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## Chapter 1. Introduction and Design

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### 1.1. Introduction

Minnesota is a land rich with cultural history; world-class business, research, manufacturing, and educational institutions; and extensive natural beauty. The state is home to 18 Fortune 500 companies, and the Mayo Clinic – a world-renowned hospital – is the largest employer in the state with nearly 47,500 employees.<sup>1</sup> The Minnesota Department of Agriculture reports that the state ranks fifth in the United States (U.S.) in terms of total agricultural production (\$17.1 billion in annual agricultural sales [2019]) and is the nation’s top producer of sugar beets, green peas, and wild rice.<sup>2</sup> These industries are the foundation of the state’s strong and diverse economic base and contribute to Minnesota’s accolades as one of the nation’s top places to live, work, and raise a family.

Airports and the aviation services they support are a critical component of the state’s infrastructure base. Whether allowing businesses to thrive, supporting Minnesota’s exceptional quality of life, or allowing travelers to experience the “Star of the North,” the state’s aviation network allows goods and people to move into, out of, and within the state. Between 2016 – 2020, Airports Council International (ACI) named Minneapolis-St. Paul International Airport (MSP) the “Best Airport in North America” in the 25 – 40 million passenger category. In addition to this large hub facility, Minnesota is home to a diverse network of 133 publicly owned, public-use commercial service and general aviation (GA) airports. These airports are supported by the Minnesota Department of Transportation, Office of Aeronautics (MnDOT Aeronautics). The 2022 Minnesota Aviation System Plan (2022 MnSASP or MnSASP) is MnDOT Aeronautics’ long-term strategic plan, designed to provide a description and assessment of the system’s current performance, as well as guidance for future development. The MnSASP offers recommendations addressing MnDOT Aeronautics’ decision-making, funding, and other policies, each of which has implications for the agency as well as individual system airports. The MnSASP is forward-thinking, offering guidance suited for the aviation environment today while considering evolving requirements anticipated in the years and decades ahead.

MnDOT Aeronautics has a long history of planning, beginning with the first system plan published in 1970. Major updates have been completed every five to seven years since that time, with the most recent update completed in 2012. Phase I of this current update was initiated in 2017 (discussed further in **Section 1.2**). Since the MnSASP was last updated in 2012, the aviation industry has been affected by numerous technological, regulatory, economic, and traveler behavior trends nationally, as well as shifting aviation activity levels within Minnesota specifically. Additionally, MnDOT published the 50-year vision for the state’s transportation network in 2011. Known as Minnesota GO, this study provides the direction for the development of all modes, driven by an overarching vision to provide a “multimodal transportation

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<sup>1</sup> Minnesota Department of Employment and Economic Development (no date [n.d.]). “A Robust and Diverse Economy.” Available online at <https://mn.gov/deed/joinusmn/why-mn/our-economy> (accessed May 2022).

<sup>2</sup> Minnesota Department of Agriculture (2019). “Minnesota Agricultural Profile.” Available online at <https://www.mda.state.mn.us/sites/default/files/inline-files/mnagprofile2019.pdf> (accessed May 2022).

[that] maximizes the health of people, the environment, and our economy.” Minnesota GO identifies three thematic features of the state’s transportation system:

**QUALITY OF LIFE**

- Recognizes and respects the importance, significance, and context of place – not just as destinations, but also where people live, work, learn, play, and access services
- Is accessible regardless of socioeconomic status or individual ability

**ENVIRONMENTAL HEALTH**

- Is designed in such a way that it enhances the community around it and is compatible with natural systems
- Minimizes resource use and pollution

**ECONOMIC COMPETITIVENESS**

- Enhances and supports Minnesota’s role in a globally competitive economy as well as the international significance and connections of Minnesota’s trade centers
- Attracts human and financial capital to the state

The vision and thematic features of Minnesota GO can only come to fruition through careful and ongoing planning efforts within each specific mode. As such, each mode develops a system investment plan within the



framework of the larger statewide policy driven by Minnesota GO and the associated *Statewide Multimodal Transportation Plan*. These mode-specific investment plans compose the MnDOT Family of Plans. The MnSASP is the aviation’s system investment plan, offering mode-specific strategies, establishing performance measures and performance-based needs, and identifying system priorities.

At the national level, the Federal Aviation Administration (FAA) updated Advisory Circular (AC) 150/5070-7, *The Airport System Planning Process* in January 2015 through Change 1. In addition to several other changes, AC 150/5070-7 suggests a more specific focus on multimodal transportation and environmental considerations within system plans – which serves to further bolster the multidisciplinary and holistic vision of Minnesota GO. AC 150/5070-7 more broadly provides the general components of an aviation system plan. State-level plans are used by the FAA to inform the National Plan of Integrated Airport Systems (NPIAS). This is primarily accomplished by coordinating the NPIAS with the national Airport Capital Improvement Program (ACIP) by prioritizing federal investment into airports and/or projects deemed most critical to the safe and efficient operation of the National Airspace System (NAS). It is important to note that many states, including Minnesota, also encompass non-NPIAS airports in the state airport system due to their important roles at state, regional, and/or local levels.

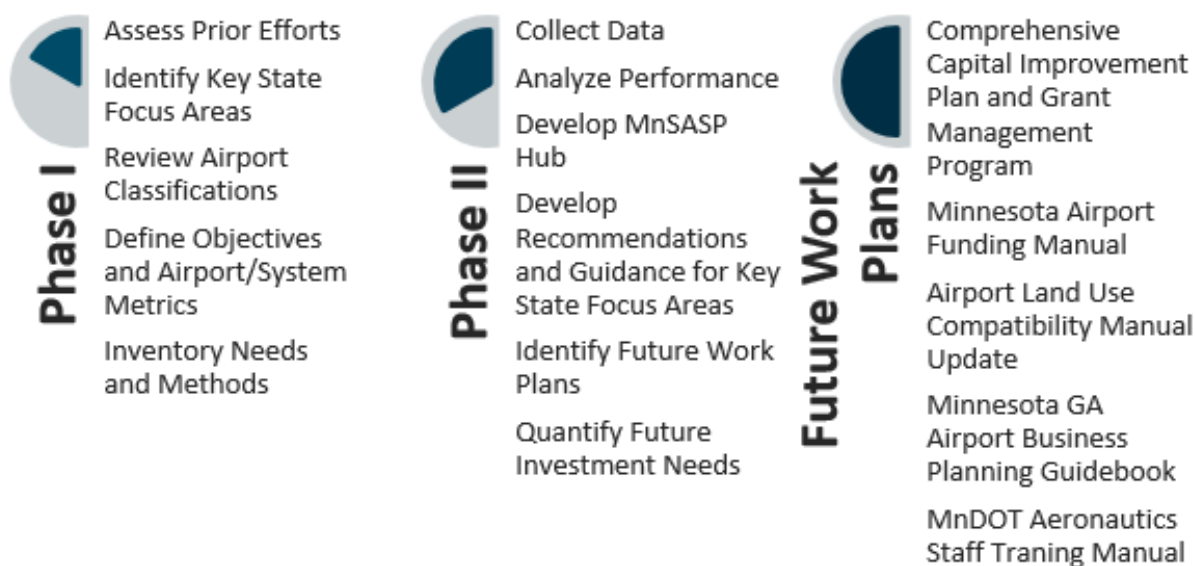
The section below provides specific details about the means by which the MnSASP advances the vision of Minnesota GO and fulfills the purpose of system planning for the State of Minnesota and FAA.

## 1.2. 2022 MnSASP Process

To carry forward the vision of Minnesota GO and align aviation policies with current needs and trends, MnDOT Aeronautics embarked on a wholesale system plan update in 2017. The agency recognizes that, “the intent for this plan is that it be accepted and embraced by the Minnesota aviation community, regulatory and funding agencies, the general public, and lawmakers.”<sup>3</sup> Towards that end, MnDOT Aeronautics embraced an open, collaborative, and innovative development process split between two phases (Phase I and Phase II). Completed in spring 2019, Phase I of the MnSASP was primarily designed to identify those issues and trends most relevant to Minnesota’s aviation stakeholders, establish the framework for the system performance assessments, and gain widespread support for the work to be completed during Phase II. The issues and trends identified during Phase I were carried forward into Phase II as “key state focus areas” (see **Chapter 5. Key State Focus Areas**).

Phase II collected the data to assess system performance, provided guidance on the key state focus areas, and published all final documents in non-technical, user-friendly formats. An online Geographic Information System (GIS)-based Hub application known as the MnSASP Hub was also developed to support continuous performance monitoring over time. Phase II also identified potential follow-on studies to be completed as they become feasible (referred to as future work plans). The primary objectives of each MnSASP phase are presented in **Figure 1.1**.

*Figure 1.1. MnSASP Key Objectives by Phase*

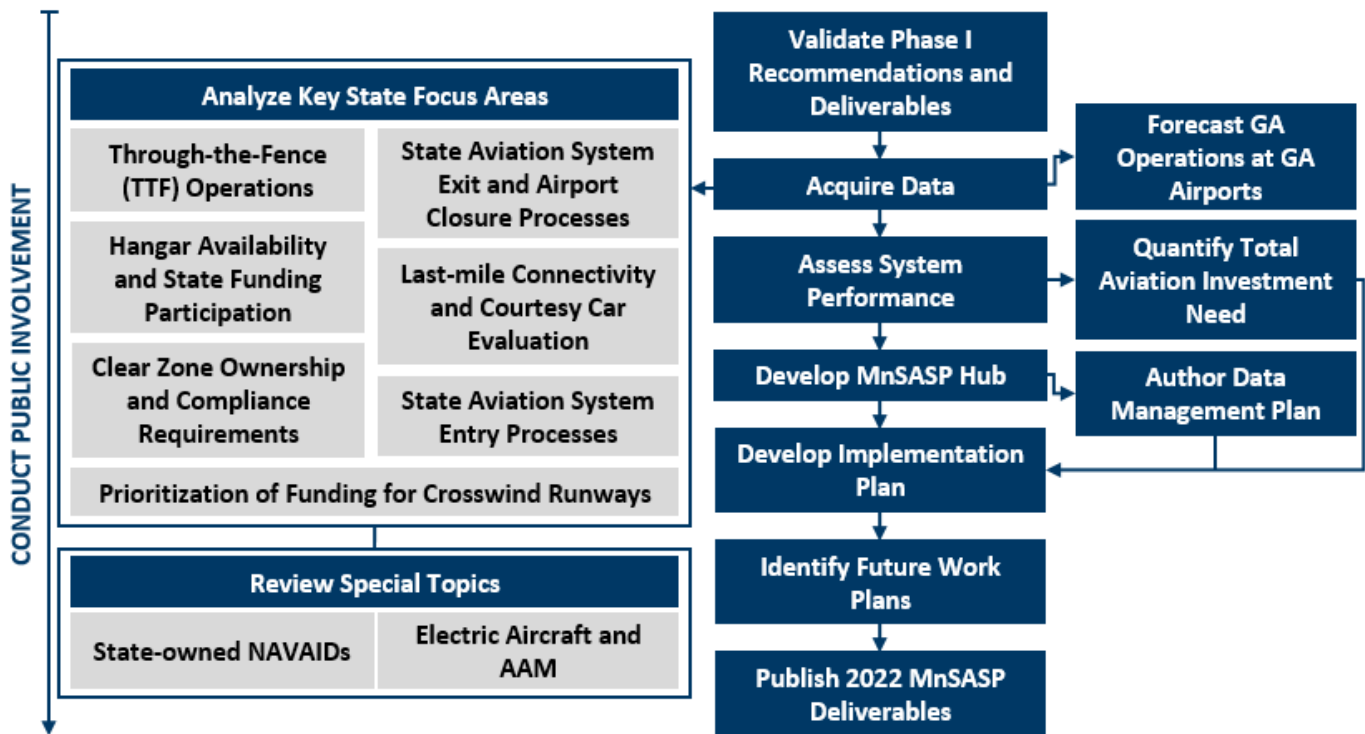


*Sources: MnDOT Aeronautics, 2019; Kimley-Horn, 2020*

<sup>3</sup> MnDOT (n.d.). “System Investment Plans.” Available online at <https://www.dot.state.mn.us/minnesotago/plans.html> (accessed May 2022).

Figure 1.2 provides a more in-depth depiction of the interrelated tasks that comprised Phase II of the MnSASP, guided by the framework established in Phase I. This includes in-depth evaluations of seven key state focus areas that stakeholders identified during an extensive public outreach process in Phase I, as well as two special topics. Focus areas are summarized in Chapter 5 of the 2022 MnSASP Technical Report, with resulting deliverables prepared as Attachments 1 through 7. The state-owned navigational aids (NAVAIDs) task is summarized in Appendix C. Minnesota NAVAIDs. The final stakeholder presentation associated with electric aircraft and advanced air mobility (AAM) is included in Appendix B. Public Participation (no additional deliverables were prepared for this task).

Figure 1.2. 2022 MnSASP Phase II Tasks



Source: Kimley-Horn, 2022

Public involvement was also an important component of Phase II. For this effort, MnDOT Aeronautics convened six Focus Area Working Groups (Working Groups) to provide guidance and regional- and use-case-specific insight on six topics potentially affecting the future of Minnesota’s aviation system and MnDOT Aeronautics:

- Airport Closure Guidance
- Cost Estimates and Airport/ System Funding
- Prioritization of State Funding for Crosswind Runways
- Electric Aircraft and AAM
- Operations Counting and Forecasting
- MnSASP Hub

Working Groups comprised representatives from commercial service and GA airports, the Minnesota Pilots' Association, the FAA, various state agencies, and others. Each group met at least two times during Phase II to provide input on the recommendations developed by the MnSASP.

The 2022 MnSASP has been developed within the context of the MnDOT Family of Plans, in compliance with the directives of AC 150/5070-7, and extensive public involvement during Phases I and II. The outcomes of the plan align MnDOT Aeronautics' policies and system airports with the current state of the industry, driven by factors inherent to and external from aviation itself. To offer the foundation for the development of the 2022 MnSASP, a brief overview of major aviation trends potentially affecting MnDOT Aeronautics and Minnesota airports is presented below.

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### **1.3. Major Aviation Trends and the Impacts of COVID-19**

Since the MnSASP was last updated in 2012, the aviation industry has been affected by numerous technological, regulatory, economic, and traveler behavior trends nationally, as well as shifting aviation activity levels within Minnesota specifically. Until 2020, scheduled commercial passenger service had experienced several years of continued expansion. Between 2010 and 2019, air carriers posted continuous profits driven by growing demands and revenue-earning and -saving steps such as right-sizing equipment, consolidating routes, adding/increasing ancillary fees to ticket purchases, and other strategies. Air cargo similarly witnessed continuous growth, driven in part by consumer demand for near-immediate delivery of goods and shifting purchasing patterns from brick-and-mortar stores to e-commerce. In general, aviation significantly benefitted from thriving global and domestic economic markets. Jet and rotorcraft operations and production numbers were similarly on an upward trend, although small recreational GA has been experiencing decreased activity in all categories except light sport.

These trends, however, dramatically and rapidly shifted in March 2020 with the arrival of COVID-19 in North America. The virus nearly shut down commercial air travel in the months immediately following its emergence. During the pandemic, most business and many leisure travelers abided by stay-at-home guidance issued by local and state officials, as well as mandates issued by individual employers. GA activity was affected more varyingly, with many airports reporting an uptick in operations as recreational pilots had more time to fly, employers chose business/corporate aviation in lieu of scheduled commercial service, and fewer alternative recreational activities were available due to COVID-related shutdowns and social distancing requirements.

Air cargo activity has arguably benefitted most positively, although some operators experienced capacity challenges due to the decreased availability of belly space in passenger aircraft. Shoppers have exhibited growing predilections for online shopping to buy nearly all durable and non-durable consumer goods. J.P. Morgan Chase reported that U.S. consumers spent \$211.5 billion during the second quarter of 2020 on e-commerce, up 31.8 percent quarter-over-quarter. This equates to 16.1 percent of all U.S. sales being conducted online, up from 11.8 percent during the first quarter of 2020.<sup>4</sup> This, coupled with consumers'

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<sup>4</sup> J.P. Morgan Chase. (November 2020). "How COVID-19 Has Transformed Consumer Spending Habits." Available online at <https://www.jpmorgan.com/solutions/cib/research/covid-spending-habits> (accessed December 2020).

increasing expectations for near-immediate delivery, resulted in new demands placed on air cargo providers. To meet these new demands, some air carriers converted a portion of their fleets to carry packages instead of people.

During the height of the pandemic, analysts generally predicted a three- to five-year recovery period before passenger air travel were restored to pre-COVID levels. Just as the MnSASP was initiated in fall 2020, signs were already indicating that travelers are ready to return to the skies. MSP reported that nearly 17,500 passengers cleared Transportation Security Administration (TSA) checkpoints on Thursday, October 15, 2020 – making it the busiest day since the week of March 16, 2020 at the start of the pandemic.<sup>5</sup> Delta Air Lines reinstated service between MSP and Amsterdam Airport Schiphol (AMS) on October 25, 2020, with four weekly flights. This was the first transoceanic service to return to Minnesota since March when the pandemic began. By the time the 2022 MnSASP completed in late spring 2022, approximately two-thirds of the U.S. population was vaccinated and many government and corporate policies prohibiting/limiting travel had been lifted.

It is also important to remember that similar historical events have disrupted air travel in the past, yet demand has always returned at higher rates subsequent to each occurrence. The *Boeing Commercial Market Outlook 2020-2039* observes that, “The fundamentals that have driven air travel the past five decades and doubled air traffic over the past 20 years remain intact. While aviation has seen periodic demand shocks since the beginning of the Jet Age, our industry has recovered from these downturns every time throughout its history.”<sup>6</sup> Demand is anticipated to return in a similar manner as populations are vaccinated and travel restrictions are lifted in the months and potentially years to come.

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## 1.4. Summary

The 2022 MnSASP serves as MnDOT Aeronautics’ long-term strategic investment plan. The plan comprehensively evaluated the major current and anticipated future trends and issues affecting Minnesota airports and the state system. This process helps to ensure the state maximizes its investment into aviation to most effectively and significantly benefit the air traveling public in consideration of the broader context in which airports operate. The framework of the 2022 MnSASP is based on the vision of Minnesota GO and in alignment with FAA guidelines as established by AC 150/5070-7.

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<sup>5</sup> Metropolitan Airports Commissions (October 2020). “MEA Week Saw the Most Traffic at MSP Since March.” Available online at <https://www.msairport.com/blog/mea-week-saw-most-traffic-msp-march> (accessed November 2020).

<sup>6</sup> Boeing (October 2020). *Commercial Market Outlook 2020-2039*. Available online at [https://www.boeing.com/resources/boeingdotcom/market/assets/downloads/2020\\_CMO\\_PDF\\_Download.pdf](https://www.boeing.com/resources/boeingdotcom/market/assets/downloads/2020_CMO_PDF_Download.pdf) (accessed October 2020).