

5. Multimodal Network

This chapter discusses the existing multimodal transportation system in place, the performance of this system in the Duluth-Superior area as well as the challenges and opportunities before it.

Sustainable Choices 2045



Duluth-Superior Long-Range Transportation Plan

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Transportation System

Over the next 25 years, the challenges borne by urban areas and the burdens placed upon the urban transportation system are anticipated to multiply in quantity and complexity. With this look to the future, understanding where the system is today is important in order to move forward.

The transportation system is the foundation of the urban economy. In this urban context, the transportation network must meet the needs of people and freight. Of the modes of transportation, this LRTP covers airways, railways, roadways, and waterways. In the Duluth-Superior region, this includes airport facilities, bikeways, bridges, highways, shipping channels, sidewalks, streets, trails, transit lines. Furthermore, over the past 25 years, the region has made a significant investment, in both planning and construction, into right-sizing the system while also creating a viable multimodal system.

As traffic patterns have changed due to changes in infrastructure, technology, and land use patterns, the configuration of the system has changed as well. A number of roadways have been reduced from 4-lanes to 3-lanes or 2-lanes where traffic volumes allow, creating space for other uses and modes. In addition, converting one-way streets to two-way, removing traffic signals where they are no longer warranted, installing technology to improve traffic signal operations, improving safety with rumble strips, cable median barriers and installing roundabouts (which have both significant traffic operations and safety improvements) are all measures that have been taken to adapt the transportation system to meet present-day demands. Map 5.1 displays the MIC area's transportation assets.

Re-Thinking the System

Cities existed for 1000s of years as primarily walkable, human centered spaces. However, in the last 100 years, as the motor vehicle became the primary mode of transportation, cities and urban areas rapidly transformed into auto-centric places. While individual mobility over large expanses has been gained, other aspects, particularly local economic and livability components of the city have been impacted. Furthermore, cities are finding themselves in an unenviable situation where the general public is demanding potholes be filled as well as expressing their desires for better transit, sidewalk and bike lanes. Though at

Re-Thinking the System

With stagnant and in many cases shrinking transportation revenues available to cover infrastructure costs and growing long-term needs and impacts, there is a critical need to do more than preserve the system "as is", so it is imperative to re-think the system to get more out of the future infrastructure investments:

- More independent mobility for all, regardless of age, ability or income.
- More access to housing, education, healthcare, and jobs.
- More economic returns on infrastructure investment for jurisdictions and for citizens to be able to build wealth.
- More infrastructure designed to accommodate large freight movements thru the Twin Ports and the intermodal needs at the Port.
- More environmental benefits, reducing costly mitigation of impacts later.
- More human health and social connections creating stronger communities in the long run.
- More understanding of the dynamic nature of human travel behavior and the interplay between modes as people travel around the urban area.

the same time revenues to build and maintain the existing transportation system is stagnant and shrinking in some cases. Time is of the essence to re-think the transportation system to meet the needs of today while at the same time working towards a vision of a more sustainable and livable future.

Today's multimodal system

As the final extension and the interstate tunnels were being completed in Duluth, a major shift in transportation policy was happening, one with a more multimodal focus. While at the same time, a new vision for the old major east-west thoroughfares in Duluth was being crafted, including London Road, Superior Street, Cody Street, Garfield Avenue, 6th Avenue East, 2nd and 3rd Streets. Ideas were and continued to be explored and implemented with the reconfiguration of the roadways as well as land use changes from highway commercial to more urban along these corridors.

While much has been changed and reconstructed over the years on these corridors, remnants from the old highway corridors remain with opportunities for positive change. Looking into how these streets and this transportation system can be safer, better for moving people and goods, more livable, environmentally friendly, better for human health and better for the local economy. Figuring out the right balance for these corridors and the overall system is the central theme to this LRTP. The development of and regularly carrying out an implementation strategy (see Chapter 2), will be a vital step towards being able to work toward this Plan's goals.

This is not to say that nothing has been accomplished over the past 25 years. In that time, the Duluth-Superior area has made many improvements to both the built environment as well as complementary educational, encouragement and evaluation efforts. The development of the primary east-west trail corridor along the waterfront in Duluth with the Lakewalk and Cross City Trail, bike lanes on Tower Avenue, London Road, Hwy 23, and 4th Street, improved highway connections to the Miller Hill area, construction of a new access road to Port facilities and dockwall stabilization, the building of new UMD and Downtown transit centers, construction of a new DLH airport terminal and runway reconstruction are key examples.

Re-thinking the Streets

- Road Diets/Right Sizing/ Complete Streets
- Streets where their role has changed in the system.
- Reconfiguring these streets has been undertaken or being considered.

Road Diets Undertaken

- 21st Ave E—London Rd to Woodland Ave
- London Rd—10th—21AE
- Hwy 23 – Fond du Lac to Becks Rd
- Grand Ave—Carlton Ave to 59AW
- Superior St—22AW to Carlton Ave
- Tower Ave—52nd to 69th
- Hammond Ave—Belknap St to 21st St.

Road Diets Under Consideration

- London Rd—21st to 26AE
- 1st/Superior St—40th –46AW
- 27th Ave W—Helm St to 3rd St
- Garfield Ave—Nelson St to Superior St
- Superior St—Michigan to 19AW
- 6th Ave East—2nd St to Central Ent
- Cody Street—Central Ave to 64AW
- Michigan/Superior
- Woodland Ave - Snively Rd to Anoka St

Also implemented were sidewalks on the urban sections of the St. Louis County roadway system and bicycle racks on all DTA transit vehicles. In addition, numerous programs, like the college student transit pass program and the bicycle and pedestrian count program, land use and built environment policies that encourage multimodal-friendly development, as well as educational and encouragement activities to promote and support the multimodal system. While much work has transpired, much remains to do. Urban street design, parking policies, green infrastructure, return on investment economic policies to name a few are all key focus areas in the future.

Nature of Travel in the Twin Ports

The Duluth-Superior Urban Area is the regional trade center of the Northeast Minnesota-Northwest Wisconsin region. It is the primary regional hub for retail, trade, employment, education, healthcare, entertainment and tourism. This urban area draws people from a wide area and a large amount of daily trips are coming into the urban area from across Minnesota, Wisconsin and Ontario.

Due to distances, particularly those 3 miles and greater, the most viable and logical transportation mode currently available is the motor vehicle. Ensuring mobility into and access across this urban region is important. Though, this is not without impacts, particularly to the urban neighborhoods that must endure the traffic and parking needs that come with the longer distance trips. There are an increasing number of alternatives to driving, including inter-regional/state bus service, shuttles, and flying—each of which have expanded options. Additionally, a rail passenger service is planned, as well.

While accommodating longer distance trips is important, the majority of all trips taken within an urban area are of shorter distances. These trips are typically less than 3 miles and are made frequently throughout each day. Within shorter distances, options for mode choice including combining modes to make a trip is more practicable. A combination of walking, cycling, ride-sharing, taking transit, and driving are all viable multimodal options available each day depending on the trip purpose and geographic location.

A problem not unique to urban areas

Older cities in the United States are facing financial challenges with covering the cost of fixing their infrastructure.

Newer cities will face this reality in time as well, as their new infrastructure ages.

All infrastructure must be maintained and eventually rebuilt in time.

Sustainable Framework

Developing a model where the infrastructure put in place is sustainably covered by revenues generated.

- Maximize return on public infrastructure investments
- Minimize undermining these investments
- Reduce externalities, costs and impacts that come from these investments and will have to be mitigated later.
- Understand the cost burdens placed on jurisdictions as well as citizens.
- Maintaining and rebuilding critical infrastructure.

Tourism

Tourism is placing increasingly more traffic demands on the system today. Trips up the North Shore create congestion through Duluth on the weekends. Special events like Grandma's Marathon, Bentleyville, concerts at Bayfront Park, and other events in the Waterfront District create predictable backups even onto the major thoroughfares. Major events at UMD as well as good weather Summer "beach" days, particularly on Saturdays create traffic congestion that can last for hours.

Security and emergency preparedness

Additional measures have been taken to improve security and emergency preparedness for major events, including both those that are planned community events, such as Grandma's Marathon as well as the unplanned, unexpected disasters such as the refinery explosion in 2018 in Superior, Wisconsin which created an evacuation.

Multimodal System Profile

Because the Duluth-Superior Urban area serves as a regional hub, it also has a major advantage and gives the Twin Ports both challenges and opportunities. Within the urban area the regional destinations are largely in close proximity to each other. Distance is the key variable in determining mode share in an area. Quality of infrastructure is important, as well, and weather and topography play a role. But where the distances are shorter there is more mode choice available. Where distances are longer the single mode use of the automobile is widely prevalent.

Challenges

- Old infrastructure is coming due (over due in many cases) for replacement.
- More infrastructure per capita, larger size and scale. Compare scale changes to Piedmont Ave before and after.
- Struggle to maintain the existing system, including more striping for cyclists and pedestrians and more maintenance, sweeping and snow clearing, all the while improving traffic flow, filling potholes, rebuilding streets, and more.

Re-thinking one-way streets

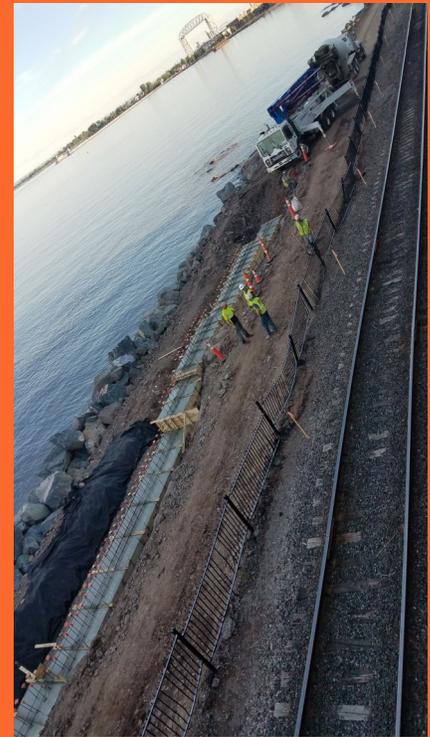
The one-way system was designed and implemented largely in the 1950s as a response to a massive increase in private motor vehicle usage, coupled with a commercial (retail & office) development pattern that was primary located in densely developed areas including the downtowns of Duluth and Superior and a few other activity nodes including the West End, West Duluth and the Belknap corridor in Superior. These areas became congested and difficult to access by motor vehicle and the solution arose to create a system of one-way streets to move motor vehicular traffic more efficiently. Since that time, commercial (retail and office) and institutional (schools and churches) have largely moved out of the central business districts and into outlying areas and therefore, the density of uses has spread out and the traffic demand by motorists has greatly diminished in these areas.

Re-thinking the continual need of each of the various segments of one-way system has been taking place over the past 20 years, with some streets converted back to two-way and others currently under consideration.

- Population demographic challenges—more seniors, more students and more people in poverty particularly those with children.
- Auto-centric system that prioritizes private motor vehicle use.
- Climate change impacts in this region, bigger and more frequent storm events, impacting culverts, bridges, and waterfront infrastructure.
- Environmental, historical and cultural impacts, creating long term costly mitigation.

Opportunities

- Infrastructure reconstruction is coming due—opportunity to re-think.
- Technological changes in how people interact with each other (less in person) and order transportation through apps on their phone.
- Changing public attitudes/desire to driving, including teenagers delay in getting driver’s licenses.
- Public health benefits extend beyond physical activity, including social cohesion, safety, stress reduction, improved environmental health and more.
- Public support for transportation investment.
- Willingness to try new approaches.
- Real-time data & messaging.
- New micro mobility/light individual transport vehicles.
- Growing sharing economy—ride share, e-scooters, car share, etc.



New concrete barrier being installed in 2019 to provide higher level of protection from anticipated bigger storm-events.

Active Transportation

Walking

A pedestrian is defined as a person who walks or rolls with the use of a wheelchair or other mobility assistive device. This mode is essential to transportation and is key for the economy and for public health.

The key infrastructure element of the pedestrian network is sidewalks. Sidewalks provide necessary walking connections to homes, businesses, transit services, and other activities. The MIC region has an extensive network of public sidewalks and stairways in place. While most public streets in the region have sidewalks, there are gaps in the sidewalk network.

Unlike public streets and trails, sidewalk maintenance is largely the responsibility of the adjacent property owners. This can create challenges, as property owners can vary greatly in their ability or desire to maintain sidewalks.

Design of sidewalks plays an important role to extent of use. Design elements that encourage pedestrian usage include curb extensions, enhanced street crossing, and reduced vehicle lane width.

Challenges & Opportunities

- Sidewalk condition (snow clearing, repair, brush removal/clearance).
- Vehicle yield for pedestrians crossing issues.
- Vulnerable users—reducing exposure to risks.
- Sidewalk network continuity (gaps).
- Steep topography, especially when snow/ice is on streets and sidewalks there is no hill climbing alternative.
- High usage of sidewalks by cyclists.
- Increasing use of sidewalks by motorized devices, for example e-scooters and segways.



Active Transportation

Pedestrians and cyclists are vulnerable users of the transportation system, particularly in shared spaces with motor vehicles. It is important to limit exposure to risk. Strategies to reduce exposure risks include:

- Reducing pedestrian crossing distances (rate of exposure)
- Reducing vehicle speed with traffic calming measures.
- Create buffer zone between sidewalks and multi-use paths and motor vehicles.
- Installing dynamic signage (RRFB's, bike signals, etc)
- Creating separated bikeways

Education, Encouragement & Evaluation—Annual Efforts

Winter Bike to Work Day—February
Bus, Bike, Walk Series—April-June
Bike to Work Day—May
Mayor's Bike Ride—May
School Bike Counts—Sept– May
Bike & Ped Counts—September
Walk/Bike to School Day—October

Bicycling

The bicycle mode of transportation continues to be underdeveloped in the MIC area, as there is currently not a fully viable interconnected bikeway system in place. However, national, state and local policy support for developing the bikeway networks does exist. Federal transportation policy clearly states that it is the responsibility of every transportation agency in the United States to improve conditions for bicycling and to integrate bicycling into their transportation system.

Agencies are encouraged to not just meet minimum requirements of providing bicycle facilities, but to go beyond minimum standards to provide the safest and most convenient bicycle facilities practicable.

Much planning has been conducted in the Twin Ports over the past 25 years to address this issue. Following these planning efforts, bike route maps were developed, wayfinding signage was put up, bike racks at K-12 public schools were installed, and in the last 10 years, major off-street multi-use paths and bike lanes have been constructed. In addition, educational, encouragement and evaluation programs have been put into place including bike to school and work days, Bus, Bike, Walk Month series of activities and the establishment of the Bike & Ped Count program.

Challenges & Opportunities

- Lack of a fully interconnected bikeways network.
- Limited options for people of all ages and abilities, particularly those who are not the “Strong & Fearless” cyclists.
- Bikeway maintenance (sweeping and snow clearing), cracks and potholes and iterative improvements.
- Steep topography.
- Traffic signals that do not recognize bicyclists.
- Bikeway wayfinding signage on the Minnesota side is largely in place, but not on the Wisconsin side.
- Bike share—dock vs dockless systems.



Trunk Lines are a transportation system handling long-distance through traffic. A main supply channel. The major trunk lines for the active transportation modes in the MIC area include:

Waterfront trunk line

- Munger Trail
- Cross City Trail
- Lakewalk
- Osaugie Trail

Hill climbing trunk lines

- Hermantown/Proctor Trail
- Lincoln Park Drive
- Congdon Park Drive

Possible Future Trunk Lines

- CSS/UMD Corridor (Campus Connector)
- Hammond Corridor
- Miller Hill/Central Ent Corridor
- Blatnik Bridge Corridor

Air Transportation

The Duluth-Superior area has three primary, publicly-owned airports that provide a wide range of services for both general aviation, commercial passenger flights (only available at the Duluth International Airport), and freight transport. Together, the area's airports provide the greater area, the Arrowhead region of Minnesota, northwest Wisconsin and the Thunder Bay, Ontario region with commercial air service, air freight service, general aviation services and float plane capabilities.

The Joint Airport Zoning Board, comprised of representatives of communities surrounding airports, imposes a variety of restrictions on land use through safety zones. This creates challenges for communities, as the regional benefit of the airports and the local community need for tax revenue to cover services can at times conflict.

Air based transportation is undergoing challenges as well. The Duluth Airport Authority worked to meet post 9-11 security requirements by building a new terminal at Duluth International Airport, and is replacing aging infrastructure by reconstructing runways at Duluth International and Sky Harbor Airports.

For more information on the infrastructure replacement plan at the Duluth International Airport please visit the master plan website at: <https://duluthairport.com/master-plan/>.

Challenges & Opportunities

- Increased access to national and international destinations particularly with direct service to MSP and to Chicago O'Hare Airports.
- "Leakage"—passengers utilizing MSP instead of DLH.
- Extending cross-runway at DLH.
- Building complementary services around the airport grounds, including lodging, restaurants, day-care, automobile services, etc.).
- Development pressures within airport safety zones.
- Noise impacts on surrounding land uses associated with unconstrained military operations at DLH.



Duluth International Airport (DLH)

- 2 runways (one of which is 10,165 feet in length—2nd longest runway in Minnesota)
- Designated as a Airport of Entry for Customs (24-hour service)
- Approximately 300,000 passengers per year
- 3 commercial passenger airlines (American, Delta & United)
- Daily flights to Minneapolis-St. Paul & Chicago

Sky Harbor Airport

- 1 runway (rebuilt 2018)
- 2 sea lanes

Richard I. Bong Airport (Superior)

- 2 Runways
- Approx. 50 flights per day

Rail Transportation

Rail lines in the Duluth-Superior area have enjoyed increasing freight loads, as well as renewed efforts to create high(er)-speed passenger rail systems, all while creating safer and quieter crossings in urban areas, improving reliability, and upgrading widespread aging infrastructure.

Four Class 1 railroads operate within the Duluth-Superior area offering connection to rail lines across North America. For example, Canadian National (CN) offers freight transport from Duluth-Superior to the Pacific Ocean, Atlantic Ocean, and the Gulf of Mexico. Container shipping of freight via rail has increased in the area with the start of Duluth Cargo Connect, an intermodal operation partnership between the Duluth Seaway Port Authority and Lake Superior Warehousing.

Rail movement between Duluth and Superior takes place on two bridges, the Grassy Point Draw near the Bong Bridge and the Oliver Bridge along MN Hwy 39/WI Hwy 105.

Passenger Rail—Northern Lights Express (NLX)

Efforts are underway to bring passenger rail service back to the Duluth-Superior area. As the regional trade center and a center for tourism the urban area has growing potential to support and benefit from this planned new service.

Challenges & Opportunities

- Rail line crossing safety restrictions.
- Increased use likely to spur increase in public investment.
- Preserving and/or re-using under-used and/or abandoned rail corridors.
- In Superior, WI numerous rail lines create challenges for crossings, including roadway blockages, motor vehicle traffic delays and barriers to walking and bicycling with limited crossing and/or long distances between crossing points.
- Reliability challenges with passenger trains sharing tracks with freight trains.
- The passenger rail line would add system redundancy and increased safety factors.



Freight Rail

4 “Class 1 Rail” Companies in the Duluth-Superior Area. “Class 1 Railroad” is defined as having annual carrier operating revenues of \$250 million or more.

- BNSF
- CN
- CPR
- UP

Passenger Rail (proposed)

Northern Lights Express (NLX)

- Service from Minneapolis to Duluth
- Stops in Coon Rapids, Cambridge, Hinckley & Superior.
- Would share use of existing freight rail lines
- Planning for NLX has concluded
- Pursuing funding to upgrade tracks, build/update stations and purchase train cars.

Surface Transportation

The predominant part of the transportation system in the MIC area, as is in much of the United States, is the network of streets, roadways and highways that primarily carry automobiles and trucks. This includes two very large bridges connecting the communities on each side of the St. Louis River. These roadways accommodate the travel needs of residents', businesses, and travelers as well as freight needs.

The Duluth-Superior area has an extensive and well-connected network of federal, state and local roadways, including major bridge crossings. The system has a significant amount of redundancy giving the system good connectivity for the movement of motor vehicles with few gaps.

Streets serve as corridors for the conveyance of people, goods, and services and must accommodate an ever-expanding set of needs. They must be safe, sustainable, resilient, multi-modal, and economically beneficial, all while accommodating traffic and serve as community gathering spaces.

Challenges & Opportunities

- Network connectivity—issue of major throughways are disjointed.
- Climate change impacts—bigger storm events, that will necessitate a need for larger culverts and bridges, and improved street stormwater management.
- Pavement condition—lack of resources to maintain and reconstruct local roadways.
- Short but intense peak hours.
- Much of the system has available capacity.
- Real time data available—congestion on Google Maps.
- Intersection controls—roundabouts and improved signal timing.
- Connected and autonomous vehicles—passenger and truck.
- Major infrastructure maintenance, repair, and reconstruction coming due.



Major thoroughfares designed for the quick and efficient movement of motor vehicles:

- I-35 & I-535
- WI Hwy 35
- US Hwy 2 (in MN & WI)
- US Hwy 53 (in MN & WI)
- MN Hwy 23
- MN Hwy 194
- WI Hwy 105
- 2nd & 3rd Street pair (Duluth)
- Midway Rd
- Martin Rd
- Lower Michigan St
- Central Entrance
- Becks Road
- Woodland Avenue
- Arrowhead Road
- Arlington Road
- Maple Grove Road

Areas of Congestion

- Lake Ave at Superior Street
- London Rd at 40th Ave East
- Hammond Ave at Blatnik Bridge
- 24th Ave West at Piedmont Ave

Major Network Gaps

- Kenwood Ave to 6th Ave E
- Martin Rd to MN Hwy 61
- Joshua Ave to Arrowhead/Rice Lake Rd

Pavement Condition

Figures 5.1-5.3 display aspects of local pavement and bridge condition. Recently, pavement conditions on the arterial system has improved. Federal transportation legislation has placed emphasis on maintaining the National Highway System (NHS) in good condition, which in turn resulted in less federal funding for the other roadways. While the largest amount of traffic travels on the NHS system, the vast majority of roadway mileage is the non-NHS system.

In addition to maintaining miles of roadways, the area’s jurisdictions maintain more than 300 bridges. Bridge structures are some of the most expensive infrastructure assets and while the majority of the bridges are less than 50 years old, as they age increasing investment will be needed for repairs and full replacement of some in the future. Removal of many of the bridges associated with the Twin Ports Interchange project will help alleviate part of this problem in the long term.

For comparison and tracking purposes, pavement condition data is not readily available at this time across all roadway authorities. Though, work is underway to develop a process where pavement conditions are routinely collected in a comparable and trackable format.

Figure 5.1: MN MIC Area Interstate Pavement Condition (2018)

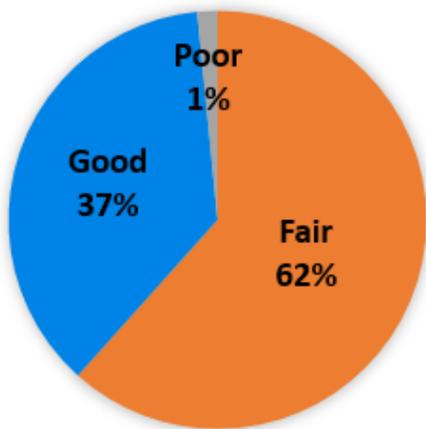
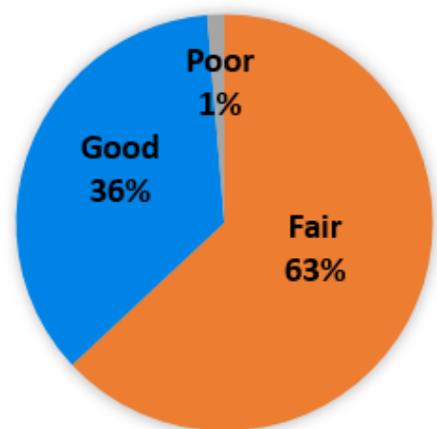


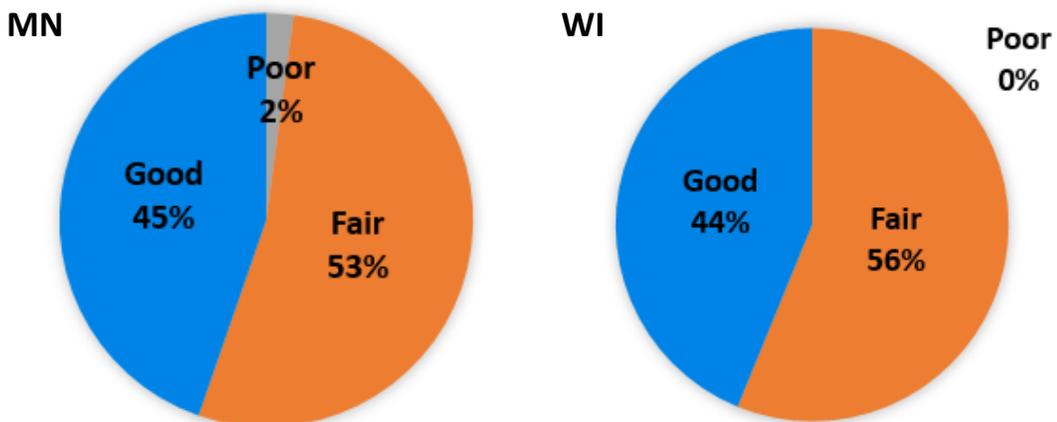
Figure 5.2: MN MIC Area Non-Interstate Pavement Condition (2018)



Data Source for Figures 5.1, and 5.2: Mn DOT

Data Source for Figure 5.3: MnDOT and WisDOT

Figure 5.3: MIC Area Bridge Condition (2018)



Transit

Transit service comprises of a mix of public and private systems which provides access across the urban area as well as to other cities, including the Twin Cities, the Iron Range, and Fargo. Two main transit providers serve the Twin Ports, DTA and Arrowhead Transit. The region also has several smaller agencies that provide rides to specific groups such as the elderly or disabled and a private commuter bus service from Cloquet.

The DTA is the municipal transit authority for the Twin Ports, has fixed regular routes across Duluth, Hermantown, Proctor and Superior, and serves approximately 3 million rides per year. DTA provides paratransit service, known locally as STRIDE, which is a dial-a-ride service for qualified individuals with disabilities. DTA has several new low emission electric buses, and has established transit hubs in Downtown Duluth, UMD Kirby Center and the Miller Hill Mall. The relatively new Duluth Transportation Center (DTC) is a multimodal center which provides indoor passenger waiting, a Jefferson Lines ticket counter, bike parking and has future capacity to accommodate passenger rail. The DTA also has a successful college service to UMD, CSS, LSC and UWS, has incorporated new technology tools to improve service, has a trolley service in Downtown and Canal Park, and is planning for bus rapid transit (BRT).

There are a number of transit options in addition to the DTA. Arrowhead Transit serves Hermantown and the larger Arrowhead Region of Minnesota. Jefferson Lines serves destinations across Minnesota with direct connections from Duluth to the Twin Cities, the Iron Range, St. Cloud, and Fargo. Indian Trails bus serves destinations across Wisconsin with direct connections from Duluth to Ashland, Iron River and Milwaukee. Groome and Land Line provide shuttle and bus service respectively to the MSP airport. Groome also provides services to select destinations along the I-35 corridor, including Hinckley and a stop at the state capitol in St. Paul.

Considerations to improve transit services in the future include better connections to regional destinations, including Cloquet, Two Harbors, Iron Range, and Ashland; maritime transport service between Duluth and Superior via ferry and/or water taxis; and aerial lift service to traverse the hill, whether it be a tramway, gondola and/or funicular (incline).



Transit Service in the Duluth-Superior Area

Urban Transit Service

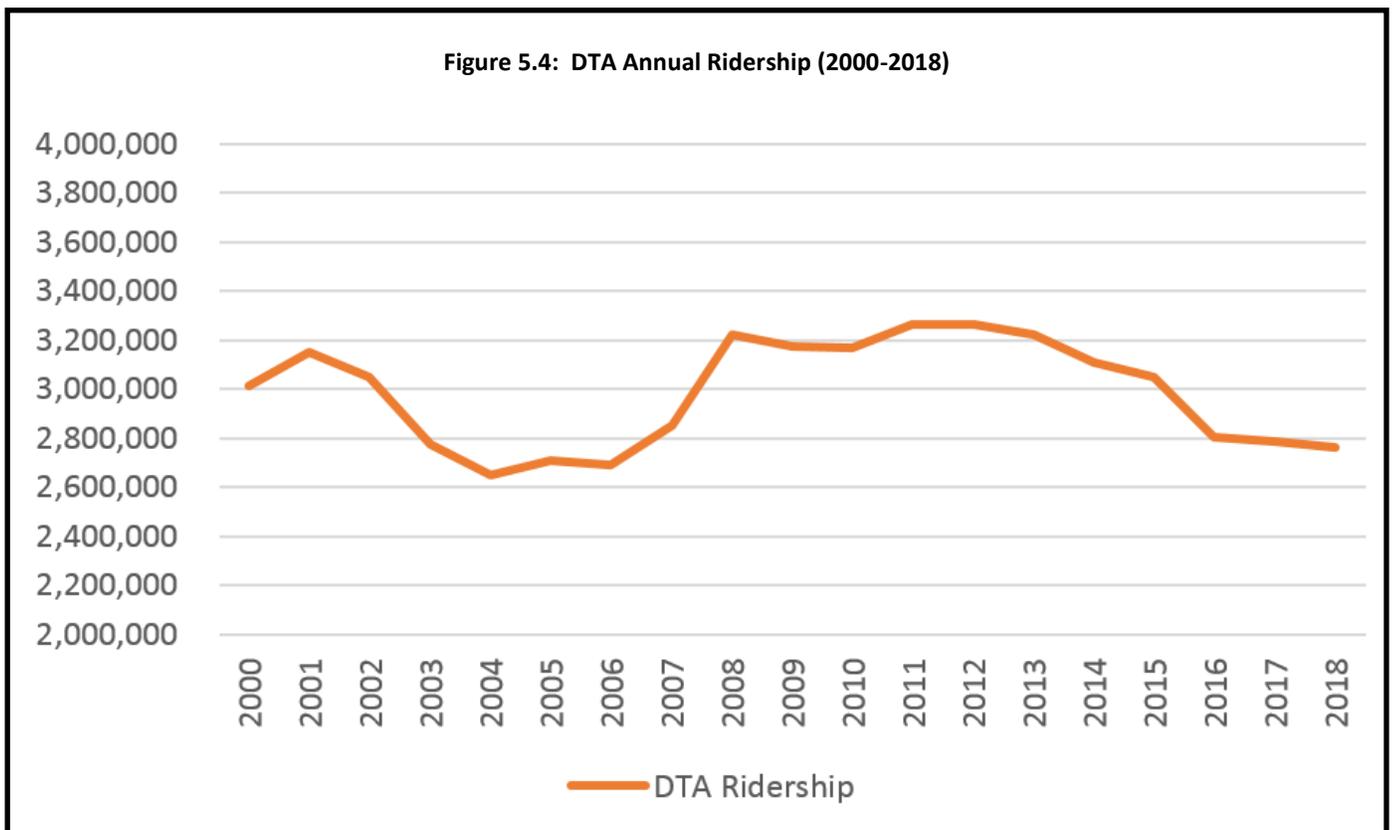
- Duluth Transit Authority
- Arrowhead Transit
- Employer/School shuttles/buses (Essentia & Boulder Ridge)
- Human Services shuttles/vans
- Major Events shuttles for Grandma's Marathon, Bentleyville, Glensheen Winter Village, Inline North Shore Marathon, Dragon Boat Festival, etc.

Inter-City Bus & Shuttle Service

- Jefferson Lines—to Twin Cities, St. Cloud, Fargo, & Iron Range
- Indian Trails—to Ashland, Iron River & Milwaukee
- Groome Shuttle (formerly known as Skyline Shuttle) - to Twin Cities and MSP Airport
- Land Line Shuttle—DLH to MSP

Challenges & Opportunities

- High level of use (compared to similar size urban areas).
- High level of regard and support for transit by the public.
- Fixed route DTA ridership is declining since 2011, but at a slower rate since 2016.
- ADA sidewalk improvements are happening.
- Encourage & ensure viable interconnections between transit and all other active transportation modes (walk, bike, etc.).
- Technology—rider access to real time data.
- Connected and Autonomous vehicles (CAV) development.
- Sidewalk condition—limits access to transit buses due to overgrown vegetation, lack of snow clearing, minimal maintenance, major gaps in sidewalk network including along bus routes.
- Lack of shelters, including warming devices in shelters.
- Land use developments happening without a full consideration of transit needs make it difficult to serve via fixed transit route system.
- On-demand—growing expectation for trips.
- Technology providing more real-time information (smart phone).



Waterways—Harbor/Port

The port serves as a full-service, multimodal hub for domestic and international trade. It is the largest and busiest port on the Great Lakes, and is ranked by cargo tonnage among the top 20 ports in the U.S. Further, the port is one of North America's major links to the world markets, aided by the Duluth Seaway Port Authority property being designated a Foreign Trade Zone, which provides incentives for international shippers. Overall the port remains a significant component of the region's economy, and supports a significant number of good paying and technical jobs.

The movement of freight by water is the most efficient and environmentally friendly way of moving bulk commodities. Primarily a natural resources port, docks in the "twin ports" of Duluth and Superior, handle a diversified commodities base ranging from coal, iron ore, grain, and limestone to cement, salt, wood pulp, steel coil, wind turbine components, and other heavy lift/dimensional equipment.

Integral to the functioning of the port is 17 miles of dredged shipping channels. These dredged channels are a largely unseen but essential component of the region's transportation network. Figure 5.5 displays the shipping channels.

At the crossroads of three major highway systems and four Class I railroads - BNSF, CN, CP and UP - the port is situated well for moving cargo in and out of the Midwest. These rail lines traverse through the port area and directly connect to the Pacific Ocean through British Columbia, to the Atlantic Ocean via the St. Lawrence Seaway, and to the Gulf of Mexico through Houston.

Harbor-related tourism, including the regular tall ships festival, is also a contributor to the local economy. Harbor cruises, the William Irvin and SS Meteor ship museums, airplane and helicopter flights offering aerial views of the area, and numerous tourist-based companies offering paddle-based tours of the harbor, estuary, and lake are all examples of tourism business in the harbor. Additionally, Great Lakes cruises are anticipated to return to Duluth on a regular basis. All of these require transportation infrastructure, including dock walls and dredged shipping channels, in and adjacent to the harbor to connect people with these opportunities.



Primary Commodities

- Iron Ore/Taconite
- Coal
- Grain
- Limestone
- Cement
- Salt
- Wood pulp
- Steel coil
- Wind turbine components

Infrastructure

- 35 million short tons of cargo
- 900 vessel visits
- 17 miles of dredged shipping channels
- 20 docks (privately owned)

Transportation Improvements with Port related Benefits

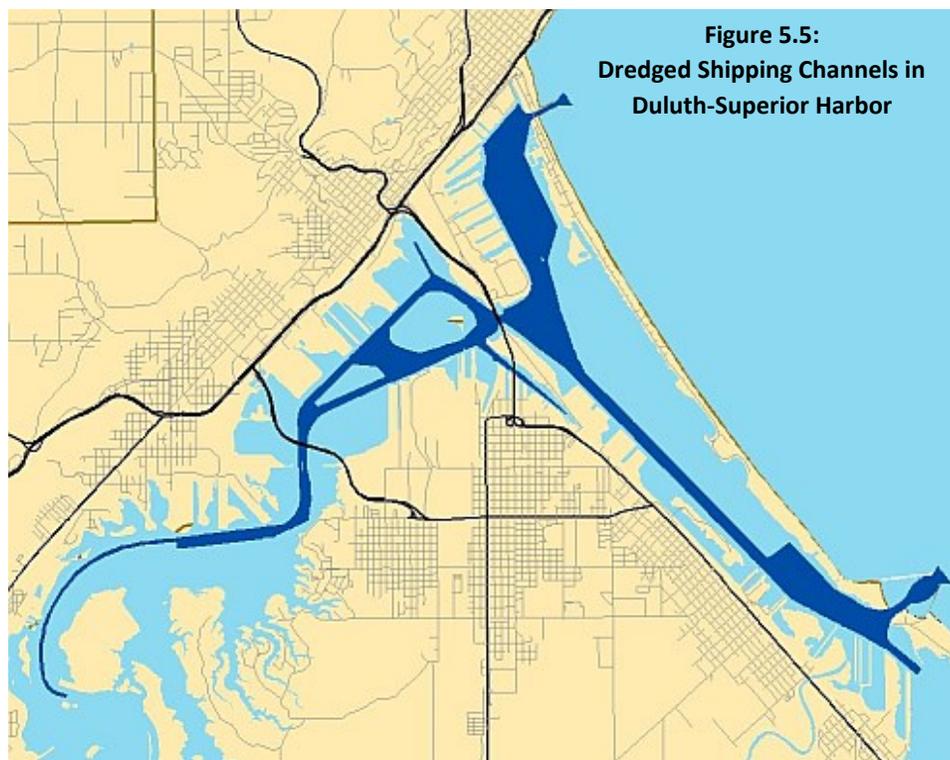
- Helberg Drive
- Twin Ports Interchange
- Blatnik Bridge

Past port-related transportation projects include the building of Helberg Drive to provide improved access, especially for over-sized loads out of the port and improve access to the state and U.S. highway system. Further improvements to the surrounding interstate (Twin Ports Interchange and Blatnik Bridge approach) will improve port access.

There are growing pressures to continue to redevelop land along the waterfront. Redeveloping waterfront properties to possible residential, commercial and recreational uses has been underway for decades, and the pressures to redevelop continue. Transportation must be addressed in relation to any of these potential redevelopment scenarios. In addition, as the waterfront continues to be cleaned up, more and more people are recreating (canoe, kayak, paddle board, etc). Efforts are underway to improve awareness of hazards of recreating in the river, harbor, and Lake Superior and strive for safe experiences for all users, whether recreational, commercial, or industrial.

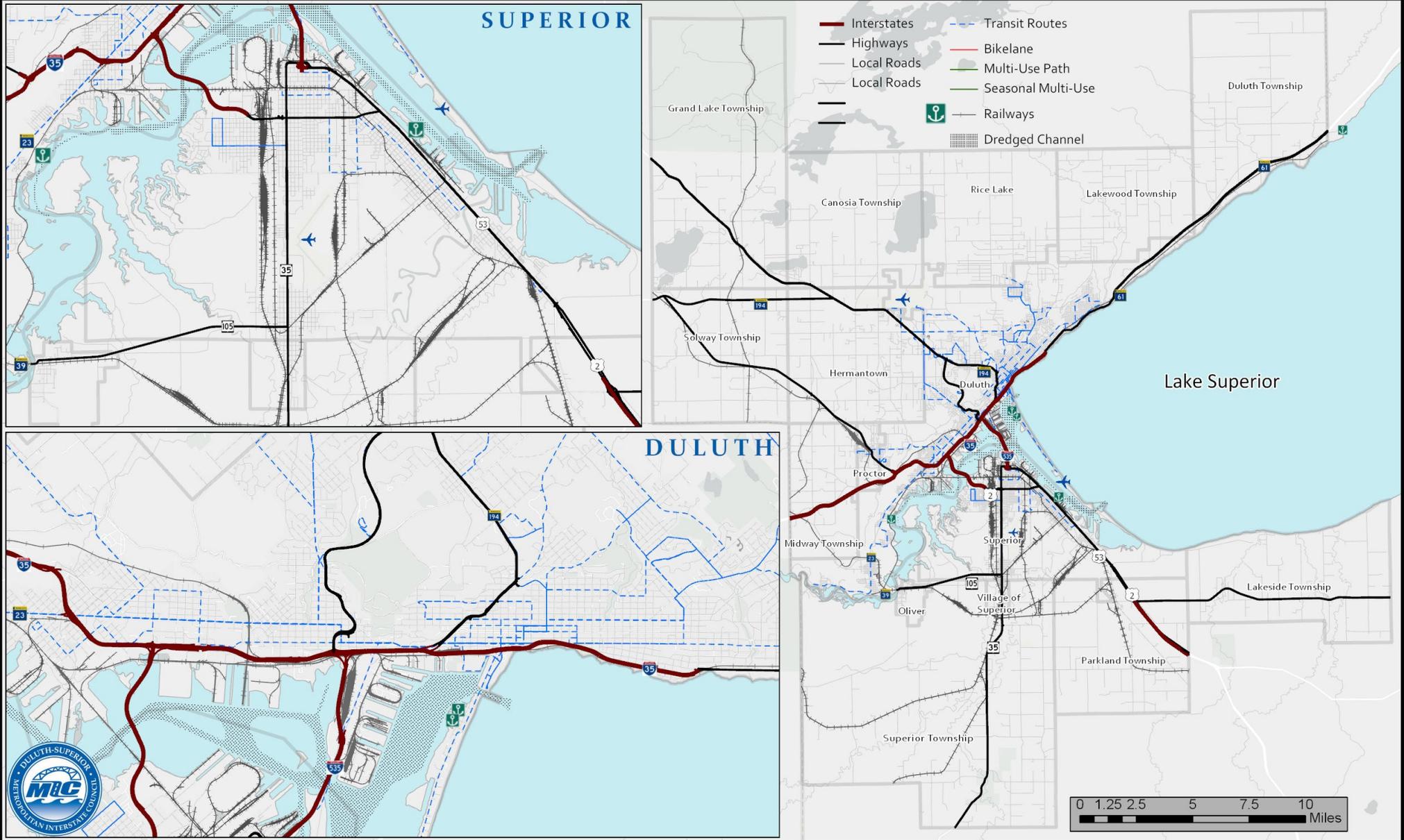
Challenges & Opportunities

- Placement/beneficial re-use of dredged materials
- Water level fluctuation and long term sustainability
- Dock wall replacement
- Legacy pollution clean up
- Land use redevelopment pressure for non-maritime and non-industrial uses.
- Major bridges (Blatnik, Bong, Oliver & rail bridge)
- Intermodal facility needs.
- Tourism—cruise ships



Map 5.1.

Duluth-Superior Area Transportation Assets



Functional Classification

Functional Classification describes roadways based on the type of service they provide. Roadways provide two basic types of service: land access and mobility. The degree to which a roadway provides access and/or mobility determines its functional classification. The key to planning an efficient roadway system is finding the appropriate balance between mobility and accessibility. Map 5.2 displays roadway functional classification across the MIC area.

Principal Arterials roadways primarily serve a mobility function with minimal land access. The primary purpose arterials serve is the rapid movement of people and goods for extended distance. Principal arterials are high capacity, high speed roadways with restricted access.

Minor Arterials interconnect with and augment principal arterials. Minor Arterials within urban areas serve inter-community trips of moderate length. Although the primary use of the minor arterials is mobility, this functional class provides more land access than a principal arterial.

Collectors channel trips between the local street system and the arterials. Collectors serve a balance between mobility and land access. Parking and direct driveway access to the street are typically allowed on collectors. Collectors are usually wider, have higher capacity, and permit somewhat higher speeds than the local street network. Collectors are broken down into two categories Major Collectors and Urban Minor Collectors.

Locals primarily provide local land access and offer the lowest level of mobility. Characteristics of local streets include uncontrolled intersections and few restrictions on parking. Local streets are not a significant consideration in metropolitan planning and this plan does address them in any systematic fashion.

The Federal Highway Administration uses functional classification to determine if a roadway is eligible for federal (gas tax) funds. Federal-aid eligible routes include: Principal Arterials, Major Arterials, Minor Arterials, and Major and Urban Minor Collectors. Local Streets and Rural Minor Collectors are not Federal-aid eligible.

Hierarchy of Roads

- **Local**—low volume, low speed (paved or unpaved).
- **Collector**—collect traffic from local roads, and distribute it to arterials. Traffic using a collector is usually going to or coming from somewhere nearby.
- **Arterial**—major through roads that are expected to carry large volumes of traffic.

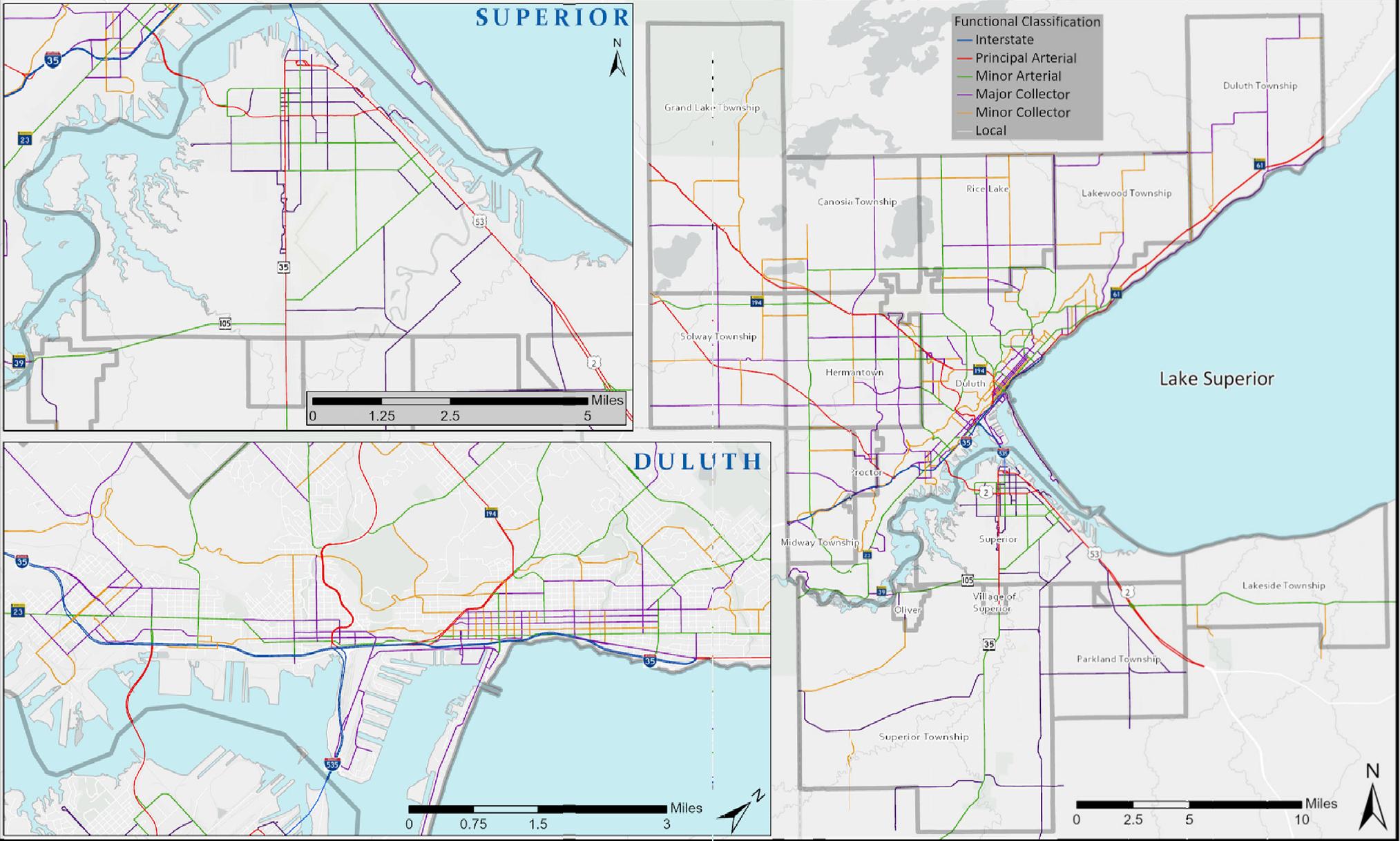
Access = refers to the ability to reach desired goods, services, activities and destinations Access is the ultimate goal of most transportation, except a small portion of travel in which movement is an end in itself (jogging, horseback riding, pleasure drives), with no destination.

Mobility = refers to the movement of people or goods. It assumes that “travel” means person- or ton-miles, “trip” means person- or freight-vehicle trip. It assumes that any increase in travel mileage or speed benefits society.

In general, as mobility increases, access decreases, and vice versa. In order to promote increased mobility access has to be limited. To increase the amount of access, mobility has to be limited.



Map 5.2. Duluth-Superior Area Functional Classification



Network Performance

In order to improve the transportation system, gaining a greater understanding on the return on public investment, the cost-benefits, the lessons learned from past projects, what worked and what did not, the transportation system is regularly evaluated. Key measures of transportation network performance are traffic volumes, level of service and performance measures, including pavement and bridge condition and crash analysis.

Traffic Volume

Traffic volume counts for all modes are regularly collected. For motor vehicles, transportation planners use average annual daily traffic and/or peak hour volumes to measure the use of the roadway system. AADT is an annualized measure of traffic volume on a road segment. AADT numbers are based on traffic counts that local and DOT engineers periodically collect on area roads. Traffic counts provide onetime “snapshot” views of traffic on area roads that traffic engineers then extrapolate into an annualized daily average using a mathematical process.

Traffic volumes for air, cyclists, motor vehicles, pedestrians, ports and transit are also being collected. For bicycle and pedestrian count data, a limited amount of data was available, largely collected during specific projects. However, in the last 10 years, a more robust local bicycle and pedestrian count program has been developed following methodologies from the National Bicycle and Pedestrian Documentation Project.

Level of Service

Level of service (LOS) is a measure describing conditions within a motor vehicle traffic stream, based on speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS is determined by calculating the Volume to Capacity ratio, where the traffic volume, observed or forecasted, is divided by the estimated capacity of the roadway. LOS A represents complete free flow of traffic, allowing traffic to maneuver unimpeded. LOS F represents a complete breakdown in traffic flow, resulting in stop and go travel. With LOS, Level “D” is acceptable traffic conditions. However, expectations in the Duluth-Superior Urban Area are generally higher. LOS is used to study and better understand congestion.

Street Network Congestion happens during the routine AM and PM weekday peak-time periods and at times during off-peak special events or recreational based trips during off-peak times.

- 23 (or more) hours of the day are largely congestion free.
- “15-minute” rush in AM and PM work-related.
- Around schools as parents are increasingly driving their children to and from school, creating congestion immediately around school sites, particularly during the afternoon school dismissal times.
- Tourism/event/recreational congestion during major events in the Downtown waterfront area, Summer “beach” days along Lake Avenue through Downtown Duluth and Canal Park and along the North Shore Scenic Drive, particularly on the Sunday drive back to the Twin Cities.

Eliminating congestion on all roads is not necessarily a desired goal in the big picture. For example, in high-performing economic districts congestion is a by-product of a strong business district and a place where people want to spend time. Having a better understanding what type of congestion exists is critical to planning congestion reduction strategies on specific road corridors. Strategies to reduce predictable congestion taking place that is impacting a small part of the network during a limited period of time, due to regular special events, schools, sports, recreation activities, etc. should take into account ways to improve operations, through traffic signal timing, parking and other non-roadway expansion solutions, including shifting trips to non-peak times.

Maps 5.3 and 4.1 demonstrate there are very few LOS and congestion problems projected in the MIC area in 2045. That said, the model that projects the LOS does not necessarily capture congestion at intersections. There are intersections in the MIC area that do have congestion problems during peak hours or during significant events. With limited congestion in the Twin Ports, and the vast majority of regular roadway congestion taking place over small time periods (approximately 15 minutes or less) or happening due to isolated or infrequent events or activities, focus should be placed on design and operation improvements and inducing the type and location of the appropriate multimodal demand where the system capacity exists and efficiency can be maximized.

It is important to recognize that LOS is an important factor but has limitations as well. In the MIC area, LOS does not consider those traveling the system via other modes, quality of life factors, or the revenue generated for roadway jurisdictions to cover long-term costs of infrastructure investments. It is generally not cost-effective to expand capacity for short-term peak conditions, given that the resulting capacity is unused for a majority of the time.

Other measures are being developed to determine LOS for other modes to more fully incorporate the varying differences between the modes and other important factors when making transportation decisions. For example, Level of Traffic Stress for bicyclists has been developed as a more appropriate alternative measure to LOS.

Non-Capacity Expansion

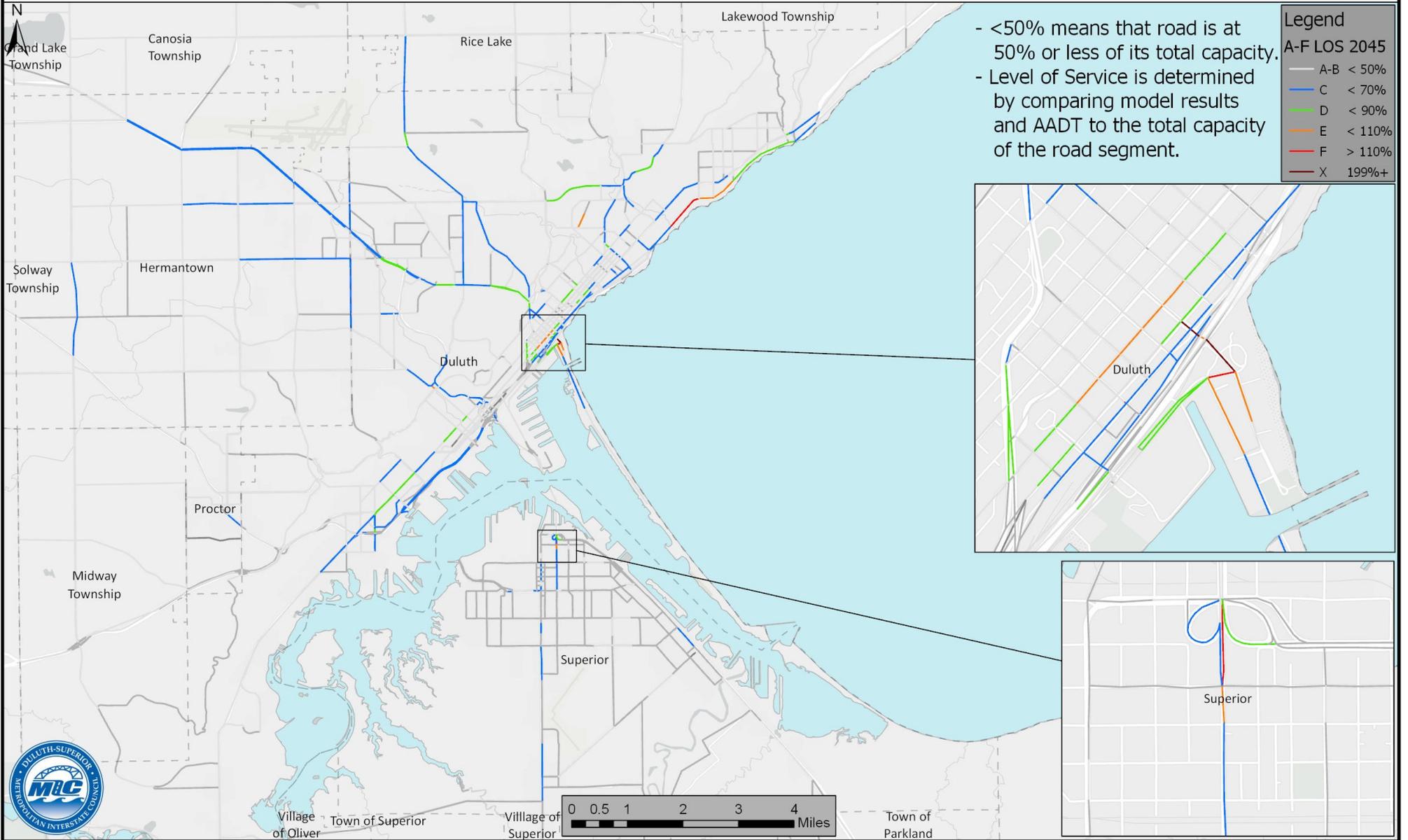
Operational Improvements

- Dynamic signal timing
- Enhanced pedestrian crossings, including dynamic pedestrian crossing warning signage, curb extensions to reduce crossing distances, which reduces both motor vehicle delay.
- Placing major motor vehicle parking facilities directly adjacent to car thoroughfares.
- Re-striping /configuring existing roadways.

Twin Ports Congestion Spots

- Lake Ave—Downtown Duluth/ Canal Park
- London Rd—26th Ave E to 40th Ave E
- 1st Street—Downtown Duluth
- Hammond Ave—near Blatnik Bridge
- Kirby Dr on UMD campus
- 24th Ave W—at Piedmont Ave

Map 5.3. 2045 Level of Service — Duluth-Superior MPO



Performance Measures

Duluth-Superior Metropolitan Interstate Council (MIC) serves as the federally designated Metropolitan Planning Organization (MPO), must establish and use a performance-based approach to transportation decision-making to support national goals. MPOs are to integrate the goals, objectives, performance measures and targets from other performance-based plans and programs into their transportation planning processes.

The two most recent federal transportation acts (MAP-21 and the current FAST Act) incorporated Performance-Based Planning and Programming (PBPP) requirements in the development of this Long Range Transportation Plan (LRTP—Sustainable Choices 2045) and Transportation Improvement Program (TIP).

MIC Area Performance Measures

The MIC's planning and programming contribute to the State of Minnesota's and the State of Wisconsin's performance targets and the DTA's transit targets. As part of implementation of this Plan, the MIC will be fully integrating performance measures into plans, studies and processes and linking investments to targets. To the extent practicable, a description of the anticipated effect of the TIP projects toward achieving targets will be provided. Revising the TIP project selection process and project status reports will be a key component to achieving this.

The MIC's approach at this time, to adopt and contribute toward the statewide targets for safety, pavement, bridge, reliability, and freight was deemed appropriate based on the limited MIC staff resources to develop, maintain and refine performance measures and targets for the MIC area.

At this time, the MIC has decided to adopt the states' (Minnesota & Wisconsin) performance targets instead of developing MPO based measures. The MIC's performance measures and related planning information can be found at:

dsmic.org/study/performance-measures/

Performance Measures

FAST Act—legislation regarding Metropolitan (Long Range) Transportation Plans

23 CFR 450.324(f)(3) and (4)

(3) A description of the performance measures and performance targets used in assessing the performance of the transportation system in accordance with § 450.306(d).

(4) A system performance report and subsequent updates evaluating the condition and performance of the transportation system with respect to the performance targets described in § 450.306(d), including -

(i) Progress achieved by the metropolitan planning organization in meeting the performance targets in comparison with system performance recorded in previous reports, including baseline data; and

(ii) For metropolitan planning organizations that voluntarily elect to develop multiple scenarios, an analysis of how the preferred scenario has improved the conditions and performance of the transportation system and how changes in local policies and investments have impacted the costs necessary to achieve the identified performance targets.

National Performances Measures Goals:

Safety—to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

Infrastructure Condition—to maintain the highway infrastructure asset system in a state of good repair.

Congestion Reduction—to achieve a significant reduction in congestion on the National Highway System.

System Reliability—to improve the efficiency of the surface transportation system.

Freight Movement and Economic Vitality—to improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

Environmental Sustainability—to enhance the performance of the transportation system while protecting and enhancing the natural environment.

Reduced Project Delivery Delays—to reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Fixing America's Surface Transportation (FAST) Act—Federal Transportation Legislation Performance Measures

Performance Measures as established by the FAST Act are:

PM 1—Safety

- Number of fatalities
- Fatalities per 100 million vehicle miles traveled
- Number of serious injuries
- Serious injuries per 100 million vehicle miles traveled
- Number of non-motorized fatalities and non-motorized serious injuries.

PM 2—Infrastructure (National Highway System—NHS Pavement and Bridge Condition)

- Percentage of pavements of the Interstate System in good condition.
- Percentage of pavements of the Interstate System in poor condition.
- Percentage of pavements of the non-Interstate NHS in good condition.
- Percentage of pavements of the non-interstate NHS in poor condition.
- Percentage of NHS bridges classified in good condition.
- Percentage of NHS bridges classified in poor condition.

PM 3—System Performance on NHS (NHS Performance and Freight Movement on the Interstate System)

- Interstate travel time reliability measure: percent of person-miles traveled on the Interstate that are reliable.
- Non-interstate travel time reliability measure: percent of person-miles traveled on the non-Interstate NHS that are reliable.
- Freight reliability measure: truck travel time reliability (TTTR) index.

Transit (Asset Management)

- The Duluth– Superior Metropolitan Area was also required to establish performance targets, and has done so by adopting the federal targets established by each state and agreeing to plan and program projects so that they contribute to the accomplishment of the targets
- Rolling Stock: the percentage of revenue vehicle (by type) for that exceed the useful life benchmark (ULB).
- Equipment: the percentage of non-revenue service vehicles (by type) that exceed the ULB.
- Facilities: the percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale.
- Infrastructure: the percentage of track segments (by mode) that have performance restrictions (speed and/or weight). Track segments are measured to the nearest 0.01 of a mile.

MIC-Adopted State Performance Measure Targets

Each state was to establish performance targets for each of the above federal performance measures. The MIC, as the MPO for the Duluth-Superior metropolitan area, was also required to establish performance targets, and has done so by adopting the federal targets established by each state and agreeing to plan and program projects so that they contribute to the accomplishment of the targets.

The performance measure targets adopted by the MIC for each state are listed below. A brief description of how projects in the MIC area have contributed to accomplishing the performance measure targets is also provided.

PM 1: Safety—Minnesota Targets

Measure	Baseline *1	2019 Targets
Number of Traffic Fatalities	375	372.2
Rate of Traffic Fatalities	0.62 per 100 million VMT *2	0.622 per 100 million VMT *2
Number of Serious Injuries	1935	1711
Rate of Serious Injuries	3.19 per 100 million VMT *2	2.854 per 100 million VMT*2
Number of Non-Motorized Fatalities & Serious Injuries	348	267.5

*1 *Baseline = 2018 adopted targets*

*2 *VMT = Vehicle Miles Traveled*

Progress in Meeting PM 1/MN Performance Measures

The following projects in the Minnesota portion of the MIC area have contributed to accomplishing the performance measure targets above:

- Installation of roundabout at Midway Road and Maple Grove Road.
- Various St. Louis County highway safety measures including rumble strips.
- Removal of unwarranted traffic signals in Downtown Duluth.

PM 1: Safety—Wisconsin Targets

Measure	Baseline *1	2019 Targets
Number of Traffic Fatalities	556.1	555.7
Rate of Traffic Fatalities	0.914 per 100 million VMT *2	0.915 per 100 million VMT *2
Number of Serious Injuries	3023.9	2967.6
Rate of Serious Injuries	4.997 per 100 million VMT *2	4.785 per 100 million VMT*2
Number of Non-Motorized Fatalities & Serious Injuries	343.3	342.0

*1 Baseline = 2018 adopted targets

*2 VMT = Vehicle Miles Traveled

Progress in Meeting PM1/WI Performance Measures

The following projects in the Wisconsin portion of the MIC area have contributed to accomplishing the performance measure targets above:

- Installation of roundabout at Belknap Street and US Hwy 2.
- Belknap Street full reconstruction with dedicated left turn lanes.

PM 2—Infrastructure (NHS Pavement and Bridge Condition) Minnesota Targets

Measure	Baseline *1	2-Year Target	4-Year Target
% of NHS * Bridges in Good Condition	42	50	50
% of NHS * Bridges in Poor Condition	2	4	4
% of Interstate Pavement in Good Condition	36.8	N/A	55
% of Interstate Pavement in Poor Condition	1.56	N/A	2
% of Non-Interstate NHS *2 Pavement in Good Condition	35.62	50	50
% of Non-Interstate NHS *2 Pavement in Poor Condition	1.33	4	4

*1 Baseline = 2018 data

*2 NHS = National Highway System

Progress in Meeting PM2/MN Performance Measures

In 2018, on the NHS the MIC area had 2 of 94 (2%) bridges rated in poor condition, 50 of 94 (53%) bridges rated in fair condition, and 42 of 94 (45%) bridges rated in good condition. Thus the bridge targets were met.

In 2018, 36.80% of MIC-area interstate was in good condition and 1.56% was in poor condition. Without improvement, the “Good” condition 4-year target will not be met.

In 2018, 35.62% of MIC-area non-interstate was in good condition and 1.33% was in poor condition. While improvement was observed from 2017 (only 25.06% was in good condition), additional improvement will need to be made to meet the “Good” condition 2-year and 4-year targets.

The following projects in the Minnesota portion of the MIC area have contributed to accomplishing the performance measure targets above:

- Blatnik Bridge preservation.
- Bong Bridge redecking and preservation.

PM 2—Infrastructure (NHS Pavement and Bridge Condition) Wisconsin Targets

Measure	Baseline *1	2-Year Target	4-Year Target
% of NHS *2 Bridges in Good Condition	44	≥ 50	≥ 50
% of NHS *2 Bridges in Poor Condition	0	≤ 3	≤ 3
% of Interstate Pavement in Good Condition		N/A	≥ 45
% of Interstate Pavement in Poor Condition		N/A	≤ 5
% of Non-Interstate NHS * Pavement in Good Condition		≥ 20	≥ 20
% of Non-Interstate NHS * Pavement in Poor Condition		≤ 12	≤ 12

*1 Baseline = 2018 data

*2 NHS = National Highway System

Progress in Meeting PM2/WI Performance Measures

The following projects in the Wisconsin portion of the MIC area have contributed towards eventually fully meeting the performance measure targets above:

- Blatnik Bridge preservation.
- Bong Bridge redecking and preservation.

Pavement condition data was not provided so a baseline was unable to be identified at this time.

In 2018, 44% of MIC-area NHS bridges were in good condition and 0% were in poor condition. Additional improvement will need to be made to meet the “Good” condition 2-year and 4-year targets, while continuing to meet the “Poor” condition targets.

PM 3—System Performance on NHS (NHS Performance and Freight Movement on the Interstate System)
Minnesota Targets

Measure	Baseline *1	2-Year Target	4-Year Target
% of Reliable Person Miles on the Interstate	99.8	80	80
% of Reliable Person Miles on the Non-Interstate NHS *2	97.3	N/A	75
Truck Travel Time Reliability (TTTR) Index	1.36	1.5	1.5

*1 Baseline = 2018 data

*2 NHS = National Highway System

Progress in Meeting PM3/MN Performance Measures

The following projects in the Minnesota portion of the MIC area have contributed to accomplishing the performance measure targets above:

- Repaving of I-35 from tunnels to 26th Ave East
- Miller Trunk Highway Traffic signal coordination.
- ITS signage usage.

PM 3—System Performance on NHS (NHS Performance and Freight Movement on the Interstate System)
Wisconsin Targets

Measure	Baseline *1	2-Year Target	4-Year Target
% of Reliable Person Miles on the Interstate	97.9	94	90
% of Reliable Person Miles on the Non-Interstate NHS *2	93.9	N/A	86
Truck Travel Time Reliability (TTTR) Index	1.16	1.4	1.6

*1 Baseline = 2018 data

*2 NHS = National Highway System

Progress in Meeting PM3/WI Performance Measures

The following projects in the Wisconsin portion of the MIC area have contributed to accomplishing the performance measure targets above:

- ITS signage usage.
- Installation of roundabout at Belknap Street and US Hwy 2.

**Transit Asset Management (TAM) Plan Targets
Duluth Transit Authority (DTA) Targets**



Asset	4-Year Target
Rolling Stock	<10% of active Fixed Route vehicles and <20% of Paratransit vehicles have reached their useful life.
Equipment	<35% of equipment (i.e. service vehicles) have reached their useful life.
Parking/Pedestrian Facility	<10% of parking/pedestrian facilities have a condition rating below 3 based on FTA's TERM scale.*
Administrative/Maintenance Facility	<20% of facility elements within the Administrative & Maintenance Facility have a condition rating below 3.

* FTA = Federal Transit Administration



Asset	Baseline (2019 Data)
Rolling Stock	19.5% of active Fixed Route vehicles have met or exceeded useful life 20% of Paratransit vehicles have met or exceeded useful life.
Equipment	42% of equipment (i.e. service vehicles) have reached their useful life.
Parking/Pedestrian Facility	50% of parking/pedestrian facilities have a condition rating below 3 based on FTA's TERM scale.*
Administrative/Maintenance Facility	0% of facility elements within the Administrative & Maintenance Facility have a condition rating below 3.

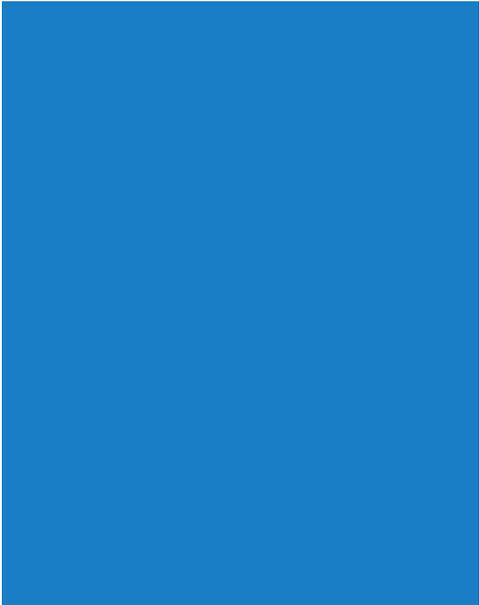
* FTA = Federal Transit Administration

Progress in Meeting TAM Performance Measures

The following projects in the MIC area have contributed to accomplishing the performance measure targets above:

- Buses are replaced on regularly set schedule.
- Transit facilities and equipment are regularly maintained.

While DTA is clearly meeting its “Administrative/Maintenance Facility” target, additional improvements will need to be made to meet the “Rolling Stock”, “Equipment”, and “Parking/Pedestrian Facility” targets.



System Performance Report Summary

Since the approval of the last LRTP five years ago, resources have been focused on maintaining and improving the operation of the transportation system with a focus on improving the safety and pavement conditions on arterial roadways, improving transit operations and passenger amenities, improving pedestrian infrastructure and improving the under-developed bikeway network.

Maintaining and improving the MIC area arterial roadways has been a major focus, including the NHS non-NHS arterial system, to ensure these roadways and bridges remain in good condition. More regular re-surfacing and more extensive reconstruction work on I-35, Blatnik Bridge, Bong Bridge, Hwy 53 (Minnesota side), Minnesota Hwy 23 has taken place over the past 5 years.

In addition, intersections are now all reviewed through an Intersection Control Evaluation (ICE) study for roundabout potential and other potential safety and operations improvements. This has directly lead to the first two roundabouts installed in the MIC area, one in Minnesota and one in Wisconsin. The Minnesota roundabout located at Midway Road and Maple Grove Road provides both safety and reliability (non-NHS system) improvements.

Transit has several new low emission electric buses, conducts regular maintenance of transit facilities and equipment, has a successful loop serving UMD, has incorporated new technology tools to improve service, and is planning a bus rapid transit (BRT) study. There are a number of transit service options within the Duluth-Superior area in addition to DTA, including Arrowhead Transit and other local bus service, Jefferson Lines and other inter-city buses and shuttles to and from the Minneapolis-St. Paul International Airport. Effort is being made to maintain and improve good connections between neighboring services.

Pedestrian improvements have taken place in a variety of ways, including updates to the pedestrian infrastructure condition inventory, creation/updates to the jurisdiction's ADA transition plans and the upgrade of pedestrian infrastructure. Specifically, improvements to pedestrian crosswalks, including utilizing pavement markings more visible to motorists and longer-lasting crosswalk markings, the high-visibility ladder instead of the standard parallel pavement markings, installing Rectangular Rapid

Focus Areas

Arterial Roadways— pavement conditions and installing safety devices.

Transit—bus operations and passenger amenities and testing new routes.

Pedestrian—facility design and user friendly devices.

Bicycle— interconnected network of on-street bikeways for people of all ages, abilities and incomes.

Highways & Bridges—major infrastructure upgrades needed in the near future.

Flash Beacons (RRFBs) at intersections and locations that are difficult and/or uncomfortable for pedestrians to cross, installing countdown timers and I pro-actively improving curb ramps that line up with direction that pedestrians are to walk or roll.

In addition, separated multiple use paths have been installed to provide a safer environment for cyclists and pedestrians, including multi-use paths along West Superior Street, College Street and Rice Lake Road in Duluth and paved shoulders on Martin Road and Arlington Avenue.

The bicycle mode of transportation continues to be under-developed as there is not a fully viable interconnected bikeway system currently in place. With that said, significant improvements to the bikeways network have begun. Prior LRTP's discussed the implementation of bike route wayfinding signage and guide maps. More recently both on-street bike lanes and off-street multi-use paths have seen increased use, improving the conditions for bicycling and integrating bicycling into the transportation system. For example, bike lanes have been added on Belknap Street (US Hwy 2), Grand Ave (MN Hwy 23) as well as major non-NHS routes including the installation of bike lanes on East 4th Street in Duluth and Hammond Avenue in Superior.

Furthermore, a protected bikeway demonstration project took place to introduce the community to a high-quality on-street bikeway facility design, as well as test out a bikeway connection from a primary trunk-line east-west multi-use trail to the new multimodal transportation facility in Downtown Duluth.

In addition, continued community-wide and school-focused educational, encouragement and evaluation activities, including pedestrian crossing safety and motorist awareness campaigns as well as safe cycling, helmet give-away programs and walk and bike to school days are taking place to encourage walking and bicycling and increase safety.

Due to additional required focus on NHS routes there has been less focus on the non-NHS system, particularly the collectors and local streets. While these roadways carry less traffic, they include the largest number of miles and receive the least resurfacing and reconstruction dollars.

Furthermore, the NHS system in the Duluth-Superior area has many massive highway and bridge structures that present long-

term maintenance and eventual reconstruction liabilities, particularly for the population and size of the Twin Ports.

The Blatnik Bridge and Bong Bridge are two of the three largest bridges in Minnesota, and I-35 within the City of Duluth has a series of bridge and tunnel structures that will all consume large funding amounts for maintenance and eventual reconstruction. While the timeframe for reconstructing the Bong Bridge and the I-35 tunnels is undetermined at this time, the Blatnik Bridge is due for significant work (perhaps reconstruction) in the mid-term of this LRTP 2045.

Much progress has been made to meet the general goal of a local and regional multimodal transportation system, and much work remains. Remaining work includes the need to improve the pavement conditions of the roadway system, especially with the local and collector streets; the need to fully integrate an interconnected multimodal system, including building out the under-developed bikeway system; the need to improve transit service, including STRIDE; and the need to maintain and improve infrastructure in the harbor, such as dock walls and shipping channels. During the update to this plan many constructive comments were received with ideas to improve the transportation system. Many of these comments have already been shared with the appropriate agencies, advisory committees, and board, and will be regularly used as appropriate in the implementation of the plan.