary runway end	Required: Precision approach with minimums of ¾ mile to at least one primary runway end Recommended: Precision approach with minimums of ½ mile to at least one primary runway end	Required: Non-precision instrument approach with one-mile visibility or lower to at least one runway end Recommended: Approaches with vertical guidance (e.g., LPV)	Required: Non-precision instrument approach with one-mile visibility or lower to at least one runway end Recommended: Approaches with vertical guidance (e.g., LPV)	Required: Visual approaches

Metric	Targets by State Classification - Key Commercial Service	Targets by State Classification - Key General Aviation	Targets by State Classification - Intermediate Large	Targets by State Classification - Intermediate Small	Targets by State Classification - Landing Strip Turf
Parallel Taxiway	Required: Full parallel taxiway to align with the requirement of a precision approach with less than one-mile visibility	Required: Full parallel taxiway to align with the requirement of a precision approach with less than one-mile visibility	Required: Full parallel taxiway if the airport has an approach minimum of less than one mile. A partial parallel taxiway is required if the visibility minimums are one mile or greater	Required: Partial parallel taxiway Recommended: Full parallel taxiway	Required: Taxiway connectors Recommended: Partial parallel taxiway
Taxiway Width	Required: At least 35 feet corresponding to TDG 2 Recommended: At least 50 feet corresponding to TDG 3	Required: At least 35 feet corresponding to TDG 2	Required: At least 25 feet corresponding to TDG 1A and 1B aircraft Recommended: At least 35 feet for TDG 2	Required: At least 25 feet corresponding to TDG 1A and 1B aircraft	Required: At least 25 feet corresponding to TDG 1A and 1B aircraft
Navigation Systems	Required: Approach lighting system, REILs, VGSI, beacon, wind cones	Required: Approach lighting system, REILs, VGSI, beacon, wind cones	Required: VGSI, wind cone, rotating beacon	Required: Beacon, wind cone	Required: Wind cone
Weather Reporting	Required: AWOS	Required: AWOS or ASOS	Recommended: AWOS	Recommended: AWOS	Recommended: AWOS as-needed
Aircraft Parking	Required: Tiedowns for at least three more aircraft than are normally parked at the airport	Required: Tiedowns for at least three more aircraft than are normally parked at the airport	Required: Tiedowns for at least three more aircraft than are normally parked at the airport	Required: Tiedowns for at least three more aircraft than are normally parked at the airport	Required: Tiedowns for at least three more aircraft than are normally parked at the airport

Metric	Targets by State Classification - Key Commercial Service	Targets by State Classification - Key General Aviation	Targets by State Classification - Intermediate Large	Targets by State Classification - Intermediate Small	Targets by State Classification - Landing Strip Turf
GA Terminal / Admin Bldg.	Required: GA terminal with a phone and restroom	Required: GA terminal with a phone and restroom	Required: GA terminal with a phone and restroom	Required: GA terminal with a phone and restrooms	Required: Phone and restroom Recommended: GA terminal with a phone and restroom
Auto Parking	Required: Adequate parking as determined at the local level	Required: Adequate parking as determined at the local level	Required: Adequate parking as determined at the local level	Required: Adequate parking as determined at the local level	Required: Adequate parking as determined at the local level
Fencing	Required: Full perimeter fencing per Part 139 certification Recommended: Fencing height of 10-12 feet with three strands of barbed wire per FAA CertAlert 04-16	Required: Controlled vehicle access As-needed: Full perimeter and wildlife fencing as determined at the local level	Required: Controlled vehicle access As-needed: Full perimeter and wildlife fencing as determined at the local level	As-needed: Controlled vehicle access and full perimeter and wildlife fencing as determined at the local level	As-needed: Controlled vehicle access and full perimeter and wildlife fencing as determined at the local level
Airport Surfaces	Required: All airport surfaces must be clear of obstructions	Required: All airport surfaces must be clear of obstructions	Required: All airport surfaces must be clear of obstructions	Required: All airport surfaces must be clear of obstructions	Required: All airport surfaces must be clear of obstructions
SERVICE METRICS	KEY COMMERCIAL SERVICE Targets	KEY GENERAL AVIATION Targets	INTERMEDIATE LARGE Targets	INTERMEDIATE SMALL Targets	LANDING STRIP TURF Targets
Fuel	Recommended: 100LL and Jet A fuel	Recommended: 100LL and Jet A fuel	Recommended: 100LL As-needed: Jet A	Recommended: 100LL As-needed: Jet A	As-needed: 100LL

Metric	Targets by State Classification - Key Commercial Service	Targets by State Classification - Key General Aviation	Targets by State Classification - Intermediate Large	Targets by State Classification - Intermediate Small	Targets by State Classification - Landing Strip Turf
Courtesy / Rental Cars	Recommended: Rental and courtesy cars	Recommended: Rental and courtesy cars	Recommended: Courtesy cars	Recommended: Courtesy cars	As-needed: Courtesy cars
Transient Aircraft Storage	Recommended: Heated transient storage	Recommended: Heated transient storage	As-needed: Transient storage	As-needed: Transient storage	As-needed: Transient storage
ADMIN. METRICS	KEY COMMERCIAL SERVICE Targets	KEY GENERAL AVIATION Targets	INTERMEDIATE LARGE Targets	INTERMEDIATE SMALL Targets	LANDING STRIP TURF Targets
ALPs/ MP	Required: ALP and MP updates at least every 10 years	Required: ALP and MP updates at least every 10 years	Required: ALP and MP updates at least every 15 years	Required: ALP and MP updates at least every 15 years	Required: ALP updates as-needed
Airport Zoni	Required: Adequate airport zoning (per state law)	Required: Adequate airport zoning (per state law)	Required: Adequate airport zoning (per state law)	Required: Adequate airport zoning (per state law)	Required: Adequate airport zoning (per state law)
Clear Zone Ownership	Required: Clear zones controlled in fee title	Required: Clear zones controlled in fee title	Required: Clear zones controlled in fee title	Required: Clear zones controlled in fee title	Required: Clear zones controlled in fee title
Minimum Standards	Recommended: Documented minimum standards	Recommended: Documented minimum standards	Recommended: Documented minimum standards	Recommended: Documented minimum standards	Recommended: Documented minimum standards

Source: MnSASP Phase I, 2019

Table 2.6. Airport Metric Evaluation – Primary Runway Width

Data Assessment	Primary Runway Width
Category	Facilities
Type	Measure
Description/Purpose	The primary runway width is the minimum required for accommodating the airport's critical aircraft (aircraft that requires the greatest runway width for safe operations and has or is forecasted to have over 500 operations per year).
Anticipated Source(s)	FAA 5010 Master Record
Data Update Cycle	FAA 5010 Master Record review/inspection, or upon completion of a runway widening project
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	High - MnDOT can prioritize funding for runway widening projects.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan (Incorporate existing projects into the MnSASP Capital Improvement Plan [CIP])

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.7. Airport Metric Evaluation – Runway Lighting

Data Assessment	Runway Lighting
Category	Facilities
Type	Measure
Description/Purpose	The runway lighting system required for each airport is based on the type of aircraft operating at an airport at night or during low visibility conditions and existing runway approaches.
Anticipated Source(s)	FAA 5010 Master Record
Data Update Cycle	FAA 5010 Master Record review/inspection, or upon completion of lighting improvement project
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	High - MnDOT can prioritize funding for runway lighting projects.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan Task 12 - Advise on Navigational Systems Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.8. Airport Metric Evaluation – Primary Runway Approaches

Data Assessment	Primary Runway Approaches
Category	Facilities
Type	Measure
Description/Purpose	Runway approach procedures provide guidance for aircraft transitioning from the en route phase of a flight to the approach and landing phases.
Anticipated Source(s)	FAA Terminal Procedures Publication
Data Update Cycle	The FAA publishes the Terminal Procedures Publication every 56 days. However, it is recommended the MnDOT review system performance on an annual basis.
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	Evaluation of airport safety
Ability to Influence Data	Low - MnDOT can support the modifications to approach procedures, but the FAA has jurisdiction over this metric.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.9. Airport Metric Evaluation – Parallel Taxiway

Data Assessment	Parallel Taxiway
Category	Facilities
Type	Measure
Description/Purpose	Parallel taxiways mitigate the potential conflict between taxiing aircraft and arriving or departing aircraft and increase runway capacity.
Anticipated Source(s)	Visual inspection of airfield via aerial imagery; airport inspection reports as available
Data Update Cycle	As warranted upon completion of a taxiway improvement project
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	High - MnDOT can prioritize funding for taxiway improvement projects.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.10. Airport Metric Evaluation – Taxiway Width

Data Assessment	Taxiway Width
Category	Facilities
Type	Measure
Description/Purpose	Taxiways are intended to quickly and safely transition aircraft from runway surfaces to the apron. Taxiway turns and intersections should be designed to maximize the safe and efficient movement of aircraft while minimizing excess pavement. Taxiway width standards are dependent on the critical aircraft at an airport and the associated TDG.
Anticipated Source(s)	MnSASP airport inventory, visual inspection of airfield via aerial imagery
Data Update Cycle	As warranted upon completion of a taxiway improvement project
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	High - MnDOT can prioritize funding for taxiway improvement projects.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.11. Airport Metric Evaluation – Navigation Systems

Data Assessment	Navigation Systems
Category	Facilities
Type	Measure
Description/Purpose	Navigation systems aid aircraft moving into and out of airspace. These systems are tailored towards the users of each airport classification and can include the following devices: approach lighting systems, VGSI, REILs, rotating beacon, and wind cones.
Anticipated Source(s)	FAA 5010 Master Record
Data Update Cycle	FAA 5010 Master Record review/inspection, or upon the installation of modification to a NAVAID
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	High - MnDOT can prioritize funding for NAVAIDs.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan Task 12 - Advise on Navigational Systems Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.12. Airport Metric Evaluation – Weather Reporting

Data Assessment	Weather Reporting
Category	Facilities
Type	Measure
Description/Purpose	Weather reporting facilities broadcast weather information over a radio frequency for pilots to use when operating on and in the vicinity of an airport. The two types of facilities include an AWOS and ASOS.
Anticipated Source(s)	MnDOT (http://dot.state.mn.us/aero/navigationsystems/awos-map-online.html), FAA (https://www.faa.gov/air_traffic/weather/asos/?state=MN)
Data Update Cycle	As warranted upon installation of an AWOS/ASOS
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	High - MnDOT can prioritize funding for weather reporting facilities.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan Task 12 - Advise on Navigational Systems Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.13. Airport Metric Evaluation – Aircraft Parking

Data Assessment	Aircraft Parking
Category	Facilities
Type	Measure
Description/Purpose	Aircraft parking spaces allow for both based and transient aircraft to be parked for long-term and short-term use.
Anticipated Source(s)	MnSASP airport inventory (number and type)
Data Update Cycle	Annual updates are recommended (aerial inspections via Google Earth after initial data collection)
Difficulty in Data Collection	Moderate - Airport coordination is required
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	Moderate - The installation of additional tiedowns may require pavement expansion or strengthening projects, as well as available land for development. Hence, tiedown projects can be costly and limited by the availability of developable airport property.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.14. Airport Metric Evaluation – GA Terminal/Administration Building

Data Assessment	GA Terminal/Administration Building
Category	Facilities
Type	Measure
Description/Purpose	GA terminal, administration, and arrival/departure buildings provide space, shelter, and work areas for pilots, passengers, and travelers.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	Annual updates are recommended (aerial inspections via Google Earth after initial data collection)
Difficulty in Data Collection	Moderate - Airport coordination is required
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	Moderate - While determining if an airport has a GA terminal with a phone and restroom is straightforward initially, it is the airport's responsibility to ensure the phone and restroom are in acceptable operating condition.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.15. Airport Metric Evaluation – Automobile Parking

Data Assessment	Automobile Parking
Category	Facilities
Type	Measure
Description/Purpose	Dedicated automobile parking is critical to ensuring that automobile and aircraft traffic do not mix. Required parking capacity is determined at the local level for all airport classifications.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Moderate - Airport coordination is required
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to plan for current or potential airport funding needs.
Ability to Influence Data	Moderate - The addition of automobile parking may be limited by available landside property.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.16. Airport Metric Evaluation – Airport Fencing

Data Assessment	Airport Fencing
Category	Facilities
Type	Measure
Description/Purpose	Airport fencing impedes wildlife from entering an airport environment and enhances airport security.
Anticipated Source(s)	MnSASP airport inventory, visual inspection of airfield via aerial imagery
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Moderate - Airport coordination is required
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	High - MnDOT can prioritize the funding of appropriate fencing.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.17. Airport Metric Evaluation – Airport Surfaces

Data Assessment	Airport Surfaces
Category	Facilities
Type	Measure
Description/Purpose	Airport surfaces must be clear of obstructions to allow aircraft to conduct safe take-offs and landings. Obstructions can pose safety risks to pilots and may require instrument approach procedure minimums to be raised.
Anticipated Source(s)	MnSASP Part 77 maps developed as part of Task 4.6 - Clear Zone Policy and Ownership. Close-in obstructions reported on FAA 5010 Master Record.
Data Update Cycle	Biennial updates are recommended
Difficulty in Data Collection	High - While close-in obstructions are recorded during FAA 5010 inspections, obstructions can arise quickly. The FAA records human-made obstructions in its Digital Obstacle File. Because many obstacles are naturally occurring, maintaining a current obstacle database at the statewide level can be difficult.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to identify airport-specific safety hazards. This information can also be used to develop airport-specific obstacle removal/mitigation plans.
Ability to Influence Data	Moderate - MnDOT can develop airport-specific obstacle removal/mitigation plans to enhance aviation safety statewide. However, the development of such plans can be costly, and their implementation depends on cooperation and coordination with local airport sponsors.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.18. Airport Metric Evaluation – Fuel

Data Assessment	Fuel
Category	Services
Type	Measure
Description/Purpose	Fuel availability is largely dependent on the type of users at an airport. Piston-powered aircraft require 100LL, while turbine engines require Jet A. Service offerings can be either self- or full-service and provided by the airport or a third-party (such as a fixed base operator [FBO]).
Anticipated Source(s)	FAA 5010 Master Record, Minnesota Airport Director and Travel Guide, confirmed during airport inventory
Data Update Cycle	As warranted upon installation of a new fuel farm
Difficulty in Data Collection	Low
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate existing airport facilities versus required/recommended targets to support project funding prioritization.
Ability to Influence Data	Low - Because fuel farms are a revenue-producing project, they are generally low priority for FAA funding. As such, some airports may not have adequate local funds to support this improvement. Fuel farms can be installed by FBOs, but this would be market-driven and difficult for MnDOT to influence.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.19. Airport Metric Evaluation – Courtesy Car/Rental Car

Data Assessment	Courtesy Car/Rental Car
Category	Services
Type	Measure
Description/Purpose	Ground transportation options such as rental and courtesy cars provide connectivity between airports and surrounding communities.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Moderate - Airport coordination is required to obtain detailed information about airport courtesy cars (including make, model, and vehicle condition). Third-party websites provide some information about courtesy car availability (http://www.airportcourtesycars.com); this information should be independently validated prior to being published by the state.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to assess available ground transportation options at airports across the state. This assessment can be used to inform the development of an effective and germane state policy regarding airport connectivity.
Ability to Influence Data	Moderate - Obtaining a courtesy car requires minimal up-front investment, as an acceptable used vehicle can be purchased for less than $10,000. Due to a variety of reasons, many airport sponsors have difficulty obtaining funding for insurance and registration costs. MnDOT can develop an educational campaign

Data Assessment	Courtesy Car/Rental Car
	to help airports understand their options in terms of enhancing intermodal connectivity and clarify state policies regarding funding/insurance availability for and liability associated with courtesy cars.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 4.7 - Last-mile Connection Opportunity

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.20. Airport Metric Evaluation – Transient Aircraft Storage

Data Assessment	Transient Aircraft Storage
Category	Services
Type	Measure
Description/Purpose	A transient aircraft is an aircraft that is temporarily visiting an airport from outside of the local traffic pattern, usually established at travel beyond 20 nautical miles. Transient airport users may prefer to store their aircraft in climate-controlled hangars to avoid inclement weather, and some owners are hesitant to leave their aircraft parked outdoors in any conditions.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Moderate - Data collection for hangar storage capacity can be difficult because conventional hangar capacity is a function of the type of aircraft being stored. As such, determining if an airport's capacity is "adequate" relies on estimations and can change should typical airport users shift over time.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to evaluate the adequacy of hangar storage across the state and inform the development of a statewide program to fund hangar development.
Ability to Influence Data	Low - MnDOT has little control over transient aircraft operations. Hangar development can be costly, and funds are generally unavailable from the FAA. As such, hangar development is primarily be driven at the local level even if new funding programs are established. Some airports do not have adequate land for new hangar development.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.2 - TTF Operations (private developers may construct hangars adjacent to airport property should TTF operations be permitted by state policy) Task 4.3 - Hangar Availability and Funding Participation Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.21. Airport Metric Evaluation – ALPs

Data Assessment	ALPs
Category	Administrative
Type	Measure
Description/Purpose	ALPs provide a graphical representation of existing/planned facilities and design standards at an airport. An airport master plan serves as an airport's long-term strategic plan to guide future development.
Anticipated Source(s)	MnSASP airport inventory, review of existing planning documents on file with MnDOT
Data Update Cycle	Annual review of ALP/master plan study years is recommended (i.e., annually review study years to identify airports that need to update their planning documents)
Difficulty in Data Collection	Moderate - Airport coordination is required to ensure MnDOT has a copy of the most recent airport planning document. ALP revisions may not always be distributed to MnDOT, so regular communication and annual data requests may be required.
Data Manipulation Plan	None
MnDOT Application of Data	Master plans and ALPs provide detailed, airport-specific information regarding current and future aviation demands, as well as planned airport improvement projects. Reviewing copies of current planning documents can help MnDOT identify and plan for long-term needs at Minnesota airports. ALPs also depict airport clear zones.
Ability to Influence Data	High - MnDOT can prioritize funding for ALP or master plan updates, as well as tie grant funding to a proposed project being depicted on a current (within the past 10 or 15 years) ALP.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.22. Airport Metric Evaluation – Airport Zoning

Data Assessment	Airport Zoning
Category	Administrative
Type	Measure
Description/Purpose	Airport sponsors must have an established zoning authority for the airport, or be in the process of doing so, to receive various types of state funding. The authority must develop airport zoning ordinances that comply with Minnesota Statutes. Additionally, communities within airport influence areas must enact airport compatible zoning in accordance with state law.
Anticipated Source(s)	MnSASP Aeronautics records
Data Update Cycle	Annual reviews are recommended
Difficulty in Data Collection	High - Local zoning ordinances can be difficult to understand, zoning can be updated without the input or knowledge of the local airport, and enforcement is the responsibility of the local planning authority.

Data Assessment	Airport Zoning
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use the data obtained in this analysis to evaluate compliance with existing policies and inform the development of recommended changes or enhancements to existing policies.
Ability to Influence Data	Low - While MnDOT has a role in educating local land use planners about their responsibilities associated with airport compatible development, the agency has limited authority to mandate compliance with state statutes. Additionally, local zoning authorities also have jurisdiction over the enforcement of pertinent regulations.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.23. Airport Metric Evaluation – Clear Zone Ownership

Data Assessment	Clear Zone Ownership
Category	Administrative
Type	Measure
Description/Purpose	Clear zones are trapezoidal shapes beyond each runway end based on the runway approach. Land uses that may be hazardous to the operational safety of aircraft and may put life and property in undue danger should a safety incident occur are restricted within clear zones. As such, airport owners are encouraged to purchase clear zones in fee title. Airports that do not own adequate clear zones may be ineligible to receive state funding.
Anticipated Source(s)	Clear zones to be mapped as part of Task 4.6 - Clear Zone Policy and Ownership. Clear zones are also generally depicted on ALPs.
Data Update Cycle	Reviews conducted in accordance with master plan and ALP updates (10- to 15-year cycle based on airport classification)
Difficulty in Data Collection	Moderate - State grant assistance is available to purchase parcels of land designated as clear zones. In such cases, MnDOT Aeronautics would be aware of airports that purchase surrounding clear zones. Airport sponsors may purchase land designated as clear zones using local money. MnDOT Aeronautics would not be automatically notified of these purchases. As such, data collection requires some airport coordination.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT will use this data to evaluate airports' compliance with Policy Statement No. 1: Clear Area Requirements. Per MnDOT policy, airports that do have adequate ownership of clear zones may be ineligible to receive state grant assistance.
Ability to Influence Data	Moderate - State grant assistance is available to purchase clear zones. However, it is assumed that airports must provide a local match for land acquisition. As such, compliance with this standard is at the discretion of the local jurisdiction.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.24. Airport Metric Evaluation – Minimum Standards

Data Assessment	Minimum Standards
Category	Administrative
Type	Measure
Description/Purpose	Minimum standards document the requirements that must be met to supply adequate aeronautical services at an airport; provide a safe operating environment; and protect the public, airport facilities, users, and tenants.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	Biennial reviews are recommended
Difficulty in Data Collection	Moderate - Airport coordination is required
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT will use this data to evaluate the safety and security of airport environments. MnDOT could require airports to document and enforce minimum standards as a condition of state grant eligibility.
Ability to Influence Data	Moderate - MnDOT could require minimum standards as a condition of state grant eligibility. However, the ongoing enforcement of minimum standards may be difficult to track over time.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.25. Airport Metric Evaluation – Based Aircraft

Data Assessment	Based Aircraft
Type	Indicator
Description/Purpose	Based aircraft are those that are operational, airworthy, and based at an airport for the majority of the year. Based aircraft are reported by type (single-engine, multi-engine, jets, helicopters). This metric provides a mechanism for reporting airport usage.
Anticipated Source(s)	FAA's National Based Aircraft Inventory Program (Nonprimary NPIAS airports), MnSASP airport inventory (non-NPIAS and Primary airports), Airport Master Record
Data Update Cycle	Nonprimary NPIAS airports are required to update based airport counts via basedaircraft.com annually. Non-NPIAS and Primary airports report based aircraft counts during 5010 inspections (conducted annually for Part 139 airports and on a three-year cycle for non-NPIAS facilities).
Difficulty in Data Collection	Moderate - Because the FAA tracks based aircraft counts closely, obtaining this information for NPIAS facilities is straightforward. Obtaining accurate based aircraft counts at non-NPIAS facilities is not difficult; however, the accuracy of the data can be flawed.
Data Manipulation Plan	None
MnDOT Application of Data	Based aircraft are one primary indicator of aviation activity levels. As such, this data can be used to develop airport-specific and system-level activity forecasts and estimate current and potential aircraft storage needs.

Data Assessment	Based Aircraft
Ability to Influence Data	Low - Based aircraft are generally driven by market demands and other local factors that are difficult to influence.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.1 - Operations Counting and Forecasting Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.26. Airport Metric Evaluation – Airport Operations

Data Assessment	Airport Operations
Type	Indicator
Description/Purpose	The number of airport operations (takeoffs or landings) helps to measure airport activity and related trends. For all classifications, the number of annual operations is measured.
Anticipated Source(s)	The FAA's Air Traffic Activity Data System (ATADS) provides operations data for towered airports. Operations data for non-towered airports is difficult to measure and involves obtaining data during the MnSASP inventory process and from the FAA's Traffic Flow Management System Counts (TFMSC). ADS-B data are evaluated as available through data collection platforms installed by third-party vendors.
Data Update Cycle	Data are updated annually
Difficulty in Data Collection	Moderate - As noted previously, data from towered airports is easily obtainable and accurate. Operations at non-towered airports can be obtained, but the accuracy of that data can be questionable. Recently enacted ADS-B requirements may modernize the system and dramatically improve operations counts at non-towered facilities.
Data Manipulation Plan	None
MnDOT Application of Data	Operation counts are a primary indicator of aviation activity levels. As such, these data are used to develop airport-specific and system-level activity forecasts.
Ability to Influence Data	Low - Operations are driven by many factors both inherent to an airport and external to it.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.1 - Operations Counting and Forecasting Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.27. Airport Metric Evaluation – Available Services

Data Assessment	Available Services
Type	Indicator
Description/Purpose	Various airport services (e.g., FBO, ground transportation, fuel, maintenance, underwing camping) are offered throughout the Minnesota airport system. These should be identified at each airport.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	Biennial updates are recommended

Data Assessment	Available Services
Difficulty in Data Collection	Moderate - While some services are recorded during FAA 5010 inspections, this data point generally requires coordination directly with airports.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to ensure the Minnesota aviation system meets the needs of all aviation users and to identify gaps or surpluses within specific regions or statewide.
Ability to Influence Data	Low - Available airport services are generally market-driven, providing MnDOT little opportunity to improve performance.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.28. Airport Metric Evaluation – Certified Pilots Within 30 Miles of an Airport

Data Assessment	Certified Pilots within 30 miles of an Airport
Type	Indicator
Description/Purpose	The total number of certified pilots within a certain distance of an airport is one indicator of the potential demand for a local airport. Airports in close proximity to large concentrations of pilots have a higher likelihood of experiencing higher demand levels.
Anticipated Source(s)	FAA Civil Airmen Statistics (https://www.faa.gov/licenses_certificates/airmen_certification/releasable_airmen_download/)
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Low - Data on file with the FAA.
Data Manipulation Plan	None
MnDOT Application of Data	This indicator can help MnDOT understand the type and level of demands placed on individual airport facilities.
Ability to Influence Data	Low - Pilot locations are driven by many factors external to the aviation industry. As such, MnDOT has little opportunity to influence this data point.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

2.3.3. SYSTEM METRICS

System metrics are used to evaluate the performance of Minnesota's airports at the systemwide level. Like airport metrics, system metrics comprise system measures and system indicators. MnDOT Aeronautics and airports can directly impact measures through investment, policy, or other actionable items. System measures comprise various safety, planning, and service-related items indicative of the performance of the statewide system. During Phase I, MnDOT Aeronautics established classification-specific targets for each measure, with systemwide targets indicating the composite performance of all classifications.

Table 2.29 provides the eight system measures identified during Phase I. Classification-specific targets were established for six of those measures during Phase I; two targets were developed during subsequent

analyses of Phase II (adequate wind coverage and adequate arrival/departure building). Table 2.30 through Table 2.37 present each of the eight system measures identified during Phase I of the MnSASP, including an overview of the measure as well as the plan for the collection, manipulation, and application of each data point during Phase II.[9] Additional details regarding how MnDOT Aeronautics can use the data to improve system performance in the future are also provided.

System indicators cannot be directly controlled and are generally driven by market demand, local and regional socioeconomic conditions, consumer choice, and other factors. Tracking indicators can help MnDOT Aeronautics and other policymakers identify trends affecting aviation demand over time. Table 2.38 through Table 2.44 provide the Phase II plan to collect and apply the data for the six system indicators identified during Phase I and carried forwarded into Phase II. These indicators are a significant departure from those collected during the previous 2012 MnSASP, with numerous deletions and additions. Phase I stakeholders indicated that the 2022 MnSASP should focus on the most meaningful, straightforward, and easily understandable data points for continuous monitoring over time.

[9] *Actual data collection methodology is presented in* ***Chapter 6. Continuous Planning****.*

Table 2.29. System Measure Targets by Classification

Data Point	Key Commercial Service Targets	Key General Aviation Targets	Intermediate Large Targets	Intermediate Small Targets	Landing Strip Turf Targets
Adequate Approaches to Airports	Precision instrument approach to at least one runway end	Precision instrument approach to at least one runway end	Precision instrument approach to at least one runway end	Precision instrument approach to at least one runway end	Visual approaches
PCI	Eighty-five percent of primary runway pavements (weighted by area) are in "very good" or "excellent" condition (PCI of 70 or greater)	Eighty-five percent of primary runway pavements (weighted by area) are in "very good" or "excellent" condition (PCI of 70 or greater)	Eighty-four percent of all runway and parallel taxiway pavements (weighted by area) are in at least "good" condition (PCI of 55 or greater), and no more than four percent of all runway and parallel taxiway pavements (weighted by area) are in "poor" condition (PCI of 40 or less)	Eighty-four percent of all runway and parallel taxiway pavements (weighted by area) are in at least "good" condition (PCI of 55 or greater), and no more than four percent of all runway and parallel taxiway pavements (weighted by area) are in "poor" condition (PCI of 40 or less)	NA
Airport Surfaces Clear of Obstructions	No obstructions to protected airspace	No obstructions to protected airspace	No obstructions to protected airspace	No obstructions to protected airspace	No obstructions to protected airspace
Adequate Navigational Systems	Approach lights, REILs, VGSI, beacon, and wind cone	Approach lights, REILs, VGSI, beacon, and wind cone	VGSI, beacon, and wind cone	VGSI, beacon, and wind cone	Beacon (if a runway is lit) and wind cone
Adequate Safety Zoning Ordinances	100 percent of airports should have an adequate airport zoning ordinance adopted by JAZB or equivalent authority	100 percent of airports should have an adequate airport zoning ordinance adopted by JAZB or equivalent authority	100 percent of airports should have an adequate airport zoning ordinance adopted by JAZB or equivalent authority	100 percent of airports should have an adequate airport zoning ordinance adopted by JAZB or equivalent authority	100 percent of airports should have an adequate airport zoning ordinance adopted by JAZB or equivalent authority
Up-to-date Planning Documents	ALP and MP updated or revisited at least every 10 years	ALP and MP updated or revisited at least every 10 years	ALP and master plan updated or revisited at least every 15 years	ALP and master plan updated or revisited at least every 15 years	ALP

Data Point	Key Commercial Service Targets	Key General Aviation Targets	Intermediate Large Targets	Intermediate Small Targets	Landing Strip Turf Targets
Adequate Wind Coverage	100 percent of airports should have 95 percent wind coverage based on their primary runway configuration.[10]	100 percent of airports should have 95 percent wind coverage based on their primary runway configuration.[11]	100 percent of airports should have 95 percent wind coverage based on their primary runway configuration.[12]	100 percent of airports should have 95 percent wind coverage based on their primary runway configuration.[13]	100 percent of airports should have 95 percent wind coverage based on their primary runway configuration.[14]
Adequate Arrival/Departure Terminal Building	GA terminal with phone and restroom	GA terminal with phone and restroom	GA terminal with phone and restroom	GA terminal with phone and restroom	Required: Phone and restroom Recommended: GA terminal with phone and restroom

Source: MnSASP Phase I, 2019

[10] *Airports that do not have at least 95 percent wind coverage based on the airports predominant use period should conduct a more detailed wind coverage analysis as discussed in the Crosswind Runway Guidance Statement. Less than 95 percent coverage does not indicate that MnDOT is responsible for funding improvements at that facility.*
[11] *Ibid.*
[12] *Ibid.*
[13] *Ibid.*
[14] *Ibid.*

Table 2.30. System Metric Evaluation – Adequate Approaches to Airports

Data Assessment	Adequate Approaches to Airports
Type	Measure
Description/Purpose	Percent of system airports with adequate approaches appropriate for their classification.
Anticipated Source(s)	FAA Terminal Procedures Publication
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Low - Approach procedures are developed by the FAA following a comprehensive multi-step process. Once established, obtaining information about existing approaches is straightforward and publicly available.
Data Manipulation Plan	None
MnDOT Application of Data	Measuring the percent of system airports with adequate approaches helps MnDOT gauge the overall safety of the system and improve airport accessibility across the state.
Ability to Influence Data	Low - The FAA's Aeronautical Information Service is responsible for developing and maintaining all public instrument approach procedures and airways.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.31. System Metric Evaluation – PCI

Data Assessment	PCI
Type	Measure
Description/Purpose	Percent of system airports with PCI scores at or above classification-specific targets by pavement area. Pavement condition is evaluated on a PCI scale from zero to 100, with zero indicating complete failure and 100 indicating perfect condition. Maintaining pavement within established thresholds extends pavement's useful life and mitigates costly rehabilitation and reconstruction projects. Additionally, keeping pavement in good condition increases airport safety and efficiency. The PCI rating scales identified by MnDOT's Airport Pavement Management System (APMS), and thus to be applied by the MnSASP, are as follows: - ≥ 85 ≤ 100 = Excellent - ≥ 70 < 85 = Very Good - ≥ 55 < 70 = Good - ≥ 40 < 55 = Fair - ≥ 25 < 40 = Poor - ≥ 10 < 25 = Very Poor - ≥ 0 < 10 = Failed
Anticipated Source(s)	MnDOT Aeronautics PCI Reports. Coordinate with Applied Research Associates (ARA) to obtain CAD/GIS data
Data Update Cycle	Annually for a third of the airports each cycle

Data Assessment	PCI
Difficulty in Data Collection	Low - PDF reports are publicly available on the MnDOT website. Note pavement inspections are required to collect PCI data. Data are housed in a software package called MicroPAVER; the software also includes information about pavement maintenance, rehabilitation, and reconstruction needs.
Data Manipulation Plan	Pavement distress is translated into a PCI score, with a score of 100 indicating perfect condition and a score of 0 indicating complete failure.
MnDOT Application of Data	PCI data are used to prioritize pavement rehabilitation projects in accordance with MnDOT's APMS.
Ability to Influence Data	High - Regular pavement maintenance and addressing issues early significantly extends the useful life of aviation pavement. As such, MnDOT Aeronautics' ongoing investment into aviation pavement is of critical importance improving this measure.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.32. System Metric Evaluation – Airport Surfaces Clear of Obstructions

Data Assessment	Airport Surfaces Clear of Obstructions
Type	Measure
Description/Purpose	Percent of system airports with approach surfaces clear of obstructions.
Anticipated Source(s)	FAA 5010 Master Record
Data Update Cycle	FAA 5010 inspection cycle
Difficulty in Data Collection	Low - PDF reports are publicly available on FAA site. However, validating data can be challenging. While close-in obstructions are recorded during FAA 5010 inspections, obstructions such as overgrown vegetation can arise quickly. The FAA records human-made obstructions in its Digital Obstacle File; however, many obstacles are naturally occurring. As such, maintaining a current obstacle database at the statewide level can be difficult.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to identify airport-specific safety hazards. This information can be used to develop airport-specific obstacle removal/mitigation plans, as well as system-wide performance assessments.
Ability to Influence Data	Moderate - MnDOT can develop airport-specific obstacle removal/mitigation plans to enhance aviation safety statewide. However, the development of such plans can be costly, and their implementation depends on cooperation and coordination with local airport sponsors.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.33. System Metric Evaluation – Adequate Navigational Systems

Data Assessment	Adequate Navigational Systems
Type	Measure
Description/Purpose	Percent of system airports with adequate navigational systems and aids.
Anticipated Source(s)	FAA 5010 Master Record
Data Update Cycle	FAA 5010 inspection cycle
Difficulty in Data Collection	Low - PDF reports publicly available on FAA website
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT Aeronautics can use this data to evaluate airport facilities versus required/recommended targets to support informed project funding prioritization
Ability to Influence Data	High - MnDOT can prioritize funding for NAVAIDs.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan Task 12 - Advise on Navigational Systems Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.34. System Metric Evaluation – Adequate Safety Zoning Ordinances

Data Assessment	Adequate Safety Zoning Ordinances
Type	Measure
Description/Purpose	Percent of system airports with an adequate Airport Zoning Ordinance.
Anticipated Source(s)	MnDOT Aeronautics
Data Update Cycle	Annual updates are recommended, or whenever an ALP is approved or a zoning ordinance is adopted, whichever comes first.
Difficulty in Data Collection	High - Local zoning ordinances can be difficult to understand, zoning can be updated without the input or knowledge of the local airport, and enforcement is the responsibility of the local planning authority.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use the data obtained in this analysis to evaluate compliance with existing policies and inform the development of recommended changes or enhancements to existing policies.
Ability to Influence Data	Low - While MnDOT has a role in educating local land use planners about their responsibilities associated with airport compatible development, the agency has limited authority to mandate compliance with state statutes. Additionally, local zoning authorities also have jurisdiction over the enforcement of pertinent regulations.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.6 - Clear Zone Policy and Ownership

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.35. System Metric Evaluation – Up-to-Date Planning Documents

Data Assessment	Up-to-Date Planning Documents
Type	Measure
Description/Purpose	Percent of system airports with up-to-date planning documents.
Anticipated Source(s)	MnSASP airport inventory, review of existing planning documents on file with MnDOT
Data Update Cycle	Annual review of ALP/master plan study years is recommended (i.e., annually review study years to identify airports that need to update their planning documents)
Difficulty in Data Collection	Moderate - Airport coordination is required to ensure MnDOT has a copy of the most recent airport planning document. ALP revisions may not always be distributed to MnDOT, so regular communication and annual data requests may be required.
Data Manipulation Plan	None
MnDOT Application of Data	Master plans and ALPs provide detailed, airport-specific information regarding current and future aviation demands, as well as planned airport improvement projects. Reviewing copies of current planning documents can help MnDOT identify and plan for long-term needs at Minnesota airports. ALPs also depict airport clear zones.
Ability to Influence Data	High - MnDOT can prioritize funding for ALP or master plan updates, as well as tie grant funding to a proposed project being depicted on a current (within the past 10 or 15 years) ALP.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan Task 4.6 - Clear Zone Policy and Ownership

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.36. System Metric Evaluation – Adequate Wind Coverage

Data Assessment	Adequate Wind Coverage
Type	Measure
Description/Purpose	Percent of system airports that have adequate wind coverage.
Anticipated Source(s)	Iowa State University Iowa Environmental Mesonet (IAM)
Data Update Cycle	Wind coverage should be evaluated as airports request state funding for new or maintenance of existing crosswind runways. Additionally, this data could be updated as airports conduct wind analyzes are part of ALP updates/development.
Difficulty in Data Collection	High - While obtaining wind data itself is not difficult, analyzes the percent wind coverage provided by the primary runway requires specialized technical skills. While the MnSASP conducted a statewide analysis based on IAM data, airports can also use the FAA's Wind Analysis Tools available at https://adip.faa.gov/agis/public/#/windAnalysisTools to calculate wind coverage at specific facilities.

Data Assessment	Adequate Wind Coverage
Data Manipulation Plan	The raw wind data obtained from IAM is compiled to determine the percent wind coverage provided by the primary runway by month for a ten-year period. The processes utilized by the MnSASP is summarized in the Task 4.5 deliverables (e.g., Crosswind Model Update Guide and Crosswind Guidance Statement).
MnDOT Application of Data	MnDOT can use the wind coverage to prioritize state investment into the development of new or maintenance of existing crosswind runways.
Ability to Influence Data	Moderate - MnDOT can influence the wind coverage provided by all airports by highly prioritizing state investment into crosswind runways. However, fully supporting crosswind runways would require significant investment. This is particularly true because federal funding via the AIP can rarely be used to support crosswind runway development/maintenance. As such, most crosswind runway projects are only eligible for state and local funding.
Proceed into Phase II	Include
Phase II Application of Data	Task 4.5 - Crosswind Runway Analysis Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.37. System Metric Evaluation – Adequate Arrival/Departure Terminal Building

Data Assessment	Adequate Arrival/Departure Terminal Building
Type	Measure
Description/Purpose	Percent of system airports with an arrival/departure or terminal building in adequate condition.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	To be determined during Phase II
Difficulty in Data Collection	Low - Because state grant money would likely be involved in a terminal enhancement, data would be readily available to conduct this analysis.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to ensure the needs of all aviation users are met across the state. This data can also be used to determine if there is a significant gap in certain regions or at specific types of airports so projects can be prioritized and funded most effectively.
Ability to Influence Data	Moderate - While state grant money would likely be involved in this type of airport improvement, significant local investment would still be required. Hence, a terminal improvement project would be primarily driven by community support and tied to an airport's capital improvement plan (CIP).
Proceed into Phase II	Included
Phase II Application of Data	Task 8 - MnSASP Hub Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.38. System Metric Evaluation – Emergency Medical Response

Data Assessment	Emergency Medical Response
Type	Indicator
Description/Purpose	Medical flights transport patients in emergency and non-emergency situations and healthcare professionals to rural areas without specialized services. Providing a network of airports to connect medical professionals with patients is one of the most important functions an aviation system can provide. Medical flights can be provided by fixed-wing aircraft or rotorcraft. In most cases, fixed-wing air medical operations require the following criteria: - Primary runway length of approximately ≥ 4,000 feet - Jet A fuel service provided 24 hours/7 days a week (24/7) - At least non-precision instrument (NPI) approach capability - Weather reporting - De-icing services - Available heated conventional transient aircraft storage Rotorcraft require fewer specific conditions to operate but are able to travel shorter distances and require more fuel to fly compared to fixed-wing aircraft.
Anticipated Source(s)	MnSASP airport inventory
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Low – While airport manager coordination is required, the frequency and type of medical air flights supported by an airport is easily assessed.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT could use the results of this evaluation to identify specific geographic regions of the state that do not support air medical flights. This could indicate a deficiency associated with one of the criteria listed above. A similar evaluation could be used to prioritize funding requests for one or more of these facilities/services.
Ability to Influence Data	Medium – While MnDOT Aeronautics can fund the facilities and services noted above, air medical providers ultimately decide where to operate. Also, operational frequency and type are driven by emergency/non-emergency situations requiring medical air transportation and the type/number of healthcare professionals traveling into a community to provide care.
Proceed into Phase II	Modify – Phase I recommended the following two questions be evaluated during Phase II: - Ability of the existing weather reporting system to adequately serve the aeromedical needs of the state - Average response time for aeromedical service by region Approximating answers to these questions would require extensive outreach to state hospitals, air medical flyers, and other stakeholders beyond the data collection efforts of the 2022 MnSASP. As such, Phase II identifies the airports that currently support air medical transportation by type and frequency.
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.39. System Metric Evaluation – Aviation-related Accidents

Data Assessment	Aviation-Related Accidents
Type	Indicator
Description/Purpose	Total number of annual aviation-related accidents in Minnesota.
Anticipated Source(s)	National Transportation Safety Board (NTSB) Aviation Accident Database (https://www.ntsb.gov/_layouts/ntsb.aviation/index.aspx)
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Low - NTSB database is publicly available and allows for filtering by state
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use the results of this evaluation to identify common accident regions and develop strategies to reduce risks associated with the most common threats to aviation safety.
Ability to Influence Data	Low - Aviation-related accidents are caused by a variety of factors outside of MnDOT control including pilot skill and aircraft performance.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.40. System Metric Evaluation – Aviation Fatalities

Data Assessment	Aviation Fatalities
Type	Indicator
Description/Purpose	Total number of annual aviation-related fatalities in Minnesota.
Anticipated Source(s)	NTSB Aviation Accident Database (https://www.ntsb.gov/_layouts/ntsb.aviation/index.aspx)
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Low - NTSB database is publicly available and allows for filtering by state
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use the results of this evaluation to identify common accident regions and develop strategies to reduce risks associated with the most common threats to aviation safety.
Ability to Influence Data	Low - Aviation fatalities are caused by a variety of factors outside of MnDOT control including pilot skill and aircraft performance.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.41. System Metric Evaluation – Runway Incursions

Data Assessment	Runway Incursions
Type	Indicator
Description/Purpose	Total number of reported runway incursions at towered airports in Minnesota. Categories to be used include: - Category A: Serious incident in which collision was narrowly avoided - Category B: Incident in which separation decreases and there is a significant potential for collision - Category C: Incident characterized by ample time and/or distance to avoid a collision - Category D: Incident such as the incorrect presence of a single vehicle/person/aircraft in the protected area of a surface designated for the landing and take-off of aircraft but with no immediate safety consequences
Anticipated Source(s)	FAA Aviation Safety Information Analysis and Sharing (ASIAS) (https://www.asias.faa.gov/apex/f?p=100:1::::::)
Data Update Cycle	Annual updates are recommended
Difficulty in Data Collection	Moderate - The ASIAS database relies on a narrative search to filter for runway incursions.
Data Manipulation Plan	None
MnDOT Application of Data	MnDOT can use this data to identify airports that are at particularly high risk for runway incursions. Runway/taxiway improvements can be implemented to mitigate runway "hotspots" before a serious safety issue arises.
Ability to Influence Data	Moderate - The FAA's Runway Incursion Mitigation (RIM) program is designed to identify high-risk airport locations and implement mitigation techniques to reduce risks at these facilities. MnDOT can partner with the FAA to implement RIM projects should areas of concern be identified. MnDOT can also prioritize funding to address major issues.
Proceed into Phase II	Include
Phase II Application of Data	Task 10.1 - Investment Plan

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.42. System Metric Evaluation – Economic Impact

Data Assessment	Economic Impact
Type	Indicator
Description/Purpose	Contribution of on-airport activities and visitor spending to local, regional, and statewide economies in terms of annual employment, payroll, spending, and economic activity.
Anticipated Source(s)	2019 Minnesota Statewide Airport Economic Impact Study
Data Update Cycle	Economic impact studies should be conducted every five to seven years
Difficulty in Data Collection	High - Calculating economic impact involves comprehensive data collection and modeling processes to estimate the economic contributions of on-airport activities and visitor spending in terms of direct, indirect, and induced impacts.

Data Assessment	Economic Impact
Data Manipulation Plan	Data are manipulated using an input/output model such as IMPLAN to calculate how on-airport activities and visitor spending continue to generate impacts within the state through supplier sales (indirect impacts) and the re-spending of worker income (induced impacts). Data manipulation is also required to translate impacts into measures of economic activity (i.e., employment, payroll, spending, and economic activity).
MnDOT Application of Data	Airport economic impact studies help demonstrate the value of airports to elected officials, policymakers, and members of the public, which can translate into additional investment into or support for airports in the state.
Ability to Influence Data	Low/Moderate - Economic impacts are generated by on-airport employment, capital improvement spending, and the spending of non-local visitors who arrive in Minnesota by air transportation. MnDOT Aeronautics and airports have some ability to create business-friendly airport environments to potentially increase tenant activities; increase funding for capital improvement spending; and work with local tourism and commerce organizations to enhance out-of-state/international visitation. These steps can be time-consuming and require the involvement of numerous business and community partners.
Proceed into Phase II	Include - Incorporate the results of the 2019 Minnesota Statewide Airport Economic Impact Study
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.43. System Metric Evaluation – Population Access to an Airline Service Airport

Data Assessment	Population Access to an Airline Service Airport
Type	Indicator
Description/Purpose	Percent of the population within 60-minutes surface travel time to a Key Commercial Service Airport with scheduled airline service.
Anticipated Source(s)	Drive-time analysis using U.S. Census Bureau data and ArcGIS
Data Update Cycle	Updates to be conducted in conjunction with U.S. Census cycles
Difficulty in Data Collection	Low - Drive-time maps are a common planning tool that can be developed by internal GIS staff or a third-party consultant
Data Manipulation Plan	Yes - Population data to be mapped against airport locations
MnDOT Application of Data	Drive-time analyses indicate the airport system's overall accessibility. They can reveal areas of the state without adequate access to scheduled commercial service and/or identify airports with overlapping catchment areas.
Ability to Influence Data	Low - The availability of scheduled commercial service is largely a factor of market demand. Demand is driven by population, socioeconomic factors, and other variables outside of MnDOT's control.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

Table 2.44. System Metric Evaluation – Fuel Availability at Airports

Data Assessment	Fuel Availability at Airports
Type	Indicator
Description/Purpose	Percent of airports within 50 nautical miles (nm) of another airport with Jet A fueling available 24 hours a day, 7 days a week (24/7) and 30 nm of another airport with 100 low lead (LL) fuel available 24/7.
Anticipated Source(s)	ArcGIS analyses using FAA 5010 data
Data Update Cycle	FAA 5010 inspection cycle
Difficulty in Data Collection	Low - This analysis can be conducted by internal GIS staff or by a third-party consultant.
Data Manipulation Plan	Yes - Fuel availability data to be mapped against airport locations.
MnDOT Application of Data	This analysis can be used to ensure adequate access to 24/7 fuel. Convenient access to fuel allows pilots to plan more direct routes, carry less fuel, and reduce the risk of running out of fuel. It can also promote safety and security, as aircraft used for emergency services need to be able to obtain fuel at all hours.
Ability to Influence Data	Low - Because fuel farms are a revenue-producing project, they rarely receive FAA support. As such, some airports may not have adequate local funds to support this improvement. Fuel farms can be installed by FBOs, but this would be market-driven and difficult for MnDOT to influence.
Proceed into Phase II	Include
Phase II Application of Data	Task 8 - MnSASP Hub

Sources: MnSASP Phase I, 2019; Kimley-Horn, 2020

2.4. Environmental Justice Methodology and Plan

According to the U.S. EPA, "environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[15] This concept is an important consideration of any planning project conducted by a public agency and is federally mandated when federal dollars are involved in most cases. As such, MnDOT is working to incorporate EJ throughout the agency's transportation planning processes, including the airport planning work occurring throughout Minnesota's airport system. This section describes MnDOT's existing EJ policies and the steps that MnDOT Aeronautics has taken to apply those policies. Section 2.4.4 provides specific recommendations for improved implementation at the statewide and airport-specific levels.

The following subsections summarize the background of EJ, provide an overview of MnDOT's EJ policies, and outline MnDOT Aeronautics' EJ analysis tool. With this foundation, the MnSASP Phase II provides recommendations on what the EJ plan means for airports and how it can be utilized toward the MnSASP.[16]

2.4.1. FEDERAL REQUIREMENTS

Several federal legal precedents mandate the consideration of EJ during the planning, design, and implementation of federally funded projects. The Civil Rights Act of 1964 addresses civil rights and labor laws by outlawing discrimination based on race, color, religion, sex, or national origin. Title VI was enacted as part of this landmark act to mandate the end of discrimination within federally assisted programs. Executive Order 12898 (E.O. 12898) issued in 1994 builds off Title VI by requiring federal agencies to avoid disproportionately impacting the environment and health of low income, racial minority, and other historically underserved populations. It also directs each federal agency to develop a strategy for implementing EJ to include a plan for enhancing the participation of and communication with groups historically omitted from decision-making processes. In response to this directive, the U.S. Department of Transportation (USDOT) issued the Final Environmental Justice Order, DOT Order 5610.2. The order lays out how EJ principles must be applied during the planning and programming of all federally funded transportation projects. Additionally, consideration of EJ is required by the National Environmental Policy Act (NEPA) of 1969 and the Clean Air Act of 1970.[17]

These federal precedents serve as the basis for why agencies must incorporate EJ considerations into any actions receiving federal funds. Chapter 10 of the FAA's 2007 *Environmental Desk Reference for Airport*

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[15] EPA (November 2020). "Environmental Justice." Available online at https://www.epa.gov/environmentaljustice (accessed November 2020).

[16] Note the information presented regarding EJ background information and MnDOT's existing policies is generally based on MnDOT Aeronautics' "Environmental Justice Analysis" (2019) whitepaper. This internal document outlines federal and state EJ policies affecting transportation development in Minnesota and presents the methodology of MnDOT Aeronautics' EJ analysis tool. Recommendations were developed in Phase II of the MnSASP in consultation with MnDOT Aeronautics.

[17] EPA (October 2020). Environmental Justice and National Environmental Policy Act. Available online at https://www.epa.gov/environmentaljustice/environmental-justice-and-national-environmental-policy-act (accessed November 2020).

Actions (Desk Reference) provides guidance on how EJ should be applied to airport development.[18] This synopsis defines the different vulnerable populations cited in the USDOT Order 5610.2 (i.e., low income and minority groups) and describes the potential applicability of EJ during airport development projects (e.g., airfield/landside expansions, movement area extensions, establishment of navigational aids off property, etc.).

In addition, the Desk Reference underlines the importance of tailored public outreach efforts to ensure vulnerable populations have an opportunity and platform to communicate any concerns regarding development efforts. This may include specifically reaching out to community leaders, conducting public involvement events in non-traditional locations or at multiple times, and providing information in multiple languages if non-English speaking populations are present.

2.4.2. MNDOT INTEGRATION

MnDOT projects funded by federal dollars (in whole or part) are required to conform with EJ principles mandated at the federal level, and the agency "supports environmental justice through every stage of its planning, construction and maintenance processes."[19] Airport projects receiving funds from FAA or other federal agencies "must take into consideration EJ impacts to surrounding populations regarding airport noise, airport construction, or other adverse human health and environmental effects."[20] In addition to the requirements outlined at the federal level, MnDOT has adopted its own policies and plans to consider EJ in its day-to-day operations and long-range plans to advance equity in Minnesota.[21] MnDOT emphasizes three fundamental principles of EJ:[22]

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations

MnDOT's Title VI policy also adds protected classes beyond the federal requirements by prohibiting discrimination on the basis of sex, age, disability, and income status. MnDOT is dedicated to ensuring that its programs offer access to Limited English Proficiency (LEP) populations and individuals. These principles are summarized in MnDOT's Title VI Program Policy:[23]

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[18] FAA (2007). "Environmental Desk Reference for Airport Actions." Available online at https://www.faa.gov/airports/environmental/environmental_desk_ref/ (accessed November 2020).

[19] MnDOT (2020). "Environmental Justice at MnDOT." Available online at http://www.dot.state.mn.us/environmentaljustice/ (accessed November 2020).

[20] FAA (March 2017). "Environmental Justice (EJ)." Available online at https://www.faa.gov/about/office_org/headquarters_offices/acr/com_civ_support/envir_justice/ (accessed November 2020).

[21] MnDOT (2019). "Environmental Justice Analysis." (internal whitepaper).

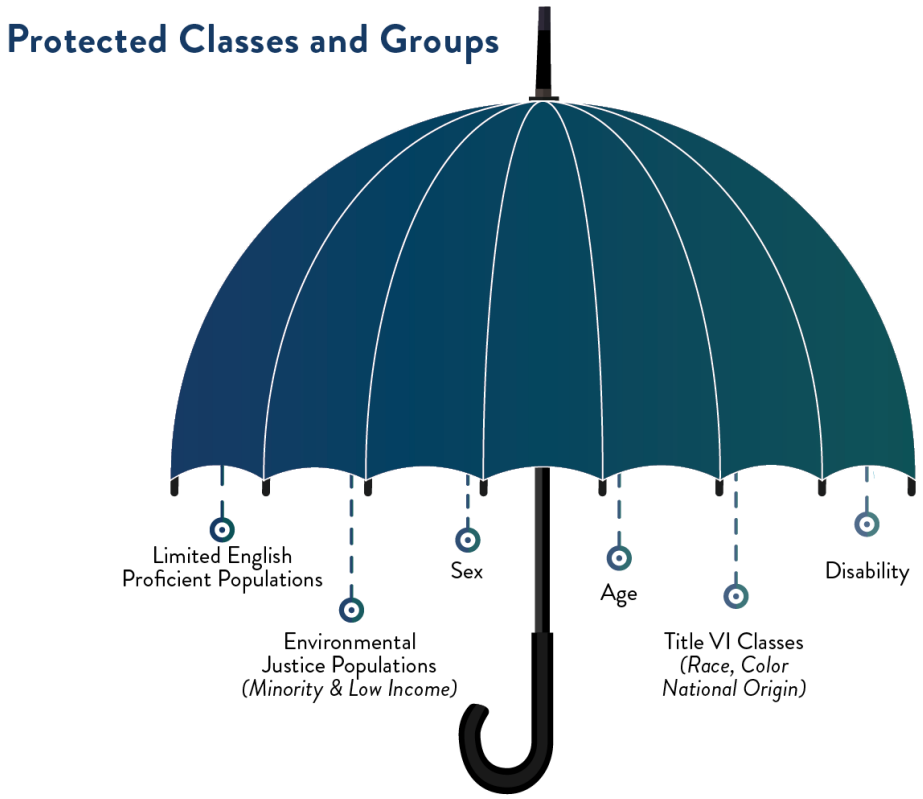
[22] MnDOT (2020). "Environmental Justice at MnDOT."

[23] MnDOT (2020). "Title VI Program: LEP." Available online at https://www.dot.state.mn.us/civilrights/limited-english-proficiency.html.

MnDOT is committed to ensuring that no person in the State of Minnesota, on the basis of race, color, national origin, sex, age, disability, or income status, is excluded from participation in, denied the benefits of, or otherwise is subjected to discrimination under any and all programs, services, or activities administered by the department, its recipients, subrecipients, and contractors. Additionally, MnDOT is committed to ensuring that its programs incorporate access for people with LEP.

Figure 2.5 visually depicts all protected classes under the Title VI Program.

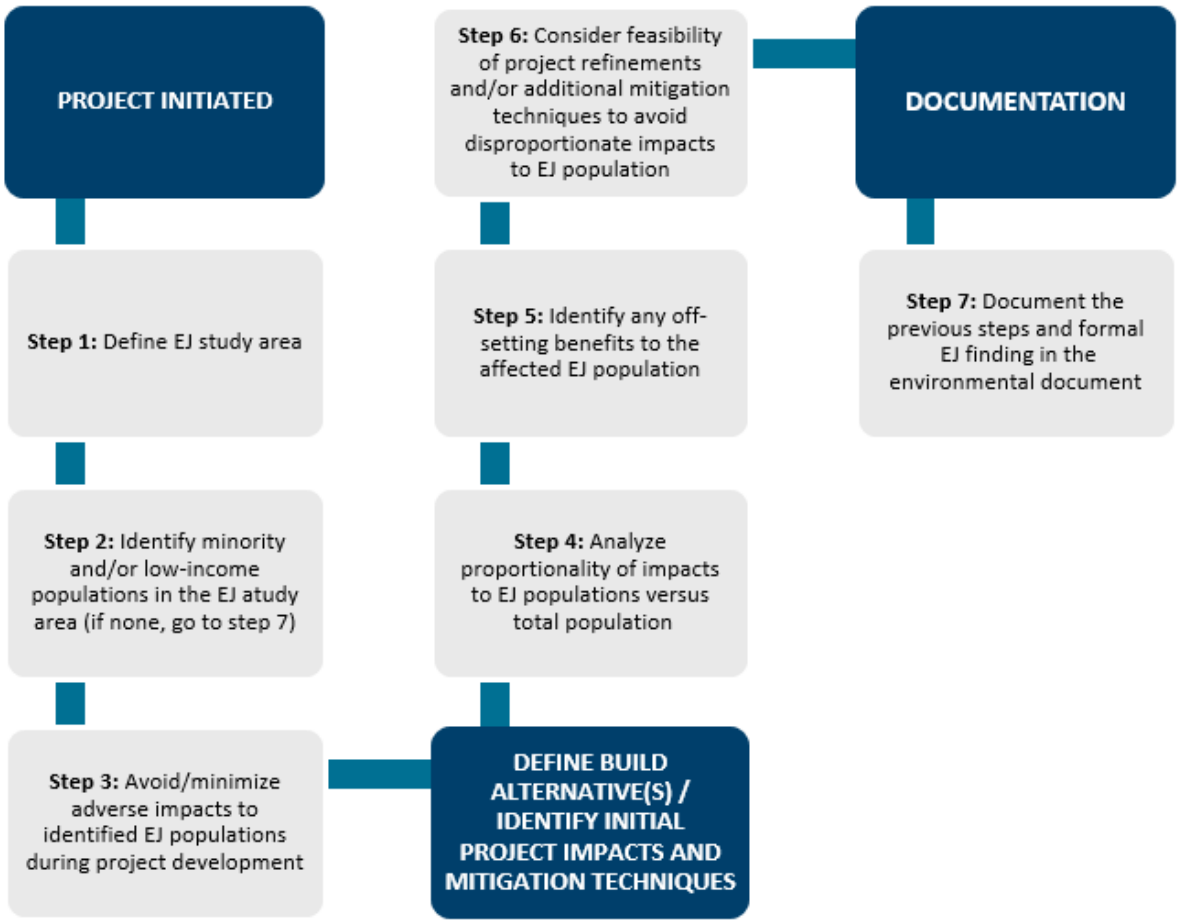
Figure 2.5. MnDOT's Title VI Protected Classes and Groups



Source: MnDOT, 2020

To clearly articulate how EJ should be incorporated into transportation programming within the state, MnDOT developed a formalized seven-step procedure. This model was first designed for the Highway Project Development Process (HPDP) and has since been adapted for implementation by other modes, including aviation. Figure 2.6 summarizes the seven steps of MnDOT's EJ Determination Process.

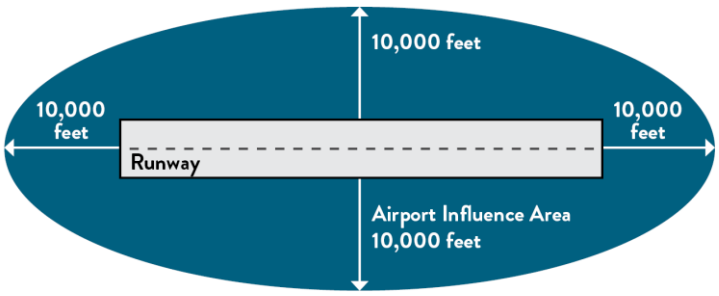
Figure 2.6. MnDOT EJ Determination Process Summary



Source: MnDOT, 2017

At this time, MnDOT Aeronautics has implemented steps one and two MnDOT's EJ Determination Process by developing an EJ analysis tool that measures the social vulnerability of EJ populations in the vicinity of Minnesota's airports. As the first step of the Determination Process, MnDOT Aeronautics has defined the EJ study areas as airport influence areas (AIAs), which comprise 2.3 percent of the state's land area. Extending out 10,000 feet from edge of each airport runway, these areas are most likely to be impacted by airport activities in terms of safety and noise (see Figure 2.7).

Figure 2.7. Airport Influence Area



Source: Kimley-Horn, 2020

To identify potentially vulnerable populations within airport influence areas, MnDOT Aeronautics developed a statewide EJ analysis tool. This tool conducts a systematic and replicable analysis utilizing U.S. Census Bureau demographics to develop a social vulnerability index (SoVI) within each individual airport influence area. This methodology identifies communities that exhibit a combination of social conditions that can lead to disproportionate risks and challenges to their safety and wellbeing. The impacts of these social conditions are indicated by specific demographics that are often associated with vulnerability, including racial minorities and low-income households. MnDOT Aeronautics' statewide EJ analysis tool measures the social vulnerability of populations living within airport influence areas by aggregating and assigning a composite index score to this demographic data. The following subsection provides additional details about the EJ analysis tool and methodology, which align with steps one and two of MnDOT's EJ Determination Process.

2.4.3. EJ ANALYSIS TOOL METHODOLOGY AND RESULTS

The starting point for the EJ analysis tool is identifying populations in Minnesota that are potentially vulnerable to disproportionate impacts due to EJ-related concerns. For instance, families that do not own a car could face particularly acute risks should the need to evacuate arise during a disaster.[24] Lacking an automobile could also pose a barrier to providing project input, as it could be challenging to attend public outreach meetings. Being able to speak and understand English with less than native fluency could similarly inhibit opportunities for public participation in terms of being notified of meetings and to meaningfully participate. MnDOT Aeronautics' EJ analysis tool identifies 14 different populations that are deemed socially vulnerable in Minnesota, categorized within eight demographic types:

- Income
  - Households in poverty
  - Average per capita income
- Racial Minorities
  - Nonwhite
  - Black
  - Native
  - Asian
  - Hispanic (all races)
- Age
  - Individuals younger than five
  - Individuals older than 64
- Education
  - Individuals over the age of 25 without a high school diploma
- Transportation access

[24] *MnDOT Aeronautics (2019). Environmental Justice Analysis (accessed November 2020).*

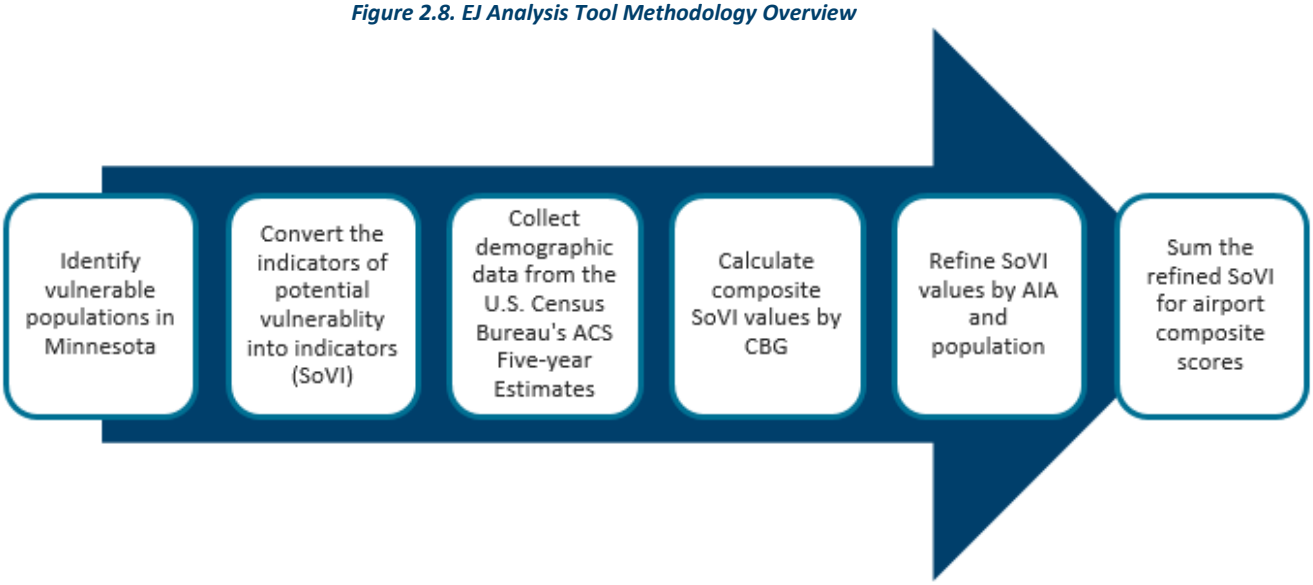
  - Households without access to a vehicle
- Nativity
  - Households with English as a second language (ESL)
- Family Structure
  - Single-parent families
- Disability
  - Households with at least one disabled member

The EJ analysis tool translated these indicators of potentially vulnerable populations into measurable indices. To accomplish this, nearly all concepts were converted into percentages (e.g., percent of households in poverty, percent of individuals older than 64, etc.) except for average per capita income.

Demographic data was collected from the U.S. Census Bureau via the American Community Survey (ACS) 5-Year Estimates data profile. At the time the analysis was conducted (2019), the most recent release of this profile was in 2017 (2013 - 2017 data years). To conduct a granular analysis, Census Block Groups (CBGs) were evaluated, as opposed to examining demographics within census tracts, urban areas, zip codes, counties, etc. CBGs are the smallest geographic unit published at the aggregate level by the U.S. Census Bureau. CBGs do not cross state, county, or city limits boundaries, although they do cross boundaries of Tribal holdings.

Once this data was collected for each CBG in Minnesota, the indicator data was translated into distinct index scores. A reductionist technique in GIS called the Jenks natural break algorithm was used to score each demographic indicator by CBG. Scores were then summed to develop a composite index for each CBG ranging from 0-44; this composite score is the SoVI value by CBG. Using GIS, the SoVI was then plotted within the portion of CBGs that fall within Minnesota's airport influence areas. To account for variation in population amongst the CBGs and only incorporate the percent of populations within the study areas, further refinement was needed. This included multiplying the SoVI by population of the CBG and by the percentage of the CBG that falls within the study area. By aggregating the SoVI by each airport influence area to determine the final composite score, system airports can be compared against one another and the Minnesota statewide average. Figure 2.8 provides an overview of the methodology of MnDOT's EJ analysis tool.

Figure 2.8. EJ Analysis Tool Methodology Overview

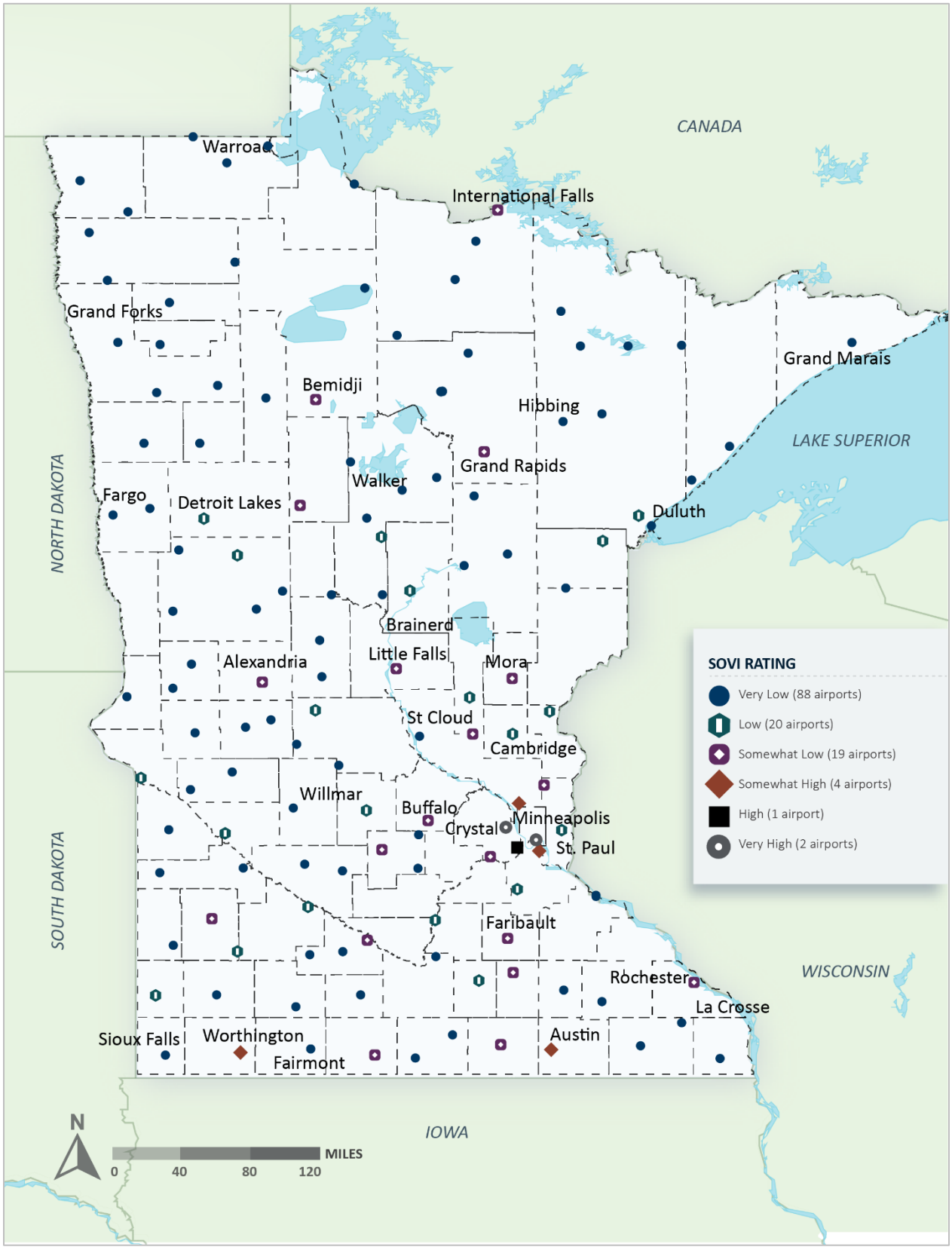


Sources: MnDOT, 2019; Kimley-Horn, 2020

Table 2.48. at the end of this chapter reports the composite SoVIs for each Minnesota system airport.[25] To supplement the comparison analysis, these SoVI composites were ranked into six distinct categories using the Jenks natural break algorithm. Figure 2.9 maps these classifications among each system airport.

[25] *At the time that the composite SoVI values were calculated (2019), the Minnesota system consisted of 134 airports. This included Silver Bay Municipal Airport which has since closed to reduce the system to 133 airports.*

Figure 2.9. SoVI Ratings for Minnesota System Airports



Source: MnDOT, 2019

2.4.4. EJ IMPLEMENTATION RECOMMENDATIONS

MnDOT's EJ Determination Process outlines seven steps for not only identifying vulnerable populations within Minnesota, but also taking actionable steps to mitigate the potential for disproportionally impacting those groups during transportation development actions. MnDOT Aeronautics' EJ analysis tool completes steps one and two of the Determination Process by clearly recognizing vulnerable populations within the vicinity of Minnesota's system airports. The 2022 MnSASP builds upon this prior work to offer guidance on how to take that recognition forward into action. The following recommendations are primarily aimed at improving the implementation of MnDOT EJ Determination Process, although some are targeted at the methodology itself.

Recommendation 1: Methodological Improvements

The following section addresses two recommendations pertaining to enhancing the methodology of the EJ analysis tool.

Reduce the Number of Indicators of Vulnerability

MnDOT's Aeronautics' EJ analysis tool assesses the composite vulnerability of each airport influence area based on 14 factors including but not limited to indicators of income, ethnicity, age, education, and access to transportation. While each of these factors could indicate a systemic disadvantage, the inclusion of so many factors can make the process unduly onerous in terms of future updates and communicating the methodology to airports, their consultants, and others responsible for implementation. Additionally, the FAA identifies just two factors in identifying vulnerable population based on guidance provided in USDOT Order 5610.2:[26]

- Low-income populations: Groups of low-income persons living in geographic proximity to one another. A low-income person is one having a median household income at or below the Department of Health and Human Services' (HHS) poverty guidelines or the U.S. Census Bureau's annual statistical poverty thresholds on income and poverty.
- Minority populations: Populations that are comprised of Black, Hispanic, Asian-American, or American Indian and Alaskan Native. These populations should be considered as an aggregate group within the specific project limit or area of impact.

The US DOT Order 5610.2 also addresses non-English speaking populations in terms of providing outreach materials in languages other than English, but these populations are not deemed inherently at-risk. Should MnDOT Aeronautics revise the methodology of its analysis tool at some point in the future, the agency may consider simplifying its process to consider only EJ populations instead of all protected classes under Title VI. Note: steps should be taken to ensure equitable opportunities for input from all protected classes during airport planning and development projects.

Enhance Geographic Equity

As the final step in the development of the SoVI composite scores, each score was multiplied by the population that lives within the CBG. This inherently skews the results so that only urban areas are

[26] *FAA (2007). Chapter 10, p.1.*

recognized as having a high SoVI composite score, especially when compared to less densely populated areas of the state. Population density does not inherently make a population vulnerable and may simply indicate the presence of multi-family housing units characteristic of urban environments. The actual SoVI composite score could be quite low but multiplying that score by population may artificially inflate the number to indicate vulnerability instead of density. Only eight airports in Minnesota have a score of "Somewhat High" or above. Six of these airports are in the Minneapolis/St. Paul metropolitan area, with the top three airports clustered in a relatively small geographic area.

MnDOT Aeronautics should carefully consider if determining vulnerability should be based on a statewide ranking of airports (as in the existing methodology) or by conducting an independent evaluation of the composition of populations living proximate to specific airports. Using this latter alternative, MnDOT Aeronautics could identify potential EJ concerns in terms of percent of total population within an airport influence area or by a certain number of people. This is the method used by the LEP four-factor analysis (see Recommendation 5), which sets the threshold for potential language accommodation at five percent or 1,000 persons, whichever is less. MnDOT Aeronautics could adopt this threshold for EJ more broadly.

Recommendation 2: Consult EJ Analysis Tool During Airport Planning and Development

As noted previously, EJ must be considered during all airport actions receiving federal funds. Airports and their consultants are generally directed to the *FAA Environmental Desk Reference for Airport Actions* for guidance on how to comply with environmental policies, regulation, and other federal mandates. Chapter 10: Environmental Justice provides an outline for determining if a project triggers EJ-related concerns. MnDOT's EJ Determination Process presented in Section 2.4.2 closely reflects this federal guidance.

MnDOT Aeronautics should consider requiring airports to consult the EJ analysis tool for any project receiving state investment and then develop an EJ accommodation plan to ensure meaningful participation of all potentially affected groups. If occurring at an airport with an SoVI rating of "Somewhat Low" or above (see Figure 2.9), airports could be required to identify if the specific project triggers EJ concerns, then identify strategies to properly mitigate or offset those concerns. This would require airports to identify the specific population(s) that are affected by proposed airport actions and develop a plan to address the needs of that group. This information could be obtained in the ACS 5-Year Estimates data profile. For example, LEP residents would require a different type of accommodation than groups without access to transportation, elderly residents, or families with young children. Examples of questions to consider when developing an EJ accommodation plan may include:

- Would the population within the airport influence area benefit from the following types of support services:
  - Translation of printed or audio materials
  - Outreach materials in easily understandable language
  - Visual depictions of potential impacts associated with proposed airport actions
  - Public participation events scheduled at multiple times or at nontraditional locations
  - Childcare services offered during outreach events
  - Transportation options, such a shuttle to transport residents from their homes to a public meeting hall

- What is this population's preferred method of communication (e.g., phone, internet, mailings, in-person update events)?
- Does this population have access to reliable internet service to obtain up-to-date project information?
- What transportation options are available to reach scheduled outreach events?
- Is there a community-based organization that could assist with project communications, such as school, church, or other civic groups?
- What are the primary obstacles this population could face that may hinder equitable and meaningful participation in this proposed project?
- To the best of your knowledge, have local community members provided input on past projects or been invited to do so? What was the outcome of such efforts? Were the concerns addressed or incorporated into the final project or action?

The answers to this final question should drive future outreach actions, as groups that have historically been excluded from public involvement processes may be less willing to participate in future efforts. Overcoming this challenge often requires partnerships with local community leaders or the involvement of a third party who already has the trust of a historically disenfranchised group. Additional recommendations pertaining to improving public participation processes for potentially vulnerable groups are provided in Recommendation 5.

Airports can access the Minnesota Social Vulnerability Index and Airport Influence Zones web application to determine their SoVI rating. MnDOT Aeronautics could require airports to include a screenshot of this application depicting their airport influence area for submission with Airport Construction Grant, Airport Maintenance and Operation, and Hangar Loan Revolving Account program applications. This would help MnDOT Aeronautics easily determine if an EJ accommodation plan may be required for the proposed project. The development of an EJ accommodation plan could be tied to state grant assurances to ensure follow-through.

Recommendation 3: Include SoVI in the MnSASP Hub

As noted above, the SoVI rating for each airport is already in GIS format and housed in the Minnesota Social Vulnerability Index and Airport Influence Zones web application. To improve awareness amongst airports, their consultants, and MnDOT, this information could be incorporated into the MnSASP Hub currently being developed as part Phase II of the 2022 MnSASP (Task 8). Merging this web application into the MnSASP Hub could allow MnDOT Aeronautics staff to more clearly identify projects triggering potential EJ concerns and better incorporate EJ considerations into planning, outreach, design, and construction phases. The web application's inclusion into the MnSASP Hub also enhances the Dashboard's functionality as a repository of all MnDOT Aeronautics GIS data.

Recommendation 4: Conduct Regular Updates

The MnDOT Aeronautics EJ analysis tool should be updated at regular intervals to capture evolving community demographics in Minnesota. The ACS provides current data about all communities every year,

instead of every 10 years as with the U.S. Census. The ACS survey is sent to a small percentage of households on a rotating basis to develop current estimates of community demographics. It is not necessary to update the EJ analysis tool annually, but population demographics do change over time. The Minnesota State Demographic Center reports that the state's population grew 7.1 percent between 2010 and 2019, adding 376,412 net new residents.[27] Some counties grew significantly faster, including Carver (17.7 percent increase), Wright (11.1 percent increase), and Hennepin (11.1 percent increase). Forty-three counties lost population during this same timeframe. These major population shifts are important to capture so the EJ analysis tool maintains relevancy over time. As such, a five-year (or less) update cycle is strongly recommended.

To assist MnDOT Aeronautics in this process, Phase II of the MnSASP developed a step-by-step update guide (for internal purposes only and not distributed as part of publicly released deliverables). The most recent update to the analysis tool occurred in December 2020 with 2015 – 2019 data. In some cases, this data may be significantly more up-to-date than provided in the existing EJ analysis tool (2013 – 2017 data).

Recommendation 5: Improve Public Participation Processes, Including LEP

EJ issues arise not only when EJ communities are disproportionally impacted by airport actions, but when those communities did not have equal opportunity to provide meaningful input during planning and design. The EPA, FAA, and other agencies emphasize that developing a public outreach plan that effectively considers the needs of EJ communities is not a "one-size-fits-all" solution. The challenges faced by historically disenfranchised populations are diverse and unique, as is the context of the project in question. As such, it is difficult to provide a list of discrete steps that should be taken to ensure all communities are equitably represented during public input processes. Instead, the EPA has developed a list of "critical elements" for effective long-term community engagement in its "Model Guidelines for Public Participation."[28] Effective public participation should include:[29]

- A two-way process of distributing and receiving information
- A process for increasing the number of community members who view themselves as "stakeholders" in the issues under consideration
- A system of processes and mechanisms for community outreach, input, and engagement at different levels
- An emphasis on the quality of input received instead of quantity of responses
- Recognition of the level of local expertise and experience offered by community members and leaders
- Efforts to design outreach methods, processes, and information targeted at the specific audiences

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[27] Minnesota State Demographics Center (n.d.). "Our Estimates." Available online at https://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/ (accessed December 2020).
[28] U.S. EPA (January 2013). "Model Guidelines for Public Participation: An Update to the 1996 National Environmental Justice Advisory Committee Model Plan for Public Participation." Available online at https://www.epa.gov/sites/production/files/2015-02/documents/recommendations-model-guide-pp-2013.pdf (accessed December 2020).
[29] Ibid. p.2.

- An overall approach tailored to the specific, unique needs of the community where activities are being implemented

Specific outreach strategies may include offering public outreach meetings at nontraditional times and in locations within communities instead of asking residents to drive to distant conference sites. Information should be presented in multiple formats. In addition to in-person forums such as public meetings, briefings, and telephone contacts, project planners should also consider "remote" outreach tools. Examples include printed information such as fact sheets, newsletters, and bulletins; websites; informational hotlines; the involvement of traditional press and media; and social media. Using multiple formats is preferable to enhance overall access to information. For example, some community members may not have access to fast or reliable internet service, and printed materials may be cumbersome for residents with limited literacy or language skills. In those cases, community residents would need to receive information using alternative formats.

Moreover, FAA grant recipients are already required to ensure equal access to information and other benefits associated with federally funded projects. This requirement extends to persons with LEP, defined as "persons for whom English is not their primary language and who have a limited ability to speak, understand, read, or write English" (FAA Order 1400.11, *Nondiscrimination in Federally-assisted Program at the FAA*). MnDOT's Title VI Program also establishes LEP consideration as critical for ensuring the full and meaningful participation of all individuals in MnDOT programs and activities.

As such, airports and their consultants should be conducting an LEP four-factor analysis to identify populations that may require specific accommodation for actions involving state money. An LEP four-factor analysis comprises the following steps:

1. Identify the number or proportion of LEP persons eligible to be served or likely to be encountered in a service area. The threshold for potential accommodation is set at five percent or 1,000 persons, whichever is less.
2. Determine the frequency of contact between LEP individuals and the recipient's services. The more frequent the contact between the services and the LEP population, the more likely the need for language assistance.
3. Assess the nature and importance of recipient's programs, activities, or services to people's lives. If a delay or denial of access could have serious health or life-threatening implications, it is probably "important."
4. Determine the resources available to the recipient and cost. A grant recipient's available resources and the costs associated with accommodation may impact the steps required to provide access for all LEP individuals.

The MnDOT Title VI Program provides further information and compliance resources to ensure agency actions and activities are compliant with state and federal policies. This includes translation services for MnDOT's internal workforce and external communications..[30] MnDOT Aeronautics should advance

[30] *MnDOT (2020). "Title VI Program: LEP." Available online at https://www.dot.state.mn.us/civilrights/limited-english-proficiency.html.*

existing LEP policies by requiring language accommodation when warranted during state-funded airport actions and coordinating such requirements with MnDOT's Title VI Program.

2.5. Summary

Phase II of the 2022 MnSASP is designed to closely evaluate many of the cornerstone funding and other decision-making policies of MnDOT Aeronautics. MnDOT Aeronautics developed the scope of work after actively listening to aviation constituents for nearly two years. The agency heard about emerging technologies such as UAS and ADS-B, the impacts of FAA policies on airport operations, and the need to enhance airports' revenue-generating capabilities. The aviation environment over the next 20 years may look quite different than the world today, and the speed of those changes could only hasten as the implications of COVID-19 continue to unravel through the development of the plan. Phase II of the MnSASP takes on these pressing issues and help MnDOT Aeronautics and airports adopt new strategies to advance and thrive within an evolving aviation landscape. The information and analyses presented in this chapter set that foundation for that work by providing a clear understanding of where we are now and the path to move ahead.

2.6. Individual Airport Tables

The following section includes the individual airport detail tables referenced throughout this chapter. Tables include:

- Table 2.45. Minnesota State Aviation System – State Classifications and Inclusion in NPIAS
- Table 2.46. NPIAS Airports by NPIAS Category and Hub Size/Role (As Applicable)
- Table 2.47. Minnesota Airport System by Classification
- Table 2.48. EJ Analysis Tool Results – SoVI Composite Scores by Airport

Note that Table 2.45 and Table 2.48 are organized alphabetically by associated city. Table 2.46 is organized in terms of NPIAS category, hub size (Primary airports), role (Nonprimary airports), and then by associated city. Table 2.47 is organized first by state classification, then alphabetically by associated city. These organizational structures are designed to offer readers the ability to most readily access the most germane information provided in each table.

Table 2.45. Minnesota State Aviation System – State Classifications and Inclusion in NPIAS

Associated City	Airport Name	FAA ID	State Classification	NPIAS Inclusion
Ada/Twin Valley	Ada-Norman County/Ada/Twin Valley Airport	D00	Intermediate Small	No
Aitkin	Aitkin Municipal Airport	AIT	Intermediate Large	Yes
Albert Lea	Albert Lea Municipal Airport	AEL	Key General Aviation	Yes
Alexandria	Alexandria Municipal Airport (Chandler Field)	AXN	Key General Aviation	Yes
Appleton	Appleton Municipal Airport	AQP	Intermediate Small	No
Austin	Austin Municipal Airport	AUM	Key General Aviation	Yes
Backus	Backus Municipal Airport	7Y3	Landing Strip Turf	No
Bagley	Bagley Municipal Airport	7Y4	Intermediate Small	No
Baudette	Baudette International Airport	BDE	Key General Aviation	Yes
Bemidji	Bemidji Regional Airport	BJI	Key Commercial Service	Yes
Benson	Benson Municipal Airport	BBB	Intermediate Large	Yes
Big Falls	Big Falls Municipal Airport	7Y9	Landing Strip Turf	No
Bigfork	Bigfork Municipal Airport	FOZ	Intermediate Large	No
Blue Earth	Blue Earth Municipal Airport	SBU	Intermediate Small	Yes
Bowstring	Bowstring Airport	9Y0	Landing Strip Turf	No
Brainerd	Brainerd-Crow Wing County Regional Airport	BRD	Key Commercial Service	Yes
Brooten	Brooten Municipal Airport	6D1	Intermediate Small	No
Buffalo	Buffalo Municipal Airport	CFE	Intermediate Small	Yes
Caledonia	Caledonia-Houston County Airport	CHU	Intermediate Small	Yes
Cambridge	Cambridge Municipal Airport	CBG	Intermediate Large	Yes
Canby	Canby Municipal Airport (Myers Field)	CNB	Intermediate Large	Yes
Clarissa	Clarissa Municipal Airport	8Y5	Landing Strip Turf	No
Cloquet	Cloquet-Carlton County Airport	COQ	Intermediate Large	Yes
Cook	Cook Municipal Airport	CQM	Intermediate Large	Yes
Crookston	Crookston Municipal Airport (Kirkwood Field)	CKN	Intermediate Large	Yes
Detroit Lakes	Detroit Lakes Airport (Wething Field)	DTL	Intermediate Large	Yes

Associated City	Airport Name	FAA ID	State Classification	NPIAS Inclusion
Dodge Center	Dodge Center Municipal Airport	TOB	Intermediate Large	Yes
Duluth	Duluth International Airport	DLH	Key Commercial Service	Yes
Duluth	Duluth-Sky Harbor Airport & Seaplane Base	DYT	Intermediate Small	Yes
East Gull Lake	East Gull Lake Airport	9Y2	Landing Strip Turf	No
Elbow Lake	Elbow Lake Municipal Airport	Y63	Intermediate Small	Yes
Ely	Ely Municipal Airport	ELO	Key General Aviation	Yes
Eveleth	Eveleth-Virginia Municipal Airport	EVM	Intermediate Large	Yes
Fairmont	Fairmont Municipal Airport	FRM	Key General Aviation	Yes
Faribault	Faribault Municipal Airport	FBL	Intermediate Large	Yes
Fergus Falls	Fergus Falls Municipal Airport (Einar Mickelson Field)	FFM	Key General Aviation	Yes
Fertile	Fertile Municipal Airport	D14	Intermediate Small	No
Forest Lake	Forest Lake Airport	25D	Intermediate Small	No
Fosston	Fosston Municipal Airport	FSE	Intermediate Small	Yes
Glencoe	Glencoe Municipal Airport (Vernon Perschau Field)	GYL	Intermediate Small	Yes
Glenwood	Glenwood Municipal Airport	GHW	Intermediate Large	Yes
Grand Marais	Grand Marais-Cook County Airport	CKC	Key General Aviation	Yes
Grand Rapids	Grand Rapids-Itasca County Airport (Gordon Newstrom Field)	GPZ	Key General Aviation	Yes
Granite Falls	Granite Falls Municipal Airport (Lenzen-Roe Memorial Field)	GDB	Intermediate Large	No
Grygla	Grygla Municipal Airport (Mel Wilkens Field)	3G2	Landing Strip Turf	No
Hallock	Hallock Municipal Airport	HCO	Intermediate Large	Yes
Hawley	Hawley Municipal Airport	04Y	Intermediate Small	Yes
Hector	Hector Municipal Airport	1D6	Intermediate Small	Yes
Henning	Henning Municipal Airport	05Y	Landing Strip Turf	No
Herman	Herman Municipal Airport	06Y	Intermediate Small	No
Hibbing	Hibbing-Chisholm-Hibbing Municipal Airport	HIB	Key Commercial Service	Yes
Hill City	Hill City-Quadna Mountain Airport	07Y	Landing Strip Turf	No
Hutchinson	Hutchinson Municipal Airport (Butler Field)	HCD	Intermediate Large	Yes

Associated City	Airport Name	FAA ID	State Classification	NPIAS Inclusion
International Falls	International Falls-Falls International Airport	INL	Key Commercial Service	Yes
Jackson	Jackson Municipal Airport	MJQ	Intermediate Small	Yes
Karlstad	Karlstad Municipal Airport	23D	Landing Strip Turf	No
Le Sueur	Le Sueur Municipal Airport	12Y	Intermediate Small	Yes
Litchfield	Litchfield Municipal Airport	LJF	Intermediate Large	Yes
Little Falls	Little Falls-Morrison County Airport	LXL	Intermediate Large	Yes
Littlefork	Littlefork Municipal Hanover Airport	13Y	Landing Strip Turf	No
Long Prairie	Long Prairie Airport (Todd Field)	14Y	Intermediate Small	Yes
Longville	Longville Municipal Airport	XVG	Intermediate Small	Yes
Luverne	Luverne Municipal Airport	LYV	Intermediate Large	Yes
Madison	Madison-Lac Qui Parle Airport	DXX	Intermediate Small	Yes
Mahnomen	Mahnomen County Airport	3N8	Intermediate Small	Yes
Mankato	Mankato Municipal Airport	MKT	Key General Aviation	Yes
Maple Lake	Maple Lake Municipal Airport & Seaplane Base	MGG	Intermediate Small	No
Marshall	Marshall-Southwest Minnesota Regional Airport-Marshall/Ryan Field	MML	Key General Aviation	Yes
McGregor	McGregor-Isedor Iverson Airport	HZX	Intermediate Small	No
Milaca	Milaca Municipal Airport	18Y	Landing Strip Turf	No
Minneapolis	Minneapolis Airlake Airport	LVN	Intermediate Large	Yes
Minneapolis	Minneapolis Anoka County/Blaine Airport (Janes Field)	ANE	Key General Aviation	Yes
Minneapolis	Minneapolis Crystal Airport	MIC	Intermediate Small	Yes
Minneapolis	Minneapolis Flying Cloud Airport	FCM	Key General Aviation	Yes
Minneapolis	Minneapolis/St. Paul International Airport	MSP	Key Commercial Service	Yes
Montevideo	Montevideo-Chippewa County Airport	MVE	Intermediate Large	Yes
Moorhead	Moorhead Municipal Airport	JKJ	Intermediate Large	Yes
Moose Lake	Moose Lake-Carlton County Airport	MZH	Intermediate Small	Yes
Mora	Mora Municipal Airport	JMR	Intermediate Large	Yes
Morris	Morris Municipal Airport	MOX	Intermediate Large	Yes

Associated City	Airport Name	FAA ID	State Classification	NPIAS Inclusion
New Ulm	New Ulm Municipal Airport	ULM	Key General Aviation	Yes
Northome	Northome Municipal Airport	43Y	Landing Strip Turf	No
Olivia	Olivia Regional Airport	OVL	Intermediate Small	No
Orr	Orr Regional Airport	ORB	Intermediate Large	Yes
Ortonville	Ortonville Municipal Airport (Martinson Field)	VVV	Intermediate Small	Yes
Owatonna	Owatonna Degner Regional Airport	OWA	Key General Aviation	Yes
Park Rapids	Park Rapids Municipal Airport	PKD	Key General Aviation	Yes
Paynesville	Paynesville Municipal Airport	PEX	Intermediate Small	Yes
Pelican Rapids	Pelican Rapids Municipal Airport	47Y	Landing Strip Turf	No
Perham	Perham Municipal Airport	16D	Intermediate Large	No
Pine River	Pine River Regional Airport	PWC	Intermediate Small	Yes
Pinecreek	Piney-Pinecreek Border Airport	48Y	Intermediate Small	No
Pipestone	Pipestone Municipal Airport	PQN	Intermediate Large	Yes
Preston	Preston Fillmore County Airport	FKA	Intermediate Large	Yes
Princeton	Princeton Municipal Airport	PNM	Intermediate Large	Yes
Red Lake Falls	Red Lake Falls Municipal Airport	D81	Intermediate Small	No
Red Wing	Red Wing Regional Airport	RGK	Key General Aviation	Yes
Redwood Falls	Redwood Falls Municipal Airport	RWF	Intermediate Large	Yes
Remer	Remer Municipal Airport	52Y	Landing Strip Turf	No
Rochester	Rochester International Airport	RST	Key Commercial Service	Yes
Roseau	Roseau Municipal Airport (Rudy Billberg Field)	ROX	Intermediate Large	Yes
Rush City	Rush City Municipal Airport	ROS	Intermediate Large	Yes
Rushford	Rushford Municipal Airport	55Y	Intermediate Small	Yes
St. Cloud	Saint Cloud Regional Airport	STC	Key Commercial Service	Yes
St. James	Saint James Municipal Airport	JYG	Intermediate Large	Yes
St. Paul	Saint Paul Downtown Airport (Holman Field)	STP	Key General Aviation	Yes
St. Paul	Saint Paul-Lake Elmo Airport	21D	Intermediate Small	Yes

Associated City	Airport Name	FAA ID	State Classification	NPIAS Inclusion
Sauk Centre	Sauk Centre Municipal Airport	D39	Intermediate Small	Yes
Slayton	Slayton Municipal Airport	DVP	Intermediate Small	No
Sleepy Eye	Sleepy Eye Municipal Airport	Y58	Landing Strip Turf	No
South St. Paul	South St. Paul Municipal Airport (Fleming Field)	SGS	Intermediate Large	Yes
Springfield	Springfield Municipal Airport	D42	Intermediate Small	Yes
Staples	Staples Municipal Airport	SAZ	Intermediate Small	Yes
Starbuck	Starbuck Municipal Airport	D32	Landing Strip Turf	No
Stephen	Stephen Municipal Airport	D41	Intermediate Small	No
Thief River Falls	Thief River Falls Regional Airport	TVF	Key Commercial Service	Yes
Tower	Tower Municipal Airport	12D	Intermediate Small	Yes
Tracy	Tracy Municipal Airport	TKC	Intermediate Small	Yes
Two Harbors	Two Harbors-Richard B. Helgeson Airport	TWM	Intermediate Large	Yes
Tyler	Tyler Municipal Airport	63Y	Landing Strip Turf	No
Wadena	Wadena Municipal Airport	ADC	Intermediate Large	Yes
Walker	Walker Municipal Airport	Y49	Intermediate Small	Yes
Warren	Warren Municipal Airport	D37	Intermediate Small	No
Warroad	Warroad International Airport (Swede Carlson Field)	RRT	Key General Aviation	Yes
Waseca	Waseca Municipal Airport	ACQ	Intermediate Small	Yes
Waskish	Waskish Municipal Airport	VWU	Landing Strip Turf	No
Waskish	Wells Municipal Airport	68Y	Landing Strip Turf	No
Wheaton	Wheaton Municipal Airport	ETH	Intermediate Small	Yes
Willmar	Willmar Municipal Airport	BDH	Key General Aviation	Yes
Windom	Windom Municipal Airport	MWM	Intermediate Small	Yes
Winona	Winona Municipal Airport (Max Conrad Field)	ONA	Key General Aviation	Yes
Winsted	Winsted Municipal Airport	10D	Landing Strip Turf	Yes
Worthington	Worthington Municipal Airport	OTG	Key General Aviation	Yes

Sources: MnSASP Phase I, 2019; FAA ADIP, 2020; Kimley-Horn, 2020; FAA NPIAS 2021 – 2024

Table 2.46. NPIAS Airports by NPIAS Category and Hub Size/Role (As Applicable)

Category	Associated City	Airport Name	FAA ID	Hub Size/ Role, As applicable
Primary	Minneapolis	Minneapolis/St. Paul International Airport	MSP	Large
	Bemidji	Bemidji Regional Airport	BJI	Nonhub
	Brainerd	Brainerd-Crow Wing County Regional Airport	BRD	Nonhub
	Duluth	Duluth International Airport	DLH	Nonhub
	Hibbing	Hibbing-Chisholm-Hibbing Municipal Airport	HIB	Nonhub
	International Falls	International Falls-Falls International Airport	INL	Nonhub
	Rochester	Rochester International Airport	RST	Nonhub
	St. Cloud	Saint Cloud Regional Airport	STC	Nonhub
Commercial Service	Thief River Falls	Thief River Falls Regional Airport	TVF	Local
Reliever	Minneapolis	Minneapolis Anoka County/Blaine Airport (Janes Field)	ANE	National
	Minneapolis	Minneapolis Flying Cloud Airport	FCM	National
	St. Paul	Saint Paul Downtown Airport (Holman Field)	STP	National
	Minneapolis	Minneapolis Airlake Airport	LVN	Regional
	Minneapolis	Minneapolis Crystal Airport	MIC	Regional
	South St. Paul	South St. Paul Municipal Airport (Fleming Field)	SGS	Regional
	St. Paul	Saint Paul-Lake Elmo Airport	21D	Regional
General Aviation	Grand Rapids	Grand Rapids-Itasca County Airport (Gordon Newstrom Field)	GPZ	Regional
	Mankato	Mankato Municipal Airport	MKT	Regional
	Marshall	Marshall-Southwest Minnesota Regional Airport-Marshall/Ryan Field	MML	Regional
	Red Wing	Red Wing Regional Airport	RGK	Regional
	Willmar	Willmar Municipal Airport	BDH	Regional
	Aitkin	Aitkin Municipal Airport	AIT	Local
	Albert Lea	Albert Lea Municipal Airport	AEL	Local
	Alexandria	Alexandria Municipal Airport (Chandler Field)	AXN	Local

Category	Associated City	Airport Name	FAA ID	Hub Size/ Role, As applicable
	Austin	Austin Municipal Airport	AUM	Local
	Baudette	Baudette International Airport	BDE	Local
	Blue Earth	Blue Earth Municipal Airport	SBU	Local
	Buffalo	Buffalo Municipal Airport	CFE	Local
	Cambridge	Cambridge Municipal Airport	CBG	Local
	Canby	Canby Municipal Airport (Myers Field)	CNB	Local
	Cloquet	Cloquet-Carlton County Airport	COQ	Local
	Crookston	Crookston Municipal Airport (Kirkwood Field)	CKN	Local
General Aviation (continued)	Detroit Lakes	Detroit Lakes Airport (Wething Field)	DTL	Local
	Dodge Center	Dodge Center Municipal Airport	TOB	Local
	Duluth	Duluth-Sky Harbor Airport & Seaplane Base	DYT	Local
	Elbow Lake	Elbow Lake Municipal Airport	Y63	Local
	Ely	Ely Municipal Airport	ELO	Local
	Eveleth	Eveleth-Virginia Municipal Airport	EVM	Local
	Fairmont	Fairmont Municipal Airport	FRM	Local
	Faribault	Faribault Municipal Airport	FBL	Local
	Fergus Falls	Fergus Falls Municipal Airport (Einar Mickelson Field)	FFM	Local
	Glencoe	Glencoe Municipal Airport (Vernon Perschau Field)	GYL	Local
	Grand Marais	Grand Marais-Cook County Airport	CKC	Local
	Hallock	Hallock Municipal Airport	HCO	Local
	Hawley	Hawley Municipal Airport	04Y	Local
	Hutchinson	Hutchinson Municipal Airport (Butler Field)	HCD	Local
	Le Sueur	Le Sueur Municipal Airport	12Y	Local
	Litchfield	Litchfield Municipal Airport	LJF	Local
	Little Falls	Little Falls-Morrison County Airport	LXL	Local
	Luverne	Luverne Municipal Airport	LYV	Local
	Mahnomen	Mahnomen County Airport	3N8	Local

Category	Associated City	Airport Name	FAA ID	Hub Size/ Role, As applicable
	Moorhead	Moorhead Municipal Airport	JKJ	Local
	Moose Lake	Moose Lake-Carlton County Airport	MZH	Local
	Mora	Mora Municipal Airport	JMR	Local
	New Ulm	New Ulm Municipal Airport	ULM	Local
	Owatonna	Owatonna Degner Regional Airport	OWA	Local
General Aviation (continued)	Paynesville	Paynesville Municipal Airport	PEX	Local
	Pine River	Pine River Regional Airport	PWC	Local
	Preston	Preston Fillmore County Airport	FKA	Local
	Princeton	Princeton Municipal Airport	PNM	Local
	Redwood Falls	Redwood Falls Municipal Airport	RWF	Local
	Rush City	Rush City Municipal Airport	ROS	Local
	Sauk Centre	Sauk Centre Municipal Airport	D39	Local
	Staples	Staples Municipal Airport	SAZ	Local
	Two Harbors	Two Harbors-Richard B. Helgeson Airport	TWM	Local
	Walker	Walker Municipal Airport	Y49	Local
	Warroad	Warroad International Airport (Swede Carlson Field)	RRT	Local
	Waseca	Waseca Municipal Airport	ACQ	Local
	Windom	Windom Municipal Airport	MWM	Local
	Winona	Winona Municipal Airport (Max Conrad Field)	ONA	Local
	Worthington	Worthington Municipal Airport	OTG	Local
	Benson	Benson Municipal Airport	BBB	Basic
	Caledonia	Caledonia-Houston County Airport	CHU	Basic
	Cook	Cook Municipal Airport	CQM	Basic
	Fosston	Fosston Municipal Airport	FSE	Basic
	Glenwood	Glenwood Municipal Airport	GHW	Basic
	Hector	Hector Municipal Airport	1D6	Basic
	Jackson	Jackson Municipal Airport	MJQ	Basic

Category	Associated City	Airport Name	FAA ID	Hub Size/ Role, As applicable
	Long Prairie	Long Prairie Airport (Todd Field)	14Y	Basic
	Longville	Longville Municipal Airport	XVG	Basic
General Aviation (continued)	Madison	Madison-Lac Qui Parle Airport	DXX	Basic
	Montevideo	Montevideo-Chippewa County Airport	MVE	Basic
	Morris	Morris Municipal Airport	MOX	Basic
	Orr	Orr Regional Airport	ORB	Basic
	Park Rapids	Park Rapids Municipal Airport	PKD	Basic
	Pipestone	Pipestone Municipal Airport	PQN	Basic
	Roseau	Roseau Municipal Airport (Rudy Billberg Field)	ROX	Basic
	Rushford	Rushford Municipal Airport	55Y	Basic
	St. James	Saint James Municipal Airport	JYG	Basic
	Tower	Tower Municipal Airport	12D	Basic
	Tracy	Tracy Municipal Airport	TKC	Basic
	Wadena	Wadena Municipal Airport	ADC	Basic
	Winsted	Winsted Municipal Airport	10D	Basic
	Ortonville	Ortonville Municipal Airport (Martinson Field)	VVV	Unclassified
	Springfield	Springfield Municipal Airport	D42	Unclassified
	Wheaton	Wheaton Municipal Airport	ETH	Unclassified

Source: FAA NPIAS 2021 – 2024

Table 2.47. Minnesota Airport System by Classification

State Classification	Associated City	Airport Name	FAA ID	Length (feet)	Surface Type
Key Commercial Service - Part 139 Certificate	Bemidji	Bemidji Regional Airport	BJI	7,004	Paved
	Brainerd	Brainerd-Crow Wing County Regional Airport	BRD	6,512	Paved
	Duluth	Duluth International Airport	DLH	10,591	Paved
	Hibbing	Hibbing-Chisholm-Hibbing Municipal Airport	HIB	6,758	Paved
	International Falls	International Falls-Falls International Airport	INL	7,400	Paved
	Minneapolis	Minneapolis/St. Paul International Airport	MSP	10,000	Paved
	Rochester	Rochester International Airport	RST	9,034	Paved
	St. Cloud	Saint Cloud Regional Airport	STC	7,500	Paved
	Thief River Falls	Thief River Falls Regional Airport	TVF	6,504	Paved
Key GA - Paved Runway ≥4,900 Feet	Albert Lea	Albert Lea Municipal Airport	AEL	5,000	Paved
	Alexandria	Alexandria Municipal Airport (Chandler Field)	AXN	5,099	Paved
	Austin	Austin Municipal Airport	AUM	5,800	Paved
	Baudette	Baudette International Airport	BDE	5,498	Paved
	Ely	Ely Municipal Airport	ELO	5,596	Paved
	Fairmont	Fairmont Municipal Airport	FRM	5,503	Paved
	Fergus Falls	Fergus Falls Municipal Airport (Einar Mickelson Field)	FFM	5,639	Paved
	Grand Marais	Grand Marais-Cook County Airport	CKC	5,002	Paved
	Grand Rapids	Grand Rapids-Itasca County Airport (Gordon Newstrom Field)	GPZ	5,756	Paved
	Mankato	Mankato Municipal Airport	MKT	6,600	Paved
	Marshall	Marshall-Southwest Minnesota Regional Airport-Marshall/Ryan Field	MML	7,221	Paved
	Minneapolis	Minneapolis Anoka County/Blaine Airport (Janes Field)	ANE	5,000	Paved
	Minneapolis	Minneapolis Flying Cloud Airport	FCM	5,000	Paved
	New Ulm	New Ulm Municipal Airport	ULM	5,401	Paved

State Classification	Associated City	Airport Name	FAA ID	Length (feet)	Surface Type
Key GA - Paved Runway ≥4,900 Feet (continued)	Owatonna	Owatonna Degner Regional Airport	OWA	5,500	Paved
	Park Rapids	Park Rapids Municipal Airport	PKD	5,497	Paved
	Red Wing	Red Wing Regional Airport	RGK	5,010	Paved
	St. Paul	Saint Paul Downtown Airport (Holman Field)	STP	6,491	Paved
	Warroad	Warroad International Airport (Swede Carlson Field)	RRT	5,400	Paved
	Willmar	Willmar Municipal Airport	BDH	5,500	Paved
	Winona	Winona Municipal Airport (Max Conrad Field)	ONA	5,679	Paved
	Worthington	Worthington Municipal Airport	OTG	5,500	Paved
Intermediate Large - Paved and Lighted Runway ≥3,800 Feet and <4,900 Feet	Aitkin	Aitkin Municipal Airport	AIT	4,000	Paved
	Benson	Benson Municipal Airport	BBB	4,000	Paved
	Bigfork	Bigfork Municipal Airport	FOZ	3,998	Paved
	Cambridge	Cambridge Municipal Airport	CBG	4,001	Paved
	Canby	Canby Municipal Airport (Myers Field)	CNB	4,648	Paved
	Cloquet	Cloquet-Carlton County Airport	COQ	4,002	Paved
	Cook	Cook Municipal Airport	CQM	4,000	Paved
	Crookston	Crookston Municipal Airport (Kirkwood Field)	CKN	4,300	Paved
	Detroit Lakes	Detroit Lakes Airport (Wething Field)	DTL	4,502	Paved
	Dodge Center	Dodge Center Municipal Airport	TOB	4,500	Paved
	Eveleth	Eveleth-Virginia Municipal Airport	EVM	4,000	Paved
	Faribault	Faribault Municipal Airport	FBL	4,257	Paved
	Glenwood	Glenwood Municipal Airport	GHW	4,500	Paved
	Granite Falls	Granite Falls Municipal Airport (Lenzen-Roe Memorial Field)	GDB	4,357	Paved
Intermediate Large - Paved and Lighted Runway ≥3,800 Feet and	Hallock	Hallock Municipal Airport	HCO	4,007	Paved
	Hutchinson	Hutchinson Municipal Airport (Butler Field)	HCD	4,000	Paved
	Litchfield	Litchfield Municipal Airport	LJF	4,002	Paved
	Little Falls	Little Falls-Morrison County Airport	LXL	4,010	Paved

State Classification	Associated City	Airport Name	FAA ID	Length (feet)	Surface Type
<4,900 Feet (continued)	Luverne	Luverne Municipal Airport	LYV	4,200	Paved
	Minneapolis	Minneapolis Airlake Airport	LVN	4,099	Paved
	Montevideo	Montevideo-Chippewa County Airport	MVE	3,999	Paved
	Moorhead	Moorhead Municipal Airport	JKJ	4,300	Paved
	Mora	Mora Municipal Airport	JMR	4,794	Paved
	Morris	Morris Municipal Airport	MOX	4,002	Paved
	Orr	Orr Regional Airport	ORB	4,000	Paved
	Perham	Perham Municipal Airport	16D	4,102	Paved
	Pipestone	Pipestone Municipal Airport	PQN	4,306	Paved
	Preston	Preston Fillmore County Airport	FKA	4,001	Paved
	Princeton	Princeton Municipal Airport	PNM	3,900	Paved
	Redwood Falls	Redwood Falls Municipal Airport	RWF	4,001	Paved
	Roseau	Roseau Municipal Airport (Rudy Billberg Field)	ROX	4,400	Paved
	Rush City	Rush City Municipal Airport	ROS	4,401	Paved
	South St. Paul	South St. Paul Municipal Airport (Fleming Field)	SGS	4,002	Paved
	St. James	Saint James Municipal Airport	JYG	3,999	Paved
	Two Harbors	Two Harbors-Richard B. Helgeson Airport	TWM	4,400	Paved
	Wadena	Wadena Municipal Airport	ADC	4,007	Paved
Intermediate Small - Paved Runway < 3,800 feet	Ada/Twin Valley	Ada-Norman County/Ada/Twin Valley Airport	D00	3,103	Paved
Intermediate Small - Paved Runway < 3,800 feet (continued)	Appleton	Appleton Municipal Airport	AQP	3,500	Paved
	Bagley	Bagley Municipal Airport	7Y4	3,800	Paved
	Blue Earth	Blue Earth Municipal Airport	SBU	3,400	Paved
	Brooten	Brooten Municipal Airport	6D1	3,500	Paved
	Buffalo	Buffalo Municipal Airport	CFE	3,200	Paved
	Caledonia	Caledonia-Houston County Airport	CHU	3,499	Paved

State Classification	Associated City	Airport Name	FAA ID	Length (feet)	Surface Type
	Duluth	Duluth-Sky Harbor Airport & Seaplane Base	DYT	2,600	Paved
	Elbow Lake	Elbow Lake Municipal Airport	Y63	3,401	Paved
	Fertile	Fertile Municipal Airport	D14	3,000	Paved
	Forest Lake	Forest Lake Airport	25D	2,700	Paved
	Fosston	Fosston Municipal Airport	FSE	3,502	Paved
	Glencoe	Glencoe Municipal Airport (Vernon Perschau Field)	GYL	3,300	Paved
	Hawley	Hawley Municipal Airport	04Y	3,398	Paved
	Hector	Hector Municipal Airport	1D6	2,776	Paved
	Herman	Herman Municipal Airport	06Y	2,997	Paved
	Jackson	Jackson Municipal Airport	MJQ	3,591	Paved
	Le Sueur	Le Sueur Municipal Airport	12Y	3,000	Paved
	Long Prairie	Long Prairie Airport (Todd Field)	14Y	3,501	Paved
	Longville	Longville Municipal Airport	XVG	3,549	Paved
	Madison	Madison-Lac Qui Parle Airport	DXX	3,300	Paved
	Mahnomen	Mahnomen County Airport	3N8	3,400	Paved
	Maple Lake	Maple Lake Municipal Airport & Seaplane Base	MGG	2,796	Paved
	McGregor	McGregor-Isedor Iverson Airport	HZX	3,400	Paved
	Minneapolis	Minneapolis Crystal Airport	MIC	3,268	Paved
	Moose Lake	Moose Lake-Carlton County Airport	MZH	3,200	Paved
Intermediate Small - Paved Runway < 3,800 feet (continued)	Olivia	Olivia Regional Airport	OVL	3,498	Paved
	Ortonville	Ortonville Municipal Airport (Martinson Field)	VVV	3,417	Paved
	Paynesville	Paynesville Municipal Airport	PEX	3,302	Paved
	Pine River	Pine River Regional Airport	PWC	3,000	Paved
	Pinecreek	Piney-Pinecreek Border Airport	48Y	3,297	Paved
	Red Lake Falls	Red Lake Falls Municipal Airport	D81	2,500	Paved
	Rushford	Rushford Municipal Airport	55Y	3,200	Paved
	Sauk Centre	Sauk Centre Municipal Airport	D39	3,296	Paved

State Classification	Associated City	Airport Name	FAA ID	Length (feet)	Surface Type
	Slayton	Slayton Municipal Airport	DVP	3,005	Paved
	Springfield	Springfield Municipal Airport	D42	3,402	Paved
	St. Paul	Saint Paul-Lake Elmo Airport	21D	2,849	Paved
	Staples	Staples Municipal Airport	SAZ	3,305	Paved
	Stephen	Stephen Municipal Airport	D41	2,700	Paved
	Tower	Tower Municipal Airport	12D	3,400	Paved
	Tracy	Tracy Municipal Airport	TKC	3,098	Paved
	Walker	Walker Municipal Airport	Y49	3,220	Paved
	Warren	Warren Municipal Airport	D37	3,199	Paved
	Waseca	Waseca Municipal Airport	ACQ	3,399	Paved
	Wheaton	Wheaton Municipal Airport	ETH	3,298	Paved
	Windom	Windom Municipal Airport	MWM	3,598	Paved
Landing Strip Turf – Unpaved Runway of Any Length	Backus	Backus Municipal Airport	7Y3	3,585	Turf
	Big Falls	Big Falls Municipal Airport	7Y9	2,850	Turf
	Bowstring	Bowstring Airport	9Y0	2,565	Turf
	Clarissa	Clarissa Municipal Airport	8Y5	2,600	Turf
	East Gull Lake	East Gull Lake Airport	9Y2	2,618	Turf
Landing Strip Turf – Unpaved Runway of Any Length (continued)	Grygla	Grygla Municipal Airport (Mel Wilkens Field)	3G2	3,437	Turf
	Henning	Henning Municipal Airport	05Y	3,199	Turf
	Hill City	Hill City-Quadna Mountain Airport	07Y	2,902	Turf
	Karlstad	Karlstad Municipal Airport	23D	2,606	Turf
	Littlefork	Littlefork Municipal Hanover Airport	13Y	3,000	Turf
	Milaca	Milaca Municipal Airport	18Y	2,900	Turf
	Northome	Northome Municipal Airport	43Y	3,199	Turf
	Pelican Rapids	Pelican Rapids Municipal Airport	47Y	3,260	Turf
	Remer	Remer Municipal Airport	52Y	2,765	Turf
	Sleepy Eye	Sleepy Eye Municipal Airport	Y58	2,575	Turf

State Classification	Associated City	Airport Name	FAA ID	Length (feet)	Surface Type
	Starbuck	Starbuck Municipal Airport	D32	2,512	Turf
	Tyler	Tyler Municipal Airport	63Y	2,517	Turf
	Waskish	Waskish Municipal Airport	VWU	2,992	Turf
	Waskish	Wells Municipal Airport	68Y	2,897	Turf
	Winsted	Winsted Municipal Airport	10D	3,248	Turf

Sources: MnSASP Phase I, 2019; FAA ADIP, 2020; Kimley-Horn, 2020

Table 2.48. EJ Analysis Tool Results – SoVI Composite Scores by Airport

Associated City	Airport Name	FAA ID	Composite SoVI
Ada/Twin Valley	Ada-Norman County/Ada/Twin Valley Airport	D00	154
Aitkin	Aitkin Municipal Airport	AIT	11,457
Albert Lea	Albert Lea Municipal Airport	AEL	62,438
Alexandria	Alexandria Municipal Airport (Chandler Field)	AXN	36,004
Appleton	Appleton Municipal Airport	AQP	5,585
Austin	Austin Municipal Airport	AUM	91,352
Backus	Backus Municipal Airport	7Y3	2,300
Bagley	Bagley Municipal Airport	7Y4	8,587
Baudette	Baudette International Airport	BDE	261
Bemidji	Bemidji Regional Airport	BJI	57,721
Benson	Benson Municipal Airport	BBB	9,755
Big Falls	Big Falls Municipal Airport	7Y9	103
Bigfork	Bigfork Municipal Airport	FOZ	684
Blue Earth	Blue Earth Municipal Airport	SBU	8,090
Bowstring	Bowstring Airport	9Y0	743
Brainerd	Brainerd-Crow Wing County Regional Airport	BRD	18,059
Brooten	Brooten Municipal Airport	6D1	1,300
Buffalo	Buffalo Municipal Airport	CFE	41,781
Caledonia	Caledonia-Houston County Airport	CHU	7,545
Cambridge	Cambridge Municipal Airport	CBG	24,885
Canby	Canby Municipal Airport (Myers Field)	CNB	9,067
Clarissa	Clarissa Municipal Airport	8Y5	4,874
Cloquet	Cloquet-Carlton County Airport	COQ	15,585
Cook	Cook Municipal Airport	CQM	635
Crookston	Crookston Municipal Airport (Kirkwood Field)	CKN	83
Detroit Lakes	Detroit Lakes Airport (Wething Field)	DTL	29,586
Dodge Center	Dodge Center Municipal Airport	TOB	6,679
Duluth	Duluth International Airport	DLH	17,276
Duluth	Duluth-Sky Harbor Airport & Seaplane Base	DYT	5,239
East Gull Lake	East Gull Lake Airport	9Y2	2,184
Elbow Lake	Elbow Lake Municipal Airport	Y63	3,061
Ely	Ely Municipal Airport	ELO	756
Eveleth	Eveleth-Virginia Municipal Airport	EVM	3,562
Fairmont	Fairmont Municipal Airport	FRM	53,532
Faribault	Faribault Municipal Airport	FBL	41,850
Fergus Falls	Fergus Falls Municipal Airport (Einar Mickelson Field)	FFM	9,965
Fertile	Fertile Municipal Airport	D14	7,108
Forest Lake	Forest Lake Airport	25D	47,730

Associated City	Airport Name	FAA ID	Composite SoVI
Fosston	Fosston Municipal Airport	FSE	7,055
Glencoe	Glencoe Municipal Airport (Vernon Perschau Field)	GYL	10,931
Glenwood	Glenwood Municipal Airport	GHW	799
Grand Marais	Grand Marais-Cook County Airport	CKC	437
Grand Rapids	Grand Rapids-Itasca County Airport (Gordon Newstrom Field)	GPZ	58,971
Granite Falls	Granite Falls Municipal Airport (Lenzen-Roe Memorial Field)	GDB	713
Grygla	Grygla Municipal Airport (Mel Wilkens Field)	3G2	69
Hallock	Hallock Municipal Airport	HCO	3,754
Hawley	Hawley Municipal Airport	04Y	1,868
Hector	Hector Municipal Airport	1D6	5,840
Henning	Henning Municipal Airport	05Y	7,981
Herman	Herman Municipal Airport	06Y	169
Hibbing	Hibbing-Chisholm-Hibbing Municipal Airport	HIB	906
Hill City	Hill City-Quadna Mountain Airport	07Y	183
Hutchinson	Hutchinson Municipal Airport (Butler Field)	HCD	38,977
International Falls	International Falls-Falls International Airport	INL	49,353
Jackson	Jackson Municipal Airport	MJQ	7,520
Karlstad	Karlstad Municipal Airport	23D	5,936
Le Sueur	Le Sueur Municipal Airport	12Y	13,032
Litchfield	Litchfield Municipal Airport	LJF	23,519
Little Falls	Little Falls-Morrison County Airport	LXL	50,525
Littlefork	Littlefork Municipal Hanover Airport	13Y	347
Long Prairie	Long Prairie Airport (Todd Field)	14Y	1,917
Longville	Longville Municipal Airport	XVG	1,535
Luverne	Luverne Municipal Airport	LYV	6,283
Madison	Madison-Lac Qui Parle Airport	DXX	4,449
Mahnomen	Mahnomen County Airport	3N8	2,050
Mankato	Mankato Municipal Airport	MKT	5,611
Maple Lake	Maple Lake Municipal Airport & Seaplane Base	MGG	9,264
Marshall	Marshall-Southwest Minnesota Regional Airport-Marshall/Ryan Field	MML	43,568
McGregor	McGregor-Isedor Iverson Airport	HZX	1,168
Milaca	Milaca Municipal Airport	18Y	18,936
Minneapolis	Minneapolis Anoka County/Blaine Airport (Janes Field)	ANE	142,876
Minneapolis	Minneapolis Flying Cloud Airport	FCM	79,912
Minneapolis	Minneapolis Airlake Airport	LVN	23,756
Minneapolis	Minneapolis Crystal Airport	MIC	773,176

Associated City	Airport Name	FAA ID	Composite SoVI
Minneapolis	Minneapolis/St. Paul International Airport	MSP	482,408
Montevideo	Montevideo-Chippewa County Airport	MVE	22,988
Moorhead	Moorhead Municipal Airport	JKJ	2,309
Moose Lake	Moose Lake-Carlton County Airport	MZH	5,253
Mora	Mora Municipal Airport	JMR	34,755
Morris	Morris Municipal Airport	MOX	5,843
New Ulm	New Ulm Municipal Airport	ULM	37,771
Northome	Northome Municipal Airport	43Y	107
Olivia	Olivia Regional Airport	OVL	5,743
Orr	Orr Regional Airport	ORB	191
Ortonville	Ortonville Municipal Airport (Martinson Field)	VVV	15,895
Owatonna	Owatonna Degner Regional Airport	OWA	42,900
Park Rapids	Park Rapids Municipal Airport	PKD	45,598
Paynesville	Paynesville Municipal Airport	PEX	6,126
Pelican Rapids	Pelican Rapids Municipal Airport	47Y	671
Perham	Perham Municipal Airport	16D	14,285
Pine River	Pine River Regional Airport	PWC	17,480
Pinecreek	Piney-Pinecreek Border Airport	48Y	63
Pipestone	Pipestone Municipal Airport	PQN	33,138
Preston	Preston Fillmore County Airport	FKA	400
Princeton	Princeton Municipal Airport	PNM	34,972
Red Lake Falls	Red Lake Falls Municipal Airport	D81	999
Red Wing	Red Wing Regional Airport	RGK	9,337
Redwood Falls	Redwood Falls Municipal Airport	RWF	27,997
Remer	Remer Municipal Airport	52Y	658
Rochester	Rochester International Airport	RST	3,062
Roseau	Roseau Municipal Airport (Rudy Billberg Field)	ROX	272
Rush City	Rush City Municipal Airport	ROS	15,445
Rushford	Rushford Municipal Airport	55Y	3,957
Sauk Centre	Sauk Centre Municipal Airport	D39	24,381
Slayton	Slayton Municipal Airport	DVP	5,174
Sleepy Eye	Sleepy Eye Municipal Airport	Y58	4,909
South St. Paul	South St. Paul Municipal Airport (Fleming Field)	SGS	192,637
Springfield	Springfield Municipal Airport	D42	9,038
St. Cloud	Saint Cloud Regional Airport	STC	4,408
St. James	Saint James Municipal Airport	JYG	2,702
St. Paul	Saint Paul-Lake Elmo Airport	21D	21,502
St. Paul	Saint Paul Downtown Airport (Holman Field)	STP	882,382
Staples	Staples Municipal Airport	SAZ	11,981

Associated City	Airport Name	FAA ID	Composite SoVI
Starbuck	Starbuck Municipal Airport	D32	5,348
Stephen	Stephen Municipal Airport	D41	4,251
Thief River Falls	Thief River Falls Regional Airport	TVF	6,971
Tower	Tower Municipal Airport	12D	1,408
Tracy	Tracy Municipal Airport	TKC	21,840
Two Harbors	Two Harbors-Richard B. Helgeson Airport	TWM	1,085
Tyler	Tyler Municipal Airport	63Y	1,854
Wadena	Wadena Municipal Airport	ADC	1,219
Walker	Walker Municipal Airport	Y49	2,476
Warren	Warren Municipal Airport	D37	2,825
Warroad	Warroad International Airport (Swede Carlson Field)	RRT	5,409
Waseca	Waseca Municipal Airport	ACQ	14,118
Waskish	Wells Municipal Airport	68Y	3,385
Waskish	Waskish Municipal Airport	VWU	67
Wheaton	Wheaton Municipal Airport	ETH	364
Willmar	Willmar Municipal Airport	BDH	10,792
Windom	Windom Municipal Airport	MWM	2,779
Winona	Winona Municipal Airport (Max Conrad Field)	ONA	48,408
Winsted	Winsted Municipal Airport	10D	4,869
Worthington	Worthington Municipal Airport	OTG	98,598

Source: MnDOT, 2019