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

Transportation System

Over the next 25 years, the challenges borne by urban areas and the burdens placed upon the urban transportation system will multiply in quantity and complexity.

The transportation system is the foundation of the urban economy. In the urban context, the transportation network must meet the multimodal needs of people walking, driving, ride sharing, cycling, and taking transit in addition to all the new micro -mobility modes appearing while still all occupying the same constrained space. The best street design also adds to the value of businesses, offices, and schools located along the roadway.

The Duluth-Superior region's existing transportation system includes highways, bridges, streets, transit lines, sidewalks and a developing bikeway and trail network running through out the area. Furthermore, over the past 20 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. The general thought has changed from building wider roads to accommodate possible (whether forecasted or not) future traffic growth and more so on meeting the needs of today.

As traffic patterns have changed due to changes in infrastructure, technology, and land use patterns, the configuration of the system is changing 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-ways, 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 round-a-bouts (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

What worked in cities (urban areas) for 1,000s of years before the advent of the car? What did not, particularly the last 100 years since cars became the primary mode of transportation? What has worked with the post-war auto-centric transportation system within the urban area? What has not? Cities all over the country are trying to understand this and re-creating a

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", but 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, medical, and jobs.
- More economic returns on infrastructure investment for jurisdictions and for citizens to be able to build wealth.
- More environmental benefits, reducing costly mitigation of impacts later.
- More human health and social connections creating stronger communities in the long run.

transportation system that works best for mobility as well as livability. In regards to mobility, figuring out how to balance the needs of the longer trips and the needs of the shorter distance trips with minimizing impacts to either is critical.

Longer distance trips

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. Providing mobility is key.

Due to distances, particularly those 3 miles and greater, the most viable and logical transportation mode currently available is the private motor vehicle. However, alternative options to driving are increasing their presence including inter -regional/state bus service, shuttles, flying as well as the planned rail passenger service have all expanded and/or are in the works.

Shorter distance trips

While many trips are taken into the urban area, the majority of all trips within urban areas are of shorter distances. These trips are typically less than 3 miles and are made frequently through out each day. Providing access is key. Mode choice and switching between modes is more reasonable. Driving, walking, cycling, ride-sharing and taking transit are all viable options available each day depending on the trip purpose and geographic location.

Today's multimodal system

As the highway system, particularly with the development of the interstate system in the Twin Ports, much planning has been on how to reconfigure the old highway corridors and the related roadway network as the major thoroughfares have shifted. Superior Street, Cody Street, Garfield Avenue, London Road, 6th Avenue East, 2nd and 3rd Streets were all major thoroughfares in the past but no longer play that role today.

While much has been changed and reconstructed over the years on these corridors, remnants from the old highway

Rethinking 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.

Reconfiguring Roadways

- 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.

Under Consideration

- London Rd—21st to 26AE
- 1st 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

corridors remain with opportunities for re-thinking. How can these streets and this transportation system be safer, better for moving people, more livable and environmentally friendly, better for human health and better for the local economy? Figuring out the answers to these questions is central to this LRTP.

Over the past 20 years, the Duluth-Superior area has made the following improvements to both the built environment as well as complimentary education and encouragement efforts. For example, 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.

Also implemented are new transit center facilities at UMD and Downtown Duluth that are examples of capital improvements. The inclusion of sidewalks on the urban sections of the St. Louis County roadway system and bicycle racks on DTA transit vehicles are in place. In addition, numerous programs, like the college student transit pass program and 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 works 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 areas for focus.

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 traffic demands on the system today. Trips up the North Shore create congestion through Duluth on the weekends. Events, usually when more than one is happening at the same time, within the urban area, particularly in the Waterfront District, create predictable backups even onto the major thoroughfare system. 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 which created an evacuation.

Multimodal System Profile

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

Therefore, the Duluth-Superior area has a major opportunity due to the nature of this urban area. Particularly, due to the fact that the major healthcare facilities, educational institutions, employment clusters, commercial hubs and tourism nodes are all within relatively close proximity (less than 3 miles).

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.

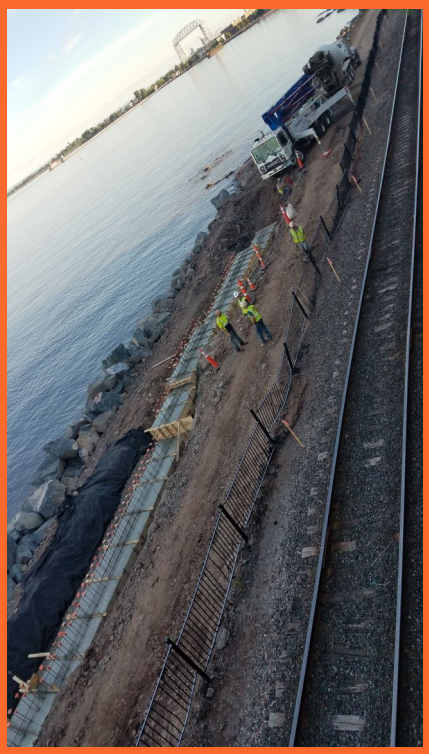
Conversion of the one-way local roadway system

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 small geographical 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-ways 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 and the traffic demand by motorists has greatly diminished in these areas.

- Population demographic challenges—more seniors, more students and more people in poverty particularly those with children.
- Public health issues with physical inactivity.
- Changing public attitudes/desire to driving, including teenagers delay in getting driver's licenses.
- Technological changes with how people interact with each other (less in person) and order transportation through apps on their phone
- Growing sharing economy—ride share, e-scooters, car share, etc.
- Auto-centric system that favors private motor vehicle use over all others.
- 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 is coming due—opportunity to re-think
- Public support for transportation
- Willingness to try new approaches
- Technological changes—real-time data & messaging
- New micro mobility/light individual transport vehicles



New protective concrete barrier being installed to prevent future storms from damaging Lakewalk.

Active Transportation

Walking

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

The key infrastructure piece to the pedestrian network are sidewalks. Sidewalks provide necessary walking connections to homes, businesses, transit services, and other activities. The MIC region has a complex network of sidewalks already in place. Most streets in the region have sidewalks, but there are gaps in the sidewalk network.

Unlike trails or on-street bicycle routes, private property owners usually maintain sidewalks. This can create challenges, as property owners can vary greatly in their ability or desire to maintain sidewalks. Street designers can also use complete streets design elements to improve pedestrian safety. Design elements include curb extensions, enhanced street crossing, and reduced vehicle lane width.

Bicycling

Bicycling is an under-developed mode of transportation in the Twin Ports. Much planning over the past 20 years has taken place to address this issue. Major off-street multi-use paths have been constructed and more recently on-street infrastructure has begun to be developed, including bike lanes and parking facilities. In addition, educational and encouragement programs that increase the number of trips made via bicycle in the urban area are taking place.

Challenges & Opportunities

- Sidewalk condition (lack of snow clearing, repair, brush removal/clearance).
- Bikeway maintenance (sweeping) and iterative improvements.
- Vulnerable users—reducing exposure rates to risks.
- Sidewalk network continuity (gaps).
- Shorter distances between places and destinations.
- Traffic signals that do not recognize bicyclists.
- Wayfinding signage.

Active Transportation

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

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

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
- 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 as well as freight. 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 airport also places a variety of restrictions through land use safety zones. This creates challenges for communities, as the regional benefit of the airport and the local community need for tax revenue to cover services can at times conflict.

Air based transportation is undergoing challenges as well. The airport worked to meet post 9-11 security requirements by building a new terminal, replacement of runways, and realignment of runways to avoid major impacts to prominent natural resources, old growth and forest.

Challenges & Opportunities

- Access to national and international destinations particularly with direct service to MSP and to Chicago O'Hare Airports.
- Reducing "leakage"—passengers utilizing MSP instead of DLH
- Extending cross-runway at DLH
- Building complimentary services around the airport grounds, including lodging, restaurants, day-care, automobile services, etc).
- Growing market to develop in and around the airport safety zones in both Hermantown and Rice Lake.

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 based surface transportation is facing growing challenges on a variety of fronts. Rail lines have seen an increase in freight, as well as efforts to create high(er)-speed passenger rail systems, create safer and quieter crossings in urban areas, improving reliability, upgrading widespread aging infrastructure as well as a continual push to re-use under-utilized or abandoned rail corridors.

The Duluth-Superior rail systems major connections to the national rail system are by BNSF lines from the Twin Cities and western Minnesota and also by a north/south rail line owned by CN. This rail line passes through Duluth-Superior area from Canada to Wisconsin connecting to Chicago.

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 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. This system would share use of existing freight rail lines.

Challenges & Opportunities

- Rail line crossing safety restrictions.
- Increasing level of use—including with re-introducing passenger service.
- Preserving and/or re-use of under-used and/or abandoned rail corridors
- In Superior, WI—numerous rail lines create challenges for crossings.
- Reliability challenges with passenger trains sharing tracks with freight trains
- The passenger rail line would add system redundancy and increased safety factors particularly in this northern climate where long and frequent periods of poor weather take place including snowy and icy pavement conditions, fog and storms.

Photo caption

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.
- Planning for NLX has concluded
- Pursuing funding to upgrade tracks, build/update stations and purchase train cars.

Surface Transportation

The predominant transportation system in the MIC area, as in the rest of the United States, is a network of streets, roadways and highways that 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 from outside the area 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.

Regarding surface transportation, the general public is asking that their streets serve not only as corridors for the conveyance of people, goods, and services, but also as public gathering spaces. Streets must accommodate an ever-expanding set of needs. They must be safe, sustainable, resilient, multi-modal, and economically beneficial, all while accommodating traffic.

Challenges & Opportunities

- Network connectivity—issue of major throughways are disjointed
- Climate change impacts—largely bigger storm events, that will require bigger culverts and bridges.
- 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
- Facing significant infrastructure maintenance , repair, and reconstruction—Twin Ports Interchange, Blatnik Bridge, I-35 tunnels, Thompson Hill.

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

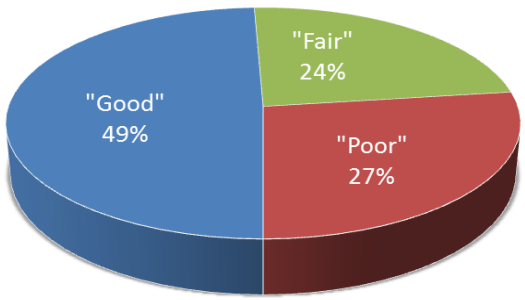
- Kenwood Ave to 6th Ave E
- Martin Rd to MN Hwy 61
- Joshua Ave to Arrowhead/Rice

Pavement Condition

Figures 5.1-5.4 display aspects of local pavement and bridge condition from the MIC's 2040 LRTP. In the last 10 years pavement conditions on the collector and arterial system have improved. Federal transportation legislation has placed emphasis on maintaining the National Highway System (NHS) in good condition, and has provided less funding for local and regional non-NHS roadways. While the largest amount of traffic takes the NHS system, the vast majority of roadway mileage is the local system. The local system is seriously underfunded.

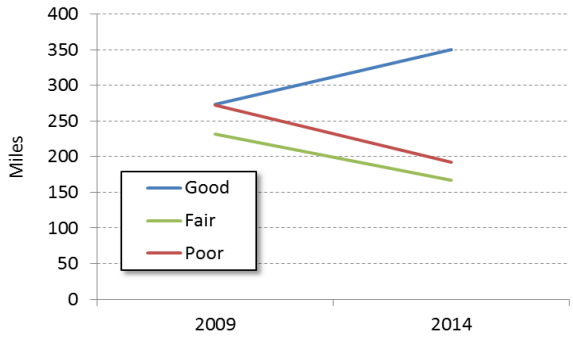
In addition to maintaining miles of roadways, the area' s jurisdictions maintain more than 300 bridges. Bridge structures are some of the most expensive infrastructure assets and while the majority of the bridges are less than 50 years old, as they age, more and more investment will be needed including at some point full replacement.

Figure 5.1. MIC area pavement quality (2014)



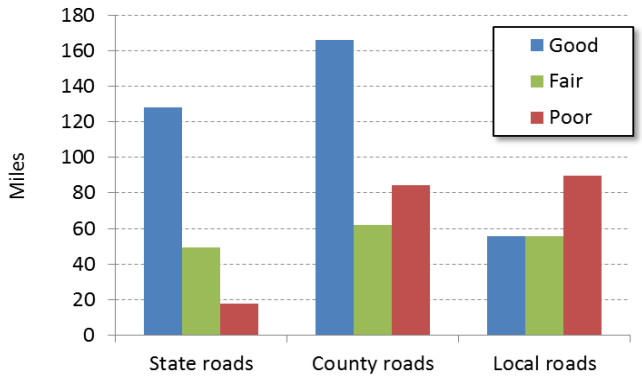
Source: Data provided by MIC area jurisdictions.

Figure 5.2. Trend in MIC area pavement conditions (2014 vs. 2009)



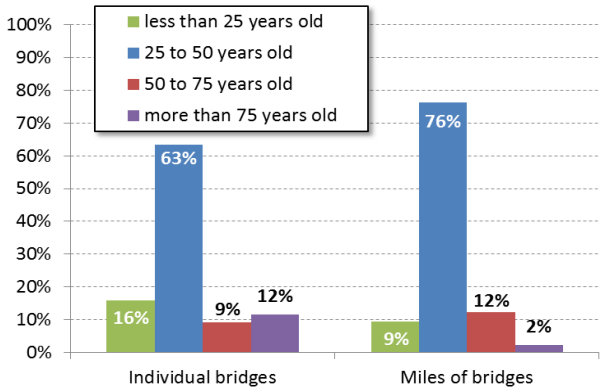
Source: Data provided by MIC area jurisdictions.

Figure 5.3. Pavement condition of MIC area roads according to jurisdiction type (2014)



Source: Data provided by MIC area jurisdictions.

Figure 5.4. Age profile of MIC area bridges (2012)



Source: National Bridge Inventory Database (2014)

Transit

Transit service connects many MIC area residents to work, school, and other important activities. Two main transit providers serve the MIC area by the providing rides to the general population. The region also has several smaller agencies that provide rides to specific groups such as the elderly or disabled.

The Duluth Transit Authority operates fixed routes and dial-a-ride services. Annual ridership is approximately 3 million per year. Service is largely organized around the transit hubs, primarily in Downtown Duluth, UMD Kirby Center and Miller Hill Mall.

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.
- ADA sidewalk improvements are happening.
- Technology—real time data
- Connected and Autonomous vehicle
- 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.
- Needs outside the urban core, suburban development patterns continue and make it difficult to serve via fixed transit route system.
- On-demand—growing expectation for trips
- Technology including the smart phone providing more real-time information

Transit Service in the Duluth -Superior Area

- **Duluth Transit Authority**
- **Arrowhead Transit**
- **Human Services shuttles/vans**

Inter-City Bus Service

- Jefferson Lines
- Indian Trails

Shuttles—Duluth to Twin Cities

- Groome Shuttle (formerly known as Skyline Shuttle)
- Land Line Shuttle from DLH to MSP

Waterways—Harbor/Port

The port serves as 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, Minn. and Superior, Wis., 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 heartland. 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 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 visit Duluth on a regular basis. All of these require transportation infrastructure, including dock walls, 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

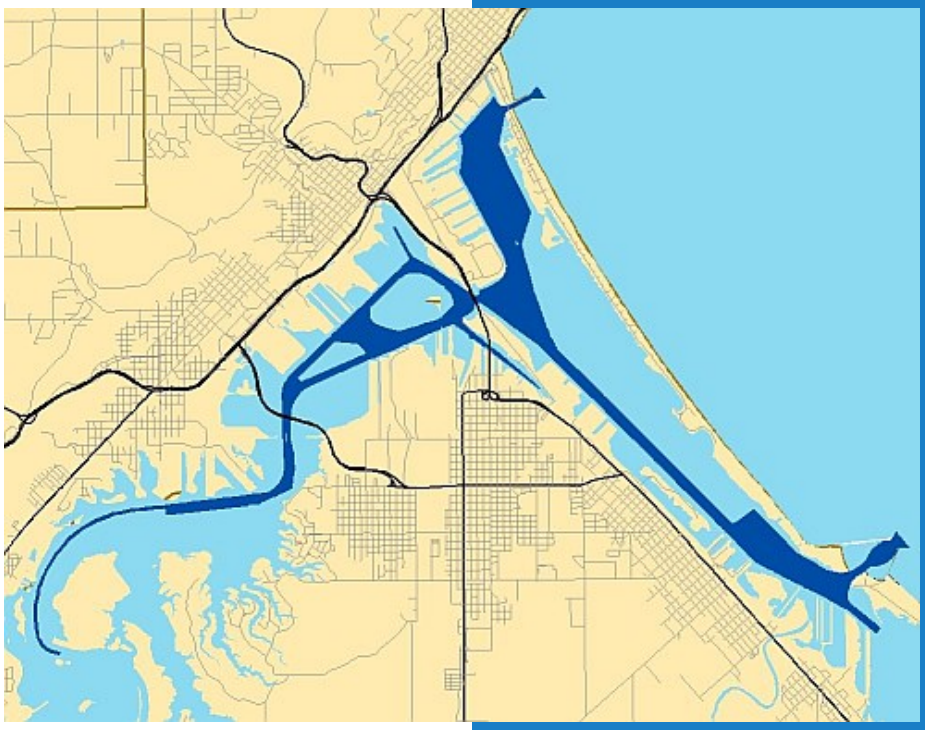
Past port-related transportation projects include the building of Helberg Drive to provide improved access, especially for over-sized loads out of the port and improve access to the state and U.S. highway system. Further improvements to the surrounding interstate (Twin Ports Interchange and Blatnik Bridge)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

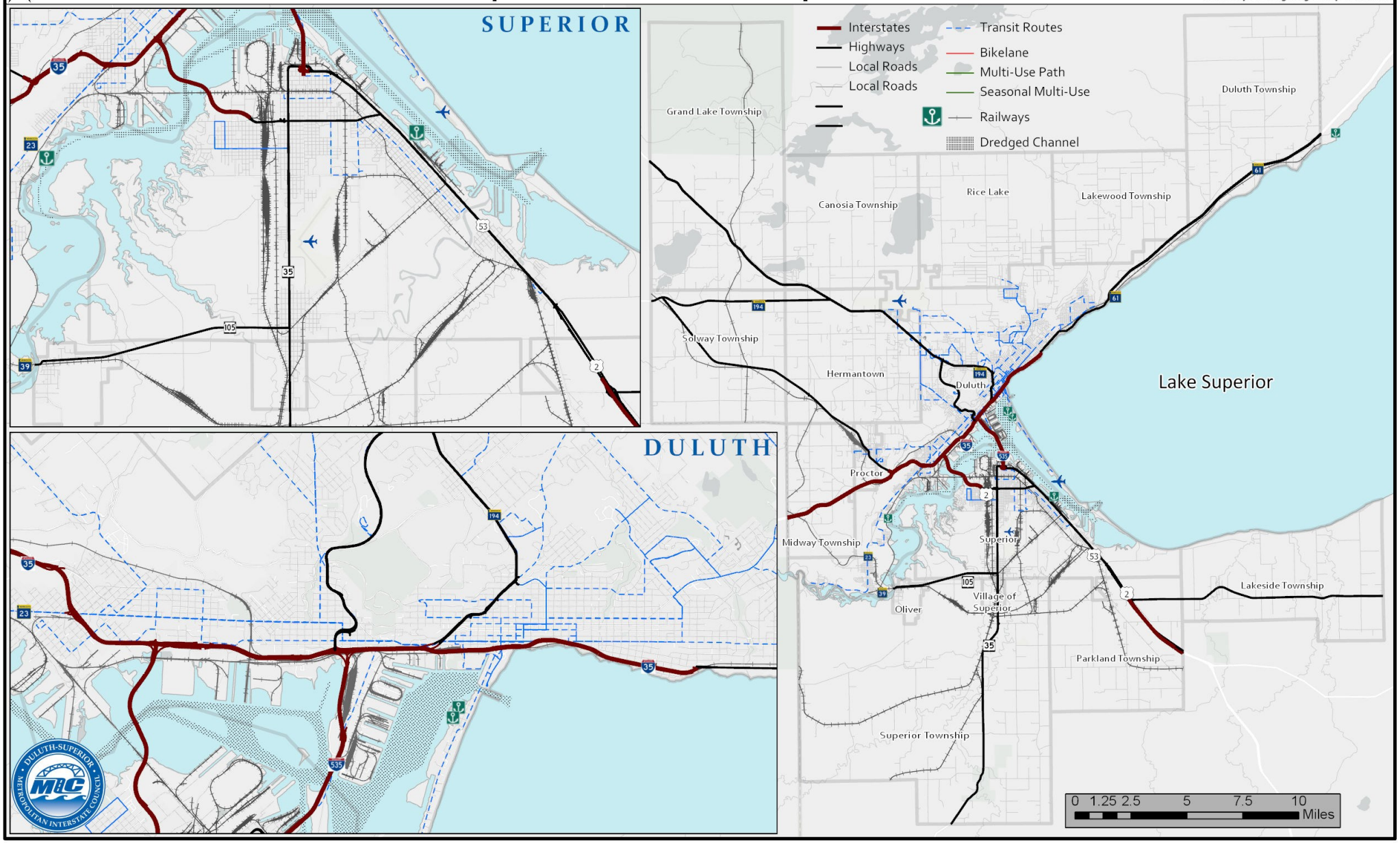
- Placement/beneficial re-use of dredged materials
- Water level fluctuation and long term sustainability
- Dock wall replacement
- Legacy pollution clean up
- Land use redevelopment pressure for non-maritime uses
- Major bridges (Blatnik, Bong, Oliver & rail bridge)
- Intermodal facility
- Tourism—cruise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

Figure 5.5.
Dredged Shipping Channels in Duluth-Superior Harbor



Map 5.1. Duluth-Superior Area Transportation Assets

Sustainable Choices 2045
Duluth-Superior Long-Range Transportation Plan



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

Minor Arterials interconnect with and augment principle 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.

Collector streets 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 Minor Collectors.

Local streets 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 funds. Federal-aid eligible routes include: Principal Arterials, Major Arterials, Minor Arterials, and Major Collectors. Local Streets are not Federal-aid eligible.

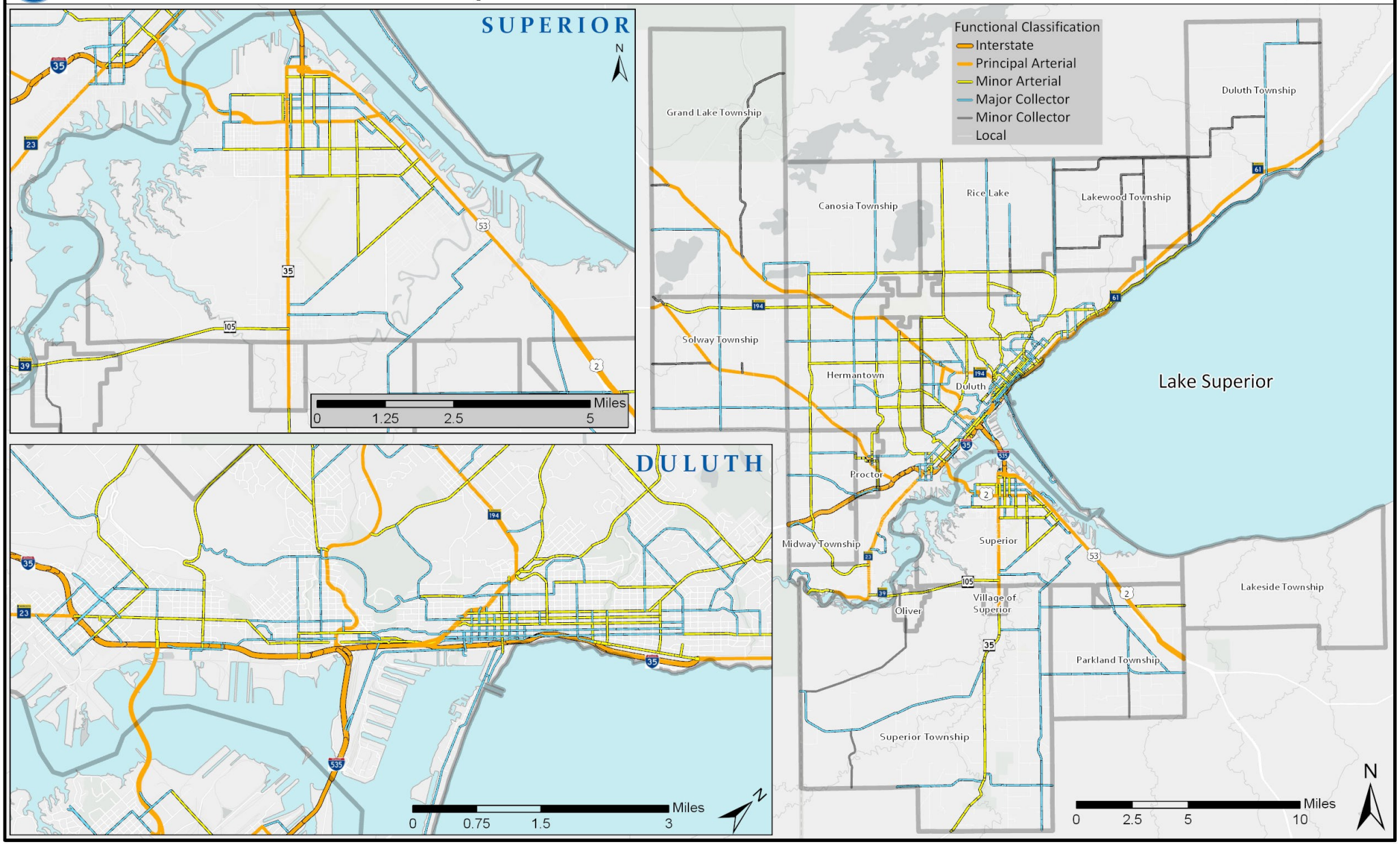
Functional Classification

- Local
- Collector
- Arterial

Streets designated a collector or an arterial are eligible for federal transportation funding.

Map 5.2. Duluth-Superior Area Functional Classification

Sustainable Choices 2045
Duluth-Superior Long-Range Transportation Plan



Network Performance

In order to improve the transportation system, better understand the return on investment/cost-benefits, and learn from past projects, what worked and what did not, the system is regularly monitored and studied. Key measures of transportation network performance are traffic volumes, level of service and performance measures.

Traffic Volume

Traffic volume counts for all modes are regularly collected. For motor vehicles, transportation planners use average annual daily traffic 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 "snapshots" views of traffic on area roads that traffic engineers then extrapolate into an annualized daily average using a mathematical process.

Traffic volumes for air, port, transit, cyclists and pedestrians are also being collected. For bicycle and pedestrian count data, a limited data was available, largely collected during specific projects. However, in the last 10 years, a more robust 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 be 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 reduce congestion, however, in high-performing economic districts, congestion is a by-product of a

Street Network Congestion happens during small time periods and during special events and recreational based trips during off-peak times.

- 23 (or more) hours of the day is 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 let out 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's drive back to the Twin Cities.

strong business district and a place where people want to spend time. Therefore, eliminating congestion on all roads is not necessarily a desired goal in the big picture. Focusing on which roads to reduce congestion is key, particularly on major thoroughfares, and better understanding what type of congestion existing is critical. 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, traffic signal timing, parking and other non-roadway expansion solutions.

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 Level of Service is an important factor but has a multitude of limitations as well. LOS does not consider those traveling the system via other modes, the quality of life factors, or the revenue generated for roadway jurisdictions to cover long-term costs of infrastructure investments.

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

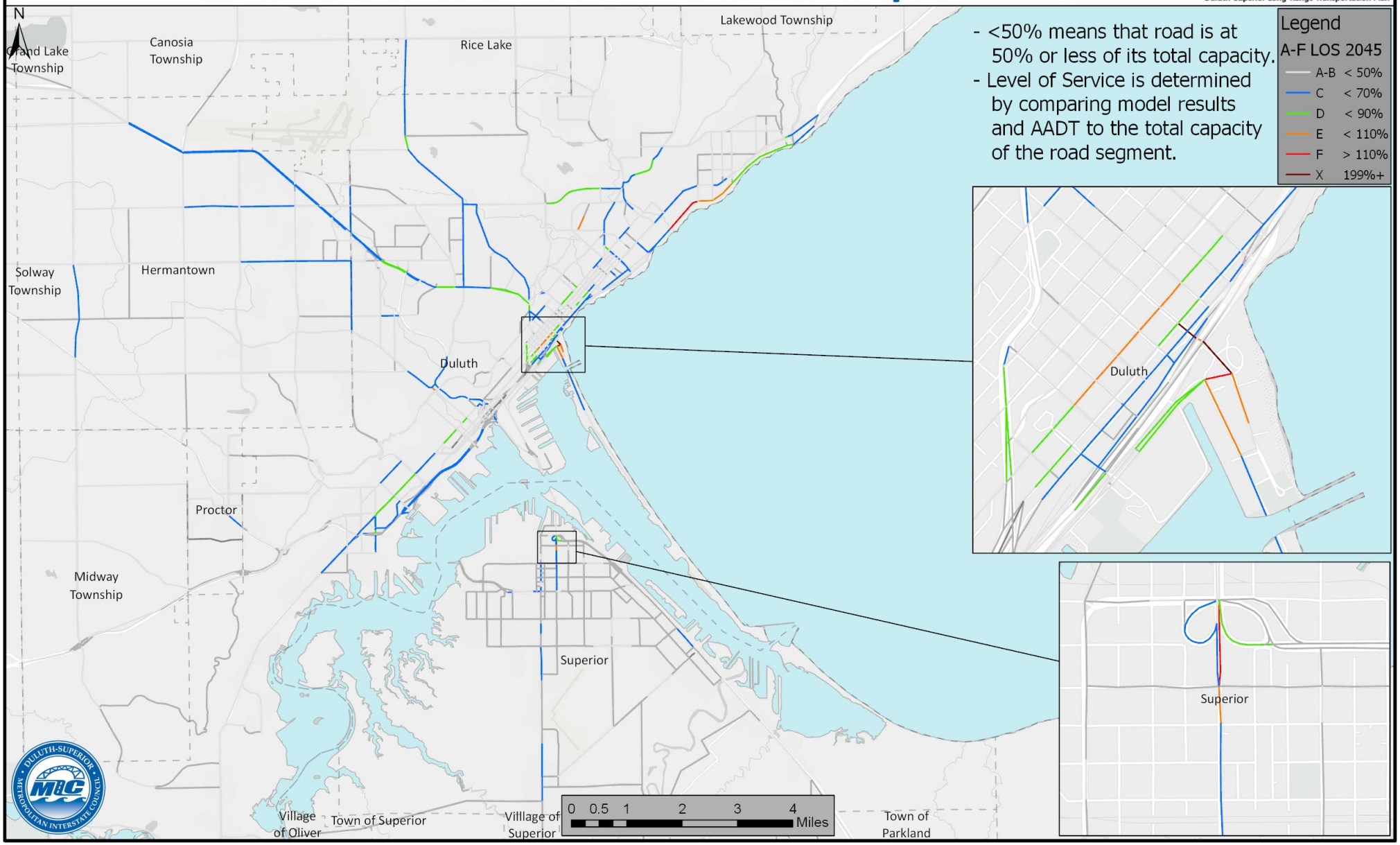
Non-Capacity Expansion

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.

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

Sustainable Choices 2045
Duluth-Superior Long-Range Transportation Plan



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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.

FAST Act 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 (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.

Performance Measures

States and Metropolitan Planning Organizations (MPOs), which the Duluth-Superior Metropolitan Interstate Council (MIC) serves as the federally designated 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 Wisconsins'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) Tranportation 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.

- 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)

- Rolling Stock: the percentage of revenue (by type) 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. 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	2019 Targets
Number of Traffic Fatalities	372.2
Rate of Traffic Fatalities	0.622 per 100 million VMT *
Number of Serious Injuries	1711
Rate of Serious Injuries	2.854 per 100 million VMT*
Number of Non-Motorized Fatalities & Serious Injuries	267.5

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

PM 1: Safety—Wisconsin Targets

Measure	2019 Targets
Number of Traffic Fatalities	555.7
Rate of Traffic Fatalities	0.915 per 100 million VMT *
Number of Serious Injuries	2967.6
Rate of Serious Injuries	4.785 per 100 million VMT*
Number of Non-Motorized Fatalities & Serious Injuries	342.0

** VMT = Vehicle Miles Traveled*

Progress in Meeting PM1/WIPerformance Measures

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

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

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

Measure	2-Year Target	4-Year Target
% of NHS * Bridges in Good Condition	50	50
% of NHS * Bridges in Poor Condition	4	4
% of Interstate Pavement in Good Condition	N/A	55
% of Interstate Pavement in Poor Condition	N/A	2
% of Non-Interstate NHS * Pavement in Good Condition	50	50
% of Non-Interstate NHS * Pavement in Poor Condition	4	4

** 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, thus meeting the interstate pavement targets. However, without improvement, the condition target will not be met at the four year mark.

In 2018, 35.62% of MIC-area non-interstate was in good condition and 1.33% was in poor condition, thus not meeting the non-interstate good condition pavement targets. While improvement was observed from 2017 (only 25.06% was in good condition), additional improvement will need to be made to meet the 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	2-Year Target	4-Year Target
% of NHS * Bridges in Good Condition	≥ 50	≥ 50
% of NHS * Bridges in Poor Condition	≤ 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

** NHS = National Highway System*

Progress in Meeting PM2/WI Performance Measures

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

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

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

Minnesota Targets

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

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

** 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 US 2 and Belknap Street roundabout.

Transit Asset Management (TAM) Plan Targets

Minnesota & Wisconsin 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*

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.

System Performance Report Summary

Since the approval of the LRTP 2040, resources have been focused on maintaining and improving the operation of the NHS system for reliability and safety. Major focus on maintaining and improving the MIC area arterial roadways has taken place, including and beyond the NHS system, to ensure these streets remain in good or fair 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.

Pedestrian safety has also been considered by improving pedestrian crossings, 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 Flash Beacons (RRFBs) at intersections and locations that are difficult and/or uncomfortable for pedestrians to cross, installing countdown timers and 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.

Designating specific space on the streets for bicyclists has also taken place to increase safety. Bicycle lanes on Belknap Street (US Hwy 2), Grand Ave (MN Hwy 23) as well as major non-NHS routes including East 4th Street in Duluth and Hammond Avenue in Superior have been installed.

A protected bikeway demonstration project took place as well to lead to the installation of this safer type of on-street bikeway facility. Continued community-wide and school-focused educational and encouragement events, including pedestrian

crossing safety and motorists awareness campaigns as well as safe cycling and helmet give-away programs have taken place to increase safety.

However, with all of this said, the additional required focus on NHS routes has lead to 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 eventually reconstruction liabilities, particularly for the population and size of the Twin Ports.

The Blatnik Bridge and Bong Bridge are two of the largest bridges in Minnesota, and I-35 within the City of Duluth has a series of 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 up for reconstruction in the mid-term of the this LRTP 2045.