



MINNESOTA GO

STATE AVIATION
SYSTEM PLAN

m DEPARTMENT OF
TRANSPORTATION

EXECUTIVE SUMMARY



Introduction

The Minnesota state aviation system comprises 133 publicly owned, public-use airports, including nine commercial service and 124 general aviation (GA) facilities. These valuable public assets are a critical component of the state's multimodal transportation system. Airports allow goods and people to move quickly between the state and destinations across the globe; enhance regional connectivity; and promote access, safety, security, and overall quality of life throughout our communities.

As part of a collaborative effort to realize Minnesota's 50-year vision for statewide transportation, the Minnesota Department of Transportation's Office of Aeronautics (MnDOT Aeronautics) initiated the 2022 Minnesota State Aviation System Plan (2022 MnSASP or MnSASP). The 2022 MnSASP is the long-term strategic plan for Minnesota's airports. This plan assessed airports holistically to understand the system's ability to meet current and anticipated demands through 2040. The 2022 MnSASP provides guidance for future development.

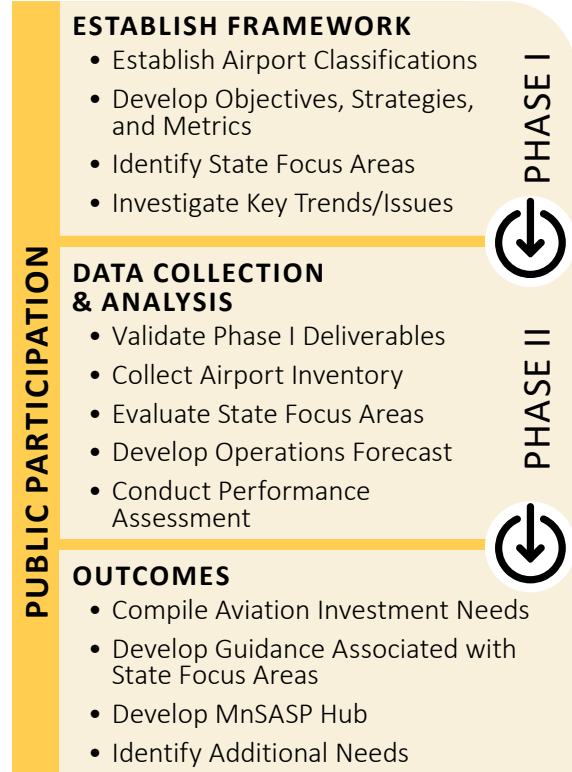
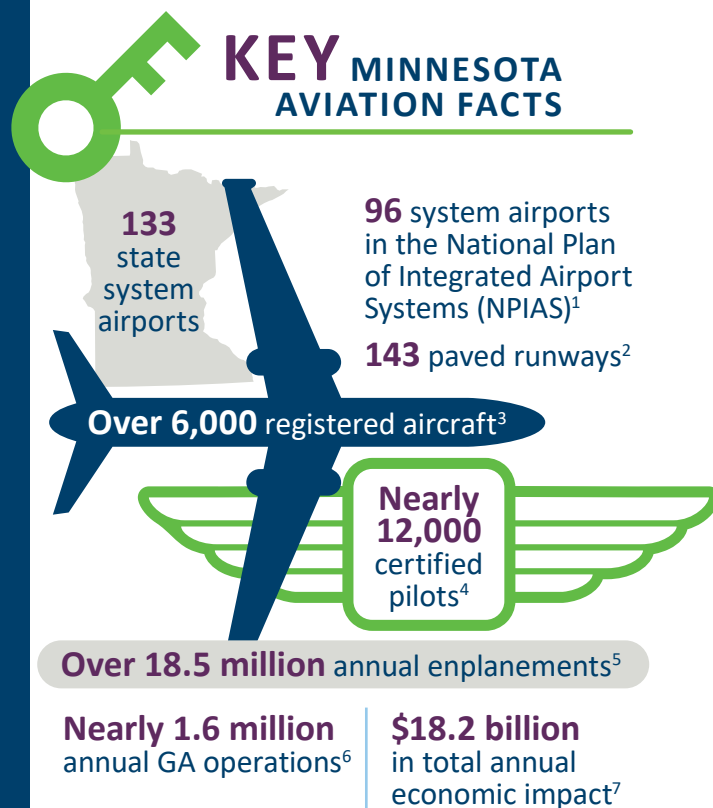
The 2022 MnSASP is one of several modal planning efforts that compose the MnDOT Family of Plans. These modal plans are guided by Minnesota GO, MnDOT's 50-year vision for the state transportation network. Minnesota GO establishes the guiding principles for MnDOT's transportation planning efforts based on three overarching themes:

- ✈ Quality of Life
- ✈ Environmental Health
- ✈ Economic Competitiveness

Process

MnDOT Aeronautics initiated a comprehensive system update in 2017, to be completed in two phases. Phase I established the MnSASP framework, aligning it with the Minnesota GO 50-year vision for Minnesota's transportation network. Phase II validated the MnSASP framework and undertook a series of evaluations used to develop forward-looking recommendations for MnDOT Aeronautics.

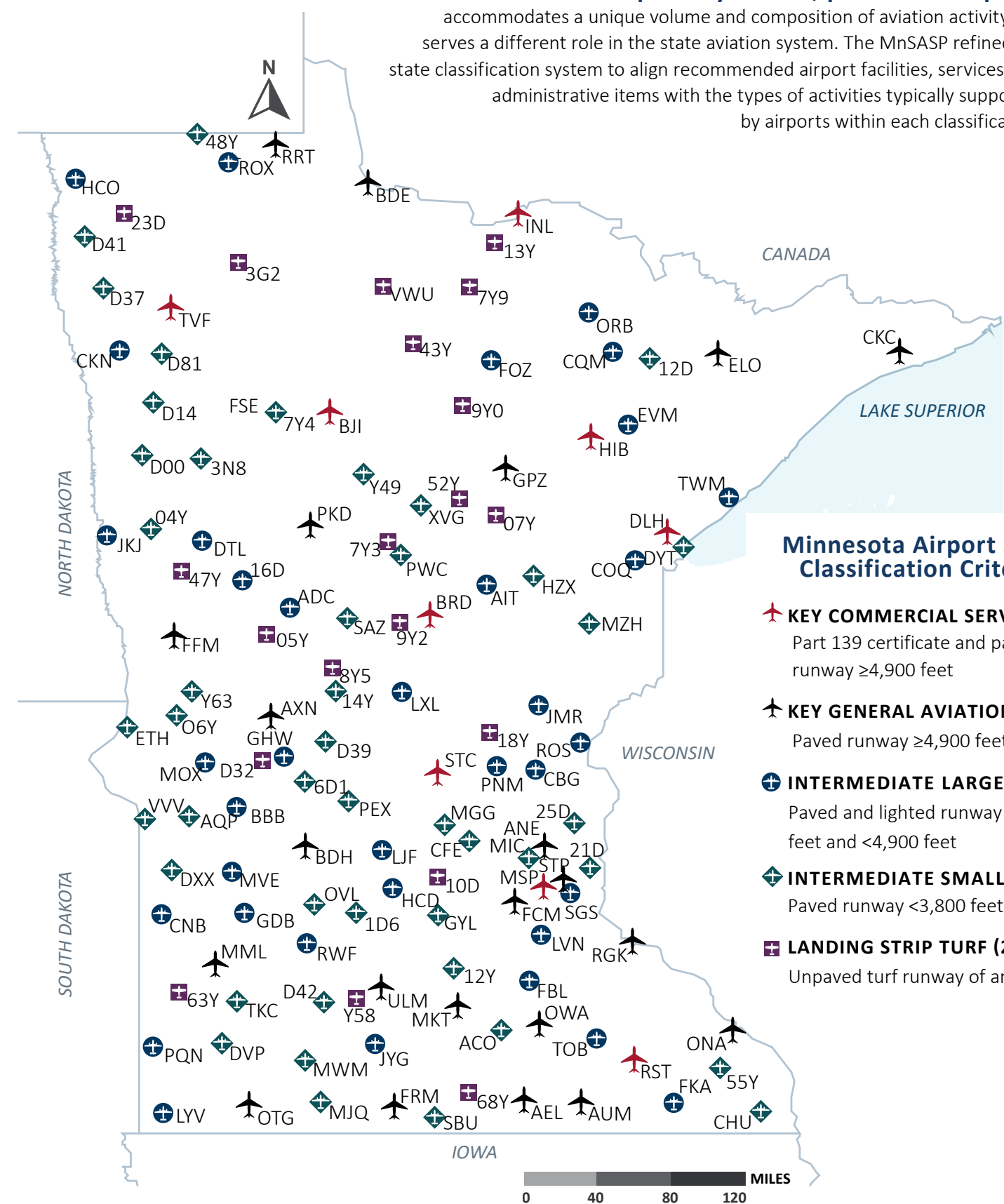
Both Phase I and Phase II of the MnSASP relied on continuous public input to ensure alignment with the needs of all Minnesota aviation stakeholders.



¹Ninety-seven airports are included in the 2019-2023 NPIAS Report. This includes Silver Bay Municipal Airport (BFW) which closed in 2019. As such, 96 NPIAS airports are included within the scope of the 2022 MnSASP.
²FAA Airport Data and Information Portal (ADIP), 2021
³FAA Aircraft Registration Database, 2021
⁴FAA Airmen Certification Database, 2021
⁵FAA NPIAS, 2019
⁶2022 MnSASP
⁷2019 MnDOT Statewide Airport Economic Impact Study

Each of Minnesota's 133 publicly owned, public-use airports

accommodates a unique volume and composition of aviation activity and serves a different role in the state aviation system. The MnSASP refined the state classification system to align recommended airport facilities, services, and administrative items with the types of activities typically supported by airports within each classification.



Minnesota Airport State Classification Criteria

- KEY COMMERCIAL SERVICE (9)**
Part 139 certificate and paved runway ≥4,900 feet
- KEY GENERAL AVIATION (22)**
Paved runway ≥4,900 feet
- INTERMEDIATE LARGE (36)**
Paved and lighted runway ≥3,800 feet and <4,900 feet
- INTERMEDIATE SMALL (46)**
Paved runway <3,800 feet
- LANDING STRIP TURF (20)**
Unpaved turf runway of any length

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

Airport and System Performance Assessment

Through coordinated and intentional aviation planning efforts, MnDOT Aeronautics plays vital role achieving Minnesota’s 50-year vision for the state transportation system established by Minnesota GO. The MnSASP established five core objectives to support implementing that vision within the context of the aviation system.

The 2022 MnSASP evaluated individual airports and the system in terms of metrics used to gauge progress towards each objective. Metrics are defined in terms of classification-specific targets that define the facilities, services, and administrative items that each airport should provide to optimally fulfill its role in the state aviation system.

Metrics are split into actionable “measures” and informational “indicators.” Measures can be influenced by MnDOT Aeronautics actions such as funding and policy-related decisions. Indicators are informational and generally cannot be impacted by MnDOT Aeronautics nor individual airports.

50 YEAR STATEWIDE VISION

To provide a multimodal transportation [that] maximizes the health of people, the environment, and our economy.

MINNESOTA GO



- Open Decision-Making
- Transportation Safety
- Critical Connections
- System Stewardship
- Healthy Communities

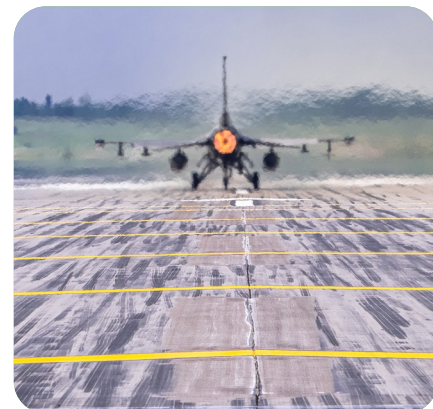
SYSTEM MEASURES

- Adequate Approaches
- Pavement Condition
- Obstructions
- Navigational Aids (NAVAIDs)
- Zoning
- Planning Documents
- Arrival/Departure (A/D) and Terminal Buildings
- Wind Coverage

AIRPORT MEASURES

- Primary Runway Width
- Primary Runway Lighting
- Primary Runway Approaches
- Taxiway Type and Width
- Weather Reporting
- NAVAIDs
- Ground Transportation
- Aircraft Storage
- A/D and Terminal Buildings
- Fuel Availability
- Planning Documents
- Zoning
- Clear Zones
- Minimum Standards

PERFORMANCE ASSESSMENT



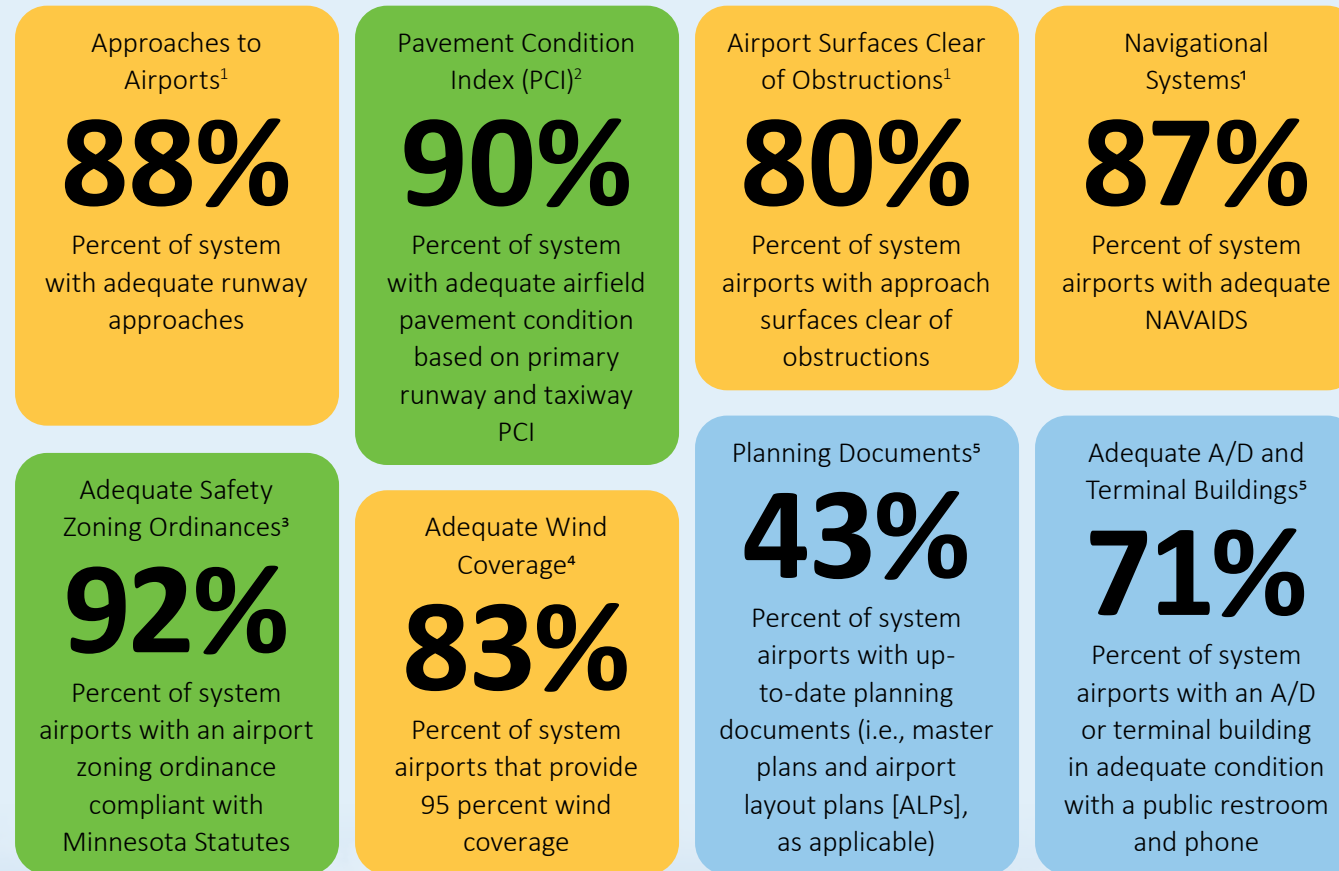
Identify airport improvement needs statewide

MnSASP Hub System and Airport Performance Dashboards

System and airport performance are reported in the MnSASP Hub. Discussed in further detail on the following page, the MnSASP Hub is an online portal that provides full details about all performance measures evaluated by the 2022 MnSASP including current performance; classification-specific targets, and data sources. System performance can be viewed by airport, classification, Congressional district, or MnDOT Planning Region.

Visit mnsasp-mndot.hub.arcgis.com to access the MnSASP Hub.

Performance Overview



Sources: (1) FAA ADIP, 2021; (2) MnDOT Aeronautics Airport Pavement Management System, 2021; (3) MnDOT Aeronautics Zoning Information Warehouse, 2021; (4) MnDOT-approved ALPs, various years; Minnesota Crosswind Runway Eligibility Model, 2021; (5) MnSASP Airport Inventory, 2020



MnSASP Hub

The 2022 MnSASP collected a wide range of airport data to complete the performance assessment and inform recommendations associated the state focus areas. These data are now stored in a public-facing ArcGIS Hub web application known as the MnSASP Hub.

The MnSASP Hub serves as a central data repository and reporting tool. This online tool allows MnDOT and aviation stakeholders to engage in continuous system and airport planning. Presented in an intuitive web interface, the MnSASP Hub is comprised of several interactive dashboards to view system and performance, background airport information, airport activity, and other spatial and tabular data.

Two dashboards included in the MnSASP Hub are highlighted below.



Visit mnsasp-mndot.hub.arcgis.com to access the MnSASP Hub.

FAA-Filed Flight Plans Dashboard: Shows a map of Minnesota with flight paths and a summary table. Total Number of Flights: 232. Departures: 114 (78.08%), Arrivals: 118 (76.62%). Intra-state flights breakdown by state: Wisconsin (11.1%), North Dakota (8.64%), Iowa (9.88%), Colorado (20%), and Other (28.4%).

MnSASP Report Card: Provides key metrics for a selected airport (Perham Municipal Airport). Clear Zone Ownership: Full Ownership. Airport Zoning: On-File (1996). Wind Coverage: 98.6% (All Weather). Current ALP: 2021 (ALP without Narrative). GA Terminal Building: IGA Terminal with Phone and Restroom.

FAA-Filed Flight Plan Dashboard

This dashboard reports all flights originating or departing from system airports with filed flight plans between January 1, 2019 and July 31, 2021. Data was obtained from the Federal Aviation Administration’s (FAA) Traffic Flow Management System Count (TFMSC) database. Data can be isolated by airport, calendar year, destination state, and Minnesota departures/arrivals. The dashboard does not depict flights conducted under Visual Flight Rules (VFR), as these flights are not recorded in the TFMSC.

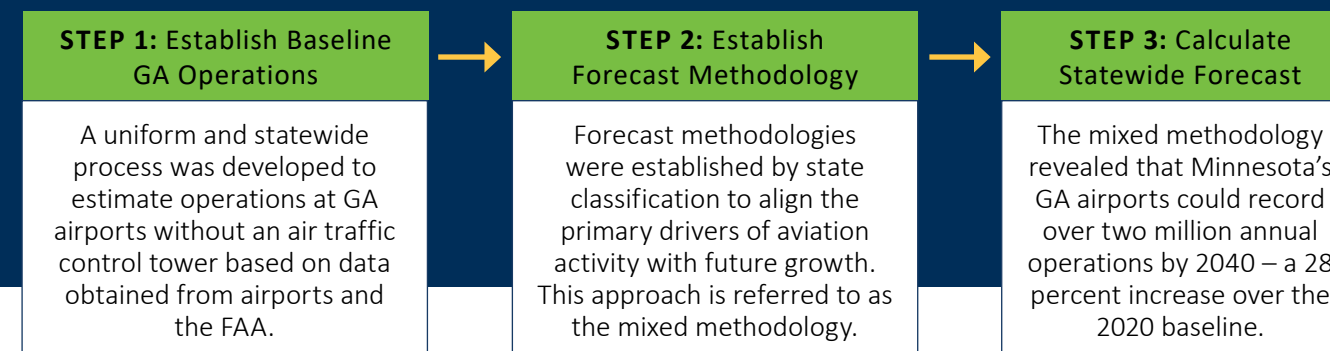
MnSASP Airport Report Card

This dashboard provides key information about state system airports, including basic characteristics and performance details across eight key airport metrics identified by MnDOT Aeronautics for system planning purposes.

Baseline and Future GA Operations

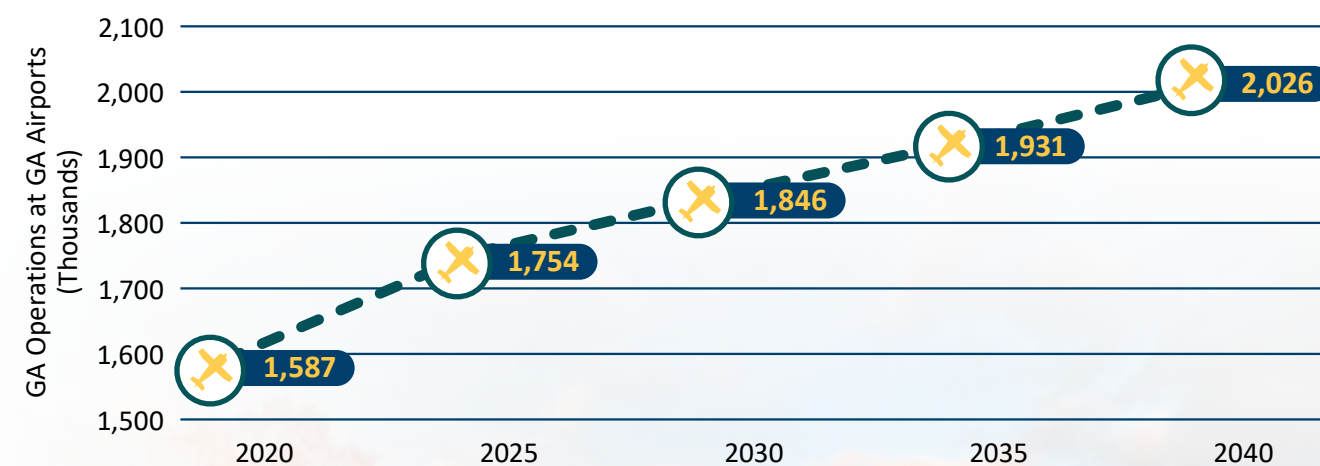
Aviation forecasts are a critical component in system planning that provide a lens into future aviation demands. The accuracy of aviation forecasts is dependent on two elements: valid baseline data and relevant forecasting methodologies that consider major activity trends that could impact future aviation activity levels.

The 2022 MnSASP assessed both of these elements to forecast GA operations at Minnesota’s 124 GA airports over the 20-year planning horizon 2020 – 2040. Commercial service airports typically conduct their own detailed evaluations of aviation activities as part of independent planning processes and were excluded from the MnSASP forecasts.



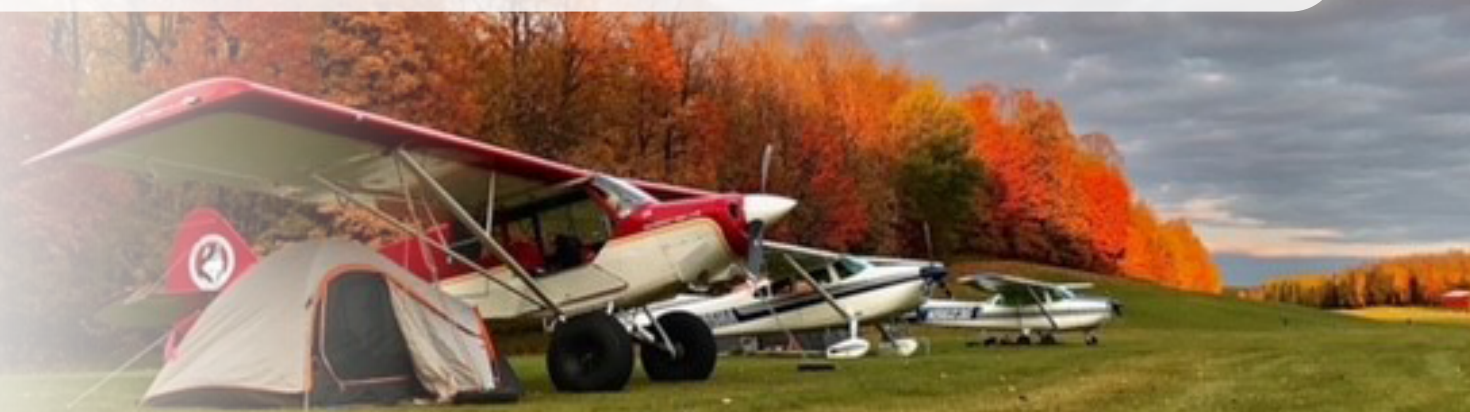
Minnesota GA Operations Forecast, 2020 - 2040*

Compound Annual Growth Rate: 1.23%



Sources: Woods and Poole, 2021; FAA Aerospace Forecasts, 2021 – 2041; FAA TFMSC, 2021; FAA Form 5010 Airport Master Records, various years; Kimley-Horn, 2022

*Note: Reflects GA operations at Minnesota’s 124 GA airports in the state aviation system. GA operations at commercial service airports are not included in the MnSASP forecast.

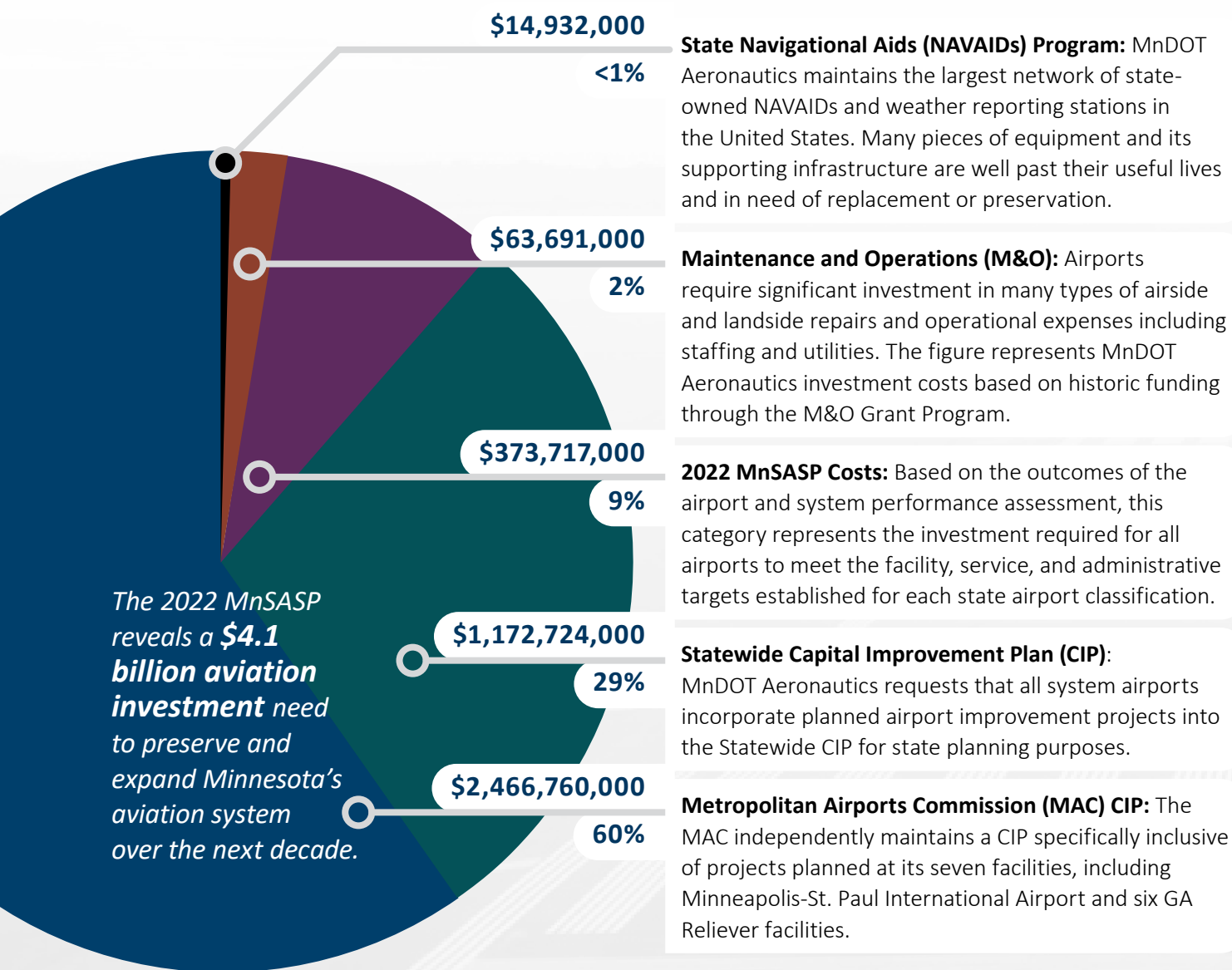


State Aviation Investment Need

Quantifying total system investment needs is one of the most important outcomes of the 2022 MnSASP. These costs represent the investments required to preserve the state’s existing aviation assets and expand capacity to meet growing aviation demands anticipated in the coming decades.

The Minnesota aviation investment need was compiled from a variety of sources, with all duplication removed prior to presenting at the statewide level.

Total Aviation Investment Need by Source, 2020 - 2030



State Navigational Aids (NAVAIDs) Program: MnDOT Aeronautics maintains the largest network of state-owned NAVAIDs and weather reporting stations in the United States. Many pieces of equipment and its supporting infrastructure are well past their useful lives and in need of replacement or preservation.

Maintenance and Operations (M&O): Airports require significant investment in many types of airside and landside repairs and operational expenses including staffing and utilities. The figure represents MnDOT Aeronautics investment costs based on historic funding through the M&O Grant Program.

2022 MnSASP Costs: Based on the outcomes of the airport and system performance assessment, this category represents the investment required for all airports to meet the facility, service, and administrative targets established for each state airport classification.

Statewide Capital Improvement Plan (CIP): MnDOT Aeronautics requests that all system airports incorporate planned airport improvement projects into the Statewide CIP for state planning purposes.

Metropolitan Airports Commission (MAC) CIP: The MAC independently maintains a CIP specifically inclusive of projects planned at its seven facilities, including Minneapolis-St. Paul International Airport and six GA Reliever facilities.

The 2022 MnSASP presents all projects cost over a 10-year horizon (2020 - 2030) except the MAC CIP (2022 - 2028).

Sources: Kimley-Horn, 2022; MnDOT Aeronautics, 2022; MAC, 2022; MnDOT Airport Pavement Management System, 2022

Future Work Plans

The 2022 MnSASP identified five recommended future studies to support its ongoing implementation and the state’s overall multimodal transportation system.



Together, these future work plans offer a framework and process to engage in continuous system planning – bringing the 2022 MnSASP to life and offering MnDOT Aeronautics and Minnesota airports with the information they need to better meet the state’s ever-evolving aviation demands over the 20-year planning horizon.

Future Aviation Funding Outlook

Calculating the total investment need in Minnesota is a critical component of understanding the long-term financial outlook for MnDOT Aeronautics. The other side of the equation is estimating available funding to meet those anticipated needs.

Over the long-term, state and federal dollars available to support airport operations and capital development are anticipated to remain stable. While federal investment into airports has been notably high in response to the impacts of COVID-19 on nearly all commercial service and some GA airports, additional influxes of dollars are anticipated to expire within the next five years. The State Airports Fund is also not projected to grow during the planning horizon.

Based on these assumptions, an estimated \$1.03 billion in federal and state funding is projected to become available to support Minnesota’s airports through 2030 – leading to a \$3.1 billion funding gap over the next decade. With design and construction costs anticipated to rise in the years ahead, the gap may ultimately be significantly higher than this analysis portends.

Estimated Minnesota Aviation Funding Gap by 2030



Federal and state aviation investments may only provide one-quarter of the estimated \$4.1 billion in airport maintenance and improvement needs through the planning horizon.

This funding gap underlines the vital importance of local airport sponsors and private users in supporting their airports through on-airport revenue generation and other funding.

Acronyms: AIP = Airport Improvement Program. BIL = Bipartisan Infrastructure Bill (Public Law 117-58, Infrastructure Investment and Jobs Act)
Sources: Kimley-Horn, 2022; MnDOT Aeronautics, 2022; MAC, 2022; MnDOT Airport Pavement Management System, 2022; FAA, 2022

Available Investment

Federal | State | Local | Private

System Needs

2022 MnSASP | Statewide CIP | MAC CIP | NAVAIDs | M&O



Key State Focus Areas

The 2022 MnSASP includes seven key state focus areas that aviation stakeholders identified as their top concerns during Phase I. The seven focus areas help support MnDOT Aeronautics’ ability to navigate complex decisions associated with these issues and provide standard and uniform guidance to airports.

Through-the-Fence (TTF) Operations Processes

TTF operations refer to aircraft that seamlessly transition from an airport’s airside facilities to land adjacent to – but not on – airport property. Establishing TTF operations can bolster airports’ economic impacts, enhance community relationships, and provide additional space for aviation-related development. TTF operations can also pose significant issues related to security, airport-compatible land use, parity between traditional on-airport users and TTF operators, and other concerns. The TTF Guidance Statement establishes MnDOT Aeronautics’ official position on residential, commercial, and noncommercial aeronautical TTF operations.

TTF OPERATIONS AT MINNESOTA SYSTEM AIRPORTS MUST:

- ✓ Comply with all FAA standards and Minnesota State Statutes and Administrative Rules
- ✓ Provide a benefit to civil aviation
- ✓ Maintain or enhance the long-term viability, safety, security, efficiency, utilization, and economic well-being of the airport and airport sponsor

Hangar Availability and State Funding Participation

The 2022 MnSASP revealed that 94 percent of T-hangars and 97 percent of conventional box hangars in Minnesota are occupied. Additionally, some aircraft hangars are used for non-aeronautical purposes, further exacerbating capacity constraints experienced at many facilities.

PRIMARY HANGAR RECOMMENDATIONS

1. Require all state-sponsored hangars be used for aeronautical purposes
2. Establish appropriate hangar lease rates per guidance provided by ACRP Report 213¹
3. Require that funding requests for hangar development be justified based on documented needs

The **Hangar Availability Evaluation and State Funding Recommendations** propose several strategies to address the primary hangar issues in Minnesota related to availability, use, rates and charges, and funding.

¹Airport Cooperative Research Program (ACRP, 2020). Report 213: Estimating Market Value and Establishing Market Rent at Small Airports. Available online at <https://www.trb.org/Publications/Blurbs/180278.aspx> (accessed June 2021).



Last-mile Connectivity and Courtesy Car Evaluation

The usability of many airports is, in part, dependent on available ground transportation options for pilots, passengers, and cargo. The **Last-mile Connectivity and Courtesy Car Evaluation** reviewed multimodal options at all Minnesota airports. The availability and condition of airport courtesy cars was identified as a key concern at many GA airports. The 2022 MnSASP offers prioritized recommendations for addressing the availability, maintenance, and funding of courtesy cars at Minnesota’s GA airports.

PRIMARY COURTESY CAR RECOMMENDATIONS

- | | | |
|--|---|--|
| Leverage state surplus programs to acquire vehicles | Obtain insurance from a Minnesota government trust | Establish trip agreements with courtesy car users |
| Partner with local businesses to sponsor courtesy cars | Require airport users to hold private auto coverage | Allow state funds to be used for vehicle maintenance |

Prioritization of State Funding for Crosswind Runways

Crosswind runways enable airports to provide continuous support of aviation demand through variable weather conditions. The **Crosswind Runway Position Statement** guides MnDOT Aeronautics in the prioritization of state support for existing and proposed new crosswind runways. The **Minnesota Crosswind Runway Eligibility Model** is a key element of the state prioritization methodology. The model evaluates airports’ need for a crosswind based on standard criteria. Airports must receive a threshold score to be eligible for state support. Airports must also submit a Crosswind Runway Justification Report (CRJR) to justify funding requests.

Clear Zone Ownership and Compliance Requirements

The airspace in and around airports must be clear of obstructions to maintain a safe and navigable environment for aircraft operations. The MnDOT Aeronautics **Clear Zone Guidance Statement** confirms that airport sponsors must acquire 100 percent of clear zones in fee simple or complete a MnDOT-approved Clear Zone Acquisition Plan to be eligible for state funds.

UPDATED MNDOT AERONAUTICS CLEAR ZONE GUIDANCE

1. Clarified clear zone dimensional standards based on ultimate build-out conditions
2. Established an alternative compliance mechanism for airports unable to acquire 100 percent of clear zones in fee simple
3. Confirmed that airports must be compliant with clear zone guidance to be eligible for state support

The Airport Geodata page in the MnSASP Hub provides an interactive Airport Safety Areas dashboard that depicts the existing and ultimate clear zone surfaces across all runways in the Minnesota airport system.

State Aviation System Exit and Airport Closure Processes

The **Airport Closure Guidance Statement** provides a uniform procedure for airports to exit the state aviation system and/or close while complying with all applicable statutes and regulations. An associated **Vulnerability Assessment** identified Minnesota airports vulnerable to closure based on a quantitative evaluation. Airports scoring less than 30 points in the assessment are eligible for a “fast-track” closure process. Nineteen Minnesota system airports are currently considered vulnerable to closure and thus eligible for this expedited process.

State Aviation System Entry Processes

According to Minnesota Statutes, airports must be included in the state aviation system to be eligible to receive financial assistance through the State Airports Fund. The **State Aviation System Entry Guidance Statement** outlines a detailed process for MnDOT Aeronautics and airport sponsors to gain entry into the state aviation system compliant with all licensure and statutory requirements.



*ALP = Airport Layout Plan



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For more information about the MnSASP, please visit the MnSASP Hub at mnsasp-mndot.hub.arcgis.com.
The MnSASP Hub includes the full 2022 MnSASP Technical Report detailing all components of the plan.