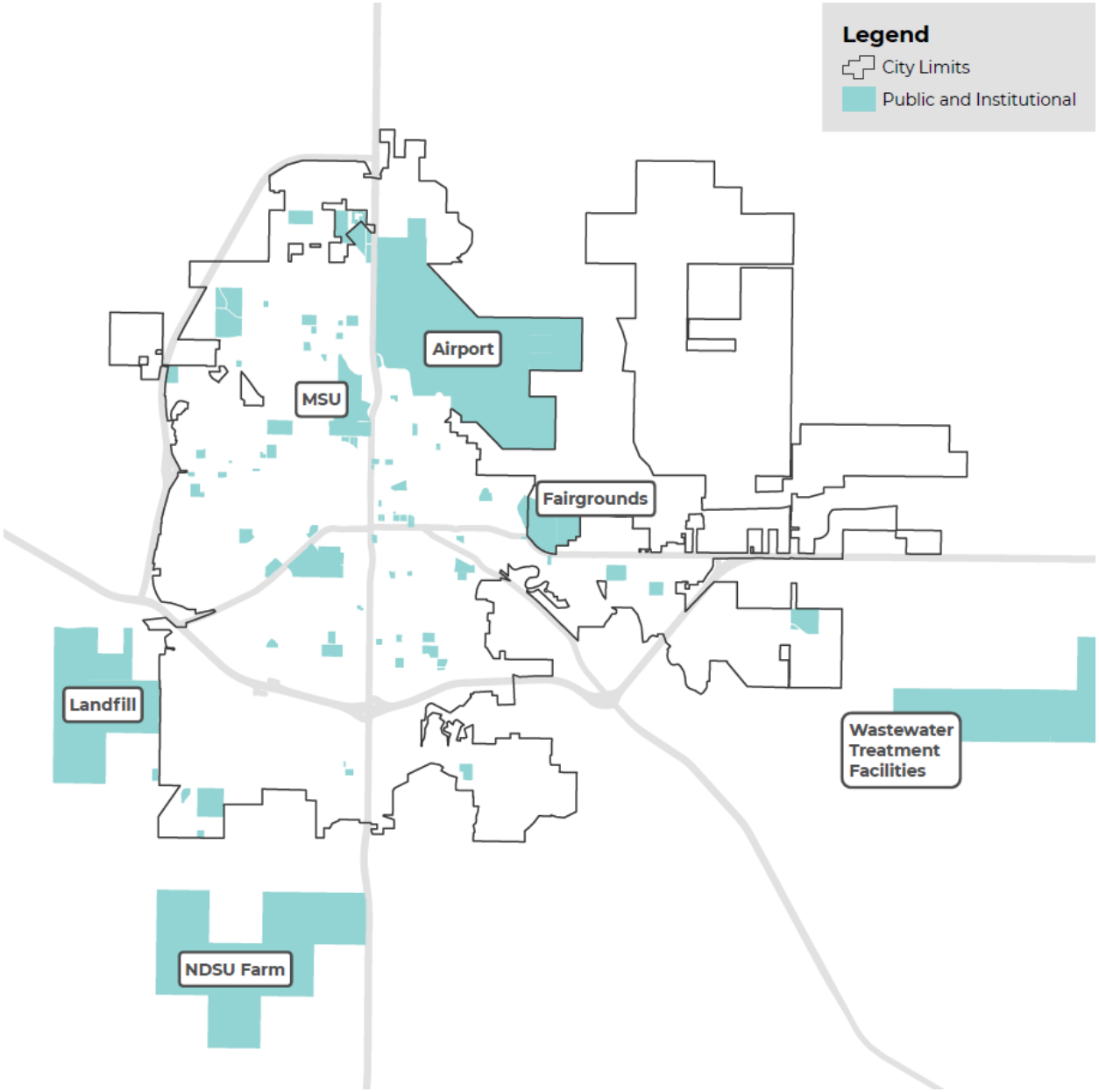
6. Public Services, Facilities, & Utilities

WHAT'S INSIDE

- Wet Infrastructure
- Flood Protection
- Emergency Services
- Educational Facilities
- Waste Management Facilities
- Energy Systems

Land Use Connection

Public services, facilities, and utilities power our community. Without them, land and buildings have little value. Developable land must have access to urban services, including water, sewer, and stormwater facilities, while growth patterns must support efficient service delivery. Services may be fully or partially financed through development gains (e.g., property taxes or tax-increment financing); strategic public investments can spur private growth. The Public and Institutional land use category includes numerous public facilities, such as the landfill and wastewater treatment facilities.



OVERVIEW

This chapter describes a range of existing services, facilities, and utilities provided by the City of Minot and other public entities. It includes general strategies and recommendations for managing these systems, but it is not meant to provide a detailed plan for infrastructure improvements or investments. Minot's Capital Improvement Program (CIP) contains the official list of programmed projects and is updated annually.

Public services, facilities, and utilities are needed to support daily living. They include wet infrastructure (water and sewer), public safety providers (police and fire departments), public health providers (mental health and rehabilitation centers), and public education (school districts and libraries). These services operate at a large scale, so long-term planning is essential to ensure sustainability. Each provider maintains their own strategic plan, while monitoring community growth and areas of need.

A focus group convened for the Comprehensive Plan identified key principles to guide the long-term management of public services, facilities, and utilities.

Key objectives include executing the landfill expansion and recycling project, and funding the remainder of the flood protection project.

Public services, facilities, and utilities are often financed through public revenue (e.g., property taxes) and user fees. Minot residents are keenly aware of these costs and prioritize cost-effective services. Residents need and expect strong management, regular maintenance and updates, efficient service, and open communication.

PS-3: Promote efficient development patterns and cost-effective infrastructure.

WET INFRASTRUCTURE

Wet infrastructure includes the municipal water supply and distribution system, sanitary sewer and wastewater treatment facilities, and the storm sewer system. Green infrastructure, such as retention ponds and drainage areas, are also a part of the wet infrastructure system.

Water Supply and Distribution

Minot's water supply and distribution system consists of over 380 miles of water mains, nine water storage tanks (five elevated tanks and four underground), and eight water booster stations. Booster stations help maintain water pressure levels in areas where water needs to flow uphill or climb through several stories of a building.

Figure 6-1 shows the existing water supply and distribution system along with improvements that are currently planned. These improvements include:

Southwest water tower – water storage capacity in southwest Minot needs to be increased to support the new Trinity Hospital and related emergency services.

Northwest transmission line – water distribution line along 30th Street NW and 36th Avenue NW/CR 10 (2.9 miles)

Northeast transmission line – water distribution line around the industrial park, following 55th St NE and 46th Ave NE (2.8 miles)

Broadway water main upsizing – this project would upsize the water main from 19th Ave NW to 36th Avenue NW to increase capacity west of Broadway (1.6 miles)

NAWS-related projects – includes various distribution and supply improvements related to NAWS.

Northwest Area Water Supply

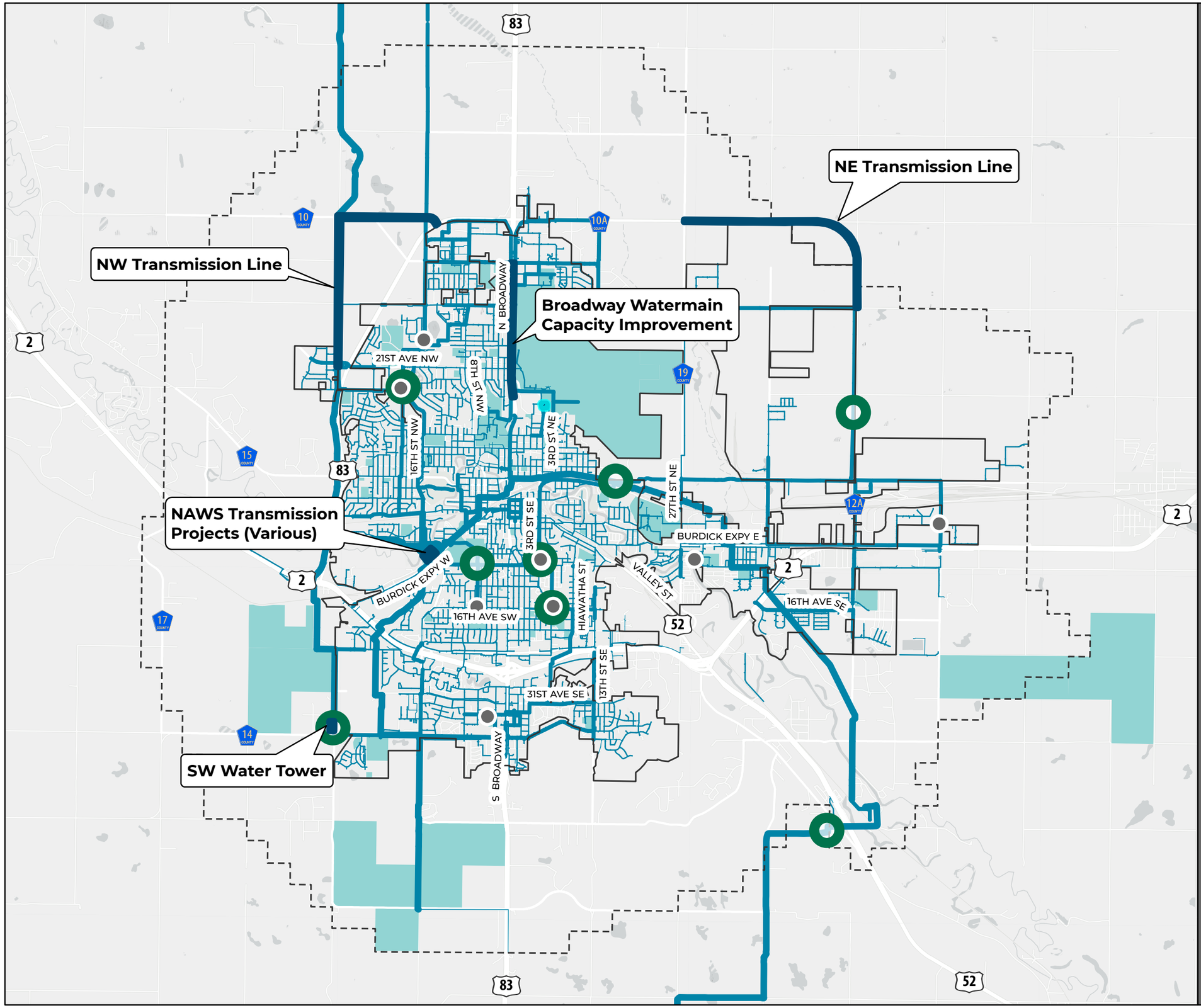
The Northwest Area Water Supply (NAWS) project provides water from the Missouri River/Lake Sakakawea to communities in western North Dakota. The project was initiated in 2002 to alleviate regional water supply and water quality issues. When complete, NAWS will significantly augment Minot's water supply. **At buildout, NAWS is designed to provide service to 81,000 people, including 63,000 people who live within urban areas. This would likely meet 80-90% of Minot's water needs under the 2040 growth projection.** Phase I includes construction of the Biota Water Treatment Plant, which is scheduled for completion in 2024. This facility will pump water to the continental divide, where gravity flow will carry it on to Minot. The entire project is scheduled for completion in 2029.

CITY OF MINOT

2040 Comprehensive Plan

Water Supply System

Figure 6-1



Legend

- City Limits
- 2-Mile Boundary
- Water Lines
- Water Tanks
- Booster Stations
- Planned Improvements
- Public and Institutional

Miles

0 0.5 1 1.5 2

The planned water system improvements generally align with the priority growth areas identified in this plan. The northwest transmission line will distribute water to the Northwest Growth Area and the southwest water tower will provide critical water reserves for the Southwest Growth Area. These are the two priority areas for greenfield development.

The water main expansion project on North Broadway will support continued development within this gateway corridor. There may be an opportunity to align this project with other corridor improvements, such as roadway construction or beautification.

Aligning infrastructure and roadway projects improves efficiency and reduces construction fatigue.

Sanitary Sewer and Wastewater Treatment Facilities

Minot's sanitary sewer and wastewater treatment facilities (WWTF) include nearly 300 miles of sanitary sewer main, 53 lift stations, and the wastewater treatment and aeration ponds located in southeast Minot. **Figure 6-2** displays Minot's sanitary sewer system. The existing lagoon system is nearing capacity and is unable to comply with EPA discharge regulations. The City plans to replace this system with a new mechanical treatment plant. A mechanical treatment plant would be able to handle a higher peak flow, significantly reduce the footprint of the wastewater treatment facilities, and eliminate outdoor odor.

Lift Stations

Sanitary lift stations are essential components of the wastewater treatment system. The cost for a new lift station starts around $150,000 (20 gpm). Minot can take advantage of available capacity by focusing infill development within existing service areas; generally, capacity increases with proximity to the lift station.

Infrastructure Replacement

Water, sanitary sewer, and storm sewer systems need to be maintained in a good state of repair. Water and sewer lines are constructed with a variety of materials, which impact durability. Original infrastructure in older neighborhoods may be nearing the end of its useful life and should be upgraded as needed. Minot Public Works Department will continue to monitor infrastructure condition and approach infrastructure upgrades and replacement systematically. It is important to maintain a comprehensive inventory of municipal infrastructure to identify potential issues. A common method of prioritization is based on risk assessment, which identifies both the likelihood of failure, based on known deficiencies or infrastructure age, and the impact of failure (e.g., number of homes).

CITY OF MINOT

2040 Comprehensive Plan

Sanitary Sewer System

Figure 6-2

Legend

- City Limits
- 2-Mile Boundary
- Sanitary Sewer Mains
- Sanitary Lift Stations
- Planned Improvements
- Public and Institutional

Proposed Lagoon System Replacement

0 0.5 1 1.5 2 Miles

PS-1: Maintain public infrastructure in safe and serviceable condition.

Stormwater Management

Minot's stormwater system consists of over 140 miles of storm sewer and 13 stormwater lift stations. **Figure 6-3** displays existing facilities and planned improvements.

Stormwater Management Program

The North Dakota Department of Health (NDDOH) has authority to issue permits for storm water discharges from small Municipal Separate Storm Sewer Systems (MS4). With a population greater than 10,000, Minot is designated as a small MS4. Under this designation, the City must develop, implement, and enforce a Stormwater Management Program (SWMP). The Clean Water Act requires the City to reduce the discharge of pollutants to the maximum extent practicable to protect water quality. Minot provides an annual SWMP to NDDOH that confirms its commitment to best management practices. The 2021 SWMP identifies six areas of focus:

- Public Education & Outreach on Stormwater Impacts
- Public Participation/Involvement
- Illicit Discharge Detection & Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management for New Development & Redevelopment
- Pollution Prevention for Municipal Operations

Storm Water Management Ordinance

The City's Storm Water Management Ordinance requires the development of Storm Water Management Plans and the acquisition of a permit for most types of land-disturbing activities that occur within the City and its extraterritorial jurisdiction. The Storm Water Management Ordinance outlines application procedures, plan review procedures, and approval standards. Minot's Storm Water Design Standards Manual (2002) provides guidance for complying with the Storm Water Management Ordinance.

Urban Impacts & Opportunities

Urban development patterns impact stormwater management and the water system as a whole. Impervious surfaces (i.e., roads, roofs, and parking lots) increase the rate of runoff, which discharges pollutants into water bodies. Landscaping increases pervious surface, which improves infiltration but increases water consumption. Development should protect sensitive water supplies and promote efficient water conveyance and usage. Strategies and techniques for a sustainable water supply include rainwater capture, water reuse, alternative/native landscaping, permeable pavement, and green infrastructure (stormwater ponds, raingardens, and bioswales, etc.)

CITY OF MINOT

2040 Comprehensive Plan

Storm Water Management and Flood Control Systems

Figure 6-3

Legend

- City Limits
- 2-Mile Boundary
- Storm Sewer Mains
- Storm Water Lift Station
- Storm Sewer Projects
- Flood Control Projects
- Public and Institutional

Flood Control Projects

1. MREFPP Phase 2-3: Levees
2. Maple Diversion Channel and Levees
3. 4th Ave Tieback Levees
4. Roosevelt Park Floodwall
5. South Walker Rd Levee

Storm Water Improvements

6. 11th Ave SW District Drainage Improvements
7. Mall-area Box Culvert Expansion
8. District 123 Storm Sewer Expansion

Miles

0 0.25 0.5 0.75 1

Flood Control Systems

The Souris River Joint Board initiated the Mouse River Enhanced Flood Protection Project (MREFPP) in 2011, in the wake of the largest flood event in Minot's history. In the decade since the flood, the project has created a Preliminary Engineering Report, numerous studies of design alternatives, and funded planning and land acquisition.

Several phases of the MREFPP have proceeded into design and construction. **Figure 6-3** displays planned flood control projects, including levee construction (Phase 2-3 of the MREFPP), the Maple Diversion Channel, tieback levees along 4th Ave NW (currently in construction), and the Roosevelt Park Floodwall.

Flood control infrastructure supports continued investment in core neighborhoods. Planning efforts should integrate opportunities to activate the riverfront with ehnanced river access, trails, and recreation areas.

AIRPORT

Minot International Airport (MOT) is a unique land use that impacts long-range planning. MOT should be involved in planning decisions that impact or impacted by the airport. MOT updated its master plan in 2018 in accordance with Federal Aviation Administration (FAA) standards; this plan is intended to provide guidance for up to 20 years.

Land Use Compatibility

Development density and building heights must be controlled around the airport to minimize the effects of aircraft noise and avoid interference with air traffic. Minot's Land Development Ordinance includes an Airport Noise Buffer Overlay (ANB) to promote airport-land use compatibility and protect public health, safety, and welfare. The extent of the zone corresponds to identified noise exposure contours. (**Figure 6-4**) Within the zone, commercial buildings must be designed to achieve a noise level reduction of 25 decibels, while residential and institutional buildings must reduce noise by 30 decibels. These regulations primarily impact the area northwest of the airport, which has experienced recent growth. The Future Land Use Map guides this area for further residential and commercial development. The area southeast of the airport features existing and planned industrial uses, which are generally compatible with the airport.

FAA Guidance

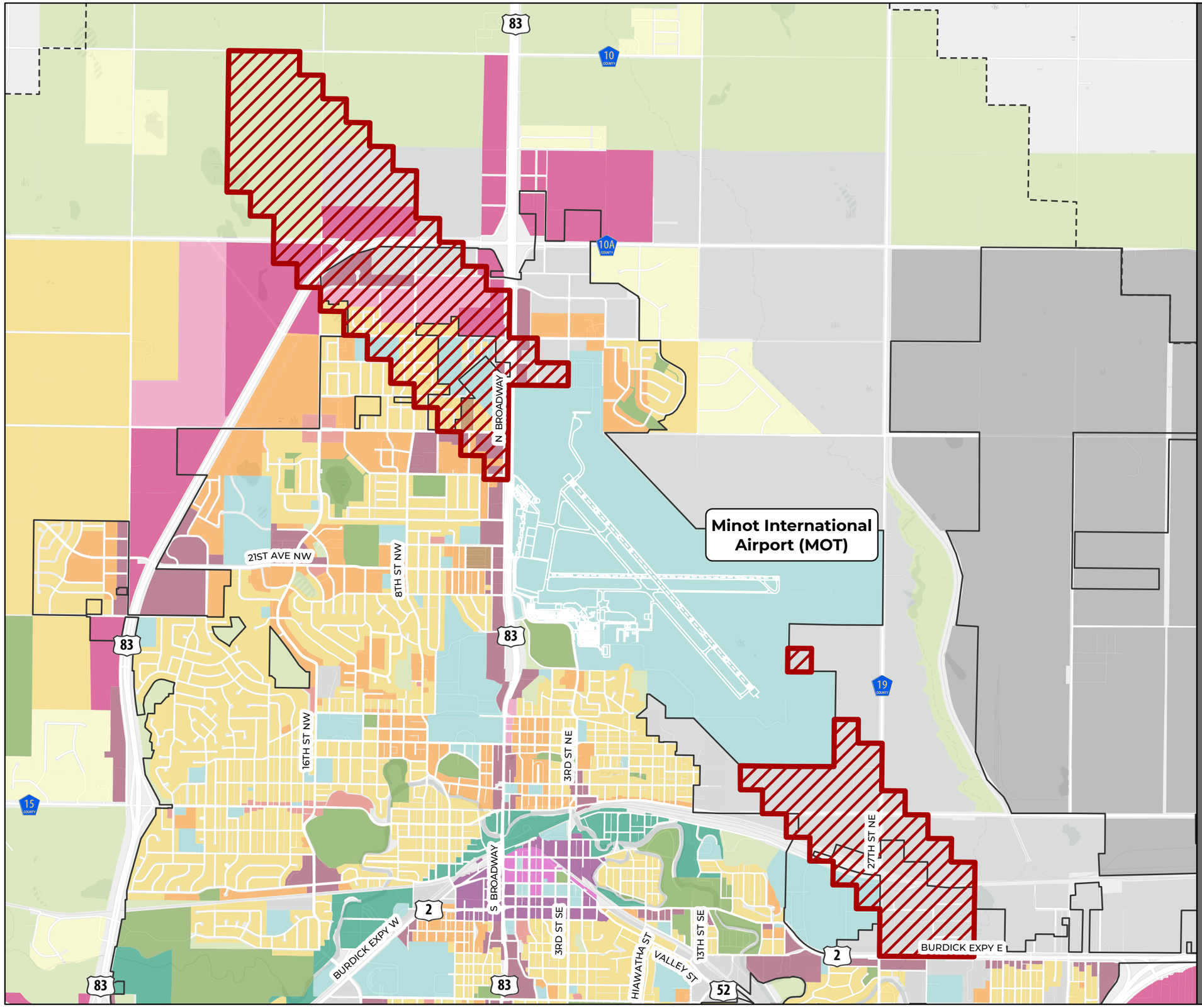
The FAA released a draft advisory circular in June 2021 which states: "Through federal grant assurances, airport sponsors and owners are obligated to pursue all reasonable and appropriate actions to secure and promote compatible land use and development... Airports owned and operated by the same jursidiction that is the land use authority are expected to adequately control land use near the airpot and prevent new incompatible development." In essence, airport-land use compatibility is needed so MOT can maintain access to federal funding.

CITY OF MINOT

2040 Comprehensive Plan

Airport Noise Buffer Overlay

Figure 6-4



Legend

- City Limits
- 2-Mile Boundary
- Airport Noise Buffer Overlay

Future Land Use Type

- Agricultural and Open Space
- Rural Residential
- Suburban Residential
- Urban Residential
- Manufactured Home Community
- Neighborhood Commercial
- General Commercial
- Gateway Commercial
- Public Institutional
- Mixed Use Center
- Light Industrial
- Downtown Mixed Use
- Downtown Fringe
- Heavy Industrial
- Parks and Recreation
- Riverfront Activation

0 0.25 0.5 0.75 1 Miles

ENERGY SYSTEMS

Public services and utilities encompass energy systems, including the electrical grid, substations, and remote energy sources. Electric utility providers include Xcel Energy, Central Power Electric Cooperative, and Verendrye Electric Cooperative.

All development is dependent on the current and/or future energy supply available to the area. The Bipartisan Infrastructure Law has encouraged energy providers to accelerate the transition from fossil fuels to carbon alternatives. As energy providers increasingly shift to wind and solar, the electrical grid will have to be adapted and expanded to provide additional capacity. Electrical storage systems may be needed to address intermittent supply.

PS-2: Strive for efficient and responsible energy usage and resource consumption.

Expanding access to renewable energy sources and local energy supplies will ultimately make Minot more resilient in the face of climate change and economic uncertainty. This includes expanding opportunities for locally-sourced (i.e., non-utility) electicity generation, such as rooftop solar, which has been enabled in the Land Development Ordinance.

EMERGENCY SERVICES

Minot provides police and fire services to protect public safety. Along with roadway improvements, funding these services constitute a signficant portion of the City's annual budget. When the City considers growth and annexation opportunities, it must evaluate the ability to provide emergency services to the area. The Fire Department aims to maintain a 4-minute response time to all portions of the city. **Figure 6-5** shows fire station locations and proposed fire response districts. With increasing development pressure in northwest Minot, the Fire Department is currently building Station Number 5 at 2611 4th Avenue NW.

Emergency responders play a role in the development process. They should review proposed subdivision plats and master plans to ensure adequate access for emergency vehicles. In addition, the water system must provide and sustain adequate fire flows to development.

Medical Facilities

Emergency responders connect residents in need with appropriate medical facilities. Planning and engineering should support efficient access and emergency response times to Trinity Hospital. In addition, Minot strives to support equitable access to community health care facilities and clinics. **Figure 6-5** displays the hospital and clinics.

CITY OF MINOT

2040 Comprehensive Plan

Emergency Services

Figure 6-5

Legend

- City Limits
- 2-Mile Boundary
- Fire Station (Station #)
- Proposed Fire Response Districts

Medical Facilities

- Hospital
- Medical Clinic
- Public and Institutional

Miles

0 0.5 1 1.5 2

EDUCATIONAL FACILITIES

Minot schools, training programs, and the university provide quality education and a foundation for lifelong learning. Good schools are essential for attracting and retaining future residents, and are often a driving factor in household locational decisions. **Figure 6-6** displays the location of educational institutions within the City of Minot.

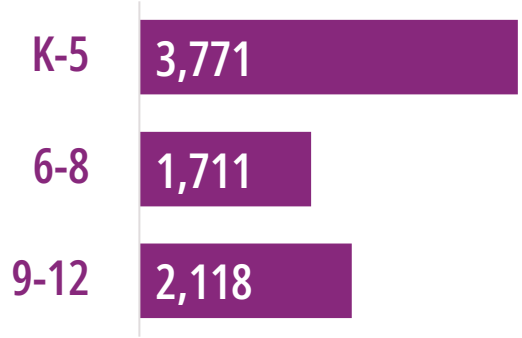
Minot Public Schools

Minot Public Schools (MPS) operates 13 elementary schools, three middle schools, and one high school (soon to be two); two elementary schools and one middle school are located on Minot Air Force Base. The new Minot North High School broke ground in October 2022 and is scheduled to open in the fall of 2024. With the high school moving out of downtown, Central Campus will be converted into a third in-town middle school. This will alleviate crowing at middle schools, as Jim Hill has been using portable classrooms.

Enrollment numbers for 2022 show 3,771 in ementary schools (grades K-5), 1,711 students in middle schools (grades 6-8), and 2,118 students in the high school.

Minot North High School opens in 2024.

Lower grades continue to have the highest enrollment, with 629 students in kindergarten and 636 first-graders. The 2022 senior class has 514 students. This indicates that school system is poised for continued growth. MPS maintains eenrollment projections and a strategic plan, which prioritizes students' academic and social growth and success.

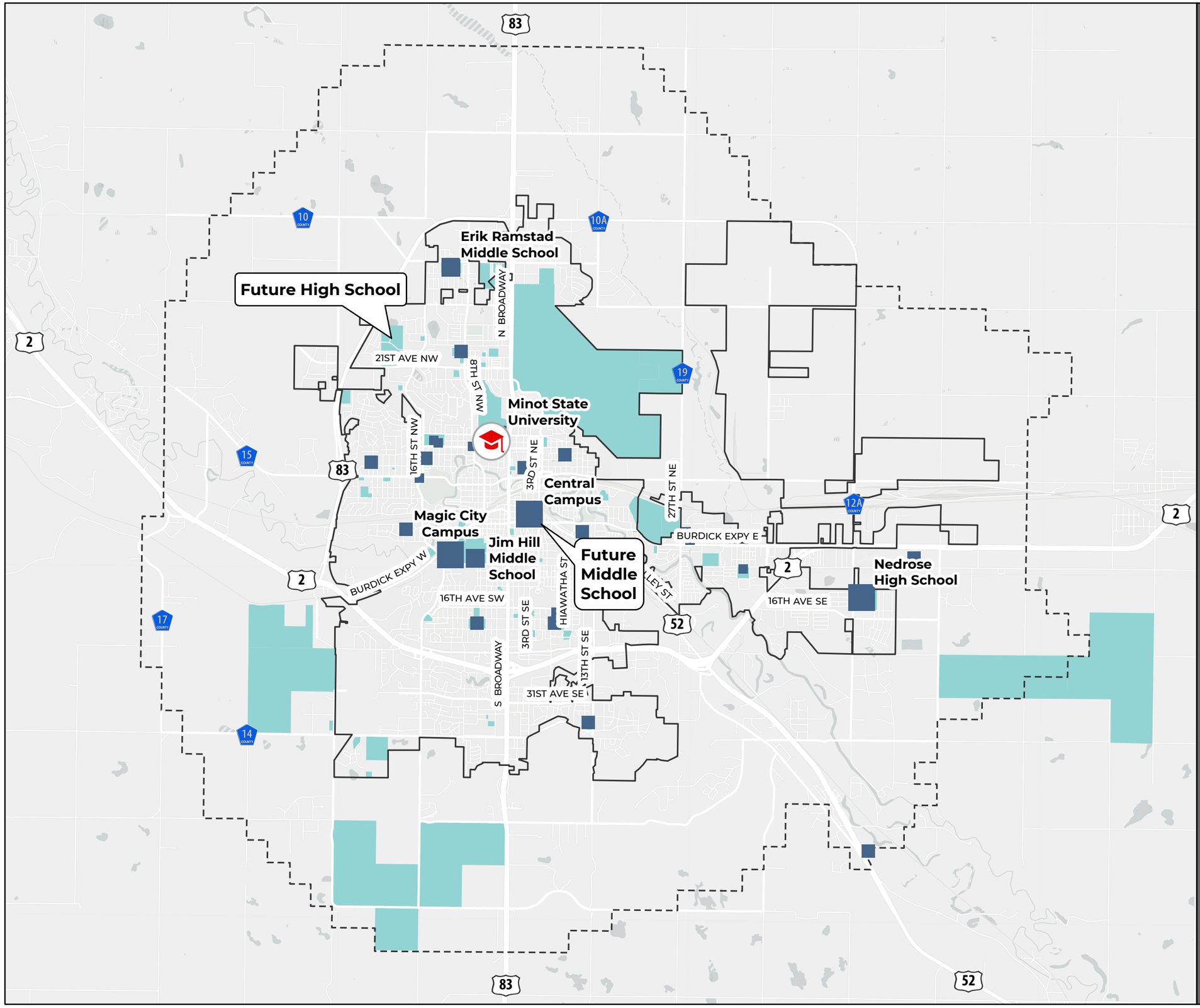


CITY OF MINOT

2040 Comprehensive Plan

Educational Facilities

Figure 6-6



Legend

- City Limits
- 2-Mile Boundary

Facility Type

- Early Childhood/Vocational
- Elementary School
- Middle School
- High School
- University
- Public and Institutional

0 0.5 1 1.5 2 Miles

School siting decisions have a large impact on city development. The City will coordinate with MPS to follow district plans and incorporate the district in municipal development initiatives. Although the Future Land Use Map does not identify future elementary school sites, note that public and institutional uses are allowed within all zoning districts. Schools are typically sited within or adjacent to residential growth areas.

As Minot continues to develop, MPS will expand into new growth areas. The Year 2040 population projection is 66,532, which equates to an increase of 14,576 residents (28% growth). This implies that schools may need to increase capacity by 25-30% by 2040. Additional elementary schools should be planned for the Northwest Growth Area and the Southwest Growth Area.

Minot State University

As the third-largest university in North Dakota, Minot State University (MSU) has served the community and region for over 100 years. MSU offers a variety of academic programs and affordable tuition; the College of Education and Health Sciences is particularly well-regarded. The school enrolls about 3,000 students and maintains about 300 faculty.

This Plan identifies opportunities to improve connections between MSU and surrounding neighborhoods, especially Downtown. The North Broadway corridor between MSU and Downtown can be enhanced with more student-oriented stores, services, and housing, including mixed-use development similar to Beaver Ridge.

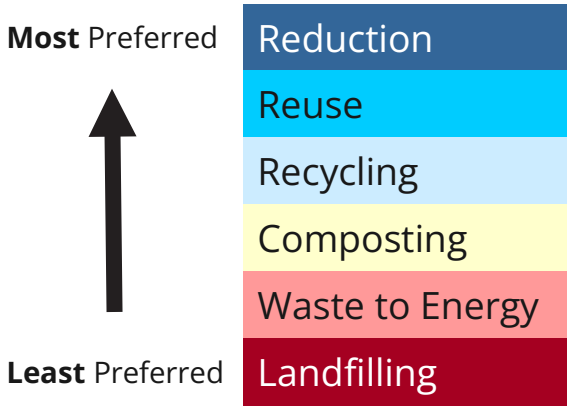
A Career and Technical Center (CTE) will occupy one of the former Trinity buildings in downtown and is expected to open in 2024.

Career Academy

Focus groups identified an opportunity to develop a career academy within the community. This would provide technical training to high school students and continuing education opportunities, filling a gap in curriculum. Career academies open additional pathways for students and help them discover new passions and possibilities. In addition, they support economic development by cultivating a workforce with skills that meet local industry needs and areas identified for future growth.

WASTE MANAGEMENT

Residential and community solid waste is managed by Minot Public Works. Residential waste is collected twice per week. The City also provides spring and fall cleanup to collect larger household items. Minot is developing recycling capabilities with curbside pickup. The recycling transfer station will be located on 37th Avenue SW, within the landfill site. Other opportunities for waste reduction include composting and waste-to-energy processing. Public Works provides programs, tools, and resources to educate the public about different ways to reuse, recycle, or dispose of materials.



STRATEGIES AND RECOMMENDATIONS

Development Considerations

The pattern and density of growth supports efficient infrastructure development, operations, and maintenance. Compact development reduces unit infrastructure costs and increases per-acre tax revenue, allowing the City to maintain infrastructure in safe and serviceable condition and serve more households at lower cost.

PS-1: Maintain public infrastructure in safe and serviceable condition.

Infrastructure Replacement

Water, sanitary sewer, and storm sewer systems need to be maintained in good repair. Improvements should be prioritized using risk assessment/cost-benefit methods (i.e., improvements that provide the greatest risk reduction are favored). Infrastructure upgrades/replacement are coordinated with roadway preservation/reconstruction plans.

Infill Prioritization

Infill is development that occurs within urban areas with access to existing services, facilities, and utilities. This is highly beneficial to the City, because it increases the tax base while lowering the capital infrastructure cost for development. Infill should be prioritized in areas with available infrastructure service capacity. Minot has used National Disaster Relief (NDR) Program funds to incentivize infill development.

Integrated Water Resource Management

The City takes a holistic approach to planning water resources (water supply, wastewater, and stormwater) and promotes coordinated development and management of water and land.

Education

Continue to educate the community and provide tools and resources to promote solid waste reduction, watershed management, energy conservation, etc.