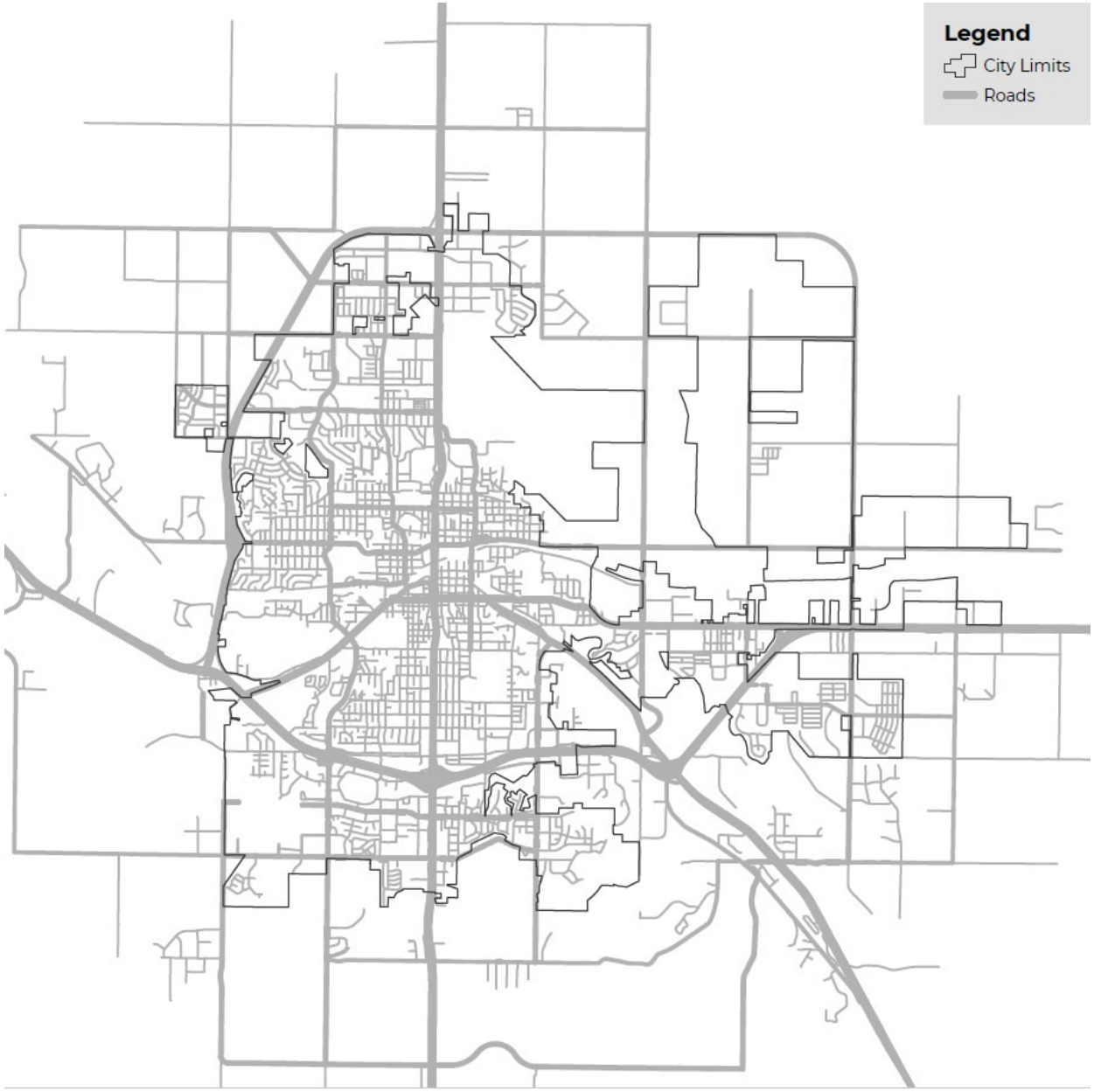
4. Transportation

WHAT'S INSIDE

- System Overview
- Roadway Safety
- Operations and Maintenance
- Bicycle and Pedestrian Facilities
- Public Transit
- Strategies and Recommendations

Land Use Connection

Minot's transportation system connects users to the places where they live, work, and play. Streets and highways support economic development and community growth. Land use categories are correlated with roadway type. For example, the Gateway Commercial category is intended for use within arterial corridors. Heavy industrial uses require access to rail networks and highway freight. Development density supports public transit, while a compact development pattern supports walking, bicycling, and asset management.



CHAPTER USAGE

The Transportation Chapter provides general strategies and considerations for managing, operating, and developing Minot's multimodal transportation system, with a focus on integrating transportation planning with the other elements of the Comprehensive Plan. This chapter informs the City's transportation plans but is not the official transportation planning document.

Long-Range Transportation Plan

The Long-Range Transportation Plan (LRTP) is Minot's official transportation planning and policy document. The LRTP identifies specific roadway system improvements, costs, and financing mechanisms for implementation over a 25-year timeline.

Capital Improvement Plan (CIP)

The Capital Improvement Plan is a short-range plan (typically five years) that contains itemized public projects that are programmed for completion. The CIP includes a variety of Public Works projects, not just roadway improvements.

Regional Planning Initiative

When the population of Minot's urbanized area surpasses 50,000, it can establish a Metropolitan Planning Organization (MPO). This designation will increase available funding, regional equity, and regulatory oversight, along with planning and staffing responsibilities. Minot can lean on peer communities – Fargo, Bismarck, and Grand Forks – all of which have regional planning authorities.

SYSTEM OVERVIEW

Minot's transportation system includes infrastructure and services that provide mobility for people and goods using a variety of travel modes, including personal vehicles, walking, bicycling, public transit, air travel, and rail. A strong transportation system ensures that all travel modes have efficient, safe, and reliable connections.

PERSONAL VEHICLE
Individual motor for personal transport

SHARED VEHICLE
Shared use of a personal vehicle (e.g., UBER)

PEDESTRIAN
Individual movement by walking or rolling

BICYCLE
Individual transport via bicycle or self-propelled vehicle

TRUCK FREIGHT
Movement of goods via truck

RAIL FREIGHT
Movement of goods via rail car

AIR
Movement of goods or people via flight

PASSENGER RAIL
Movement of people by rail (e.g., Amtrak)

ROAD CLASSIFICATIONS

Roadways are organized into different functional classifications based on travel volumes, design speed, continuity (corridor length), and accessibility. These classifications align with the roadway jurisdictional responsibilities. Functional classifications are also highly correlated with land use planning. The size and scale of roadway intersections, adjacent development, and nodal activity varies with functional class (see figure at right). **Figure 4-1 displays the existing functional classification system.**

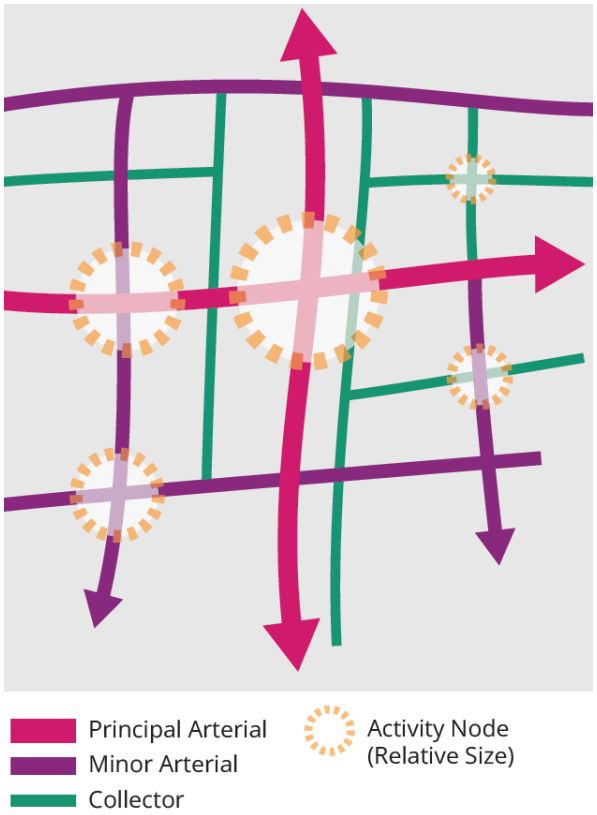
Principal Arterials

Principal arterials provide regional connectivity. They are designed to carry large traffic volumes over long distances and are owned and operated by NDDOT. Principal arterials within Minot's roadway system include US Highways 2, 52, and 83, the bypass system, and highway business routes (Broadway Avenue and Burdick Expressway). Principal arterials prioritize mobility. Access management is crucial to improve safety and mitigate congestion. On roadways that provide a greater degree of access and stop controls (e.g., Broadway), coordinated signal timing maintains smooth traffic flow along the corridor.

Bicyclists and pedestrians are allowed on all State and Federal highways that serve Minot, even if dedicated facilities are not available. Nonetheless, these roads are unsafe for pedestrians and bicyclists without separated and dedicated bike/ped facilities. Wide highways also tend to create a barrier between neighborhoods and are difficult for bicyclists and pedestrians to traverse. Within Minot's downtown, Broadway and Burdick Expressway separate the Downtown core from surrounding neighborhoods. While vehicular throughput is the overarching priority, traffic calming may be considered on targeted segments of highway business routes. Opportunities to improve pedestrian and bicycle connections across principal arterials should also be explored.

Minor Arterials

Minor arterials provide intracity connectivity. Like principal arterials, these auto-oriented roads prioritize mobility but provide additional access to land use. Examples of minor arterials within Minot's roadway system include 16th Street NW/SW, 3rd Street NE/SE, and 13th Street SE. Minor arterials can also be dangerous locations for pedestrians and bicyclists if dedicated bike/ped facilities are not available.



Collectors

Collectors support neighborhood connectivity. In North Dakota, County roadways are classified as major collectors, while municipal roads are generally classified as minor collectors. Collectors are designed to provide a balance of access and mobility, which may produce inherent roadway conflicts. Because they provide reasonable connectivity with lower vehicle volumes and travel speeds, collectors can be ideal targets for multimodal improvements.

Local Streets

Local streets provide local connectivity and direct access to property. Local streets are the most common roadway type but receive relatively little investment because they carry limited traffic and are not eligible for federal funding. Roadway maintenance is typically funded through municipal revenues (e.g., property taxes), special assessments, or private financing. Local streets provide the fabric of neighborhood life. Sidewalks and landscaping are encouraged to create an attractive, active environment.

Streets, Roads, and Stroads

Another way to conceptualize the roadway network is to classify routes as Streets, Roads, and "Stroads."

Streets are platforms for building community wealth. They support economic development at a neighborhood level. They are active and engaging places where pedestrians want to be. Streets pay for themselves. Because streets support compact, high-density development, property values and municipal revenues are typically much higher for street-oriented development than for road-oriented development when adjusted for acreage. "Improvements" that increase vehicular throughput, traffic speeds, etc. degrade functionality and undermine the purpose of the street.

Roads are designed to maximize vehicle throughput. They support economic development at a regional level by connecting residents to jobs, shopping, and other activities. They are designed for the comfort and convenience of motor vehicles. Changes to the roadway system that reduce mobility (e.g., expanded access) degrade functionality and undermine the purpose of the road.

A stroad is what it sounds like – an uninspiring combination of a street and road. Stroads attempt to balance the functionality of streets and roads but perform neither role well. They have too much high-speed traffic to be a sustainable platform for building wealth but allow too much access to be effective roads. Stroads can be dangerous, congested, inhospitable environments for all forms of travel. The best way to improve a stroad is to turn it into a street (by expanding access and pedestrianizing the right-of-way) or into a road (by managing access for motor vehicles).

CITY OF MINOT

2040 Comprehensive Plan

Existing Roadway Functional Classifications

Figure 4-1

Legend

- City Limits
- 2-Mile Boundary
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Roads

0 0.5 1 1.5 2 Miles

COMPLETE STREETS

Complete Streets is a Smart Growth approach to planning, designing, and building streets that provide safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. The Complete Streets movement is a response to historical planning and roadway design that has prioritized the car. What makes a street complete depends on the type of street (functional class) and its neighborhood context. However, regardless of functional class/context, all streets can benefit from multimodal improvements.

Public Transit

Public transit provides a valuable service for Minot residents who cannot or choose not to drive, connecting users to employment, services, and amenities. Minot City Transit (MCT) operates a fixed-route bus system with service Monday through Friday. MCT has also partnered with Souris Basin Transportation to offer dial-a-ride paratransit service that meets ADA standards.

TR-2: Promote development patterns and transportation infrastructure that support access and connectivity for all travel modes.

Across the United States, public transit agencies suffer from a lack of investment and declining ridership. Declining ridership forces service cuts, which further reduce ridership, etc. Land use planning is one tool for promoting sustainable transit. Transit viability is tied to the density of jobs and households. The minimum density to support a fixed-route bus system is three households per acre or four jobs per acre.

As density increases, a greater level of service can be provided. For high-capacity service, the target density is 15-20 households per acre, which is difficult to achieve in Minot, but generally aligns with the following land use categories:

- Urban Residential
- Mixed Use Center
- Downtown Mixed Use
- Downtown Fringe

Each bus route is supported by a transit walkshed, which is the area within ¼ mile of the route/stop. This is the distance that most people are willing and able to walk to a bus stop (about 5 minutes). One way to evaluate the transit system is to assess densities within the walksheds. Increasing jobs and/or households within walksheds can boost transit access and ridership, without the cost of expanding service.

Figure 4-2 overlays existing and proposed transit routes on the Future Land Use Map (FLUM).

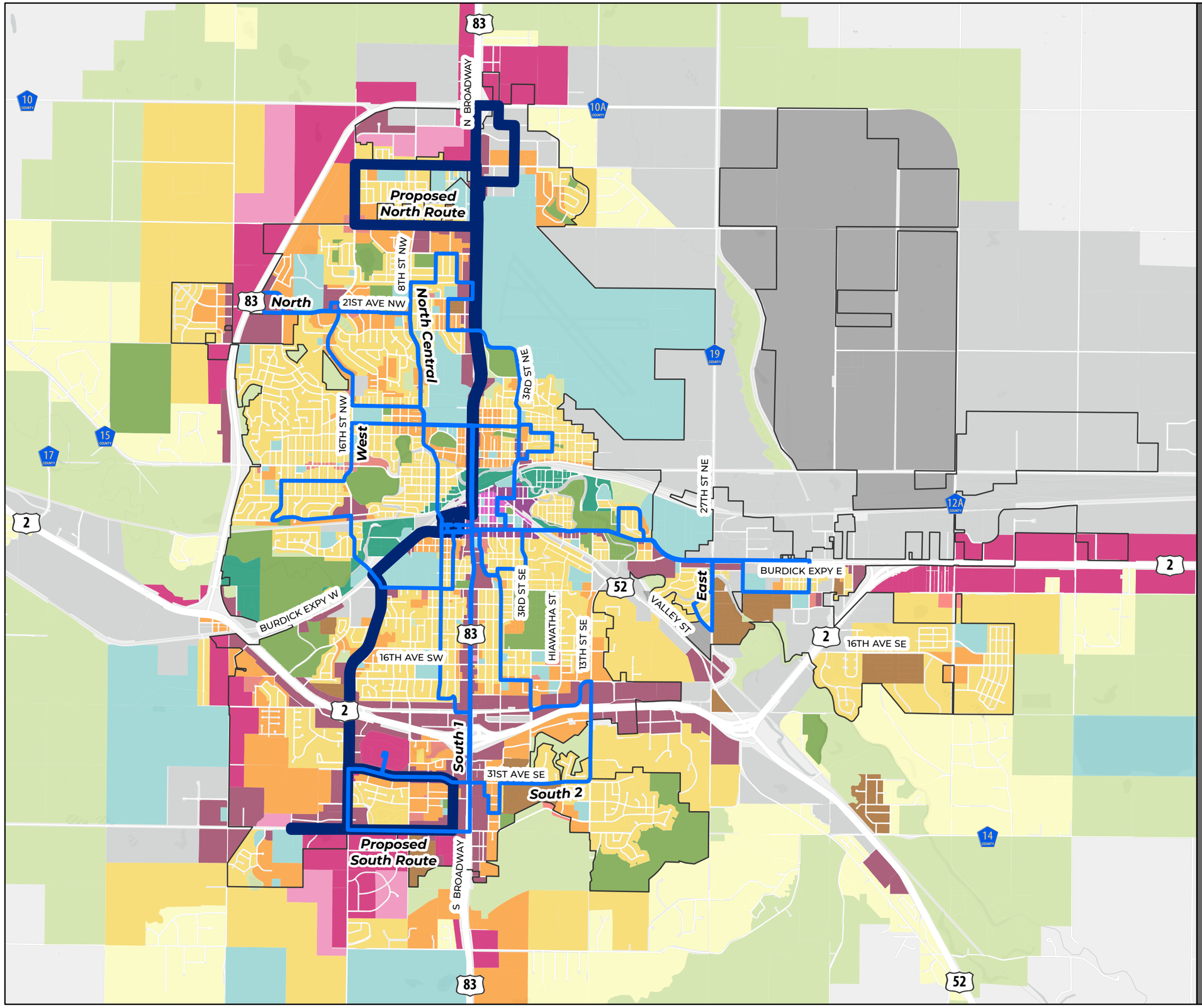
Areas for potential expansion include the Northwest Growth Area, Southwest Growth Area, and southeast Minot.

CITY OF MINOT

2040 Comprehensive Plan

Minot City Transit System

Figure 4-2



Legend

- City Boundary

Transit Routes

- Existing
- Proposed

Future Land Use Type

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

Miles

0 0.5 1 1.5

Pedestrian Facilities

In the community survey conducted for the Comprehensive Plan, residents were asked: When you visit other communities, what is one thing you love that Minot needs? The most frequent response was sidewalks and trails. Minot residents prioritize sidewalks and notice when they are lacking. While new subdivisions incorporate sidewalks, most neighborhoods outside of the core have incomplete sidewalks or lack sidewalks entirely.

Sidewalk infill efforts have expanded in the last few years with the City responding to requests on a case-by-case basis. Property owners are assessed the cost of construction. Still, the community could benefit from a more proactive approach to sidewalk improvements. In addition to responding to residents' requests, the City should identify priority corridors for sidewalk infill and explore alternative funding sources, such as the creation of sidewalk improvement districts.

TR-3: Promote pathway connections within subdivisions.

Maintaining plans and programs dedicated to improving conditions for pedestrians has the added benefit of positioning Minot for related grant programs. Supportive plans and programs include:

- Safe Routes to School Program
- ADA Transition Plan
- Active Transportation Plan

Walkable City

Research shows that walkable communities are tied to positive health outcomes, such as lower rates of obesity and improved mental health. Walkable cities also promote social interaction. Walkable design emphasizes good land use planning as much as sidewalks. Walkable environments typically feature:

- **Neighborhood center:** A focal point such as a main street, school, or public spaces to gather and play.
- **Mixed-use development:** Accessible housing located near neighborhood businesses.
- **Compact and connected grid:** A compact, connected street grid has short blocks and multiple routes for bicycle and pedestrian trips.
- **Pedestrian scale:** Walkable neighborhoods are designed from the pedestrian perspective – minimal setbacks, small buildings, engaging facades, and attractive streetscaping all play a role.

An ADA Transition Plan aims to improve compliance with the Americans with Disabilities Act by identifying gaps in accessible facilities, programs, policies, and services and outline steps to address these deficiencies.

EMERGING TECHNOLOGY

Transportation technology is changing rapidly. Major areas of change include

- Electrification of vehicles
- Autonomous and connected vehicles
- Intelligent transportation systems (ITS)

These technologies could significantly impact Minot's transportation system over the next two decades. Community planning and design decisions with a long-range outlook should be made with this in mind.

TR-4: Prepare for and embrace emerging transportation technologies.

Electric Vehicles

Electric vehicles (EVs) are expanding their hold in the automotive industry. This trend appears to continue as automakers compete for market share and state and federal governments expand incentives for EVs. (The Inflation Reduction Act extended a $7,500 tax credit for EVs through 2032.) To be sure, Minot's climate poses a challenge for electric batteries, which lose capacity in extreme cold. Nonetheless, EV adoption will grow through 2040 as battery technology continues to improve and automakers phase out internal combustion engines (ICE). The industry forecasts 100 million EVs in the United States over the next 20 years.

Because EVs are not directly powered by the combustion of fossil fuel, they release no tailpipe pollutants and greatly reduce noise pollution. EV owners save on the cost of fuel and, since EV powertrains are streamlined, the cost of maintenance is significantly reduced over the lifetime of vehicle ownership.

Widescale adoption of electric vehicles (EVs) will require installation of charging stations throughout the community. Planners and engineers must account for increased electrical loads and ensure that development has the electrical capacity for charging infrastructure. Minot should also identify funding opportunities to expand charging infrastructure. Zoning changes could be considered to require charging stations within certain roadway corridors and/or for certain development types.

EV development extends beyond personal vehicles, with opportunities for transit, freight, agriculture, and other industries.

Autonomous and Connected Vehicles

The arrival of fully autonomous vehicles (AV or self-driving car) could revolutionize the transportation industry by 2040. Motor vehicle operating laws, insurance laws, and highway engineering practice all operate under the assumption that a human is behind the steering wheel. Autonomous vehicles will eventually upend that paradigm.

AV technology is continually improving; most new vehicles feature semi-autonomous features such as park-assist and lane-departure warnings. Community planners must be cognizant of the

impacts and opportunities that come with AVs. Due to high costs that will mass adoption by private users, the most likely early adopters of AV technology include rideshare programs and transit agencies.

AVs face a longer timeline to mass deployment than EVs, but will ultimately shape how we design the built environment. Connected vehicles (CV or CAV) can travel more closely together than human-powered vehicles, which could free up space for other modes and amenities. If shared use systems take root, parking needs would be significantly reduced. Minot will monitor changes to the AV and CV technology and consider planning, policy, and design changes that may be needed on a local level.

Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) encompasses a broad array of integrated technologies that improve transportation safety, efficiency, and personal mobility. These technologies include advanced sensors, information processing, communication technologies, and other applications. The City of Minot and NDDOT use ITS solutions to make better use of existing infrastructure. Examples include dynamic traffic signals, variable message signs, electronic payment systems, and traveler information systems.

SAFETY

TR-1: Maintain roadways in safe and serviceable condition.

Roadway investments that produce a demonstrable safety benefit will continue to be prioritized. Proven techniques include traffic calming, road diets, roundabouts and other intersection modifications, access management, and other strategies.

Figure 4-3 summarizes NDDOT's crash data from 2017 to 2021 (crashes are clipped to the 2-mile ETA). Crash data is a valuable resource for evaluating the impacts of roadway safety projects, but it is important to remember that other factors deserve consideration, including actual roadway conditions that are known to be correlated with higher crash rates.

All discretionary federal funding opportunities prioritize safety in project selection. The 2021 Bipartisan Infrastructure Law established the Safe Streets and Roads for All (SS4A) discretionary funding program. To access the funds available through this program, the City must adopt a comprehensive safety action plan. A qualifying plan could also be considered as an element of the City's next transportation plan update.

Access Management

Access management guidelines promote safe and efficient transportation by controlling the number and spacing of intersections and private access points along a corridor. Good access management seeks to balance the right of individual property owners to access the roadway with the City's commitment to public safety. Access management reduces the number of conflict points and simplifies decision-making. However, roadways with limited access can also send environmental cues that induce speeding and reflexive decision-making, which may be counterproductive.

CITY OF MINOT

2040 Comprehensive Plan

Crash History (2017-2021)

Figure 4-3

Legend

City Limits

2-Mile Boundary

Crash Severity/Type

Fatal

Incapacitating Injury

Other Crashes

Bicycle or Pedestrian Crash

Crash Density

Sparse

Dense

0 0.5 1 1.5 2 Miles

83 2 10 10A 19 12A 15 17 14 52

N BROADWAY

8TH ST NW

21ST AVE NW

16TH ST NW

3RD ST NE

3RD ST SE

HIAWATHA ST

13TH ST SE

VALLEY ST

BURDICK EXPY W

BURDICK EXPY E

16TH AVE SW

16TH AVE SE

31ST AVE SE

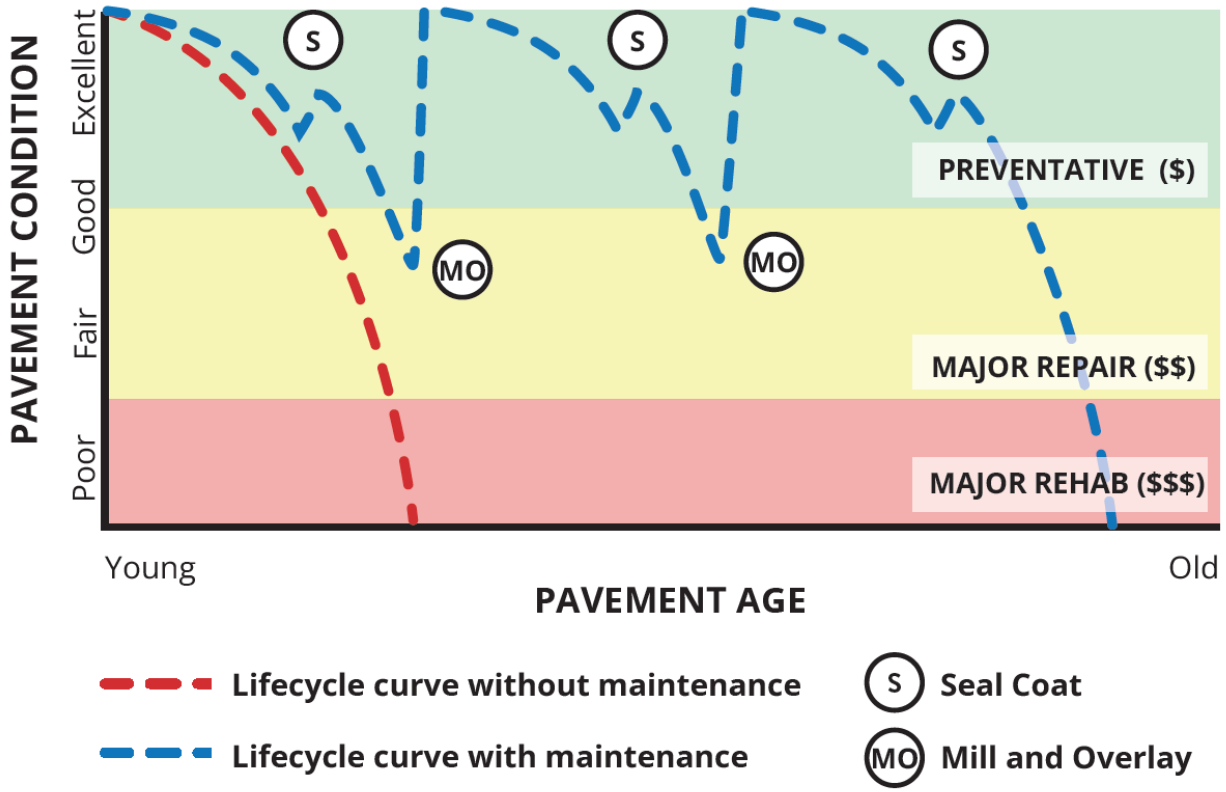
S BROADWAY

OPERATIONS AND MAINTENANCE

Pavement Preservation

Many municipalities have more pavement than they can realistically maintain, so local governments are forced to make hard decisions about where to invest. By emphasizing pavement preservation, Minot will make its roadway spending dollars go farther.

TR-1: Maintain roadways in safe and serviceable condition.



A preservation-based strategy emphasizes the importance of investing in roadways *before* serious problems arise. Pavement preservation improvements, which include resurfacing work such as a mill and overlay, are much more cost-effective than pavement replacement – "an ounce of prevention is worth a pound of cure." To be most effective, overlays need to be performed before the subgrade deteriorates (i.e., when the roadway condition is "fair", not "poor"). If well-timed, these types of improvements can be performed multiple times and significantly extend the life of the road before reconstruction is needed. Shifting the mindset toward pavement preservation requires communities to discard the "worst-first" mentality, which can seem counter-intuitive.

In a survey of 1,033 residents, 44% of respondents identified pavement preservation as their top priority for transportation; 19% of respondents identified new construction (roadway capacity improvements) as the biggest need.

The Cost of Sprawl

Most communities want better roads but don't want to pay for them. Suburban sprawl strains the tax base and makes it impossible for municipalities to pay for repairs without raising costs. Compact development reduces the infrastructure burden and makes money go farther.

System Performance

Roadway systems are evaluated with standard performance measures such as level of service (LOS) and volume/capacity. The LOS is a measure of delay; intersections are scored with a letter grade from A to F. LOS is a convenient metric but comes with some caveats. It is most useful with arterial roads, where mobility concerns are paramount and drivers are most sensitive to congestion impacts. Even then, many planning agencies find that LOS D or even LOS E is acceptable, especially if congestion occurs infrequently. If a road is consistently performing at LOS F, highway capacity improvements are warranted, although alternative transportation demand management (TDM) strategies could also be considered.

Proposed capacity improvements should not be taken lightly. Road expansion may introduce new safety issues and degrade the pedestrian environment, and adds more mileage for the City to maintain.

GROWTH OPPORTUNITIES

As Minot grows, roadways will need to be improved to urban standards in future growth areas. In general, section line roads will form the backbone of the future arterial system. These roads have the benefit of established right-of-way and appropriate spacing for arterial roadways (one mile apart).

Roadway improvements will be focused in the Northwest Growth Area and Southwest Growth Area, where most greenfield development is planned and anticipated.

In the Southwest Growth Area, the following improvements can be expected:

- Expansion of 16th Street SW from 37th Ave SW to 54th Street SW
- Construction of an overpass/interchange improvement at Burdick Expressway or the Northwest Bypass
- Construction of 30th Street SW as a minor arterial to 37th Ave SW, with likely roadway realignment
- Roadway tie-ins and intersection improvements on 37th Ave SW

In the Northwest Growth Area, the following improvements can be expected:

- Construction of 36th Ave NW/CR 10 as an urban minor arterial to approximately 1.5 miles west of the bypass
- Construction of 30th Street NW as a minor collector from 19th Ave NW to 36th Ave NW/CR 10
- Extension of 30th Ave NW as a minor arterial from the bypass to approximately 1 mile west, with intersection expansion and potential realignment to eliminate the skew

These improvements require proactive planning and, in some cases, advance coordination with NDDOT.

SUMMARY

This chapter has identified many tools and strategies for the transportation system. Recommendations include:

- Proactively preparing to establish a Metropolitan Planning Organization
- Pursuing discretionary grants on a regular basis to supplement local and federal revenue sources
- Adopting pavement preservation as the guiding principle for roadway investment
- Adopting a Complete Streets approach to roadway improvements
- Developing an ADA Transition Plan
- Developing a Roadway Safety Plan
- Prioritizing sidewalk/trail gaps for infill based on level of need and developing a more organized approach to sidewalk infill
  Ensuring bicycle/pedestrian connections across principal arterials
- Prioritizing shared-use paths along minor arterials
- Strategic implementation of access management guidelines
- Emphasis on improving roadway safety using techniques that are proven effective
- Encouraging transit-oriented development to support transit investments (“TOD lite”)
- Adoption of policy to support emerging transportation technologies