



The 2018 Minot International Airport Master Plan Update was prepared for the City of Minot in accordance with Federal Aviation Administration (FAA) standards and in consultation with the Airport Staff, Tenants, and Community Representatives.

The development plan resulting from this update provide the basis for airport projects through the next 20 years.

Minot International Airport

Airport Master Plan Executive Summary 2018

Scope and Timeline

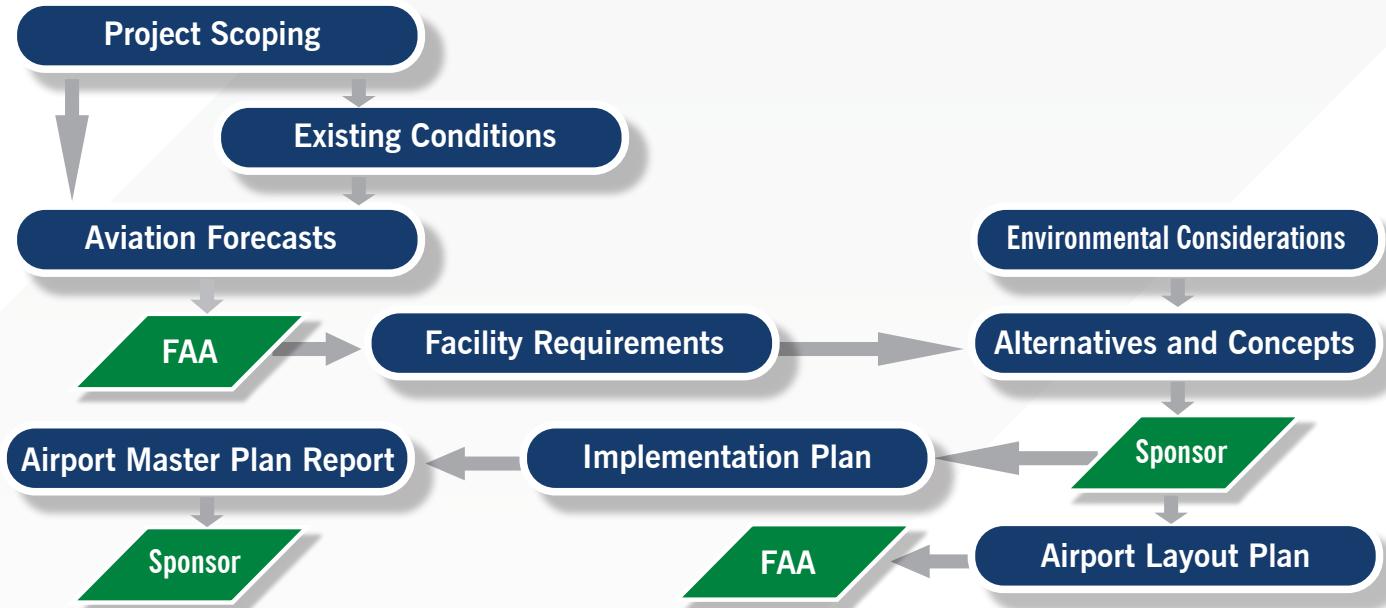
While the Master Plan project addressed all elements of the airport required to meet projected demand, the following items were specific focus areas for this 2018 Airport Master Plan:

- » Corporate aviation demand and location for development
- » Cargo demand and location for development
- » Determine Critical Design Aircraft and required airfield infrastructure
- » Identify areas for non-aeronautical development
- » Identify demand for support facilities (e.g., rental car quick turn-around facility)

The previous Master Plan and Airport Layout Plan (ALP) was completed in 2012 and focused on work in the southern quadrant of the airport. These projects included Taxiway D, the airline terminal, the snow removal equipment (SRE) building, and options for the runway protection zone (RPZ) for Runway 8. Most of these projects were completed or are underway. In addition, after 2012 the community began to experience substantial increases in enplanements and operations as a result of the oil boom. Some activity increases were just peaks, but others were sustainable, and this 2018 Master Plan update looked at what facilities would be necessary to support the new level of activity.

The process for the Master Plan is shown in the figure below. During the process, airport staff and stakeholders were greatly involved in the information gathering process and provided feedback on recommendations to make sure proposed plans would be the most beneficial to the airport. The public was also invited to provide input on the plan via two Open House meetings held at the airport.

Master Plan Milestones



Forecasts

After existing facilities were examined, a subsequent effort was undertaken to forecast the demand for each type of aviation activity at the Minot International Airport through the 20-year planning period. There are three key measures of aviation activity: 1) passenger enplanements which drive airline terminal capacity, 2) based aircraft which drive aircraft storage capacity, and 3) airport operations that drive airfield capacity.



METRIC	2014	2019	2024	2034	CAGR
Passenger Enplanements	220,522	192,253	201,574	289,769	1.4%
Based Aircraft	107	128	144	176	2.5%
Operations	30,826	27,065	26,193	29,694	-0.2%

Source: Trillion Aviation Analysis



Passenger Enplanements, on an annual basis, have shown rapid growth from 2010 to 2014 with a leveling and decline through 2017. A modest growth projection of 1.4% per year was used as the forecast for enplanements.

Historical Based Aircraft numbers at Minot have shown steady growth. The forecast annual growth rate for based aircraft was determined at 2.5% per year with most growth occurring with multi-engine and jet aircraft. Airport Operations which include airline, military, and general aviation, have varied greatly over the years. These changes in operations have been due to economic factors affecting general aviation and commercial airline fleet changes. The forecast annual

growth rate for operations was determined to be -0.2% annually. This decline is primarily due to the forecast indicating airlines will use larger aircraft to serve Minot, resulting in more seats but fewer operations.

It is important to note the forecasts are realistic projections of demand that may occur. Justification for construction of facilities is still based on actual demand.



Facility/Alternative Issues Addressed in Process

In the Master Plan project, there were several items that the airport considered in the Facility Requirements and Alternatives chapters. Below are some notable items and how they were evaluated to determine a preferred development alternative for Minot International Airport.

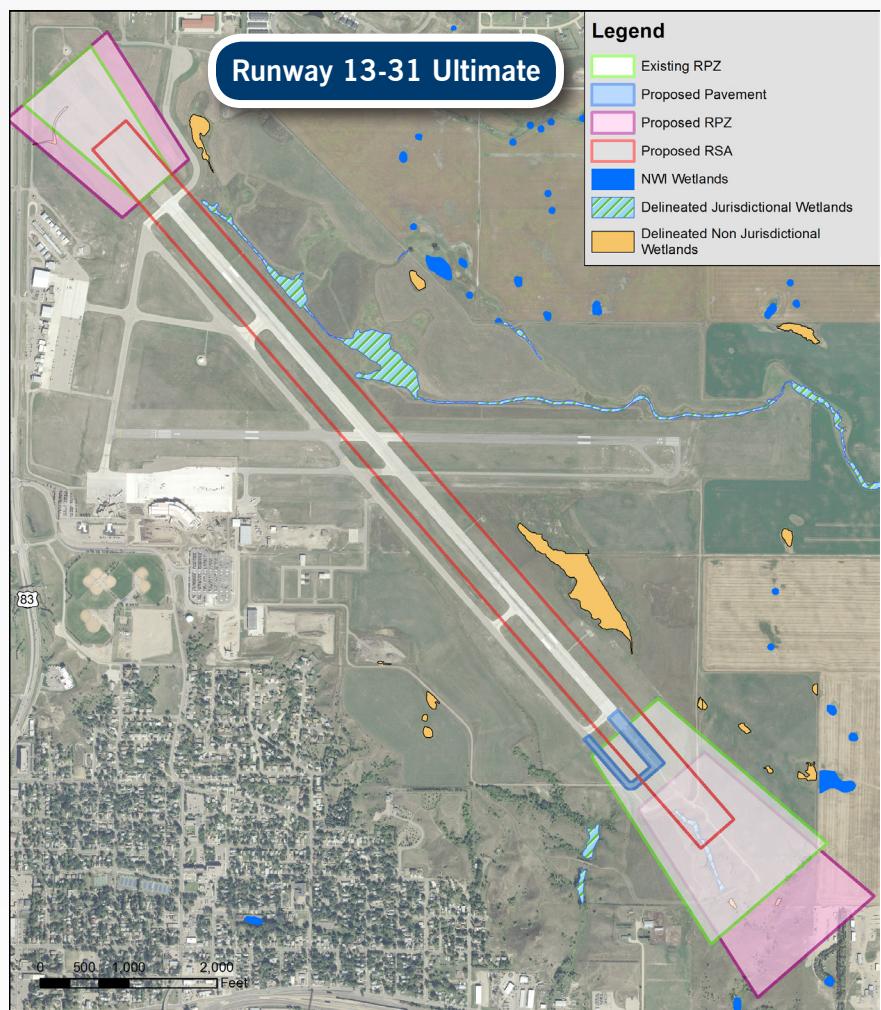


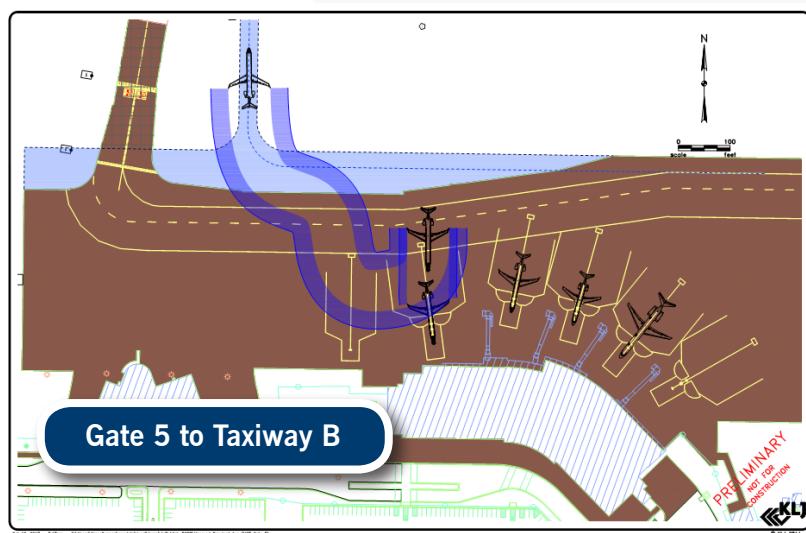
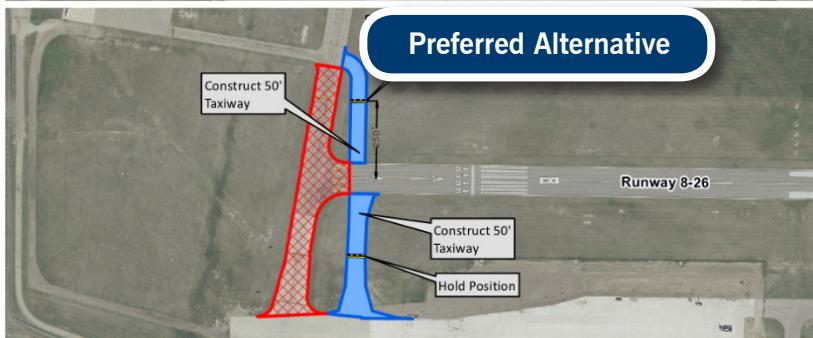
Accommodating Based Aircraft – for Minot 23% of existing based aircraft are at the Dakota Territory Air Museum and 22% of existing based aircraft are tied down on the apron. The parking of so many based aircraft on the apron is unusual for airports in this region. The Master Plan evaluated the long-term needs for the airport for either apron space or hangar space to allow aircraft owners the option should more of them choose to hangar in the future.

Locations for hangar development were identified by area with different sizes of aircraft being accommodated. The areas on the airport included the west and south so owners would have several options from which to choose.

Runway 13-31 – is the primary runway for Minot, which is 7,700 by 150 feet. The runway has a precision instrument approach on Runway 31 down to half-mile visibility and a non-precision approach on Runway 13 down to one-mile visibility. It was important to maximize its capabilities to the greatest extent possible through the planning period. Runway length analysis conducted during the Master Plan indicates a length of 8,500 feet would be a reasonable ultimate length to plan for. The 8,500 foot length would require an extension of 800 feet to the end of Runway 31. While not considered in the near-term, the extension was included in the preferred alternative to preserve space should further justification and demand dictate the need in the future.

Another improvement to Runway 13-31 would be to lower the approach minimums for Runway 13 from one-mile visibility to three-quarter-mile visibility. The improved approach is expected to also lower the ceiling from a 400 foot cloud ceiling to as low as a 250 foot cloud ceiling and would improve accessibility to the airport when winds are out of the south. The airport meets all the requirements for this Runway 13 improvement and only needs to submit a request for improving the approach to the FAA.





Runway 8 Runway Protection Zone (RPZ) – in September 2012, the FAA issued guidance for airports to identify and address issues within RPZs. As a result of this guidance, the Master Plan process identified several options that the FAA reviewed to deal with incompatible uses inside the Runway 8 RPZ.

After extensive review, the FAA concluded the runway threshold could remain generally where it is currently located, and the preferred alternative was prepared accordingly. For the short-term Runway 8-26 will remain as it exists. When Taxiway B is reconfigured, the Runway 8-26 threshold will be moved slightly and the existing displaced threshold will be removed. The Runway 8-26 design category will remain as it exists currently through the short-term and long-term configuration.

Safety Risk Management (SRM) Meeting – During the Master Plan process, the FAA coordinated an SRM meeting to look at the existing intersection of Runway 8 and Taxiway B. The current configuration is in existence as a result of continuing to use original pavement from an old runway for the purpose of a taxiway. The taxiway does not meet design standards and has been identified as a Hot Spot on the airfield.

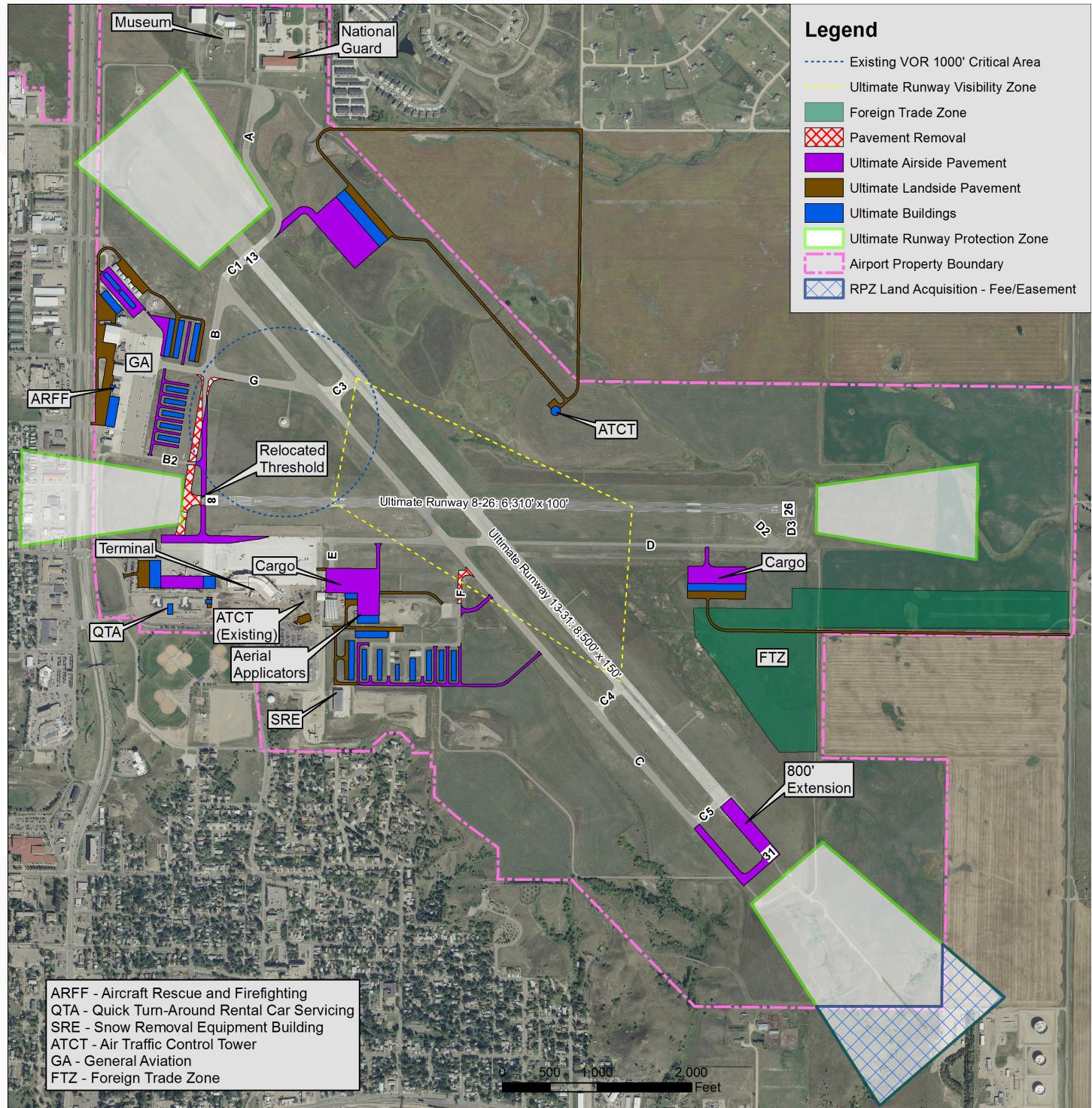
The SRM meeting included various FAA staff, North Dakota Aeronautics Commission staff, airport staff, and consultants to discuss issues and identify the best solution for the airport. The SRM meeting included deliberation on several FAA airfield design concerns including how the intersection contained an inline taxiway, an angled intersection with the runway, and could even be seen as an end around taxiway. The discussion further included solutions that could include consideration of potential problems with direct apron access to the runway.

A solution, determined through the SRM process, involved removing the inline taxiway and end around configuration as a part of the preferred alternative for Runway 8. This work would be done in coordination with relocating the threshold for Runway 8 in the future. Access from the commercial apron would be made by Taxiway B directly. To show this did not create a “direct access with no turn required” scenario, it was demonstrated using PathPlanner that due to the narrowness of the commercial apron, there are no direct access issues since all aircraft must make turns from Taxiway D to enter Taxiway B and no gate positions provide a direct access to Taxiway B without a turn.



Preferred Development Plan

The preferred development plan makes necessary improvements to the airfield and allows for utilization of all areas of the airport for multiple types of aviation use. This proposed layout is created in a manner so that no type of use impedes upon another type of use, and that space is reserved for future development. The figure below is an overview of the preferred development.



Implementation Plan

The implementation timeline is based on a balance between available funding, facility conditions, and manifested demand for facilities. The following table provides a timeline for the projects in the preferred development plan. Most hangar development is expected to occur with private funding as demand dictates.

NEAR-TERM 0-5 YEARS		MID-TERM 6-10 YEARS	LONG-TERM 11-20 YEARS
Airfield	» Runway 8-26 Rehab	» Runway 8 Threshold; Taxiway B & D Realignment » Taxiway F Realignment » Pavement Maintenance	» Taxiway C Rehab » Runway 31 Extension » Taxiway B & G Rehab » Pavement Maintenance
Airline Terminal	» Rental Car Quick Turn-Around (QTA)	» Short Term Parking Lot Rehab » Expand Employee Lot	» Parking Lot Rehab » Passenger Boarding Bridge #5
General Aviation West and Other	» Apron Rehab » Rehab Access Road and Parking » Construct Hangars with Demand	» Expand Auto Parking » Replace T-Hangars » Construct Hangars with Demand	» Hangar Taxilane Extension » New Apron – North East » Construct Hangars with Demand
General Aviation South	» Rehab & Expand Cargo Apron » Construct Hangars with Demand	» Expand Cargo Apron » Hangar Taxilane Extension » Construct Hangars with Demand	» Rehab Hangar Taxilanes » Construct Hangars with Demand
Support	» ARFF Reconstruction/Expansion » Storm Water/Wildlife Mitigation » Snow Removal Equipment	» Snow Removal Equipment	» New ATCT » Replace Perimeter Fence » Snow Removal Equipment

Environmental Considerations

The implementation of each project is subject to environmental considerations. Often when this work is within existing disturbed areas, only a Categorical Exclusion (CATEX) is required as compared to a runway extension, which will require an Environmental Assessment (EA). For Minot, there are wetlands that will require mitigation including projects to implement the Wildlife Hazard Management Plan. The wetlands mitigation will have an impact on project costs.

ANTICIPATED ENVIRONMENTAL REQUIREMENTS FOR MAJOR PROJECTS	
Proposed Action(s)	Anticipated Environmental Documentation
Near-Term Improvements (2018-2022)	
ARFF station rehabilitation	Simple CATEX
General aviation apron reconstruction	Expanded CATEX
QTA facility	Expanded CATEX
Landside access road and parking for FBO and GA area	Expanded CATEX
Mid-Term Improvements (2023-2027)	
Runway rehabilitation	Simple CATEX
T-hangar development	Expanded CATEX
Cargo apron replacement	Expanded CATEX
Long-Term Improvements (2028-2037)	
Taxiway rehabilitation	Simple CATEX
Parking lot refurbishment	Simple CATEX
General aviation apron construction	Expanded CATEX or EA
Perimeter fence replacement	Expanded CATEX
Runway extension	EA

COST ESTIMATES AND FUNDING SOURCES FOR PREFERRED ALTERNATIVE					
Period	FAA	State	Local	Other	Total
Near-Term	12,861,149	714,508	764,508	4,057,665	18,397,830
Mid-Term	6,933,600	410,200	1,895,200	1,875,000	11,239,000
Long-Term	29,634,500	1,635,250	4,235,250	-	35,680,000
TOTAL	\$ 49,429,248	\$ 2,759,959	\$ 6,849,958	\$ 5,932,665	\$ 65,316,830

Sources of Funding

The development needs at the airport will make use of several different funding sources for different project elements. Please note the project cost items listed above do not include funding for hangar development (except for T-hangar replacement). A description of those funding sources and potential uses is provided below:

Federal

- » **Airport Improvement Program (AIP)** – from the FAA and used for eligible portions of airport projects which improve safety, capacity or preserve justified facilities. Funding is up to 90%.

State

- » **ND Aeronautics Commission** – from the ND Aeronautics Commission and used for 5% of the cost of an AIP Eligible project. The Commission also provides additional funding for non-AIP projects as requested.

Local

- » **Passenger Facility Charge** – authorized by the FAA for eligible portions of projects and funded from a \$4.50 per passenger charge set by Congress. Currently dedicated to repayment of the airline terminal.
- » **Customer Facility Charge** – a charge to rental car customers used for improvements to rental car facilities. This is anticipated to be used to fund a Car Rental Quick Turn facility.
- » **Airport Revenues** – all sources of airport funding which can be used for capital improvements. For the master plan this is expected to be the match for AIP projects, the ineligible portions of any projects, and the construction of small hangars for renting to aircraft owners. Maximizing local revenues is important as the ND Aeronautics Commission looks closely at local funding before agreeing to participate in projects.

Other

- » **Private Funding** – individuals and companies finance projects at airports in exchange for a leasehold interest in airport property. For the master plan this private funding is anticipated for large hangars which are typically unique to a business interest. The leasehold interest authorized by the airport should be equivalent to the level of investment and its typical amortization.

For Minot International Airport, the primary challenge will be local funding for capital projects. Local funding can be derived from fees and charges as well as levy authority through the City of Minot. Income can also be found from new facilities such as hangars or the QTA building, but these improvements require upfront capital funding that is limited. With these options in mind, it will be important for the airport to establish sustainable sources of annual revenue because there are significant needs related to major maintenance and demand-based improvements.

Airport Master Plan Prepared in Accordance with FAA Requirements

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