

# Master Plan Update EXECUTIVE SUMMARY

## 2019



Mead  
& Hunt



**Bismarck**  
AIRPORT

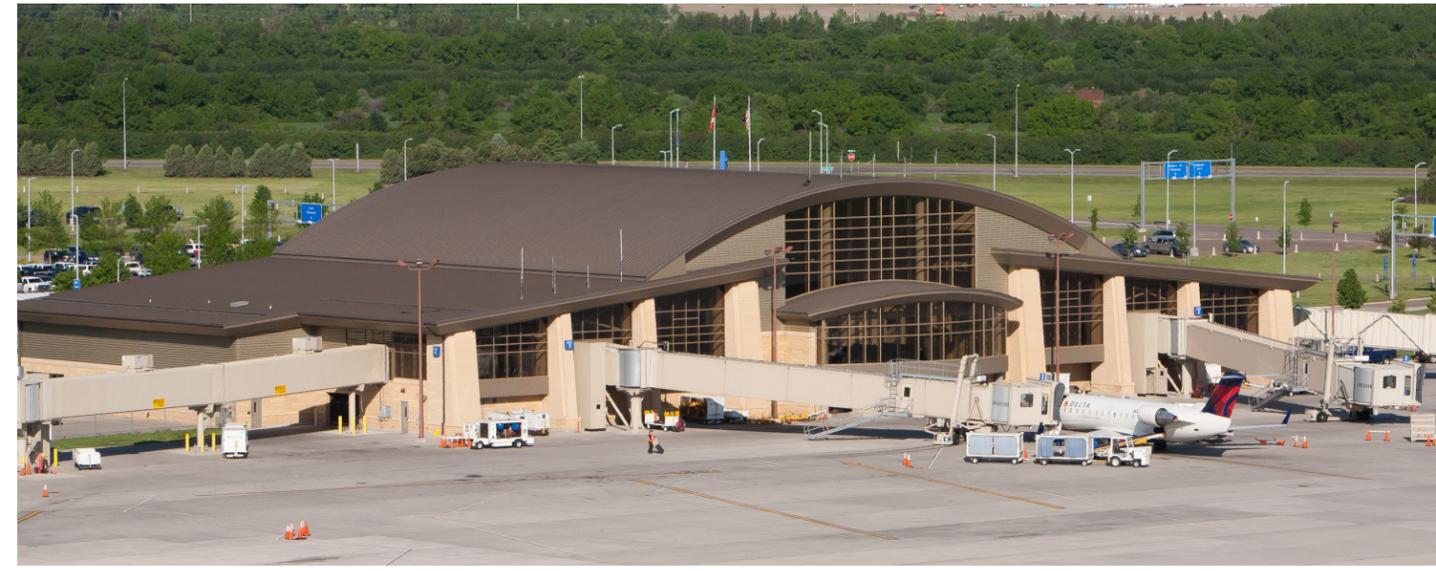


## Master Plan Update Executive Summary

The City of Bismarck launched a comprehensive update of the Airport Master Plan in October 2015. To plan strategically for future improvements, the City of Bismarck, owners and operators of the Bismarck Airport (BIS), along with the Federal Aviation Administration Dakota-Minnesota Airports District Office (FAADMA) and the North Dakota Aeronautics Commission elected to initiate a study to update the airport master plan.

With a history that spans nearly 90 years, the Airport has continually evolved to meet the demands of its users. This master plan will guide the Airport's plans for future infrastructure development as well as strengthen its commitment to being a community-friendly business and vital transportation hub for the region.

# Airport Master Plan



## Objectives

- Enhance terminal area to improve the passenger experience
- Expand general aviation and specialized air service operations on airfield
- Examine options for expanding air cargo activities
- Expand vehicular parking capacities for users and rental cars
- Identify opportunities for revenue-generating projects for both aviation and non-aviation users
- Develop 20-year Airport Capital Improvement Plan
- Plan for future development in coordination with the rehabilitation of Runway 13-31
- Airport Layout Plan development to comply with FAA Standard Operating Procedures
- Compatibility between Airport operations and surrounding land uses
- Public outreach and engagement to incorporate community feedback into the plan
- Incorporate sustainable measures to benefit the airport and users

## Key Factors

- Economic development
- Population and workforce growth
- Tourism destination
- Communication with stakeholders and the public
- General aviation
- Air cargo
- Airline industry
- Security
- Technology including unmanned aerial systems
- Airline consolidation
- Fuel price fluctuations
- Commercial service airports and government subsidies

# Inventory

Bismarck, and its sister city, Mandan, have evolved over time to serve the needs of the large government workforce, private sector businesses, the tourism industry, the energy industry, higher education, and those drawn to the area's natural beauty and outdoor recreational opportunities.

## Higher Education Providers

- University of Mary
- United Tribes Technical College
- Bismarck State College

## Largest Employers in Private Sector

- Sanford Health
- Basin Electric
- CHI St. Alexius Medical Center
- Montana-Dakota Utilities (MDU) Company
- Walmart
- Aetna

## Airport Role and Location

Bismarck Airport (BIS) is in the southern half of central North Dakota in Burleigh County on the southeast side of the City of Bismarck. The Airport's location is close to Interstate 94 and Highway 83. BIS is surrounded by eight general aviation airports. Two of these airports are used by the public. Six of these airports are privately-owned.

The Airport offers vital air transportation for the capitol city of North Dakota and the whole state. The FAA classifies BIS as a primary, non-hub commercial service airport critical to supporting the demands of the nation's aviation system. This classification makes BIS eligible for funding grants from the Federal Government to support development projects. The North Dakota Aeronautics Commission classifies Bismarck Airport as one of eight commercial service airports within the State of North Dakota.

*The Airport offers vital air transportation for the capitol city of North Dakota and the whole state*

Currently, Bismarck Airport supports the following activities:

- Passenger service
- Recreational aviation
- Business aviation
- Air cargo
- Air ambulance service
- Flight training
- Aircraft maintenance
- Military aviation
- Army National Guard air operations

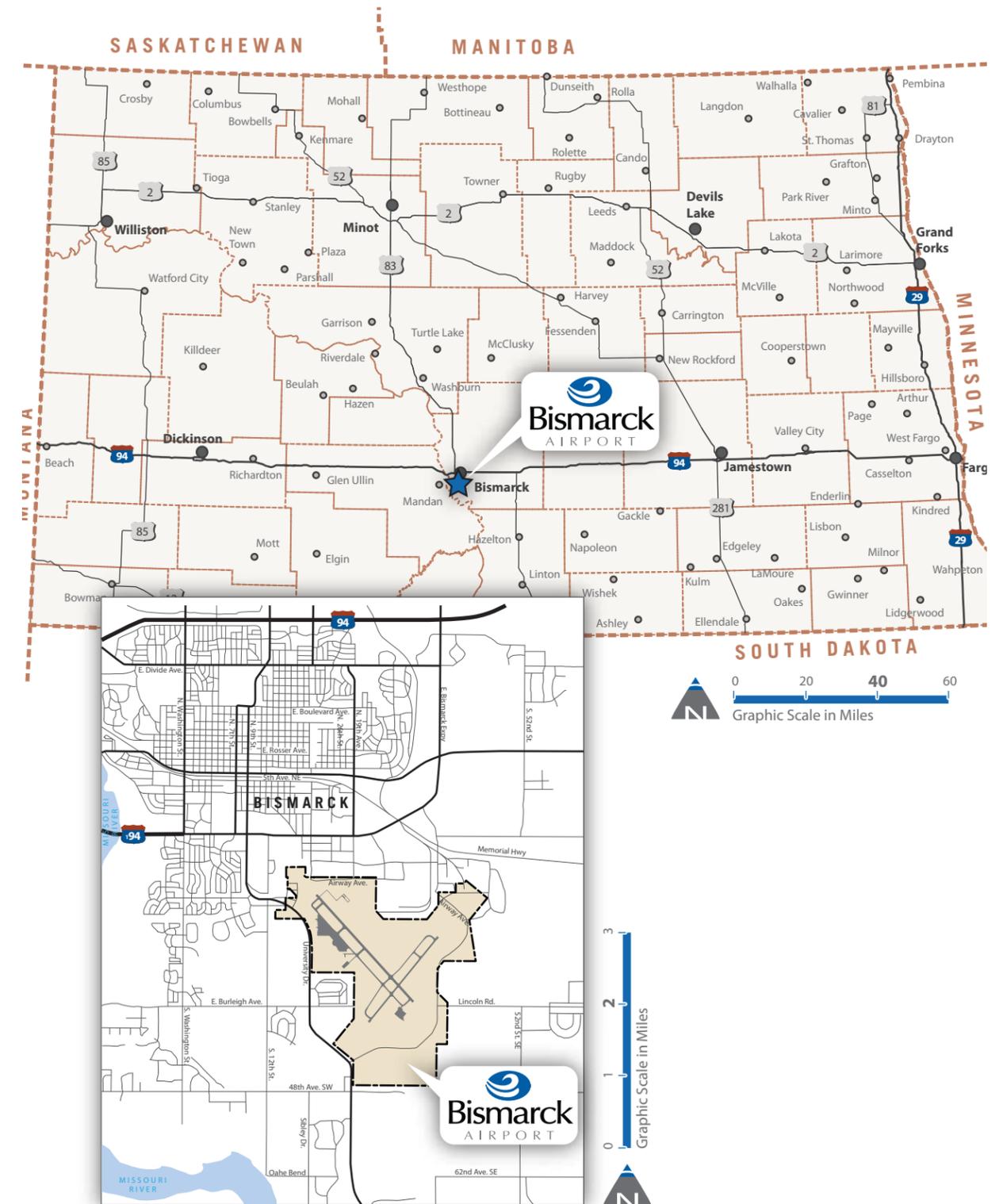
## Commercial Service Air Carriers

- Allegiant Air
- American Airlines
- Delta Air Lines
- Frontier Airlines (seasonal)
- United Airlines

## Round Trip Destinations

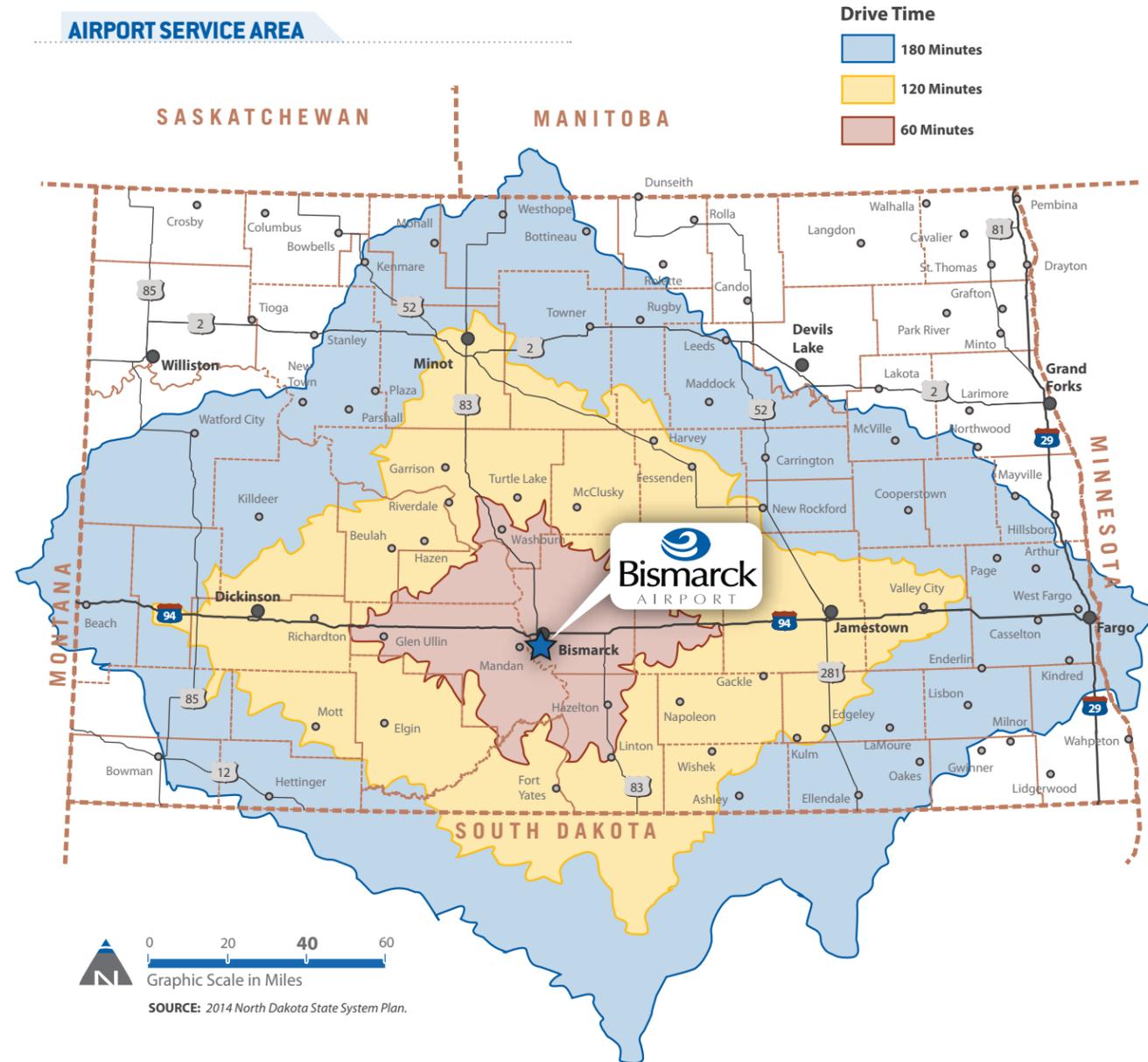
- Chicago (ORD)
- Dallas/Fort Worth (DFW)
- Orlando/Sanford (SFB)
- Denver (DEN)
- Las Vegas (LAS)
- Minneapolis/St. Paul (MSP)
- Phoenix/Mesa (IWA)

## AIRPORT LOCATION



Inventory

**AIRPORT SERVICE AREA**



**Setting, Demographics and Economic Impact**

The Airport's service area includes five counties, which boasted a population just over 125,000 in 2015, an increase of 16 percent over a period of 10 years. Employment increased by 21 percent over the same period, and overall retail sales grew to \$2.17 billion as well. BIS generates \$279.7 million in total economic impact into the local economy.

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**AIRPORT CATCHMENT AREA**

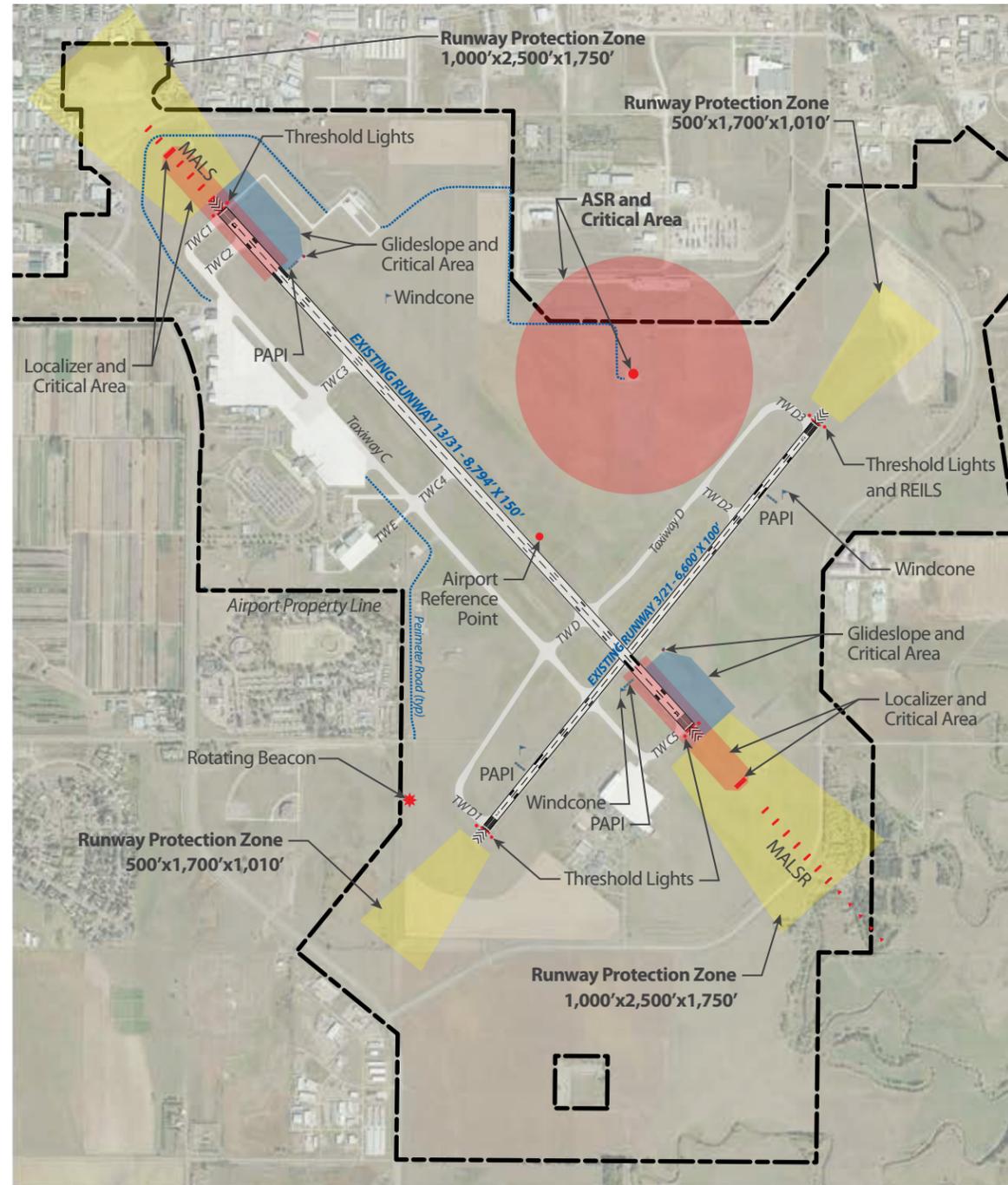


An airport's catchment area, or service area, is a geographic area surrounding an airport where it can reasonably expect to draw passenger traffic and is representative of the local market. Bismarck Airport's catchment area represents the focus market for air service improvements and the majority of travelers using the local airport.

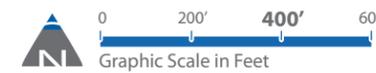
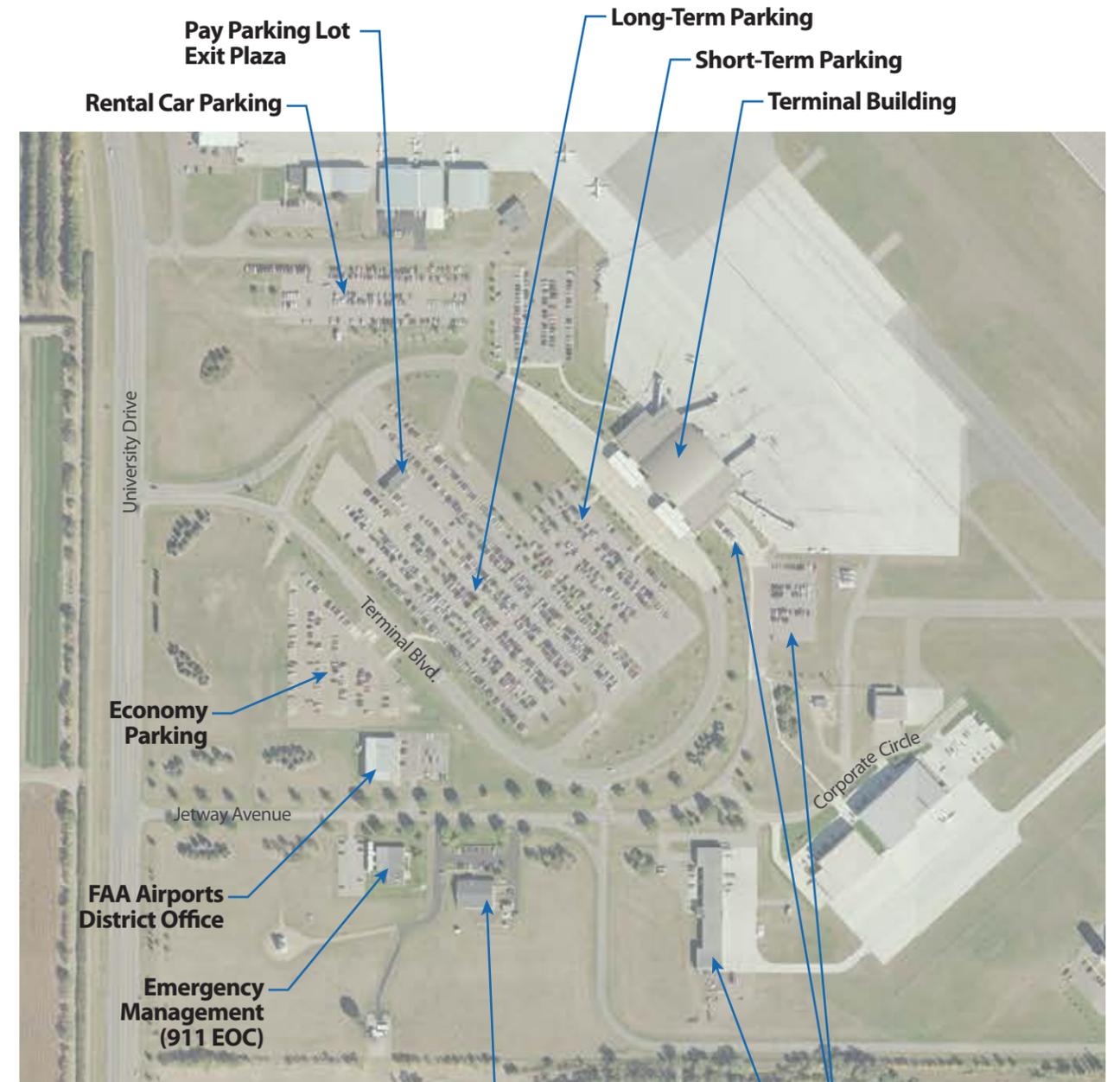
# Airport Facilities

The master planning process for Bismarck Airport closely reviewed the existing condition of landside, terminal, and airfield facilities along with support and tenant facilities.

## AIRFIELD LAYOUT



## TERMINAL FACILITIES



# Airport Facilities

## Activity Forecasts

Aviation activity forecasts are pivotal in master planning because they provide the basis for projections of future demand. The categories of activities forecast for BIS are passenger enplanements, based aircraft, operations, air cargo and peak passengers. This table summarizes the preferred forecasts to guide planning for the next 20 years.

### SUMMARY OF PREFERRED FORECASTS

CATEGORY	2015	2020	2025	2030	2035
<b>PASSENGER ENPLANEMENTS</b>	<b>259,734</b>	<b>296,308</b>	<b>341,525</b>	<b>386,743</b>	<b>431,961</b>
Total Annual Operations	56,709	58,537	60,987	63,338	65,598
Itinerant Operations	41,012	42,498	43,911	45,730	47,559
Local Operations	15,697	16,039	17,076	17,608	18,039
<b>BASED AIRCRAFT</b>	<b>117</b>	<b>120</b>	<b>124</b>	<b>128</b>	<b>133</b>
Single-Engine Piston	65	66	67	68	70
Twin-Engine Piston	13	13	13	12	13
Turboprop	9	10	10	11	12
Jet	10	11	13	15	17
Helicopter	3	3	4	4	4
Military	17	17	17	17	17
<b>AIR CARGO (Million Pounds)</b>	<b>7.9</b>	<b>8.1</b>	<b>8.3</b>	<b>8.5</b>	<b>8.7</b>

Source: Mead & Hunt, 2016.



BIS - Forecast (Apron Activity) Photo Caption.

## Facility Requirements

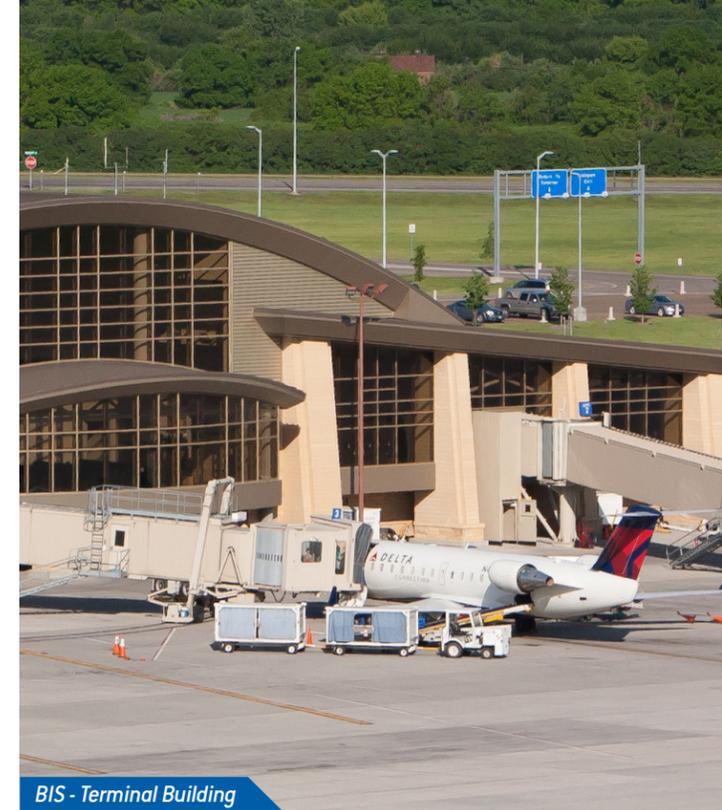
Planning and investment made to improve facilities at Bismarck Airport will allow it to meet the air transportation demands of the region for the next 20 years. This is a list of the recommended improvements by facility.

### Recommended Airside Facilities

- **RUNWAYS**
  - ♦ Preserve runway lengths to meet future aeronautical needs
  - ♦ Comply with FAA design standards that changed since 2008 airport master plan update
  - ♦ Continue to use runway 13-31 Runway Design Code D-III
  - ♦ Continue to use runway 3-21 Runway Design Code C-II
- **TAXIWAYS**
  - ♦ Design new taxiway fillets to comply with FAA standards
  - ♦ Modify direct runway to apron connections
- **NAVAIDS**
  - ♦ Preserve options for MALSF to Runways 3 and 21
  - ♦ Update lighting to LEDs

### Recommended Landside Facilities

- **HANGARS**
  - ♦ Expand corporate hangar development areas
  - ♦ Continue to expand growth of GA and T-Hangar development areas
  - ♦ Expand to meet future storage needs
- **SNOW REMOVAL EQUIPMENT (SRE)**
  - ♦ Expand Snow Removal and Equipment facilities
  - ♦ Plan for "Pull-through" parking for large vehicles



BIS - Terminal Building

- **FUEL**
  - ♦ Expand fuel facility (additional capacity)
- **AIRCRAFT RESCUE AND FIRE FIGHTING (ARFF)**
  - ♦ Expand ARFF station
- **VEHICULAR PARKING**
  - ♦ Expand public parking by 743 spaces
  - ♦ Add 56 new employee parking spaces
  - ♦ Add 75 new rental car ready/return parking spaces
  - ♦ Add 211 new rental car storage spaces

### Recommended Terminal Facilities

- Additional TSA screening and queuing space
- Additional baggage carousel and expanded baggage handling area
- Four additional gates for air carrier and charter aircraft
- Expansion of terminal area apron
- Total need of 138,000-141,000 sf of additional terminal building space by 2035

Activity Forecasts

Facility Requirements

## Preferred Alternatives

Overall, Bismarck Airport is well positioned to expand and improve its infrastructure to meet user demands throughout the next 20-years. The following bullets summarize the recommended alternatives to meet those needs and are shown below in the preferred Airside, Landside and Parking Alternative Plans.

### Runways

- Expand blast pads to 200 feet wide by 200 feet long for both runways
- Maintain the existing length and width of both runways

### Taxiways

- Reduce the width of Taxiway C2
- Reduce the width of Taxiway C4
- Reduce the width of taxiway fillets connecting Runway 13/31 to C2 and C4
- Re-mark the paved island near Taxiway C3 to require pilots to turn before accessing the air carrier apron

### General Aviation (GA) Development Areas

- Develop additional hangars
  - North expansion of FBO hangars to support continuation of GA development area parallel to University Drive
  - South expansion concentrated within existing corporate hangar area along Taxiway E

### Terminal Building

- Expand the existing terminal building both northwest and southeast with a new linear concourse to the south capable of up to 11 gates

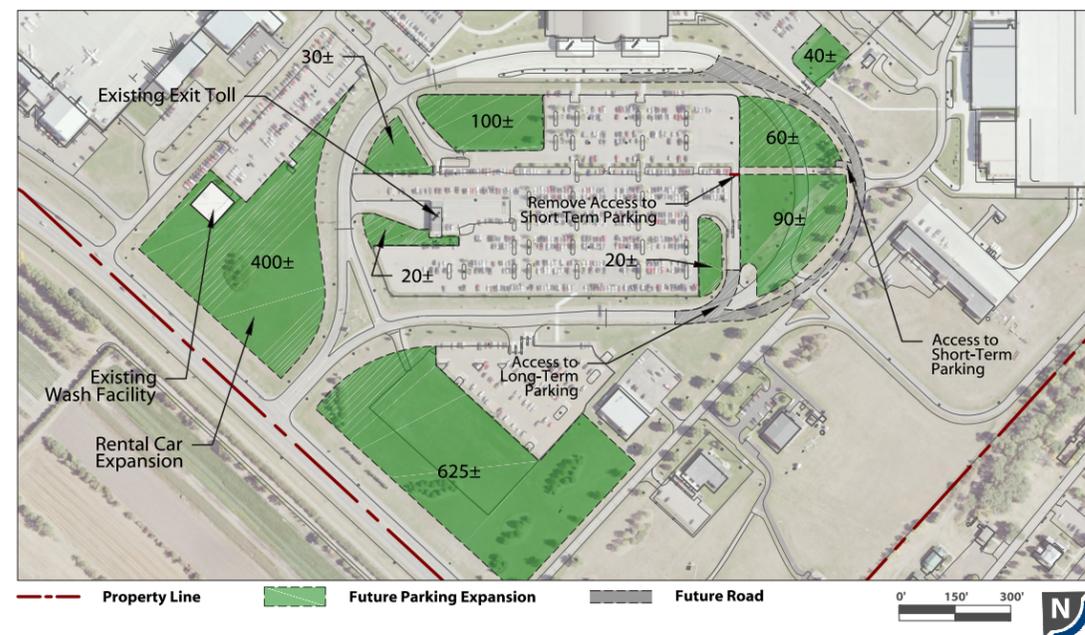
### SRE Facility

- In the short-term, expand existing SRE to the northwest
- In the long-term, consider development of the new SRE facility southeast of the ARFF

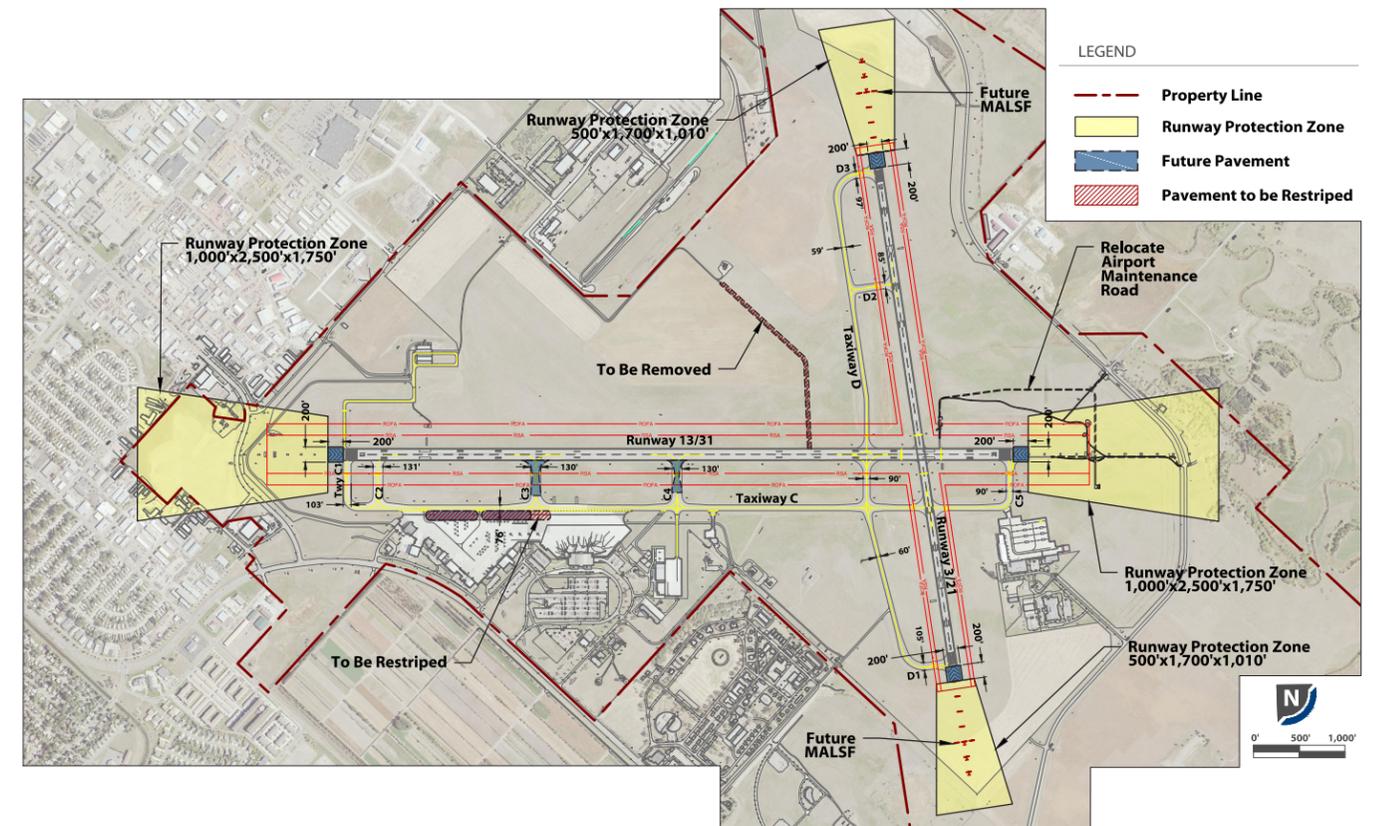
### Fuel Facility

- Increase the fuel storage capacity by adding fuel storage tanks in the existing fuel farm area

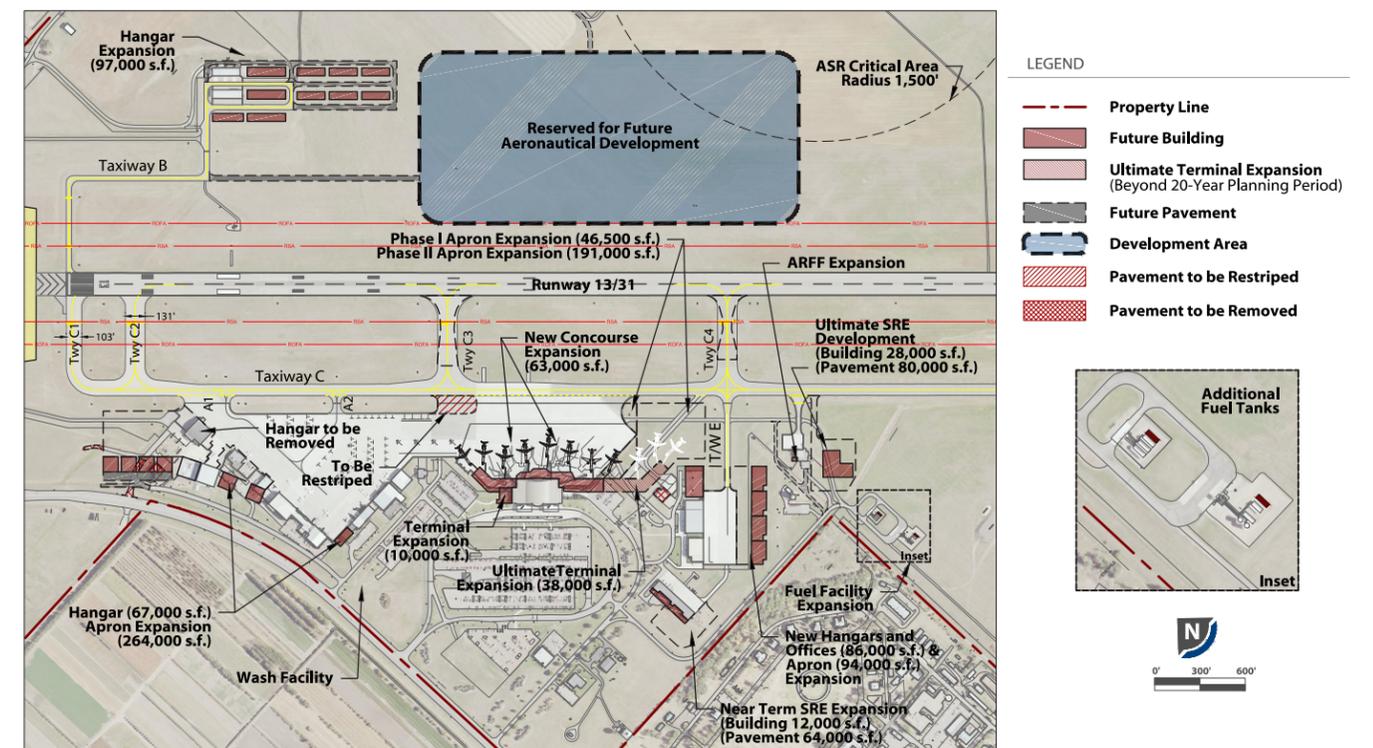
### PARKING EXPANSION ALTERNATIVE 1



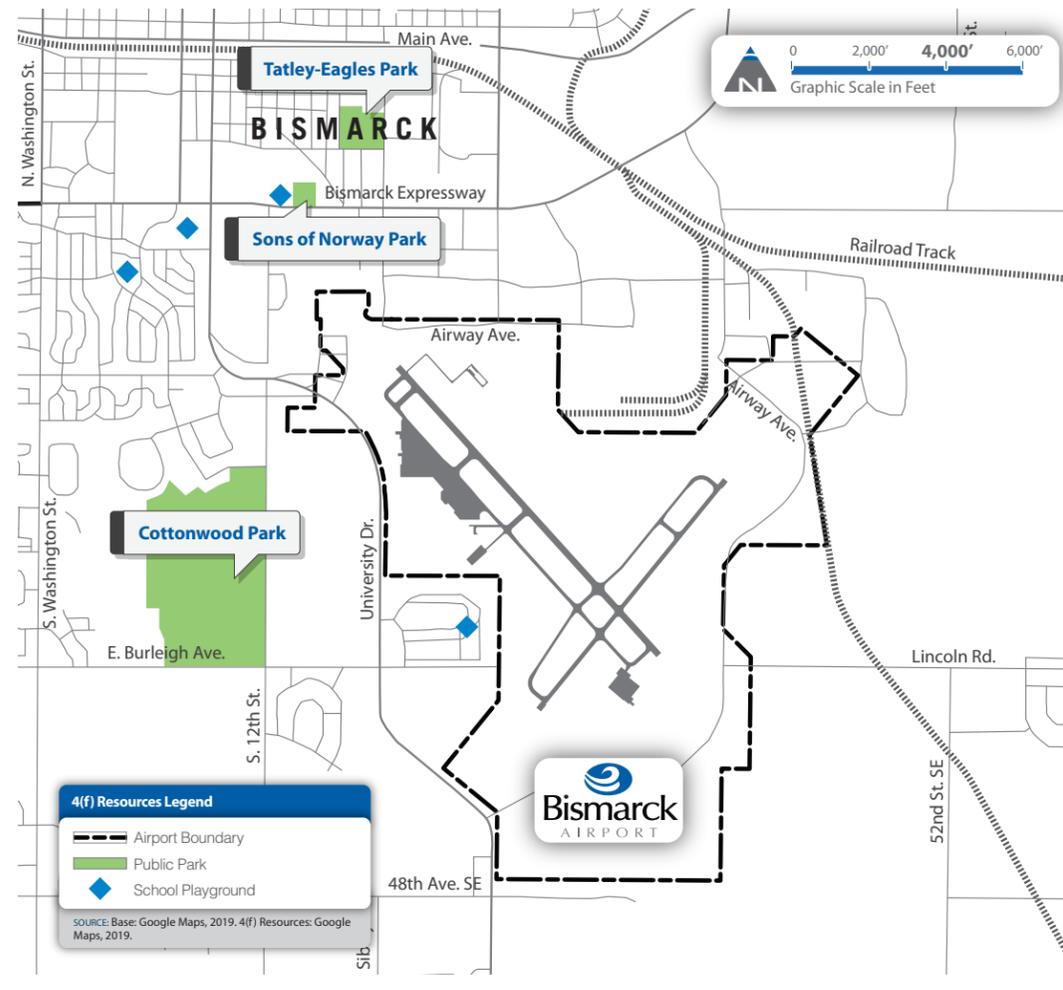
### AIRSIDE PREFERRED ALTERNATIVE



### LANDSIDE PREFERRED ALTERNATIVE



**BISMARCK AIRPORT LOCATION OF 4(F) RESOURCES**



**Environmental and Land Use**

The National Environmental Policy Act requires airports to assess the potential for negative impacts to the environment as a result of airport development and operations. The Bismarck Airport Master Plan effort included an initial analysis of the regulated environmental categories. The analysis determined none of the recommended development is anticipated to negatively impact the existing environmental categories identified below.

- Noise
- Land Use
- Land Use Controls
- GIS Airspace Tool
- Historical and Archeological
- Water Quality
- Fish, Wildlife, and Plants
- Hazardous Materials
- Solid Waste and Recycling
- Wetlands
- Other Environmental Considerations
- Construction Impacts

# Financial

**Financial Implementation**

The Financial Feasibility Analysis evaluated BIS's capability to fund the Master Plan Capital Improvement Program (CIP) and finance operations during the planning period for three development phases: **PHASE I, a three-year Short-Term period, PHASE II, a five-year Mid-Term period, and PHASE III, a ten-year Long-Term period.**

The sources and uses of capital funding appear by phase in the table below and total close to \$293 million.

**CIP FUNDING OVERVIEW**

SOURCES OF CAPITAL FUNDING	PHASE I (2018-2020)	PHASE II (2021-2025)	PHASE III (2026-2035)	Totals
AIP Entitlement Grants	\$6,699,183	\$11,845,633	\$27,217,636	\$45,762,452
AIP Discretionary Grants	16,515,048	20,528,976	9,402,323	46,446,347
North Dakota Aeronautics Commission	1,293,469	8,772,330	4,516,398	14,582,198
Passenger Facility Charges	736,713	0	9,584,727	10,321,440
Other City Capital Contributions	0	10,000,000	0	10,000,000
Private Third Party Funding	0	0	4,525,365	4,525,365
Other Unidentified Funding	0	48,024,466	56,719,719	104,744,185
Cash Reserves/Net Ops Cash Flow	4,593,441	16,933,536	35,188,979	56,715,957
<b>Total Source of Capital Funding</b>	<b>\$29,837,855</b>	<b>\$116,104,942</b>	<b>\$147,155,148</b>	<b>293,097,945</b>
USES OF CAPITAL FUNDING				
Runway/Taxiway Improvements	\$18,568,705	\$16,255,317	\$659,949	\$35,483,971
Apron Improvements (GA & Commercial)	692,639	9,881,248	13,033,593	23,607,480
Terminal Building Improvements	0	64,202,527	44,310,866	108,513,393
Roadway & Parking Improvements	1,909,416	0	33,908,811	35,818,227
General Aviation Facility Improvements	42,624	1,555,202	4,713,922	6,311,748
Land Acquisition	0	0	4,009,315	4,009,315
Drainage Improvements	7,095,091	13,092,280	20,660,209	40,847,581
ARFF Building & Equipment	0	3,398,957	0	3,398,957
SRE Building & Equipment	1,284,292	6,813,022	17,017,259	25,114,573
Other Improvements	245,088	906,389	8,841,223	9,992,700
<b>Total of Capital Funding</b>	<b>\$29,837,855</b>	<b>\$116,104,942</b>	<b>\$147,155,148</b>	<b>\$293,097,945</b>

**Note:** Addition errors are due to rounding of calculated amounts.  
**Source:** Leibowitz & Horton Airport Management Consultants analysis.

## Public Involvement

**The Airport and the FAA wanted to connect with the public, BIS's tenants, businesses and municipal partners to listen to and document their views that are critical to the BIS Master Plan Update.**

A study work group consisting of airport tenants, federal, state, city and county representatives, and business groups from the city of Bismarck/Mandan and Burleigh County met throughout the process to steer its course. Ten focus groups also assembled to discuss the Airport. Three public input meetings occurred during the process, and the Airport gave the public access to view and comment on the planning materials through a master plan website. The Airport responded to comments through the site as well. As a result of this thorough public involvement effort with contributions from diverse individuals and organizations, the Airport has made every effort to involve the public and consider their input.



*BIS - Master Plan Update Progress Meetings & Workshops*





# Master Plan Update

For additional information about the Bismarck Airport Master Plan Study or questions regarding this Executive Summary, please visit our website at [www.bismarckairport.com](http://www.bismarckairport.com).



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