Chapter 2. Study Framework

2.1. Introduction

Core to the success of the 2025 NDSASP is establishing a framework that is used to guide the study, from the early stages of data collection through evaluating existing system performance, and finally to identifying project and/or policy recommendations. There are two main components of the study framework which include the system plan goals and metrics. The goals can be thought of as overall objectives for the system, while the metrics within each goal help to define how the goal is measured and evaluated. The 2025 NDSASP goals and metrics evaluate key markers of success that have been recognized by the North Dakota Aeronautics Commission (NDAC) as essential for the safety of operations, future development, and the role the aviation system serves for communities within North Dakota.

The following subsections define the framework, identify the goals, and present the performance metrics for the 2025 NDSASP. The 2014 NDSASP was reviewed and considered in the development of the updated framework. As discussed in Chapter 1, there have been many changes within the state and national aviation industry as well as in other areas such as population and business activity that indicate the need for updates to better reflect the current and anticipated needs of NDAC in evaluating its future aviation system. Changes to elements of the 2014 NDSASP are noted in the appropriate sections.

2.2. 2025 NDSASP Framework

The framework used to guide the 2025 NDSASP follows a similar structure to the 2014 NDSASP, however, minor modifications were applied to create a more linear process for identifying future recommendations and creating distinction between elements of the system that may require intervention from NDAC or are important to assess for informational purposes only.

As shown in **Figure 2-1**, the 2014 NDSASP framework included three main terms: goals, performance measures, and benchmarks.

Figure 2-1. 2014 NDSASP Framework

The 2014 NDSASP goals offered a broad objective for the system to achieve such as "Strive to Attain Safety and Security," for example. Each goal was then linked to a set of performance measures, which indicated the element of the system that was being measured to evaluate the achievement of a certain goal. For this example, one of the performance measures associated with the "Strive to Attain Safety and Security" goal was to identify the percentage of airports with clear approaches to their primary runways. The benchmarks associated with each performance measure defined a future target of performance and were presented alongside the existing performance. The gap between the existing performance and benchmark was used to inform

recommendations. It is important to note, however, that many of the recommendations from the 2014 study were associated with actions that NDAC did not have direct control over. An example is the recommendations associated with establishing a local mill levy, which is based on local factors and not influenced or funded by NDAC. Therefore, for the 2025 study, some minor adjustments were made to the framework to enhance clarity and transparency about how eventual project or policy recommendations are identified, with an enhanced focus on identifying recommendations that NDAC has direct influence over implementing.
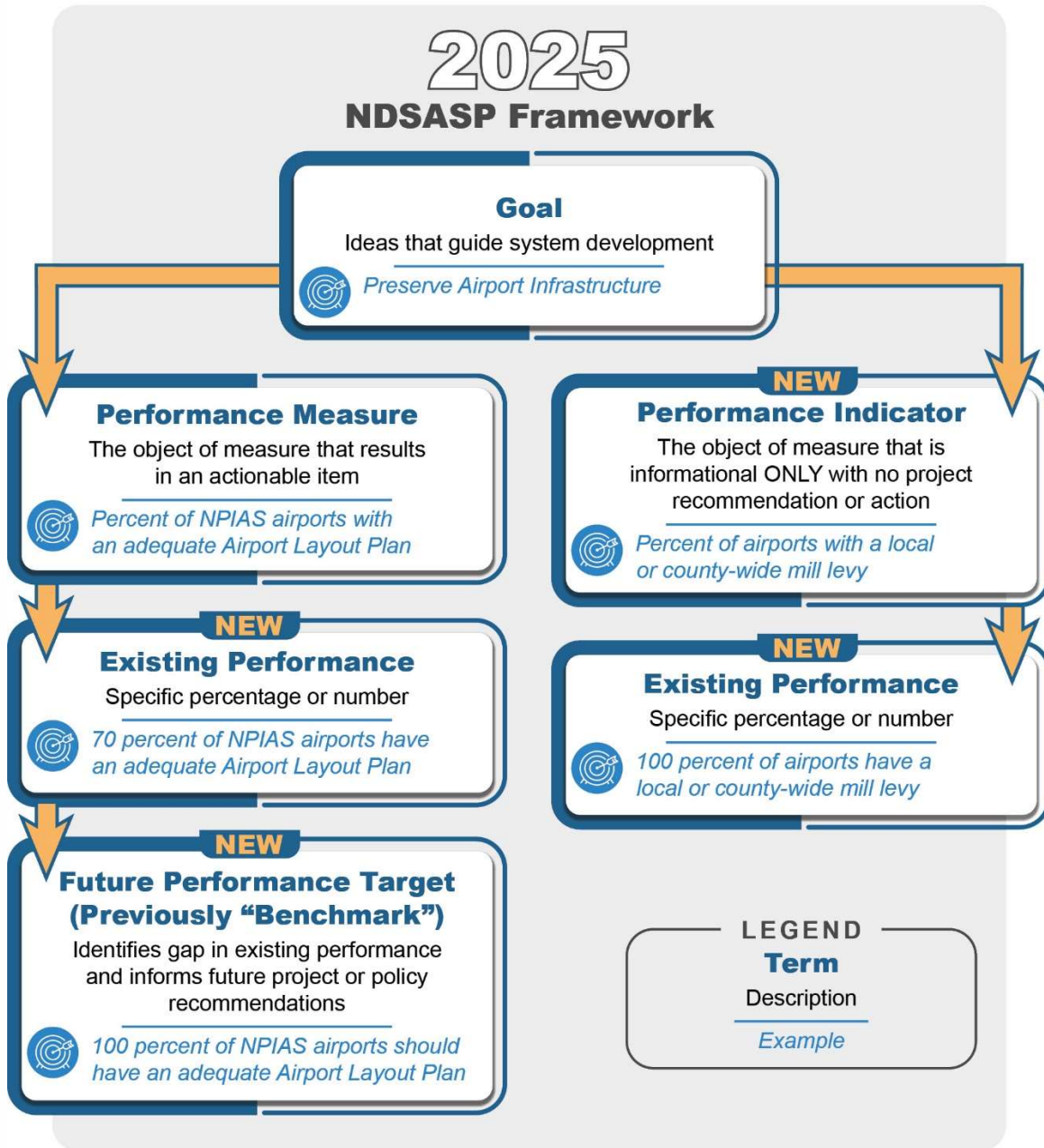
Figure 2-2 (on the next page) shows the 2025 NDSASP framework and highlights the new terms introduced in this study. One of the new terms introduced in the 2025 NDSASP is "performance indicator (PI)" which is used in addition to "performance measure (PM)." Both terms are considered performance metrics and are used to evaluate system performance, however, the distinction is that PIs are used for informational purposes only, whereas PMs measure elements of the system that are considered actionable. An example of a PI is the "percent of airports with a local or county-wide mill levy." This is a PI as NDAC has no direct control over which airports do or do not have a local mill levy (as noted in the previous paragraph). PIs result in an existing performance value (i.e. 80 percent of airports have a local or county-wide mill levy), but no further action is taken due to NDAC's limited influence or control over changing mill levy conditions.

A PM, such as the "percent of NPIAS airports with an adequate Airport Layout Plan (ALP)," also results in an existing performance value (i.e. 70 percent of NPIAS airports have an adequate ALP), like a PI, but it differs because a PM describes a condition or characteristic that can be changed or influenced by NDAC over time. For this reason, all the PMs in the 2025 NDSASP will have an associated future performance target (i.e. 100 percent of NPIAS airports should have an adequate ALP). The gap between existing performance and the future performance target is used to inform project or policy recommendations. The concept of a future performance target is not new to the 2025 NDSASP as it functions similarly to the term "benchmark" used in the 2014 study. The term was changed from "benchmark" to "future performance target" to more clearly describe the function that it serves within the 2025 study's framework.

The enhanced 2025 NDSASP framework still follows the general process of the previous study, but by introducing the distinction between PMs and PIs the study can more clearly demonstrate areas where improvement can and will be sought and areas where information is gathered for contextual purposes only.

Figure 2-2. 2025 NDSASP Framework

2025
NDSASP Framework

Goal
Ideas that guide system development

Preserve Airport Infrastructure

Performance Measure
The object of measure that results in an actionable item

Percent of NPIAS airports with an adequate Airport Layout Plan

NEW
Performance Indicator
The object of measure that is informational ONLY with no project recommendation or action

Percent of airports with a local or county-wide mill levy

NEW
Existing Performance
Specific percentage or number

70 percent of NPIAS airports have an adequate Airport Layout Plan

NEW
Existing Performance
Specific percentage or number

100 percent of airports have a local or county-wide mill levy

NEW
Future Performance Target
(Previously "Benchmark")
Identifies gap in existing performance and informs future project or policy recommendations

100 percent of NPIAS airports should have an adequate Airport Layout Plan

LEGEND
Term
Description

Example

Source: Kimley-Horn, 2025.

2.3. 2025 NDSASP Goals

The goals established for the NDSASP play an important role in identifying the long-term vision for the state's aviation system. In 2014, the NDSASP identified six goals:

- Strive to Attain Safety and Security
- Accommodate Accessibility Needs
- Enhance Air Access to Airports
- Support North Dakota's Economy
- Enhance Quality of Life
- Preserve North Dakota Airport Assets

When developing the 2025 NDSASP goals, these goals were reviewed for continued relevancy and applicability. In general, it was determined that these goals continue to serve the purpose of the 2025 NDSASP, however slight modifications were made to remove redundancies across goals, so that each goal in the 2025 NDSASP is clear and distinct from one another. Additionally, a new goal related to aviation education and industry advancement was included to ensure that long-term aviation planning for the state system considers future advancements in the industry.

During consideration of the 2025 NDSASP goals, North Dakota's most recent long-range transportation plan, 2021 *Transportation Connect*[1], which provides a long-term vision for guiding and integrating all modes of transportation in the state, including aviation, was also reviewed. It can be beneficial for a statewide aviation system plan to have alignment with a state's long-range transportation plan, providing continuity between the goals and allowing for analysis of the entire transportation system using similar processes. In some states, the aviation system plan may directly adopt the goals of a long-range transportation plan. North Dakota's *Transportation Connect* and the goals established for the 2025 NDSASP already have clear alignment, with the NDSASP goals clarified for aviation purposes.

Table 2-1 presents the final goals of the 2025 NDSASP to demonstrate how these goals relate to the 2014 NDSASP goals and shows how the 2025 NDSASP goals align with the *Transportation Connect* goals.

Table 2-1. Crosswalk of NDSASP and Transportation Connect Goals

2025 NDSASP Goals	2014 NDSASP Goals	Transportation Connect Goals
Maintain a Safe Aviation System	Strive to Attain Safety and Security	Keeping You Safe

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[1] https://www.dot.nd.gov/sites/www/files/documents/ExecutiveSummary_July2021.pdf

2025 NDSASP Goals	2014 NDSASP Goals	Transportation Connect Goals
Promote Aviation System Coverage	Accommodate Accessibility Needs	Connecting North Dakota
Provide Air Access to Airports	Enhance Air Access to Airports	Helping You Get There
Enhance Quality of Life	Support North Dakota's Economy	Connecting North Dakota
	Enhance Quality of Life	
Preserve Airport Infrastructure	Preserve North Dakota's Airport Assets	Caring for What We Have
Support Aviation Education and Industry Advancement	Not Applicable	Investing for the Future

Sources: 2014 NDSASP; Transportation Connect, 2021; Kimley-Horn, 2025.

The final goals of the 2025 NDSASP are described in **Table 2-2**, which includes a brief statement about each goal and its intent in achieving North Dakota's long-term aviation vision. As discussed in **Section 2.2**., there are relevant PMs and PIs associated with each of these goals, which are presented in the next section.

Table 2-2. 2025 NDSASP Goals

Goal	Description
Maintain a Safe Aviation System	Maintain a safe aviation system by promoting land use compatibility to protect both aircraft and the communities they serve.
Promote Aviation System Coverage	Evaluate commercial and general aviation system coverage to better understand system accessibility across the state.
Provide Air Access to Airports	Provide air access and help airports meet the needs of aeronautical users, such as on-site weather reporting, navigational aids, fuel, and more.
Enhance Quality of Life	Leverage the state's aviation system to enhance quality of life by promoting both economic and social benefits.
Preserve Airport Infrastructure	Preserve current infrastructure by identifying airport facility and planning needs, funding, and current land use compatibility measures in place to allow both airports and communities the ability to grow and flourish.
Support Aviation Education and Industry Advancement	Support aviation education and industry advancement such as flight training at airports, airport community involvement, and other programs that continue the state's aviation workforce development.

Source: Kimley-Horn, 2025.

2.4. 2025 NDSASP PMs and PIs

The following subsections present the PMs and PIs that are used to measure existing performance within each of the six system goals. PMs or PIs that are new to the 2025 NDSASP are presented in **bold** text.[2] The results of the PM and PI existing system performance analyses are presented in **Chapter X. Existing System Performance.**

2.4.1. Goal: Maintain a Safe Aviation System

The PMs and PIs associated with the Maintain a Safe System goal evaluate a few key areas within an airport's environment to determine if these areas are clear of obstructions and controlled by the airport. The key areas evaluated within this goal include an airport's Part 77 approach surfaces and the runway protection zones (RPZs), as shown in **Table 2-3.** All these PMs and PIs were analyzed in the 2014 NDSASP.

Obstructions within approach surfaces can create hazards for aircraft during take-off and landing procedures and can limit the operations of an airport due to restrictive approach procedures. Runway Protection Zones (RPZs) are trapezoidal boundaries that exist off all runway ends and are designed to enhance safety by protecting the public and large gatherings of people on the ground from potential aircraft incidents. It is recommended that Runway Protection Zones (RPZs) remain clear of obstructions, such as stadiums, parks, large public commercial buildings, parking lots, and other similar uses, to prevent public gatherings from existing within such close proximity to runway ends. RPZ dimensions are determined by a number of factors, such as an airport's critical design aircraft, approach types, and runway length. In addition to measuring whether the approach surfaces and RPZs are free of obstructions, other metrics evaluate the percent of airports that have complete control over their RPZ. In many cases an RPZ may extend beyond an airport's property boundary, so it's important the airports seek to acquire control over the complete RPZ to ensure that the area remains clear of obstructions. An airport may acquire control of their RPZ through fee simple ownership via purchase of the land, or via an avigation easement controlling development and limiting heights of structures.

Table 2-3: Goal: Maintain a Safe Aviation System

Metric	Metric Type
Percent of airports with clear approaches to all runway ends	Performance Measure

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[2] PMs or PIs that were slightly rephrased or moved to different goals are not considered new and are not shown in **bold** text. Only PMs and PIs that are entirely new to the study are shown in **bold.**

Metric	Metric Type
Percent of airports with public gatherings in the RPZs (stadiums, parks, large public or commercial buildings, parking lot, or other similar spaces) for all runway ends	Performance Measure
Percent of airports that control RPZs through fee simple ownership or easements for all runways	
Percent of airports with roads, railroads, or structures not utilized for public gatherings in the RPZs for all runway ends	Performance Indicator

Source: Kimley-Horn, 2025.

2.4.2. Goal: Promote Aviation System Coverage

The PIs relating to the goal to Promote Aviation System Coverage assess the percentage of area and population that have sufficient access to North Dakota's aviation system, as shown in **Table 2-4.** A 90-minute drive-time is used to evaluate sufficient access to a commercial service airport, whereas a 30-minute drive-time is used to evaluate the system's overall coverage, including all NPIAS airports, all paved airports, and all public-use airports. There are only PIs in this goal as it is not anticipated that an additional commercial service or GA facility will be added to the system based solely on the results of this analysis. Decisions on additional airports typically arise at the local level and could be supported by the results of these PIs. Three of the four PIs were analyzed in the 2014 NDSASP, with the PI regarding coverage from all paved public-use airports being new to this study.

Table 2-4. Goal: Promote Aviation System Coverage

Metrics	Metric Type
Percent of area and population within 90 minutes from a Commercial Service airport	Performance Indicator
Percent of area and population within 30 minutes from a NPIAS airport	
Percent of area and population within 30 minutes from all paved public-use airports (NPIAS and Non-NPIAS)	
Percent of area and population within 30 minutes from all public-use airports (NPIAS and Non-NPIAS)	

Source: Kimley-Horn, 2025.

2.4.3. Goal: Provide Air Access to Airports

The PM and PIs corresponding to the goal to Provide Air Access to Airports evaluate the percent of area and population that have access to airports with certain facilities or services, including navigational aids (NAVAIDs), adequate passenger buildings and aircraft storage, and more, as shown in **Table 2-5.** The facilities and services included in this goal were identified as they often relate to the type or frequency of operations that an airport can support. It is helpful to understand the population and area served by system facilities with these attributes to identify if there are regions in the state where these facilities and services are lacking or highly concentrated. The PM on airports with available covered aircraft storage and the PI on airports with standard runway lighting are new to the 2025 NDSASP, while the remaining PMs and PIs were analyzed in the 2014 plan.

Table 2-5. Goal: Provide Air Access to Airports

Metrics	Metric Type
Percent of area and population within 30 nautical miles of an airport with on-site weather reporting (AWOS/ASOS)	Performance Measure
Percent of area and population within 30 nautical miles of an airport with a non-precision approach	
Percent of area and population within 30 nautical miles of an airport with a vertically guided approach	
Percent of airports with adequate terminal facilities to support passenger demand	
Percent of airports with available covered aircraft storage	
Percent of airports with standard runway lighting	Performance Indicator
Percent of area and population within 50 nautical miles of an airport with Jet A fuel	
Percent of area and population within 30 nautical miles of an airport with 100LL fuel	
Percent of NPIAS airports that have at least 95% wind coverage for all runways	

Source: Kimley-Horn, 2025.

2.4.4. Goal: Enhance Quality of Life

The PIs associated with the goal to Enhance Quality of Life are related to business aviation, cargo operators, businesses located on airports, and medical operations as shown in **Table 2-6**. Airports that can support the needs of corporate or cargo operations play a significant role in their local, regional, and statewide economies. Moreover, offering mechanic services and supporting the agricultural industry through aerial application are important economic drivers for airports, especially in North Dakota given this critical sector in the state. In addition to supporting a variety of economic activities, airports also play a key role in providing emergency medical transport, which is vital to enhancing quality of life for rural communities. For this reason, PIs included in this goal also evaluate the percent of airports that can support medical transport operations and have hospitals or clinics within their service areas.

This goal only has PIs as this assessment is intended to provide information on the system's ability to support business aviation, cargo operations, aviation business related tenants, aerial application, and medical operations. No recommendations for NDAC actions pertaining to adding these services is anticipated. Four of the PIs are new to this study compared to the five that were analyzed in the 2014 NDSASP.

Table 2-6. Goal: Enhance Quality of Life

Metrics	Metric Type
Percent of area and population within 60 minutes of a 5,000ft or longer runway	Performance Indicator
Percent of airports that meet the Light Business Jet Capability criteria	
Percent of airports utilized by air cargo operators	
Percent of airports with aviation related business tenants on airport property	
Percent of airports that can meet the needs of the King Air emergency aircraft	
Percent of area and population within 30-minutes of an airport that can meet the needs of the King Air emergency aircraft (3,800ft runway, ARC B-II Small +, lighted runway, certified weather reporting)	
Percent of area and population within 30 nautical miles of an airport that supports based or transient aerial applicator operations	

Metrics	Metric Type
Percent of airports that provide access to mechanic services: - **On site and available to the public** - **On-site private operation only** - **On-call only** - **None**	Performance Indicator
Percent of airports with a hospital and/or clinic within its service area	

Source: Kimley-Horn, 2025.

2.4.5. Goal: Preserve Airport Infrastructure

The PMs and PIs related to the Preserve Airport Infrastructure goal evaluate elements of airport preservation and airport revenues streams, as shown **Table 2-7**. Many airports in the system have significant pavement assets (ex. runways, taxiways, and aprons) and it is important to understand what percentage of the system is meeting established Pavement Condition Index (PCI) thresholds to proactively plan for future pavement needs and effectively preserve these assets. Airports can also support their preservation through planning efforts, such as by maintaining an adequate ALP or working with their local land use authority to protect against development that may create obstructions to an airport's Part 77 approaches. Local revenue streams, such as through mill levy or non-mill levy revenues, can also play an important role in preserving the airport, as these local funds may be used to support future airport maintenance and preservation projects. All these PMs and PIs were previously analyzed in the 2014 plan.

Table 2-7. Goal: Preserve Airport Infrastructure

Metrics	Metric Type
Percent of airports meeting state PCI thresholds on primary runways	Performance Measure
Percent of NPIAS airports with an adequate Airport Layout Plan	
Percent of airports that have height zoning following Part 77 guidelines adopted by a local zoning board	Performance Indicator
Percent of airports with a local or county-wide mill levy	
Percent of airports with non-mill levy revenue	

Source: Kimley-Horn, 2025.

2.4.6. Goal: Support Aviation Education and Industry Advancement

The PIs associated with the Support Aviation Education and Industry Advancement goal evaluate how many airports offer flight training, host community events, and offer educational programs as shown in **Table 2-8.** This is a new goal not previously included in the 2014 NDSASP so all the PIs identified are new to this study. This goal includes PIs only as this evaluation is intended to provide information about how many airports support flight training, offer educational programs, and other opportunities for aviation education and industry advancement/ workforce development.

In 2024 the FAA reports that there were 4,161 manned pilots and 2,104 remote pilots in North Dakota.[3] Evaluating the percent of airports and the population/area with access to flight training is critical to GA and the future workforce of aviation in the state and beyond. It is also important to evaluate the additional benefits that airports provide their communities, such as hosting community events, and offering programs to support aviation and other Science, Technology, and Engineering (STEM) educational programs. Engaging with the public allows airports to positively influence the communities they serve.

Table 2-8. Goal: Support Aviation Education and Industry Advancement

Metrics	Metric Type
Percent of airports that offer flight training	Performance Indicator
Percent of area and population within 30 nautical miles of an airport that offers flight training	
Percent of airports that host annual fly-ins or other community engagement events	
Percent of airports that participate in STEM activities (tours, classroom visits, etc.)	
Percent of area and population that have educational opportunities available in the community	

Source: Kimley-Horn, 2025.

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[3] FAA, 2024 Active Civil Airmen Statistics, https://www.faa.gov/data_research/aviation_data_statistics/civil_airmen_statistics, December 31, 2024.

2.5. Summary

This chapter establishes the 2025 NDSASP framework, which includes the goals, PMs, and PIs that are used to drive the study forward and inform all subsequent tasks. Particularly, these goals, PMS, and PIs are used to establish the system's existing condition, calculate the system's existing performance, and are used to inform future project or policy recommendations.