

4. Performance

This section of CONNECTIONS 2040 summarizes each mode of transportation as in relation to the movement of people and freight. Where possible, information regarding operations, maintenance, safety, etc. is provided.

PAGE 4-2

SYSTEM PERFORMANCE

Transportation Asset Management Efforts at the MIC 4-3

PAGE 4-5

MOVEMENT OF PEOPLE

Air 4-6

Motor Vehicles 4-14

Non-motorized 4-31

Passenger Rail 4-41

Transit 4-44

Conclusion: Movement of People 4-52

PAGE 4-53

MOVEMENT OF FREIGHT

Air 4-53

Rail 4-56

Truck 4-60

Maritime 4-65

Pipeline 4-71

Northern Minnesota/Northwest Wisconsin Freight Plan 4-72

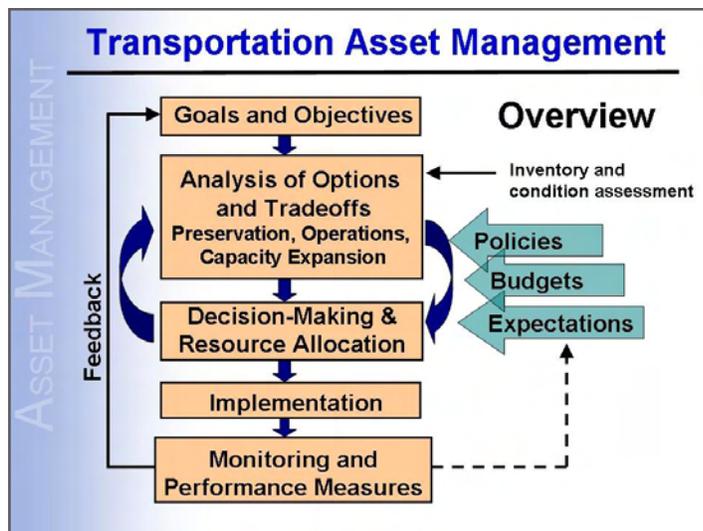
Conclusion: Movement of Freight 4-74

SYSTEM PERFORMANCE

Performance defined: The degree to which the area's transportation assets are providing for access, ensuring mobility, operating efficiently and safely, and being managed effectively and securely.

With increasing concerns among agencies and communities alike across the country about being able to fund their infrastructure and operations into the future in the face of rising construction costs, the concept of [Transportation Asset Management](#) is taking a more prominent role in transportation planning.

Figure 4.1: Transportation Asset Management (TAM) Process



Source: American Association of State Highway and Transportation Officials (AASHTO), 2009.

Transportation asset management (TAM) is the process of operating and maintaining a transportation system in a more strategically systematic way; aiming to optimize performance while minimizing costs and also satisfying user expectations. Ongoing monitoring and evaluation are required to accomplish these goals, and therefore a successful TAM program is one that uses various performance measures, and identifies targets within those measures to be maintained or aspired to.

Performance measurement involves the use of quantitative evidence to help track specific conditions and to establish specific objectives that can be measured. In transportation planning, such measures can address issues of operational safety and efficiency, and the physical condition of existing infrastructure. Table 4.1 on the following page provides examples of performance measures and performance targets.

Transportation Asset Management (TAM) defined:

The immediate importance of TAM is to best address mobility needs with the constraints of available transportation funding, but over the long term, TAM is an approach to transportation planning that aims to accomplish the following:

- Maximize the performance of the overall system
- Minimize the cost of its maintenance over the life of its various infrastructure
- Improve the satisfaction of its users.

Table 4.1: Example Performance Measures and Targets

Performance measure	Performance target
Frequency of crashes	< 1 crash per 1 million miles of vehicle travel
Traffic volume-to-road capacity	< 10% of roads have a volume/capacity ratio > 0.9
Transit riders per mile traveled	50,000 riders per 10,000 miles traveled
Pavement quality rating	< 30% of lane miles with "poor" PQI ratings

Asset Management Efforts at the MIC

There is presently no area-wide TAM program in place to address the various transportation assets within the Duluth-Superior metro (Map 4.1 on the following page), and there are no specific performance measures or targets that have been formally established regarding the area's various transportation assets. The Duluth-Superior Metropolitan Interstate Council (MIC), however, recognizes TAM as a concept that continues to gain a lot of traction both nationally and across disciplines, and one which will likely be given greater emphasis in future federal transportation legislation.

In preparation for future discussions about the role of TAM within the Duluth-Superior metropolitan planning area, and about performance-based planning in general, the MIC has used the update of its long-range transportation plan (LRTP) as an opportunity to begin to gather together available information regarding the following aspects of the planning area's various transportation assets:

- Accessibility & mobility
- Maintenance & operation
- Safety & security

In the pages that follow, the MIC has attempted to present various data (where possible and in the format available) in an attempt to describe how the Duluth-Superior transportation system is "performing" in terms of both the movement of people and the movement of freight. No performance targets have been associated with any of this information at this time, nor has any of this information been decided upon as appropriate measures that the MIC will continue to use moving forward. To identify such measures and targets will need to be part of upcoming discussions among the MIC's various jurisdictions and stakeholders, and will likely require further study, further guidance from the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Federal Rail Administration (FRA), Federal Aviation Administration (FAA), and U.S. Maritime Administration (MARAD). The MIC will work with these and other agencies, and its jurisdictions to consider the need for, scope, and development of a formal Transportation Asset Management (TAM) Plan for the Duluth-Superior area.

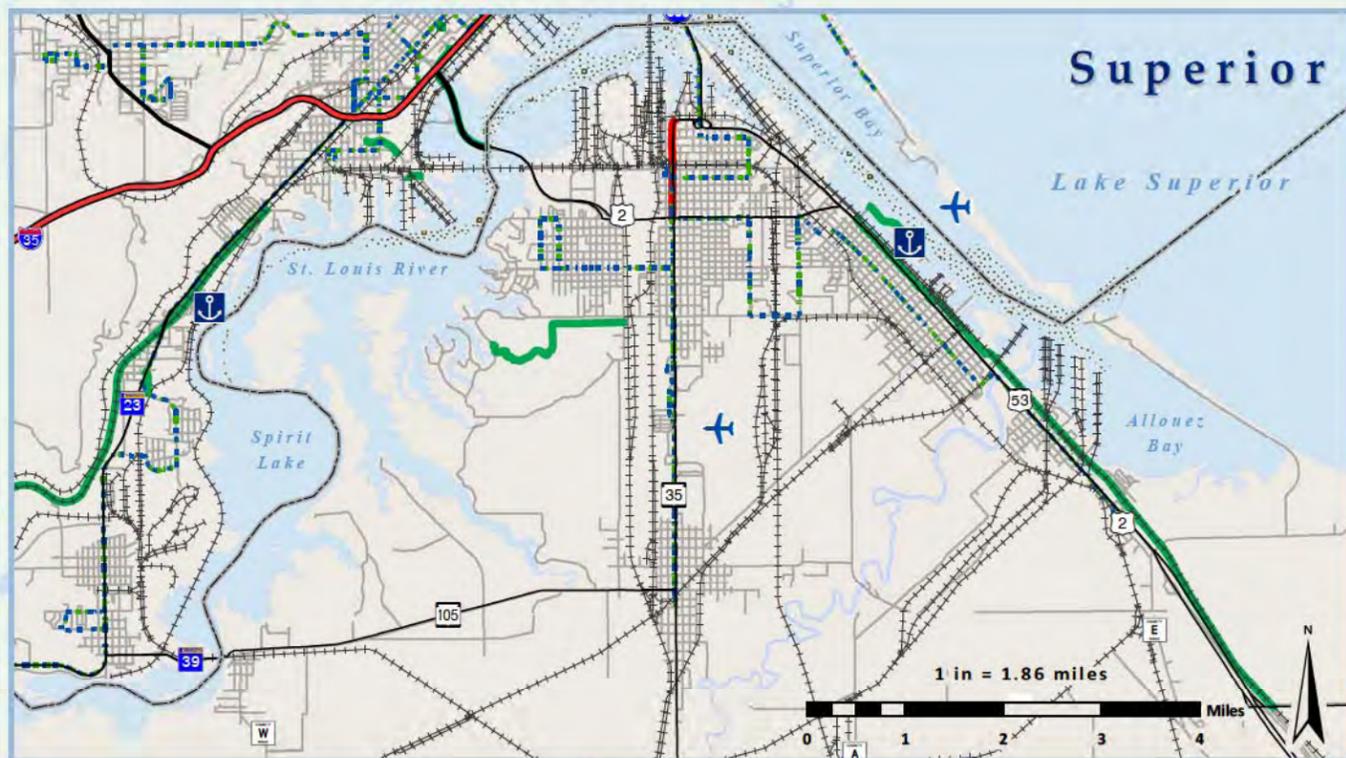
FHWA defines an MPO's role in asset management as follows:

"The MPO role in a successful TAM program includes defining performance measures for assets through public involvement, serving as a repository for asset data, and promoting standard data collection and technology applications. MPOs can also educate the public and decision makers and work cooperatively with stakeholders across transportation modes."

Source: Federal Highway Administration, 2014.
(<http://www.fhwa.dot.gov/infrastructure/asstmgmt/tpamb.cfm>)



Duluth - Superior Transportation Assets



Map 4.1

MOVEMENT OF PEOPLE

Duluth-Superior is the regional trade center (RTC) of the Northeast Minnesota-Northwest Wisconsin region. In addition to being the region’s largest concentration of people, it also represents the largest accumulation of opportunities in terms of employment, retail, trade, education, healthcare and entertainment. And as a result, it generates travel on the order of 2 million trips per day; and a significant number of which come from communities outside the area’s planning boundary.

The movement of people throughout the Duluth-Superior metro area involves several modes of transportation, both motorized and non-motorized. Automobiles, buses, trains, airplanes, boats, biking and walking are each important to a variety of users living and working within the Twin Ports. All of these modes require the planning, design, building, operation and maintenance of individual and/or shared facilities.

As the metropolitan planning organization (MPO) for Duluth-Superior, the Metropolitan Interstate Council (MIC) is charged with overseeing the planning of the area’s various transportation assets. It is federally required to coordinate efforts among the area’s various jurisdictions and stakeholder groups to plan for transportation improvements with a consideration of all modes. A big part of this responsibility is ensuring that all modes of transportation are addressed in the Duluth-Superior long-range transportation plan (LRTP).

In the pages that follow, the MIC identifies and addresses issues and opportunities related to the accessibility, mobility, operations, maintenance, safety and security of its various transportation assets related to each mode. Some general recommendations follow about how the quality of each mode can be improved or advanced as the Twin Ports communities move forward in the coming decades.



Moving people in Duluth-Superior:

The Duluth-Superior metropolitan area has a variety of transportation assets devoted to the movement of people. This section of *Connections 2040* addresses issues of accessibility & mobility, operations & maintenance, and safety & security related to the following modes of transportation:

- Air 4-6
- Motor Vehicles 4-14
- Non-motorized 4-31
- Passenger Rail 4-41
- Transit 4-44
- Conclusion: Movement of People .. 4-52

MOVEMENT OF PEOPLE: AIR

Airports play an important role in the development of a well-balanced transportation system by providing rapid long distance travel. Airports accommodate business and leisure travelers by providing the logistical support for both commercial airline service and general aviation. As such, they also function as economic development engines. In the case of Duluth-Superior, area airports host military operations, airplane manufactures, and air freight providers, and provide support to numerous other businesses.

The public has an interest in protecting the Duluth-Superior airports and supporting them in ways that allow them to function in an efficient, safe and secure manner. The economic repercussions of relocating an existing airport within an effective proximity to an urban area, make it extremely important to achieve long-term compatibility between the airport operations and nearby land uses.

The MIC is committed to working with area stakeholders and jurisdictions to ensure that land use decisions and related transportation projects occur in ways that compliment or enhance the operations and services of the area's airports.

Accessibility & Mobility

The Duluth-Superior area has three primary, publicly-owned airports that provide a wide range of services for both general aviation and commercial passenger flights (Figure 4.2).

Figure 4.2: Publicly-owned Airports in Duluth-Superior



Connections 2040

Duluth-Superior airports are well positioned in a competitive industry. MIC area communities will need to coordinate planning efforts to ensure future land use patterns that support the continued economic vitality, safety, and security of area airports.

Together, the area’s airports provide the Duluth-Superior metropolitan area and greater region with commercial air service, air freight service, general aviation services, and float plane capabilities. A summary of the services at each airport follows:

Duluth International Airport (DLH) - North Duluth

The Duluth International Airport (DLH) is the second-largest airport in Minnesota and generates \$1.3 billion in annual economic impact. It functions as a regional airport that offers commercial passenger services, general aviation, air freight, a 24 hour fixed-base operator (FBO), 24 hour customs service, and 24 hour control tower operations. The airport has both a 10,165 foot main runway and a 5,718 foot cross wind runway, and is located six miles northwest of the central business district in Duluth.

DLH is the only airport within a 50-mile radius that offers scheduled commercial airline service, and has an estimated service area population of 400,000 people. The airport offers scheduled service to:

- Minneapolis and Detroit via Delta Airlines (scheduled daily non-stop flights)
- Chicago O’Hare via United Airlines (scheduled daily non-stop flights)
- Las Vegas and Phoenix/Mesa via Allegiant Air (scheduled seasonal twice weekly non-stop flights).

DLH non-stop service to the major hub airports in Minneapolis, Detroit and Chicago offers regional travelers with hundreds of domestic and international flight connection opportunities. DLH is also listed as Delta’s primary diversion airport for international operations inbound to Minneapolis St. Paul International Airport that are unable to land in MSP due to weather conditions.

DLH averages around 300,000 passengers annually. This varies based on a number of factors, such as economic activity and the presence of multiple carriers at DLH which can lower ticket prices through competition (Figure 4.3).

Figure 4.3: Annual Passengers at DLH (2000-2012)



Source: Duluth Airport Authority, 2014.

Duluth International Airport (DLH):

- Located in NW Duluth bordering Hermantown, Rice Lake and Canosia Townships.
- Primary runway second longest in Minnesota at 10,165 feet.
- Designated as an Airport of Entry for Customs (24 hour service).
- Averages approximately 300,000 passengers per year

A new airport terminal building opened on January 14, 2013. The \$78 million terminal, a LEED silver-certified 110,000 square foot building was designed to meet the Federal Aviation Administration (FAA) and post 9/11 Transportation Security Administration (TSA) requirement, as well as the American with Disabilities Act Accessibility Guidelines.

The new terminal includes more pick-up and drop-off vehicle traffic lanes, a separate commercial-vehicle lane to alleviate congestion in front of the terminal, two main levels connected by centrally located escalators, stairs and elevator, increased natural lighting, improved TSA baggage and passenger screening areas, a comfortable 400-seat passenger waiting area, Wi-Fi, TVs, multiple in-floor outlets for electronics, vending, restrooms, and a restaurant and lounge. Portions of the lower level can be converted to accommodate processing international flights by Customs and Border Protection (CBP). Two baggage-claim carousels provide passengers quicker access to their luggage.

Richard I. Bong Municipal Airport (SUW)

SUW is located three miles from Superior's central business district and is also designated as an International Airport of Entry for Customs. It primarily serves general aviation needs, but it also used occasionally for military operations. SUW is owned by the City of Superior and has two asphalt runways 5,100 and 4,000 feet in length. The FBO is Twin Ports Flying Service, which provides flight training, FAA Examination services, hangar facilities, aircraft rental and aircraft fuel services.

Sky Harbor Airport (DYT)

DYT is a general aviation airport located on Park Point, five miles southeast of Duluth's central business district. It is owned and operated by the Duluth Airport Authority. It offers both a hard surface runway and two water landing areas, and is also an Airport of Entry for Customs. Facilities at DYT include a paved 3,050 foot runway with parallel taxiway, two sea lanes, a seaplane ramp and dock, a terminal building and private airplane hangars.

Operations & Maintenance

The area airports host a number of various operations. DLH, for instance, is home to the 148th Fighter Wing of the Minnesota Air National Guard (MNANG) and the aircraft manufacturing operations of Cirrus Design in addition to its commercial and general aviation operations. It is also the location for the Duluth operation for AAR, an airline maintenance company, which opened an 80,000 square foot airline maintenance facility in November 2012 in the former



*New DLH Terminal.
Image source: Duluth Airport Authority, 2014*

Richard I. Bong Municipal Airport (SUW):

- 3 miles south of the downtown Superior.
- 2 runways; averaging 53 operations per day (2007).
- Designated as an Airport of Entry for Customs.
- Occasional use for military operations.

Sky Harbor Airport (DYT):

- 5 miles south of the downtown Duluth on Park Point.
- 1 runway and 2 sea lanes;
- Designated as an Airport of Entry for Customs.
- Currently considering alternatives seeking to return to compliance with C.F.R. FAR Part 77

Northwest Airlines Maintenance Facility on the north side of the airport.

Operations at the airports are facilitated primarily through fixed base operators (FBOs) which provide aircraft fueling, deicing, maintenance and other such services to private general aviation and corporate aircraft operators and the scheduled and charter airlines. Each of the FBOs at the area's three public airports also facilitate operations related to the airports' role as an entry point for customs. DLH's FBO, Monaco Air in particular has positioned DLH to capitalize on international traffic transitioning between Europe and the west coast by marketing DLH as a non-congested airport offering quick turn fueling and customs and border protection services.

The Duluth Airport Authority working with aviation consultants and local stakeholders is in the process of completing a Master Plan for DLH. This plan details the development vision for airport upgrades for the next 20 years. It concentrates on airport facilities and properties and complies with FAA and MnDOT Aeronautics standards to provide a realistic growth and development scenario. The strategic vision for the airport includes accommodating the major airport users: commercial aviation, Air National Guard mission, aviation businesses and general aviation.

A major issue to be addressed by the Master Plan is the rehabilitation of the main runway. To be able to accomplish reconstruction of the main runway, the crosswind runway will need to be expanded to a length of 8,000 feet to accommodate the current aircraft using the airport. This will create some land use issues as the runway safety zones will have to be extended. These details are still being addressed in the planning process. Completion of the Master Plan is scheduled for late 2014.

Safety & Security

As with any mode of transportation, safety and security is a priority. Given post 9/11 realities, this is especially the case for air travel, which is under the purview of agencies like the Federal Aviation Administration (FAA), Transportation Safety Administration (TSA), and the Department of Homeland Security (DHS). Local airport authorities work directly with these agencies to ensure that the facilities and operations at area airports are safe and secure. Many of the security operational concerns from TSA regulations have been addressed in the design of the new airport terminal at DLH.

The MIC's area of influence regarding safety and security at area airports is related to local land use decisions. The MIC works with the area's various jurisdictions and stakeholders to plan for

Funding for Airports in the MIC Area:

The [Federal Aviation Administration](#) (FAA) is the primary source of federal aviation funds, while the [MnDOT Office of Aeronautics](#) provides state funds to the airports on the Minnesota side. Local funds for the airports are generated by the airport authority itself through parking lot revenue, land leases, passenger services, rental car operations, and landing fees. Even FHWA funds have been used in the MIC area in the past to help finance improved access to DLH and Air National Guard facilities.



Runway delineation at DLH.

development in a way that is consistent with existing airport zoning and supports the safety and security of the airports.

Airport zoning is a method prescribed by law to both protect the public and the public's investments in the airports. The zoning of public airports in relation to airspace and nearby land uses are designed to limit or prevent situations that potentially compromise the safety and security of an airport's operations.

Safety zone areas serve two primary purposes; they provide a safe environment for operating aircraft, but also provide a safe environment for community members living and working near the airports. The location and size of zones depend on the lengths of an airport's runways and the type of aircraft that use those runways. Figure 4.4 below illustrates the airport land use safety zones at DLH.

FIGURE 4.4: DLH Airport Land Use Safety Zones



DLH is in close proximity to the Miller Trunk commercial corridor (US Hwy 53/STH 194) with adjacent concentrations of commercial, residential and industrial uses. This is an area that has seen significant growth in recent years, and which is projected to continue.

The jurisdictions surrounding the Duluth Airport have created a Joint Zoning Board to regulate the use of property in the vicinity of the Duluth Airport. The jurisdictions forming the Duluth International Airport Joint Zoning Board are Duluth, Hermantown, Canosia Township, Rice Lake Township, and St. Louis County. The Duluth International Airport Zoning Ordinance, created by the Joint Zoning Board, was adopted in June 1988 and has been periodically updated. This ordinance is based upon safety principals associated with the

Airports Land Use Safety Zones:

State and federal laws define minimum standards for the zoning of public airports in relation to airspace and adjacent land uses. Airport safety zones are intended to ensure the safety and security of airport operations and those living and working near airports.

DLH Safety Zones:

Rules defining the safety zones for DHL are based on regulations issued nationally by the FAA and statewide by the [MnDOT Office of Aeronautics](#). The safety zones are DLH are as follows:

Safety Zone A: no buildings, structures, or exposed transmission lines. No land uses that bring together an assembly of persons.

Safety Zone B: Each land use has a 3 acre minimum lot size. Each use cannot bring together a site population to exceed 15 times that of the site acreage.

Safety Zone C: no land use shall create electronic interference for aircraft or the airport, produce lights that make it difficult for pilots to see airport lights, or otherwise endanger aircraft landings, takeoffs and maneuvering.

land use safety zones.

The area's two other airports do not face the same development pressure as DLH, or face the same level of potential conflict between their operations and adjacent land uses. The Sky Harbor Airport (DYT), however, is presently facing a unique challenge of its own. The airport is currently involved in an Environmental Assessment process to consider various land use and operational alternatives that will bring the safety zone of its south approach, Runway 32 back into compliance with C.F.R. FAR Part 77. The safety zone is being penetrated by State and Natural Area (SNA) old growth forest trees, which has forced DYT to close night operations and move the threshold of Runway 32 temporarily. Alternatives being considered include cutting trees, realigning the runway, moving the runway, closing the airport or moving the airport to another location. A decision is expected to be reached in 2014.

SUW in Superior may see an increase of General Aviation activity as it was announced in 2012 that it will become home to an aircraft manufacturing facility. Kestrel Aircraft Corporation will be locating its headquarters and manufacturing facilities at SUW and other locations in the City of Superior. The plan to manufacture an all-composite (carbon fiber) single engine turboprop aircraft designed to carry a large load (5 passengers plus pilot) over a long range (approximately 1,500 miles) at high speed (approximately 375 mph), with the ability to use short runways. Projected employment of the operation is 600 employees.

Air Service/Air Cargo Leakage and Expansion Analysis

The MIC, in partnership with the Duluth Airport Authority and consulting firm Trillion Aviation, conducted a specialized analysis to understand key industry trends that could influence maintaining and expanding both passenger and cargo service opportunities and identify the unique strengths of DLH that could be leveraged.

The key study findings are these:

- DLH captures only 42% of potential passengers (residents within a 30-mile radius of the Duluth/Superior area). These passengers are flying out of the Minneapolis-St Paul airport (MSP) instead. (In industry terms, the Duluth airport has a "leakage rate" of 58% of its total potential passengers to MSP).
- This leakage is driven by the perception of lowest cost by flying out of MSP and by schedule flexibility created by ease of driving down to MSP, with a good highway connection between the two cities and the availability of a van shuttle service.
- This high leakage rate represents a significant opportunity for growth. If DLH were to capture even a fraction of the leakage that currently drives to MSP it would mean increased number of



Cirrus planes manufactured in Duluth

flights, lower fares, new destinations and the return of the first class cabin on most flights

- A bright spot is the Allegiant service to Las Vegas and Phoenix. The service to these two cities accounts for about 20% of all DLH passengers. Allegiant is attracting about 25% of its passengers from the Thunder Bay area.
- The fastest growing segment of the U.S. airline industry is from low cost carriers. Specifically, Allegiant Airlines has been the fastest growing airline in the U.S. and the most profitable. Allegiant's service from DLH is profitable and forecasts indicate that additional Allegiant routes from DLH would also be profitable. These routes could include service to Mexico and the Caribbean.
- Allegiant service out of DLH also has a strong draw into southern Canada because of the avoidance of ticket taxes and international ticketing.
- Delta's DLH to MSP service performs solidly. This route will likely see aircraft upgrades (larger aircraft with potentially a first class product) going forward.
- Delta's DLH to DTW (Detroit) service needs to improve in order to ensure its long term success.
- United's DLH to ORD (Chicago-O'Hare) service has met expectations to date; however additional focus needs to be made to continue to market and grow this route.

The Duluth Airport Authority will use the data from this study as a tool that will guide its air service growth strategy for years to come. New marketing initiatives will include reminding business and leisure travelers alike that flying local has broad positive implications to the services we can offer the entire community

This growth strategy also includes a focus on Allegiant Airlines, and to capitalize on the Federal Inspection Service facility by growing service to new international winter destinations including Mexico and the Caribbean.

Moving Towards 2040

The three airports in the MIC area are economically important, and the DLH, in particular, is a major economic engine in the Duluth-Superior area. It is in the interest of the Duluth Airport Authority and the communities surrounding DLH to ensure that the investments in the airport are not compromised.

In addition to the airports' impact on the area's economy overall, federal funding for airport projects require a smaller local match (10%) than for other transportation investments. Yet, the FAA

considers compliance with land use safety zoning when prioritizing airport funding, and is not interested in investing in airports that are not positioning themselves for the long term through protection of their land use safety zones.

Therefore, the MIC has identified protection of the area's airport safety zones as a priority for local transportation planning, and will be working with MIC area jurisdictions to stay abreast of potential conflicts between development and the airport operations. It will continue to review how the planning and implementation of new construction relates to the airport safety zones and work with area jurisdictions to ensure that such construction supports the safety and security of the area's airports.

Passenger Air: General Recommendations Moving Forward

- Support land use decisions that increase the economic productivity of, and do not negatively impact the operations of the area's airports.
- Make sure comprehensive plans for jurisdictions surrounding the airport consider the land use safety zones and other related issues such as noise when developing future land use scenarios near the airport.
- Ensure that investments are made in ways to optimize the life-cycle maintenance of airport facilities.
- Maintain and improve roadway connectivity to the airport.
- Assist Duluth Airport Authority where possible in implementing the recommendations from the Air Service/Air Cargo Leakage and Expansion Analysis.

MOVEMENT OF PEOPLE: MOTOR VEHICLES

Duluth-Superior’s network of arterial and collector roadways are arguably the most important components of the area’s transportation system, as they serve multiple modes of transportation and facilitate the vast majority of travel throughout the area, for both people and freight.

Accessibility & Mobility

There are over 900 miles of roads in the Duluth-Superior metropolitan area, 40% of which are classified as arterial or collector routes that serve most of the vehicle miles traveled in the area. The MIC will continue to work with jurisdictions to improve connectivity and mobility of the area’s network of these arterials and collectors.

The Functionally Classified Network

The MIC area’s functionally classified network of roads is shown in Map 4.2 on the following page. The network contains approximately 370 miles of arterial and collector routes, and facilitate 85% of the estimated 2.8 million vehicle miles being traveled in the area on a daily basis. Table 4.2 shows how these daily miles are distributed among the different roadway classes within the MIC area. More than 1.4 million miles (50%) are carried by seven primary roadways that also serve to function as regional corridors, connecting Duluth-Superior to the larger region.

In addition to these corridors, the network includes nine principal bridge structures. Two of these, the Blatnik Bridge and the Bong Bridge, span across the Duluth-Superior harbor, connecting the two cities. Together they carry more than 47,000 vehicles per day. A third bridge structure is the major interchange of I-35 and US Hwy 2 in Duluth, known locally as the “Can of Worms”. It carries an estimated 78,000 vehicles daily. The area’s primary highways and bridges are listed in Tables 4.3 and 4.4, and are shown in Figure 4.5 on the following page.

Table 4.2: Miles of Roadway & DVMT by Functional Class

Functional Class	Miles in the MPO	% of System	Daily Vehicle Miles Traveled (DVMT)	% DVMT
Interstate Highway	17	1.9 %	569,000	20.4 %
Principal Arterial	52	5.6 %	707,000	25.3 %
Minor Arterial	143	15.8 %	818,000	29.3 %
Collector	140	15.5 %	279,000	10.0 %
Local Roads	552	61.1 %	416,000	14.9 %
Total	904	100 %	2,789,000	100 %

Source: FHWA Statistical Highways Series, 2007.



Connections 2040

Increasing travel demand will result in minor loss of capacity. System expansion does not appear necessary. Operational efficiency and safety can be addressed through a variety of travel demand and systems management strategies. Maintaining and preserving existing infrastructure will become an ever greater challenge.



Duluth - Superior Functional Classification

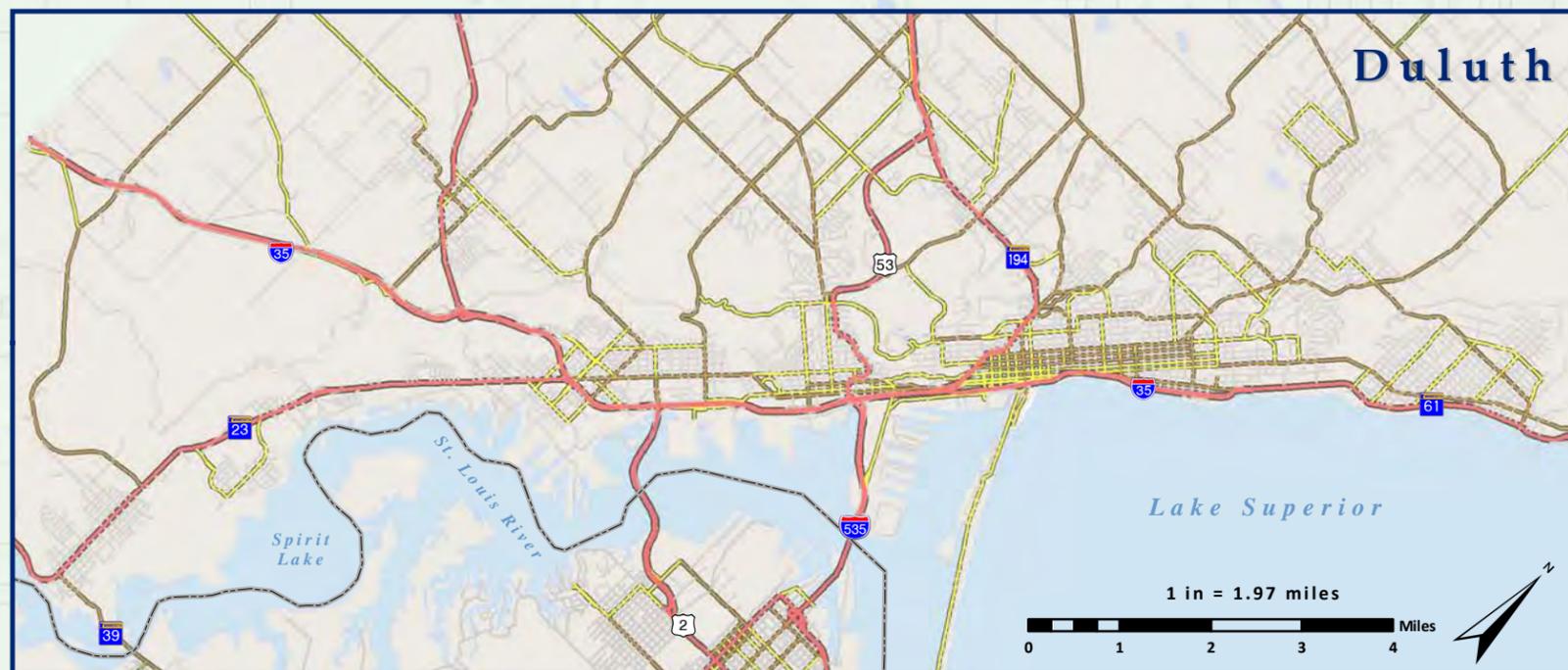
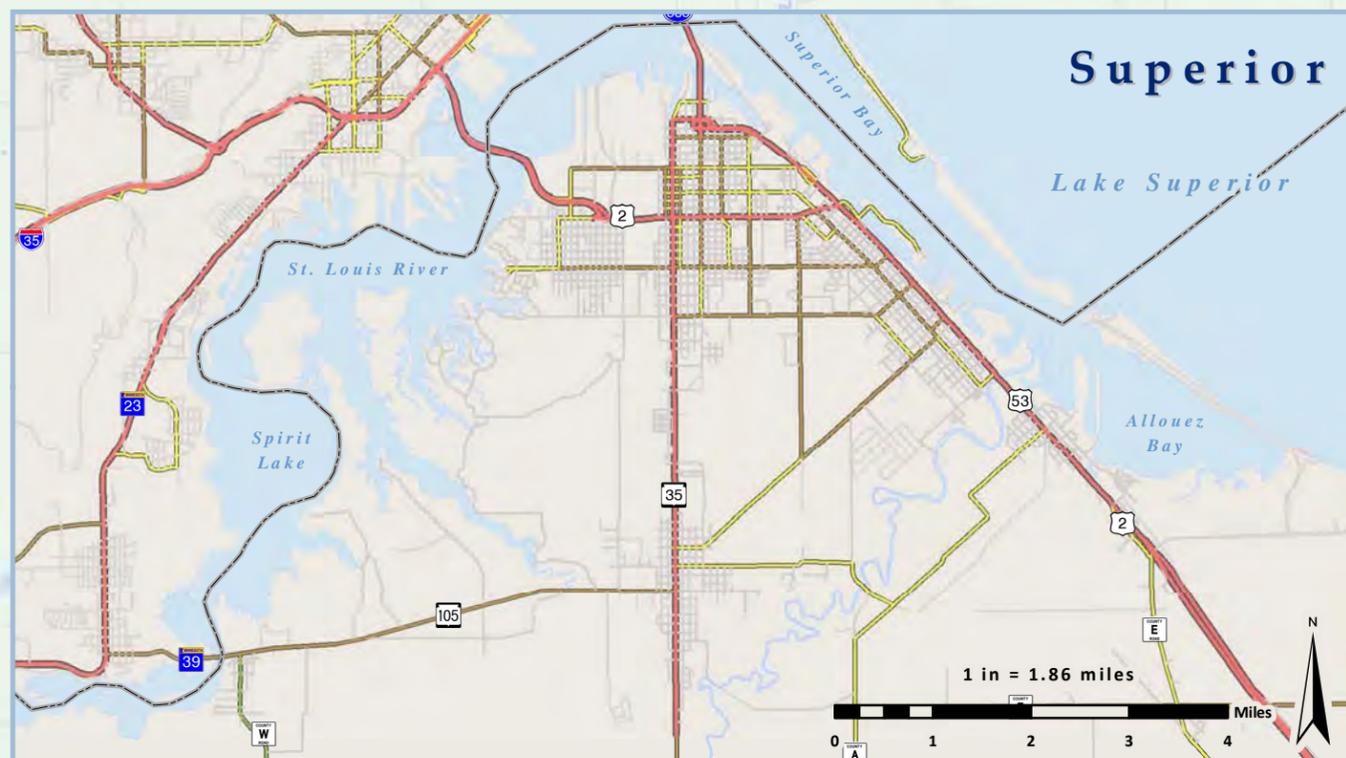


Table 4.3: Major Roadways and Estimated DVMT

Roadway	Miles in the MPO	Estimated DVMT	% of Total DVMT
Interstate 35	14.4	515,286	18.4%
Interstate 535	2.7	84,206	3.0%
US Trunk Highway 2	21.1	175,727	6.3%
US Trunk Highway 2/53	10.1 (orig. 5.7)	178,425	6.4%
US Trunk Highway 53	22.4	311,000	11.1%
State Trunk Highway 61	16.3	164,047	5.9%
State Trunk Highway 194	10.1 (orig. 3.6)	85,504	3.1%
Total	97.1 miles	1.5 million	54.1%

Source: MIC estimates, 2014.

* DVMT: Daily vehicle miles traveled.

Table 4.4: Primary Bridges and Average Daily Traffic

Bridge	Length (ft)	Operating Rating ¹	Inventory Rating ²	Annual Average Daily traffic (AADT)
1. Bong Bridge (US Hwy 2)	8,320	73.1 tons	43.9 tons	17,700
2. Blatnik (I - 535)	7,980	38.9 tons	23.3 tons	29,500
3. "Can of Worms" bridges*	15,570*	63 tons**	37.8 tons**	78,000
4. I-35 in West Duluth (crosses State Hwy 23)	3,173	60.3 tons	36.2 tons	42,000
5. Belknap St. Viaduct	1,909	35 tons	35 tons	12,000
6. Piedmont Bridge (US Hwy 53)	1,630	105.5 tons	63.3 tons	15,500
7. N 21st Street Viaduct	1,598	31 tons	31 tons	8,000
8. Oliver Bridge (State Hwy 39)	739	59.4 tons	59.4 tons	1,450
9. Nemadji Bridge (US Hwy 2/53)	303	35 tons	35 tons	21,900

Source: MnDOT and WisDOT Bridge Inventory Reports (2007).

* Total for all 31 bridges/ramps. ** Average for all 31 bridges/ramps.

1. Maximum permissible load to which the structure may be subjected.
2. Load level which can safely utilize the structure for an indefinite period of time.

Figure 4.5: Location of Primary Bridges in Duluth-Superior



View of Bong Bridge from Duluth Harbor

Duluth-Superior’s Bridges:

There are more than 300 bridges within the Duluth-Superior network of classified roadway. The Blatnik Bridge (I-535) and the Bong Bridge (US Hwy 2) are two of the most important connections in the Twin Ports, providing for the efficient transfer of more than 47,000 vehicles over the Duluth-Superior harbor and St. Louis River daily.

Bridges of primary significance within the MIC area are listed in Table 4.4 to the left. These bridges correspond with the numbers shown in Figure 4.5 below.

Network Connectivity

The Duluth-Superior metropolitan area has a well-connected network of federal, state, and local roadways. In fact, given the area's extensive road network, including three bridge connections across the harbor, Duluth-Superior's road network has a significant amount of redundancy, implying a system with good connectivity for the movement of motor vehicles.

Given the levels and patterns of growth being projected for the area (see Chapter 3), there does not appear to be a significant need to expand the existing road network. A few network gaps, however, have been identified through transportation studies conducted by the MIC and other agencies over the past years. These gaps are shown in Figure 4.6 below.

All three network gaps exist within the City of Duluth. The "Joshua Avenue" and "Kenwood Connector" concepts represent future connections that would better serve growing traffic demands to the Miller Hill Mall area and the College of Scholastica/UMD area. The "Waseca Industrial Road" connection would be a new collector route that would allow for more efficient movement of heavy truck traffic between an industrial area and State Highway 23 and I-35. These connections represent expansion projects that the City of Duluth is not moving to implement at this time, but will continue to consider in future planning efforts.

Figure 4.6: Identified Network Gaps in the MIC area



Image source: Google Maps (2014).

Identified Network Gaps:

- Joshua Avenue (Duluth):
Construct a collector route from Maple Grove Rd. to Arrowhead Rd.
- "Kenwood Connector" route (Duluth):
Improved connection between Kenwood Ave. and 6th Ave. E.
- "Waseca Industrial Road" route (Duluth):
Construct a new road between 61st Ave. W. and Grand Ave. (STH 23).

Travel Demand

It is estimated that the number of daily vehicle miles traveled (DVMT) in the MIC area has been increasing at a rate of about 0.3% per year. Recent years have seen a curbing of this trend, especially in the urban area (Figure 4.7). This may be the result of a number of factors: changes in the economy, changes in mode choice, etc.

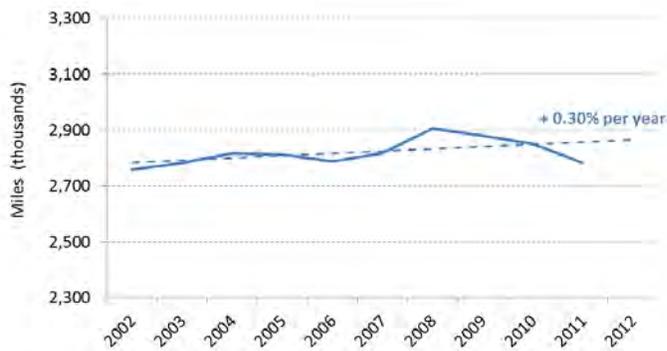
If the general trend of 0.3% annual growth were to continue, an additional 332,000 miles would be driven in the MIC area daily by 2040. This would be merely 1/4th of the additional traffic that is being predicted under the “aggressive” growth scenario considered in this plan (see Chapter 3). Under that scenario, DVMT would exceed 4 million miles per day (Figure 4.8).

The MIC area travel demand model projects that such growth in traffic will lead to increased congestion at a number of segments throughout the network. The MIC will work with the area’s jurisdictions to continue to assess conditions and strategize ways to mitigate the impacts of further growth in traffic in these segments.



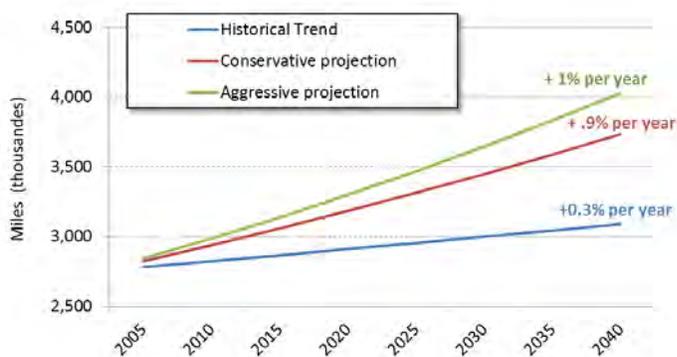
Interstate 35 near Downtown Duluth

Figure 4.7: Daily vehicle miles traveled: Duluth-Superior urban area



Source: Federal Highway Administration (FHWA) Statistical Highway Series, 2014.
* DVMT: Daily vehicle miles traveled.

Figure 4.8: Alternate DVMT projections for Duluth-Superior



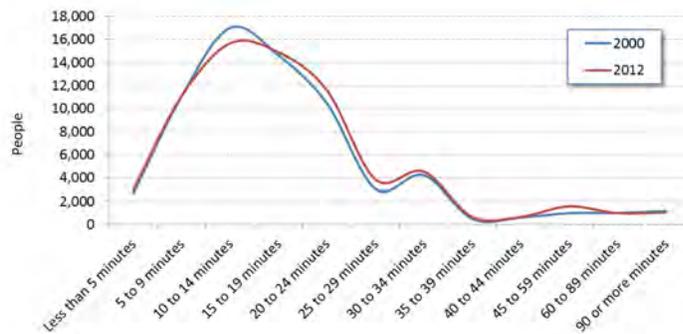
Sources: Federal Highway Administration (FHWA) Statistical Highway Series, 2014; MIC travel demand model (2014).. * DVMT: Daily vehicle miles traveled.

Network Mobility

A transportation system is worked the hardest during the peak hours of travel that correspond to peoples’ trips to and from work. One way to begin gauging the quality of a system’s mobility then is to look at trends in travel-time-to-work; the Duluth-Superior system shows that travel times have been slightly increasing over the past decade (Figure 4.9). This is in part due to the fact that more development has occurred further out from the central cities during that time.

Another way of describing system mobility is in terms of level of service (LOS), a rating from A to F based on a measure of volume-to-capacity on roadways (see Figure 4.10). Current LOS in the Duluth-Superior metropolitan area has been estimated using the MIC travel demand model. The results of this model show that, overall, LOS is good across the system, with the vast majority of segments operating at LOS C or better under peak-hours of travel. Eight segments, however have been identified as performing at LOS E or poorer under peak hours of travel. These segments are listed in Table 4.5 below.

Figure 4.9: Change in travel-time-to-work (2000-2012)



Source: U.S. Census 2000; U.S. Census, ACS, 2008-2012 5-year estimate

Table 4.5: Network segments with deficiencies in LOS (2014)

Roadway link	LOS Year 2035	2010 AADT†
London Rd: I-35 ramp - 36th Ave E (Duluth)	LOS F	21,200
Intersection of London Rd & 26th Ave E (Duluth)	LOS E	16,525
Grand Ave: 62nd Ave to - I-35 ramps (Duluth)	LOS E	15,600
Woodland Ave: Arrowhead Rd - Snively Rd (Duluth)	LOS E	20,900
London Rd: 36th Ave E - 43rd Ave E (Duluth)	LOS E	12,200
Snively Rd: Woodland Ave—Glenwood St (Duluth)	LOS E	10,800
N 24th Ave W: Piedmont Ave - W. Skyline Pkwy. (Duluth)	LOS E	9,500
London Rd: 60th Ave E - 61st Ave E (Duluth)	LOS E	11,000

Source: MIC travel demand model, 2014; MnDOT & WisDOT AADT Estimates, 2014.

† AADT (Average annual daily traffic)

Level of Service Explained:

Level of service (LOS) is a qualitative statement about the road’s operation, but is based more quantitatively on the measure of vehicles present compared to a road’s capacity, as is illustrated in Figure 4.10 below.

Figure 4.10: Level of Service (LOS)

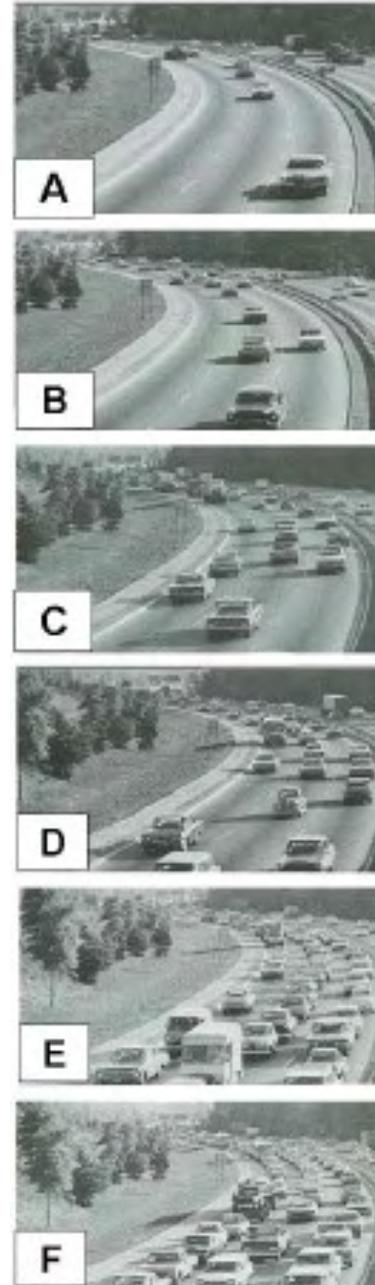


Image source: unknown.

In addition to vehicle-miles-traveled and LOS, the MIC area travel demand model also calculates and estimated total vehicle-hours-traveled (VHT). Under present-day conditions, daily VHT is estimated to be 68,000 hours a day. Modeling future population growth, employment growth, and land use changes in the area suggests that this could grow to be 99,000 hours a day under a high-growth scenario. If this were to be the case, an average trip taking 7.2 minutes today would take 9 minutes (Table 4.6).

Table 4.6: Estimated and projected daily vehicle trips and vehicle-hours-traveled in the MIC area

<i>Scenario</i>	<i>Daily trips</i>	<i>Vehicle-hours-traveled (VHT).</i>	<i>Minutes per trip</i>
2010 base year	569,039	67,925	7.2
2040 "Conservative" growth	608,669	89,766	8.8
2040 "Aggressive" growth	662,657	98,962	9.0

Sources: MIC travel demand model (2014)

The implications of the estimates shown in Table 4.6 are that there will be an increasing number of vehicles on the road network, resulting in greater numbers of delays throughout the system. The model helps to identify some specific areas where such delays will likely occur. These have been noted in Chapter 3.

With more than 90% of the system projected to still be operating at acceptable levels of service, little system expansion will be needed. However, there are consequences nonetheless for having more vehicles, longer travel times, and more delay in the system are potentially more consumption of non-renewable fuels and a greater release of harmful emissions into the atmosphere. In an effort to mitigate against these impacts, the MIC will work with jurisdictions and area stakeholders to pursue a variety of travel demand management (TDM) strategies throughout the system.

Operations & Maintenance

A significant number of road miles and transportation facilities exist in the MIC area and need to be operated and maintained. The MIC will continue to work with jurisdictions to cost-effectively maintain and operate the system while reducing congestion and delay, and managing the levels of vehicle emissions produced within the Duluth-Superior metropolitan area.

System Operations

As the outputs from the MIC travel demand model indicate, the area's road network overall is operating above acceptable levels of service. The model assesses operations based primarily on segment capacity. Though it does not identify specific

Travel Demand Management (TDM):

TDM involves promoting a variety of alternatives to the single-occupancy automobile trip with the aim of reducing traffic volumes. These includes promoting and improving non-motorized facilities, public transit options, and ridesharing programs.

The success of TDM relies on the choices made by individual commuters. Therefore education and marketing are necessary components. Commuters need to be aware of alternatives, and given incentives to chose them. That is why the MIC will continue to work with MnDOT, WisDOT, area agencies and businesses to create such incentives, increase the number of transportation alternatives available to users and elevate their profile in the community.

Example TDM Strategies the MIC continues to promote:

- Express transit routes during rush hours
- Park & Ride lots
- Employer subsidized transit passes
- Telecommuting & Rideshare programs
- Flexible work schedules
- Bike racks near employment centers
- Bike racks on city buses

intersections with operational deficiencies, its outputs tend to point to intersections that are likely experiencing capacity issues. Comparing the model results with in-the-field observations, the three intersections identified in Figure 4.11 below have been identified as intersections experiencing increasing operational deficiencies in recent years. The MIC will work with area jurisdictions to identify transportation systems management (TSM) strategies for improving conditions at these locations.

Figure 4.11: Intersections identified as having operational

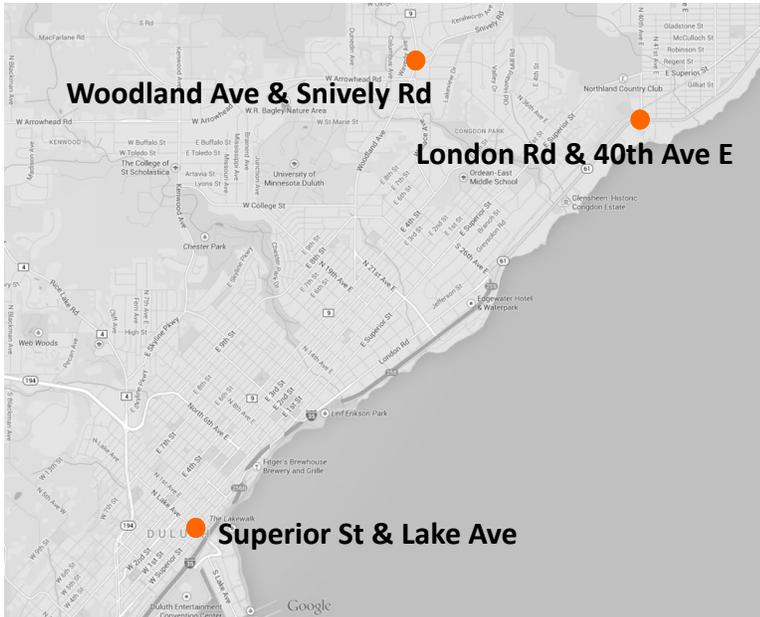


Image source: Google Maps (2014).

Air Quality Maintenance

The City of Duluth had some poor air quality readings with regards to carbon monoxide (CO) in the 1980's. As a result, the MIC was required to coordinate with the City of Duluth to establish and execute a set of control measures to improve air quality in the city. These control measures are identified in Table 4.7 on the following page.

In addition to these controls measures, the northward extension of I-35 in the early 1990's - which pulled a lot of traffic out of the downtown area - appears to have significantly improved air quality in the area. For the past 20 years, the city has continued to have CO readings below the national ambient air quality standards (NAAQS) for the past twenty years. This is a trend that continues to be seen in the most recent readings of CO concentrations in the area. As Figure 4.12 on the following page shows, Duluth's second highest eight-hour concentration of CO in 2013 was well below the

Intersections Identified with Poor LOS (2014):

- Woodland Ave. & Snively Rd. - Duluth
- London Rd. & 40th Ave. E. - Duluth
- Superior St. & Lake Ave. - Duluth

MIC's Transportation Systems Management (TSM) efforts - addressing locations of poor LOS:

TSM is a planning and engineering approach aimed at optimizing the operational efficiency and safety of existing transportation facilities through the use of cost effective improvements.

The MIC promotes the use of TSM measures in the Duluth-Superior metropolitan area, and plans to continue assisting area jurisdictions in identifying locations in the MIC area where traffic operations can be significantly improved with low-cost treatments.

Examples of TSM-based tools to improve operations:

- Restriping to improve intersection geometry.
- Median treatments to manage access.
- Optimizing and synchronizing traffic signals.
- Land use ordinances that control the spacing and location of driveways and accesses.

NAAQS standard of 9 parts-per-billion. With that said, this was both an increase from the previous year and higher than concentrations recorded in the Minneapolis/St. Paul area.

Table 4.7: Identified Carbon Monoxide Control Measures (1990)

Strategy	Jurisdiction	Status
<i>Encourage use of Trunk Hwy 61</i>		
A. Mesaba & 2 nd St. temporary channelization	Duluth	Completed
B. Improve enforcement of on-street parking	Duluth	Completed
<i>Improve signal phasing at 6th Ave. E., 3rd & 4th Streets</i>		
A. Improve turning radius at 14 th Ave. E. & 3 rd	Duluth	Completed
B. Interconnect 3 rd St. signals	MnDOT	Completed
C. Evaluate right on red restrictions	MIC	Completed
<i>Improve signage of parking facility access routes</i>		
A. Short-term parking access loop	Duluth	Completed
B. Long-term parking (DECC) routes	Duluth	Completed
<i>Encourage voluntary ban on peak hour goods deliveries</i>		
A. Private sector	Duluth	Completed

Source: Duluth Transportation Control Plan, 1990.

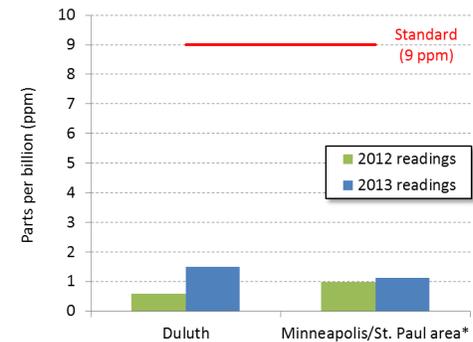
Another pollutant of concern related to automobile emissions is ozone (O₃), a byproduct of the release of hydrocarbons from incomplete combustion, and a major component of smog. Ozone emissions in Duluth are much closer to the NAAQS threshold than other air pollutants monitored in the area. The most recent 3-year average O₃ concentration in Duluth was 67% of that threshold (Figure 4.13).

Though air quality does not appear to be an issue of concern for the MIC area at this time, it may become an increasingly larger one in coming decades. As such, the MIC will continue to monitor air-quality data, promote and pursue TDM strategies, and coordinate with local jurisdictions to implement TSM based solutions aimed at reducing delays and relieving congestion throughout the system.

System Maintenance

The amount and age of the area's transportation infrastructure presents an ongoing challenge for jurisdictions in the MIC area. Figure 4.14, for example (following page), shows how the Duluth-Superior urban area has more feet of road per capita than the average for urban areas of a similar size. In general, this means there is more infrastructure than there is public revenue to manage it, a situation that is expected to worsen as system infrastructure continues to age and construction costs continue to rise. This reality underscores the importance of transportation asset management in for the Duluth-Superior metropolitan area.

Figure 4.12: Carbon monoxide (CO) concentrations† (2013)

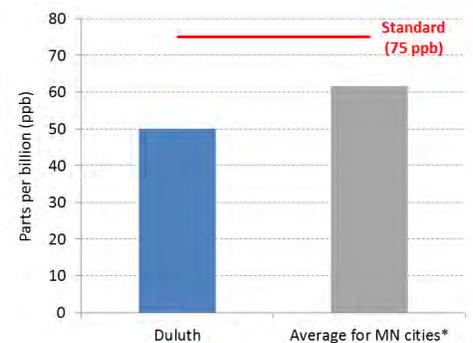


Source: Minnesota Pollution Control Agency (MPCA), 2014.

† 2nd highest, non-overlapping 8-hour concentration compared to annual 8-hour average. Concentrations must equal or exceed 9 ppm to violate the national ambient air quality standard.

* Average of readings at 5 monitoring stations in the Minneapolis/St. Paul area.

Figure 4.13: Ozone (O₃) concentrations† (3 year average: 2011-2013)



Source: Minnesota Pollution Control Agency (MPCA), 2014.

† 4th daily maximum 8-hour concentration. Concentrations must equal or exceed 75 ppb to violate the national ambient air quality standard.

* Average of readings at 16 other cities throughout greater MN.

Transportation asset management

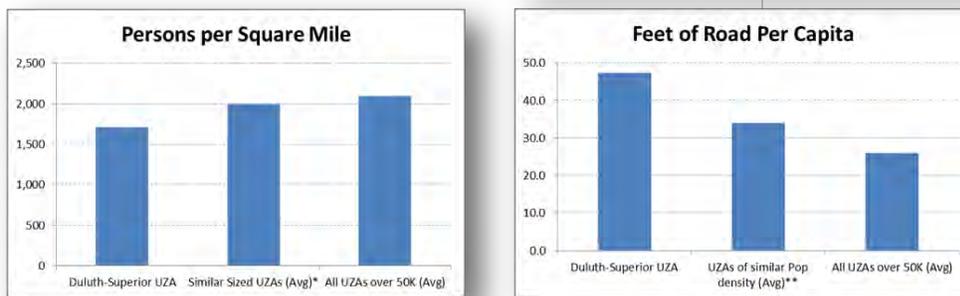
Transportation Asset Management involves monitoring the physical conditions of the system's various components, projecting rates of deterioration, and making cost-effective decisions about how to allocate resources and maintain system integrity over time. It involves a strategy of targeting investments at those projects that can better prolong the lifespan of existing infrastructure, a concept that is illustrated in Figure 4.15 below. It is an approach that may mean neglecting some infrastructure in favor for others that can return a greater benefit-to-cost ratio.

The MIC will continue to work with jurisdictions to coordinate federal, state, and local transportation investments in ways that promote sound transportation asset management. System preservation remains a priority for the area, and was an important factor in identifying the projects that are listed in CONNECTIONS 2040.



Surface cracking and pavement deterioration

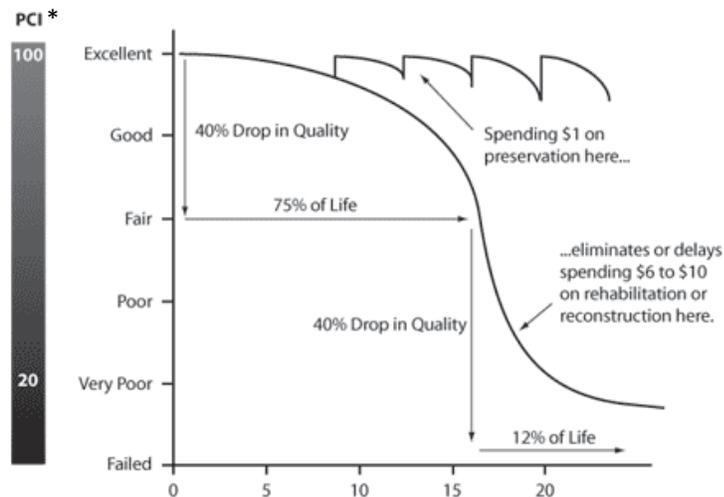
Figure 4.14: Comparisons of MIC area density and roadway Miles to other urban areas in the United States.



Source: FHWA Statistical Highways Series

* 29 urban areas with populations greater than 120,000 and less than 140,000 people/.

Figure 4.15: Pavement Life-cycle Maintenance



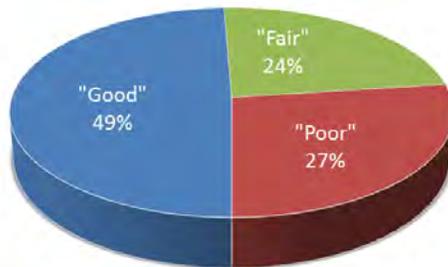
Source: Federal Highway Administration (FHWA), 2009.

* Pavement Condition Index.

Overall, the area’s jurisdictions have been successfully applying asset management principles throughout the system. As Figure 4.16 shows, more than half of the area’s roadway miles have pavement conditions that could be considered good, a substantial improvement from just four years ago (Figure 4.17). Some of this is the result of an influx of stimulus money following the economic crises of 2008/2009. Other changes at the federal level, however, were not as positive; the passing of the current federal transportation bill, MAP-21, has redirected funding away from local roads in favor of maintaining those miles that make up the National Highway System (NHS). As Figure 4.18 shows, however, it is the network of local road miles that has the greatest need for reinvestments.

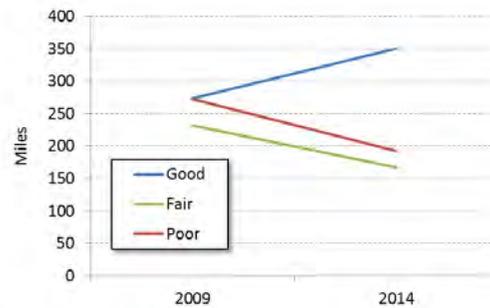
In addition to maintaining road miles, the area’s jurisdictions need to continue to devote resources to maintaining the area’s more than 300 bridges. Bridge structures represent some of the most expensive pieces of infrastructure and, while the majority of bridges may be relatively young (less than 50 years old), they will all likely need more and more intense reinvestment going forward (Figure 4.19.)

Figure 4.16: MIC area pavement quality (2014)



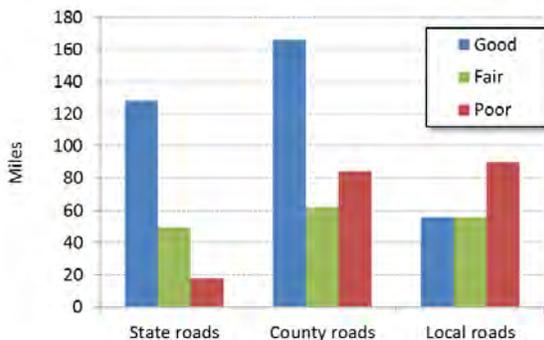
Source: Data provided by MIC area jurisdictions.

Figure 4.17: Trend in MIC area pavement conditions (2014 vs. 2009)



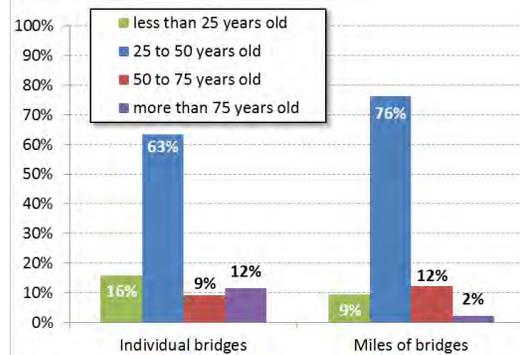
Source: Data provided by MIC area jurisdictions.

Figure 4.18: Pavement condition of MIC area roads according to jurisdiction type (2014)



Source: Data provided by MIC area jurisdictions.

Figure 4.19: Age profile of MIC area bridges (2012)



Source: National Bridge Inventory Database (2014)

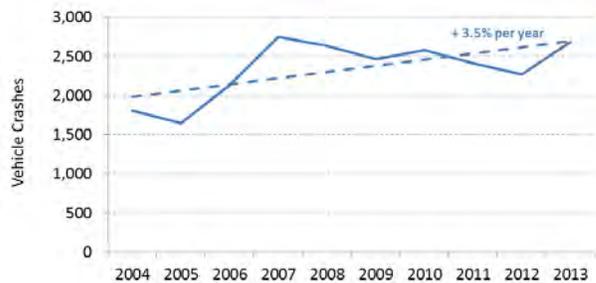
Safety & Security

The MIC coordinates efforts with area jurisdictions to identify and address unsafe conditions throughout the metropolitan roadway network. It is committed to *Safety Conscious Planning* and, as such, works to coordinate efforts among area jurisdictions and stakeholders, and actively participates in local, regional and statewide safety initiatives to reduce the number and severity of automobile crashes. The MIC will also work to ensure interagency coordination in identifying and addressing locations of safety concern throughout the road network, as well as to improve the network's operations during incidents of manmade and natural emergency.

Vehicle Crashes within the MIC Area

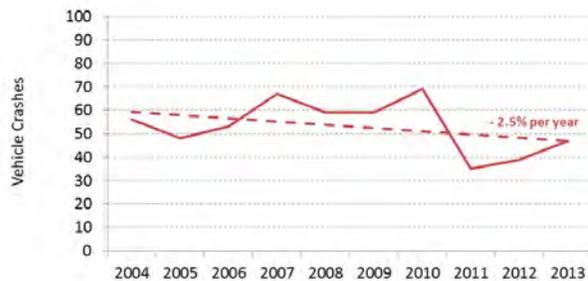
Prior to a policy change at the Duluth Police Department in 2006, vehicle crashes amounting to less than \$2,000 in damage were not reported to the Minnesota Department of Public Safety (DPS). This change is believed to be the major factor behind what appears to have been an average 3.5% annual increase in crashes over the past decade (Figure 4.20). Looking at only those crashes that resulted in either incapacitating injuries or fatalities, however, the data shows the reverse trend (Figure 4.21).

Figure 4.20: Vehicle Crashes in the MIC Area (2004-2013)



Source: MnDOT Crash Mapping Analysis Tool (CMAT), 2014; Wisconsin MV4000 Crash Database, 2014.

Figure 4.21: Fatal or incapacitating crashes (2004-2013)



Source: MnDOT Crash Mapping Analysis Tool (CMAT), 2014; Wisconsin MV4000 Crash Database, 2014.



Head-on vehicle crash

Safety Conscious Planning:

Safety Conscious Planning is a proactive approach to addressing safety issues throughout the roadway network. It elevates safety as a priority consideration throughout the entire planning process, and is meant to be comprehensive, system-wide, and multi-modal in its approach. It involves the following steps:

- Data collection and analysis
- Multi-disciplinary collaboration
- Outreach and advocacy

Overall, the rate of vehicle crashes occurring within the MIC area do not appear to be above average, and the number of fatal and incapacitating crashes per-capita are less in the MIC area than they are statewide in either Minnesota or Wisconsin (Figure 4.22).

It is understood that, in general, issues of driver behavior figure more prominently among factors that lead to vehicle crashes. This is the case, for example, with crashes resulting from chemically impaired drivers, which have been decreasing in the MIC area (Figure 4.23). For this reason, traffic safety issues need to be approached from the perspective of “the four E’s”: Education, Enforcement, Engineering, and Emergency Response. As such, the MIC realizes the importance of interagency coordination and stakeholder outreach in reducing vehicle crashes in the area, and it actively participates with and supports a number of state, regional and local initiatives. Based on the trend seen in Figure 4.23, it would appear that such initiatives are paying off.

Figure 4.22: Comparison of vehicle crashes per capita (3 year average: 2004-2013)

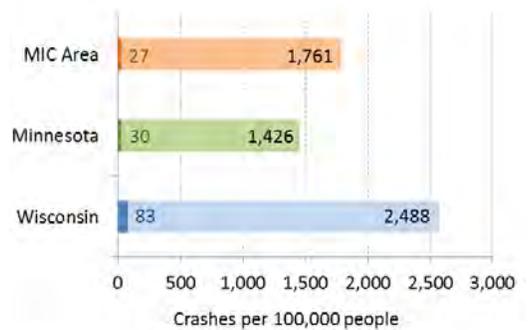
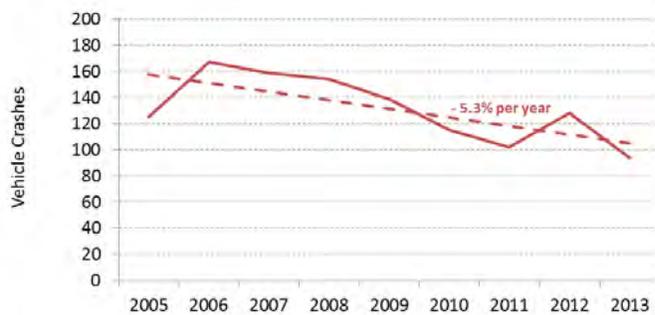


Figure 4.23: Crashes involving chemical-impairment in the MIC Area (2004-2013)



Source: MnDOT Crash Mapping Analysis Tool (CMAT), 2014; Wisconsin MV4000 Crash Database, 2014.

Support of Statewide and Regional Safety Initiatives

The data, priorities, and strategies presented in the Minnesota and Wisconsin Strategic Highway Safety Plans (SHSPs) form the foundation of traffic safety initiatives in the MIC area. The purpose of these plans is to help direct funding from the federal Highway Safety Improvement Program (HSIP) (23 U.S.C. § 148) in ways that have the most impact. This foundational information serves to inform a wide variety of entities throughout the states and across disciplines which come together under initiatives such as Minnesota’s Towards Zero Deaths to work towards the common goal of reducing highway crashes, injuries and fatalities.

An extension of the SHSP on the Minnesota side of the MIC is the St. Louis County Highway Safety Plan, which identifies traffic safety

The “Four E’s” of transportation safety:

There are many factors that can lead to vehicle crashes and resulting fatalities and injuries. *Educating* drivers, *enforcing* traffic laws, *engineering* improvements in street design and ensuring effective *emergency response* all have an important role in reducing the number and severity of crashes. This is why the MIC works to ensure coordination among the following:

- **Enforcement:** State patrol and local police departments
- **Education:** School districts, universities and colleges
- **Engineering:** State, county and city planning and engineering departments
- **Emergency Response:** Medical institutions and local emergency responders.

priorities. Based on county-wide safety data showing that the majority of fatalities and incapacitating injuries are happening in the rural areas and involving alcohol impairment and run-off-the-road events, that plan emphasizes investments and strategies aimed at reducing crashes related to those factors.

In an aim to support these efforts, the MIC is a participating agency in *Driving 4 Safe Communities*, a Safe Communities Coalition that has been formed to collectively address traffic safety priorities specific to Carlton County, MN and the lower portion of St. Louis County, MN.

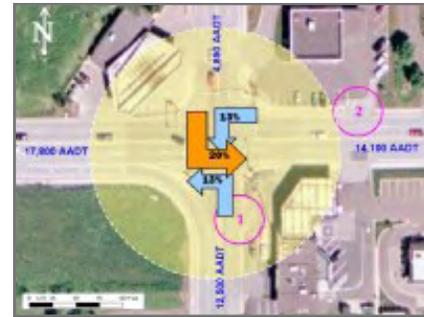
Identifying Locations of Concern within the MIC Area Road Network

Most crashes - and many of the most severe - occur at or near intersections and points of access. As part of the MIC's safety improvement efforts, it occasionally conducts Transportation System Management (TSM) assessments of area intersections. This effort aims to identify and prioritize intersections based on both operational and safety deficiencies, and a big part of this work is doing a crash assessment of the area's intersections. Figure 4.24 below shows the top three intersections for both the Minnesota and Wisconsin sides that were ranked the highest in terms of safety concerns from the MIC's most recent TSM assessment in 2011. The MIC continues to engage area jurisdictions in finding ways to mitigate safety concerns at these locations.

Figure 4.24: Intersections identified as safety priorities (2011)



Image source: Google Maps (2014).



Spatial crash analysis of Arrowhead Rd & Kenwood Ave intersection

Image source: MIC TSM Assessment, 2007.

The MIC's TSM efforts: addressing high-crash locations:

The MIC promotes the use of TSM measures in addressing safety issues at high-crash locations where low-cost treatments can aid in reducing the number and severity of crashes. Examples of TSM-based tools to improve safety include the following:

- High-visibility pavement paint.
- Edge line rumble-strips.
- Adjusting traffic signal cycles.
- Restricting problematic movements with raised medians.
- Removing or consolidating accesses.

Intersections Identified with most severe crashes (2011):

- Arrowhead Rd. & Kenwood Ave. - Duluth
- Superior St. & 26th Ave. E. - Duluth
- Skyline Pkwy. & 19th Ave. E. - Duluth
- Elmira Ave. & N 28th St. - Superior
- County Rd. E & County Rd. Z - Superior
- Hammond Ave. & N 5th St. - Superior

System Security

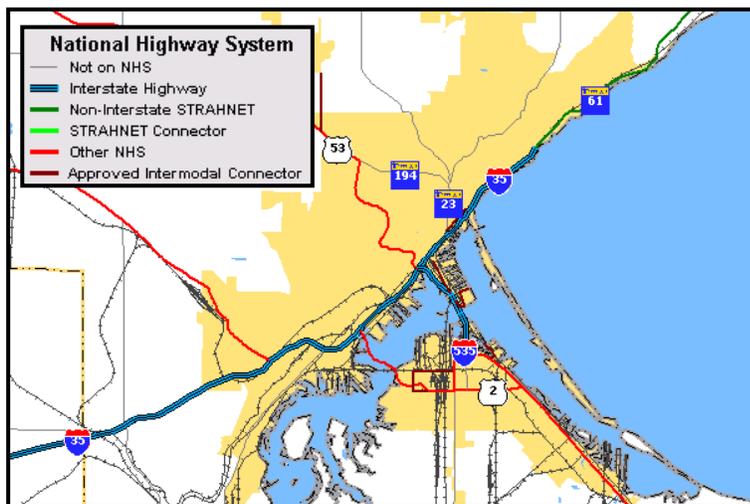
Figure 4.25 below shows the National Highway System (NHS) and Strategic Highway Network (STRAHNET) routes within the MIC's boundaries. These roadways, along with their accompanying bridge structures, constitute the most critical highway facilities in terms of rapid mobilization and deployment in response to emergencies.

Several agencies have a role in the ongoing security of highway and bridge facilities in the MIC area. They include the Minnesota and Wisconsin Departments of Public Safety, Division of Homeland Security and Emergency Management (HSEM), US Border and Customs, US Coast Guard, MnDOT and WisDOT, and Minnesota and Wisconsin State Patrols as well as local law enforcement agencies. These agencies maintain and coordinate the area's system security and emergency response plans.

In addition to general patrolling and surveillance, the security, safety, and efficient operations of the NHS network are further ensured through a variety of Intelligent Transportation Systems (ITS) elements that are maintained and managed by the DOTs (See list at right). ITS technology continues being implemented throughout the MIC area according to the MnDOT ITS Plan and the WisDOT District 8 Region ITS Strategic Deployment Plan.

The MIC remains ready to assist the DOTs and local jurisdictions in their efforts to coordinate planning and funding for further ITS investments in the area. This includes coordinated traffic signals that provide preemption technologies that give priority to emergency response vehicles. The footprint of these technologies continues to be expanded in the area, on both sides of the bridge.

Figure 4.25: Network of critical highway infrastructure



ITS changeable message board at the base of the Blatnik Bridge (I-535) in Superior

Using Intelligent Transportation Systems (ITS) in the Duluth-Superior metro:

ITS is a suite of technologies used to improve the safety and efficiency of the transportation system. ITS technologies deployed within the Duluth-Superior metropolitan planning area include the following:

- Pole mounted, bridge mounted, and tunnel mounted cameras.
- Coordinated traffic signal systems.
- Signal preemption for priority vehicles.
- System links between MnDOT Transportation Operations Communication Center (TOCC), WisDOT, and City of Superior/Douglas County Dispatch Center.
- Remote processing units for gathering and disseminating pavement conditions related to weather.
- Variable Message signs to alert drivers.

Emergency Response Preparedness

As mentioned above, the safety and security of the surface transportation system is served by a coordinated system of agencies and technologies. Although critical, this is just one aspect of transportation security. Planning for how to manage emergencies and security threats as they occur is even more critical and involves the following four phases:

- 1) Mitigation
- 2) Preparedness
- 3) Response
- 4) Recovery

Planning for emergency management within the MIC area is the responsibility of many entities. These entities have developed their own security plans to address needs and identify the necessary steps to be taken in response to an emergency incident, and to ensure the security and operations of critical infrastructure under conditions of natural or man-made disasters.

Although security and emergency response are not traditional responsibilities of an MPO, the current federal transportation legislation calls for organizations such as the MIC to take on a bigger role in ensuring that sufficient communication and coordination exists between entities. As such, MIC will continue to work with its member jurisdictions and area stakeholders to strengthen existing levels of coordination regarding emergency management planning. As deemed necessary and appropriate, the MIC will work with all relevant agencies and entities to develop and adopt a more formalized coordinated emergency management plan for the Duluth-Superior metropolitan area. As such a plan is developed, the MIC will work with MnDOT and WisDOT to ensure that it can be suitably integrated into the statewide emergency relief and disaster preparedness plans.

Moving Toward 2040

The forecasting and modeling results presented in Chapter 3 are suggesting levels of growth that do not appear to justify much expansion to the existing road network in the Duluth-Superior metropolitan area. A spreading out of the area's population further from the area's urban centers, however, will likely increase the number of vehicle-miles and vehicle-hours traveled throughout the system, which may cause increased delay throughout the system and - barring technological innovations - lead to greater levels of fuel consumption and air pollution in the area.

Challenges facing the area's communities with respect to the ability to fund the ongoing maintenance of existing transportation infrastructure necessitates that system preservation remain the



Fire truck responding to emergency.

The MIC's role in Security Planning:

It is the role of the MIC to work with local, regional, state and federal agencies toward coordinating and bringing awareness to issues as they relate to the security and operations of the roadway system during emergency and disaster response situations.

Existing Security & Emergency Management Plans:

- City of Duluth Emergency Management Plan
- City of Superior All Hazard Mitigation Plan
- County emergency response plans (Douglas Co, WI & St. Louis Co, MN)
- Minnesota Emergency Operations Plan
- Wisconsin Emergency Management Plan
- Port Security Plan (US Coast Guard)
- Facility security plans (various entities)
- Transit System Security Program Plan (DTA)

principal investment priority for the surface transportation system in Duluth-Superior.

With that said, a few gaps in the network have been identified, as well as number of locations that are showing deficiencies in operations and safety. There may be opportunities to plan and coordinate investments in ways that can address also address some of these objectives. Therefore, a multi-pronged approach, using TDM, TSM, and asset management strategies, should be employed in order to derive the biggest possible benefit out of limited revenues.

Motor Vehicles: General Recommendations Moving Forward

- Local jurisdictions should investigate ways (technologies, planning, and policies) in which their road maintenance programs can be strengthened to capture optimal points within the life-cycle of their various infrastructure assets.
- Consider/study ways in which the system’s “infrastructure burdens” can be reduced without compromising connectivity or capacity.
- Continue to emphasize facility maintenance and preservation; consider rising construction costs and prioritize needs accordingly.
- Investigate and identify better ways of measuring and monitoring the condition and operations of facilities at a system-wide level.
- Continue to monitor area air quality, with a greater focus on ozone levels; support the increased use of alternative modes of transportation in the area.
- Prioritize identified gaps and operational deficiencies (current and projected) and address accordingly, coordinating planning between jurisdictions with shared ownership.
- Continue to regularly monitor all available safety data for the area; identify and prioritize locations of concern on the system; identify and support efforts targeted at local, regional, and state emphasis areas (e.g. reduce impaired driving, address increased distracted driving).
- Continue to emphasize the application of low-cost treatments with proven effectiveness as a way to address deficiencies in safety and operations.
- Develop a metro area study to ensure sufficient levels of coordination are in place regarding emergency response on the system; identify potential gaps in coordination.



Oliver Bridge (State Hwy 105)

MOVEMENT OF PEOPLE: NON-MOTORIZED

Fundamental to transportation planning is the understanding that every trip, no matter which modes are involved, begins and ends with a non-motorized movement, and, implicitly, walking (or using a wheelchair) is the universal mode of transportation, independent of one's financial means to access other modes of transportation. This perspective is key in planning for any transportation improvements in a way that recognizes and avoids creating barriers to non-motorized movements, and to ultimately promote enhanced connectivity and mobility for all users.

The MIC therefore is committed to improving the non-motorized aspects of the Duluth-Superior transportation system, and will work with area jurisdictions and stakeholders to avoid and reduce barriers and improve the mobility, safety and security for pedestrians, cyclists and users of other non-motorized forms of transportation. Integral to this commitment is the MIC's establishment of a Bike & Pedestrian Advisory Committee ([BPAC](#)). The BPAC committee represents a variety of users; the perspectives of the youth, elderly, disabled populations, as well as those of recreational users are involved to ensure non-motorized issues are being sufficiently addressed in its planning efforts.

Accessibility & Mobility

Non-motorized forms of transportation face a number of accessibility and mobility challenges in the Duluth-Superior metropolitan area; much of the City of Duluth, for instance, sits on a hill, resulting in numerous steep streets. Winter months bring sub-zero temperatures and challenges of snow removal for sidewalks, pathways and bike routes. Yet, despite the challenges, the general population continues to express interest in non-motorized transportation issues. Whether it be the efforts of groups like Healthy Duluth Area Coalition to promote active lifestyle choices in the area, or the recent adoption of an on-street bikeways plan for the City of Duluth, there is an increasing emphasis to address non-motorized transportation issues in Twin Ports communities, and the MIC continues to be an active participant in each initiative in order to further the success of common objectives and make the area's network of sidewalks, trails and bike routes more complete, with more accessible design features and better integrated with other modes of transportation.



View of Duluth Lakewalk

Connections 2040

Increasing integration of transportation assets will lead to improved accessibility and mobility for non-motorized modes. Safety will be improved through increased information and outreach as well as improved elements of street design.

Major Initiative:

Bicycle & Pedestrian Counts

Based on goals of the previous LRTP, the MIC with the help of Mn/DOT and other state local and non-profit partners have begun a bicycle and pedestrian count program for the MIC area. A baseline data-set of bicycle and pedestrian numbers is being developed. Counts began in 2012 and are conducted annually in July and September.

LRTP 2040—complete the baseline data-set and begin identifying trends and tracking performance of provide new and existing bicycle and pedestrian infrastructure.

Local Sidewalk Network

Duluth-Superior is a fairly accessible metropolitan area for users of non-motorized modes. The urbanized areas have extensive sidewalk connections, and the broader metropolitan area is served by more than 49 miles of paved trails, and 64 miles of non-paved trails. There are also a number of walkways and bike/ped connections over I-35 and portions of US Hwy 53 in Duluth; as well as a bike/ped passage on the Bong Bridge (US Hwy 2) crossing the harbor.

Much of the area's non-motorized facilities are concentrated in the denser urban portions of Duluth and Superior, which have better connectivity than other urbanized sections of the MIC area. However, most of the area's recent residential growth has been occurring at or beyond the city limits of Duluth and Superior, and much of this growth is resulting in lower-density, suburban development patterns; with design features oriented more towards automobiles than non-motorized forms of transportation. This trend is indicated by the ratio of sidewalks to road miles for MIC area cities shown in Table 4.8, which are significantly lower in Hermantown and Proctor.

Table 4.8: Ratio of Sidewalks to Road Miles

Community	Sidewalks (miles)	Roads (miles)	Ratio
City of Duluth	757	644	1.18
City of Superior	159	241	0.66
City of Hermantown	63	126	0.50
City of Proctor	11	28	0.39

Sources: MnDOT, WisDOT (2009); MIC (2012)

This trend is supported in part by current policy at the area's various jurisdictions. Urban sections of road maintained by the Hermantown and St. Louis and Douglas Counties are typically constructed with sidewalk on only one side, due to the low population density and high cost of installation and maintenance. Furthermore, the decision and cost to install sidewalk on non-arterial or collector streets is deferred to the residents of the street, who do not have a financial incentive to do so. Although this ensures a non-motorized connection, it occasionally results in alignments that are not ideal relative to adjacent pedestrian generators, and it necessitates more street crossings.

Because of either the speeds and volumes of traffic, street width, absence or ineffective spacing of traffic signals, street crossings themselves can often be an impediment or barrier to non-motorized travel, regardless of the presence of sidewalks or pathways. There are a number of corridors in the MIC area that have been identified as potential barriers to non-motorized movements and are listed on the following page.



Snow-covered sidewalk in Superior

Improving Sidewalks :

- Consider the user's safety, comfort and level of service
- Separate the sidewalk and traffic lane with a boulevard where possible (6-8-feet), particularly along roads with high traffic volumes and speeds.
- Create barriers between the moving automobile traffic and the pedestrians, including street light posts, trees, street furniture, etc.
- Create wide enough sidewalks on busier pedestrian corridors.
- Identify priority sidewalk routes, that will be highly maintained in good condition, quickly cleared of snow and debris, and regularly trimmed of trees and shrubs.
- Avoid, minimize or mitigate sidewalk closures along sidewalk priority routes during construction including clearly identified detours which do not put pedestrians into unsafe situations.

Challenging corridors (listed in the right-hand column) can be treated with various design treatments, signage or signal enhancements, such as those listed at right, and the MIC will continue to study these and other corridors to identify treatments appropriate for the context of the corridor and work with area jurisdictions to identify and fund their implementation.

Low-density, auto-oriented environments also exist at the area's largest concentration of retail centers, which are also located miles away from the area's major concentrations of households. These retail centers likewise represent the highest concentrations of both lower-skilled employment opportunities and discounted food and goods, which are important for low income and elderly members of the community to whom access to automobile travel may not be readily available.

Another challenge to ensuring non-motorized mobility which can render the presence of sidewalk and other non-motorized facilities ineffective, is the absence of ADA compliant design features. This includes both the absence or ineffective spacing of curb cuts to sidewalks, issues related to slope and the absence of ramps to complement the presence of stairs. ADA legislation was passed in the 1990's and since then new and reconstructed sidewalks in the area have been brought into compliance with ADA standards, but a significant portion of the area's sidewalks have yet to be addressed. Another notable ADA issue in Duluth is that much of the downtown Skywalk System is replete with doors that are not equipped with ADA features.

Finally, snow removal represents a significant challenge to maintaining the accessibility of non-motorized facilities in the Duluth-Superior metro. Although local jurisdictions have snow removal ordinances that require residents to shovel the sidewalks abutting their properties within 24 hours of a snow event, they are not strictly enforced.

The MIC recognizes the need for an updated inventory of non-motorized facilities throughout the area that at a minimum provides the following:

- Identifies gaps in the network
- Locates non-ADA compliant facilities
- Identifies potential "barrier" corridors
- Prioritizes non-motorized routes to address ADA and snow removal issues.

Corridors with Potential Barriers to Non-Motorized Crossings and Status for Addressing Issue:

- *6th Ave East (Duluth) - Planning*
- *Central Entrance (Planning) - Planning*
- *Mesaba Ave (Duluth) - Planning*
- *Trinity Road (Duluth) - Planning*
- *East 2nd St (Superior) - Planning*
- *Belknap St (Superior) - Design*
- *Tower Ave (Superior) - Planning*
- *Hammond Ave (Superior) - Planning*
- *US Hwy 23 (Duluth) - Design*
- *Miller Trunk Hwy (Duluth/Hermantown) - Planning*

Treatments for Improving Street Crossings:

- Centerline median pedestrian islands
- Bulb-outs
- Programming/lengthening protected pedestrian phases into signal cycles
- Installing signal countdown timers
- Installing audible signals for the sight-impaired



A non-motorized user traveling Duluth's Lakewalk

Local Bicycle Route Network

The MIC has been doing extensive bikeways planning for the metro area since the early 1990's, which has resulted in a metro-wide network of identified bike routes. Routes on the Minnesota side are signed with bike route signs containing way-finding information, and signs are being planned for the routes on the Wisconsin side. These routes are connected to existing ped-bike crossings over I-35, US Hwy 53 and across the harbor via the Bong Bridge.

While the bikeway network is comprehensive, there remains much room for improvement. The designation of a bike route only signifies that it is the most ideal option for an area, and it can not guarantee that the route is free of issues related to slope, the speed or volume of traffic, etc. In some situations, accessibility and mobility could be improved with special pavement markings, separated bike lanes or protected bike lanes to get riders out from the flow of traffic.

As the community pushes for better bikeways to accommodate all "types" of bicyclists (see Figure 4.26 below), the MIC is actively assisting the region's jurisdictions bikeways planning and will incorporate this work into a full update of the MIC Area Bikeways Plan. The City of Duluth lead an update to their network and has approved a Duluth Bikeways Plan. A similar planning process that was followed with Duluth, will be underway with Hermantown, Proctor, Superior and the surrounding townships.

An accessibility related issue for cyclists is the availability of bike racks in public spaces. Although a number of schools, colleges, and business throughout the metro area provide racks or sponsor racks in a few locations, there's widespread acknowledgement of an insufficient provision of racks throughout the metropolitan area, especially in the area's downtowns and mall areas. The MIC has been involved in recent initiatives to get more bike racks installed in key places throughout metro area and will continue to participate with other jurisdictions and stakeholder groups to identify key locations for additional installations.



Building Better Bikeways - consider the majority of trips taken by the majority of potential bicycle users. Most trips are less than 3 miles in length and 60% of people are average bicyclists, not willing to share a lane with cars.

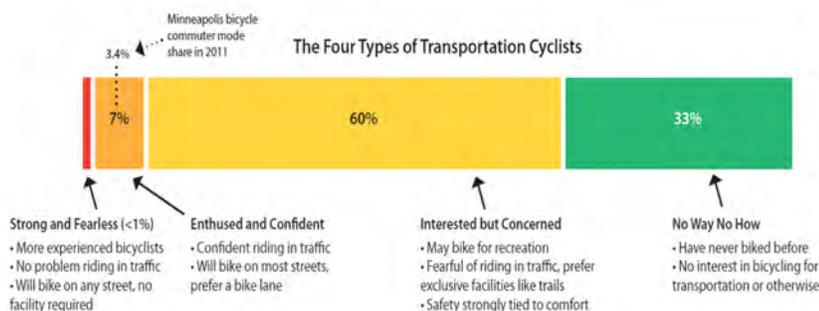


Bike Route and way-finding signs



Parking meter fitted with a bike rack

Figure 4.26



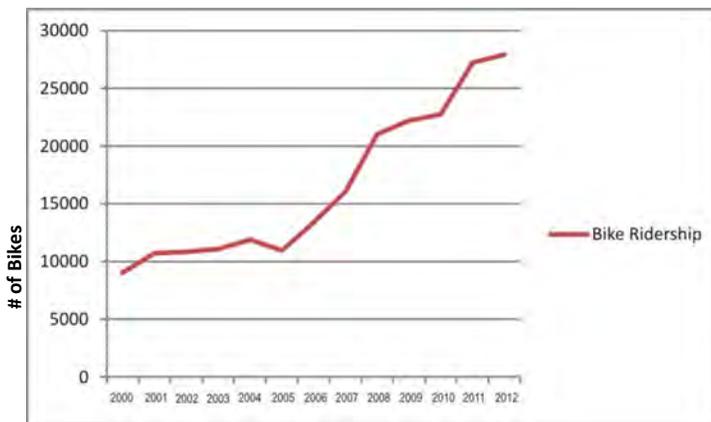
*Geller, Roger. *The Four Types of Transportation Cyclists*. Portland Bureau of Transportation 2007.

Multimodal connectivity

Non-motorized modes are being well served by the Duluth Transit Authority's (DTA) efforts to integrate its transit services with other modes of transportation in the metro area. First and foremost, it gives a lot of consideration to specific pedestrian generators (e.g. schools, retail centers, etc.) and walking distance, and designs its routes and positions its stops accordingly. It strives to optimize the spacing of bus stops and minimize the distances riders have to travel to access a bus. All of its buses have space designated for wheelchair users and are equipped with ramps or "kneelers" to assist individuals with limited mobility.

In addition, the DTA equips all of its regular route buses with bike racks all year round, which has been seeing increased use in recent years (Figure 4.27). Each bus has rack space for two bikes. However, the DTA's policy does not allow for cyclists to bring their bikes on board in the event that rack space is not available for that rider. Finally, the DTA's plans for a new multimodal transit terminal in the downtown area includes space for a bike station in which riders could store bikes. Future ideas include having a full bike station with access to shower facilities and maintenance services adjacent to the new transit center.

Figure 4.27: Number of Bikes Carried by DTA Buses per Year



Source: DTA, 2013.

Interregional connectivity

The Duluth-Superior area has a number of regional and interregional assets for non-motorized modes of transportation. Most noted for their connection to the Lake Superior shoreline are the Lakewalk in Duluth and the Osaugie Trail in Superior. In terms of their length and regional significance are the Willard Munger Trail and the Tri-County Corridor. Natural surface trails include the



Bus-mounted bike rack

Increase Demand to Put Bikes on Buses:

- The number of bicycles that the DTA carried has grown by 150% from under 10,000 bicycles a year to over 25,000 a year. DTA is looking at options to accommodate additional bicycles.
- The topographic nature of Duluth impacts the demand, as bicyclists will ride the down-hill portion of their trip, and put their bike on the bus for the up-hill portion of the trip.

Duluth Traverse, a mountain biking trail across Duluth and the Superior Hiking Trail (a 275 mile footpath from Duluth to the Canadian border).

Communities on the Minnesota side of the MIC area have worked to extend these trails through the metropolitan area and link them to other local routes. At present, the City of Duluth is planning to create the “Cross City” trail connection through West Duluth, which will link the Munger Trail to the Lakewalk, and the cities of Proctor and Hermantown are planning on a major through-way trail with a connection to the Munger Trail to each community’s key destination and activity centers.

Operations & Maintenance

Data regarding the condition of sidewalk, paved trails and other infrastructure for non-motorized users is beginning to be regularly collected. In the past, the MIC has produced both a [Superior Sidewalk Inventory](#) and [Duluth Sidewalk Inventory](#) (updated in 2012), though the Superior information is now 15 years old.

Results of the MIC’s inventories showed that the sidewalk networks in Duluth and Superior were fairly balanced in terms of the number of miles in “Good,” “Fair,” and “Poor” condition, but with a number of missing sidewalk segments, including along major roadway corridors including on the north side of Central Entrance between Pecan Avenue and Arlington Road, London Road between 21st Ave E and 25th Ave East, MN Hwy 23 between I-35 and Gary-New Duluth.

While the Duluth sidewalk data was updated by the MIC in 2012, updating Superior sidewalk inventory (as many sidewalks have been recently replaced in the last 5 years) and collecting sidewalk inventory and condition analysis for the Cities of Hermantown and Proctor and other areas of recent growth in the metro is needed. Such inventories could help to identify any additional gaps or deficiencies as well as to further monitor system conditions, and help area planners coordinate projects.

Beyond the need for more information, however, are challenges related to financing sidewalk and bikeway improvements. Much of this is due to the limited amount of funding available to the area versus the level of its maintenance needs. Other aspects of this challenge are policy based. Many of the jurisdictions require residents of a street to pay for its sidewalks and sidewalk improvements. However, communities have not mandated such improvements.

Another maintenance challenge relating to non-motorized assets in the area is snow removal. Local jurisdictions have adopted ordinances requiring owners to clear the sidewalks in front of their properties within 24 hours of a snow event. Budget limitations make this difficult to enforce, and the result is often a patchwork of

Interregional Trail Connections

Existing:

- **Willard Munger State Trail (MN)**

Hinckley to Duluth - 63 mile paved segment connects at 75th Ave West/Lake Superior Zoo.

Alex Laveau Memorial Trail - 22 mile paved/gravel segment along MN Hwy 23 in Gary/New Duluth through Wrenshall into Carlton.

Matthew Lourey State Trail - 80 mile natural surface trail passes through St. Croix State Park linking the Chengwatanan, St. Croix and Nemadji State Forests.

- **Gitche Gami State Trail (MN)**

Two Harbors to Grand Marais - 88 mile paved trail (not completed). Duluth to Two Harbors connection is a paved pathway along the North Shore Scenic Drive connecting the Lakewalk at Brighton Beach in Duluth to Two Harbors.

- **Tri-County Corridor (WI)**

Superior to Ashland - 62 mile gravel trail connecting Superior and the Osaugie Trail to Ashland.

clearings and barriers. Anecdotally, this problem is significant throughout the Duluth-Superior urbanized area, but only portions of the system have been studied during short periods of time. A recent study of transportation patterns near the University of Minnesota, Duluth and College of St. Scholastica ([UMD-CSS snow removal assessment](#)) showed prolonged obstruction of certain sidewalks along major pedestrian corridors, which caused all foot traffic to move into the street.

Safety & Security

The MIC's efforts are guided by [Safety Conscious Planning](#) aimed at ensuring that transportation improvements in the Duluth-Superior area result in making the communities transportation assets safer. This is particularly the case with roadway improvements because between the interaction of motorized and non-motorized movements.

Unlike drivers, who benefit from numerous safety features built into vehicles, even crashes at modest-speeds can be severe for vulnerable users of the roadway including pedestrians and bicyclists (Figure 4.28). That is why, in addition to advocating for safety through aspects of road design, the MIC works with area jurisdictions and stakeholders to advance public awareness and education through outreach efforts such as [Share the Road](#).

Pedestrian & Bicycle Crashes in the MIC area

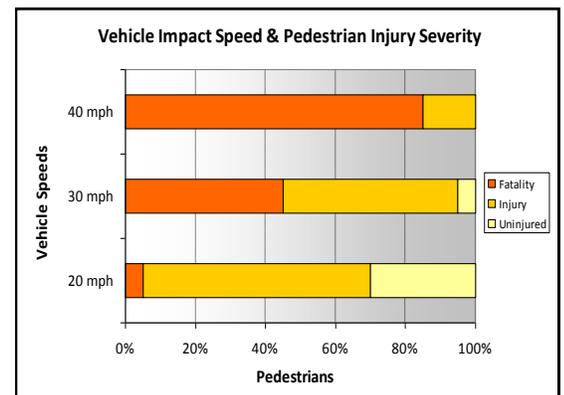
Crash data shows between 30 and 40 pedestrians are struck by vehicles in the Duluth-Superior area annually (Figure 4.29), and there are approximately 20 collisions with cyclists (Figure 4.30). These crashes have happened at various locations throughout the metro area and there are too few to point to any specific street or intersection as being particularly dangerous. Yet, when comparing them on a per capita basis to averages for Minnesota and Wisconsin (Figures 4.31 and 4.32), it's apparent that there is room for improvement. And that improvement will need to come from a combination of information gathering, education and outreach, policy decisions, and engineering.

The MIC's objectives regarding non-motorized safety begin with a continuing assessment of available safety-related information for the area. From this information the MIC will work to identify needed improvements and work with jurisdictions and stakeholders to prioritize these needs and decide on the most appropriate methods to use to achieve those improvements.



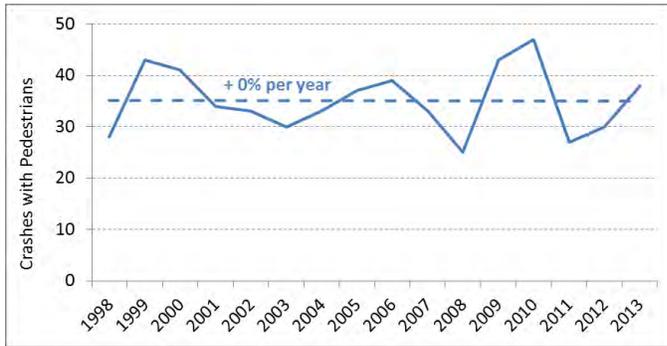
Cyclist signaling at an intersection

Figure 4.28: Relationship between Vehicle Speed and Severity of Pedestrian Injury



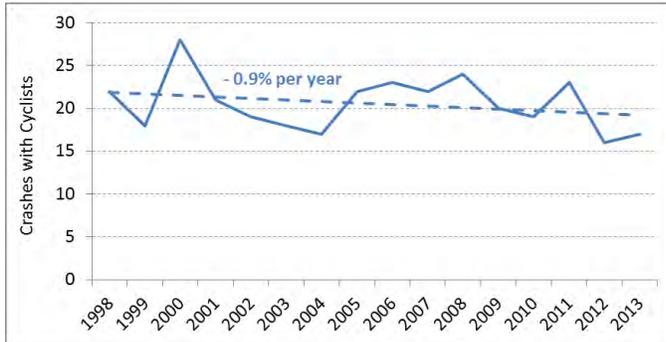
Source: Literature review on Vehicle Travel Speeds and Pedestrian Injuries; U.S. DOT National Highway Traffic Safety Administration, 1999

Figure 4.29 Crashes with pedestrians in the MIC area (1998-2013)



Source: MnDOT Crash Mapping Analysis Tool (CMAT), 2014; Wisconsin MV4000 Crash Database, 2014.

Figure 4.30 Crashes with cyclists in the MIC area (1998-2013)



Source: MnDOT Crash Mapping Analysis Tool (CMAT), 2014; Wisconsin MV4000 Crash Database, 2014.

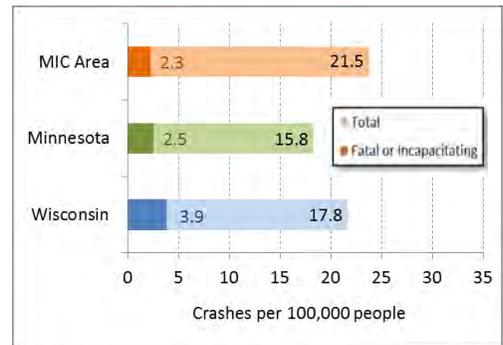
Promoting Safer Design Features

As with issues of accessibility and mobility, the physical nature of streets can lead to situations that are not ideal from a safety stand point. Wide streets and turning radii, for instance, not only expose crossing pedestrians to vehicles longer, but they tend to make drivers drive faster. Likewise, there are conditions that create riskier situations for cycling, such as requiring both cyclists and automobiles to travel in the same stream of traffic up a steep incline.

Locations of Concern within the MIC Area

The MIC's objectives regarding the safety of non-motorized transportation include continual assessment of safety related data to identify and prioritize needed improvements, and to use this information to assist jurisdictions in implementing projects. Unsafe situations can be addressed in a number of ways. In some

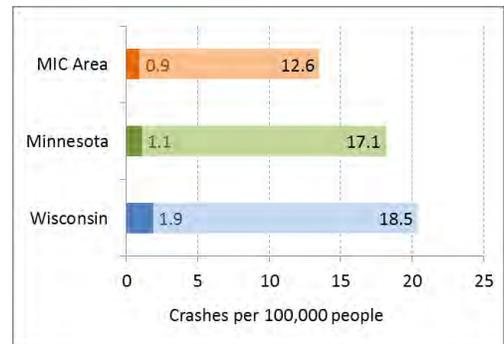
Figure 4.31 Per capita crashes with pedestrians (3-year average 2010-2012)



Sources: MnDOT Crash Mapping Analysis Tool, 2014;

Wisconsin MV4000 Crash Database, 2014

Figure 4.32 Per capita crashes with cyclists (3-year average 2010-2012)



Sources: MnDOT Crash Mapping Analysis Tool, 2014;

Wisconsin MV4000 Crash Database, 2014



Source: People for Bikes - An example of a two-way protected bikeway allowing for separated bike travel

instances they may require reconstruction, such as placing a raised median in the middle of a street to shorten distances and allow pedestrians refuge mid-crossing, but issues can often be addressed in conjunction with the resurfacing of a road, and often with less expensive treatments, such as repainting crossings with high-visibility paint, or installing high-visibility stantions in the roadway, as the City of Superior has recently done.

In addition to identifying locations of concern for non-motorized users in the metropolitan area, the MIC will promote recommended improvements, and work with area jurisdictions to find ways to appropriately incorporate them into new construction and as improvements to existing facilities.

Security for non-motorized modes

Ensuring the security of non-motorized forms of transportation is often largely a matter of disincentivising criminal behavior by making areas more visible and open for surveillance. In addition to the Police Departments' patrolling of the communities, and efforts such as Duluth's Clean & Safe Team sponsored by Duluth's Greater Downtown Council, ensuring effective lighting along streets and paths can greatly increase the security of environments for non-motorized travel. This tends to be more of an issue with separated pathways in the MIC area, such as Duluth's Lakewalk and Superior's Osaugie Trail, which have several stretches that are not lighted.

Supporting Statewide and Local Safety Initiatives

The MIC will continue to assist jurisdictions and stakeholders in advancing initiatives aimed at making their communities safer for non-motorized users. This includes initiatives such as the Lake Superior Region Safe Communities Coalition; and state and local Complete Streets efforts; Safe Routes To Schools planning; and state Toward Zero Deaths and Share the Road initiatives, which the MIC will continue lending technical and planning support.

Moving Toward 2040

The Duluth-Superior area already has extensive sidewalk and bike route connections, but throughout these networks exist a variety of deficiencies related to the accessibility, safety, and condition of the various infrastructure. Better information is needed to identify and prioritize needed improvements, especially in light of limited funding.

Meanwhile, newer development patterns occurring in areas outside of older urban centers are trending towards designs that threaten to create barriers and mobility burdens for non-motorized users of the

Treatments for Making Street Crossings Safer:

- Programming/lengthening protected pedestrian phases into signal cycles
- Installing signal countdown timers
- high-visibility pedestrian crossing signs, cross-walks and pavement markings
- flashing pedestrian crossing signs, signal count down timers, programming protected pedestrian phases into signal cycles.
- [HAWK](#) signals



Crossing guard near Duluth area school

transportation system. In addition, a concern has arisen regarding recent commercial redevelopment patterns, particularly along major roadways, as they have taken an auto-oriented design, making it more uncomfortable and difficult for pedestrians, bicyclists and transit users to access these developments. Efforts will need to be made to ensure the needs of non-motorized users are receiving sufficient consideration during the review of site designs for new development, while at the same time more effort needs to be made to coordinate planning and better align the activities of the area's various jurisdictions, private developers and other stakeholder groups.

Inefficiencies in local policies and procedures related to the maintenance of non-motorized facilities, such as with snow removal or sidewalk replacement should be addressed in order to assure the continued accessibility and safety of existing facilities.

Non-motorized transportation:

General Recommendations

- Identify gaps, barriers, safety concerns and quality of connections within the transportation system.
- Update existing sidewalk and bike route inventories to account for information related to condition of infrastructure and presence or absence of ADA compliant design features.
- Continue to develop methods and procedures for measuring the level of bicycle and pedestrian usage of facilities.
- Work to ensure stronger consideration of the needs of non-motorized users during local site design review process.
- Identify and consider alternative funding strategies or mechanisms to supplement traditional funding sources.
- Work to integrate facilities in ways that improve and encourage multimodal connections.
- Continue supporting statewide and local initiatives that focus on improving conditions of accessibility, mobility, safety and security for non-motorized users.
- Provide public education and outreach regarding bicycle and pedestrian issues.

Priority Trail Connections:

- **Munger Trail connection ("Cross City Trail") - Duluth**

Paved trail from Lake Superior Zoo (75th Ave W to Bayfront

- **North Shore Scenic Drive Pathway**

Paved trail/pathway along the North Shore Scenic Drive connecting Duluth and Two Harbors

- **Proctor & Hermantown Trails -**

Paved trail system connecting Proctor & Hermantown key points to regional trails and destinations

- **Lowell to Lakewalk Trail - Duluth**

Paved trail from Rice Lake Road (Lowell Elementary School) to Lakewalk

- **Winter Street Trail - Superior**

Paved trail from US Hwy 2/53 to Bong Bridge ped-bikeway

- **Crosstown Trail - Superior**

Paved trail from 30th Ave. to Hwy 105

- **Wisconsin Point Trail - Superior**

Paved trail extension to lighthouse

Improving Connections 2040 - Non-Motorized Transportation

SPECIFIC Issues to Be Addressing:

- Identify the missing connections to the existing trails systems, including the Lakewalk, Munger Trail, and Cross City Trail (i.e. missing curb ramps, pathways to neighborhoods, community facilities, business districts).
- Install bikeway facilities as appropriate to accommodate all levels of bicyclists.
- Explore new technologies for reducing the impact of the vertical challenge in Duluth.
- Develop a plan to complete the missing sidewalk links and reduce the barriers to cross major streets.
- Identify improvements for areas of concern for bicyclists and pedestrians, including at the following major locations:
 - Superior Street at Mesaba Ave
 - Grand Ave at I-35
 - Lake Ave at I-35

MOVEMENT OF PEOPLE: PASSENGER RAIL

Efforts from various entities throughout the country are currently underway to bring high-speed passenger rail service to Duluth-Superior. As the regional trade center for NE Minnesota and NW Wisconsin, as well as a nationally recognized tourist destination, Duluth-Superior has the potential to both support and benefit from reestablishing passenger rail connection between the Twin Ports and the Twin Cities. The MIC is supportive of this endeavor as it relates to increasing transportation options and creating multimodal connections. Staff continues to stay connected with the studies currently underway that are consultant-led: preliminary engineering for grade crossings/roads and station location plans for both Duluth and Superior.

Accessibility & Mobility

The proposed [Northern Lights Express](#) (NLX) service, in coordination with the planning efforts of local jurisdictions, would increase transportation options for those who make the estimated 4.3 million trips between the Twin Ports and the Twin Cities annually.¹

Duluth-Superior Terminus:

Plans for local connections include stops in both Superior and Duluth. The Historic Duluth Depot has been identified as the stop in Duluth, where it will connect with an adjacent multimodal transit center that the DTA is currently building. This center is planned to bring together local and intercity bus services, taxi and rental car services, long-term parking, and amenities for cyclists.

Terminus in the Twin Cities:

The NLX's Twin Cities terminus is planned to be Target Field Station which will provide direct connections to the Northstar Corridor (St. Cloud), Blue Line light rail (to Minneapolis-St. Paul International Airport/Mall of America), and Green Line light rail (St. Paul), as well as other Metro Transit services. The Target Field Station connects to regional and metro bike trail to provide a multi-modal connection.

Operations & Maintenance

A preliminary [feasibility study](#) shows that in order to capture the greatest demand with optimal costs, service should be as follows:



Connections 2040

Return of passenger rail service to Duluth-Superior, increasing multimodal connections and transportation opportunities for commuters and travelers.

Strengths

- Viable rail corridor in place.
- Existing potential for increased mobility.
- Existing potential for strong multimodal connections.
- Reuse of historic Duluth Depot and possible reuse of a Superior depot.

Challenges

- Expensive investment required.
- Making Passenger rail a viable competitor to the personal automobile.
- Ensuring safety & security needs are met at crossings and stations.

- Train speeds of 110 mph (2-hour commute time)
- 4 trips to Duluth-Superior per day

1 MnDOT Minnesota Comprehensive Statewide Freight and Passenger Rail Plan: Passenger Rail System Draft Technical Memo 3

Rail Authority & Operator

The overall cost of operations (currently estimated at \$33.38/mile*) will be the responsibility of a future rail authority and contracted rail operator, both of which have not yet been identified. Estimates also suggest that operations will be self-sustaining through ticket sales, though the state would be looked upon to subsidize the difference.

Infrastructure

The proposed NLX service will use existing BNSF freight lines already existing along the 155 mile corridor between Minneapolis and Duluth. Cost-sharing arrangements still need to be negotiated, but BNSF will remain responsible for the maintenance of track and right-of-way. This arrangement defrays significant expense. Yet, in order to support train speeds of 110 mph, upgrades to existing track will still be required.

Results of an environmental impact assessment are still pending, and track alignments have not yet been identified in the MPO area, but new track is anticipated, as is reconstruction of the Grassy Point Bridge between Duluth and Superior.

Cost estimates as they currently exist are shown in Table 4.9.

Table 4.9: Current cost estimates for NLX project

Project component	Estimated Cost
Capital	\$ 550 million
Engineering	\$ 45 million
Administrative (includes env. impact assessment)	\$ 20 million
Total	\$ 615 million

Source: St. Louis & Lake Counties Regional Rail Alliance, 2009.

Safety & Security

Safety and security needs will require a great deal of attention during planning and preliminary engineering for the NLX. The higher-speeds will likely require significant upgrades to existing crossings and traffic control devices; as final track alignment is decided upon with additional at-grade crossings a possibility. At a minimum, the following should be conducted:

The proposed NLX would provide connection to more than the Twin Cities:

The proposed NLX passenger rail service will not only transport passengers between the Twin Cities and the Twin Ports. Three other stations are currently planned: Coon Rapids, Cambridge, and Hinckley, Minnesota (see Figure 4.33). These stops open up service to an additional estimated 355,000 trips annually.



Figure 4.33

- A system-wide risk assessment.
- A grade crossing hazard analysis.

** TEMS study: "Restoration of Intercity Rail Service in the Minneapolis-Duluth/Superior Corridor," 2007.*

Security issues also demand significant attention, not just to the surveillance of trains, tracks and facilities, but to communication and coordination efforts among all the station operators and various other agencies along the line. This will include security concerns that cross over to other operators such as the DTA's transit operations. At a minimum, the following will need to be carried out and coordinated:

- Security threat & vulnerability analysis.
- Wayside intrusion detection analysis.

Moving Towards 2040

The trend across the nation is a growing support and demand for passenger rail services. When service between Duluth-Superior and the Twin Cities will happen is still unclear, but planning for it continues, with significant work being done to determine exactly what such service will look like, and how it will be delivered. Opportunities remain to ensure that accessibility and multimodal connections are maximized, and that safety and security issues are effectively addressed.

Preparing for the Future

What's being done:

- Preliminary Engineering for at-grade crossings
- Station location study for Duluth and Superior

What needs to be done:

- Assessment of local safety and security needs.
- Operational & cost-sharing arrangements

General Recommendations Moving Forward

- Create the most direct/least inconvenient connections between NXL service and DTA transit services.
- Ensure that advanced attention is given to the planning and coordinating safety and security needs; emphasis given to communication and interoperability between NLX and both traffic and transit operations.

MOVEMENT OF PEOPLE: TRANSIT

Public transit is an important transportation asset for the Duluth-Superior metropolitan area. It offers a reliable and inexpensive alternative for those who cannot afford, or choose not to use a personal automobile for their transportation needs. As explained in Chapter 3, those who are older than 70 are expected to represent a growing percentage of the area’s population in the coming decades. This is expected to result in greater demand for transit services throughout the MIC area.

Accessibility & Mobility

Residents of the Duluth-Superior metropolitan area have a number of transit services available to them. The MIC will work to coordinate efforts among transit providers and area jurisdictions to ensure that residents of the area will continue to enjoy the improved mobility through transit.

Local Regular-Route Service

The Duluth Superior Transit Authority (DTA) operates 20 fixed transit routes in the MIC area (see [DTA route map](#)) with a fleet of 73 buses. The hours of operation vary by route, but generally follow the summary shown in Table 4.10. Since 2009, the DTA has increased the hours of operation for most of its routes, especially on Sundays, per public request.

Table 4.10: Hours of Operation: DTA Regular-route Service

Service	Hours of operation (2009)	% DTA routes in operation (2009)	Hours of operation (2014)	% DTA routes in operation (2014)
Weekday	6 AM - 9 PM	100 %	6 AM - 9:30 PM	100 %
Saturday	8:30 AM - 7 PM	80 %	8 AM - 8 PM	87 %
Sunday	9:30 AM - 7 PM	60 %	9:45 AM - 8 PM	67 %

Source: Duluth Transit Authority, 2014

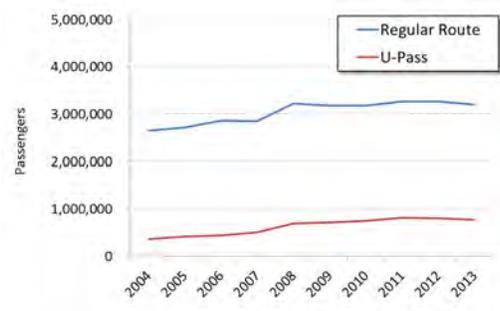
Use of the DTA regular route service has grown substantially in recent years. Annual ridership has increased by more than 450,000 since 2004. The success of the DTA’s U-Pass program has been a big contributor to this growth. The program is designed to serve the students, faculty, and staff of the area’s colleges and universities. It accounted for nearly a quarter of all rides in 2013 (Figure 4.34).

Compared to other urban areas across the nation, Duluth-Superior is a metropolitan area with a relatively low population density. Lower densities can be a challenge to providing sufficient levels of transit service, as it generally translates into having to expend more resources to travel longer distances that serve less people.



DTA Regular Route bus

Figure 4.34: Regular Route Service: Annual Passengers



Source: Duluth Transit Authority (2014)

Past assessments of the DTA's fixed route system have shown, however, that the DTA maintains good transit coverage despite the challenges of serving a metro area with lower population densities. It brings service within 3 blocks of more than 90% of potential ridership in Duluth and Superior, and has been shown to serve more than 90% percent of entry-level jobs & low-income housing in Duluth.

Current Transit Hubs & Planned Future Connections

Service along the DTA's network of fixed routes is organized around a central transit center in downtown Duluth. By virtue of the system's design, the Miller Hill Mall and the University of Minnesota Duluth (UMD) act as secondary hubs, and the DTA continues to plan for a potential adjustment of its operations to serve similar hub locations in the West Duluth and Downtown Superior areas in the future. These locations are shown in Figure 4.35 below. This would create better connectivity and greater frequency by allowing for more direct routes to be run between Superior and West Duluth and West Duluth and the mall area.

The DTA is also currently in the process of moving their downtown Duluth operations to a new multimodal transit center at Michigan St. & 3rd Ave W (see images at right). It is scheduled to open in November 2015, and will create a more seamless and direct linkages with intercity bus service, local taxi services, and a potential future high-speed rail service. In addition, the building includes a parking ramp with charging stations for electric vehicles, bike parking, and space for retail.



Drawing of the future DTA Downtown Multimodal Center.



Aerial view of the DTA Multimodal Center site, showing its location relative to the main transit line on Superior St.

Figure 4.35: Existing and potential transit hubs

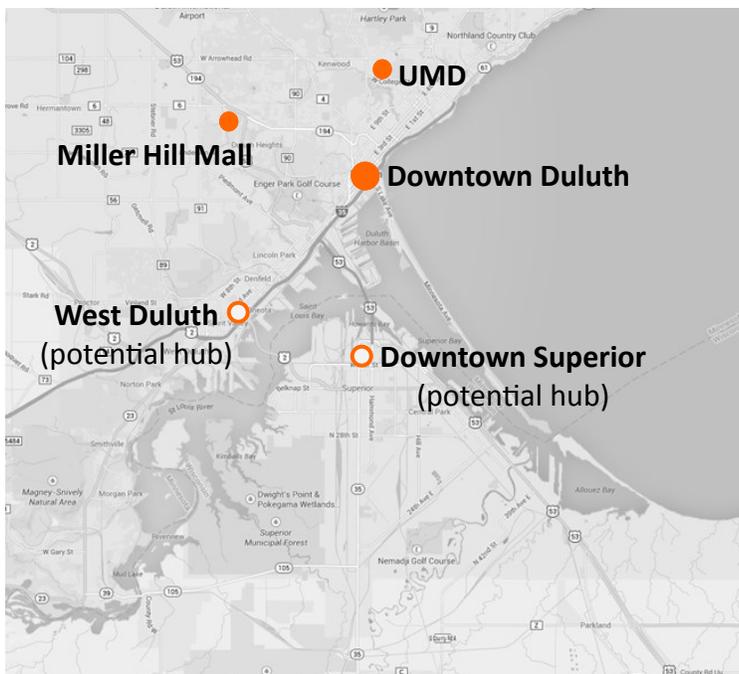


Image source: Google Maps (2014).

Includes a parking ramp with charging stations for electric vehicles, bike parking, and space for retail, making it a center for multiple users and creating a variety of multimodal opportunities.

Regular Route Service: Other Amenities

Beyond providing accessibility through a well designed fixed-route system, the DTA also strives to ensure accessibility and provide multimodal opportunities through the following features:

- Ramps or lifts, and reserved space and equipment to secure riders using wheelchairs.
- “Kneelers” to lower the front of the bus to aid people of limited mobility when getting on and off the bus.
- Bike racks available for use during all twelve months of the year.
- Service to the DLH international airport.
- Service to four existing Park & Ride lots (with plans to add more throughout the area).



DTA driver demonstrating use of the on-bus bike rack

Local Demand-Response Service: STRIDE

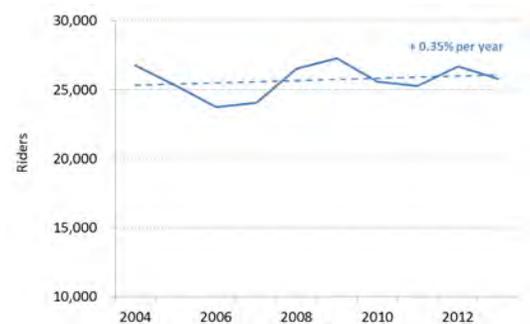
In compliance with the American with Disabilities Act (ADA), the DTA also provides a paratransit - or curb-to-curb “dial-a-ride” service with wheelchair-accessible buses and vans. The STRIDE (Special Transit RIDE) service does not follow a fixed route and is made available to qualified persons with long-term or temporary disabilities. Users of STRIDE (and those who may be accompanying them) can access the service anywhere in the Duluth-Superior urbanized area. The DTA operates nine vehicles during the hours shown in Table 4.11 below.



Passenger being assisted off a STRIDE bus.

The demand for STRIDE service can vary from year to year, but a trend line based on annual ridership numbers between the years 2004 and 2013 suggests that demand for the service has been growing at 0.35% annually (Figure 4.36). As more and more of the area’s population ages beyond 70 in the coming decades, demand for STRIDE is expected to increase substantially.

Figure 4.36:
Annual DTA ridership: STRIDE service



Source: Duluth Transit Authority (2014).

Table 4.11: Hours of Operation: DTA STRIDE Service

Service	Duluth (71 Sq. miles)	Superior (37 Sq. miles)
Weekday	6 AM - 11 PM	6 AM - 7 PM
Saturday	6 AM - 8 PM	7 AM - 7 PM
Sunday	8 AM - 7 PM	10:30 AM - 7 PM

Source: Duluth Transit Authority, 2014

Intercity Transit Services

Two intercity transit services currently operate in Duluth-Superior: Jefferson Lines serves communities along I-35 to the Twin Cities and LCS Coaches offers a commuter service to/from Clouquet, MN. Both services are limited to one arrival and departure per day.

There is movement to expand the number of intercity transit options in Duluth-Superior. Establishing intercity bus service between Superior and Eau Claire, WI is identified in [Connections 2030](#), WisDOT's long range transportation plan, and there are efforts currently underway to determine the feasibility of re-establishing intercity passenger rail service between Duluth-Superior and the Twin Cities (see information at right). If this occurs, it's anticipated to offer four arrival/departures per day.

Rural Transit Service

Residents of the Duluth-Superior area's rural communities also have regional transit service available to them through the Arrowhead Transit service operated by the Arrowhead Economic Opportunity Agency (AEOA). AEOA provides transit service to communities within NE Minnesota's seven county Arrowhead region.

Although Arrowhead Transit operates along primary routes, a hallmark of the service is flexibility. It offers both route-deviation and dial-a-ride opportunities based on its arrangements with individual counties. Anyone can use the service, regardless of abilities.

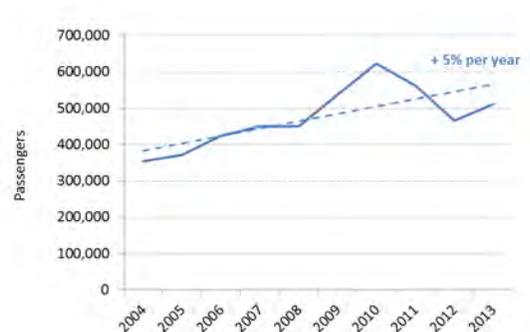
Arrowhead Transit has a fleet of 85 vehicles and operates between 6 AM and 6 PM, five days a week in the MIC area. Ridership has been increasing since 2000, indicating a growing demand for this service (Figure 4.37).

Efforts to Coordinate Regional Transportation Services

Beyond the DTA and rural transit services, there are numerous organizations that serve members, clientele or transit-dependent individuals in their communities. Efforts have been made to inventory such organizations and facilitate coordination among them, starting with the [NW MN & Duluth Human Services Coordinated Transportation Plan](#) and [Douglas County Human Services Coordinated Transportation Plan](#).

A major need that has been identified in these efforts is to have someone, or some agency in the region serve as a key point-person for providing information to people about such services and help to coordinate trips. Numerous organizations, including the MIC, continue to work to identify resources necessary to establish and sustain such a service.

Figure 4.37: Arrowhead Transit: Annual Passengers



Source: Arrowhead Economic Opportunities Agency (AEOA), 2014

Operations & Maintenance

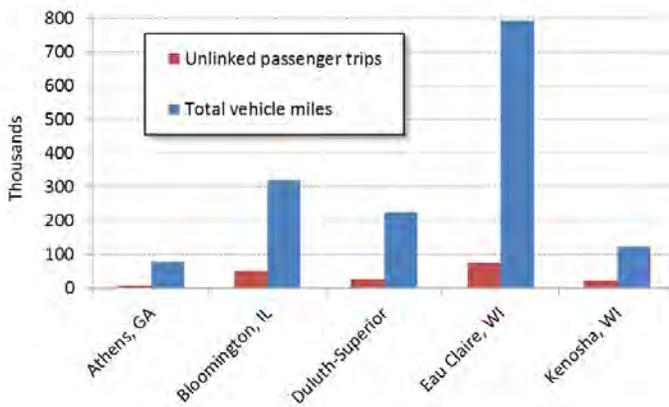
The MIC will coordinate efforts with jurisdictions and local transit agencies to help ensure the efficient and effective operations and maintenance of transit services, avoid intermodal conflicts and optimize the movement of transit riders throughout the MIC area.

Level of Service

A comparison of transit statistics with metropolitan areas similar in size and population densities to Duluth-Superior suggests that there's a stronger-than-average demand for transit service in Duluth-Superior (Figure 4.38).

A look at service across the MIC area, however, indicates that the current Regular Route service may be underserving the Superior residents (Table 4.12). The DTA is presently working with the MIC and Northwest Wisconsin Regional Planning Commission (NWRPC) to assess ways in which the DTA's operations could be adjusted to provide better levels of service on the Wisconsin side of the MIC area.

Figure 4.38: Annual Ridership and Passenger Miles in 2007*



Source: National Transit Database, 2014

Table 4.12: Duluth-Superior Service Comparison

Area	Sq. Miles	Miles of route (w/o bridges)	Population (2010)	Per capita income*	Population in poverty	Trips per capita** (2008)
Duluth	71	172	86,265	\$ 23,845	12.6 %	74
Superior	37	20	27,244	\$ 24,084	3.1%	12

Source: DTA and US Census Bureau, 2014.

* 2006-2010 American Community Survey 5-year estimate

** Ridership numbers for regular-route service only; based on 2008 boarding data.

Efficiency of Service

It remains a goal of the DTA to increase transit efficiencies every year, despite the fact that providing service in Duluth-Superior is challenging due to topography, lower population densities, and a general increase in the cost of fuel. Operating expenses have risen 3.4% per year between 2008 and 2012, even as adjustments were made to services. The DTA anticipates that this trend will continue for the foreseeable future and that the cost of operations will continue to be the biggest challenge for transit providers in the coming years. Figure 4.39 shows how increasing funds have been needed to maintain the same levels of service for the DTA's Regular Route service since 2008.

The performance of DTA routes is analyzed on a monthly basis to determine if adjustments need to be made in order to better optimize the use of transit resources. The DTA's thresholds are as follows: routes running with passenger per revenue hours of 36% to 50% below the average for all routes are considered warranted for adjustments; below 50%, possible elimination. Given the increasing costs of operations, the DTA may have to commence with reductions of service in coming years, regardless of increasing demand for greater levels of service.

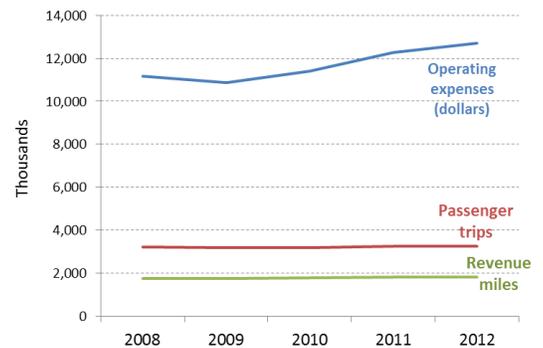
The MIC will continue to assist the DTA in identifying and implementing strategies to make their existing operations more efficient. An example of such a strategy is increasing the number of traffic signals with technologies that provide green-light priority for transit vehicles. Such improvements are being done as part of the DTA's multimodal terminal project. Another strategy that the DTA is seeking to employ is to integrate more hybrid- or fully electric buses into their fleet. Both strategies require significant investments and will require alternative sources of funding to be identified.

Fleet Maintenance Cycle

The DTA strives to maintain a fleet of different vehicle styles and sizes to address the changing service needs. Fleet adjustments in recent years have included the addition of 35-foot hybrid buses to the fleet, which provide 25% better fuel economy and 60% less emissions than standard buses.

The DTA estimates the service life cycle of one of its regular-route buses at 12 years, and aims to purchase 10 new buses every other year to maintain an average age of its entire fleet at 6 years. This target helps the DTA ensure safety and comfort for its passengers, as well as meet its maintenance cost targets. The DTA estimates the service life of its STRIDE vehicles at 6 years and programs 3 new vehicles within every three years to maintain its service and maintenance targets for STRIDE (Table 4.13 on the following page).

Figure 4.39:
Operating statistics: DTA Regular Route service



Source: National Transit Database, 2014



DTA buses in downtown Duluth

Table 4.13: DTA Fleet Maintenance Cycle

Vehicle Type	Operating life	Fleet size (2007)	Fleet turnover
Regular-route bus	12 years	63 buses	12 years
Downtown trolley	NA	2 trolleys	NA
STRIDE bus	5 years	9 vehicles	6 years

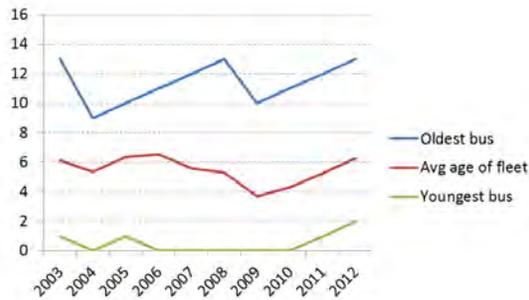
Source: Duluth Transit Authority, 2014

Looking at the age profile of the DTA’s fleet of Regular Route buses over the past decade, it can be seen that the DTA has been able to maintain its targets (Figure 4.40). When looking at the data displayed in Figure 4.41, however, it’s apparent these buses, overall are being driven more in order to meet increased levels of service. Similar trends are observed with the DTA’s fleet of STRIDE buses too. On the other hand, the DTA appears to be maintaining its fleet despite these increased levels of use (Figure 4.42).



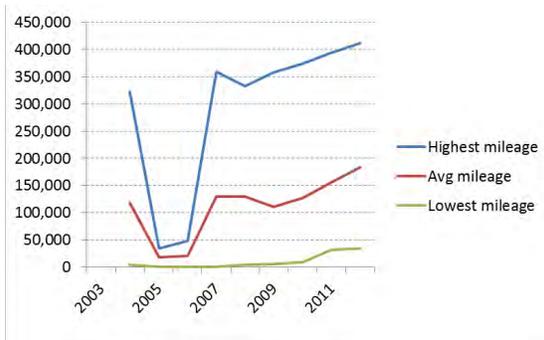
Hybrid-electric bus

Figure 4.40: Age profile of DTA Regular Route bus fleet (2003-2012)



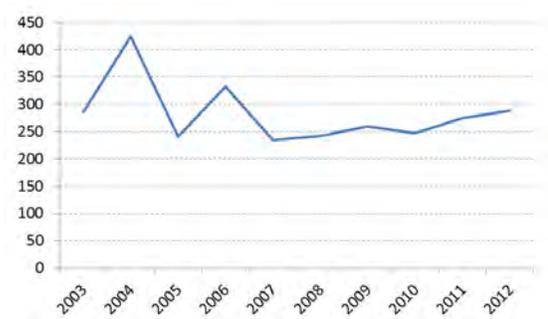
Source: National Transit Database (2104)

Figure 4.41: Mileage profile of DTA Regular Route bus fleet (2003-2012)



Source: National Transit Database (2104)

Figure 4.42: Number of major mechanical repairs to DTA Regular Route buses (2003-2012)*



Source: National Transit Database (2104)

* Repairs that result in a vehicle being suspended from its normally scheduled service.

Safety & Security

The MIC works to coordinate planning efforts with local entities to promote and support the safe operation of transit services in the Duluth-Superior metropolitan area. The MIC will work with local jurisdictions, including the DTA, to identify potential safety issues and review proposed transportation projects with an eye for safety.

Efforts of the Local Transit Authority

The DTA has established several standards that it strives to maintain regarding the safety and security of its transit services. It strives for zero passenger accidents, and it monitors, tracks and reports all safety and security related incidents on its buses and at its facilities, and it assesses passengers' perceptions regarding the safety and security of DTA services.

The agency maintains and updates a *Transit System Security Program Plan* as required by the Federal Transit Administration (FTA). Bus operators undergo annual safety and security training. All buses and facilities are equipped with surveillance cameras, and the DTA contracts with the Duluth Police Department for officers to ride bus routes.

Data Regarding Safety & Security

Crash data shows that the number of reported crashes involving buses in Duluth-Superior is similar to the state rate (Figure 4.X). Crash data for Duluth-Superior also includes non-transit vehicles.

Moving Toward 2040

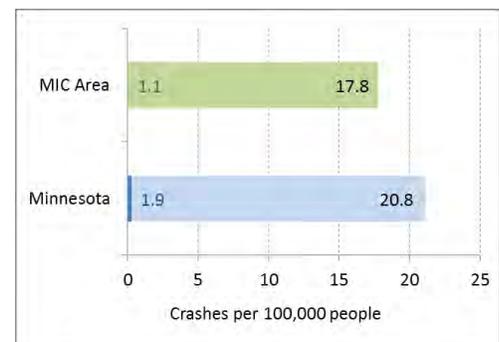
Ridership numbers since 2004 suggest the demand for transit services in the MIC area are growing. This will include additional demand for more travel options and opportunities to integrate the use of multiple modes of transportation.

In preparation for increasing demand, increases in funding for transit at the Federal, State and local levels are not certain, and pose a significant challenge in coming years. Therefore, the DTA and other service providers should explore and plan for ways that they can provide for greater levels of service in spite of the increasing cost of providing those services. Such planning will need to involve strategies that increase the efficiency of transit operations.

Transit: General Recommendations Moving Forward

- Continue to make increased service efficiency a primary transit objective while striving to meet demand.

Figure 4.43: Bus crashes per capita (3-year average: 2011-2013)



Source: MnDOT Crash Mapping Application (2014).

- Look for ways to improve local transit service both to and within the City of Superior, as well as rural areas of the MIC.
- Create transit hubs in Superior and West Duluth; increase the number of Park & Ride lots and connections between different transit services.
- Ensure the most direct, convenient connection between DTA services and potential passenger rail.
- Work with MnDOT, WisDOT, local jurisdictions and stakeholders to strengthen intercity bus service to/from Duluth-Superior.

CONCLUSION: MOVEMENT OF PEOPLE

Planning efforts, both locally and regionally, are underway to strengthen and build upon an already robust multi-modal transportation system to move people in the Duluth-Superior metropolitan area. This includes regional initiatives to improve airport services and to create high-speed passenger rail connections; as well as local initiatives such as advancing local “Complete Streets” policies to improve the multimodal quality of the area’s roadways.

Moving such initiatives forward while also maintaining the integrity of existing transportation assets, however, is going to require significant coordination in order to meet challenges related to changing travel patterns and growing needs for infrastructure maintenance and preservation. These challenges elevate the importance of measuring how the area’s various transportation assets are performing in terms of their physical integrity, connectivity, mobility, safety and security.

In its work with the area’s many jurisdictions, the MIC will continue to support the recommendations that have been identified in the previous pages for advancing improvements to the Duluth-Superior transportation system. In addition, it will continue seeking ways to improve how performance-based information is collected and assessed for the area’s numerous transportation assets, and how such information can be used to help jurisdictions make informed decisions and coordinate project implementation to ensure a future multimodal system for the area that is connected and efficiently operated.

MOVEMENT OF FREIGHT

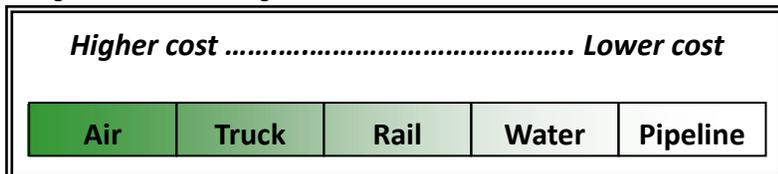
Duluth-Superior’s location at the western most point of Lake Superior make it a natural transshipment point for natural resource based commodities to transfer from rail and truck to ships. The ports of Duluth and Superior act as a transportation hub connecting highways and rail lines to Great Lakes and maritime shipping.

The movement of freight is especially important to the economic vitality of the Duluth-Superior metropolitan area and greater region. Providing for an efficient transportation system reduces costs, increases productivity, and is a key site location factor for new businesses. As domestic companies continue to operate in a competitive global environment, there will be more pressure on local decision-makers to improve the productivity and reliability of the transportation system in order to attract and retain successful businesses.

During the development of this plan, supporting the local shipping and freight industries was identified as a major transportation goal for the area, and subsequent objectives of the plan reflect a desire by area stakeholders to more fully incorporate needs of freight movement in the regional transportation system. See [Chapter 1](#) for the Long Range Plan Goals relevant to freight movements.

Freight movement can be described in terms of the freight service cost continuum below (Figure 4.46). Transportation modes listed at the left of the continuum, such as air and truck, tend to move freight with a higher value by weight, or freight that is more time sensitive. Modes toward the right typically move the lower-value bulk commodities. The following pages discuss the presence of these freight modes within the Duluth-Superior metro area, and identify areas where potential strengths and weakness related to mobility, safety, security, operations and maintenance may be addressed with future planning.

Figure 4.44: The Freight Service Cost Continuum



Moving freight in Duluth-Superior:

The movement of freight is an important part of the Duluth-Superior economy. This section of *Connections 2040* addresses issues of accessibility & mobility, operations & maintenance, and safety & security related to the following modes of transportation:

- Air page 4-54
- Rail page 4-56
- Truck page 4-60
- Maritime page 4-65
- Pipeline page 4-71
- Northern Minnesota/Northwest Wisconsin Freight Plan page 4-72
- Conclusion page 4-74

MOVEMENT OF FREIGHT: AIR

Air transportation is mostly known for moving people long distances in a short amount of time. That concept can also be applied to the movement of freight by air. Air freight by nature falls into the end of the freight service cost continuum (see Figure 4.44 on page 4-53) that is high value, low weight, time sensitive goods. Air freight carriers use integrated networks of aircraft and trucks to provide a door to door service. Air freight also is carried in the belly of passenger aircraft on a space available basis. Air freight movements through the Duluth International Airport (DLH) provide local business the ability to ship freight throughout the country very quickly.

Accessibility and Mobility

The air cargo area of DLH is served by an access road that has two access points onto Trunk Highway 53/194. The access points are at Stebner Road and Cirrus Drive. It is approximately 7 miles from the air cargo terminal to Interstate 35 via Trunk Highway 53. Over the past 10 years, this route has had upgrades in roadway and intersection capacity from I-35 to Haines Road. The MIC will continue to work with the Duluth Airport Authority and local road jurisdictions to maintain and improve roadway connectivity to the freight area of DLH.

Operations and Maintenance

Currently, air cargo service at DLH is performed by Bemidji Air Service for UPS and Mountain Air Cargo for FedEx. These routes are flown with small regional aircraft and are feeders to larger “conduit” routes flown from their regional hubs. As the cost of fuel skyrocketed, the network cargo carriers have shifted their operations away from air cargo to ground transportation. FedEx and UPS have developed intricate and efficient ground networks that have provided similar responsiveness at a fraction of the cost of air freight. Mountain Air and Bemidji Air are flying routes as solely determined by FedEx and UPS and are paid for performance. They have no input into the routes flown, rates, destinations, or the amount of product that would be transported.

One feature DLH does have when it comes to cargo potential is location as a processing point for international freight. DLH has a sufficiently sized runway to support large freighters, a staffed customs function that would translate into a quick turn, and a central location that would prove beneficial to distribution into the United States.

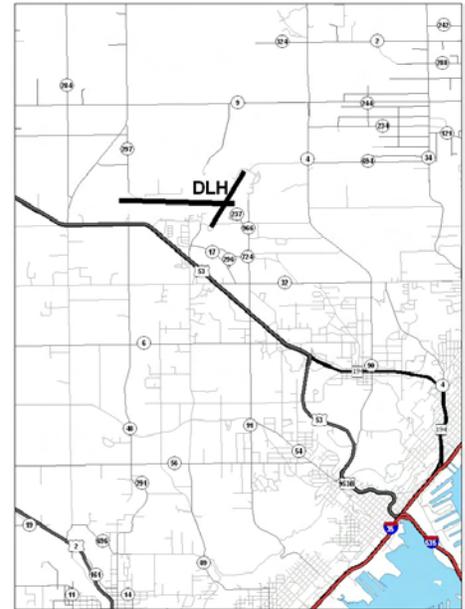
Safety and Security

The [Transportation Security Administration](#) (TSA) has developed the Freight Assessment System (FAS) to identify methods and procedures



Fed Ex plane at DLH

Figure 4.45: Proximity of DLH to Major Highways



for screening air freight for security risks.

Screening, in the case of air cargo, includes TSA-recognized known shipper programs. Screening may include inspection of a percentage of cargo through Explosives Detection System, Explosive Trace Detection, TSA certified canine, manual inspection, or other method of evaluation. Any or all of these components may be part of a known shipper program.

Land use safety zones surrounding airports also contribute to the safety of air freight movements. See Movement of People: Air for a description of the safety zone information.

Moving Towards 2040

The air freight industry is important to support the competitiveness of the Duluth-Superior area economy. The ability to quickly move freight throughout the country supports the productivity and efficiency of local businesses. The MIC will continue to work with the Duluth Airport Authority and jurisdictions surrounding the airport on compatible land use issues and implementing relevant recommendations from the Duluth Airport Land Use Plan.

Air Freight: General Recommendations Moving Forward

- Support land use decisions that increase the economic productivity and do not negatively impact the operations of the airport.
- Support efforts to increase options for the movement of freight by air.
- Look for opportunities to increase safety and security in all air freight movements.
- Make sure comprehensive plans for jurisdictions surrounding the airport consider the land use safety zones and other related issues such as noise when developing future land use scenarios near the airport.
- Maintain and improve roadway connectivity to the airport.

MOVEMENT OF FREIGHT: RAIL

The Duluth-Superior area relies heavily on the rail industry for the movement of resource based commodities and the Duluth-Superior rail system offers flexible and efficient low cost transportation for various commodities to markets throughout North America. Railroads move massive quantities of bulk goods such as coal, grain, and iron ore to the port of Duluth-Superior. According to the Duluth Seaway Port Authority up to 20 million tons of coal and 18 million tons of iron ore move through the port annually. Given the nature of northeast Minnesota's resource based economy, rail is the vital link in moving these commodities to their destinations. The location of the Duluth-Superior port provides a transshipment point that is efficiently served by rail. Rail lines serving the port carry iron ore from the Minnesota Iron Range, grain from western Minnesota and the Dakotas, and coal from Montana and Wyoming to the Duluth-Superior port. These rail connections allow the port of Duluth-Superior to be nationally competitive.

Accessibility and Mobility

Accessibility to rail service is determined by trackage ownership and trackage rights agreements between rail companies. This provides individual rail companies with competitive advantages and freight rates often result from how many rail companies a particular shipper has access to. If shippers have access to only one rail company, rates tend to be higher because of the lack of competition. This can cause certain commodities to shift to truck transportation where rail transportation may be more efficient.

Operations and Maintenance

There are four Class I rail companies operating in the MIC area (see sidebar at right). The primary rail companies are BNSF and CN with smaller operations for CPR and UP. CN has purchased two smaller regional rail companies over the past 15 years which have allowed it to control a track network that runs east and west across Canada and north and south across the United States and runs through Duluth and Superior.

The majority of local track is owned by BNSF and CN but complex trackage rights agreements allow competing rail companies access to other company's track. Each rail company also has at least one rail yard and maintenance facilities. See the [Duluth-Superior Rail Map](#). Rail movement between Duluth and Superior is over the Grassy Point Draw Bridge near the Bong Bridge (U.S. Hwy 2) and the Oliver Bridge at the terminus of MN Hwy 39. The Oliver Bridge is a two tiered bridge with trains on top and vehicles below.



Rail cars at Midwest Energy facilities in Superior

“Class 1 Railroad” defined:

The Surface Transportation Board (STB) defines a **Class I Railroad** in the United States as "having annual carrier operating revenues of \$250 million or more."

Class I Railroads Operating in Duluth-Superior:

- Burlington Northern and Santa Fe Railway (BNSF)
- Canadian Pacific Railway (CPR)
- Canadian National (CN)
- Union Pacific (UP)

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 from Canada to Wisconsin eventually connecting to Chicago. See the [Minnesota Freight Rail Map](#) and the [Wisconsin Rail Map](#).

The amount of freight moving by rail and other performance related data is proprietary in nature and difficult to collect in a timely fashion. The MIC will continue to seek appropriate ways of assessing and monitoring operations and maintenance data regarding movement of freight to and from Duluth-Superior using rail.

Safety and Security

Concerns over transporting hazardous materials by rail has been recently discussed at the state level in both Minnesota and Wisconsin. Hazardous materials rules are enforced by the Federal Rail Administration (FRA) of the U.S. DOT. Under authority delegated to FRA by the Secretary of Transportation, the Hazardous Materials Division administers a safety program that oversees the movement of hazardous materials such as petroleum, chemical, and nuclear products, throughout the Nation's rail transportation system, including shipments transported to and from international organizations. Both states are working with the FRA to update and implement new safety measures that include improvements in rail tanker cars carrying crude oil as well as better reporting measures to help emergency response.

Rail crossings with public roadways is one area where rail safety falls into the public realm. State and federal guidelines dictate what type of rail crossing safety device is present. The amount of rail traffic and vehicle traffic along with crossing geometrics such as sight distances are the major factors in determining the type of safety device. The general types of safety devices include crossbucks, warning lights and safety arms blocking the roadway.

Examining total train crashes at crossings in the MIC area over the 16 year period from 1998 to 2013 show 2 or less crashes each year except 2002 and 2009 when there was four (see Figure 4.46 on the following page). Looking at crash rates over the three year period from 2010 to 2012 show the MIC area to be under the state averages for Minnesota and Wisconsin (see Figure 4.47).

Currently rail crossing safety improvements are prioritized in Minnesota on a regional basis by MnDOT's Office of Freight and Commercial Vehicle Operations, Rail Administration Section. All rail crossings in the eight county Northeast Minnesota Area Transportation Partnership (NE ATP) area are reviewed for crashes and prioritized for safety upgrades. The NE ATP has dedicated funding targeted for rail crossing safety and

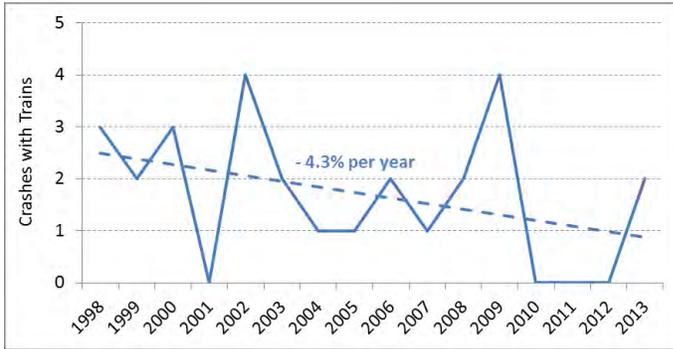


BNSF Locomotive in Superior



The Association of American Railroads has partnered with Operation Lifesaver, Inc., the Federal Railroad Administration and the Federal Transit Administration to launch a nationwide rail safety public education campaign designed to raise awareness about risky pedestrian and driver behavior around railroad tracks.

Figure 4.46 Crashes with trains in the MIC area (1998-2013)



Source: MnDOT Crash Mapping Analysis Tool (CMAT), 2014; Wisconsin MV4000 Crash Database, 2014.

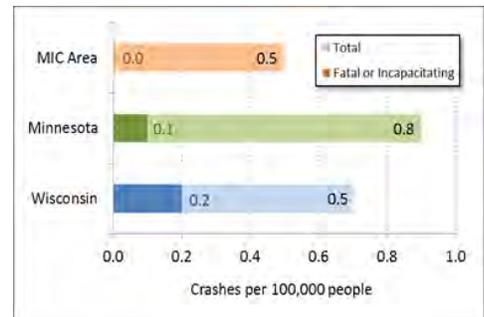
MIC area rail crossings in Minnesota are included in these prioritized safety upgrades.

In Wisconsin, the Office of the Commissioner of Railroads (OCR) enforces regulations related to railway safety and rail crossing safety. Any local road authority or rail company that wants to make any improvements or changes to a rail crossing must have OCR approval. The OCR also determines what warning devices are needed. WisDOT has dedicated funding for rail crossing safety upgrades on the Wisconsin side of the MIC planning area. The MIC has worked with the OCR and City of Superior in the past to upgrade the condition of rail crossings in the city.

Moving Toward 2040

Access to rail service is good for the MIC area as a whole but many area businesses only have access to one rail company which may result in higher rates. Rail infrastructure is privately owned by rail companies and upgrades and maintenance decisions are made privately. Public agencies like the MIC should engage the rail companies as decisions are made on the transportation system. Public/private partnerships can benefit the region as we develop freight moving systems to support increased economic development.

Figure 4.47 Number of crashes with trains per capita (3-year average 2010-2012)



Sources: MnDOT Crash Mapping Analysis Tool, 2014; Wisconsin MV4000 Crash Database, 2014

Rail Freight: General Recommendations Moving Forward

- Continue to examine rail crossings to identify if the proper safety devices are present.
- Monitor rail crashes to identify potential problem rail crossings.
- Promote development of an intermodal terminal. Potential locations include the port area for a truck/rail/maritime users or a local rail yard for truck /rail operations.
- Identify opportunities for moving freight by rail instead of truck.
- Promote access to multiple rail companies for businesses dependent on rail service.
- Identify opportunities to integrate rail freight infrastructure with road and port facilities to improve intermodal freight movements.
- Develop an MPO-wide rail crossing data base to inventory current crossing safety devices, daily train trips, ADT at crossings and crash data.
- Adopt use of new technologies that would help quantify rail freight movements.



New rail tracks near Helberg Drive



CN Train in West Duluth

National Highway System (NHS) shown in Figure 4.49 below.

The National Highway System is approximately 160,000 miles of roadway important to the nation's economy, defense, and mobility. The NHS, developed by the U.S. Department of Transportation in cooperation with the states, local officials, and MPOs, reaches virtually every part of our country. About 90 percent of America's population lives within five miles of an NHS road. All urban areas with a population of more than 50,000 and 93 percent of urban areas with a population of between 5,000 and 50,000 are within five miles of an NHS road.

Figure 4.49: MIC Area National Highway System (NHS) Routes



Our transportation infrastructure no longer can be a collection of individual modes competing with one another. Instead, it must be a unified system with each mode complementing the others. Increasingly, intermodal carriers rely on all forms of transportation to deliver goods and services to consumers in the most efficient manner possible. The NHS fulfills that goal by serving ports, airports, Amtrak stations, rail/truck terminals, intercity bus terminals, public transit stations, ferry terminals, pipeline terminals, and multipurpose passenger terminals. By providing these essential linkages to other modes, NHS creates a seamless transportation system for the rapid movement of people and products.

National Highway System:

The NHS is approximately 160,000 miles of roadway important to the nation's economy, defense, and mobility and was developed by the U.S. Department of Transportation in cooperation with the states, local officials, and MPOs.

MIC Area NHS Routes:

- I-35
- I-535
- U.S. Trunk Highway 53
- U.S. Trunk Highway 61 – Duluth to Two Harbors
- U.S. Trunk Highway 2 – North Dakota to I-35
- U.S. Trunk Highway 2 - U. S. Trunk Highway 53 to Michigan

Over the years, trucks have become longer and wider while most highway dimensions have remained the same. This creates a problem, as some highways can no longer accommodate modern trucks while other highways, such as interstates and some expressways, are designed for the larger vehicles. To mitigate the problem, larger trucks are now required to travel on a network of highways that can physically accommodate them. In 1982, the Federal Surface Transportation Assistance Act (STAA) authorized the establishment of the National Network of Truck Routes. This is a system of highways composed of interstate highways and other primary highways on which trucks are authorized to travel. Optional signing of the National Network Routes is also available. The sign symbols are a rear view of a semi trailer with a green circle around it. In the Duluth-Superior area, the National Network Routes mirrors the NHS.



Heavy truck using I-35, part of the NHS network within the MIC Area.

Operations and Maintenance

The amount of truck traffic moving in and through the Duluth-Superior area is forecast by each state's DOT. It is described by classifying a percentage of Average Daily Traffic (ADT) as Heavy Commercial Average Daily Traffic (HCADT). HCADT is an estimate of the total number of vehicles with at least two axles and six tires, using a specific segment of roadway (both directions) on any given day of the year. These

Figure 4.50: MIC Area Heavy Commercial Average Daily Traffic 2009



estimates, shown for the MIC area in Figure 4.50, are helpful to get an idea of which roadways are carrying larger amounts of truck traffic.

By examining HCADT information, the reader can see the areas of heaviest truck traffic are the core areas of Duluth and Superior. This reflects that in areas of the highest economic activities, such as central business districts, will be also areas of high truck traffic.

The truck route system in the Duluth-Superior area is comprised of the major roadways previously described in this section. Maintenance of these roadways is the responsibility of state, county and city road authorities. Bridges are another component of the area roadway system that must be maintained.

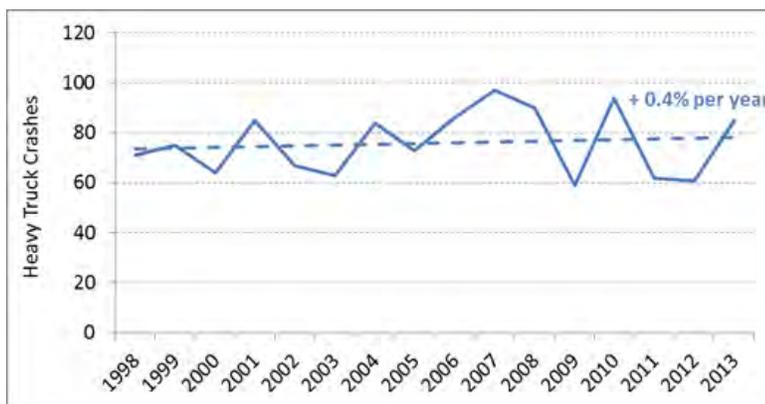
Much of the freight moving by truck through the MIC area passes through and may use either the Blatnik (Hwy 53 / I-535) or the Bong Bridge (Hwy 2) between Duluth and Superior. The Bong Bridge is the preferred bridge between Duluth and Superior for moving oversize/overweight loads.

Safety and Security

In examining truck related crashes in the MIC area from 1998 to 2013, it appears that truck crashes have risen very slowly during that time averaging about 0.4% per year. (see Figure 4.51). When crash rates are examined, the MIC area has a lower rate than state levels in both Wisconsin and Minnesota (see Figure 4.52). A closer analysis may be necessary to identify contributing factors such as weather conditions or site specific issues. This analysis can take place during regular TSM assessments of the roadway network.

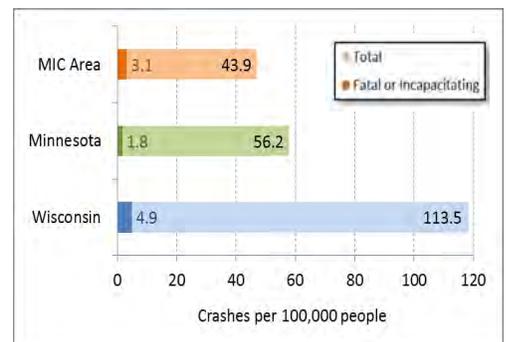
Recent efforts to reduce weather related crashes include the installation

Figure 4.51 Heavy truck crashes in the MIC area (1998-2013)



Source: MnDOT Crash Mapping Analysis Tool (CMAT), 2014; Wisconsin MV4000 Crash Database, 2014.

Figure 4.52 Heavy truck crashes per capita (3-year average 2010-2012)



Sources: MnDOT Crash Mapping Analysis Tool, 2014;

Wisconsin MV4000 Crash Database, 2014

of changeable message signage on the local bridges and Interstate system and other ITS improvements.

Moving Toward 2040

Moving freight efficiently by truck is fundamental to the healthy functioning of the regional economy. Truck routes should be reliable for businesses to be able to move inputs to manufacturing facilities and to move goods to markets. Many companies manage their inventories through the movement of goods across a reliable freight movement system and truck routes are a key component of that system. From a community perspective truck routes should be compatible with adjacent land uses where feasible.

Truck: General Recommendations Moving Forward

- Route through truck traffic away from downtown Superior by using National Network Truck Route signage to encourage through truck movements to use the Blatnik Bridge and East 2nd Street in Superior (I-535 & Hwy 53).
- Work toward getting an exemption for I-35 from Duluth to Cloquet for forest products trucks with permits to carry over 80,000 lbs.
- Continue to improve turning radii in areas of high truck traffic and low pedestrian movements.
- Incorporate over dimension load considerations in any roadway design.
- Work with local freight movers and public agencies to identify potential routes through Duluth-Superior to move over-dimension and over-weight loads.
- Focus on access management principles as a tool to reduce congestion, increase safety and enhance system reliability that freight movers want.
- Look for opportunities to develop intermodal facilities to make a more seamless connection between trucking and rail and maritime freight movements.



Freight Container at Intermodal Facility



National Network of Truck Routes Sign

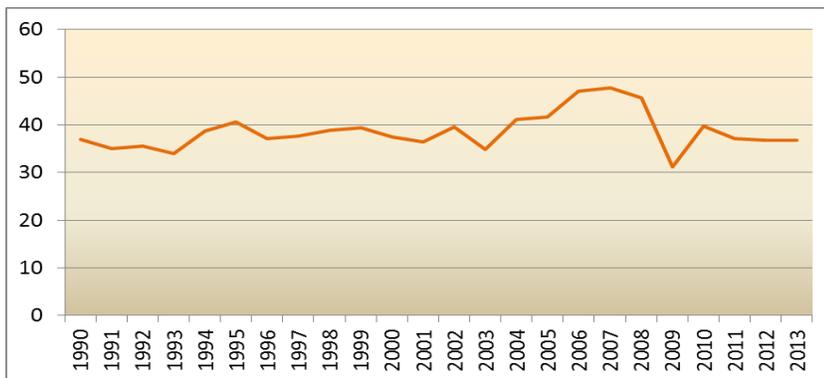
MOVEMENT OF FREIGHT: MARITIME

The movement of freight by water is the most efficient and environmentally friendly means of moving bulk commodities. The Duluth-Superior port is the premier bulk port on the Great Lakes, annually shipping approximately 40 million tons (see Figure 4.53). The primary commodities include iron ore, coal and grain. The regional economy relies heavily on the efficiency of these bulk materials moving through the port. According to *The ECONOMIC IMPACTS of the GREAT LAKES - ST. LAWRENCE SEAWAY SYSTEM* compiled by Martin Associates of Lancaster, Pennsylvania for the Duluth Seaway Port Authority in 2011, the port generated a total economic impact of over \$1.5 billion and a direct employment impact of 2,985 jobs. Adding in induced and indirect jobs bring the total jobs related to the port to 11,510. A total of \$156.3 million in state and federal taxes were generated by cargo and vessel activity at the Port of Duluth-Superior. This study highlighted how important the port is to the local and regional economies.

Accessibility and Mobility

The port of Duluth-Superior serves as one of North America's major links to world markets. The port is located only hours away from the commodity centers of the nation's breadbasket and about fourteen days sailing time to prime world markets. The proximity of the Duluth-Superior port to the Minnesota iron mines, the Minnesota-Dakota Red

Figure 4.53: Annual Freight Tonnes (in millions) for the Duluth-Superior Port



River Valley, Powder River Basin coal and Canadian grain and lumber products, makes it among the busiest ports in the United States. Water movement of freight falls on the end of the freight cost continuum (see Figure 4.44 on page 4-53) where the commodities moved are high weight, low value, and not as time sensitive.

The port of Duluth-Superior is primarily a transshipment harbor,



Ocean-going ship docked in Duluth



Grain elevator facilities at the Superior port

handling goods produced and consumed in areas far from the immediate confines of the port. Duluth-Superior is recognized worldwide as the designated route for shippers of heavy-lift and oversized cargo to and from North America. The geographic location of the Duluth-Superior port also provides direct benefits. Rail lines funnel into the area from Canada and major highways such as Interstate Highway 35, and Trunk Highways 2, 61, and 53 provide direct access to and from the rest of the United States. Recent access improvements include the addition of Helberg Drive which provided a second roadway access to the port terminal area (see Figure 4.54). This road has been valuable for moving over dimension pieces out of the port. The improved geometrics have allowed easier access to the regional highway system. As part of the project, rail improvements were also included.

Operations and Maintenance

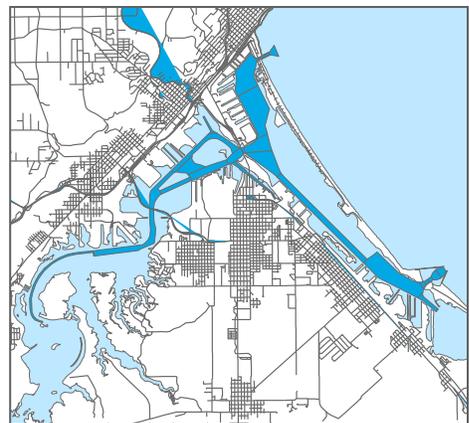
The U.S. Coast Guard along with its security and search and rescue duties is also responsible for maintaining aids to navigation throughout the Duluth-Superior port. The Coast Guard Cutter Alder is stationed in Duluth and performs numerous duties: oil spill recovery, aids to navigation, icebreaking, law enforcement, and marine environmental protection. One of the primary tasks of the Alder is tending the large amount of buoys in the Duluth-Superior harbor. The Alder was built in 2004 and is one of the most advanced vessels afloat, equipped with the latest technological developments in computers, navigation, environmental protection, and remote monitoring systems.

Operations and maintenance of the federally designated shipping channel (see Figure 4.55) is the responsibility of the Army Corps of Engineers. Within the Corps, the Detroit District Office is responsible for the Duluth-Superior port. The Corps regularly dredges the shipping channel to maintain a St Lawrence Seaway standard depth of 27 feet. This permits vessels to safely navigate the harbor with up to 78,000 tons of bulk cargo aboard. A major challenge for the Corps is managing the dredged materials removed from the harbor. Across the Great Lakes, confined disposal facilities (CDF) were developed to place dredged materials. These facilities have a limited life span and are difficult to replace given environmental and social concerns as well as the need for large tracts of waterfront land. A strategy developed by local port stakeholders has converted Erie Pier, the CDF in the Duluth-Superior port, to a processing and reuse facility. This strategy is outlined in the [Erie Pier Management Plan](#) developed by the MIC working through the HTAC and its Dredging Subcommittee. Beneficial reuse of dredged materials is also outlined in the Corps Dredged Material Management Plan (DMMP) which is a planning document required in every port the Corps maintains. The DMMP is required to outline how dredged materials are to be managed over a 20 year planning horizon.

Figure 4.54: Helberg Drive on Rices Point



Figure 4.55: Duluth-Superior Harbor's Federally Maintained Shipping Channel



Erie Pier Management Plan:

The purpose of the plan is to facilitate a dredged material reuse program at Erie Pier and convert it to a processing and reuse facility. This will ensure that dredged materials from the maintenance of the federal shipping channel will be beneficially reused, saving taxpayers the cost of building a new CDF.

Land use along the working waterfronts of Duluth and Superior is controlled by local land use and zoning laws from each city. To assist each city in protecting its waterfront resources, the MIC worked with port stakeholders to develop the [Duluth-Superior Port Land Use Plans](#). Through this planning process it was recognized that land along the federally designated shipping channel has a higher value in relation to its intended use for maritime freight movement. The public has invested and continues to invest in maintaining the shipping channel. As a result, these lands should be preserved for maritime uses. Once land previously used for maritime uses is converted to residential and commercial uses, it rarely reverts back. To ensure that a sufficient supply of land is preserved for maritime freight movements, Future Land Use maps were developed during the compilation of the Port Land Use Plan. This map outlines how the working waterfront land will be utilized in the future. Each city has either adopted the Port Land Use Plan or used the information in development of their Comprehensive Plans. The Port Plan is currently in the process of being updated.

The Duluth Seaway Port Authority owns and leases out facilities at the Clure Public Marine Terminal located on Rices Point in Duluth. The terminal is home to 16 businesses that employ almost 400 people. The operator at the Port Terminal is Lake Superior Warehousing Company, Incorporated (LSWCI), an independently owned company that contracts with the Port Authority. LSWCI is known world wide for the ability to unload and move heavy equipment. In the past decade they have conducted movement of large pieces of industrial equipment to the Oil Sands in Alberta, paper making machinery in Minnesota, mining equipment for the Minnesota Iron range and more recently wind energy equipment to destinations throughout the Midwest and Western Plains.

The majority of the port facilities in the Duluth-Superior port are privately owned and operated. Some are subsidiaries of large national companies. Midwest Energy Resources Company is a subsidiary of Detroit Edison and moves up to 20 million tons of low sulfur coal each year from the Powder River Basin in Wyoming and Montana to destinations throughout the Great Lakes. Other facilities such as the Canadian National (CN) Ore Docks (formerly known as the DM&IR Ore Docks) and the Burlington Northern Sante Fe (BNSF) Ore Docks are owned by national and international rail companies. The CN Railway Company and BNSF ship taconite from the Minnesota Iron Range to the lower Great Lakes steel mills by utilizing their ore docks in the Duluth-Superior port. There are also a number of other port facility operators in the port that move a variety of bulk materials to and from Duluth and Superior. The maintenance of the docks and slips adjacent to these facilities are the responsibility of the private operators.



Management of dredge materials at Erie Pier



CN ore docks in Duluth

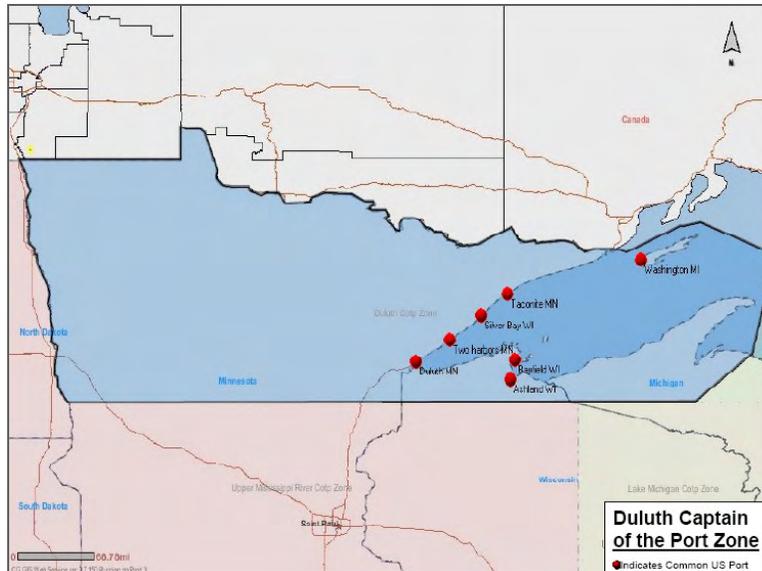
Safety and Security

Port security is the responsibility of the U.S. Coast Guard which is now part of the Department of Homeland Security. The local Coast Guard office, Marine Safety Unit Duluth, works with port stakeholders in developing three levels of security plans: Port Security Plan, facility security plans, and vessel security plans.



The Coast Guard Cutter, Alder

Figure 4.56: Area Covered by Marine Safety Unit—Duluth



The Port Security Plan was developed as a guideline for the formation of port security committees and delineates the process for security procedures to be followed in response to a recognized threat. This effort led to the creation of an area maritime security committee that has led to increased communication among law enforcement, emergency responders and the maritime community.

Each port facility in the Duluth-Superior harbor is required to have a facility security plan. These plans address employee training, drills, communications, access control, restricted areas and cargo handling as it relates to security. The facility plans must be submitted and approved by the U.S. Coast Guard. All port facilities in the Duluth-Superior harbor have completed their facility security plans. The Duluth Seaway Port Authority has secured grants and other federal funding to obtain new perimeter fencing at many waterfront businesses.

Vessel security plans are required for all vessels operating in U.S. waters and address topics such as personnel training, drills and exercises, procedures for interfacing with facilities and other vessels, communications, security systems and maintenance, access control, identification of restricted areas, cargo handling, and security incident

procedures. One vessel security plan can be used by a shipping company for more than one vessel if they are similar in design and function.

The Department of Homeland Security has also instituted the Transportation Worker Identification Credential (TWIC) Operations and Maintenance program. TWIC is a common identification credential for all personnel requiring unescorted access to secure areas of MTSA-regulated facilities and vessels, and all mariners holding Coast Guard-issued credentials. According to U.S. Coast Guard officials the Duluth-Superior port workers have a very high compliance rate with the program.

Moving Toward 2040

New Iron Range mining and steel making initiatives, the strong presence of the timber and agriculture industries, and development of the energy industry create future challenges for the freight transportation system. Whether it's getting natural resource based materials to manufacturing facilities or finished products to markets, the port will play a vital role in moving these materials.

Proposed new operations on the Iron Range include Essar Steel Minnesota whose plans may include constructing and operating an integrated steel plant on the western edge of the Mesabi iron range in northeast Minnesota. To be located north of Nashwauk, the taconite-to-steel facility will have an annual capacity of 1.5 million tons in steel-making capability when completed. Once operational, it will be the only facility in North America to include open pit iron ore mining, ore processing, direct reduced iron processing, and steel slab casting on a single site. Steel slabs may be transported by rail to the port of Duluth/Superior for national and international distribution.

Recent developments in the Bakken oil fields in North Dakota and Montana have produced pressure to move oil by maritime means. Historically oil has moved across the Great Lakes and currently pipeline and rail infrastructure are limited in getting this oil to refineries.

Maritime Freight: General Recommendations Moving Forward

- Continue to facilitate HTAC (see pages 2-7 & 2-8) and its Subcommittees on all issues relevant to freight movements in the port.
- Continue to work towards beneficially reusing all dredged materials from maintenance dredging the federally designated shipping channel.
- Continue to maintain and improve road and rail access to port facilities.



Lift of oversize cargo leaving Duluth for Alberta, Canada.

- Expand port facilities to accommodate new shipping trends and commodities currently under development.
- Preserve land adjacent to the federally designated shipping channel for maritime freight uses.
- Work with local resource agencies to preserve and enhance valuable habitat in the lower St. Louis River Estuary.
- Work with port stakeholders to educate the public on the importance of the Duluth-Superior port to the regional and local economies.
- Identify opportunities for private, public or public/private partnerships to rehabilitate and reuse under-utilized dock structures for additional maritime commerce uses.



Ship entering the Duluth-Superior port under the Aerial Lift Bridge

MOVEMENT OF FREIGHT: PIPELINE

Pipeline movement of freight through the MIC area is the mode of transportation that the MIC has the least impact on. The pipeline infrastructure is privately owned and its location is proprietary. The following information was compiled for the Northeast Minnesota/ Northwest Wisconsin Freight Plan (see following section about the plan).

Figure 4.57: Pipelines in Northern Minnesota and Northwest Wisconsin

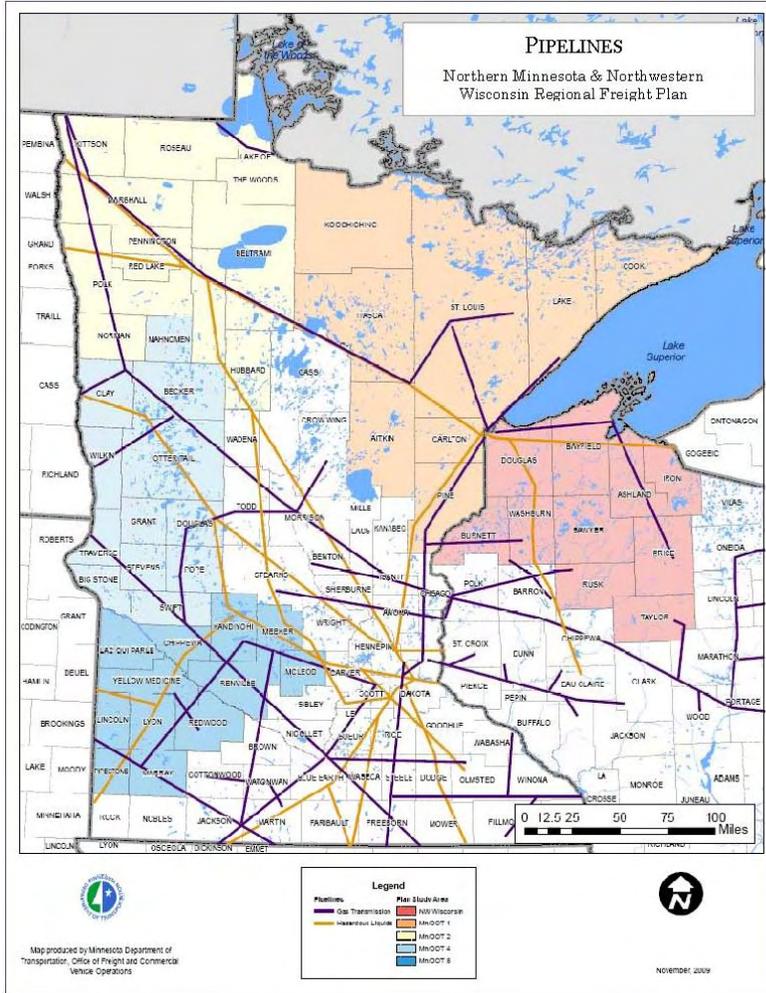


Figure 4.57 shows the extent of the pipeline network throughout Northern Minnesota and Northern Wisconsin. The system moves a significant tonnage of gas and hazardous liquids to and throughout the region, including the transportation of more than 75 different types of crude oil and natural gas. The end users range from power plants to private residences.

Several power and transmission companies account for the ownership and operation of regional pipeline. Magellan Midstream Partners L.P.

operates two terminals within Minnesota including one in Duluth. Additional pipelines are operated by the Great Lakes Gas Transmission L.P., Enbridge Energy, and Calumet, which transport gas as well as crude and refined petroleum products from Canada and the Dakotas to Duluth and Superior. Calumet's Superior Refinery is connected to Enbridge's Lakehead System of liquids pipelines, which transport crude oil from Western Canada to the region.

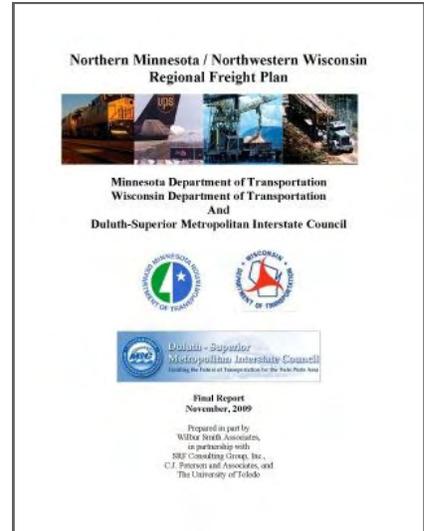
NORTHERN MINNESOTA / NORTHWEST WISCONSIN FREIGHT PLAN

Freight movements are rarely contained within an MPO but are regional, national and many times international in origins and destinations. To get a better understanding of freight movements within the MIC area, we needed to understand the regional freight system. To accomplish this, we developed strategic partnerships with regional and state stakeholders in both Minnesota and Wisconsin and developed the [Northeast Minnesota/Northwest Wisconsin Freight Plan](#).

The partners included MIC, Arrowhead Regional Development Commission, Minnesota Department of Transportation, Wisconsin Department of Transportation and the University of Wisconsin Superior Transportation and Logistics Program. We also broadened the partnership to include other state, regional, and local stakeholders (see Study Committee). The study area encompassed 29 counties, 19 in northern Minnesota (MnDOT Districts 1 & 2) and 10 in Northwest Wisconsin. The plan was completed in November 2009.

Freight Plan Recommendations

- Duluth-Superior Intermodal Container Terminal: Develop a new Truck/Rail/Water container terminal at the port. Potential MnDOT planning, investment participation.
- Duluth-Superior Port Capacity Expansion: New berths, dock space, backlands needed for existing and new moves (slab steel, wind equipment, pulp). Support the TIGER grant implementation by the Duluth Seaway Port Authority and/or MnDOT for the capacity expansion of Garfield C&D Dock.
- Duluth-Superior Port Coordination: Create a working agreement between the Duluth Seaway Port Authority and the Superior Harbor Commission, encourage continued participation in HTAC planning activities by port stakeholders.
- Designate Super-Haul Truck Corridors: Preserve routes for wind and oil sands equipment and others from further degradation (turning radii, low bridges). MnDOT coordination with construction



Regional Freight Plan, adopted in 2009..

and permitting to preserve oversize and overweight routes, including Wisconsin routes.

- Advance Strategies to Improve Regional Truck Size and Weight Uniformity: Develop regional consistency with WI permitting practices, Canadian limits, and configurations.
- Quick Starts Projects (less than \$50,000): Regional marketing campaign, bridge and intersection geometrics, signage and markings.

CONCLUSION: MOVEMENT OF FREIGHT

The Duluth-Superior area has a large amount of transportation assets: the largest bulk port on the Great Lakes, four Class 1 railroads, access to the Interstate Highway system, an airport that can handle any size aircraft, and many miles of arterial highways. The challenge is to integrate these assets into a system that maximizes their economic development value and while minimizing their impact on the environment and other community values.

In working with freight stakeholders throughout the years, it is evident that the freight moving industry is very dynamic and flexibility is important with all public agency partners as we address needs and meet future challenges.

To meet the goals spelled out in this plan, we must continue to engage freight stakeholders in our planning processes and make sure freight needs are considered in mainstream transportation planning.

Interagency Involvement in Development of the Freight Plan:

- MnDOT District 1
- MnDOT District 2
- WisDOT
- MIC
- Arrowhead Regional Development Commission (ARDC)
- Northwest Wisconsin Regional Planning Commission (NWRPC)
- MnDOT Freight Office
- MnDOT Office Investment Management
- St. Louis Co. MN, Engineering
- Polk Co., WI Engineering
- Douglas Co., WI Engineer
- MN Department of Economic Development (DEED)
- WI DNR
- MN DNR
- Duluth Seaway Port Authority
- University of Wisconsin, Superior
- University of Minnesota, Duluth
- FHWA