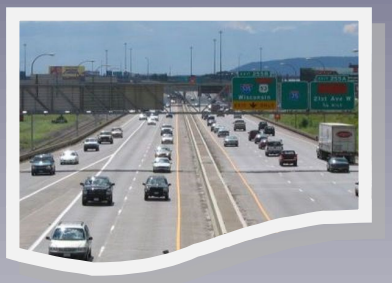
CONNECTIONS 2040

The Duluth-Superior Long Range Transportation Plan

Pedestrian

Harbor/Port



Highways

Transit

Rail

Local Roadways

Bicycle

Air

Presented for Approval

October 15, 2014

Adopted and Approved for Release on

October 15, 2014

by the

Duluth-Superior Metropolitan Interstate Council

Guiding the Future of Transportation and Planning for the Twin Ports Area

Funding sources for this plan include:

Federal Highway Administration (FHWA)
Minnesota Department of Transportation (MnDOT)

Wisconsin Department of Transportation (WisDOT)

Arrowhead Regional Development Commission (ARDC)

Northwest Regional Planning Commission (NWRPC)

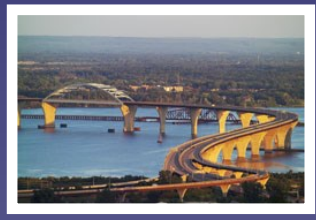
Copies of this plan are available on CD-ROM from the MIC by request and a printed copy is available to view at the MIC office at:

221 West First Street, Duluth, MN 55802

(800) 232-0707 Toll Free
(218) 529-7541 Phone
(218) 529-7592 Fax

www.dsmic.org/lrtp

Duluth-Superior Urban Area Communities Cooperating in Planning and Development through a Joint Venture of the Arrowhead Regional Development Commission and the Northwest Regional Planning Commission



Executive Summary

Connections 2040 is the most recent update of the Long Range Transportation Plan (LRTP) for the Duluth, MN-Superior, WI urbanized area. *Connections 2040* presents a long-range (2015-2040) strategy to guide the effective investment of public funds for multi-modal transportation infrastructure throughout the Duluth-Superior area. The LRTP is updated every five years in accordance with federal and state requirements, and reflects local planning initiatives and incorporates public input.

Connections 2040 also provides the foundation for the annual development of the Duluth and Superior Transportation Improvement Programs (TIPs), short-range capital improvement programs that implement some of the needed highway, transit, and bikeway projects identified in the project lists in Chapter 5, as well as for the MIC's annual work program activities.

A great deal of effort was applied to address provisions in the federal transportation bill (MAP-21) specific to Metropolitan Planning Organizations (including the MIC) and its emphasis on performance measures and performance-based planning. Just as important, it was developed with an eye to making the content more accessible to a broader, more diverse audience interested in accessing information about the multiple modes of transportation in the Duluth-Superior area.

Connections 2040 consists of six individual chapters: ***Chapter 1-Introduction*** establishes the transportation goals and objectives for Duluth-Superior for the next 25 years. In combination with ***Chapter 2-Planning & Policy Framework,*** which outlines the federal and state transportation policies, plans and regulations that guided the development of this plan, they are the foundation for *Connections 2040*. ***Chapter 3-Trends*** describes the trends in area land use, demographics, economics, employment and travel demand patterns. ***Chapter 4-System Performance*** assesses the degree to which this area's transportation facilities provide access, ensure mobility, and operate safely and efficiently to move people and freight via by both motorized and non-motorized modes. ***Chapter 5-Projects & Funding*** lists short-, mid-, and long-term transportation projects planned to be implemented by the major jurisdictions within the MIC planning area as well as projected funding sources, which together form the financial analysis for the plan. ***Chapter 6-Participation*** details the process that was used to engage the public and a wide range of stakeholder groups during the development of this plan.

Connections 2040 may be amended as a result of changes in projected federal, state and local funding and/or substantive planning and policy shifts resulting from area plans, studies, priorities and initiatives.

DULUTH-SUPERIOR METROPOLITAN INTERSTATE COUNCIL

Member and Staff Listing – October 2014

MIC Policy Board		Transportation Advisory Committee
Broc Allen – Douglas Co. Suburban Townships		Bryan Anderson—MnDOT
Ed Anderson – City of Superior Citizen Rep		Todd Campbell—MnDOT
Nick Baker – Douglas County Board *(WI Co-chair)*		Dena Young—WisDOT
Warren Bender – Superior Common Council		Jim Foldesi – St. Louis County
Wayne Boucher – City of Hermantown		Chuck Froseth – City of Duluth Planning
Dave Brenna – City of Proctor		Jeff Goetzman – City of Superior
Earl Elde – St. Louis County Suburban Townships		Jason Jackman—Douglas County
Tom Fennessey —Superior Common Council		Bryn Jacobson – Bike/Pedestrian Rep
Zach Filipovich – Duluth City Council		Dennis Jensen – Duluth Transit Authority
Frank Jewell – St. Louis County		John Judd—City of Duluth Planning
Duane Johnson – St. Louis Co. Suburban Townships		Cari Pedersen – City of Duluth Engineering
Rosemary Lear – Douglas County Board		Heather Rand – MN Dept. of Economic Dev.
David Montgomery – Duluth Citizen Rep (*MN Co-chair)*		Jim Rohweder – City of Proctor
Wayne Nelson—Duluth Transit Authority		David Salo – City of Hermantown
Dan Olson – Superior Common Council		Jason Serck – City of Superior
Jim Paine—Douglas County Board		Jim Sharrow – Duluth Seaway Port Authority
Sam Pomush—Douglas County Board		Cindy Voigt – City of Duluth Engineering
Joel Sipress—Duluth City Council		Tom Werner—Duluth Airport Authority
MIC Staff - ARDC		**MIC Staff - NWRPC**
Ron Chicka, MIC Director		Sheldon Johnson, MIC Deputy Director **
Laurel Davis, Administrative Assistant **		
James Gittemeier, Senior Planner **		
Robert Herling, Senior Planner *		
Andy McDonald, Principal Planner *		
Eric Miller, GIS Specialist **		
Rondi Watson, Planning Assistant **		
Kayla Horan, Intern **		
Alex Bogdanov, (Summer) Intern **		
** Project Lead ** Project Contributor*		

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Connections 2040: List of Maps

Online Interactive Map of Projects:

http://arrowhead.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=cbc1164b7a394d01894db76a588cea05

MAP DISCLAIMER: The information contained in the following maps is a compilation of data from various federal, state, county, regional, and municipal sources. Geographic information has limitations due to the scale, resolution, date and interpretation of the original source materials. Users should consult available data documentation (metadata) to determine limitations and the precision to which the data depicts distance, direction, location or other geographic characteristics. These maps and/or data are not legal survey documents to be used for describing land for the purpose of ownership or title.

1. Goals & Objectives

This chapter introduces the Long Range Transportation Plan (LRTP) and its Goals and Objectives for the Duluth-Superior area.

WELCOME TO *CONNECTIONS 2040*

The Long Range Transportation Plan for the Duluth-Superior metropolitan area.

What is *Connections 2040*?

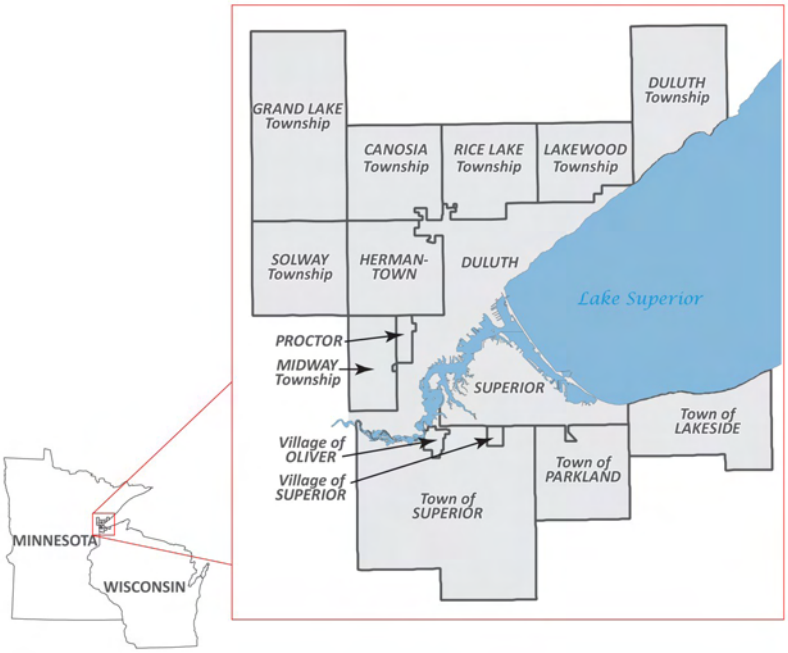
This Long Range Transportation Plan (LRTP) provides policy guidance, goals and strategies for jurisdictions within the greater metropolitan area of Duluth, Minnesota and Superior, Wisconsin to work cooperatively to provide a well-maintained, integrated, accessible and multi-modal transportation system to safely and efficiently move people and freight for the next 25 years.

Since a transportation system crosses many jurisdictional boundaries with spending decisions made at state, county and city levels, *Connections 2040* coordinates the planning and sets forth a vision for the area-wide transportation network, within the constraints of funding the region can reasonably expect to receive. It covers a twenty-five year planning horizon and is updated every five years.

What Area Does It Cover?

Connections 2040 addresses all modes of transportation within the Duluth-Superior metropolitan planning area (Fig. 1.1).

Fig. 1.1: Duluth-Superior Metropolitan Planning Area



Statement of Purpose

Connections 2040 will guide the future of transportation in the Twin Ports area by planning for a comprehensive, multi-modal, and integrated transportation system that provides a high level of access and mobility for all people and goods, improves safety, preserves infrastructure, and provides economic activity consistent with available environmental and fiscal resources.

Access and mobility...

Access is the ease with which people can reach destinations

Mobility is the ease of movement that people experience in moving from place to place

for people and freight...

Transportation systems must accommodate the needs of personal and commercial trips, locally and regionally, via multiple modes

...is the sensitive balance sought in good transportation planning.*

* Source: The Institute of Transportation Engineers and Smart Growth transportation planners.

Area Transportation Assets

Duluth and Superior feature a broad range of infrastructure across all modes of transport: four Class I railroads, local roads, an Interstate highway, an international seaport, an international airport, a public transit system and miles of hiking and biking trails. The goal of this Long Range Transportation Plan is to preserve and develop these assets to maximize their economic development value and minimize their impact on the environment and other community values. (See Map 4.1, Transportation Assets)

Why Does It Matter?

Connections 2040 serves as the foundation for the MIC's planning efforts. This multimodal plan is important because it incorporates community and jurisdictional input to establish priorities for area transportation decisions; identifies issues for further study by the MIC, and filters potential projects down into the Duluth and Superior Transportation Improvement Programs which apply federal transportation funds to priority projects for the Duluth-Superior area.

If a city, county, or public agency in the Duluth-Superior metropolitan planning area intends to use federal transportation funding for projects or programs, the projects must be included in or consistent with this Long Range Transportation Plan.

When is it Updated?

To keep pace with changing priorities, opportunities, and challenges, the MIC's LRTP is updated every 5 years; the TIPs are updated annually.

What's New for the 2040 LRTP?

New data that has become available since the publication of the last (2035) Long Range Transportation Plan, along with the federal MAP-21 transportation legislation which put forward several notable policy initiatives and planning directives, have shaped the focus of *Connections 2040:*

Updated Traffic Demand Model

The MIC-area traffic demand model has been updated to include revised demographic and employment projections, as well as expansion projects that have occurred since 2010.

Adjusted Project Costs and Constrained Project Lists

Estimated costs of all improvement projects identified in the previous (2035) version of the LRTP have been revised to better reflect inflationary increases over a 25 year timeframe. The adjusted numbers show a dramatically increasing shortfall between programmed projects and projected revenues: of $214 million for

Duluth-Superior Metropolitan Interstate Council

The MIC is the designated Metropolitan Planning Organization (MPO) for the Duluth-Superior area and produced this Long Range Transportation Plan.

MIC-Area Jurisdictions include:

Minnesota

Canosia Township
City of Duluth
City of Hermantown
City of Proctor
Duluth Township
Grand Lake Township
Lakewood Township
Midway Township
Rice Lake Township
Solway Township
St. Louis County
MnDOT

Wisconsin

City of Superior
Lakeside Township
Parkland Township
Town of Oliver
Village of Superior
Douglas County
WisDOT

More information about the MIC: See www.dsmic.org.

short-range projects (2015-2019); $180 million for mid-range projects (2020-2024); and a very large gap (more than $1.15 billion) for mid-range projects (2025-2040).

The MIC has worked with its jurisdictions to constrain the 2040 project lists by asking them to prioritize projects to match projected revenues and to identify other potential revenue sources.

Foundations for Future Performance Measures

Connections 2040 lays the foundation for local performance measures to be established in the following areas:

- Mobility & accessibility
- Operations & maintenance
- Safety & security

Where available, information related to these performance measures will be presented in this document in the context of specific modes (roads, bikes and pedestrians, transit, etc).

Complete Streets Policies and Active Transportation

A Complete Streets policy has been adopted by the State of Minnesota and in the City of Duluth a Resolution providing for a Complete Streets Policy and requesting city staff to develop implementation strategies was passed in March 2010.

The main idea behind Complete Streets is to ensure that roads offer safe access not just for drivers, but for transit users, pedestrians, and bicyclists, as well as for older people, children, and people with disabilities.

The spirit of this policy shift is reflected in the MIC's work with its Bicycle and Pedestrian Advisory Committee (BPAC) and, notably, in the strong community support for Active (formerly "non-motorized") Transportation in this plan's Goals and Objectives. (See p. 1-6 as well as Chapter 6 (Public Participation) and Appendix D).

How Was This Plan Developed?

The MIC's development process for *Connections 2040* assessed transportation needs and set priorities for the Duluth-Superior area by :

- Analyzing the most recent data available, including traffic volumes, demographic trends, and existing transportation assets;
- Estimating projected revenues;
- Coordinating with current federal and state policies;
- Building upon recent local and area plans and policies; and
- Conducting a variety of public input processes.

Planning for All Modes of Transportation

Transportation systems are multi-modal. This plan addresses both motorized and non-motorized modes of travel within a variety of

Pedestrian

Harbor/Port

facilities, including:

Highways

Transit

These priorities are reflected in the plan's Goals and Objectives (pages 1 -6 through 1-35) for maintaining and improving transportation for all modes throughout the area as well as in the jurisdictional Project Lists with short-, mid-, and long-range timeframes (Chapter Five).

Who Was Involved?

Public involvement is integral to good transportation planning. The MIC's Public Involvement Plan set the framework for the outreach efforts. Input was sought from local transportation stakeholders and the general public throughout the development of *Connections 2040.* The MIC Policy Board and the Transportation Advisory Committee served in an advisory capacity at their monthly meetings and the MIC's website (www.dsmic.org) was utilized to disseminate a survey and to provide updates. Chapter Six describes the public involvement process in detail.

Statement of Purpose

Connections 2040 will guide the future of transportation in the Twin Ports area by planning for a comprehensive, multi-modal, and integrated transportation system that provides a high level of mobility for all people and goods, improves safety, preserves infrastructure, and provides economic activity consistent with available environmental and fiscal resources.

Goals, Objectives and Strategies

The development of *Connections 2040* was based on the Goals, Objectives and Strategies as identified by area transportation stakeholders.

Goal: A broad statement identifying a desired outcome;

Objective: A specific & measurable condition that must be met in order to accomplish the goal;

Strategy: A specific action undertaken in order to meet the stated objective.

Implementation of the Goals

- The Goals, Objectives and Strategies are reflected in the **policy and programming recommendations** put forward for each mode in Chapter Four (Performance) and also in the **short-, mid-, and long-range projects** listed in Chapter Five (Projects and Funding).
- **MIC and Partnership Strategies**: each of the strategies for the following Goals and Objectives have been identified as implementable by MIC staff (in its annual work program activities), or by area jurisdictions (in their planning and engineering work to develop, maintain and improve transportation infrastructure), or both.

Planning for All Modes of Transportation

Local Roadways

Air

Bicycle

Rail

Goal 1: Access & Mobility

Develop and maintain the Duluth-Superior transportation system to enhance accessibility and mobility for all users and modes

Objective (1) **Increase transportation choices and year-round access and for the movement of people** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Ensure ADA compliance, particularly in high-use and key pedestrian corridors.		X
b. Increase transit options, including on-demand transportation options		X
c. Improve sidewalk connections to major pedestrian generators (including snow removal)		X
d. Expand bicycle infrastructure as routine part of roadway maintenance and construction projects.		X
e. Improve connections between modes for people of all ages ("8 to 80" Cities)	X	X
f. Provide education concerning year-round mobility issues from all socio-economic backgrounds.	X	
g. Work with jurisdictions across the board to develop Complete Streets Policies throughout the region.	X	X
h. Promote events such as free DTA ride days, Bike to Work and Walk to School days, etc.	X	

Planning Goals

1. **Access & Mobility**
2. Economic Vitality
3. Operations & Maintenance
4. Public Participation
5. Environmental Protection
6. Network Integration
7. Safety
8. System Preservation and Optimization
9. Security

Goal 1: Access & Mobility

Develop and maintain the Duluth-Superior transportation system to enhance accessibility and mobility for all users and modes

Objective (2) **Develop performance measures for the movement of people within the Duluth-Superior region** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Develop performance measures to increase overall mobility for motorized modes (such as number of jobs or retail destinations that can be reached in a given time (e.g. 30 minutes))	**X**	
b. Develop performance measures to increase overall mobility for non-motorized (active) modes (such as number of miles of bike lanes)	**X**	
c. Partner with area jurisdictions, agencies and academic institutions to determine opportunities for counting technology sharing		**X**
d. Continue to develop and refine methodology for conducting annual bike and pedestrian counts and share this area's data in accordance with state and national data collection initiatives.	**X**	**X**

Goal 1: Access & Mobility

Develop and maintain the Duluth-Superior transportation system to enhance accessibility and mobility for all users and modes

Objective (3) **Shift investment strategies towards providing a diversification of modes (rather than solely increasing roadway capacity)** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Prioritize projects for funding that incorporate bicycle and pedestrian infrastructure and connections as elements of corridor improvement projects.	**X**	**X**
b. Lead education and dialogue about the importance of a multi-modal transportation network.	**X**	
c. Review and continually update the active transportation plans for the region, including trails, sidewalks and bikeways plans.	**X**	
d. Promote events such as free DTA ride days, Bike to Work and Walk to School days, etc.	**X**	

Goal 1: Access & Mobility

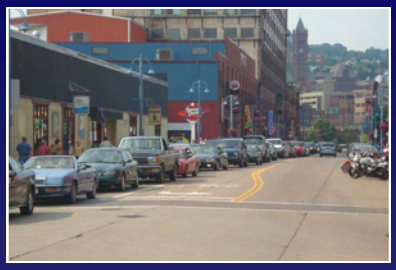
Develop and maintain the Duluth-Superior transportation system to enhance accessibility and mobility for all users and modes

Objective (4) **Improve access and mobility for the movement of freight** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Lead education and dialogue on future freight needs.	**X**	
b. Seek opportunities to develop intermodal freight facilities.	**X**	**X**
c. Maintain minimum weight limits (10-ton) for freight movements between points of origin and destination.		**X**
d. Develop oversized/overweight load corridors to serve the expanding industries.		**X**
e. Continued and/or accelerated replacement of load-restricted bridges		**X**
f. Support an effective and seamless supply chain for businesses to be able to provide efficient delivery of goods.	**X**	

Goal 2: Economic Vitality

Develop and maintain the Duluth-Superior transportation system to support economic productivity, efficiency and competitiveness

Objective (1)	MIC Strategy	Partnership Strategy
Encourage transportation investments that stimulate economic activity ***Strategies to implement this Objective include:***		
a. Improve connections and mobility for regional tourism	X	X
b. Consider economic benefits in developing transportation performance measures	X	X
c. Ensure freight routes are efficient, safe and reliable	X	X
d. Encourage infrastructure investments that integrate, coordinate and modernize multi-modal infrastructure	X	X



Planning Goals

1. Access & Mobility
2. **Economic Vitality**
3. Operations & Maintenance
4. Public Participation
5. Environmental Protection
6. Network Integration
7. Safety
8. System Preservation and Optimization
9. Security

Goal 2: Economic Vitality

Develop and maintain the Duluth-Superior transportation system to support economic productivity, efficiency and competitiveness

Objective (2) **Improve transportation to and within key population, activity and employment centers** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Increase transit to employment centers	X	X
b. Encourage tourism by providing a variety of transportation choices to key destinations	X	X
c. Engage in P3 (Public-Private Partnerships) to secure maximum lifecycle maintenance and operation, and to bridge funding gaps.	X	X
d. Analyze and work to understand the region's freight markets and the national/international role it plays in the global economy.	X	X
e. Continue to support and improve existing transit service.	X	X
f. Make strategic infrastructure investments that integrate, coordinate and modernize multi-modal infrastructure	X	X

Goal 2: Economic Vitality

Develop and maintain the Duluth-Superior transportation system to support economic productivity, efficiency and competitiveness

Objective (3) **Encourage investment in key freight facilities (water, rail, air and highway)** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Increase coordinated planning efforts and cost -sharing opportunities	X	X
b. Capitalize on emerging industry trends	X	X
c. Increase flexibility of the transportation system to respond to changing economic and market conditions	X	X
d. Concentrated investment in transportation system infrastructure that completes or increases long term sustainability of key industrial sectors.	X	X
e. Capitalize on unique assets already in place (e.g., Duluth airport's runway can land heavy international transport and has "airport of entry" status)	X	X
f. Make strategic infrastructure investments that integrate and modernize multimodal transportation infrastructure	X	X
g. Look for opportunities to develop public-private partnerships to improve intermodal freight movement options.	X	X
h. Develop new facilities and improve the efficiency of existing facilities for moving freight through the Duluth-Superior port.	X	X

Goal 2: Economic Vitality

Develop and maintain the Duluth-Superior transportation system to support economic productivity, efficiency and competitiveness

Objective (4) **Promote transportation decisions that support regional and neighborhood vitality** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Increase coordinated planning efforts and cost-sharing opportunities	X	X
b. Increase flexibility of the transportation system to respond to changing demographic trends and economic and market conditions	X	X
c. Implement Complete Streets improvements at key activity centers	X	X
d. Complete neighborhood (small area) plans as amendments to the Comprehensive Plan	X	X
e. Market alternative transportation options at events such as Bike to Work Day	X	X
f. Present information about transportation options to city council and county boards	X	X
g. Continue to include all modes in planning	X	X
h. Recognize transportation infrastructure and facilities that have a negative impact on economic development and seek improvements	X	X
i. Develop metrics for measuring economic benefits of roadway improvements that benefit active transportation modes (bicycle, pedestrian and transit)	X	X

Goal 3: Operations & Maintenance

Ensure the efficient operation and maintenance of the transportation system to optimize the movement of people and goods throughout the metro area.

Objective (1) **Ensure sufficient funding for operations and maintenance needs.** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Adopt life-cycle considerations during the planning and design of transportation projects.		X
b. Increase coordination and cost-sharing for transportation and infrastructure projects among jurisdictions.	X	X
c. Develop a public relations campaign to inform and educate the public as to why greater investment in an efficient and safe transportation system is needed.	X	
d. Investigate funding mechanisms that also consider the negative and positive financing impacts on local governments.	X	X
e. Require local governments and authorities to develop short- and long-term operations and maintenance budgets.	X	X
f. Reach out to private sector to seek opportunities for public-private partnerships (PPPs) in funding infrastructure and services.	X	X
g. Conduct corridor studies of priority roadways; develop recommendations aimed at improving multimodal operations.	X	
h. Assist local transit providers with the procurement of funding for converting more of their fleet to more fuel efficient vehicles.	X	X

Planning Goals

1. Access & Mobility
2. Economic Vitality
3. **Operations & Maintenance**
4. Public Participation
5. Environmental Protection
6. Network Integration
7. Safety
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9. Security

Goal 3: Operations & Maintenance

Ensure the efficient operation and maintenance of the transportation system to optimize the movement of people and goods throughout the metro area.

Objective (2) **Optimize efficiencies of area transportation operations for all modes** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Adopt technological innovations aimed at enhancing transportation services and traffic operations.		**X**
b. Increase the use of alternative fuel technologies for improved operations.		**X**
c. Combine facilities for modes (e.g. motor vehicles and bikes) where feasible to reduce the costs of maintenance and operations.		**X**
d. Explore the opportunities for more park-and-ride lots that serve commutes between the region and the urban core.	**X**	**X**
e. Use traffic modeling to identify and help to address potential capacity issues.	**X**	**X**
f. Use regular Transportation Systems Management (TSM) assessments to help prioritize locations of poor operations.	**X**	
g. Conduct corridor studies of priority roadways; develop recommendations aimed at improving multimodal operations.	**X**	
h. Advocate for signal-prioritization in key activity centers.	**X**	**X**

Goal 3: Operations & Maintenance

Ensure the efficient operation and maintenance of the transportation system to optimize the movement of people and goods throughout the metro area.

Objective (3) **Ensure operational preparedness for planned and unplanned events** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Seek ways to improve communication and co-ordination between area planners, transportation services, law enforcement and emergency responders.	**X**	**X**
b. Promote the expansion of Intelligent Transportation Systems (ITS) and Traffic Operations Co-ordinating (TOC) technologies in the Duluth-Superior metro.	**X**	**X**
c. Work with regional emergency responders to ensure coordinated incident management plans.	**X**	**X**

Goal 4: Public Participation

Provide ongoing and effective opportunities for public participation so the needs and interests of all users of the transportation system are taken into consideration

Objective (1) **Ensure the public has a variety of opportunities for information and involvement** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Implement methods and techniques put forward in the 2013 MIC Public Involvement Plan	X	
b. Ensure the proper timing of announcements to allow meaningful input to be incorporated into decision making process	X	X
c. Coordinate planning and outreach efforts with local jurisdictions and transportation partners	x	X

Planning Goals

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Goal 4: Public Participation

Provide ongoing and effective opportunities for public participation so the needs and interests of all users of the transportation system are taken into consideration

Objective (2) **Ensure efforts to inform and engage disenfranchised groups impacted by transportation decisions** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Ensure compliance with Environmental Justice and Title VI requirements	**X**	
b. Broaden contact base and invite participation from churches, community clubs, group homes, and special needs facilities	**X**	**X**
c. Establish convenient contact centers at high-traffic and/or centrally-located areas and events, such as mall kiosk, fair/festival booth, etc.	**X**	**X**
d. Seek ways to regularly encourage participation in transportation planning	**X**	**X**

Goal 4: Public Participation

Provide ongoing and effective opportunities for public participation so the needs and interests of all users of the transportation system are taken into consideration

Objective (3) **Improve strategies and methods to get the word out, receive feedback and increase public interest** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Increase use of real-time consumer technologies (e.g. smartphone apps, social media, etc.)	**X**	**X**
b. Implement methods and techniques put forward in the 2013 MIC Public Involvement Plan	**X**	
c. On an annual basis review the PIP and other efforts to determine what worked and what did not work and who was missed	**X**	

Goal 5: Environmental Protection

Protect and enhance the environment through responsible and compatible transportation projects

Objective (1) **Avoid, minimize and/or mitigate the negative environmental impacts of local and regional transportation** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Increase the use of innovative technologies and techniques that mitigate/reduce negative impacts		**X**
b. Encourage the use of active modes such as transit, bike and walking	**X**	**X**
c. Allow for multiple uses within existing facilities and rights-of-way to decrease environmental impact of expanding right of way.		**X**
d. Investigate other types of fuel for cars and trucks that have a neutral impact on the environment.		**X**
e. Consider "green design" for upgrades to current rights of ways.		**X**
f. Promote and incorporate best stormwater management practices	**X**	**X**
g. Seek project designs that minimize impervious surfaces		**X**

Planning Goals

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Goal 5: Environmental Protection

Protect and enhance the environment through responsible and compatible transportation projects

Objective (2) **Reduce negative social or cultural impacts of local and regional transportation** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Promote transportation choices that reduce negative impacts	X	X
b. Encourage the use of active modes such as transit, bike and walking	X	X
c. Increase opportunities and locations for seamless transfer between modes		X
d. Ensure that that facilities for vehicles also provide for alternative modes		X
e. Encourage the use of electric and dual fuel vehicles by developing a larger fueling/ charging network		X
f. Seek project designs that minimize noise and light pollution		X

Goal 5: Environmental Protection

Protect and enhance the environment through responsible and compatible transportation projects

Objective (3) **Improve energy conservation** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Encourage the use of active modes such as transit, bike and walking	**X**	**X**
b. Increase education/dialogue about the importance of a multimodal transportation network	**X**	**X**
c. Extend tax benefits for use of public transit		**X**
d. Develop computer modeling and analysis for efficient streamlining of traffic patterns with specific focus on conservation		**X**
e. Decrease or eliminate non-essential/cosmetic lighting treatments for roadways and bridges		**X**

Goal 5: Environmental Protection

Protect and enhance the environment through responsible and compatible transportation projects

Objective (4) **Ensure that adequate transportation facilities are in place and functioning at the time development occurs** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Ensure concurrency between transportation facilities and planned commercial, industrial and residential development	**X**	**X**

Goal 6: Network Integration

Promote innovations that integrate transportation facilities to provide effective and efficient transfer of people and goods between modes.

Objective (1) **Improve connectivity between modes of transportation for people.** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Recognize multimodal needs when designing facilities		x
b. Coordinate transit schedules and routes with major destinations including large employers, colleges and schools.	x	x
c. Integrate the transportation system to create efficient travel for all users of the corridor, including recognizing the differing needs for each mode of transportation.	x	x
d. Further establish key transit corridors, by including transit-oriented zoning and infrastructure which supports these corridors.	x	

Planning Goals

1. Access & Mobility
2. Economic Vitality
3. Operations & Maintenance
4. Public Participation
5. Environmental Protection
6. **Network Integration**
7. Safety
8. System Preservation and Optimization
9. Security

Goal 6: Network Integration

Promote innovations that integrate transportation facilities to provide effective and efficient transfer of people and goods between modes

Objective (2) **Improve connectivity between modes of transportation for freight** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Integrate transportation technologies for different modes.	x	x
b. Increase interconnectivity and identify opportunities for modal transfers.	x	
c. Reduce intermodal conflicts for fewer interruptions in main freight corridors		x
d. Identify and reduce obstacles and/or barriers for the movement of freight through physical infrastructure improvements (e.g., low clearance bridges) and policy changes (e.g., weight limits on highways).	x	

Goal 6: Network Integration

Promote innovations that integrate transportation facilities to provide effective and efficient transfer of people and goods between modes

Objective (3) **Improve coordination of transportation facilities and services between agencies and municipalities** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Increase local coordination to ensure that transportation projects and services integrate different modes.	**x**	
b. Prior to development, coordinate cross-agency communications and/or meetings when new projects or services may benefit other groups.	**x**	**x**
c. Promote inter-agency successes as they occur in order to foster a culture of working together across agencies	**x**	**X**

Goal 7: Safety

Maintain and improve the safety of the Duluth-Superior transportation system for all users and modes

Objective (1): **Reduce motor vehicle crashes that result in fatalities or severe injuries** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Initiate and promote activities that support regional Toward Zero Deaths (TZD) strategies.	X	X
b. Initiate and support activities that help implement countywide safety plans.	X	X
c. Support and participate in activities of the regional Safe Communities Coalition "Driving for Safe Communities".	X	X
d. Monitor and evaluate system safety based on established performance measures.	X	
e. Use crash data to identify and prioritize locations with high rates of crash-severity.	X	X
f. Invest in evidence-based, cost-effective infrastructure projects that reduce head-on, T-bone, and road-departure crashes.	X	X
g. Promote and support regional efforts to decrease chemically-impaired and distracted driving through enhanced enforcement and education efforts.	X	X
h. Support programs aimed at educating adults and teens about proper use of seatbelts and child safety restraints.	X	X
i. Promote increased consideration for roundabout designs in MIC area roadway projects.	X	X
j. Promote and implement expansion of ITS and other safety technologies in the Duluth-Superior metro.	X	X
k. Increase consideration of safety treatments in selection of TIP projects.	X	X

Planning Goals

1. Access & Mobility
2. Economic Vitality
3. Operations & Maintenance
4. Public Participation
5. Environmental Protection
6. Network Integration
7. **Safety**
8. System Preservation and Optimization
9. Security

Goal 7: Safety

Maintain and improve the safety of the Duluth-Superior transportation system for all users and modes

Objective (2) **Improve bike and pedestrian safety** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Increase the use of techniques and technologies to improve bike and ped safety.		X
b. Promote and invest in roadway projects that support the safe movement of pedestrians and cyclists.	X	X
c. Monitor and evaluate crash data and other information to identify and prioritize locations of concern regarding bike and pedestrian safety.	X	X
d. Seek Safe Routes to School (SRTS) and other funding sources to help promote bike and ped safety around schools.	X	X
e. Coordinate the input and efforts of the 4 "E's" (Education, Enforcement, Engineering, and Emergency Response) and other stakeholders that impact bike and pedestrian safety.	X	X
f. Seek planning and funding resources to develop area-wide bike and ped safety action plans.	X	
g. Establish performance measures to support bike and pedestrian safety.	X	X

Goal 7: Safety

Maintain and improve the safety of the Duluth-Superior transportation system for all users and modes

Objective (3) **Improve safety of freight movements** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Increase the use of technologies to improve the safety of freight transport in the Duluth-Superior area.		X
b. Use crash data and other information to identify and prioritize locations of concern with respects to safe freight transport.	X	X
c. Guide freight to the appropriate corridors, where feasible.	X	X
d. Monitor safety conditions at - and invest in improvements for - at-grade rail crossings in the Duluth-Superior metro.	X	X
e. Seek funding for grade-separated rail crossings where justified.	X	X
f. Evaluate and provide more information regarding the hazards of mixing modes of transportation in confined areas.	X	X

Goal 8: System Preservation and Optimization

Preserve existing infrastructure where warranted and ensure transportation facilities are utilized optimally, applying financial resources in the most effective manner

Objective (1) **Increase longevity of local transportation facilities for all modes** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Increase coordinated use of technologies for multimodal operations and asset management	x	x
b. Consider Transportation Demand Management to provide or expand alternatives to single-occupancy vehicle travel, such as transit, bicycling, and walking.	x	
c. Replace sidewalks, include bicycle accommodations and optimize placement of bus stops as a component of roadway reconstruction.		x
d. Work cooperatively with roadway authorities to encourage sound investment decisions for all involved.	x	
e. Have access management plans in place to reduce the need for corridor expansion.	x	x

Planning Goals

1. Access & Mobility
2. Economic Vitality
3. Operations & Maintenance
4. Public Participation
5. Environmental Protection
6. Network Integration
7. Safety
8. **System Preservation and Optimization**
9. Security

Goal 8: System Preservation and Optimization

Preserve existing infrastructure where warranted and ensure transportation facilities are utilized optimally, applying financial resources in the most effective manner

Objective (2) **Optimize transportation investments** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Examine the transportation system for under-utilized assets and develop strategies that that will more fully utilize the system	x	
b. Utilize sound asset management practices and principles to ensure preservation of the transportation network (i.e., right fix, right road, right time).		x
c. Utilize Pavement Management of road surfaces. Implement a multi-jurisdictional, data driven needs analysis for the investment into the region's infrastructure.	x	x
d. Develop zoning and other site and density regulations that optimize transportation investments.	x	x
e. Develop performance measures that help maximize transportation investments.	x	

Goal 8: System Preservation and Optimization

Preserve existing infrastructure where warranted and ensure transportation facilities are utilized optimally, applying financial resources in the most effective manner

Objective (3) **Increase funding for local and regional transportation projects** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Identify and pursue new funding opportunities.	x	x
b. Work with local governments to include funding of transportation projects in comprehensive plans	x	
c. Emphasize funding requirements in conducting public meetings on transportation projects and needs	x	
d. Research federal and state grant availability and determine funding eligibility for projects	x	
e. Provide guidance and support of grant applications for transportation projects	x	
f. Seek ways to coordinate multiple types of projects (i.e., water, sewer line repairs and road repairs) for cost savings	x	x
g. Plan for multimodal and innovative projects (even without funding available at the time) that may be eligible for future funding (shovel ready plans).	x	
h. Leverage private investment in public infrastructure as development occurs	x	x

Goal 8: System Preservation and Optimization

Preserve existing infrastructure where warranted and ensure transportation facilities are utilized optimally, applying financial resources in the most effective manner

Objective (4) **Ensure appropriately scaled transportation network** ***Strategies to implement this Objective include:***	MIC Strategy	Partnership Strategy
a. Examine the existing scale of the transportation system with the current and projected future demand	x	
b. Determine the transportation mode(s) that will grow with future demand.	x	
c. Develop a system/process to prioritize infrastructure needs.	x	x
d. Make sure provisions for mass transit and alternative modes are included during planning for new and redeveloped areas that may generate demand.	x	x
e. Optimize the use of the existing transportation infrastructure, examining the over- and under-utilized segments of the network through each day.	x	x

Goal 9: Security

Enhance security of the Duluth-Superior transportation system and ensure preparedness for system operations during natural or man-made emergencies

Objective (1) **Ensure the security of all transportation facilities** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Coordinate safety and emergency response management plans.	X	X
b. Seek opportunities for redundancy and resiliency in the transportation system.	X	X
c. Develop a security check list for all transportation facilities that outlines issues for review.	X	X
d. Conduct security audit of all transportation facilities to identify areas of vulnerability.		X
e. Establish a system of priorities for upgrading security measures at transportation facilities where weaknesses are identified.	X	X
f. Establish Safety and Security workgroup with representatives from all transportation modes.	X	X

Planning Goals

1. Access & Mobility
2. Economic Vitality
3. Operations & Maintenance
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7. Safety
8. System Preservation and Optimization
9. **Security**

Goal 9: Security

Enhance security of the Duluth-Superior transportation system and ensure preparedness for system operations during natural or man-made emergencies

Objective (2) **Ensure effective emergency response capabilities** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Incorporate technologies to improve emergency response.		**X**
b. Seek opportunities for redundancy and resiliency in the transportation system.	**X**	**X**
c. Seek opportunities for inter-agency training across different government agencies.	**X**	**X**
d. Hold mock emergency response/disaster-related training.		**X**
e. Ensure all agencies know each others' roles and responsibilities in a disaster situation, and have up-to-date contact information.	**X**	**X**

Goal 9: Security

Enhance security of the Duluth-Superior transportation system and ensure preparedness for system operations during natural or man-made emergencies

Objective (3) **Ensure effective disaster management preparedness** ***Strategies to implement this Objective include:***	**MIC Strategy**	**Partnership Strategy**
a. Coordinate safety and emergency response management plans	**X**	**X**
b. Seek federal and state grant sources that would fund interagency communication integration and/or upgrades and enhance rehearsals and/or exercises	**X**	**X**

2. Planning & Policy

This section reviews the planning policies and processes that guided the development of *CONNECTIONS 2040*.

Planning and Policy Framework

Many policy elements form the planning framework for Connections 2040. These include the federally-mandated role of Metropolitan Planning Organizations (MPOs) in combination with other national, state and regional planning directives, as well as the MIC's established public participation and planning processes.

Duluth-Superior Metropolitan Interstate Council

The Duluth-Superior Metropolitan Interstate Council (MIC) is the designated bi-state Metropolitan Planning Organization (MPO) for the Duluth (Minnesota) and Superior (Wisconsin) area. MPOs are federally mandated to conduct a continuing, cooperative and comprehensive (3-C) planning process as a condition for spending federal highway or transit funds in every urbanized area with a population of 50,000 or more.

The MIC's Requirements as an MPO

The MIC's principal role as an MPO is to establish a fair and impartial setting for effective regional decision making for shared transportation goals and facilities. The core functions of every MPO, including the MIC, are to:

- **Maintain a Long Range Transportation Plan (LRTP)**

  The LRTP sets forth a vision for the area's transportation system with a planning horizon of twenty-five years. It includes strategies to accomplish these goals as well as prioritized projects with short-, mid- and long-term timeframes. It must also include a financial plan that demonstrates how these projects can be implemented using the resources that are reasonably expected to be available over the life of the plan.

- **Develop a Transportation Improvement Program (TIP)**

  The TIP is a short-range (four-year) program of the area's transportation improvements and must include all regionally significant projects receiving federal funding. The TIP is a mechanism for allocating limited financial resources among the capital and operating needs of the area, based on the transportation priorities, goals and projects identified in the LRTP.

  Within the Duluth-Superior Metropolitan Planning Area, certain local public agencies and cities or towns over 5,000 are eligible to apply for federal TIP funds. These include the Minnesota and

Metropolitan Planning Organizations (MPOs)

MPOs are federally mandated to conduct transportation planning in urbanized population areas of 50,000 or more.

MPOs are comprised of a Policy Board of local elected officials and citizens, professional planning staff and technical advisory committees.

MPOs are funded by a combination of federal transportation funds and required matching funds from state and local governments.

MPOs are designed to provide a fair and impartial setting to allow local officials to decide collaboratively how to spend available transportation funds in their urbanized areas.

MPOs are required to involve local stakeholders and citizens.

MPOs encourage a multi-modal approach to transportation planning and infrastructure investments.

MPOs ensure that expenditures of federal funds for transportation projects and programs are based on a 3-C (continuing, comprehensive and cooperative) planning process.

MPOs have three core products:

- Annual Work Program
- 4-year Transportation Improvement Program (TIP)
- 20-year Long Range Transportation Plan (LRTP)

MPOs complement and supplement local government activities but are not in themselves units of government — they have no authority to levy taxes or implement recommendations.

Wisconsin Departments of Transportation (MnDOT, WisDOT); St. Louis and Douglas counties; the cities of Duluth, Hermantown, and Superior; the Duluth Seaway Port Authority; and the Duluth Transit Authority.

The MIC maintains two separate TIPs for the urbanized areas of Duluth, MN and Superior, WI, based on the differing state processes and timelines.

- **Implement a Unified Planning Work Program (UPWP)**

  The UPWP spells out the MIC's transportation planning activities as well as administrative activities, budgets and funding sources for each project for a two-year period.

- **Facilitate Public Involvement**

  Public involvement means that stakeholders are involved in our area's transportation planning and decision-making processes.

  "Stakeholders" are individuals or entities that could be significantly affected by the plan recommendations or could significantly influence implementation. Stakeholders include (but are not limited to): the general public; low income; people with disabilities; neighborhood representatives; local transportation providers; local businesses and associations; special transportation interests such as airport and port authorities, freight shippers, advocacy groups for or users of alternate modes such and transit or bicycling, local officials and jurisdictional representatives; and federal and state transportation agencies.

  Public involvement is a two-way process. It gives the community an opportunity to provide input and also serves as a mechanism to provide information and answer questions. This exchange leads to better decisions and gives the public a sense of ownership of the resulting plans and recommendations.

  The MIC worked to secure participation from stakeholders throughout the development of Connections 2040. The public involvement process for this Plan is discussed in detail in Chapter 6 and an overall guide to public involvement activities is outlined in the MIC's Public Involvement Plan, last updated October 2013.

Additional MIC Responsibilities

- **Function as a Bi-state MPO**

  As the designated MPO for the urbanized area that includes both Superior, Wisconsin and Duluth, Minnesota, the MIC works to coordinate and harmonize the activities of federal, state and local agencies in both states.

Duluth-Superior Metropolitan Interstate Council (MIC)

Mission:
Guiding the future of transportation and planning for the Twin Ports Area

The MIC is the designated MPO for the Duluth-Superior metropolitan urbanized planning area.

The MIC is one of eight MPOs in the State of Minnesota, one of fourteen MPOs in the State of Wisconsin, and one of approximately 400 Metropolitan Planning Organizations across the country.

The MIC provides guidance and leadership on transportation and land use planning issues in the Duluth-Superior metropolitan planning area.

The MIC works to focus the area's limited transportation funding on projects that yield the greatest benefit and integrate with the existing transportation system.

The MIC conducts studies, develops plans, models the transportation system, and programs projects for federal funding in the metropolitan area.

- **Conduct Air Quality Conformity Consultations (through August 2014)**

  In 1994 the City of Duluth was designated an air quality 'Maintenance' area (see sidebar) for carbon monoxide and since this time the MIC has complied with additional federal regulations to ensure regional transportation initiatives were consistent with Clean Air Act air quality objectives.

  An analysis, referred to as Air Quality Conformity, was required to show that emissions created by the transportation programs, policies and projects included in the MIC's LRTP and the Duluth-Area TIP conformed to allowable limits.

  Conformity must be coordinated with federal, state, and local agencies, utilize public involvement and be conducted using the latest planning assumptions and modeling tools in a manner consistent with the Minnesota State Implementation Plan (SIP).

  A Conformity analysis was required every four years or preceding alterations to the MIC-area LRTP, the Duluth-area TIP, or the Minnesota SIP.

  Air Quality 'Attainment' Designation—August 2014

  In August 2014, a joint conclusion was made through the interagency consultation process that air quality has been sufficiently improved to re-designate the City of Duluth an 'Attainment' area.

  Therefore the additional federal Air Quality Conformity requirements no longer apply, effective with this update of the Long Range Transportation Plan as well as for future Transportation Improvement Programs.

Duluth-Superior Metropolitan Planning Area

The population of the Duluth-Superior area has remained relatively stable since the previous census, at 147,628 in 2010, a modest 1.7% increase over the total 145,166 in 2000.

The MIC's planning jurisdiction encompasses 641 square miles within St. Louis and Douglas counties in Minnesota and Wisconsin, respectively (see Map 2.1). It extends from the census-defined Duluth-Superior Urbanized Area out to the first ring of non-urbanized townships. This includes:

Minnesota/St. Louis County

City of Duluth

City of Hermantown

City of Proctor

Overview:

Duluth's Air Quality Designations 1978 - 1994

Prior to the construction of the extension of I-35 from Mesaba Avenue on the west side of downtown Duluth to 26th Avenue East, traffic was funneled through downtown Duluth and caused congestion. The combination of tall buildings, low winds and warm air trapped carbon monoxide (CO) from vehicle emissions, and led to a series of air quality violations in the 1970's. In 1978, **the City of Duluth was designated a 'non-attainment' area for CO.**

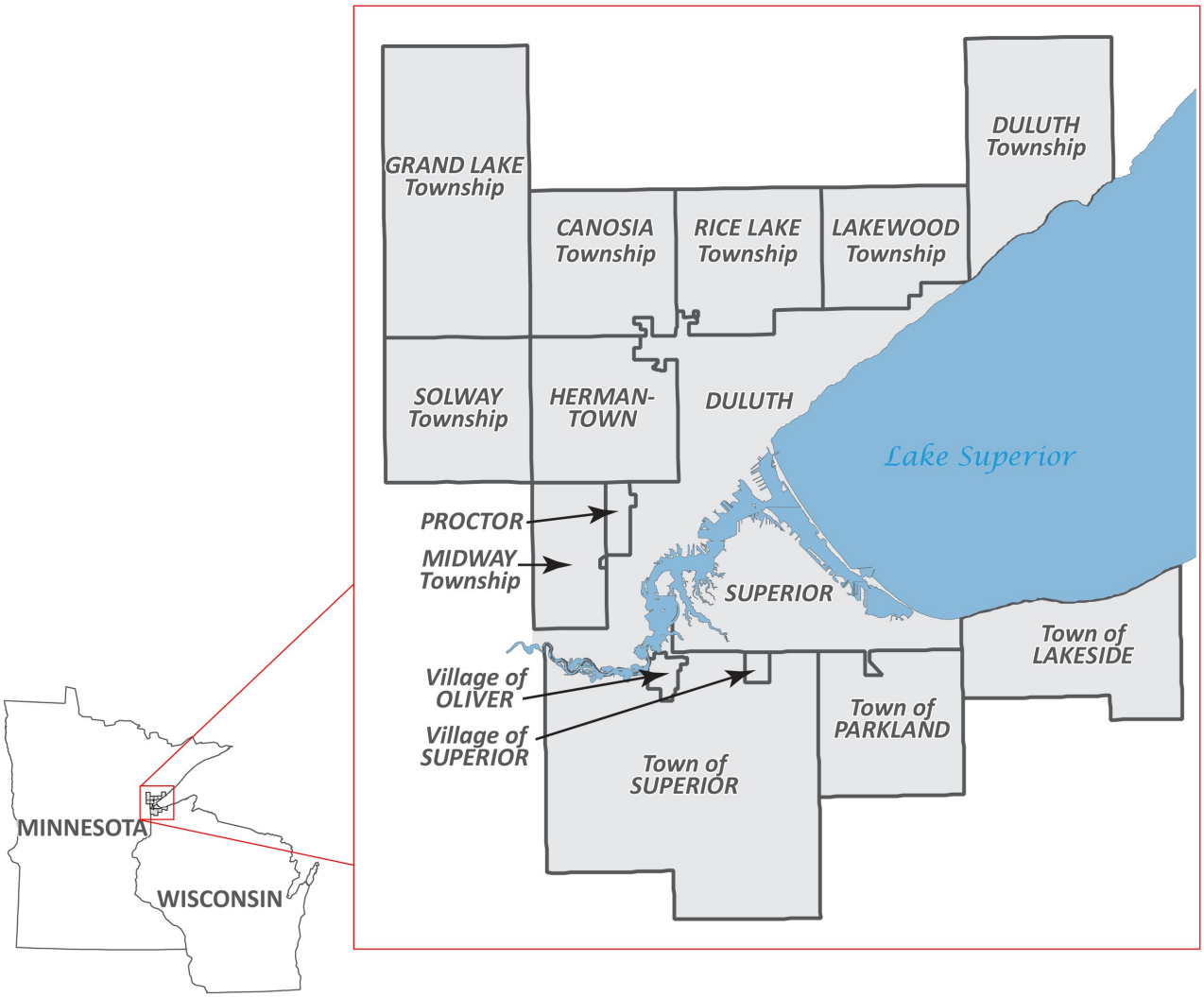
In 1994, two years after the I-35 extension was completed and downtown traffic congestion was mitigated, **it was re-designated as an air quality 'Maintenance' area for carbon monoxide** for 20 years.

During this time the MIC complied with all additional federal regulations including:

- Conducting conformity determinations as part of the LRTP and TIP approvals;
- Updating its LRTP every four years;
- Participating in an interagency consultation process with FHWA, MPCA, and MnDOT to ensure that Duluth-area transportation plans and projects conformed to the state's air quality plan (known as the State Implementation Plan or SIP).

The goal of interagency consultation is to reach a joint conclusion that air quality has been improved and in **August 2014, the** City of Duluth **"Maintenance' was designated as an 'Attainment' area** and the additional air quality requirements no longer apply.

Map 2.1: Duluth-Superior Metropolitan Planning Area



Minnesota/St. Louis County, continued

Canosia Township

Duluth Township

Grand Lake Township

Lakewood Township

Midway Township

Rice Lake Township

Solway Township

St. Louis County

Wisconsin/Douglas County

City of Superior

Douglas County

Town of Lakeside

Town of Parkland

Town of Superior

Village of Oliver

Village of Superior

MIC planning area geography, population and demographic trends are discussed in detail in Chapter 3.

MIC Organizational Structure

ARDC, NWRPC and the MIC

The organizational arrangements of MPOs vary throughout the country —some are free-standing entities, some are set up as a

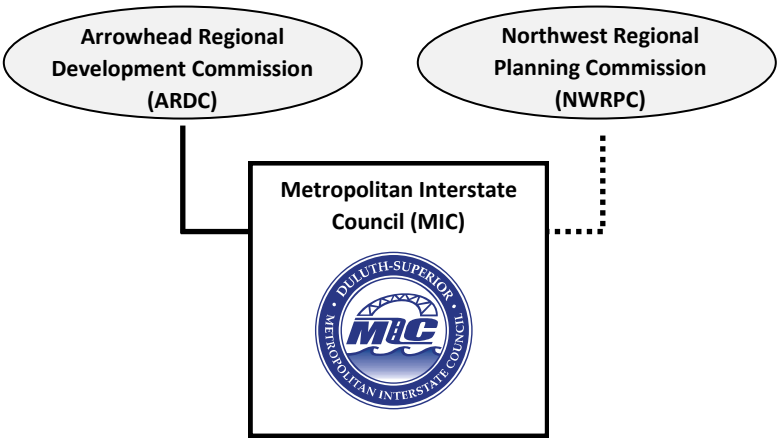


Figure 2.1 Organizational Structure of ARDC, NWRPC and the MIC

Regional Development Commissions and Regional Planning Commissions

Regional Development Commissions (RDCs) in Minnesota and Regional Planning Commissions (RPCs) in Wisconsin are typically multi-county planning and development districts that, like MPOs, encourage cooperation between local, state, and federal agencies, elected officials, the private sector, and citizens.

RDCs and RPCs work to solve shared economic development, transportation, human services and natural resource challenges. Each is governed by a policy board consisting of elected officials from each jurisdiction within the region.

Arrowhead Regional Development Commission (ARDC), the first of nine multi-county regional development organizations in Minnesota, was established in 1969 based on the state Regional Development Act (1969). ARDC serves 7 counties, 180 townships, 70 cities, and 3 reservations in northeast Minnesota.

Northwest Regional Planning Commission (NWRPC) was created in 1959 by local units of government of northwest Wisconsin. It is the oldest planning commission in Wisconsin and one of the first multi-county planning commissions in the nation. The NWRPC is a cooperative venture of 10 counties and 5 tribal nations in the northwest corner of the state.

division within city or county offices, while others, like the MIC, are housed within regional planning and development organizations.

The MIC was formed in 1975 under a joint agreement between the Arrowhead Regional Development Commission (ARDC) in Duluth, Minnesota and the Northwest Regional Planning Commission (NWRPC) in Spooner, Wisconsin and is housed as a division of ARDC (Figure 2.1).

MIC Board, Staff and Advisory Committees

Typically, an MPO includes a top-level policy board, specialized advisory committees and professional planning staff.

MIC Policy Board

The MIC Policy Board is comprised of 18 elected officials and appointed citizen representatives (nine from Minnesota and nine from Wisconsin) who represent all local units of government within the planning area (Figure 2.2). The Policy Board considers and determines key MPO actions as well as the policies and recommendations in its plans and studies. It is also responsible for prioritizing projects for inclusion in the four-year Transportation Improvement Programs of federally-funded projects in Duluth and Superior.

Figure 2.2 Jurisdictional Representation on the MIC Policy Board

Minnesota (9 representatives)	Wisconsin (9 representatives)
4 City of Duluth (2 city councilors, 1 Duluth Transit Authority Board member, 1 citizen)	**4 City of Superior** (1 citizen, 3 city councilors)
1 City of Hermantown (elected official)	**5 Douglas County** (4 county board supervisors, 1 suburban township elected official or citizen)
1 City of Proctor (elected official)	
3 St. Louis County (1 county board member, 1 suburban township elected official and 1 suburban township citizen)	

MIC Planning Staff

The MIC's professional planning staff conducts ongoing planning and administrative activities, including research, data collection and analysis, mapping, facilitating public input and feedback, consulting with area jurisdictions and bringing plans and recommendations forward to the Policy Board for final approvals. Staff members include a director, administrative assistant, Geographic Information Systems (GIS) specialist and three transportation planners.

The MIC Policy Board provides cooperative leadership to meet the following objectives:

To address major transportation issues and solve problems that affect multiple jurisdictions or agencies within the Duluth-Superior metropolitan area.

To develop detailed transportation information that will encourage decisions to enhance livability and optimize the movement of people and goods throughout the metro area.

To improve the comprehensive transportation network so that it is safe and fully integrated.

To gain the maximum benefit from each public transportation investment.

To establish an effective area-wide transportation planning process that is inclusive and responsive to the needs and interests of the area's residents, interest groups, units of government and affected agencies.

Transportation Advisory Committee

- City of Duluth—Planning (2)
- City of Duluth—Engineering (2)
- City of Superior—Planning (1)
- City of Superior—Engineering (1)
- City of Hermantown (1)
- City of Proctor (1)
- State/MnDOT—Planning (1)
- State/MnDOT—Engineering (1)
- State of Minnesota—Economic Dev. (1)
- State/WisDOT—Planning (1)
- St. Louis County Engineering (1)
- Douglas County—Engineering (1)
- Duluth Transit Authority (1)
- Airport (1)
- Port/Harbor (1)
- Bike/Pedestrian (1)

Advisory Committees to the MIC

Three formal advisory committees advise the Policy Board on technical matters and interact with the MIC's professional staff for consultation, analysis and other project work (Figure 2.3). All three committees meet regularly to consider, discuss and forward recommendations for Policy Board consideration.

- **Transportation Advisory Committee (TAC)**

  The Transportation Advisory Committee, or TAC, is comprised of staff-level officials, planners and engineers from local jurisdictions and state and federal agencies. It also includes modal representatives (bike/pedestrian, transit, port and airport).

- **Harbor Technical Advisory Committee (HTAC)**

  The Harbor Technical Advisory Committee, or HTAC, provides guidance on decisions affecting the Duluth-Superior harbor. It also serves as an interstate forum for the development of recommendations relevant to the private, local, state and federal stakeholders who are directly involved with or impacted by their planning, programming and implementation.

- **Bicycle and Pedestrian Advisory Committee (BPAC)**

  The Bicycle and Pedestrian Advisory Committee, or BPAC, was formed in early 2010 to provide citizen input into the planning and implementation of bicycle and pedestrian infrastructure and to assist with data collection and developing recommendations for a variety of MIC projects including an area bike map and events such as the annual Bike to Work Day.

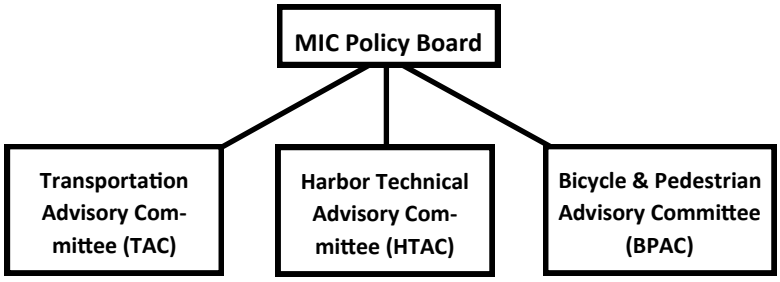


Figure 2.3 MIC Policy Board & Advisory Committees

Harbor Technical Advisory Committee

The HTAC's voting members include a broad range of area stakeholders:

City/County/Regional

- City of Duluth
- City of Superior
- St. Louis County
- Douglas County
- MIC
- NWRPC
- Western Lake Superior Sanitary District
- Duluth Seaway Port Authority

State/Federal

- MnDNR
- WisDNR
- MnDOT
- WisDOT
- MN Pollution Control Agency
- MN Sea Grant Program
- WI Sea Grant Program
- USDA-Natural Resources Conservation Service
- US Army Corps of Engineers
- US Coast Guard
- US Fish & Wildlife Service

Industry and Environmental/Citizen

- Coal sector
- General Bulk sector
- General Cargo sector
- Grain sector
- Harbor Engineering sector
- Harbor Services sector
- Iron Ore sector
- Pilots/Vessel Operations sector
- Recreation sector
- Save Lake Superior Association
- St. Louis River Alliance
- Isaak Walton League

The MIC's Planning Process

Transportation planning is a cooperative process designed to foster involvement by all relevant stakeholders. Federal, state and local guidelines are integrated into a planning process utilized by the MIC for all its planning projects, including **Connections 2040**.

Project-Level Planning Process

The MIC's transportation planning process is not a "one size fits all" approach but rather recognizes that different projects call for customized approaches that will require different steps (even the repeating of some steps) and will vary in the types and frequencies of stakeholder participation.

However, all of the MIC's planning activities (LRTP, TIPs and short-range plans and studies) offer several opportunities for public participation at key decision points during each of the four phases of the planning process as illustrated, below. Each phase represents a strategic point in time to engage stakeholders with the types of information that need to be considered at those times.

Federal public participation requirements are integrated into the MIC's planning process, as outlined in Figure 2.4), below:

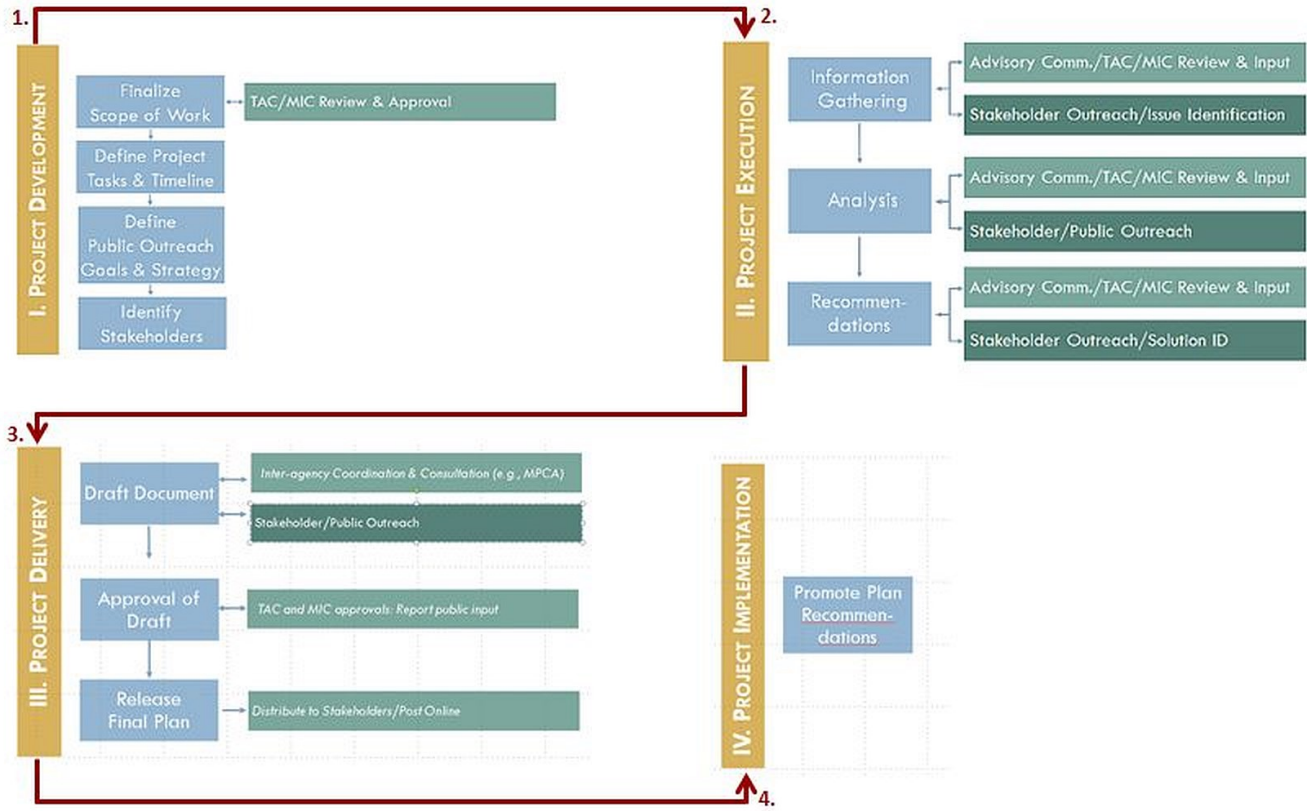


Figure 2.4 The MIC's Project-Level Planning Process

Planning Framework — Federal Guidance

MPOs are charged with providing regional-level coordination and planning for transportation investments in a continuing, cooperative, and comprehensive manner (the 3-C planning process). Connections 2040 incorporates the following federal-level legislative mandates:

Transportation Legislation

MAP-21—Moving Ahead for Progress in the 21st Century (2012)

The most recent federal transportation authorization bill, MAP-21, was passed and signed into law on July 6, 2012.

In MAP-21, the metropolitan and statewide transportation planning processes established in 1991 (ISTEA through SAFETEA-LU, below) are continued and enhanced to incorporate performance goals, measures and targets into the process of identifying needed transportation improvements and project selection. Public involvement remains a hallmark of the planning process.

Requirements for a long-range plan and a short-term transportation improvement plan (TIP) continue. The long-range plan must describe the performance measures and targets used in assessing system performance and progress in achieving the performance targets.

SAFETEA-LU—Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)

Signed into law on August 10, 2005, SAFETEA-LU established new and revised requirements for the MIC's transportation plans and programs, as well as its underlying planning processes, by:

- Giving more responsibilities to MPOs and local governments, along with a requirement for more citizen input into decision making.
- Requiring consideration of projects and strategies that will protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
- Including transportation security as a stand-alone planning factor, with consideration of projects and strategies that will increase the security of the transportation system for motorized and non-motorized users.
- Requiring that MPOs include a discussion of types of potential environmental mitigation activities, developed in consultation with federal, state, and tribal wildlife, land management, and regulatory agencies.

Federal Legislation and the Role of MPOs

The MPO role in transportation planning has become more robust as national transportation policy has evolved through a series of federal legislative initiatives:

2012 Moving Ahead for Progress in the 21st Century (MAP-21)

2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA -LU)

1998 Transportation Equity Act for the 21st Century (TEA-21)

1991 Intermodal Surface Transportation Efficiency Act (ISTEA)

1962 Federal-Aid Highway Act

7 Planning Factors (TEA-21)

- Economic vitality
- Safety & Security
- Accessibility & Mobility
- Environmental Protection & Enhancement
- Integration and Connectivity
- Efficient Management & Operations
- Emphasis on preservation

- Expanding public participation requirements to encourage earlier involvement and requiring consultation with state and local agencies responsible for natural resources, environmental protection, conservation and historic preservation.
- Coordinating with officials responsible for other types of planning activities that are affected by transportation in the area, including state and local planned growth, economic development, environmental protection, airport operations, and freight movements.
- Adding specific requirements to make plans and planning information available in electronically accessible formats, including via the World Wide Web;
- Expanding the fiscal constraint planning provision is to ensure that revenues (federal, state, local, and private) are available to adequately cover the costs of projects included in the plan, while providing for the operation and maintenance of the existing highway and transit systems.

Transportation Equity Act for the 21st Century (1998)

Although there were few statutory changes under TEA-21, the legislation provided greater flexibility and eligibility in highway funds and focused greater attention in certain areas critical to transportation agencies, such as connectivity, freight, asset management, and performance measurement. TEA-21 also:

- Requires that seven planning factors be included in transportation plans (see list at right);
- Allowed a listing of illustrative projects (that would be constructed if funding were available) in addition to a fiscally constrained list of projects;
- Emphasized the importance of Environmental Justice and Intelligent Transportation Systems (ITS) deployment.

Intermodal Surface Transportation Efficiency Act (1991)

With the passage of ISTEA, MPOs evolved into active planning bodies responsible for producing long and short-range transportation plans, coordinating public participation in the transportation investment decision-making process, and serving as an impartial regional platform for debate and discussion. It also:

- Introduced an intermodal approach to highway and transit funding with collaborative planning requirements;
- Established the responsibility of MPOs to develop a Long Range Transportation Plan (LRTP) with a twenty-year planning horizon

MAP-21 / SAFETEA-LU Planning Guidance:

- Planned growth and economic development planning [49 USC 5303 (g)(3) and 23 USC 134(g)(3)]
- Transportation systems security/ emergency preparedness [49 USC 5303(h)(1)(C) and 23 USC 134(h)(1)(C)]
- Environmental mitigation activities [49 USC 5303(i)(2)(B), 5304(f)(4)(A)(B) and 23 USC 134(i)(2)(B)]
- Public participation plan [49 USC 5303(i)(5)(B)(i) & (ii) and 23 USC 134 (i)(5)(B)(i) & (ii)]
- Coordination with other types of planning [49 USC 5303(i)(4)(A), 49 USC 5304(f)(2)(D)(i), and 23 USC 134 (i)(4)(A)]
- Consultation with tribes [49 USC 5304 (f)(2)(D) and 23 USC 135(f)(2)(D)]
- Consultation with economic development agencies [49 USC 5303 (g)(3) and 23 USC 134(g)(3)]
- Use of visualization techniques [49 USC 5303(i)(5)(C)(ii), 23 USC 134(i)(5)(C)(ii)], and 5304(f)(3)(B)(ii)
- Electronic publication of plans [49 USC 5303(i)(5)(C)(iii), 23 USC 134(i)(5)(C)(iii), and 23 USC 135(f)(8)]
- Transportation Alternatives funding, e.g., Safe Routes to School (SRTS)

and a Transportation Improvement Program (TIP) with a minimum three-year programming horizon;

- Required MPOs to include a financial component with a fiscally constrained list of projects outlining transportation funding resources.

Federal-Aid Highway Act (1962)

The Federal-Aid Highway Act of 1962 created the federal requirement for urban transportation planning largely in response to the construction of the Interstate Highway System and the planning of routes through and around urban areas,. The Act required, as a condition attached to federal transportation financial assistance, that transportation projects in urbanized areas of 50,000 or more in population be based on a continuing, comprehensive, urban transportation planning process undertaken cooperatively by the states and local governments.

Other Federal Requirements

The following regulations identify additional federal requirements that impact the MIC's planning and programming activities, including:

Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act ensures that no person shall, on the grounds of race, color or national origin, be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination under any program receiving federal assistance from the United States Department of Transportation.

National Environmental Policy Act (NEPA) of 1969

The National Environmental Policy Act (NEPA) requires all Federal agencies to systematically assess the environmental impacts of their proposed actions and consider alternative ways of accomplishing their missions that are less damaging to the environment. To ensure the public's interests are protected, proposed actions involving Federal resources may not take place until all NEPA and agency requirements for environmental analysis are met.

Americans with Disabilities Act (ADA) of 1990 and ADA Amendments Act of 2008

The Americans with Disabilities Act (ADA) requires that disabled populations must be assured access to employment, public services, and private facilities through improved transportation services. The MIC will identify actions necessary to ensure that the local transportation planning process involves the entire community, particularly those with disabilities, in the development and

Disadvantaged Business Enterprises

The ADA requires that agencies using FTA and FHWA funds make an effort to utilize Disadvantaged Business Enterprises to perform a percentage of their work. The ADA also requires that efforts be made in the planning and design of mass transportation facilities to ensure that elderly and disabled individuals have facilities available to effectively utilize.

The MIC must show a good faith effort when procuring assistance from private contractors and will use minority and disadvantaged firms and contractual services whenever appropriate. It will address the needs of the elderly and disabled through its public participation outreach efforts and by working closely with the Duluth Transit Authority (DTA), which provides accessible dial-a-ride transit services and equips regular route buses with wheelchair lifts.

improvement of public transportation facilities and services. The local process must also ensure that physical locations for such activities, as well as the information presented, shall be accessible to persons with disabilities.

Clean Air Act Amendments (CAAA) of 1990

The Clean Air Act Amendments require greater integration of transportation and air quality planning, and assign a greater responsibility to transportation plans and programs for reducing mobile source emissions. They allowed the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for various pollutants. NAAQS standards have been developed for carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide.

Environmental Justice Executive Order (12898) 1994

Environmental Justice is the public policy goal of ensuring that low-income or minority populations do not bear "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." Adverse human health effects include air and noise pollution, divided neighborhoods, loss of access to opportunities and jobs, property value changes, safety, and aesthetics.

Federal Transit Act (FTA) of 1997

The Federal Transit Act requires any urban area with a population of 50,000 or greater to undertake a process to develop transportation plans and programs based upon transportation needs. Additionally, these plans and programs will consider transit elements in comprehensive long range land use plans, development objectives, and social, economic, environmental and energy conservation goals.

Planning Framework – State Guidance

Both Minnesota and Wisconsin statewide plans were also used as framework for developing goals and objectives for this plan. Key state plans are summarized below.

Minnesota GO / 50-Year Vision for Transportation

In 2012, MnDOT completed the Minnesota GO visioning process to better align the transportation system with what Minnesotans expect for their quality of life, economy and natural environment.

As the plan states, "Ownership of the vision is a shared responsibility." The Minnesota GO vision and guiding principles are

Community Impact Assessment—FHWA

Community Impact Assessment is linked and similar to Environmental Justice, but is not tied specifically to minority and low-income populations as is Environmental Justice. As defined by FHWA, Community Impact Assessment is a process to evaluate the effects of a transportation action on a community and its quality of life. This assessment should focus on important impacts of transportation projects to people such as mobility, safety, employment effects, relocation, isolation, and should suggest context sensitive transportation mitigation.

Private Enterprise Participation—FTA

The FTA requires plans and programs to encourage the involvement of private firms in providing transportation services for the community. In addition, these regulations established guidelines on the involvement of the public sector where a private sector vendor is already providing a service at a competitive rate.

The Duluth Transit Authority (DTA) uses a private operator to provide its accessible transit service to those with disabilities. The DTA and MIC jointly evaluate any new or current services to ensure maximum efficiency so that public subsidies do not provide unfair advantages over private sector bidders. The MIC also maintains a private participation policy related to the involvement of transportation providers in the planning and competitive bidding process.

Public Participation Requirement—FTA

The MIC's process for the annual development of the Transportation Improvement Programs for Duluth and Superior satisfies the DTA's public participation requirements for the program of projects.

intended to be used by all agencies responsible for transportation planning, construction and delivery in Minnesota, including the MIC planning area, to inform their investment and service decisions:

Leverage public investments to achieve multiple purposes
The transportation system should support other public purposes, such as environmental stewardship, economic competitiveness, public health and energy independence.

Ensure accessibility
The transportation system must be accessible and safe for users of all abilities and incomes. The system must provide access to key resources and amenities throughout communities.

Build to a maintainable scale
Consider and minimize long-term obligations–don't overbuild. The scale of the system should reflect and respect the surrounding physical and social context of the facility. The transportation system should affordably contribute to the overall quality of life and prosperity of the state.

Ensure regional connections
Key regional centers need to be connected to each other through multiple modes of transportation.

Integrate safety
Systematically and holistically improve safety for all forms of transportation. Be pro-active, innovative and strategic in creating safe options.

Emphasize reliable and predictable options
The reliability of the system and predictability of travel time are frequently as important (or more important) than speed. Prioritize multiple multimodal options over reliance on a single option.

Strategically fix the system
Some parts of the system may need to be reduced while other parts are enhanced or expanded to meet changing demand. Strategically maintain and upgrade critical existing infrastructure.

Use partnerships
Coordinate across sectors and jurisdictions to make transportation projects and services more efficient.

The Minnesota GO guiding principles are reflected in the goals for the MIC's *Connections 2040*, as illustrated in Figure 2.5.

Minnesota Statewide Transportation Goals
MN statute 174.01 subd. 2

To provide safe transportation for users throughout the state;

To provide multimodal and intermodal transportation that enhances mobility and economic development and provides access to all persons and businesses in Minnesota while ensuring that there is no undue burden placed on any community;

To provide a reasonable travel time for commuters;

To provide for the economical, efficient, and safe movement of goods to and from markets by rail, highway, and waterway;

To encourage tourism by providing appropriate transportation to Minnesota facilities designed to attract tourists;

To provide transit services throughout the state to meet the needs of transit users;

To promote productivity through system management and the utilization of technological advancements;

To maximize the benefits received for each state transportation investment;

To provide funding for transportation that, at a minimum, preserves the transportation infrastructure;

To ensure that the planning and implementation of all modes of transportation are consistent with the environmental and energy goals of the state;

To increase high-occupancy vehicle use;

To provide an air transportation system sufficient to encourage economic growth and allow all regions of the state the ability to participate in the global economy;

To increase transit use in the urban areas by giving highest priority to the transportation modes with the greatest people moving capacity; and

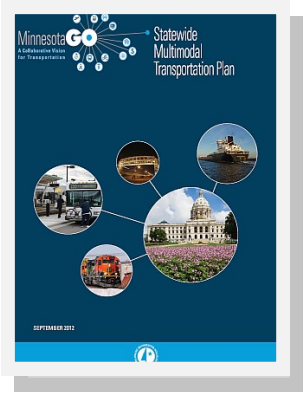
To promote and increase bicycling as an energy-efficient, nonpolluting, and healthful transportation alternative.

Figure 2.5: ***Minnesota GO*** *Guiding Principles as represented in the MIC's* ***Connections 2040*** *Goals*

Connections 2040 GOALS → / Minnesota GO Guiding Principles ↓	SYSTEM PRESERVATION & OPTIMIZATION	NETWORK INTEGRATION	ACCESS & MOBILITY	ECONOMIC VITALITY	ENVIRONMENTAL PROTECTION	OPERATIONS and MAINTENANCE	PUBLIC PARTICIPATION	SAFETY	SECURITY
Leverage public investments to achieve multiple purposes				●	●			●	●
Ensure accessibility		●	●				●		
Build to a maintainable scale	●				●			●	●
Ensure regional connections	●	●		●					●
Integrate safety						●		●	
Emphasize reliable and predictable options		●	●	●		●	●		
Strategically fix the system	●	●		●		●			
Use partnerships		●		●	●	●	●	●	●

Statewide Multimodal Transportation Plan

MnDOT's 20-year Statewide Multimodal Transportation Plan articulates policies, strategies and performance measures as a framework to help achieve the vision over the next two decades. The Statewide Multimodal Transportation Plan serves as the framework plan for MnDOT's family of modal plans.

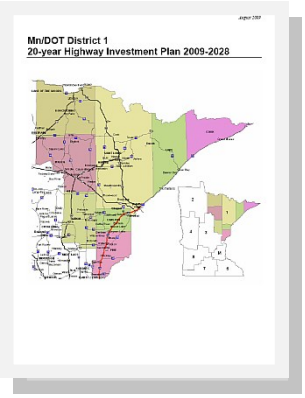


Policy and Modal Plans

The long-range outcomes for transportation in the state, as articulated in the Minnesota GO vision, may take up to 50 years to be fully realized and extend to an entire family of plans that provide direction for different modes of transportation (aviation, bikes, freight, highways, pedestrians, ports and waterways, rail and transit).

Minnesota State Highway Investment Plan (MnSHIP)

The 20-Year Minnesota State Highway Investment Plan 2013-2032 will support the guiding principles from the Minnesota GO vision and link the policies and strategies in the Statewide Multimodal Transportation Plan to capital improvements that will be made to the state highway system.

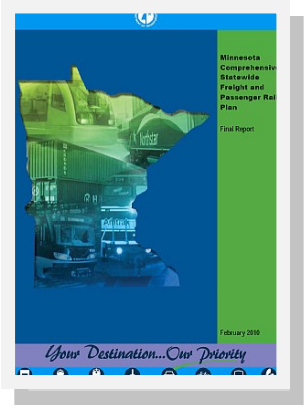


MNDOT District 1 Highway Investment Plan 2009-2028

Part of the overall Minnesota State Highway Investment Plan, this 20 -year plan is a guide for future capital investments in the state trunk highway system for northeastern Minnesota.

Minnesota Statewide Highway Systems Operations Plan

This plan documents policy, strategies, performance targets and investment priorities for maintenance and operations-related activities for Minnesota's 12,000-mile transportation system through 2015. It balances many competing activities, which include clearing snow and ice, patching roadways, inspecting bridges and replacing damaged signs. These various activities enhance safety and mobility for system users.



Minnesota Strategic Highway Safety Plan

This plan was created to reduce the number of traffic fatalities and serious injuries on Minnesota's roadway as part of the Towards Zero Deaths initiative. An update to this 2007 plan is currently in development, which will incorporate input from Minnesota's safety community and new crash and other data.

Minnesota Comprehensive Statewide Freight and Passenger Rail Plan

The purpose of this 2010 plan is to guide the future of the rail system and rail services in the State. The development of the Plan included extensive involvement by the private sector, public officials, and representatives, as well as the general public. An update to the 2010 version is currently underway.

Statewide Freight Plan

The purpose of this 2005 plan is to provide an integrated system of freight transportation in Minnesota – highway, rail, water, air cargo, and intermodal terminals – that offers safe, reliable, and competitive access to statewide, national, and international markets. An update to the 2005 version is currently underway.

Mn/DOT Bicycle Modal Plan 2005-2030

This 2005 plan is consistent with MnDOT's mission "…to help Minnesotans travel safer, smarter and more efficiently" It prioritizes

and guides investments in safe bicycle and pedestrian accommodations on MnDOT owned and influenced facilities.

Statewide Bicycle System Plan

The Statewide Bicycle System Plan is a modal plan that follows the completion of the 2013 Statewide Bicycle Planning Study. The planning process is currently underway and aims to accomplish four goals—

- To create better ways to think about biking in MnDOT projects;
- To identify future long-distance bikeways;
- To help MnDOT coordinate with communities when a local street is also state road; and
- To help MnDOT understand how to prioritize funding for bicycle infrastructure across the state.

The Greater Minnesota Transit Investment Plan

This is a 20-year strategic plan that provides directions for the future of public transportation in Greater Minnesota. The plan describes current challenges in the state, examines future transit service needs and analyzes future levels of funding to meet that need.

State Aviation System Plan

This plan identifies the goals, minimum system objectives, and performance measures in which serves as a guide to meet the demands for airport facilities throughout Minnesota to ensure safety and economic competitiveness nationally and internationally, while managing available funding options. The gap between available funds and identified needs will likely be managed by an established prioritization system in which the needs of each project will be carefully reviewed. The future of aviation in Minnesota includes sustainability practices, new technology, and multimodal connectivity.

Context Sensitive Design

The former Context Sensitive Design Policy is now being called the **Context Sensitive Solutions** with a key difference in rationale as context-sensitive projects do not necessitate a design component. The same principles still apply such as seeking safe facilities for all users, environmental harmony, addressing community concerns, involving stakeholders, utilizing a full range of flexibility and design choices, and creating a long lasting value for the public and communities.

Street and Development Design

In alignment with Policy 8-C of Mn/DOT's Statewide Transportation Policy Plan, the MIC's planning process will incorporate the principles of **Context Sensitive Design** and **Complete Streets**:

Context Sensitive Design

It is Mn/DOT's policy to use a context sensitive approach to create excellence in project development, that incorporates design standards, safety measures, environmental stewardship, aesthetics and community sensitive planning and design.

Mn/DOT's approach to Context Sensitive Design promotes six key principles:

- Balance safety, mobility, community, and environmental goals in all projects
- Involve the public and affected agencies early and continuously
- Use an interdisciplinary team tailored to project needs
- Address all modes of travel
- Apply flexibility inherent in design standards
- Incorporate aesthetics as an integral part of good design

Complete Streets

Complete Streets are designed to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street.

Complete Streets Policy

MnDOT requires Complete Streets to be considered at all phases of planning and project development in the establishment, development, operation, and maintenance of a comprehensive, integrated and connect multimodal transportation system. This policy is to uphold, complement, and elevate existing state and federal laws and departmental direction that support and integrated, multimodal transportation system.

Long Range Transportation Plan — Wisconsin

Connections 2030: Wisconsin's Long-Range Multi-Modal Transportation Plan

Connections 2030 is the long-range transportation plan for the state of Wisconsin, addressing all forms of transportation over a 20-year planning horizon: highways, local roads, air, water, rail, bicycle, pedestrian and transit. WisDOT officially adopted *Connections 2030* in October 2009.

Policy and Modal Plans — Wisconsin

Additionally, numerous plans, reports, and studies are considered and reflected in Connections 2030 and in the MIC's Long Range Plan goals and strategies, including:

Wisconsin State Airport System Plan 2020

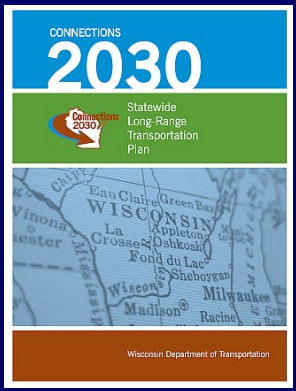
This plan provides a framework for the preservation and enhancement of a system of public-use airports adequate to meet the current and future aviation needs of the State of Wisconsin.

Wisconsin Bicycle Transportation Plan 2020

WisDOT encourages planning for bicyclists at the local level, and is responsible for developing long-range, statewide bicycle plans. Guidelines for accommodating travel by bicycles when roadways are reconstructed, or new roads are built, are available and their use is encouraged.

Wisconsin Statewide Pedestrian Policy Plan 2020

WisDOT developed the Wisconsin Pedestrian Policy Plan 2020 to provide a long-range vision addressing existing and emerging pedestrian needs over the next 20 years, with recommendations to meet those needs.



Connections 2030: Wisconsin's Vision for Transportation

WisDOT envisions an integrated multimodal transportation system that maximizes the safe and efficient movement of people and products throughout the state, enhancing economic productivity and the quality of Wisconsin's communities while minimizing impacts to the natural environment.

Connections 2030 policies are organized according to seven themes:

To preserve and maintain Wisconsin's transportation system

To promote transportation safety

To foster Wisconsin's economic growth

To provide mobility and transportation choice

To promote transportation efficiencies

To preserve Wisconsin's quality of life

To promote transportation security

Wisconsin State Highway Plan 2020

This is a 21-year strategic plan which considers the highway system's current condition, analyzes future uses, assesses financial constraints and outlines strategies to address Wisconsin's preservation, traffic movement, and safety.

Wisconsin Long-Range Rail Plan 2030

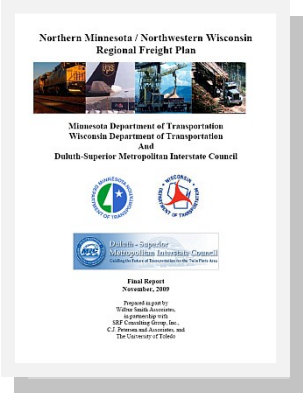
This plan is currently under development to meet federal and state legislative requirements. Set for completion in 2010, it will establish a vision for rail transportation through 2030; set state rail policy; and present priorities and strategies for investment.

Wisconsin Strategic Highway Safety Plan

This plan provides background and information about highway safety in Wisconsin and lays out strategies for the Wisconsin Department of Transportation (WisDOT) and its many safety partners to address key safety issues.

Planning Framework – Local Coordination

Many of the MIC's member jurisdictions develop and maintain a number of planning documents to help guide coordinated development and investment decisions.

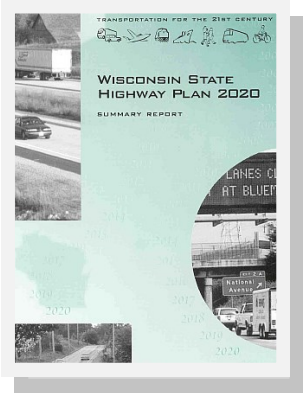


Regional Plans

Several planning initiatives from in and around the MIC area are relevant to the development of this document. While *Connections 2040* does not include specific recommendations from individual community plans, it does incorporate community-level concerns into the LRTP's policies, goals and objectives. Current region-wide plans include:

Northern MN and Northwest WI Regional Freight Plan

This is a multimodal transportation planning effort that includes highway (commercial vehicle operations), rail, waterway, air cargo, pipeline, and intermodal transportation. It assesses the demands from freight being placed on the regional transportation infrastructure, documents the existing freight transportation system in the region, examines regional and local issues not captured in previous freight studies, and plans for improvements to freight movements specific to the region.

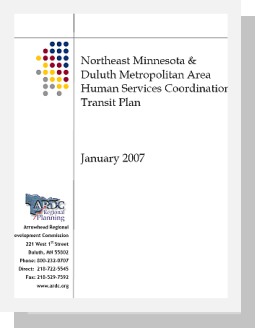


Douglas County Comprehensive Plan 2010-2030

The transportation element of the Douglas County Comprehensive Plan reviews the existing types of transportation choices in the county, and identifies applicable local, state, and regional transportation plans affecting Douglas County.

Coordinated Human Services Transportation Plans

The plans assess transportation needs for individuals with disabilities, older adults, and persons with limited incomes; inventory available services; and develop strategies to address the identified gaps in service for more efficient utilization of resources. Two of these plans have been developed in the MIC Planning Area:

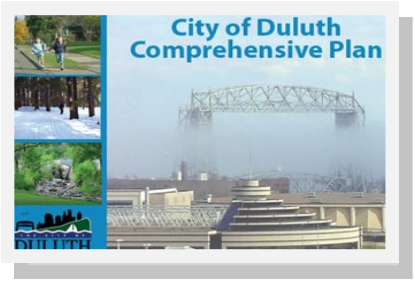


Northeast MN and the Duluth Metro Area

Douglas County, WI and the City of Superior.

Comprehensive Plans

Comprehensive Plans that provide an overall guide for growth while maintaining or improving quality of life for its residents by identifying future land use, utilities, green space and transportation needs. Current Comprehensive Plans within the MIC area include:



Canosia Township Comprehensive Plan

City of Duluth Comprehensive Plan

City of Proctor Comprehensive Plan

City of Superior Comprehensive Plan 2010-2030

Duluth Township Comprehensive Plan

Lakewood Township Comprehensive Plan

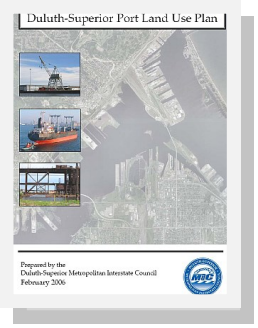
Midway Township Comprehensive Plan

Rice Lake Township Comprehensive Plan

Town of Parkland Comprehensive Plan 2010-2030

Specialty and Small Area Plans

Several recent local planning initiatives that are relevant to the MIC's planning outlook include:



Bayfront District Small Area Management Plan

Duluth and Superior Port Land Use Plans

Gary/New Duluth Small Area Plan

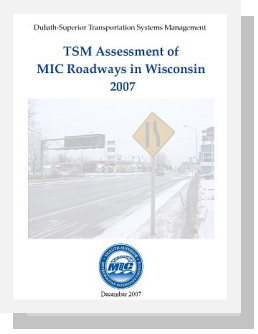
Historic Union Depot Passenger Rail Terminal Study

Lincoln Park Small Area Plan

Miller Hill/Central Entrance Small Area Management Plan

Park Point Small Area Plan

Skyline Parkway Corridor Management Plan



Transportation Systems Management Assessment of MIC Roadways in Minnesota and Wisconsin

3. Trends & Projections

This section of *Connections 2040* summarizes the trends in demographics, economics, land use and transportation patterns that the Duluth-Superior metropolitan area has experienced in recent years.

INTRODUCTION

An assessment of the current and future transportation needs in the Duluth-Superior metropolitan area begins with a look at trends in population growth, demographics, employment, land use, and travel behavior. The size, makeup, and characteristics of the population exert different demands throughout the transportation system. Together, these things influence both travel patterns and subsequent decisions in transportation investment.

Geographic Definitions

Trends regarding population, demographics, economics, and other characteristics are tracked using data published by the U.S. Census Bureau and other agencies. For metropolitan areas like Duluth-Superior, such data is collected and delivered according to at least one of three geographic levels: the metropolitan statistical area (MSA), the urbanized area (UZA), or the individual municipalities that comprise the metropolitan planning organization (MPO).

Metropolitan Planning Organization (MPO)

The Duluth-Superior Metropolitan Interstate Council (MIC) is the federally designated MPO for the area. It is a bi-state MPO comprised of three cities and seven townships on the Minnesota side of the harbor and one city, two villages, and three towns on the Wisconsin side. The boundary of the MPO is depicted in Figure 3.1. Census data regarding population, demographics, and jobs can be assessed in terms of this boundary, but some economic and transportation related data cannot. Throughout Connections 2040, this geographical unit will be referred to as the "metropolitan area", "metro area", "MIC area", or "MPO".

Urbanized Area Boundary (UZA)

The Duluth-Superior UZA boundary delineates the portion of the MPO considered to be "urban" based on the concentration of people and impervious surfaces. This is the smallest unit with which some employment and transportation related data are delivered (Figure 3.2).

Metropolitan Statistical Area (MSA)

The Duluth-Superior MSA is a much larger geography that contains the MPO. It includes all the counties considered to have a close economic tie to the metropolitan area. Trends in population, workforce, and transportation are all available for this geographic area and can be easily compared (Figure 3.3).

Figure 3.1:

The Duluth-Superior MPO boundary

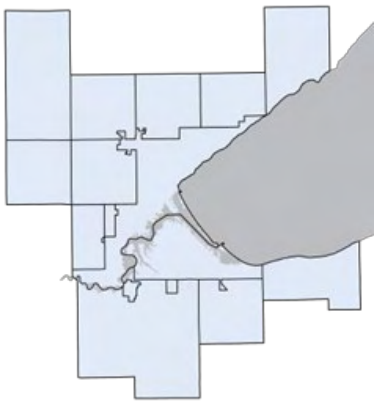


Figure 3.2:

The Duluth-Superior UZA

The Duluth-Superior UZA is represented by shaded area in the center.

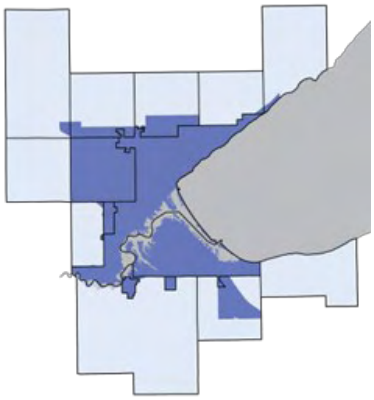
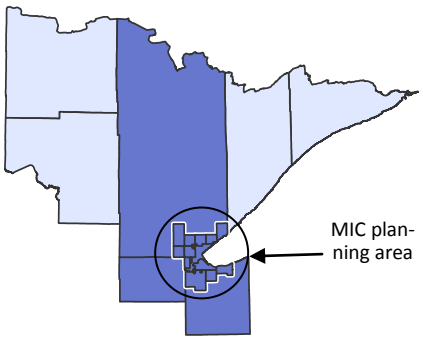


Figure 3.3:

The Duluth-Superior MSA

The Duluth-Superior MSA is represented by shaded area in the center.



Population & Demographics

***Trend**: Modest increases in population have been occurring mostly outside the urban center; aging seniors will continue to represent a larger percentage of the population, and households will likely continue to decrease in size.*

Pedestrian traffic in Canal Park, Duluth

Historical Population Trends

According to data from past decennial censuses, the population of the Duluth-Superior area has remained relatively stable. Modest gains have reversed a downward trend in the 1980's and 1990's, and in 2010 the entire MIC area had gained 2,462 more people than in had in 2000 (Table 3.1).

Much of the area's growth, however, has been occurring in the cities, villages and townships which surround the urban centers of Duluth and Superior. The City of Hermantown, by far experienced the most growth, increasing by nearly 2,000 people, while the other surrounding communities together grew by 1,273 people. The growth in these communities have been supplanting population losses in the urban core, which signifies a spreading out of the population within the metro area.

Table 3.1: Historical population trends in the Duluth-Superior metropolitan area (1980 to 2010)

Area	1980	1990	% Change	2000	% Change	2010	% Change
St. Louis Co.	222,229	198,213	-10.8%	200,528	1.2%	200,226	-0.2%
MIC portion (MN)	116,944	109,841	-6.1%	113,033	2.9%	115,242	2.0%
Duluth	92,811	85,493	-7.9%	86,918	1.7%	86,265	-0.8%
Hermantown	6,759	6,761	0.0%	7,448	10.2%	9,414	26.4%
Proctor	3,180	2,974	-6.5%	2,852	-4.1%	3,057	7.2%
Rice Lake T.	3,861	3,883	0.6%	4,139	6.6%	4,095	-1.1%
Grand Lake T.	2,166	2,355	8.7%	2,621	11.3%	2,779	6.0%
Lakewood T.	1,680	1,799	7.1%	2,013	11.9%	2,190	8.8%
Canosia T.	1,562	1,743	11.6%	1,998	14.6%	2,158	8.0%
Solway T.	1,665	1,772	6.4%	1,842	4.0%	1,944	5.5%
Duluth T.	1,604	1,561	-2.7%	1,723	10.4%	1,941	12.7%
Midway T.	1,656	1,500	-9.4%	1,479	-1.4%	1,399	-5.4%
Douglas Co.	44,421	41,758	-6.0%	43,287	3.7%	44,159	2.0%
MIC portion (WI)	34,437	31,686	-8.0%	32,133	1.4%	32,386	0.8%
Superior	29,571	27,134	-8.2%	27,368	0.9%	27,244	-0.5%
T. of Superior	2,065	1,911	-7.5%	2,058	7.7%	2,166	5.2%
T. of Parkland	1,496	1,326	-11.4%	1,240	-6.5%	1,220	-1.6%
T. of Lakeside	572	569	-0.5%	609	7.0%	693	13.8%
V. of Superior	480	481	0.2%	500	4.0%	664	32.8%
V. of Oliver	253	265	4.7%	358	35.1%	399	11.5%
TOTAL MIC AREA	**151,381**	**141,527**	**-6.5%**	**145,166**	**2.6%**	**147,628**	**1.7%**

Source: US Census Bureau, 2014.

Population Density

While growth in the metro area appears to be moving further out from the core cities of Duluth and Superior, the adjacent cities of Hermantown and Proctor, as well as the Village of Oliver, and the Village of Superior have all seen significant increases in their population per square mile of available land, or population density (Table 3.2).

While the general trends shown in Table 3.2 have implications for the planning, funding, and maintenance of transportation assets, it is an incomplete picture, geographically. Map 3.1 on the following page displays population density at the census block level in 2010 and shows how - despite decreases in population and population density - a substantial portion of the area's residents live along the shore in Downtown Duluth and near Downtown Superior.

Map 3.2 shows the additions and subtractions of population between the years 2000 and 2010. This imagery helps to show that much of the added growth has occurred along the State Highway 53 corridor in Duluth and Hermantown.

Examples of large multi-residential units near downtown Duluth.

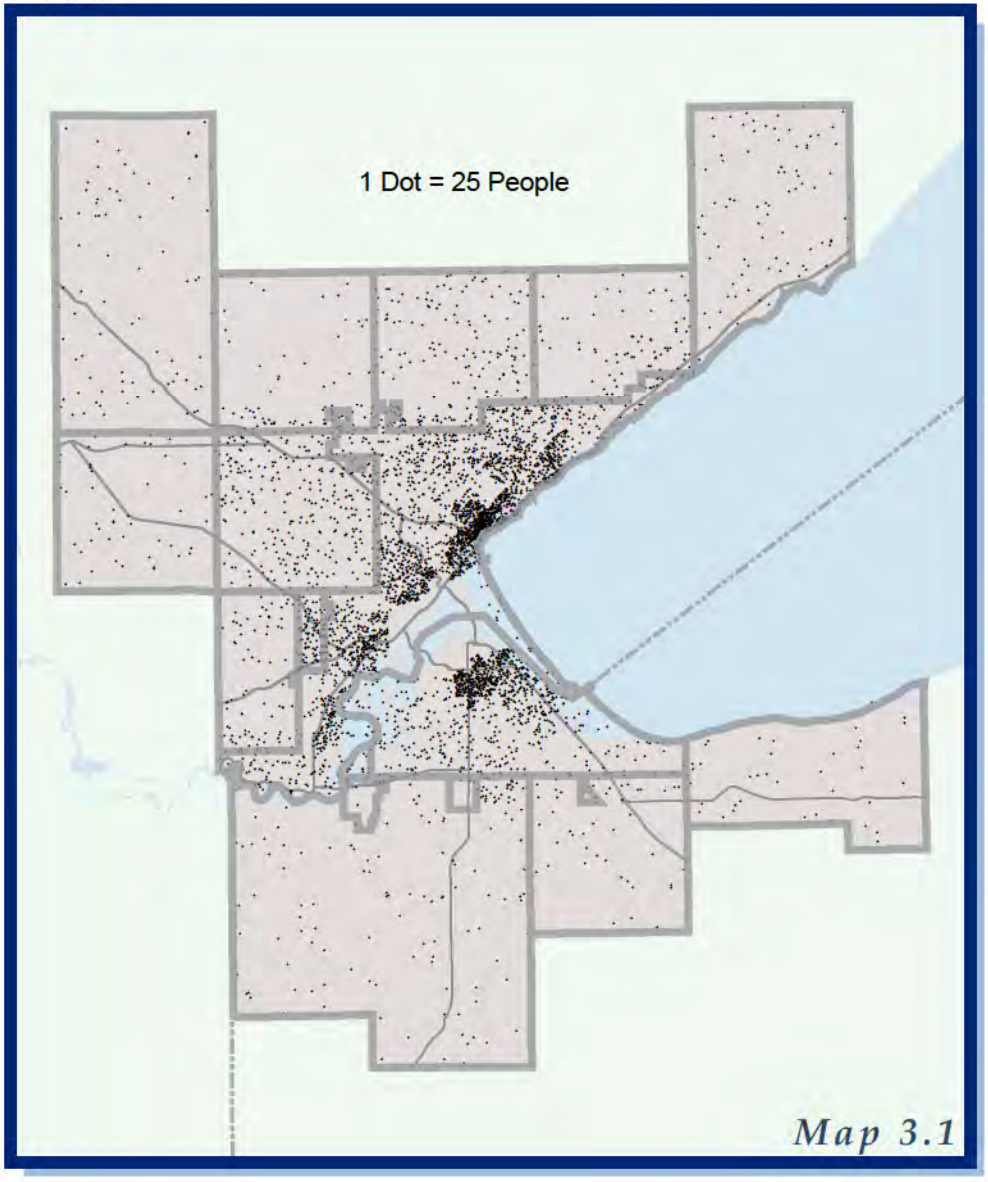
Table 3.2: Changes in population density in the Duluth-Superior metropolitan area (2000 to 2010)

Area	Total Area (Square miles)	Population 2000	*2000 Density (people per sq. mi.)*	Population 2010	*2010 Density (people per sq. mi.)*	*Change in Pop. Density*
MIC (MN)	398.8	113,033	*283*	115,242	*289*	*6*
Duluth	87.4	86,918	*994*	86,265	*987*	*-7*
Hermantown	34.4	7,448	*217*	9,414	*274*	*57*
Proctor	3.0	2,852	*951*	3,057	*1,019*	*68*
Rice Lake T.	33.5	4,139	*124*	4,095	*122*	*-1*
Grand Lake T.	71.5	2,621	*37*	2,779	*39*	*2*
Lakewood T.	27.8	2,013	*72*	2,190	*79*	*6*
Canosia T.	35.7	1,998	*56*	2,158	*60*	*4*
Solway T.	35.7	1,842	*52*	1,944	*54*	*3*
Duluth T.	51.8	1,723	*33*	1,941	*37*	*4*
Midway T.	18.0	1,479	*82*	1,399	*78*	*-4*
MIC (WI)	242.2	32,133	*133*	32,386	*134*	*1*
Superior	55.7	27,368	*492*	27,244	*490*	*-2*
T. of Superior	107.8	2,058	*19*	2,166	*20*	*1*
T. of Parkland	35.5	1,240	*35*	1,220	*34*	*-1*
T. of Lakeside	39.9	609	*15*	693	*17*	*2*
V. of Superior	1.2	500	*403*	664	*535*	*132*
V. of Oliver	2.1	358	*172*	399	*192*	*20*
TOTAL MIC AREA	**641.0**	**145,166**	***226***	**147,628**	***230***	***4***

Source: US Census Bureau, 2014.

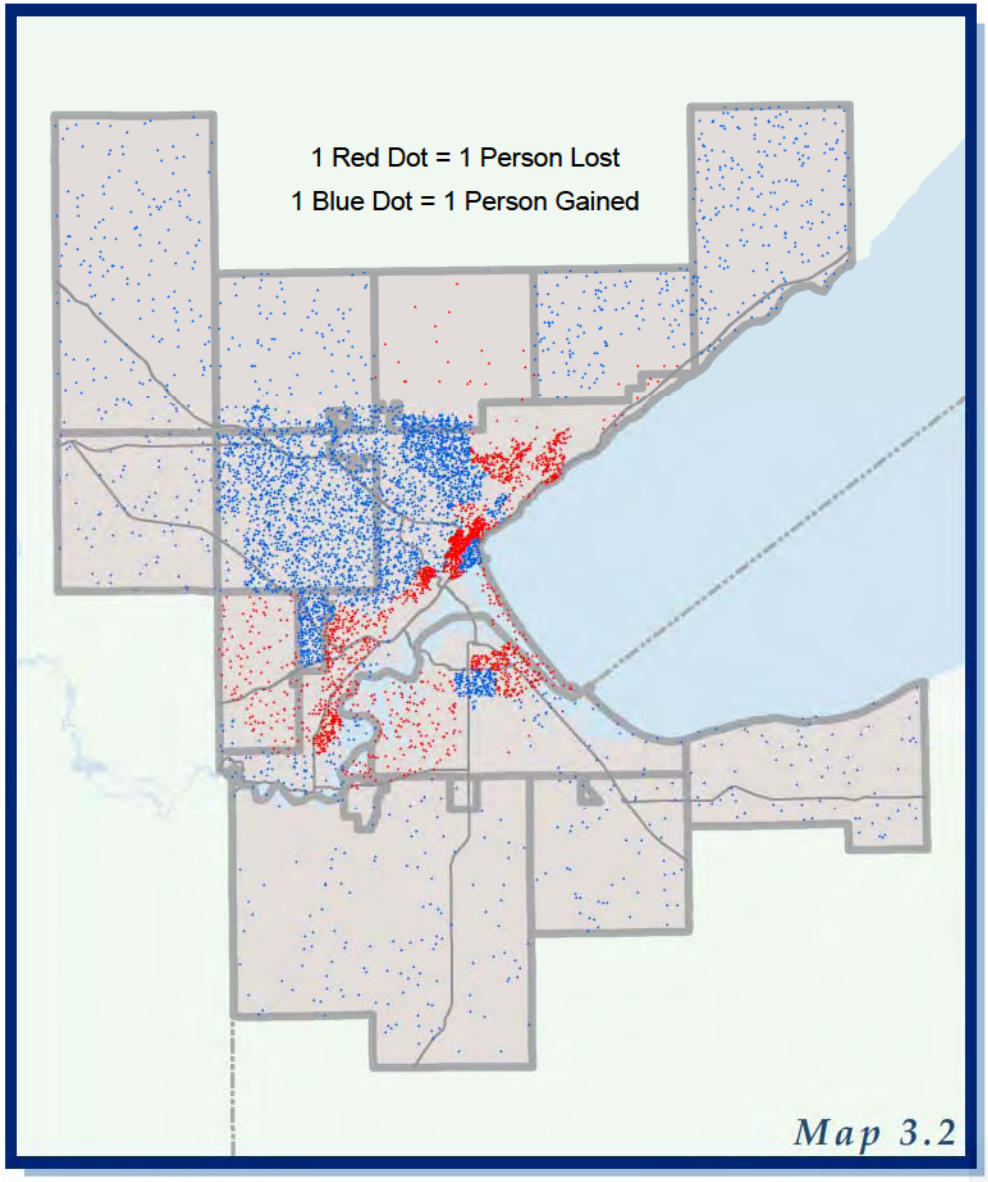
Duluth - Superior
Population Density & Change

Population Density 2000



Map 3.1

Population Density Changes 2000-2010



Map 3.2

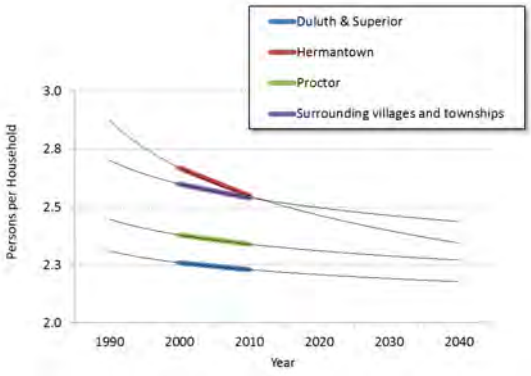
Household Size

Data regarding average household size shows shrinking household sizes in each of the MIC area's communities. This is consistent with Minnesota and Wisconsin statewide trends in declining average household sizes. It is also consistent with a progressively aging population in the metro area, as discussed on page 3-8.

As shown in Table 3.3 below, several of the towns and townships surrounding the Duluth-Superior urbanized area have experienced the largest decreases in average household size. On average, however, the average household size in these areas went from 2.6 persons per household to 2.5 in 2010. In contrast, the City of Hermantown went from 2.7 persons to 2.5.

When projecting this data out logarithmically to a year-2040 planning horizon, a pattern in which household sizes in the urban area will be around 2.3 persons while it will remain above 2.4 in the surrounding townships (Figure 3.4).

Figure 3.4:
Trends in average household sizes in the Duluth-Superior metropolitan planning area



Source: U.S Census Bureau (2014).

Table 3.3:
Changes in average household size in the MIC area (2000 to 2010)

Area	Average persons per household in 2000	Average persons per household in 2010	*% Change*
MIC (MN side)			
Duluth	2.26	2.23	*-1.3%*
Hermantown	2.67	2.55	*-4.5%*
Proctor	2.38	2.34	*-1.7%*
Rice Lake T.	2.77	2.54	*-8.3%*
Grand Lake T.	2.66	2.52	*-5.3%*
Lakewood T.	2.84	2.74	*-3.5%*
Canosia T.	2.66	2.58	*-3.0%*
Solway T.	2.74	2.57	*-6.2%*
Duluth T.	2.58	2.59	*0.4%*
Midway T.	2.66	2.56	*-3.8%*
MIC (WI side)			
Superior	2.26	2.23	*-1.3%*
T. of Superior	2.69	2.54	*-5.6%*
T. of Parkland	2.68	2.44	*-9.0%*
T. of Lakeside	2.69	2.68	*-0.4%*
V. of Superior	2.39	2.22	*-7.1%*
V. of Oliver	2.82	2.51	*-11.0%*
Minnesota	2.52	2.45	*-2.8%*
Wisconsin	2.50	2.41	*-3.6%*
United States	2.59	2.59	*0.0%*

Source: US Census Bureau, SF100%2000; 2006-2010 5-year ACS (2014).

Population Projections

For the purposes of long-range planning, two growth scenarios for the Duluth-Superior metropolitan area were compared: a conservative growth estimate and an aggressive growth estimate. Under the conservative estimate, the population of the Duluth-Superior area would be 158,413 by the year 2040. The aggressive scenario would exceed this by nearly 15,000 more people. Both scenarios are shown as straight-line projections in Table 3.4 and Figure 3.5 below.

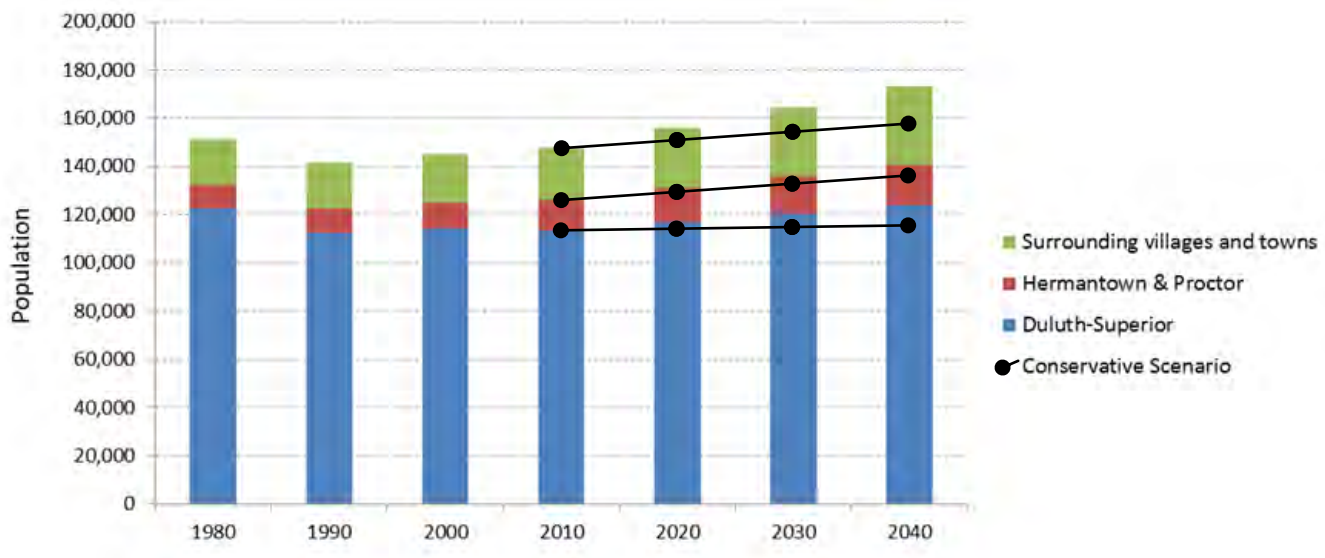
These 25-year growth estimates were developed to help anticipate future development patterns and the potential need for certain transportation investments. How these estimates were derived and their implications for planning and policy development are addressed further in the "Land Use & Travel Demand Patterns" discussion starting on page 3.20.

Table 3.4: Population projections for the Duluth-Superior metropolitan area (2010 to 2040)

	2010	2020 Projection		2030 Projection		2040 Projection		Total Change (30 years)			
Area	Actual	Conservative	Aggressive	Conservative	Aggressive	Conservative	Aggressive	Conservative	% Change	Aggressive	% Change
MIC (MN)	115,242	118,210	121,919	121,179	128,595	124,147	135,272	8,905	7.7%	20,030	17.4%
Duluth	86,265	86,616	88,763	86,966	91,261	87,317	93,759	1,052	1.2%	7,494	8.7%
Duluth % increase		0.4%	2.9%	0.4%	2.8%	0.4%	2.7%				
Hermantown	9,414	10,501	10,788	11,589	12,162	12,676	13,536	3,262	34.7%	4,122	43.8%
Hermantown % increase		11.6%	14.6%	10.4%	12.7%	9.4%	11.3%				
Proctor	3,057	3,131	3,165	3,206	3,272	3,280	3,380	223	7.3%	323	10.6%
Proctor % increase		2.4%	3.5%	2.4%	3.4%	2.3%	3.3%				
Townships (MN Side)	16,506	17,962	19,203	19,418	21,900	20,874	24,597	4,368	26.5%	8,091	49.0%
Township % increase		8.8%	16.3%	8.1%	14.0%	7.5%	12.3%				
MIC (WI)	32,386	33,013	34,201	33,639	36,017	34,266	37,832	1,880	5.8%	5,446	16.8%
Superior	27,244	27,357	28,149	27,471	29,053	27,584	29,958	340	1.2%	2,714	10.0%
Superior % increase		0.4%	3.3%	0.4%	3.2%	0.4%	3.1%				
Villages and towns (WI Side)	5,142	5,655	6,053	6,169	6,963	6,682	7,874	1,540	29.9%	2,732	53.1%
Villages & Townships % increase		10.0%	17.7%	9.1%	15.0%	8.3%	13.1%				
TOTAL MIC AREA	**147,628**	**151,223**	**156,120**	**154,818**	**164,612**	**158,413**	**173,104**	**10,785**	**7.3%**	**25,476**	**17.3%**

Source: URS Corp, 2014.

Figure 3.5: Population trends and projections for the Duluth-Superior metropolitan area (1980 to 2040)



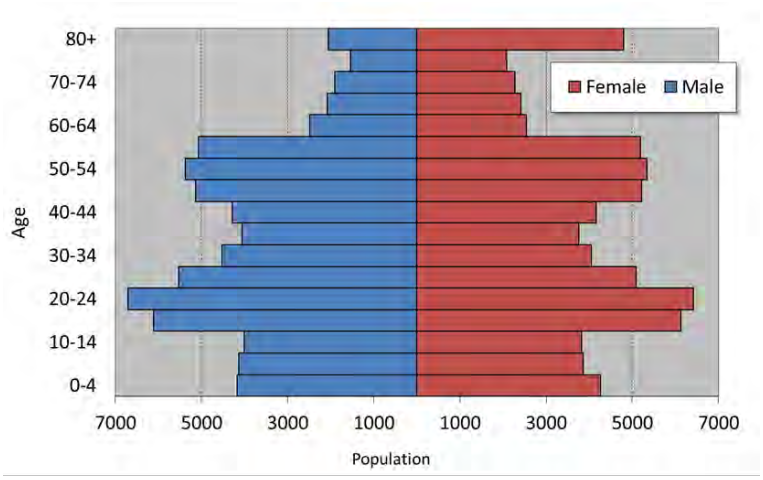
Population Diversity

As with the size and density of a population, the age, race, and income profiles of an area also have important implications for transportation planning decisions. Different subsets of a population tend to have different needs when it comes to the provision of transportation services or the design of transportation infrastructure. Changes in these demographic profiles may signal needed shifts in transportation policy and investments. What follows is a summary of trends regarding age, race, and poverty in the Duluth-Superior area.

Age

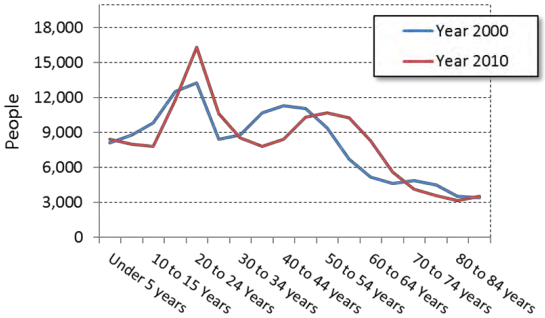
The population of the Duluth-Superior area is characterized by its Baby Boomer and college-aged populations, which can be seen in Figure 3.5 below. The effects of these groups on the area's age profile can be seen in Figure 3.6. As time continues, the large "boomer" population will be entering their senior years, while the size of college-aged population (identified here as ages 18 to 30) is expected to remain relatively static. These trends have implications for transportation planning. For instance, those identified as "Millennials" (born between 1980 and 2000) are showing increasing demand for ride-sharing, public transit, and non-motorized options, while the increasing number of seniors may also translate into increased demand for more "walkable" environments and more transit service. Whatever the preferences may be, an increasing percentage of the area's population will likely be needing transportation assistance in coming years. Projections based on those done by the Minnesota State Demographer's Office for St. Louis County show that those aged 75 and older will approach 20% of the population by the year 2040 (Figure 3.7).

Figure 3.5: Duluth-Superior Population Pyramid (2010)



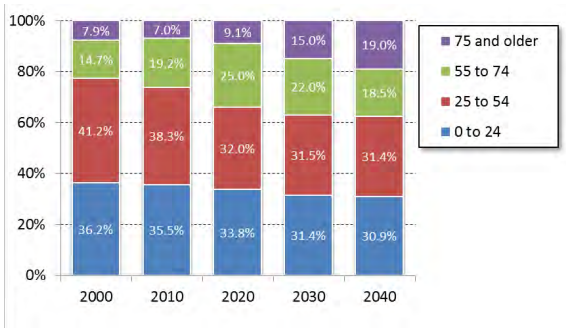
Source: U.S. Census Bureau, 2010.

Figure 3.6:
Age profile of the MIC area: 2000 and 2010



Source: U.S. Census Bureau, 2010.

Figure 3.7:
Projected change in age profile: MIC area (2000 to 2040)



Source: MIC (2014).

Race

The Duluth-Superior metropolitan area is not very racially diverse, compared to many other metro areas throughout the country. The area's population is predominately Caucasian (Figure 3.10), and those identified as Hispanic or Latino represent only 1% of that subset (Figure 3.11).

There are signs, however, that the Duluth-Superior metro is becoming more racially diverse. For instance, in 2010, Whites represented 92% of the population, as opposed to 94% a decade earlier, while the numbers of African American residents and those of multiple races have been increasing (Table 3.5). In addition, it has been reported that 5% of the area's population speaks a language other than English at home (Figure 3.12).

Table 3.5: Changes in % race (2000-2010)

Area	Population subset 2000	% of Pop.	Population subset 2010	% of Pop.
Caucasian	136,373	93.9	135,565	91.8
Two or more races	2,342	1.6	3,960	2.7
African American	1,686	1.2	2,688	1.8
American Indian or Alaskan Native	3,028	2.1	3,182	2.2
Asian American	1,316	0.9	1,805	1.2
Some other race	372	0.3	383	0.3

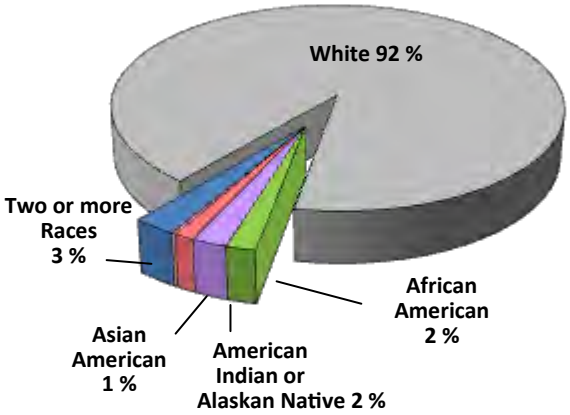
Sources: U.S. Census Bureau, 2010.

Considerations of race, ethnicity, and language are important in the planning and provision of transportation services. These populations have historically been underserved by public transportation policy and have had limited or no input into major transportation decisions that have significantly impacted their neighborhoods.

These considerations fall under "Environmental Justice" (EJ), which is the public policy goal of ensuring that low-income or minority populations do not bear disproportionately high, or negative impacts as a result of government activities - which includes publicly funded transportation projects. The transportation projects that are identified in *Connections 2040* have undergone a preliminary EJ assessment, which can be found in Chapter 5 of CONNECTIONS 2040.

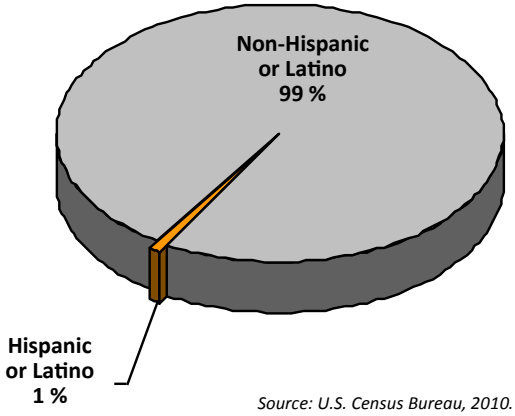
Map 3.3 (following page) shows the census blocks in the MIC area where concentrations of minorities exceed both the metropolitan average of 8.2% and the national average of 27.6% (Census 2010) . The largest concentrations exist in Duluth's Central Hillside neighborhood near the downtown, which also represents a high

Figure 3.10: Population by Race (2010)



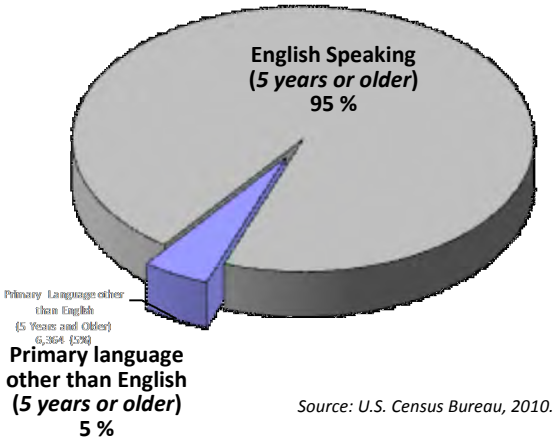
Source: U.S. Census Bureau, 2010.

Figure 3.11: Hispanic or Latino Population (2010)



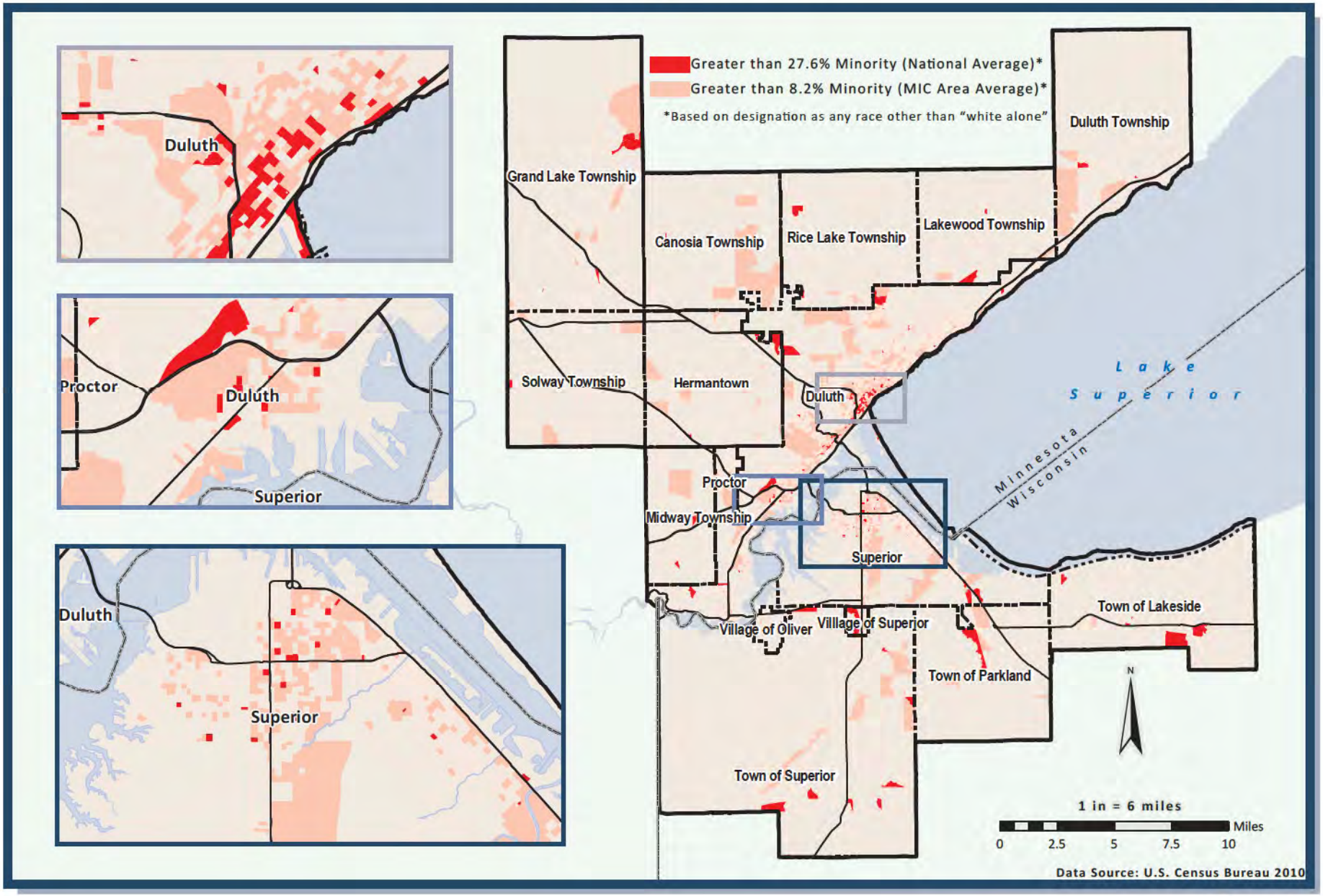
Source: U.S. Census Bureau, 2010.

Figure 3.12: Non-English Speaking Population (2010)



Source: U.S. Census Bureau, 2010.

Duluth - Superior
Minority Populations



Map 3.3

concentration of people living below the national poverty line.

Poverty

The most recent estimates from the U.S. Census Bureau show that 18% of the MIC area's population is living below the national poverty line (Figure 3.13). This represents a four percent increase from the 2000 Census, of which the City of Duluth has experienced the largest addition of those living in poverty (Table 3.6).

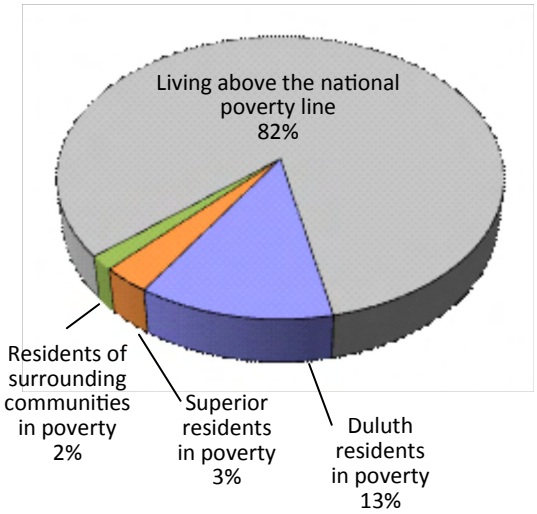
Table 3.6: Change in % Poverty in the MIC area (2000-2010)

Area	Individuals in poverty (2000)	% of Area Pop.	Individuals in poverty 2010 *	% of Area Pop.
Duluth	13,472	9.3	17,591	12.6
Superior	3,667	2.5	4,338	3.1
Surrounding areas	1,542	1.1	2,294	1.6

** 5-year estimate 2008-2012*

Sources: U.S. Census Bureau, Census 2000 and 2008-2012 5-Year ACS data (2014)

Figure 3.13: Percent Duluth-Superior



Source: U.S. Census Bureau, 2010.

People living in poverty often face transportation challenges. They often lack the means to transport themselves to/from work and other destinations and have difficulty accessing jobs and services. Often they are reliant on public transit or other services that do not always provide the flexibility they need to effectively chain different trips together (work, daycare, medical, shopping, etc.).

Areas of concentrated poverty, therefore, are important to consider in the planning and provision of transportation services. Efforts should be made to tailor transportation projects in ways that improve access and mobility for low-income individuals and families.

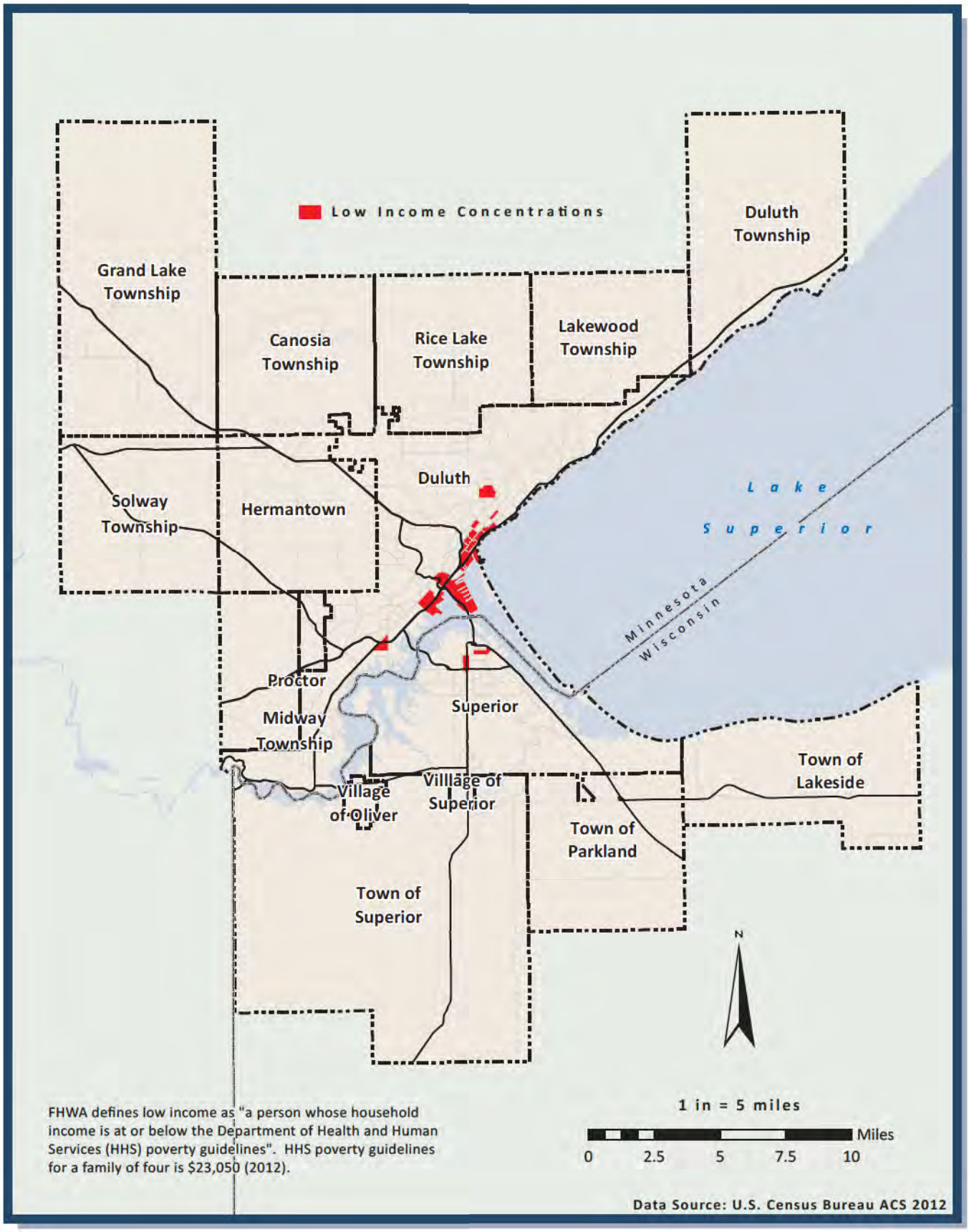
Map 3.4 on the following page shows that the highest concentrations of individuals living in poverty in the area are near the downtown districts of Duluth and Superior, the Central Hillside and Lincoln Park neighborhoods of Duluth, as well as Duluth's university district (full-time students are included in the low-income subset). It is important to note that significant distances (two miles in Superior, and greater than four in Duluth) exist between these concentrations and the area's major retail centers, which represent the greatest number of low-skilled or entry level employment opportunities in the area.

Map 3.4 was also used in the preliminary Environmental Justice (EJ) analysis to determine which of the planned transportation projects on pages 5-12 through 5-30 may impact areas of concentrated poverty in the Duluth-Superior metropolitan area.

Is Duluth-Superior's population of those living in poverty bigger than reported?

The federal government's method of counting those who are living in poverty is under increasing scrutiny as alternative methods, such as those recently proposed by the National Academy of Sciences (NAS), attempt to factor in rising costs of health care, child care, and transportation, and would suggest an even greater percentage of the MIC area's population is encountering the challenges of poverty on a daily basis.

Duluth - Superior
Low Income Concentration



FHWA defines low income as "a person whose household income is at or below the Department of Health and Human Services (HHS) poverty guidelines". HHS poverty guidelines for a family of four is $23,050 (2012).

Map 3.4

Ambulatory Difficulty

The U.S. Census Bureau defines ambulatory difficulty as those who have "serious difficulty walking or climbing stairs." This subset of the population is important to consider in transportation planning as they represent those with potentially greater mobility needs both in terms of services and infrastructure design.

It is estimated that 3% of the MIC area's population have ambulatory difficulty. This is lower than the national average of 3.2%. Some municipalities, however, have estimates that are above the national average (see Table 3.7), and when looking at individual census tracts in the metro, the percent of people with ambulatory difficulty is estimated to be as high as 12% (Map 3.5 on the following page).

As people age, their ambulatory abilities begin to decline. As would be expected then, those over age 65 represent a greater percentage of those facing ambulatory difficulty. As Table 3.7 shows, this subset of the Duluth-Superior population has a level of ambulatory difficulty that is nearly 5 times larger than the population overall.

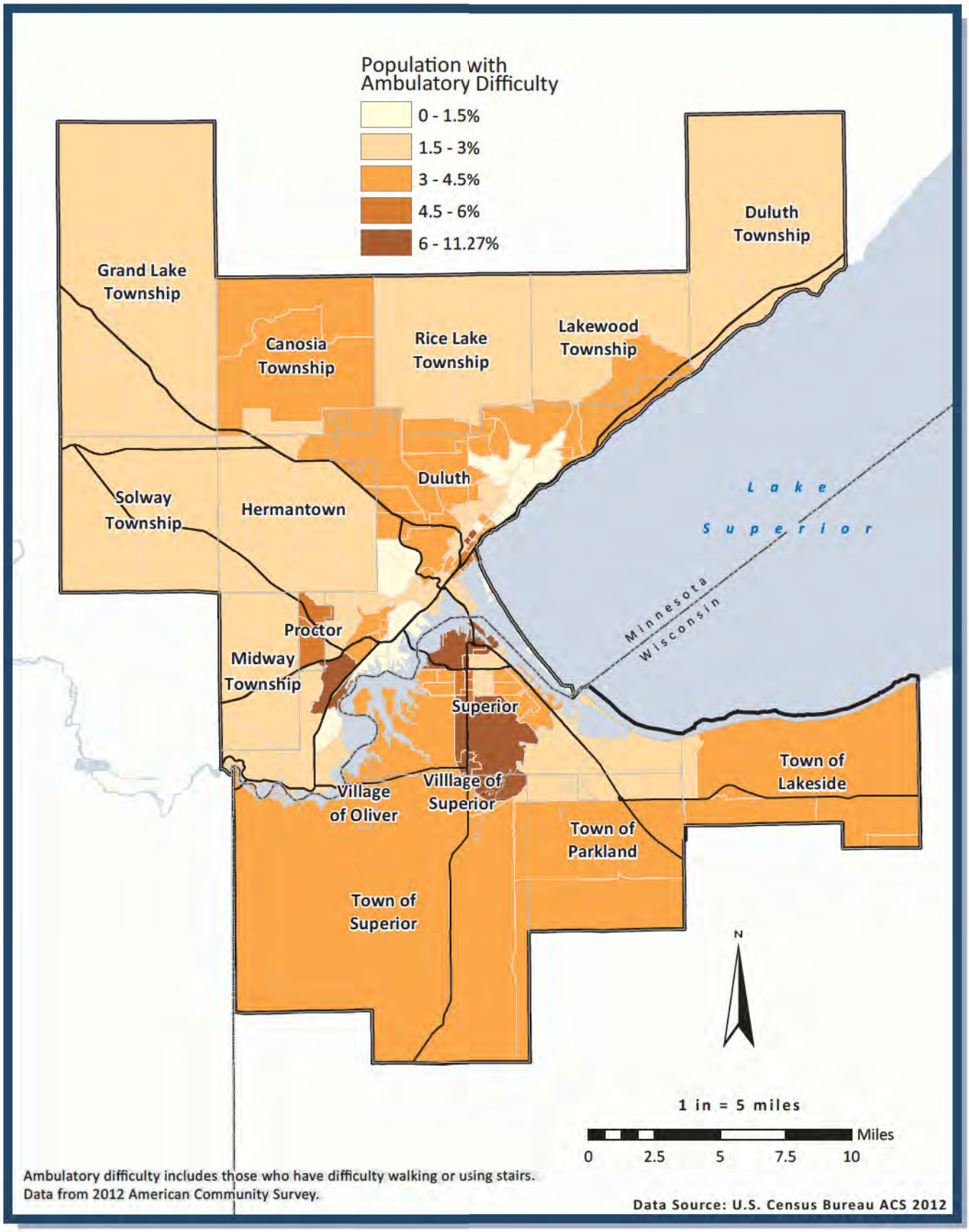
Members of the population aged 65 and over represent a higher percentage of those with ambulatory difficulty.

Table 3.7: Estimates of those with ambulatory difficulty in the Duluth-Superior metropolitan area

Area	Population estimate (ages 5 and over) 2008 - 2012	People with an ambulatory difficulty	*% ambulatory difficulty*	Ages 65 and over	Ages 65 and over with ambulatory difficulty	*% ambulatory difficulty*
MIC (MN)	106,255	2,760	*2.6%*	21,032	3,106	*14.8%*
Duluth	79,720	2,067	*2.6%*	16,503	2,338	*14.2%*
Hermantown	8,226	145	*1.8%*	1,572	366	*23.3%*
Proctor	2,843	121	*4.3%*	627	93	*14.8%*
Rice Lake T.	3,880	77	*2.0%*	525	56	*10.7%*
Grand Lake T.	2,477	36	*1.5%*	402	68	*16.9%*
Lakewood T.	2,076	44	*2.1%*	263	27	*10.3%*
Canosia T.	2,018	152	*7.5%*	281	56	*19.9%*
Solway T.	1,911	37	*1.9%*	260	33	*12.7%*
Duluth T.	1,717	44	*2.6%*	254	38	*15.0%*
Midway T.	1,387	37	*2.7%*	345	31	*9.0%*
MIC (WI)	29,755	1,265	*4.3%*	5,892	850	*14.4%*
Superior	25,044	1,118	*4.5%*	5,092	705	*13.8%*
T. of Superior	1,920	28	*1.5%*	336	36	*10.7%*
T. of Parkland	1,257	42	*3.3%*	187	28	*15.0%*
T. of Lakeside	642	28	*4.4%*	98	17	*17.3%*
V. of Superior	580	43	*7.4%*	144	57	*39.6%*
V. of Oliver	312	6	*1.9%*	35	7	*20.0%*
TOTAL MIC AREA	**136,010**	**4,025**	***3.0%***	**26,924**	**3,956**	***14.7%***

Source: US Census Bureau, ACS 5-year estimates (2008-2012), 2014.

Duluth - Superior
Ambulatory Difficulty



Ambulatory difficulty includes those who have difficulty walking or using stairs.
Data from 2012 American Community Survey.

Data Source: U.S. Census Bureau ACS 2012

Map 3.5

THE ECONOMY & EMPLOYMENT

***Trend**: The Duluth-Superior metropolitan area is expected to grow in its capacity as a regional trade center, with significant job growth anticipated to occur within the cities of Duluth, Hermantown, and Superior.*

The Blatnik Bridge on US Hwy 53 connects Duluth, MN (foreground) and Superior, WI

The Regional Economy

The Duluth-Superior metropolitan area is the regional trade center (RTC) for Northeast Minnesota and Northwest Wisconsin. It offers a wealth of opportunities for employment, shopping, tourism, trade, education, healthcare and other services. It is also a major transportation hub for the movement of commodities and other freight throughout the region, nation, and internationally - especially because of its port facilities. Because of the concentration of economic activities and transport, the Duluth-Superior metro drives regional productivity.

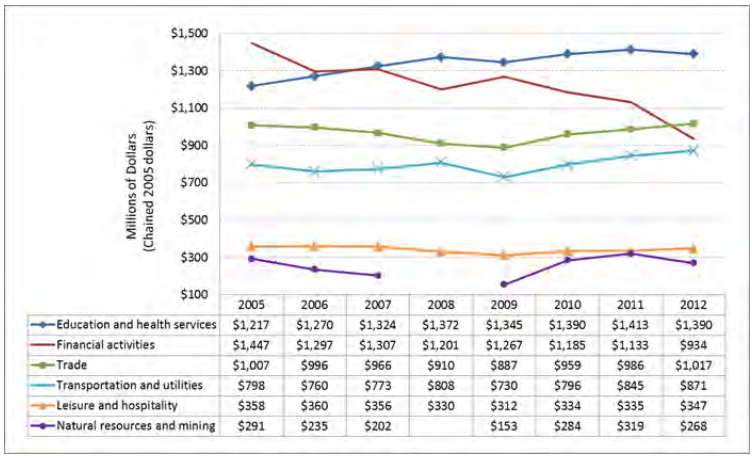
As Figure 3.12 shows, in terms of real gross domestic product (GDP), the productivity of the MSA has tracked fairly closely with that of the Twin Cities and the State of Minnesota at large. In 2012, however, real GDP for the MSA was $142 million, which contained virtually no growth from the previous year. This appears to be the result of a tightening financial industry in the region, which has been showing decline since the global economic crisis of 2008 and 2009 and is having a dampening effect on the increasing productivity of the region's other prominent industries. This is illustrated in Figure 3.13 on the following page.

Figure 3.12:
Comparison of GDP trends (All Industries total - indexed)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Duluth, MN-WI (MSA)	$100	$109	$112	$119	$121	$123	$128	$131	$128	$135	$142	$142
Twin Cities (MSA)	$100	$103	$108	$115	$122	$125	$130	$133	$131	$136	$143	$151
State of Minnesota	$100	$104	$110	$117	$123	$126	$131	$135	$133	$138	$144	$152
U.S. Metropolitan Portion	$100	$104	$108	$115	$123	$130	$137	$139	$136	$141	$146	$152

Source: U.S. Bureau of Economic Analysis, 2014.

Figure 3.13:
Real GDP of prominent industries in the Duluth-Superior MSA

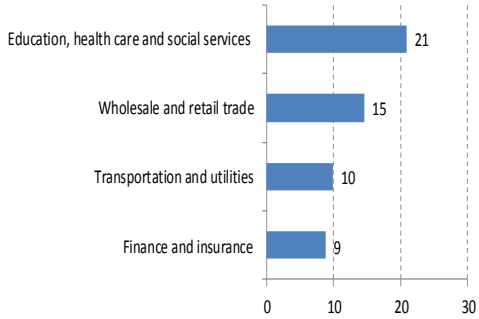


	2005	2006	2007	2008	2009	2010	2011	2012
Education and health services	$1,217	$1,270	$1,324	$1,372	$1,345	$1,390	$1,413	$1,390
Financial activities	$1,447	$1,297	$1,307	$1,201	$1,267	$1,185	$1,133	$934
Trade	$1,007	$996	$966	$910	$887	$959	$986	$1,017
Transportation and utilities	$798	$760	$773	$808	$730	$796	$845	$871
Leisure and hospitality	$358	$360	$356	$330	$312	$334	$335	$347
Natural resources and mining	$291	$235	$202		$153	$284	$319	$268

Source: U.S. Bureau of Economic Analysis, 2014.

As Figure 3.13 shows, despite the decreasing GDP of the area's financial sector, other prominent industries are showing signs of economic vitality. The Education and Health Services industries continue to be the biggest contributors to the area's productivity, while the Trade, Transportation, and Utilities industries have been increasing in productivity. And, as Figure 3.14 shows, these sectors have a potentially more significant impact on employment in the area, employing more people per $100 million in GDP than the finance and insurance sector. The growth of these industries in the region helps to explain an unemployment rate in the Duluth-Superior MSA that is decreasing significantly faster than the national unemployment rate (Figure 3.15).

Figure 3.14:
Jobs per $1 million in real GDP
(average for all MSAs: 2010 to 2012)



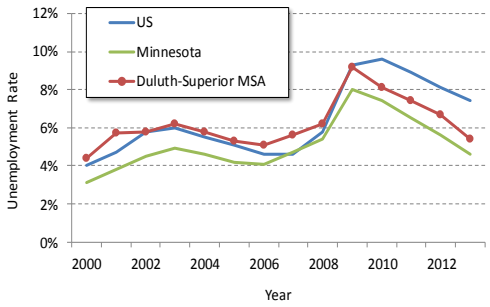
Source: U.S. Bureau of Labor Statistics, 2014.

Employment Trends

While the activities of many businesses result in freight traffic on the area's roads, rails, airways, and waterways, the greatest impacts to the transportation system come from the many more numbers of employees and customers that businesses attract. That is why consideration is given in this plan for the numbers and types of jobs that are located throughout the Duluth-Superior metropolitan area. Different types of jobs tend to be associated with different levels of customer activity, and so the types and locations of jobs in an area can also help to understand the patterns of traffic related to shopping and services.

According to data available through the Bureau of Labor statistics, total employment in the Duluth-Superior metropolitan statistical area (MSA) was estimated to be 122,000 jobs in 2012. More than

Figure 3.15:
Comparison of unemployment trends



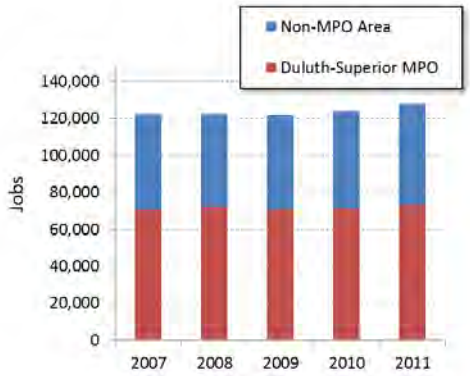
Source: U.S. Bureau of Labor Statistics, 2014.

half of these Jobs are within the Duluth-Superior MPO, as is shown in Figure 3.16.

The MPO had accounted for around 58% of the region's jobs between 2007 and 2011, and that approximately 5,000 jobs were added to the region during that time. Of all the jobs in the MPO, 97% are contained within the urbanized area (UZA) of the cities of Duluth, Hermantown, Proctor, and Superior, and the villages of Oliver and Superior.

Figures 3.17 and 3.18 below show the employment profile of the Duluth-Superior urbanized area, coded according to the North American Industry Classification System (NAICS). Over 88% of the area's jobs are considered service-producing jobs and include the sectors associated with five of the area's six prominent industries previously discussed (Healthcare and education, Financial activities, trade, Leisure and hospitality, and Transportation and utilities). Together, these sectors account for more than 54,000 employees in the area.

Figure 3.16:
Total jobs in the Duluth-Superior MSA (2007 to 2011)



Source: U.S. Census Bureau, LEHD, 2014.

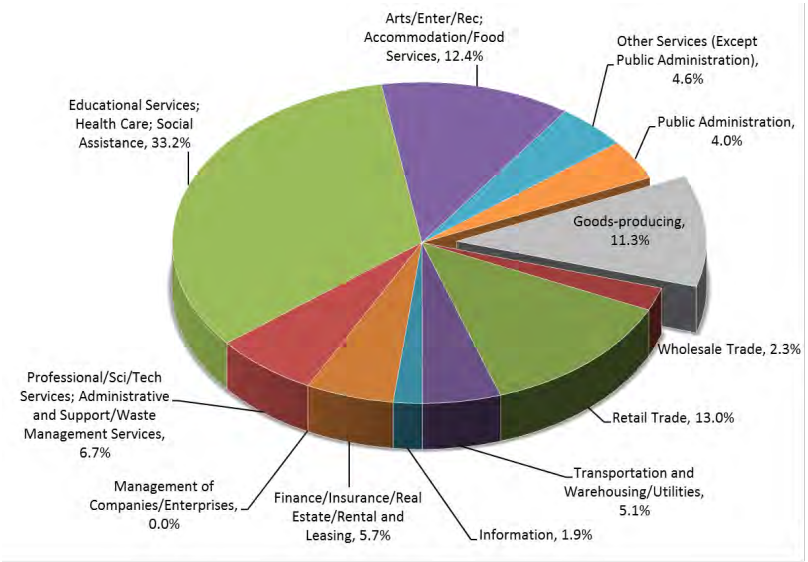


Figure 3.17: Service-Providing Employment (Duluth-Superior MPO area)

Five of the area's most productive industry sectors (Health care and education, trade, leisure and hospitality, financial activities, transportation and utilities) account for 74% of all the jobs within the MPO area, employing more than 54,000 people.

Source: U.S. Census Bureau, LEHD, 2014.

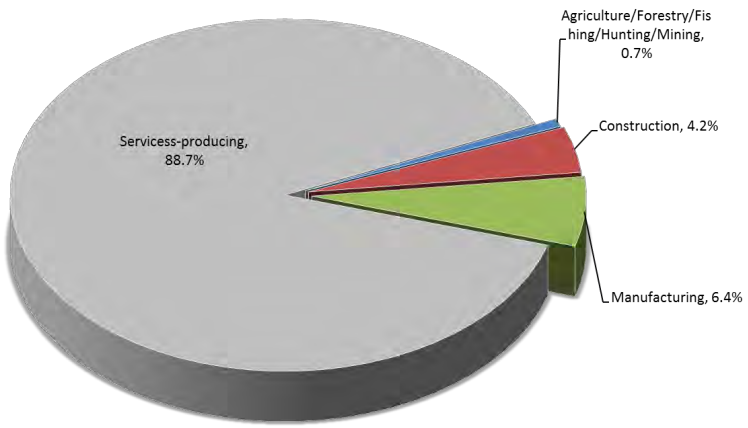


Figure 3.18: Goods-Producing Employment (Duluth-Superior MPO area)

Goods-producing jobs account for about 11% of the Duluth-Superior employment. This equates to more than 8,000 jobs, more than half of which are in manufacturing.

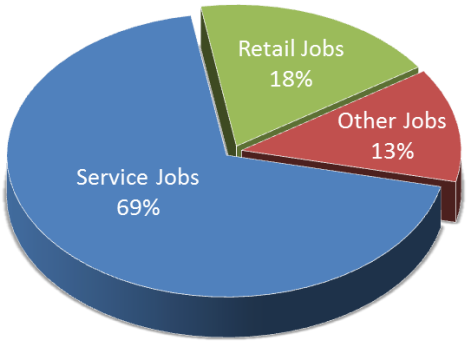
Source: U.S. Census Bureau, LEHD, 2014.

Goods producing jobs account for 11.3% of the jobs within the metro area. These include jobs in Agriculture, forestry, fishing, hunting and mining, as well as construction and manufacturing jobs. Together, these jobs employ approximately 8,300 people in the area.

Traditionally, it has been understood that retail jobs, service jobs, and other types of jobs tend to generate different levels of employee and customer traffic. Thus, the jobs shown in Figure 3.17 and 3.18 on the page 3-17 were further organized according to the categories shown in Table 3.8 below and are represented in Figure 3.19 at right.

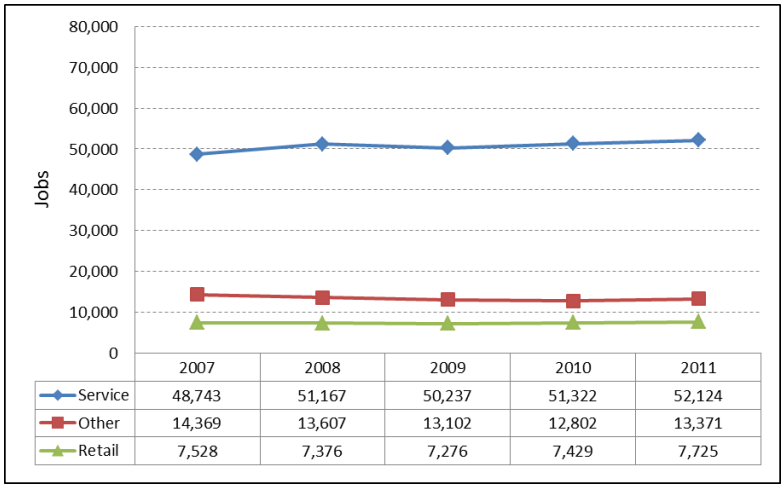
Between 2007 and 2011, the total number of jobs in the area has remained relatively stable, rebounding from losses it experienced in the global crisis of 2008 and 2009. During this time, the three categories remained basically proportional to each other, with the "Other" category losing approximately 1,000 jobs, but the "Service" category gaining more than 3,300 jobs.

Figure 3.19:
Jobs in the Duluth-Superior UZA according to "retail", "service", and "other" categories (2012).



Source: U.S. Census Bureau, LEHD, 2014.

Figure 3.20:
Number of jobs by category in the MIC Area (2007-2011)



Source: U.S. Census Bureau, LEHD, 2014.

Table 3.8: Organization of job types by "Retail", "Service", and "Other" categories.

Job Category	NAICS Code	Job Types
Retail	44-45	Retail Trade
Service	71	Arts, Entertainment, and Recreation
	72	Accommodation and Food Service
	48-49	Transportation and Warehousing
	51	Information
	52	Finance and Insurance
	53	Real Estate and Rental Leasing
	54	Professional, Scientific, and Technical Services
	55	Management of companies and Enterprises
	56	Administrative, Support, Waste Management and Remediation Services
	61	Educational Services
	62	Health Care and Social Assistance
	81	Other Services [Except Public Administration]
Other	11	Agriculture, Forestry, Fishing and Hunting
	21	Mining, Quarrying, and Oil and Gas Extraction
	22	Utilities
	23	Construction
	31-33	Manufacturing
	42	Wholesale Trade
	92	Public Administration

Employment Projections

The three job categories described above, their relative proportions, and rates of growth were all considered in estimating future employment for the Duluth-Superior area. Two employment projections were developed that correspond to the conservative and aggressive growth scenarios modeled for population growth. The results of these projections are described here, while the process of using them in future travel demand modeling is explained in more detail on pages 3-30 through 3-35.

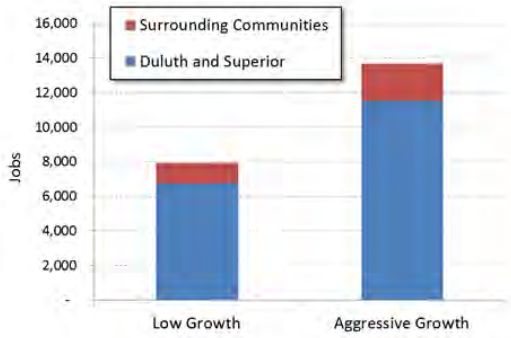
Under the conservative growth scenario, employment in the Duluth-Superior metropolitan area is estimated to grow by 11% to 79,496 jobs. This rate of growth is comparable to that projected by the Minnesota Department of Employment and Economic Development (DEED) for the entire northeast region of Minnesota and represents a reasonable estimate for growth, given the existing demographic and economic trends throughout the region.

A rate of growth of 19% was modeled for the aggressive growth scenario. This results in a total of 85,000 jobs in the MIC area by the year 2040, exceeding the conservative projection by 4,580 jobs. The employment projections of both scenarios are displayed in Table 3.7.

Once the growth scenarios were developed, staff at the MIC sat down with officials from the various jurisdictions within the area to identify where each municipality was planning future business growth to occur. Table 3.9 shows how the projected job numbers were allocated among the municipalities as the results of this process, and Figure 3.21 illustrates the proportion of jobs distributed between the major cities of Duluth and Superior and the surrounding communities under the two future scenarios.

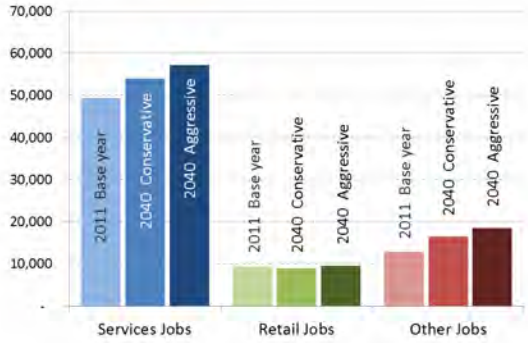
The types of jobs in the area are likely to change in ways that cannot be anticipated at present. However, the relative proportions of those job types are not expected to change dramatically. Figure 3.22 compares the estimated changes in the numbers of service, retail, and other jobs under the different growth scenarios. From that illustration, it can be seen that the growth in retail jobs is estimated to be negligible. This reflects an anticipated continuation of retail sales moving on-line, with those jobs making up 2% less of the area's employment in 2040. By contrast, jobs in the "other" category are expected to make up 4% more of the area's jobs. This reflects a level of growth in manufacturing jobs that the economic development initiatives of a number of the area's municipalities are calling for.

Figure 3.21:
2040 Job growth scenarios modeled for the MIC area.



Source: MIC Travel demand model (2014).

Figure 3.22:
Comparison of projected job growth by type in the MIC area.



Source: MIC Travel demand model (2014).

Table 3.9: Employment projections for the Duluth-Superior metropolitan area (2010 to 2040)

	2010	***2040 Projection***		***Total Change (30 years)***			
Area		*Conservative*	*Aggressive*	*Cons.*	*% Change*	*Aggr.*	*% Change*
MIC (MN)	*62,890*	*68,882*	*73,462*	*5,992*	*9.53%*	*10,572*	*16.8%*
Duluth	55,747	60,423	64,075	4,676	*8.4%*	8,328	*14.9%*
Hermantown	4,035	4,949	5,414	914	*22.7%*	1,379	*34.2%*
Proctor	1,147	1,195	1,262	48	*4.2%*	115	*10.0%*
Townships (MN Side)	1,961	2,315	2,711	354	*18.1%*	750	*38.2%*
MIC (WI)	*8,663*	*10,614*	*11,771*	*1,951*	*22.5%*	*3,108*	*35.9%*
Superior	8,320	9,880	10,890	1,560	*18.8%*	2,570	*30.9%*
Villages and towns (WI Side)	343	734	881	391	*114.0%*	538	*156.9%*
TOTAL MIC AREA	**71,553**	**79,496**	**85,233**	**7,943**	***11.1%***	**13,680**	***19.1%***

Source: URS Corp, 2014.

Land Use & Transportation Demand Patterns

***Trend**: More people are moving farther away from the area's concentrations of employment and commercial activities. The result is that more vehicle miles are being traveled throughout the area. There are some signs of increasing demand for other modes of transportation.*

US Highway 53 in Duluth

The preceding pages have presented information regarding trends in the numbers, types, and densities of people and jobs within the Duluth-Superior metropolitan planning area. These are important considerations for transportation planning for a variety of reasons, but trends in land use and travel behavior are also important to consider. Land use and transportation are inextricably linked; trends occurring in one generally influence patterns of the other. The demand for different modes of transportation can similarly influence the provision of transportation services and patterns of land development. This dynamic relationship makes it necessary to coordinate the planning of transportation improvements in the metro area with land use planning of the individual municipalities and vice-versa. The following pages describe these trends in the Duluth-Superior area.

Travel patterns influenced by land uses

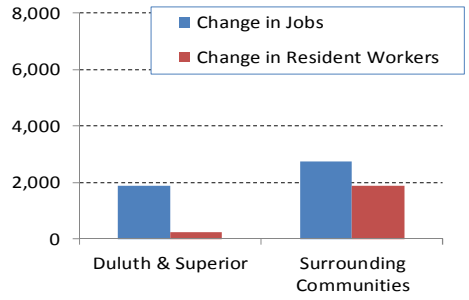
- Local travel to jobs, services, and shopping
- Regional commuter traffic
- Movements of freight
- Seasonal traffic (e.g. holidays, tourism)

Land Use Patterns

The shape and size of the Duluth-Superior area and its land uses are the result of the economic and industrial activities that have gathered around its harbors over time. The area's patterns of land-use today largely remain that way; industrial activities are still concentrated near the ports, and employment and services are still concentrated in nearby central business districts. Over the past several decades, however, more of the area's population and commercial activities have migrated further from the central cities. As the urban boundary has expanded, large concentrations of commercial activity - such as the Miller Hill Mall - have developed farther away from the largest concentrations of people. Map 3.6 on the following page, shows the concentrations high-density residential areas relative to concentrations of commercial and industrial activities.

Development in the Duluth-Superior metro continues to expand beyond the urbanized area. Signs of this can be seen in the population and employment estimates from the U.S. Census Bureau; changes in the number of jobs and employees in the core cities versus the surrounding communities suggest a metropolitan area that is getting larger but becoming less dense (Figure 3.23).

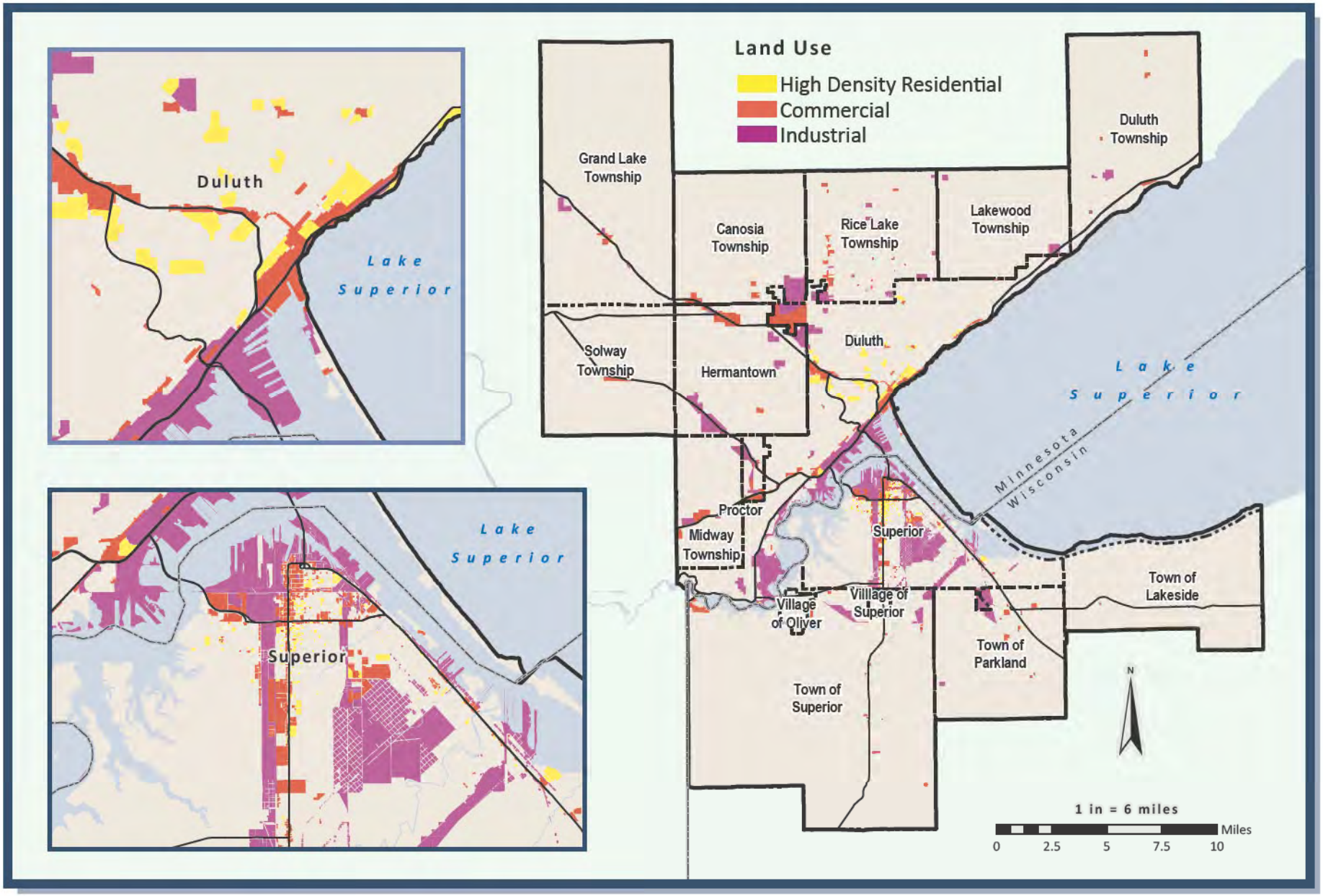
Figure 3.23:
Changes in Jobs and working-aged People living and working in the MIC area: 2006 to 2010.



Source: US Census Bureau, LED Origin-Destination Data Base (2014).

Duluth - Superior

Land Use Concentrations



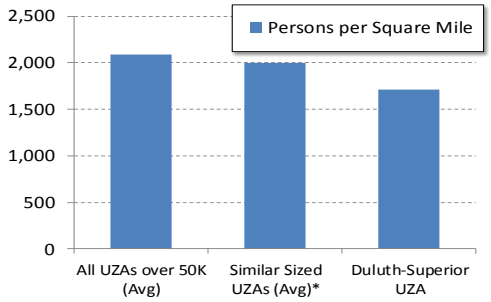
Map 3.6

While the trend of spreading out of development is typical of most metropolitan areas, the pattern seems more noteworthy for the Duluth-Superior area when comparing its population density to those of U.S. metro areas of similar size (Figure 3.24).

Being a metro area with lower-than-average density implies accompanying trends of higher-than-average consumption of energy and resources. As the distances between population, commercial centers, jobs, and services become greater, they require greater extensions of infrastructure and service networks, and result in longer travel times.

Figure 3.24:

Comparison of urban area population densities



Source: FHWA Statistical Highway Series (2013).

** metropolitan areas of similar population size to the Duluth-Superior UZA (range: 110,000 to 130,000 people; n=37).*

Local Travel Patterns

Travel times have been getting longer in the Duluth-Superior area. This can be seen in the *Travel-Time-to-Work* data provided by the Census Bureau, which shows that, while the majority of residents have commute times under 20 minutes (Figure 3.25), commute times have been getting longer in the population overall. For example, those with commutes of less than 15 minutes have decreased from 44% to 41% of the population between the years 2000 and 2010 (Figure 3.26).

The majority of this increased travel is occurring as additional single-occupancy automobile trips. It is estimated that 87% of the working population in the Duluth-Superior area drive to work alone, while 9% carpool, and 9% travel to work by some other means (see Figure 3.27 on the following page).

Figure 3.25:

Travel time to work: Duluth-Superior metropolitan area

Source: U.S Census Bureau: Census 2000; 2008-2012 ACS.

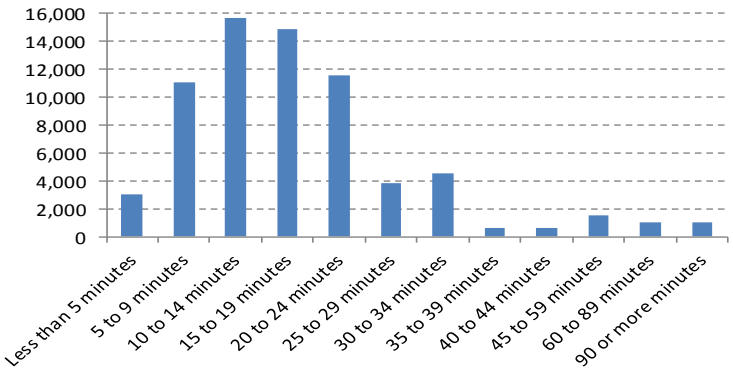
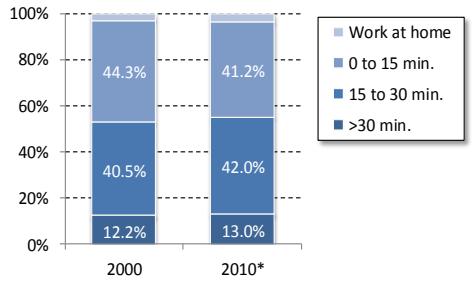


Figure 3.26:

Change in metro population's travel times to work (2000 to 2010).



Source: U.S Census Bureau: Census 2000; 2008-2012 ACS.

** ACS 5-Year estimate.,*

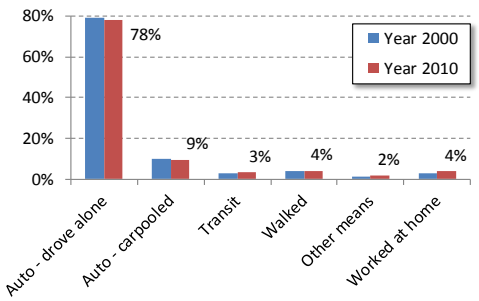
It is interesting to note in Figure 3.27 that a slight shift in people's travel choices has also occurred in the area since 2000. The percentage of those traveling to work by automobile decreased by 2%, while those working from home or traveling by "other means" each increased one percentage point. This shift is consistent with trends known to be occurring throughout the country: increased telecommuting and an increased bike commuting.

Nevertheless, the majority of travel in the area still occurs in the form of automobile trips, and it is understood that this travel is occurring primarily as two distinct mass movements of vehicles throughout the area - a few hours in the morning and a few hours in the afternoon. These are times when the area's transportation system is most congested and the efficiency of traffic operations at various locations throughout the network are most challenged.

The overall amount of automobile travel in the area, however, appears to be holding steady. As Figure 3.28 shows, the number of total miles traveled by vehicles on an average day, or vehicle-miles-traveled (VMT), has remained roughly the same over the past decade for both the tri-county MSA and the Duluth-Superior urbanized area. This is consistent with VMT trends observed at both the state and national levels over the same period.

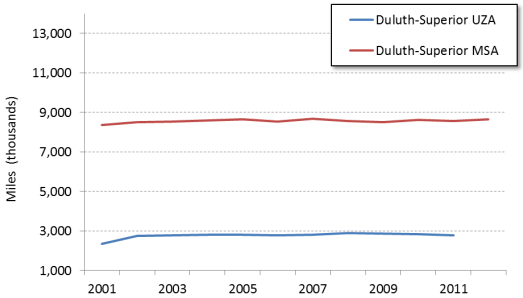
When looking more closely at VMT in the urbanized area versus the larger MSA, however, some differences are noticed in their trend lines. Despite being relatively flat, the VMT for both geographies has been increasing slightly. For the MSA, daily travel has been trending upward by 0.1% every year (Figure 3.29), while VMT for the urban area has been averaging a 0.3% increase per year (Figure 3.30). With that said, VMT in the urbanized area has been decreasing consecutively, year after year, since 2008.

Figure 3.27:
Means of travel to work: Duluth-Superior metro



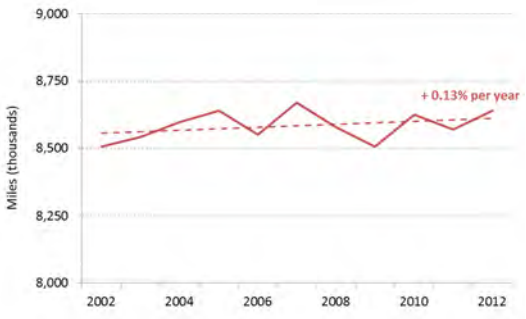
Source: U.S Census Bureau: 2008-2012 ACS (2014).

Figure 3.28:
Daily vehicle-miles-traveled (VMT): 2001 to 2012



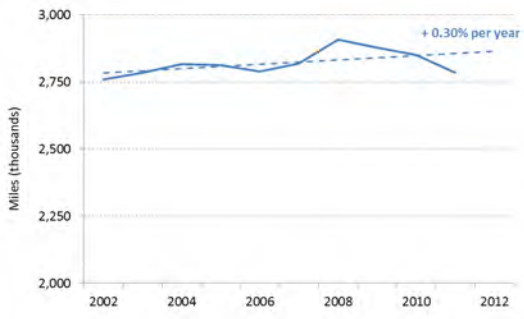
Source: FHWA Highway Statistics Series (2104); MnDOT Roadway Data (2014).

Figure 3.29:
Daily vehicle-miles-traveled (VMT) in the Duluth-Superior MSA: 2002 to 2012



Source: MnDOT Roadway Data (2014).

Figure 3.30:
Daily vehicle-miles-traveled (VMT) in the Duluth-Superior UZA: 2002 to 2012



Source: FHWA Highway Statistics Series (2104)

Local Demand for Other Modes of Transportation

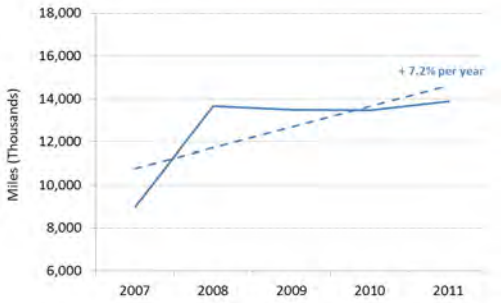
While growth in vehicle travel demand in the area appears modest, there are signs of growing demand for other forms of transportation in the area. The usage of public transit, in particular, has grown by 20% over the recent decade, serving 547,000 more riders in 2013 than in 2004. When comparing the most recently available data regarding passenger miles traveled (PMT) with overall vehicle miles traveled (VMT) in the urbanized area, transit usage appears to be increasing in contrast to a decreasing VMT (Figure 3.31 and Figure 3.32).

There are signs that the use of other modes in the Duluth-Superior area are on the rise too. Each DTA bus is equipped with front-end bike racks year-round and, as with passengers, the DTA also counts the numbers of bikes it transports. This data can be considered as somewhat of a proxy measure for non-motorized transportation demand in the area. It shows that between the first year of data collection (2006) and 2012, the annual number of bikes on buses increased by more than 14,000 trips – an average annual increase of 14% (Figure 3.33). This trend was reversed in 2013, which staff at the DTA has speculated was the result of a combination of a longer-than-average winter, more inclement weather days, and new housing opportunities opening up near college campuses in the area.

While the demand for walking and biking in the Duluth-Superior area is not something that can presently be measured system wide, there is anecdotal evidence of increasing demand. For instance, cyclists appear to be more present – especially in non-summer months - in and around downtown Duluth and Superior.

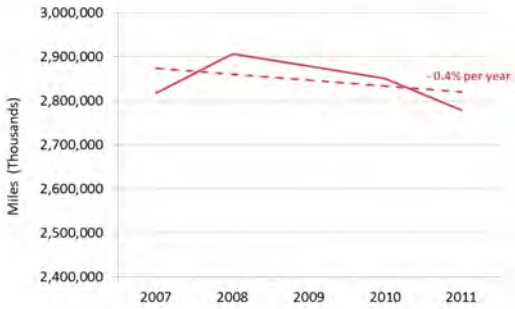
Cyclist placing bike on DTA bus

Figure 3.31:
Annual passenger revenue miles (PMT) in the Duluth-Superior UZA: DTA Regular Route service (2007 to 2011)



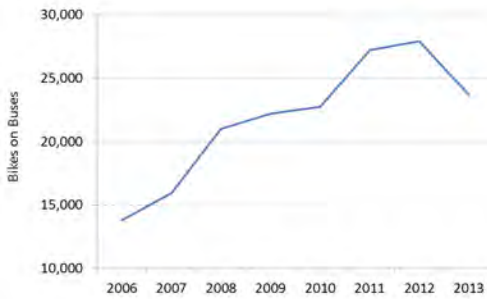
Source: FTA National Transit Database (2014).

Figure 3.32:
Annual vehicle miles traveled (VMT) in the Duluth-Superior UZA (2007 to 2011)



Source: FHWA Statistical Highway Series (2013).

Figure 3.33:
Annual bikes transported on DTA buses



Source: Duluth Transit Authority (2014).

Demand for Transportation Assistance

There are members of the Duluth-Superior community that face transportation challenges due to poverty or to mental or physical disabilities. The transportation needs of some of these individuals are being met with a combination of the DTA's regular route bus service, paratransit (aka "dial-a-ride" service), and volunteer driver services funded through regional agencies.

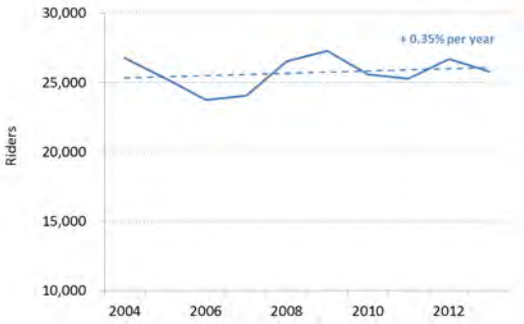
There are some signals that the demand for transportation assistance is increasing in the Duluth-Superior metro. The DTA has reported the number of clients registered to use the DTA's paratransit service, STRIDE, has increased in recent years. While the levels of use the service experiences can vary significantly from year to year, the trend line suggests there has been a 0.3% increase in the use of STRIDE since 2004 (Figure 3.34).

Other programs that provide transportation assistance in the area have also experienced increases in usage. The Assisted Transportation program administered by the Arrowhead Agency on Aging (AAA) provides mileage-reimbursement for volunteers who provide rides to seniors, principally for medical appointments. Use of this program has followed a trend line that is equivalent to a 20% annual increase in use since 2003 (Figure 3.35). Though this data is for the entire Arrowhead region, staff at the AAA contend that a similar rate of increased use is occurring in the Duluth area as well.

The Arrowhead Economic Opportunity Agency (AEOA) provides a similar mileage-reimbursement program for volunteers for individuals on public assistance in Lake County, Koochiching County, and St. Louis County in Minnesota. This program is the outcome of a recent convergence of smaller programs, and so AEOA does not have data that can fairly outline trends in usage, but AEOA does report providing an average of 3,000 trips per month in these counties.

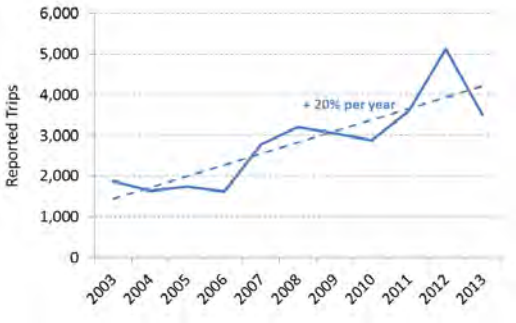
Wheelchair user accessing medical appointment by using the STRIDE service.

Figure 3.34:
Annual DTA ridership: STRIDE service



Source: Duluth Transit Authority (2014).

Figure 3.35:
Increase in annual 1st Quarter trip reimbursements administered by AAA in the Arrowhead Region



Source: Arrowhead Agency on Aging (2014).

Regional Travel Demand Patterns

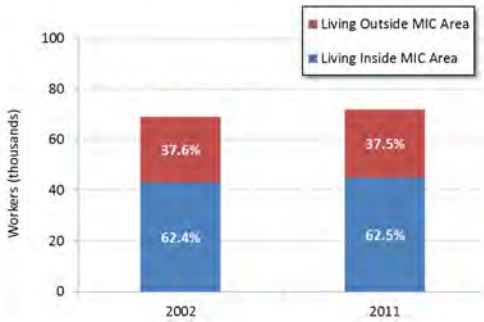
Being the regional trade center (RTC) of Northeast Minnesota and Northwest Wisconsin, the Duluth-Superior area attracts regional traffic related commerce, both in terms of the transfer of freight and the commutes of workers who live beyond its boundaries. Data regarding freight movements is generally proprietary and difficult to track, but data regarding the location of workers' homes and jobs shows slight increases in the numbers and distances of people commuting into the area for work.

Duluth and Superior attract a significant amount of commercial and employment-related traffic from outside the metro area

The Census Bureau's Longitudinal Employment-Household Dynamics (LEHD) data is one of the most comprehensive datasets available regarding employment and worker flow. The data is drawn from state unemployment insurance (UI) earnings records that provides a link between home location and job location. In some cases, the UI records may link employees to a payroll location they do not actually commute to. It is for this reason that, upon review, the MIC planning staff estimates the LEHD employee count for the Duluth-Superior area is overrepresented by 12%. Once this is adjusted for, the data shows that 27,000 people are potentially commuting into the area for work on a daily basis, while 11,800 people are commuting outside the area 2011 (see Table 3.10).

The LEHD data also shows that employment in the area grew by more than 3,000 jobs between 2002 and 2011 and that nearly two-thirds of that growth (1,930) went to people living within the metropolitan boundary. The other 1,704 jobs were additional people commuting into the area. This ratio of new resident to non-resident workers is roughly equivalent to the distribution that already existed in the area, which shows that 37% of the area's jobs are held by people living outside of the Duluth-Superior metro (Figure 3.36).

Figure 3.36:
Jobs in the MIC area according to where workers live (2011).



Source: U.S Census Bureau, LEHD (2014).

Table 3.10: Changes in the numbers of MIC area workers living in inside and outside the MIC area (2002-2011)

Person Characteristic	2002 LEHD Count	Adjusted 12%	*% Share*	2011 LEHD Count	Adjusted 12%	*% Share*	*Change*
Employed in the MIC area	78,488	69,069	*100.0%*	81,901	72,073	*100.0%*	3,003
Employed in the MIC area but living outside	29,488	25,949	*37.6%*	30,708	27,023	*37.5%*	1,074
Employed and living in the MIC area	49,000	43,120	*62.4%*	51,193	45,050	*62.5%*	1,930
Living in the MIC area	62,253	54,783	*100.0%*	64,658	56,899	*100.0%*	2,116
Living in the MIC area but employed outside	13,253	11,663	*21.3%*	13,465	11,849	*20.8%*	187
Living and employed in the MIC area	49,000	43,120	*78.7%*	51,193	45,050	*79.2%*	1,930

Source: U.S Census Bureau, LEHD (2014), adjusted by MIC.

The *LEHD On the Map* web application also shows the proportion of employment-based commuter traffic by distance and direction. From this information, the overall pattern of regional traffic to and from the Duluth-Superior metropolitan area can be seen, and it becomes apparent that much of the long-distance commuting to and from Duluth–Superior is moving along the I-35 corridor, followed by travel south into Wisconsin (Figure 3.37).

Figure 3.38 indicates that more people are now traveling longer distances to access jobs in the area. It shows that the number of people commuting between 25 and 50 miles grew by 4.4%, while the number of people traveling more than 50 miles may have grown by as much as 7.5%. It also shows that substantially more commuter traffic is occurring from communities that are 10 to 25 miles west and northwest of the area. This is a pattern that is consistent with population increases in townships adjacent to the MIC planning area and in Carlton County to the west.

The increased commuter traffic to the area is consistent with increases in the average annual daily traffic (AADT) on regional corridors at the area's boundary. As seen in Table 3.11 below, many of the key corridors experienced approximately a 10% increase in their *annual average daily traffic* (AADT) between 2003 and 2011. The geographic locations of these increases can be seen in Map 3.7 on the following page.

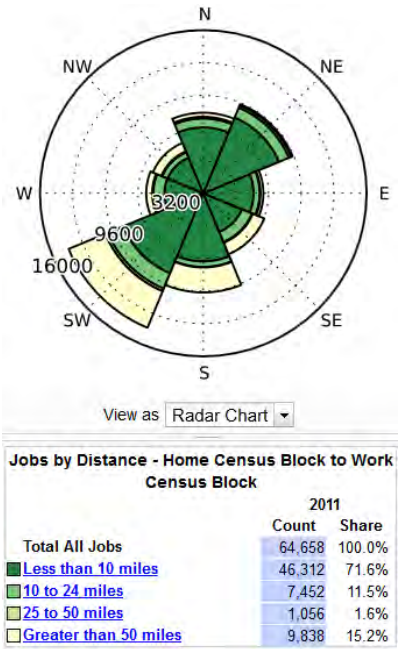
Despite the general increase in traffic at the MIC boundary, one important regional corridor stands out as an exception: Interstate 35. Between 2003 and 2011, I-35 experienced a 12% decrease in daily traffic. This is likely the result of many factors; impacts of the recent economic downturn of 2008 and 2009, increasing gas prices, and large-scale construction projects in 2010 and 2011 likely all suppressed non-work, interregional travel (such as tourism) on I-35. This trend is expected to be reversed in coming years.

Table 3.11: Increases in daily traffic at MIC boundary (2003-2011)

Roadway	2003 AADT*	2007 AADT*	2011 AADT*	*%Change 2003-2011*
A. Interstate 35	28,900	27,600	25,400	-12%
B. WI State Trunk Hwy 35	1,650	1,700	1,800	9%
C. US Trunk Hwy 2/53	12,680	13,700	13,900	10%
D. US Trunk Hwy 53	7,100	7,900	7,900	11%
E. US Trunk Hwy 2	4,750	4,600	5,100	7%
F. MN State Trunk Hwy 61	6,900	7,600	7,600	10%

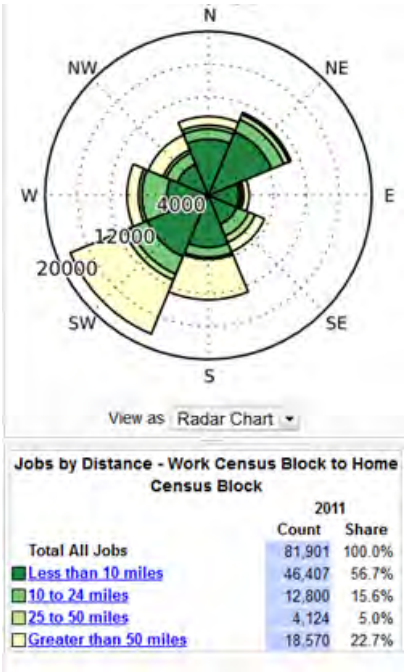
Sources: Minnesota Department of Transportation and Wisconsin Department of Transportation, 2014.

Figure 3.37:
Distance and direction of workers travel to/ from the MIC area to their jobs (2002).



Source: U.S Census Bureau, LEHD On the Map (2014).

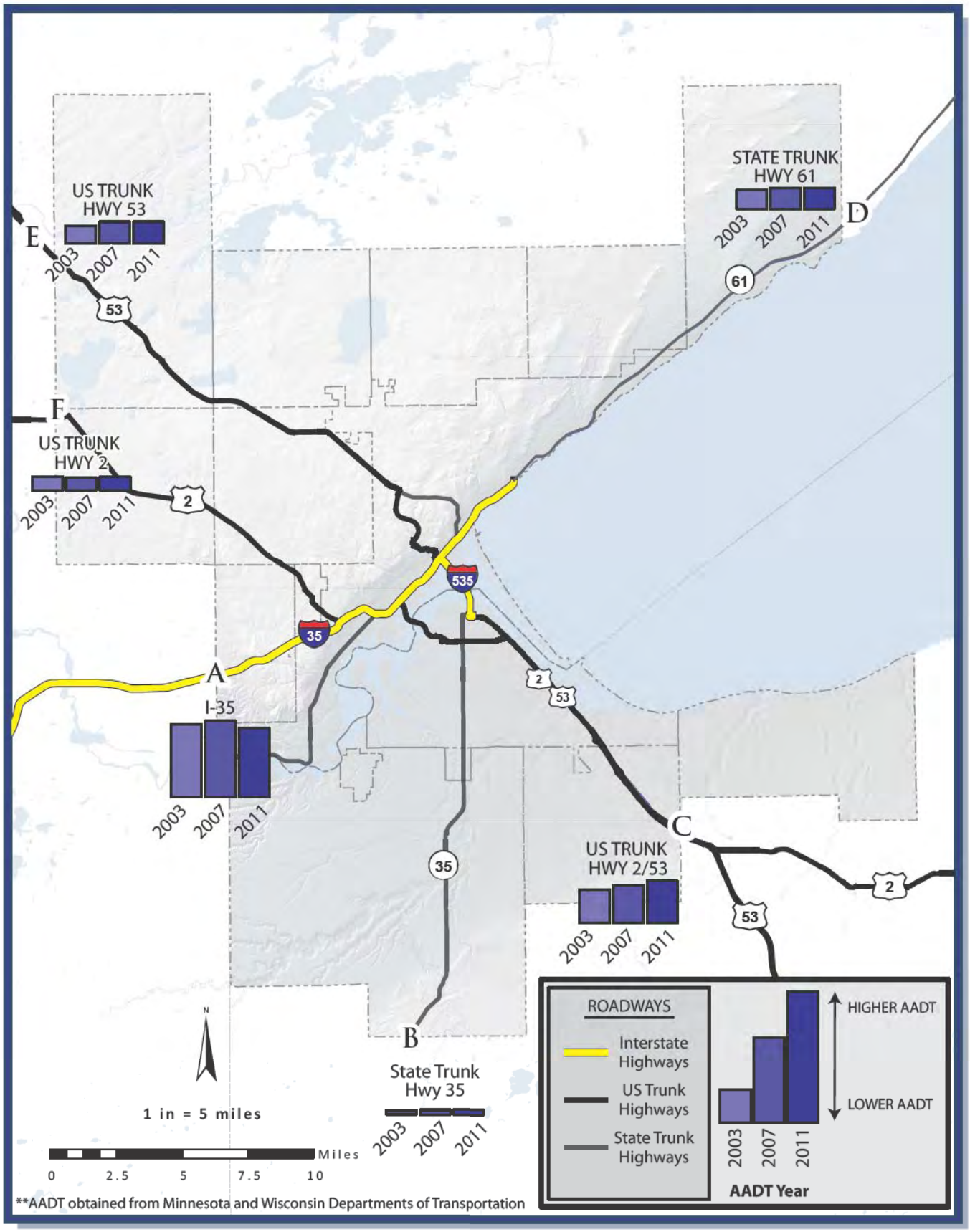
Figure 3.38:
Distance and direction of workers travel to/ from the MIC area to their jobs (2011).



Source: U.S Census Bureau, LEHD On the Map (2014).

Duluth - Superior

AADT - Major Corridors on MIC Boundary



**AADT obtained from Minnesota and Wisconsin Departments of Transportation

Map 3.7

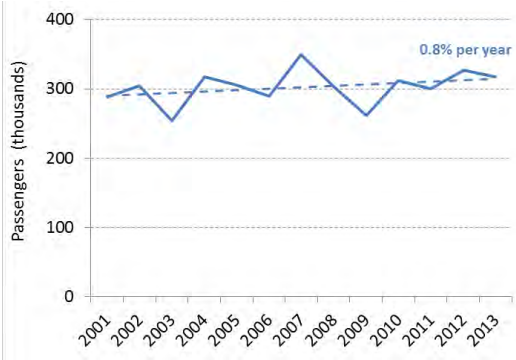
Demand for Other Modes: Air, Rail, and Water

In addition to the regional traffic facilitated by the area's network of highways and roads, Duluth-Superior is also home to major transportation facilities that serve interregional air, rail, and waterborne transportation. The area has three major airports of regional significance for passenger service, freight movements, and recreational flying: the Duluth International Airport (DLH), the Richard I. Bong Municipal Airport (SUW), and Duluth's Sky Harbor Airport (DYT). The SUW and DYT airports facilitate more than 19,000 and 13,000 flight operations a year, and – despite facing competition from the larger Minneapolis-St. Paul International Airport (MSP) - DLH served 28,900 more in passengers in 2013 than it did in 2001, trending at an average 0.8% annual increase over that period (Figure 3.39).

An extensive network of railways exists in and around Duluth-Superior. More than 40% of rail crossings on the Minnesota side of the MIC area and more than 50% on the Wisconsin side experience more than five train movements per day (Figure 3.40). At present, all such movements are exclusively freight trips, as passenger rail service to the area ended in 1980, but there has been increasing efforts in recent years to study the feasibility and demand potential for creating a high-speed rail connection between Duluth-Superior and St. Paul, Minnesota. A marketing study is currently underway, and MnDOT's Office of Passenger Rail is modeling the potential ridership attraction of a select number of station locations.

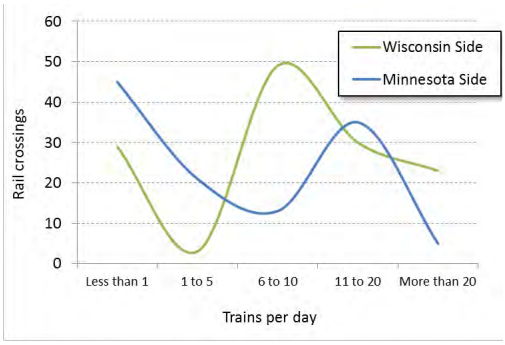
The Duluth-Superior port is are the largest Great Lakes' port for bulk commodities, shipping an average 38 million tons annually. As with the other major ports on the Great Lakes, the Duluth-Superior port has experienced decreases in the amount of freight moving through it; total tonnage decreased 12% between 2001 and 2011. Nevertheless, the port has continued to facilitate significantly more tonnage than the other Great Lakes ports (Figure 3.41). Up to 100 foreign ships call on the Duluth-Superior port each year bringing imports such as steel, wind energy components and manufactured heavy equipment and return overseas with grain. On intermittent years, cruise ships carrying passengers have visited the area, and the MIC has worked with the Duluth Port Authority to study the feasibility of establishing a cruise ship docking facility to grow the cruise ship industry while also meeting federal security requirements.

Figure 3.39:
Annual passenger enplanements at DLH (2001 to 2013)



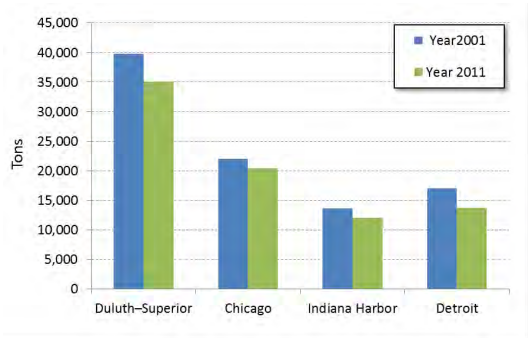
Source: Duluth International Airport (2014).

Figure 3.40:
Average daily train movements at rail crossings in Duluth-Superior



Source: Federal Rail Administration (2014).

Figure 3.41:
Annual tonnage moving through major Great Lakes ports (2001 and 2011)



Source: Federal Rail Administration (2014).

Modeling Future Travel Demand

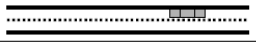
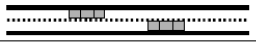
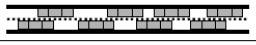
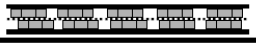
***Trend**: Increases in households and employment are projected to lead to significant increases in traffic in some areas. Some key corridors will approach capacity over the next 25 years and will require planning and investments to mitigate congestion.*

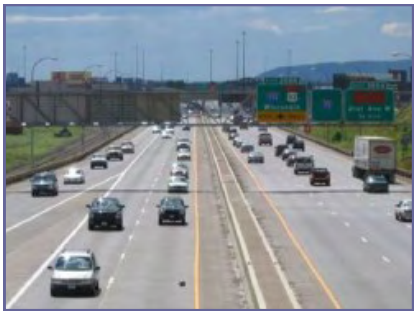
The MIC models both current and future transportation demand in Duluth-Superior using a mix of traffic volume and socioeconomic data. As part of *Connections 2040*, the existing model was updated to reflect Census 2010 information as well as changes to the road network that have occurred since 2009. This information was then used to model the impacts of the changes in both population and employment as are being projected under the two growth scenarios discussed on pages 3.7 and 3-19.

Levels of population and employment cannot tell the story alone. Information regarding trends in household sizes, job types, and land use patterns were used to help identify where increases in populations and jobs will most likely be occurring in the area. For this purpose, the planning staff at the MIC met with officials from the various municipalities and jurisdictions in the area to help allocate projected population and employment to the different transportation analysis zones (TAZs) in the model. Map 3.8 and Map 3.9 on the following pages illustrate how increases in households and jobs are being allocated under the conservative and aggressive growth scenarios.

The allocation of future households and jobs, as well as projected school enrollment, were all inputs into the transportation demand model, which was then used to predict the volumes and paths of future traffic on the area's road network under both growth scenarios. The model produced outputs in the form of predicted future volumes, vehicles-to-capacity (V/C) ratios, and estimated levels of service (LOS) for each of the road links represented in the model. LOS is a description of the levels of traffic that one would experience as they are traveling on a certain road (see Figure 3.42).

Figure 3.42: Levels of Service Descriptions

	Level of Service	Description
A		**FREE FLOW.** Low volumes and no delays.
B		**STABLE FLOW.** Speeds restricted by travel conditions, minor delays.
C		**STABLE FLOW.** Speeds and maneuverability closely controlled due to traffic volumes.
D		**STABLE FLOW.** Speeds considerably affected by change in operating conditions. High-density traffic restricts
E		**UNSTABLE FLOW.** Low speeds, considerable delay, volume slightly over capacity.
F		**FORCED FLOW.** Very low speeds, volumes exceed capacity, long delays with stop-and-go traffic.



Traffic on I-35 near downtown Duluth.

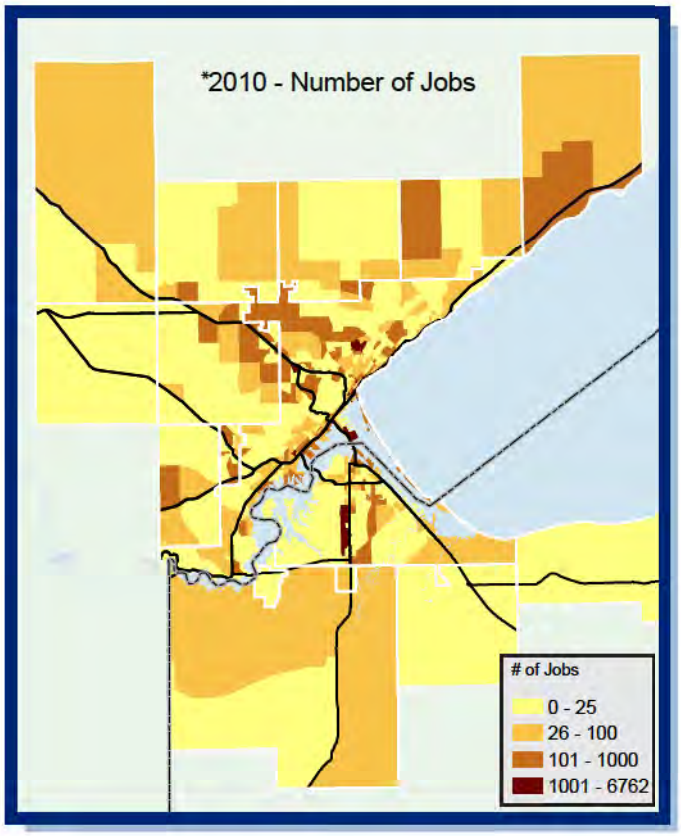
Modeling the Duluth-Superior Transportation Network based on TAZs:

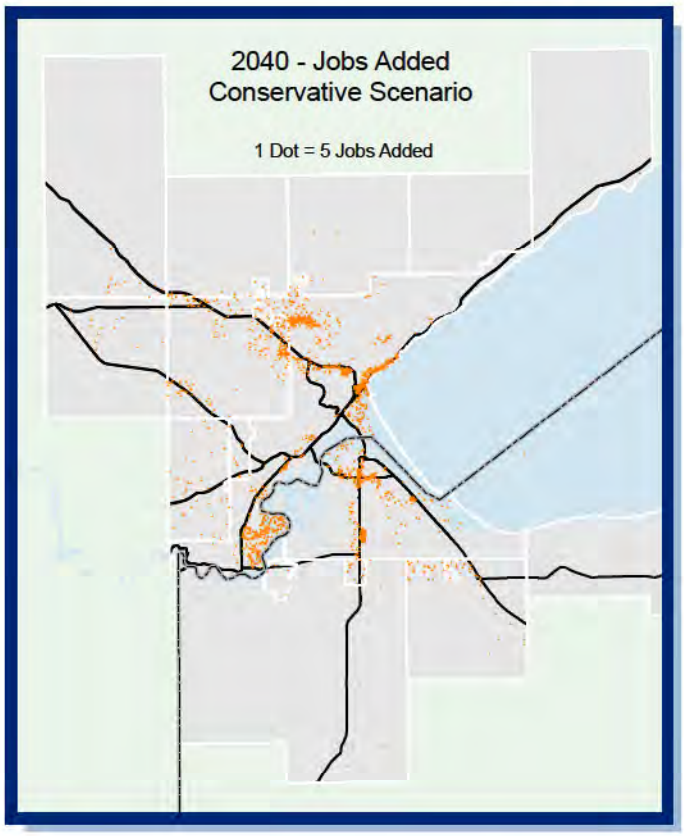
Transportation demand modeling uses a set of computerized processes to predict changes in travel patterns in response to changes in demographics, development patterns, and the transportation network itself.

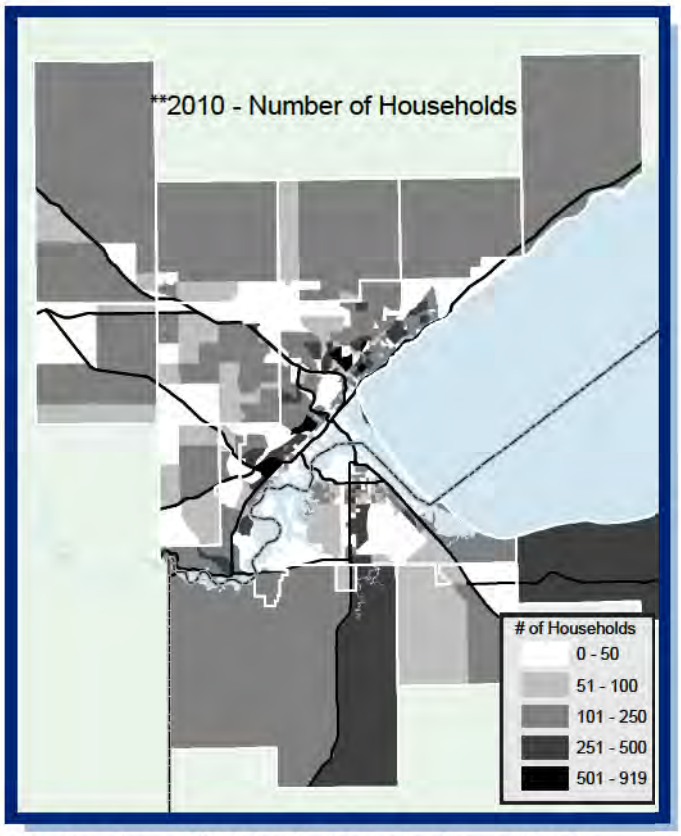
Describing capacity conditions with LOS:

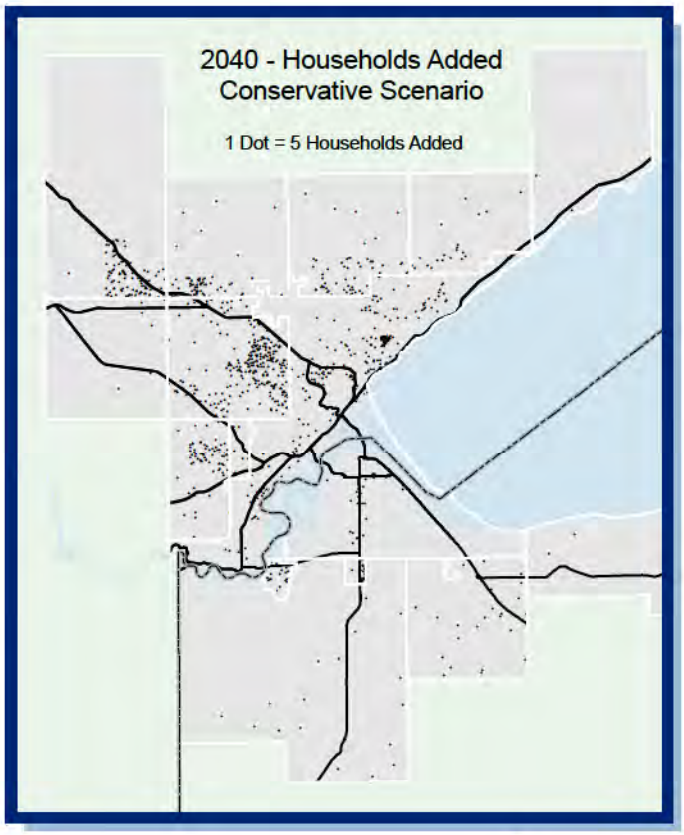
The capacity of a network link is dependent on the assumed level of service (LOS). LOS is a vehicles-to-capacity ratio and is used to estimate the amount of delay on a network link.

Duluth - Superior
Model Inputs - Conservative





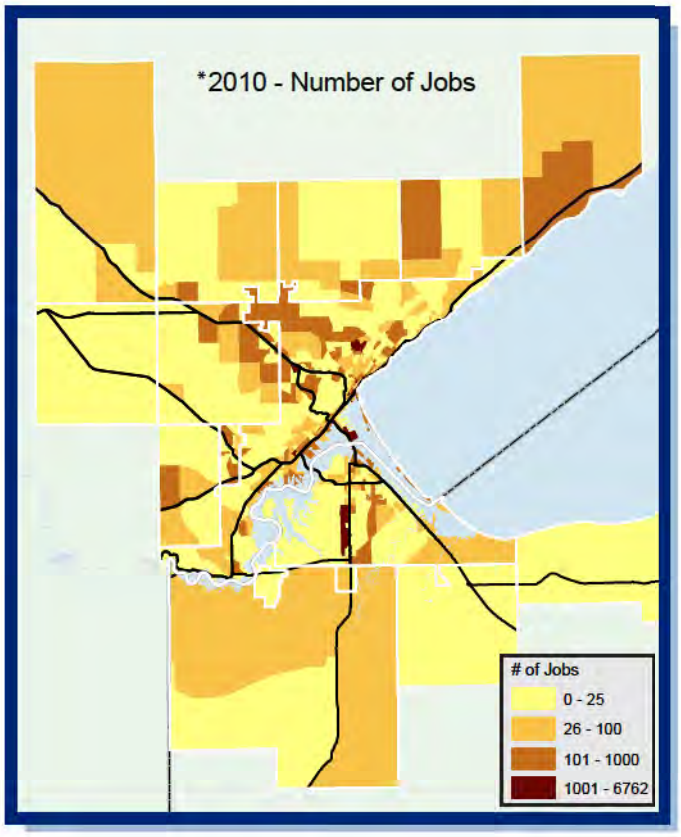


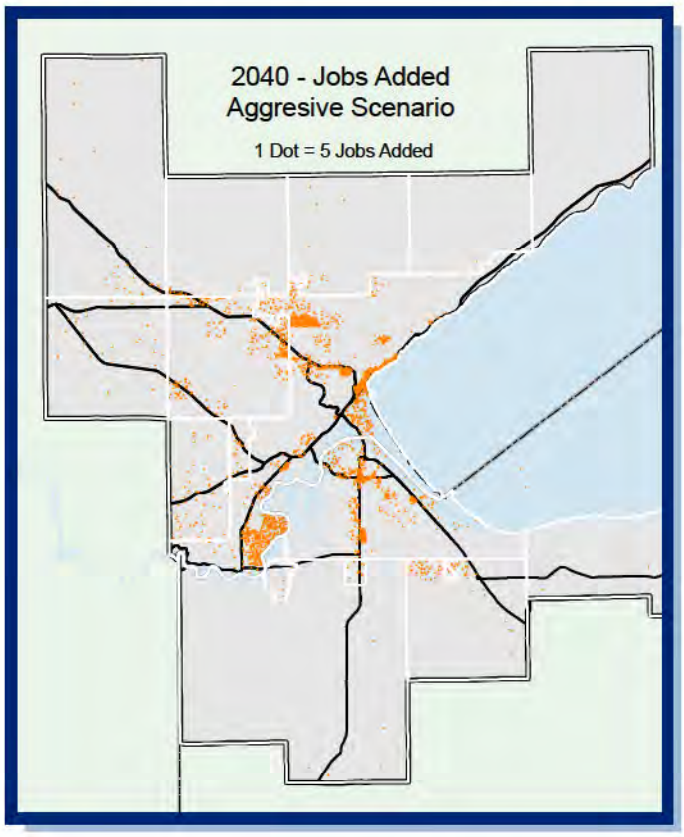


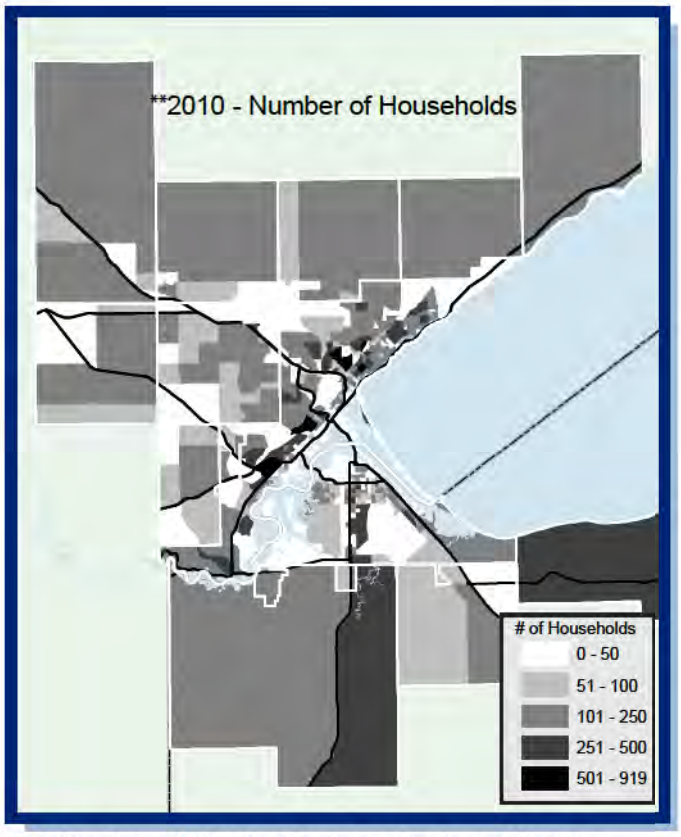
*Data from Census LEHD Origin-Destination Employment Statistics
Workplace Area Characteristics
*Data from 2010 Decennial Census

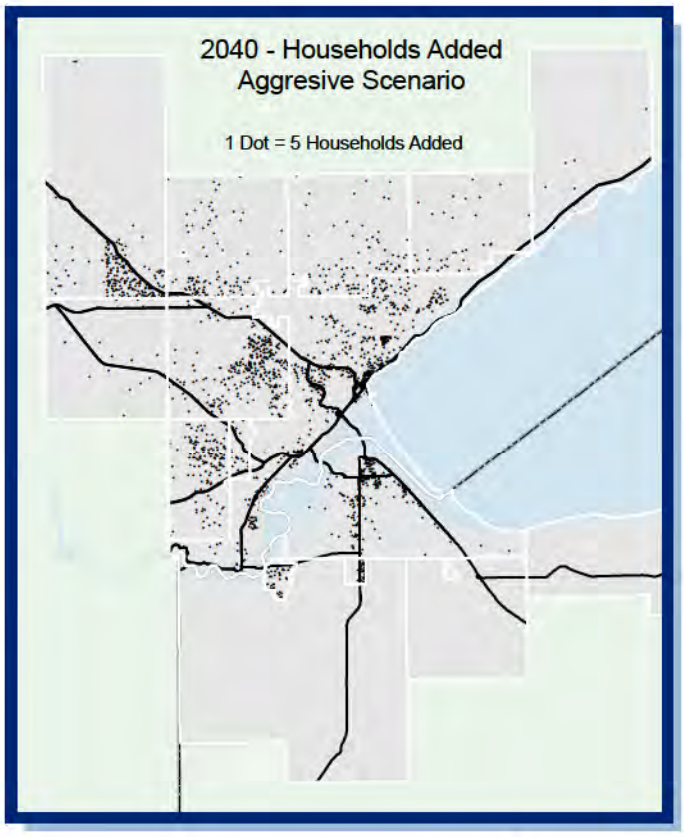
Map 3.8

Duluth - Superior
Model Inputs - Aggressive









*Data from Census LEHD Origin-Destination Employment Statistics
Workplace Area Characteristics
*Data from 2010 Decennial Census

Map 3.9

Comparing Present and Future Conditions

When comparing the information in maps 3.8 and 3.9 on the previous pages, it is apparent that the majority of the area's households and jobs will continue to be concentrated in the cities of Duluth and Superior. Both future scenarios, however, anticipate an expansion of population and employment into the surrounding communities. As Table 3.12 shows, the City of Duluth is projected to represent 2% to 3% less of the area's jobs while surrounding communities increase a percent. Table 3.13 shows an even greater pattern of dispersion with respect to households. Figures 3.43 and 3.44 below illustrate these trends between 2010 and the 2040 aggressive growth scenario.

Table 3.12: Projected Increases in jobs

Area	2010 Jobs	*% Share*	2040 Jobs "Conservative" scenario	*% Share*	2040 Jobs "Aggressive" scenario	*% Share*
Duluth	55,747	*77.9%*	60,423	*76.0%*	64,075	*75.2%*
Superior	8,320	*11.6%*	9,880	*12.4%*	10,890	*12.8%*
Hermantown	4,035	*5.6%*	4,949	*6.2%*	5,414	*6.4%*
Proctor	1,147	*1.6%*	1,195	*1.5%*	1,262	*1.5%*
Surrounding communities	2,304	*3.2%*	3,051	*3.8%*	3,592	*4.2%*
TOTAL MIC AREA	71,553	*100.0%*	79,498	*100.0%*	85,233	*100.0%*

*Source: **MIC travel demand model** (2014).*

Table 3.13: Projected Increases in households

Area	2010 Jobs	*% Share*	2040 Households "Conservative" scenario	*% Share*	2040 Households "Aggressive" scenario	*% Share*
Duluth	38,673	*60.6%*	39,718	*57.5%*	42,618	*56.4%*
Superior	13,684	*21.5%*	12,538	*18.1%*	13,454	*17.8%*
Hermantown	3,681	*5.8%*	5,282	*7.6%*	5,640	*7.5%*
Proctor	1,316	*2.1%*	1,426	*2.1%*	1,470	*1.9%*
Surrounding communities	6,436	*10.1%*	11,565	*16.7%*	13,818	*18.3%*
TOTAL MIC AREA	63,790	*100.0%*	69,102	*100.0%*	75,529	*100.0%*

*Source: **MIC travel demand model** (2014).*

Figure 3.43: Distribution of households and jobs - 2010 model base year

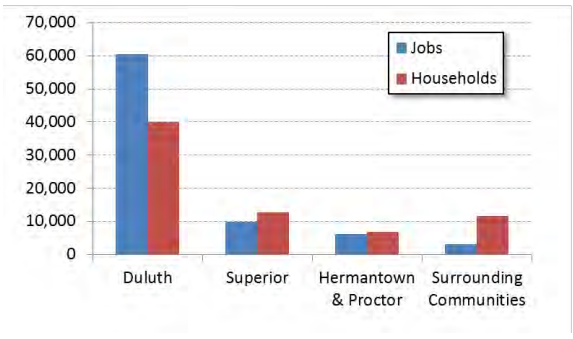
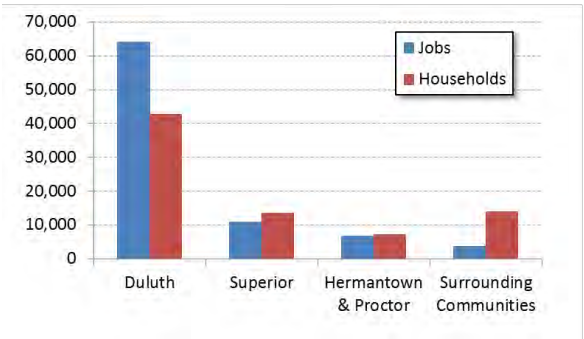


Figure 3.44: Distribution of households and jobs - 2040 "Aggressive" scenario



The general pattern of concentrating jobs in the urban center and an dispersing households further out from that center translates into greater trip distances and travel times between households, jobs, shopping, etc. The impacts of such land use changes in the MIC area were calculated with the travel demand model.

As Table 3.14 demonstrates, every type of trip, with the exception of those between households and schools (due to decreased levels of enrollment) are increasing by 9% under the conservative scenario and 19% under the aggressive growth scenario. This is estimated to amount to an additional 744,000 to 1.1 million vehicle-miles-traveled (VMT) per day in the area (Figure 3.45) and 21,800 to 31,000 more hours of travel (Table 3.15). Each mile, on average, would take approximately 6 seconds longer (conservative growth) to 14 seconds longer (aggressive growth) to travel in 2040. An average commute time of 20 minutes, for example, would become more than 24 minutes under the aggressive growth scenario.

The increased VMT and VHT would also equate to more fuel consumption and vehicle emissions. The FHWA has estimated an average fuel consumption of 21.4 miles-per-gallon per vehicle, and the EPA has estimated .00042 metric tons of greenhouse gases emitted per mile traveled (www.epa.gov/cleanenergy/energy-resources/refs.html). Based on these estimates, the MIC area could be consuming 18.6 million more gallons of gasoline and releasing 164,000 more metric tons of greenhouse gases into the atmosphere annually by 2040 (Figure 3.46).

Table 3.14: Projected Increases in Trip Productions

Trip type	2010 daily trips	2040 daily trips "Conservative" scenario	*% Change*	2040 daily trips "Aggressive" scenario	*% Change*
Home-based work	89,599	97,389	*9%*	106,212	*19%*
Home-based shop-ping	90,130	98,133	*9%*	107,072	*19%*
Home-based School	89,412	86,496	*-3%*	93,014	*4%*
Home-based other	157,681	171,693	*9%*	187,277	*19%*
Non home-based	142,217	154,958	*9%*	169,082	*19%*
TOTAL	569,039	608,669	*7%*	662,657	*16%*

Source: Trip estimations from Duluth-Superior traffic demand model, 2014.

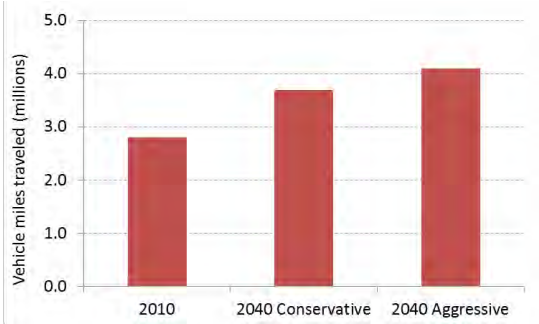
Table 3.15: Increase in Daily Miles and Hours Traveled

Scenario	VMT	*% Change from 2010*	VHT	*% Change from 2010*
2010 Base year	3,010,946		67,925	
2040 "Conservative"	3,755,722	*24.7%*	89,766	*32.2%*
2040 "Aggressive"	4,103,340	*36.3%*	98,962	*45.7%*

** VMT (vehicle miles traveled); VHT (vehicle hours traveled)*

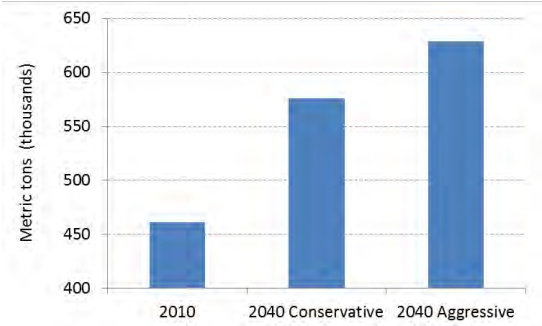
Source: Trip estimations from Duluth-Superior traffic demand model, 2014.

Figure 3.45:
Daily vehicle-miles-traveled (VMT) estimates under three different modeled scenarios.



Source: MIC travel demand model (2014).

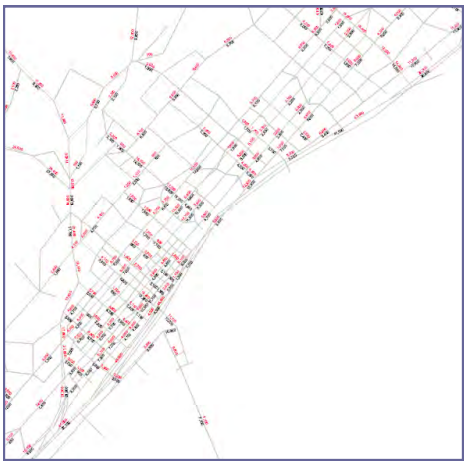
Figure 3.46:
Estimated annual greenhouse gas emissions from vehicles under three different modeled scenarios



Source: MIC (2014).

Future Deficiencies Identified in the Traffic Model

Where new households and jobs are located can cumulatively result in significant impacts to the operations of a transportation system. The MIC area travel demand model was thus used to identify where such issues might occur under the two growth scenarios being considered as part of this long-range plan.



Screen shot of the MIC area travel demand model

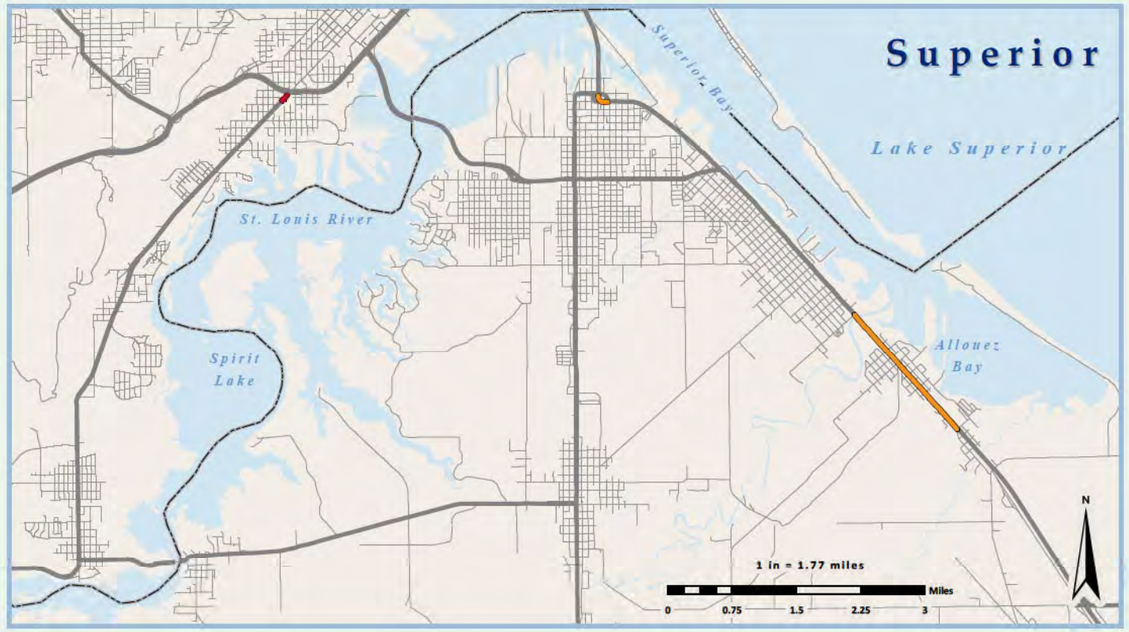
All segments that the model identified as being at or beyond capacity now or in the future are listed in Table 3.16 below and also shown in Map 3.10 and Map 3.11 on the following pages. These are estimates based on basic daily volume parameters that are discussed in more detail in Appendix A of this plan. Conditions specific to each segment would require further study, but the model results do suggest that strategies should be considered for these segments to accommodate the potential future demand. Such strategies may include upgrading parallel facilities, managing demand through access control and other measures, increasing transit services, or even expanding the existing lane capacity, if necessary.

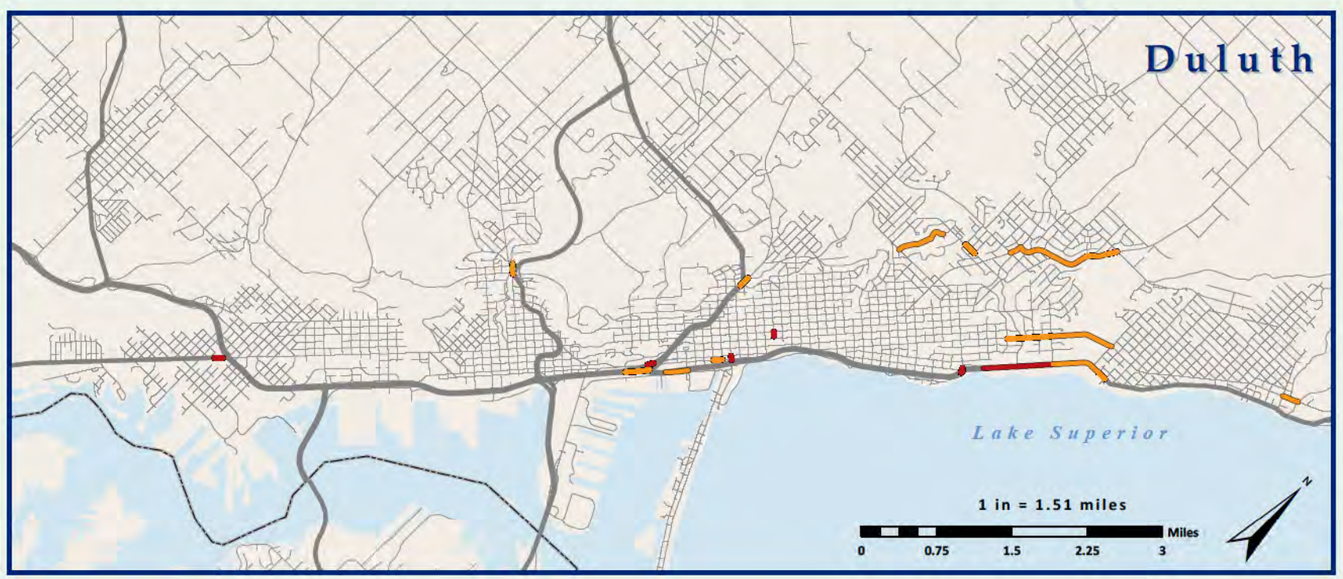
Table 3.16: Projected deficiencies in level of service under three different modeled scenarios (MIC area model)

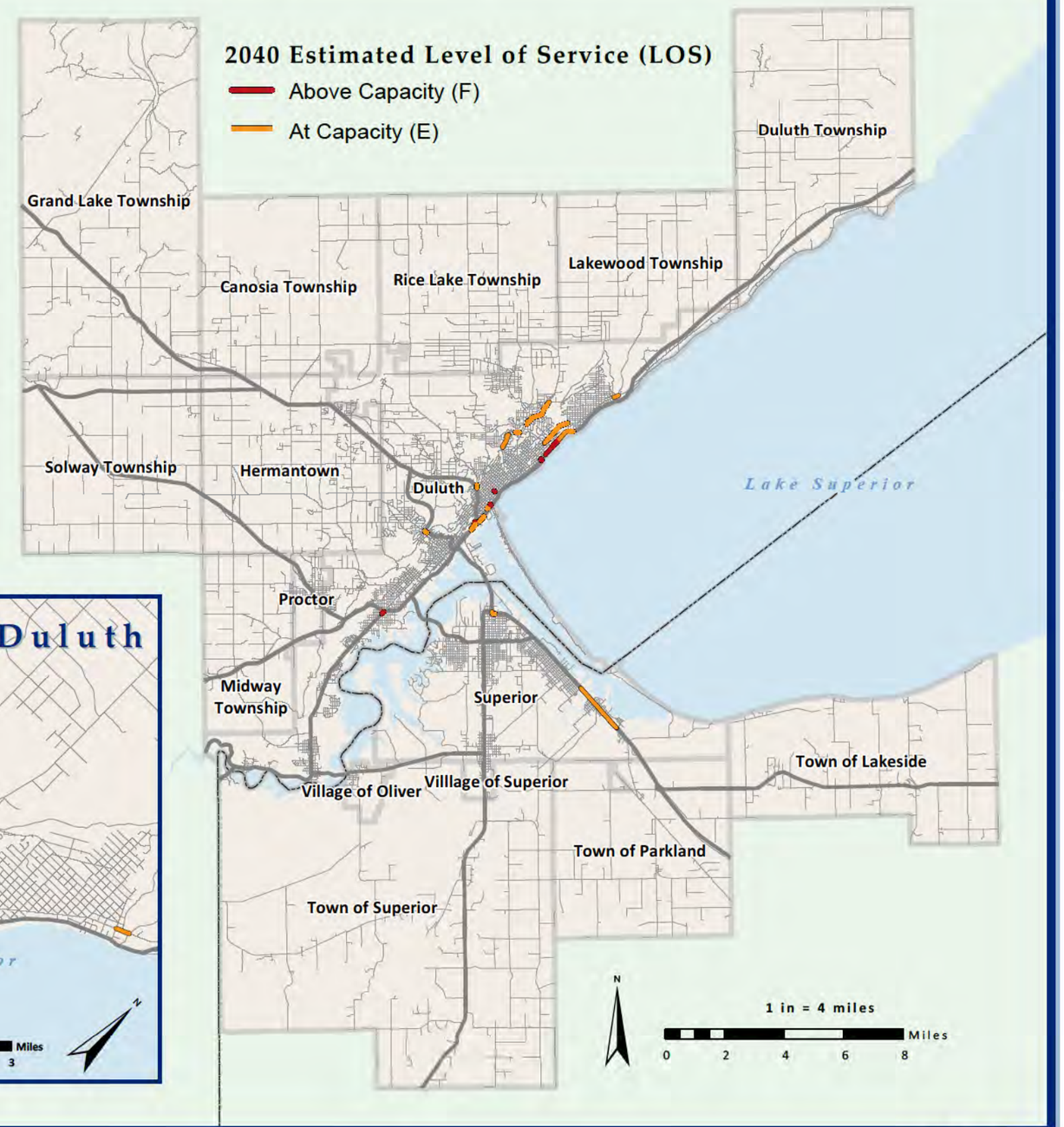
		2010		2040 Conservative		2040 Aggressive	
Jurisdiction	Road Segment	LOS	AADT	LOS	AADT	LOS	AADT
MnDOT	London Rd (MN STH 61): I-35 off-ramp - 36th Ave E	F	21,200	F	16,049	F	16,276
MnDOT / City of Duluth	Intersection of 26th Ave E & London Rd	E	16,525	F	17,438	F	23,569
MnDOT	Grand Ave (MN STH 23): 62 Ave W - I-35 ramps	E	15,600	F	12,410	F	12,807
City of Duluth	Lake Ave: E 1st Street - I-35	D	12,200	F	16,448	F	17,291
City of Duluth	5th Ave E: E 2nd St - E 3rd St	NA	NA	F	8,914	F	9,260
St. Louis Co.	Woodland Ave: Arrowhead Rd - Snively Rd	E	20,900	E	31,067	F	32,469
City of Duluth	E Superior St: 34th Ave E - 36th Ave E	D	9,000	E	15,413	F	15,874
MnDOT	NB I-35 off-ramp to 5th Ave W	NA	NA	E	11,198	F	11,583
City of Duluth	Kirby Dr: College St - UMD Kirby Center	NA	NA	E	8,707	F	9,105
MnDOT	NB I-35 off-ramp to Superior St	NA	NA	E	8,378	F	8,762
MnDOT	London Rd (MN STH 61): 36th Ave E - 43rd Ave E	E	12,200	E	14,149	E	15,534
St Louis Co.	Snivley Rd: Woodland Ave - Glenwood St	E	10,800	E	14,530	E	14,656
WisDOT	E 2nd St (US 2/53): 31st Ave E - Moccasin Mike Rd	D	17,700	E	28,910	E	29,490
St Louis Co.	Rice Lake Rd: Central Ent - E Skyline Pkwy	B	9,900	E	17,409	E	17,799
City of Duluth	E Superior St: Hawthorne Rd - 34th Ave E	D	9,000	E	14,226	E	14,337
Duluth, MN	NB I-35 off-ramp to Mesaba Ave	NA	NA	E	10,721	E	11,198
WisDOT	NB I-535 on-ramp at US 53	C	9,900	E	10,146	E	10,568
City of Duluth	Saint Marie St: Carver Ave - Stuart Ct	B	4,900	E	8,130	E	8,405
City of Duluth	N 24th Ave W: Piedmont Ave - W Skyline Pkwy	E	9,500	E	8,117	E	8,159
City of Duluth	Michigan St: 2nd Ave W - 1st Ave W	B	2,500	E	4,099	E	4,254
City of Duluth	E Superior St: 36th Ave E - 40th Ave E	D	9,000	E	14,395	E	14,693
City of Duluth	E Superior St: 60th Ave E - 61st Ave E	C	5,500	E	7,812	D	7,640
MnDOT	London Rd (MN STH 61): 60th Ave E - 61st Ave E	E	11,000	D	13,417	E	14,175
MnDOT	Mesaba Ave: E 9th St - Central Ent	D	17,700	D	28,109	E	29,287
City of Duluth	E Skyline Pkwy: Kenwood Ave - Martha St	D	8,700	D	14,013	E	14,731
City of Duluth	5th Ave W: Michigan St - I-35 ramps	B	5,200	D	12,473	E	13,821
MnDOT	SB I-35 on-ramp at S 46th Ave W	NA	NA	D	6,720	E	7,401
City of Duluth	N 21st Ave W: W 3rd St - W 6th St	B	2,450	D	5,800	E	6,344
City of Duluth	Michigan St: 2nd Ave E - 3rd Ave E	B	4,150	D	3,586	E	4,031

Duluth - Superior

2040 Level of Service - Conservative Scenario



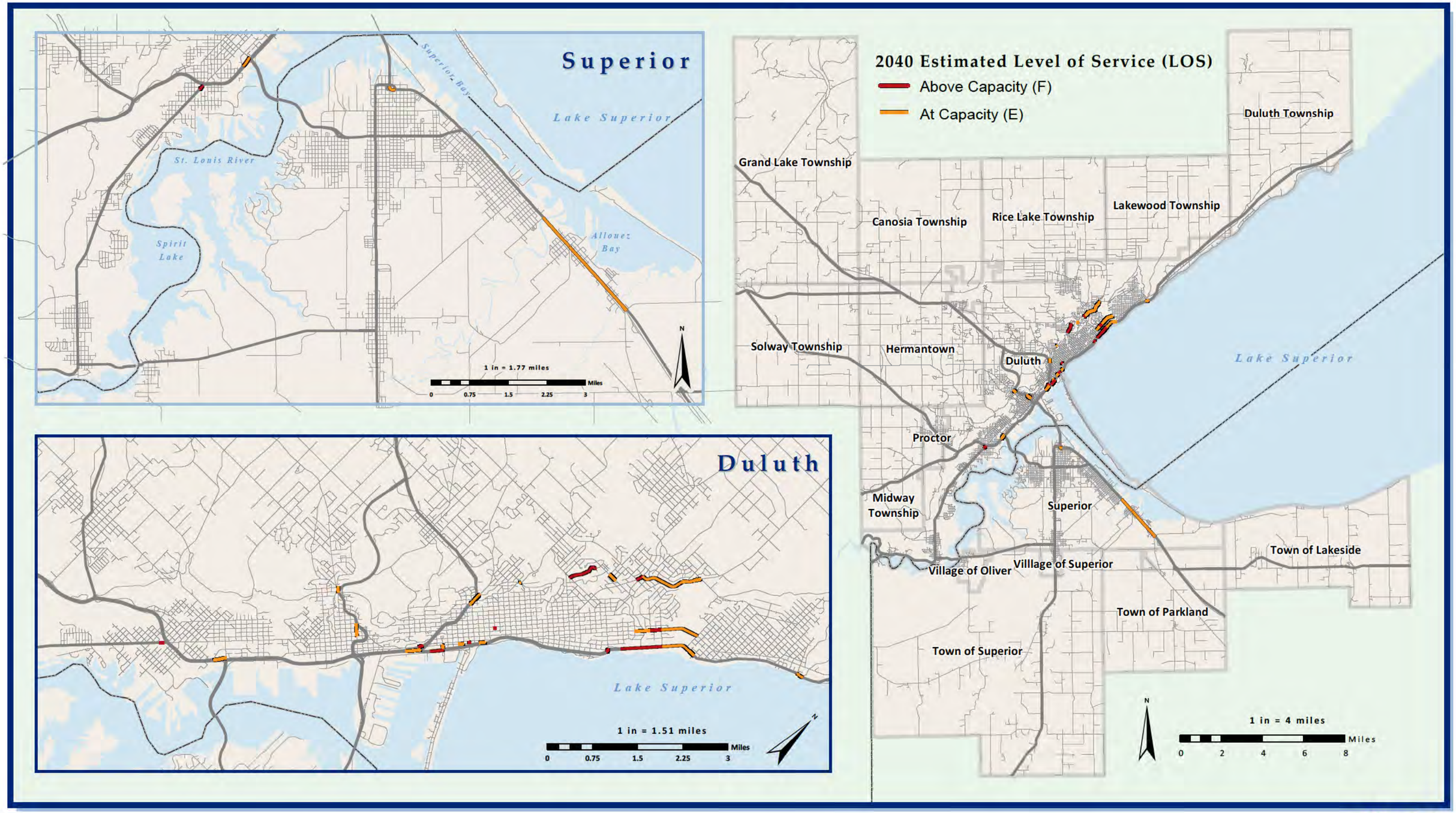




Map 3.10

Duluth - Superior

2040 Level of Service - Aggressive Scenario



Map 3.11

System Conditions

***Trend**: The ongoing maintenance of the area's roads, bridges, and public transit vehicles will become an increasingly burdensome challenge as public revenue streams are not keeping pace with the costs of maintaining the system.*

Surface cracking and pavement deterioration

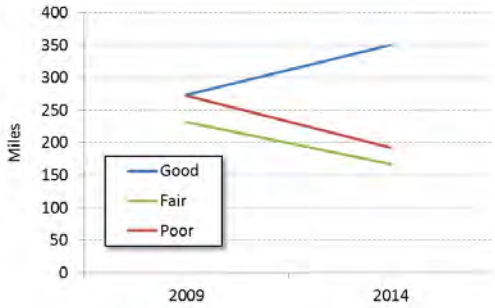
Transportation assets - roads, bridges, buses, etc - depreciate over time and require ongoing maintenance. The costs of that maintenance is subject to inflation and requires careful planning in terms of how to best manage these assets in the future. The Duluth-Superior area has an extensive network of roads and bridges; and public transit vehicles put on a lot of miles in order to serve that network. The following sections offer a system-wide assessment of the conditions of these assets.

Pavement Condition

In 2009, the MIC gathered pavement quality data from its jurisdictions and categorized them in an attempt to derive some measure of system condition. It did this again in 2014. The resulting information is only a rough estimate of system condition, as it does not sufficiently speak to the integrity of either road substructure or major infrastructure, but it does provide a sketch of the potential extent of the maintenance needs throughout the MIC area.

On a whole, the pavement condition of the 720 miles of classified roadways in the MIC area appears to have been improving. The number of miles identified as "Good" have increased by 76 miles (28%) (Figure 3.47). Today, nearly half of the system's pavement miles are in good condition (Figure 3.48). But when looking at this same data in terms of who owns and maintains those miles, it becomes apparent that the network of local roads is falling into disrepair at a rate substantially disproportionate to local maintenance efforts (Figure 3.49).

Figure 3.47: Trend in MIC area pavement conditions (2014 vs. 2009)

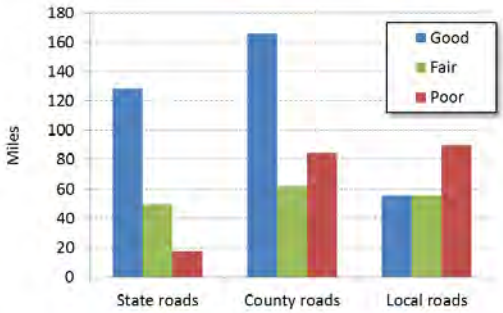


Source: Data provided by MIC area jurisdictions.

Figure 3.48: MIC area pavement quality (2014)

Source: Data provided by MIC area jurisdictions.

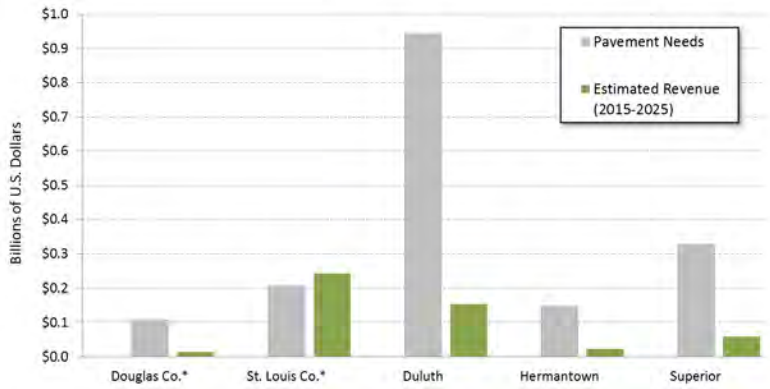
Figure 3.49: Pavement condition of MIC area roads according to jurisdiction type (2014)



Source: Data provided by MIC area jurisdictions.

As explained in more detail in Chapter 5, the financial demands of maintaining the Duluth-Superior transportation system are expected to outpace jurisdictions' abilities to pay for it, if transportation revenues remain at current levels. Even when forecasting the municipalities' current levels of funding at a 1% annual rate of inflation over the next 25 years, it would not be enough to bring all the "poor" miles to a "good" condition (Figure 3.50).

Figure 3.50: Comparison of estimated pavement needs and 25-year revenue projections for local jurisdictions (2014)



** Portion of total revenue based on the portion of county road miles within the MIC area.*

Data sources: Pavement condition ratings as reported by individual jurisdictions (2014); revenue information from the Minnesota Office of the State Auditor and the Wisconsin Department of Revenue (2014).

Condition of Area Bridges

Bridges represent some of the most critical pieces of infrastructure within an area's transportation system. They also represent some of the most expensive infrastructure with stringent engineering and maintenance requirements, and are thus challenging assets to manage over time.

View of Bong Bridge from Duluth Harbor

The Blatnik Bridge (I-535) and Bong Bridge (US 2) are the area's two most important and iconic bridges, together facilitating the passage of more than 47,000 vehicles across the Duluth-Superior harbor on an average day. But, the MIC area has more than 300 other bridge structures within its boundaries that also need to be maintained. Among these are many ramps and overpasses found along the interstates and major highways throughout the area. For example, the interchange of I-535, I-35, and US 53 (known locally as the "Can of Worms") contains more than 30 individual bridge structures. MnDOT District 1 has determined that much of the interchange will

require major reconstruction within the next 20 years and anticipates that construction costs will approach $500 million.

Data available through the National Bridge Inventory provides information regarding the length and age of the area's bridges, as well as a sufficiency rating for each structure. Together, this information gives some idea of the condition of the area's bridges.

The bridge sufficiency ratings are used for the purpose of federal funding. They represent a composite score in which 55% is based on structural condition, 30% on whether elements of its design are obsolete, and 15% on its public importance. The ratings follow a 100 point scale; bridges with ratings lower than 80 are considered eligible for federal repair funding, while bridges with ratings below 50 are considered eligible for funds to help replace them.

As of 2012, 56% of the bridges within the MIC area had ratings below 80, and 43% had ratings below 50. While these scores do not exactly indicate the degree of disrepair facing these bridges, it provides some sense of the amount of bridge work facing the area jurisdictions in the coming decades. The ages of bridges may be a further indicator of this.

Major bridge structures are typically built and maintained for a lifespan well beyond 50 years. When looking at the age/length profile of bridges within the Duluth-Superior area, it can be seen that almost 80% the bridges and 85% of the total bridge mileage is less than 50 years old (Figure 3.52). While this would suggest that conditions are far from urgent, it should be noted that the majority of the area's bridges are within 25 to 50 years of age. This suggests that the area could become inundated with necessary bridge replacements at some point in the coming decades. And, given signs that jurisdictions will have financial difficulty in merely maintaining their road pavements, this is a daunting prospect.

Condition of Transit Vehicles

Public transit in Duluth-Superior faces challenges similar to those regarding the area's pavements and bridges. Federal funding has become less available for bus purchases in recent years and, as a result, the Duluth Transit Authority (DTA) is struggling to maintain the standards it has set for its fleets of buses.

The DTA has estimated the service life of its Regular-Route buses to be 12 years. Because of this, it has aimed to purchase 10 new buses every other year, in order to maintain an average age of six years across its fleet of 65 regular-route buses. This target helps the DTA ensure the safety and comfort of its passengers, as well as meet the its cost targets regarding the maintenance of its vehicles.

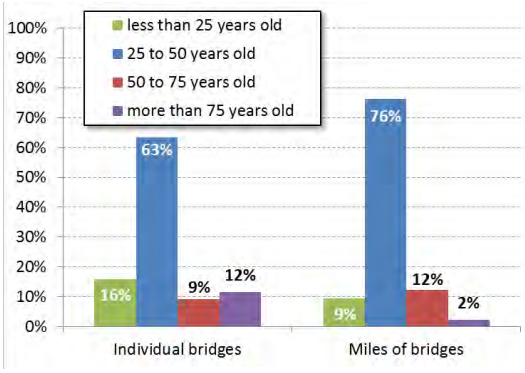
Aerial view of Duluth's "Can of Worms"

Image source: Google Maps, 2009.

Figure 3.51: Sufficiency ratings of MIC area Bridges (2012)

Source: National Bridge Inventory Database (2014)

Figure 3.52: Age profile of MIC area bridges (2012)



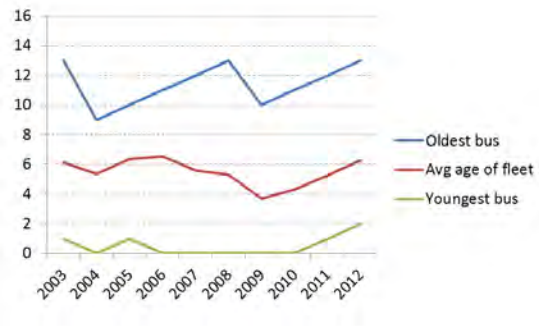
Source: National Bridge Inventory Database (2014)

As Figure 3.51 suggests, the DTA is at a point where it needs to make bus purchases or defer the ordering of replacement buses for its Regular Route service. To make matters worse, increasing demand for transit service in the area means that these aging vehicles are being driven many more miles over their life span (Figure 3.52).

These same trends can be seen with the DTA's fleet of paratransit (or STRIDE) buses. The service life of these vehicles is estimated to be half that of the Regular Route buses, and so the DTA aims to replace three of its nine STRIDE vehicles every three years. However, as Figure 3.53 shows, the average age of the STRIDE fleet was approaching the 6-year target in 2012, and the age of the youngest vehicles had passed the 3-year replacement cycle. While Figure 3.54 indicates that even as the DTA has been distributing mileage equitably across the entire STRIDE fleet, the fleet is reaching the end of its service life.

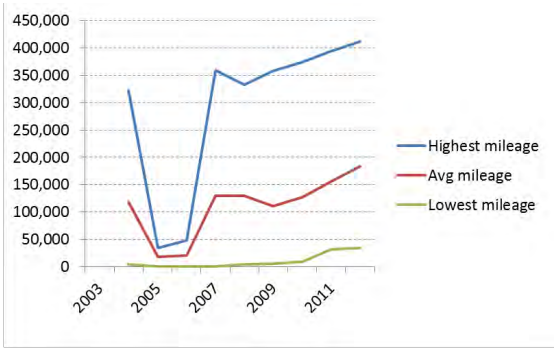
The consequences of driving buses beyond their intended service life are increasing maintenance costs for the DTA, a greater potential for breakdowns and disruptions of service, and an overall decline in ride comfort and service quality for DTA passengers.

Figure 3.51: Age profile of DTA Regular Route bus fleet (2003-2012)



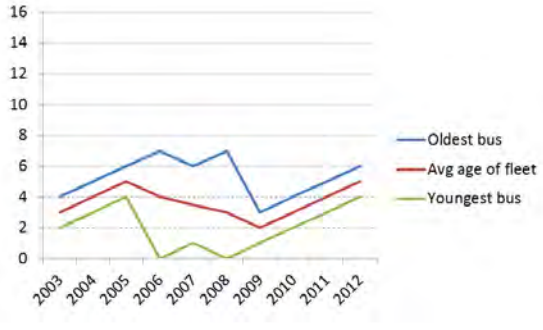
Source: National Transit Database (2014)

Figure 3.52: Mileage profile of DTA Regular Route bus fleet (2004-2012)



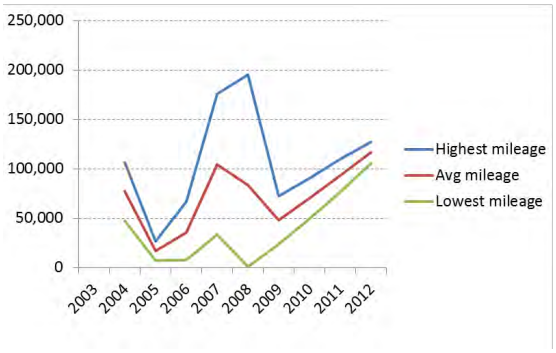
Source: National Transit Database (2014)

Figure 3.53: Age profile of DTA STRIDE bus fleet (2003-2012)



Source: National Transit Database (2014)

Figure 3.54: Mileage profile of DTA STRIDE bus fleet (2004-2012)



Source: National Transit Database (2014)

CONCLUSION:

TRENDS & PROJECTIONS

The Duluth-Superior metropolitan area is not projected to grow at levels that will require significant expansion of the existing transportation system over the next 25 years. It is, however, expected to experience significant changes in the age and distribution of its population. With these changes may come increased demand for different kinds of transportation services.

More people are expected to live further out from the urban central cities of Duluth and Superior, where the area's concentrations of employment, shopping and services will be. This will likely result in greater numbers of vehicle miles being traveled within the MIC area and, as a greater percentage of the population ages beyond their 70's, there will be growing demand for services to address increasing limitations to their mobility.

The Duluth-Superior area will continue to grow in its strengths as a regional trade center and transportation hub for the movement of people and freight, as it draws people throughout the region for shopping, tourism and entertainment. Employment in the area is also expected to grow more than population, and thus greater numbers of people will be commuting from outside the metro area as a result. Transportation patterns are expected to change and a few important corridors, as identified through the Duluth-Superior transportation model, are projected to see increasing traffic congestion.

A more significant trend facing transportation in the Duluth-Superior metro area is the aging of its transportation assets in the face of rising construction costs and static revenues. There are ample signs that jurisdictions are already falling behind in maintaining their pavements, bridges, and transit vehicles. Maintenance costs are expected to grow more rapidly then revenues, making these problems even worse. Because of this, transportation investment priorities for the area will need to focus more and more on system maintenance and preservation.

4. Performance

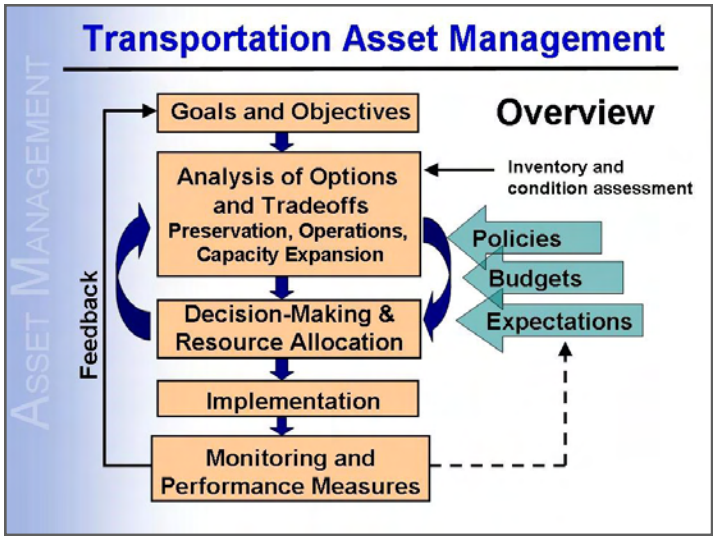
This section of CONNECTIONS 2040 summarizes each mode of transportation as in relation to the movement of people and freight. Where possible, information regarding operations, maintenance, safety, etc. is provided.

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

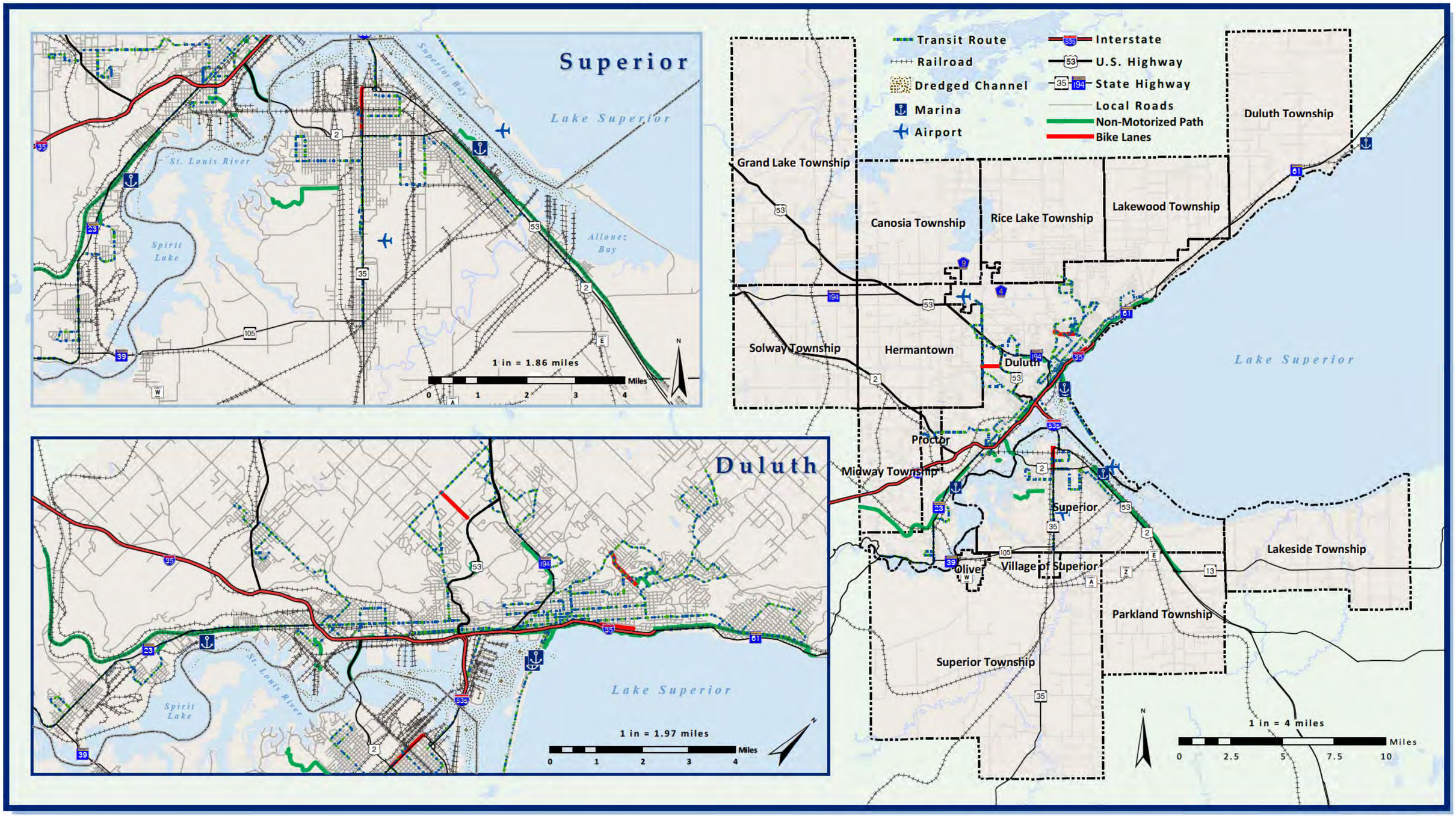
In the pages that follow, the MIC has attempted to present various data (where possible and in the format available) in an attempt to describe how the Duluth-Superior transportation system is "performing" in terms of both the movement of people and the movement of freight. No performance targets have 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:

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.

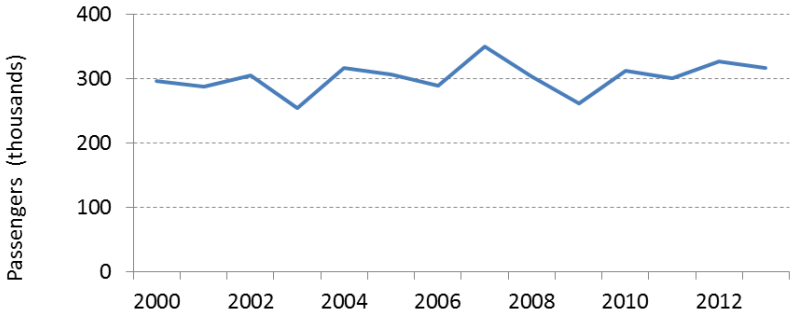
DLH is the only airport within a 50-mile radius that offers scheduled commercial airline service, and has an estimated service area population of 400,000 people. The airport offers scheduled service to:

- 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.

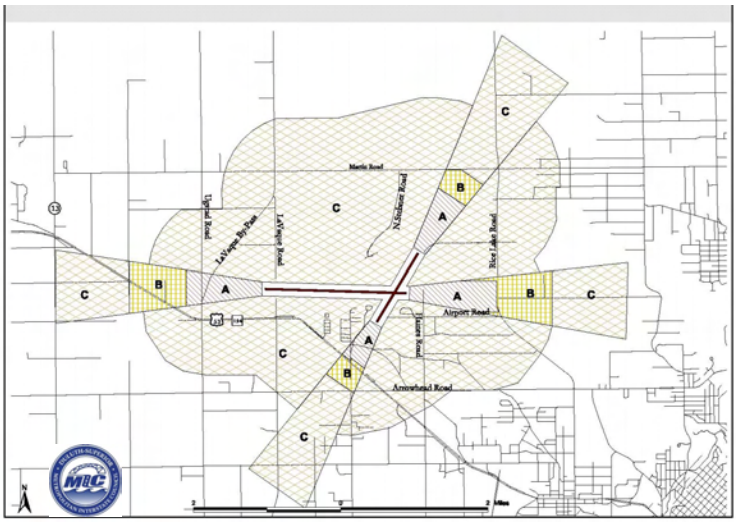
Runway delineation at DLH.

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

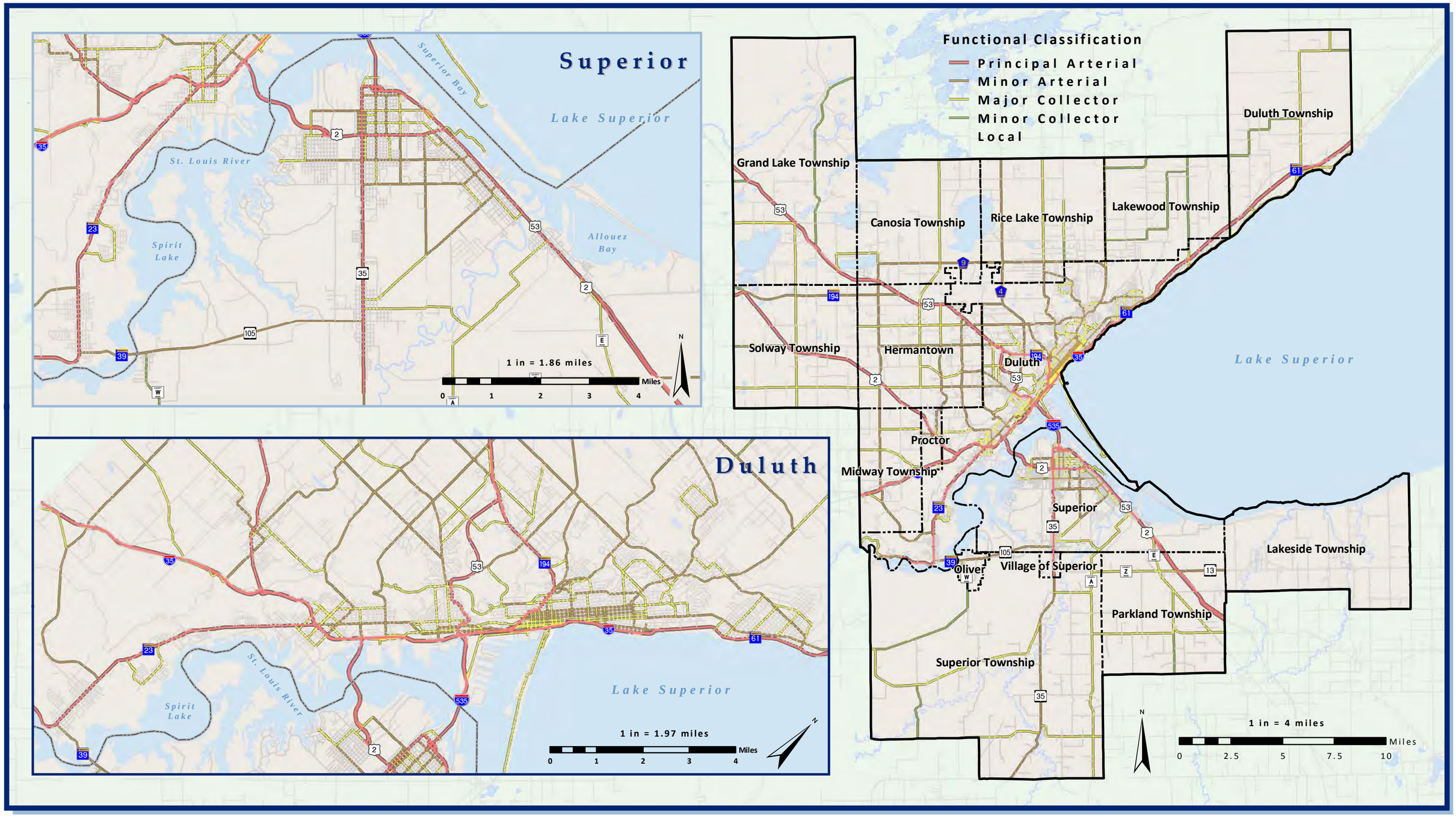
Functional Class	Miles in the MPO	% of System	Daily Vehicle Milles Traveled (DVMT)	% DVMT
Interstate Highway	17	1.9 %	569,000	20.4 %
Principal Arterial	52	5.6 %	707,000	25.3 %
Minor Arterial	143	15.8 %	818,000	29.3 %
Collector	140	15.5 %	279,000	10.0 %
Local Roads	552	61.1 %	416,000	14.9 %
Total	904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



Map 4.2

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

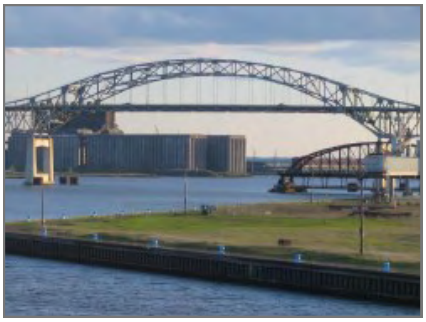
Bridge	Length (ft)	Operating Rating[1]	Inventory Rating[2]	Annual Average Daily traffic (AADT))
1. Bong Bridge (US Hwy 2)	8,320	73.1 tons	43.9 tons	17,700
2. Blatnik (I - 535)	7,980	38.9 tons	23.3 tons	29,500
3. "Can of Worms" bridges*	15,570*	63 tons**	37.8 tons**	78,000
4. I-35 in West Duluth (crosses 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:

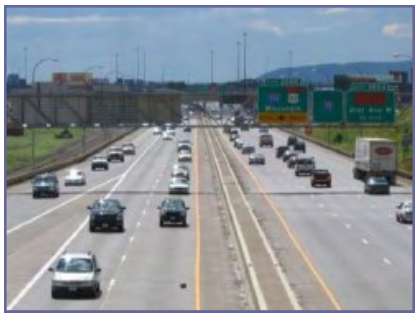
- Joshua Avenue (Duluth):
  Construct a collector route from Maple Grove Rd. to Arrowhead Rd.
- "Kenwood Connector" route (Duluth):
  Improved connection between Kenwood Ave. and 6th Ave. E.
- "Waseca Industrial Road" route (Duluth):
  Construct a new road between 61st Ave. W. and Grand Ave. (STH 23).

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.

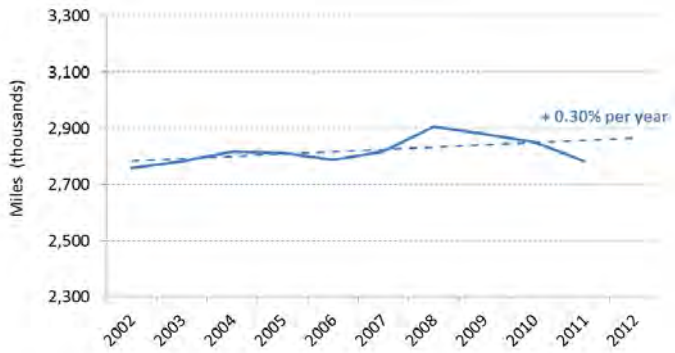
If the general trend of 0.3% annual growth were to continue, an additional 332,000 miles would be driven in the MIC area daily by 2040. This would be merely 1/4th of the additional traffic that is being predicted under the "aggressive" growth scenario considered in this plan (see Chapter 3). Under that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



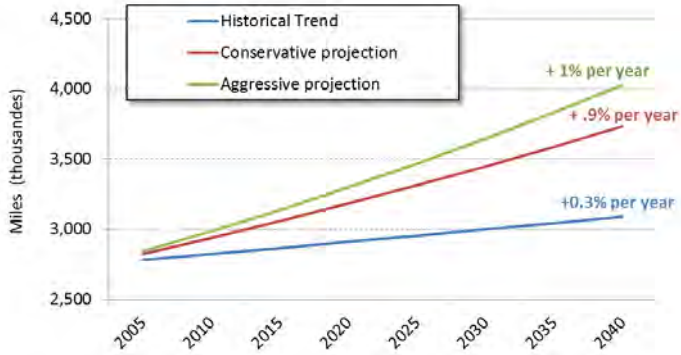
Interstate 35 near Downtown Duluth

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



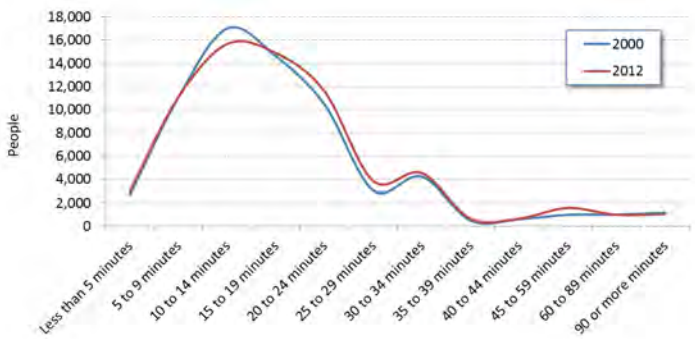
*Sources: Federal Highway Administration (FHWA) Statistical Highway Series, 2014; MIC travel demand model (2014).. * DVMT: Daily vehicle miles traveled.*

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)

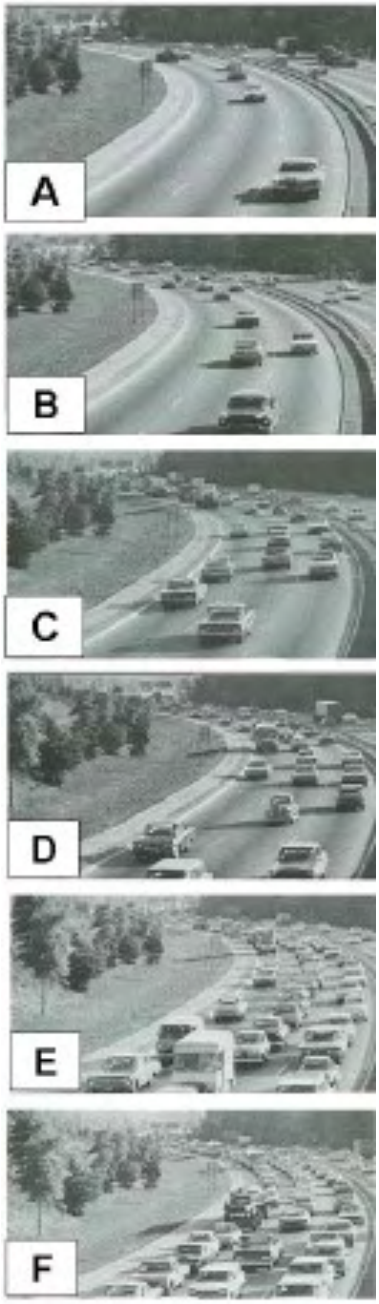


Image source: unknown.

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

Scenario	*Daily trips*	*Vehicle-hours-traveled (VHT).*	*Minutes per trip*
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

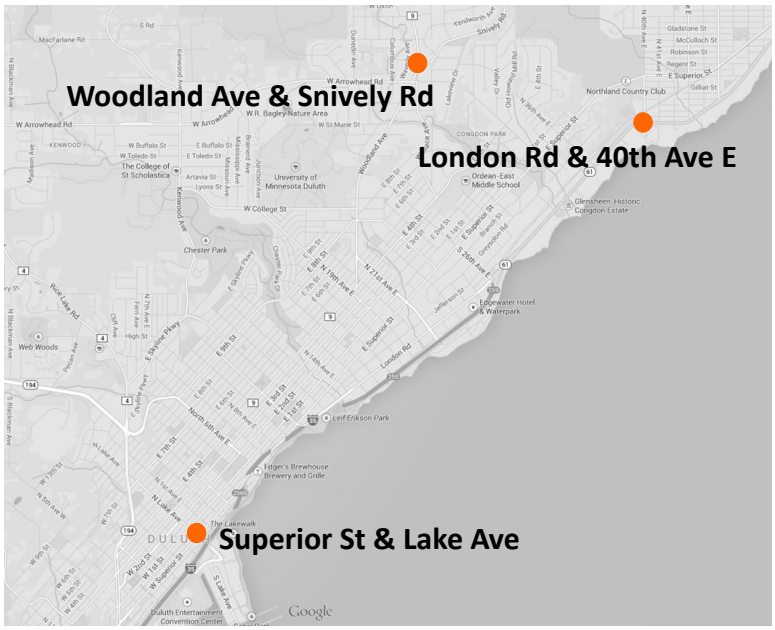


Image source: Google Maps (2014).

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.

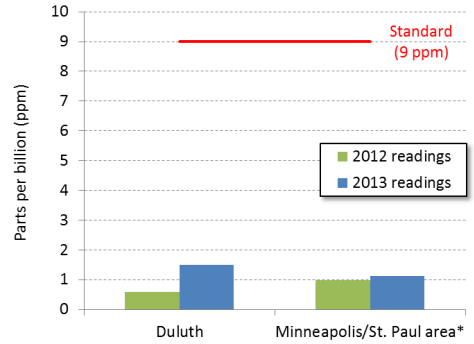
NAAQS standard of 9 parts-per-billion. With that said, this was both an increase from the previous year and higher than concentrations recorded in the Minneapolis/St. Paul area.

Table 4.7: Identified Carbon Monoxide Control Measures (1990)

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

Source: Duluth Transportation Control Plan, 1990.

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



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

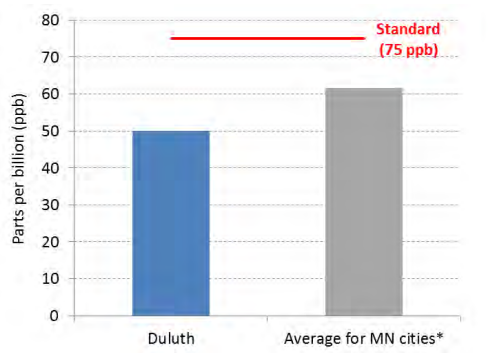
† 2nd highest, non-overlapping 8-hour concentration compared to annual 8-hour average. Concentrations must equal or exceed 9 ppm to violate the national ambient air quality standard.

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

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.

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.*

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.

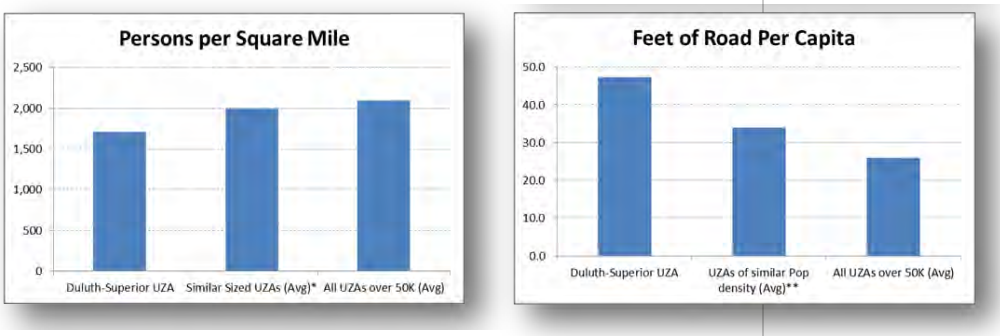
Transportation asset management

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.

Surface cracking and pavement deterioration

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.

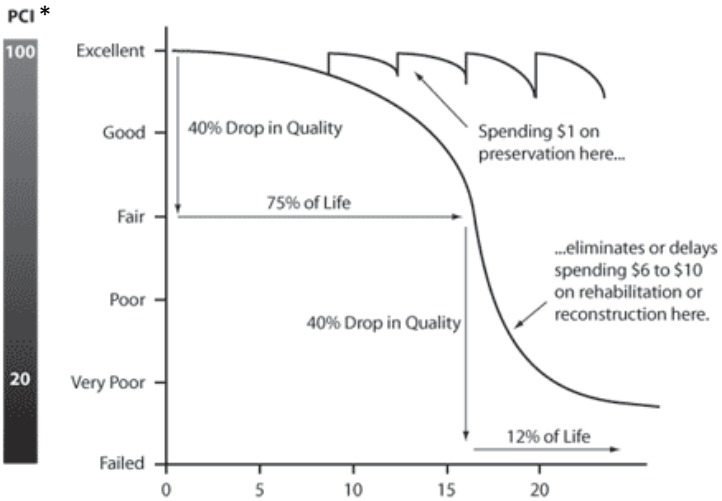
Figure 4.14: Comparisons of MIC area density and roadway Miles to other urban areas in the United States.



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



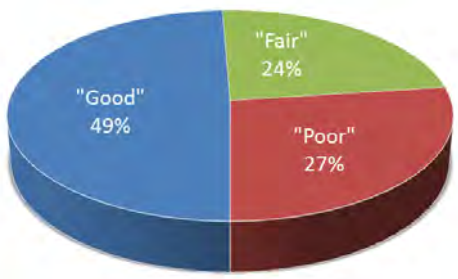
Source: Federal Highway Administration (FHWA), 2009.

** 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.

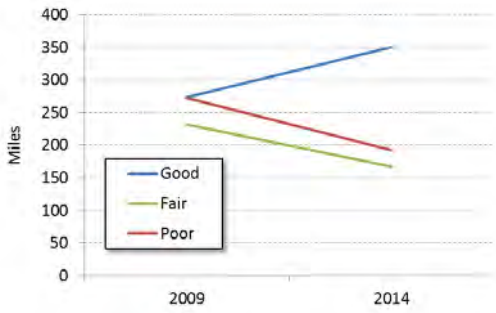
In addition to maintaining road miles, the area's jurisdictions need to continue to devote resources to maintaining the area's more than 300 bridges. Bridge structures represent some of the most expensive pieces of infrastructure and, while the majority of bridges may be relatively young (less than 50 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)



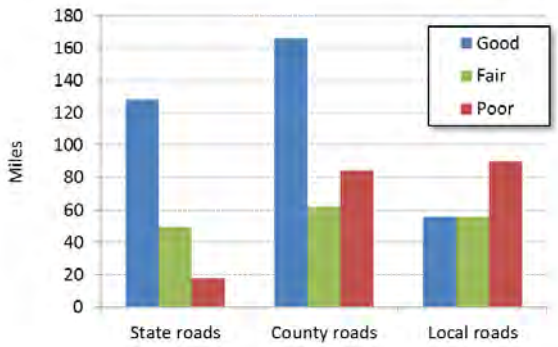
Source: Data provided by MIC area jurisdictions.

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



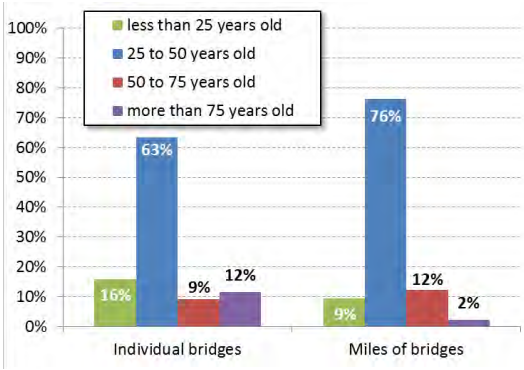
Source: Data provided by MIC area jurisdictions.

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

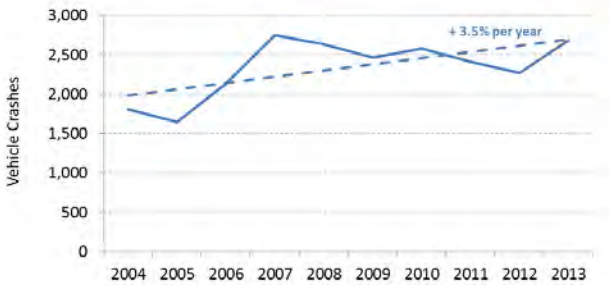
The MIC coordinates efforts with area jurisdictions to identify and address unsafe conditions throughout the metropolitan roadway network. It is committed to *Safety Conscious Planning* and, as such, works to coordinate efforts among area jurisdictions and stakeholders, and actively participates in local, 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.

Head-on vehicle crash

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.

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)

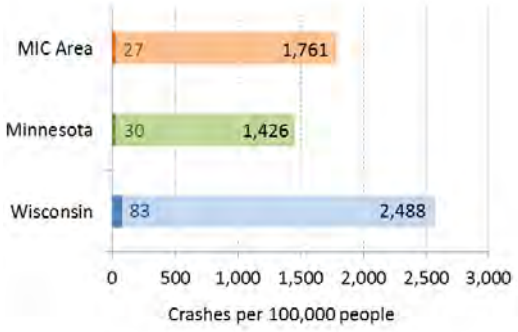
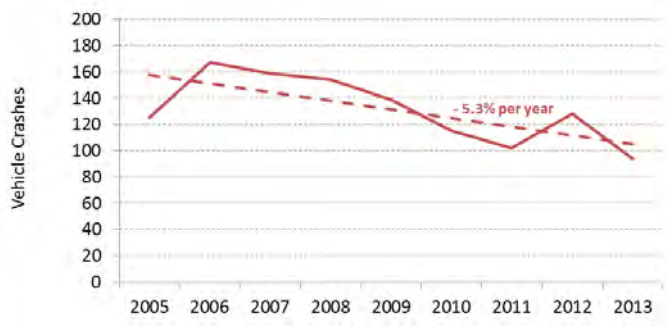


Figure 4.23: Crashes involving chemical-impairment in the MIC Area (2004-2013)



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 be 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

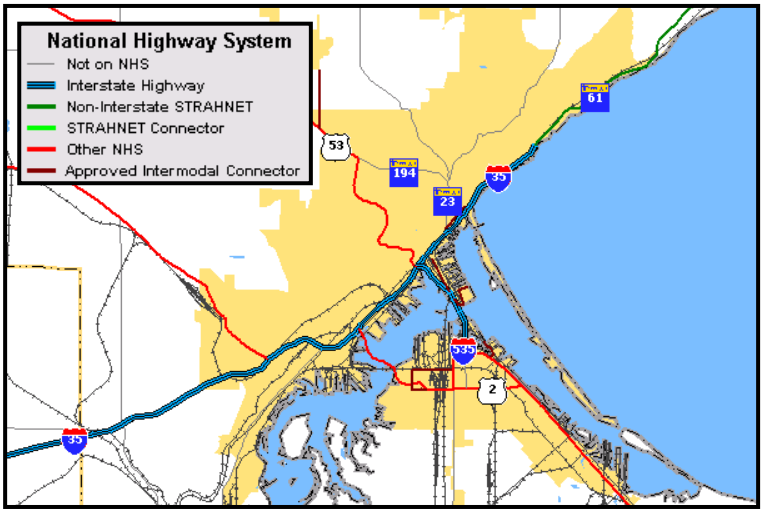
Figure 4.25 below shows the National Highway System (NHS) and Strategic Highway Network (STRAHNET) routes within ithe MIC's boundaries. These roadways, along with their accompanying bridge structures, constitute the most critical highway facilities in terms of rapid mobilization and deployment in response 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 3) Response
2) Preparedness 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.

Oliver Bridge (State Hwy 105)

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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.

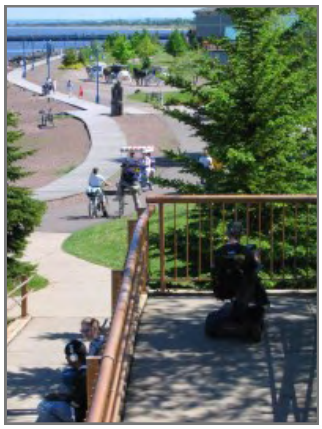
Movement of People: Non-Motorized

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 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

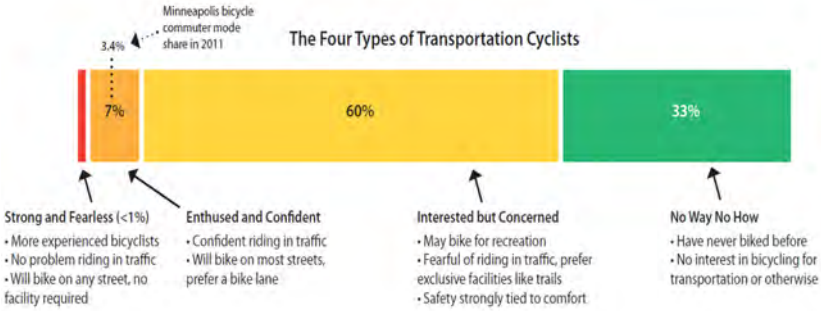
The MIC has been doing extensive bikeways planning for the metro area since the early 1990's, which has resulted in a metro-wide network of identified bike routes. Routes on the Minnesota side are signed with bike route signs containing way-finding information, and signs are being planned for the routes 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.

Figure 4.26



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

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

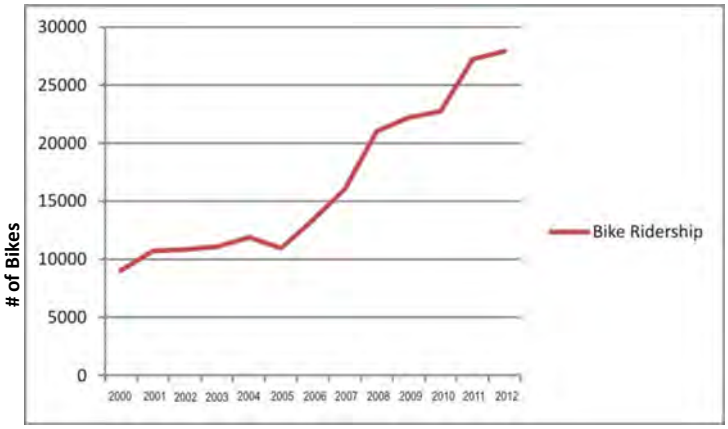
Parking meter fitted with a bike rack

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.

- **Gitchie 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.

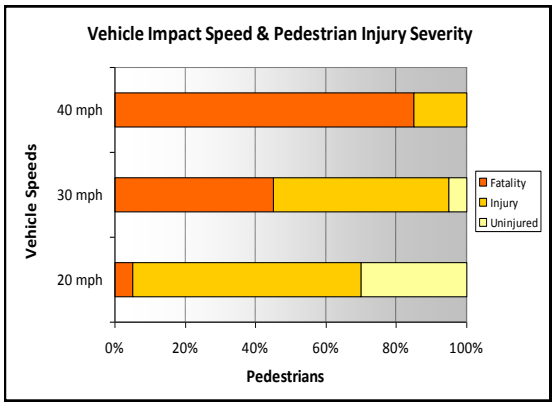
Cyclist signaling at an intersection

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.

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



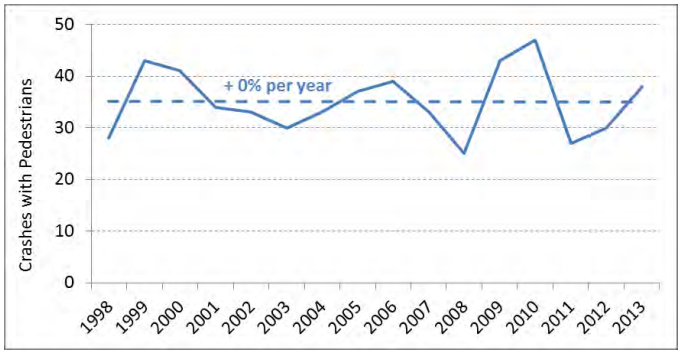
Source: Literature review on Vehicle Travel Speeds and Pedestrian Injuries; U.S. DOT National Highway Traffic Safety Administration, 1999

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.

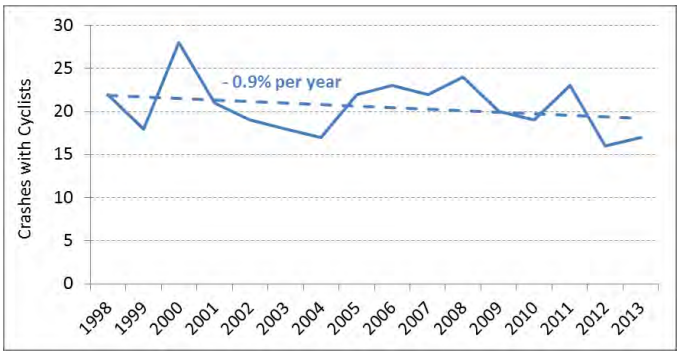
The MIC's objectives regarding non-motorized safety begin with a continuing assessment of available safety-related information for the area. From this information the MIC will work to identify needed improvements and work with jurisdictions and stakeholders to prioritize these needs and decide on the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

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.

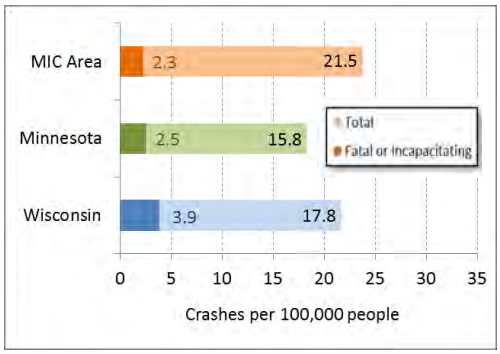
Promoting Safer Design Features

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

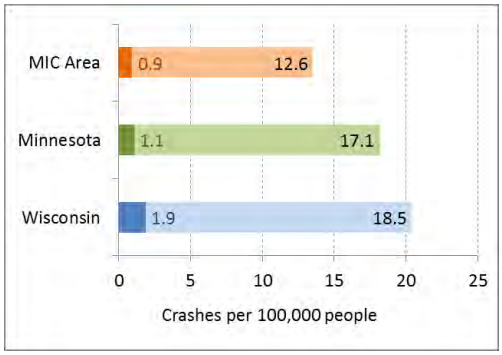
Figure 4.31 Per capita crashes with pedestrians (3-year average 2010-2012)



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 separat-ed 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 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 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.

DTA Regular Route bus

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.

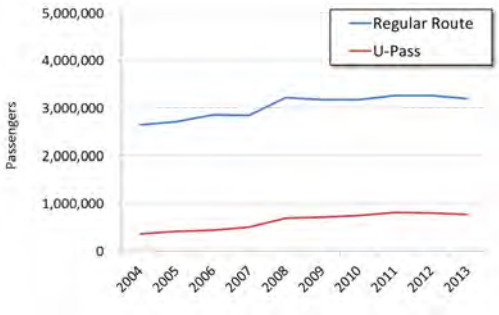
Table 4.10: Hours of Operation: DTA Regular-route Service

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).

Figure 4.34: Regular Route Service: Annual Passengers



Source: Duluth Transit Authority (2014)

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.

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.

Drawing of the future DTA Downtown Multimodal Center.

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.

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

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.

Figure 4.35: Existing and potential transit hubs

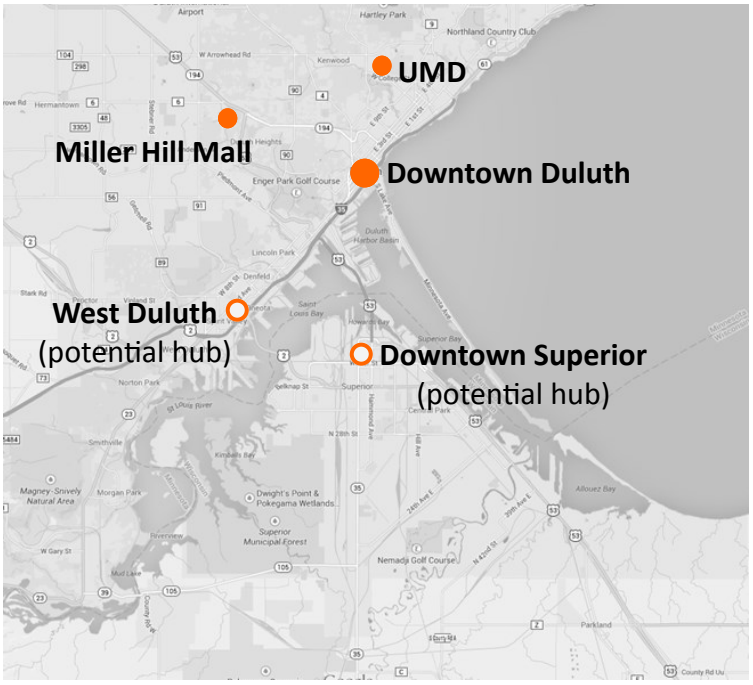


Image source: Google Maps (2014).

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.

DTA driver demonstrating use of the on-bus bike rack

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).

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.

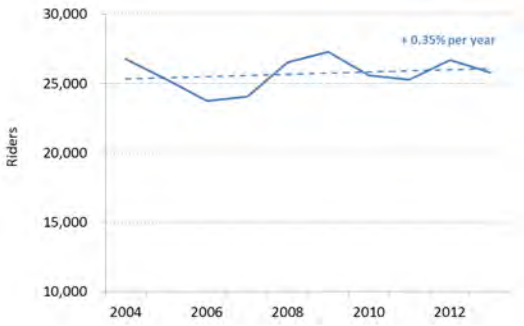
The demand for STRIDE service can vary from year to year, but a trend line based on annual ridership numbers between the years 2004 and 2013 suggests that demand for the service has been growing at 0.35% annually (Figure 4.36). As more and more of the area's population ages beyond 70 in the coming decades,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

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

Figure 4.36:
Annual DTA ridership: STRIDE service



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.

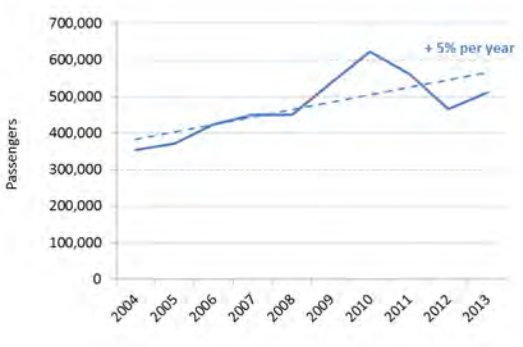
Rural Transit Service

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).

Figure 4.37: Arrowhead Transit: Annual Passengers



Source: Arrowhead Economic Opportunities Agency (AEOA), 2014

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 the 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.

Operations & Maintenance

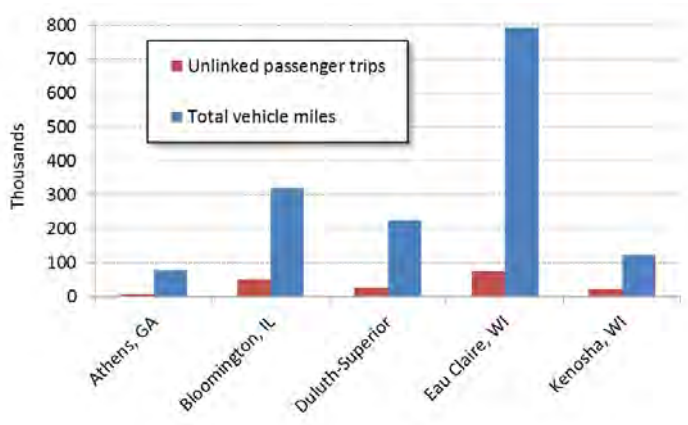
The MIC will coordinate efforts with jurisdictions and local transit agencies to help ensure the efficient and effective operations and maintenance of transit services, avoid intermodal conflicts and optimize the movement of transit riders throughout the MIC area.

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 he 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.

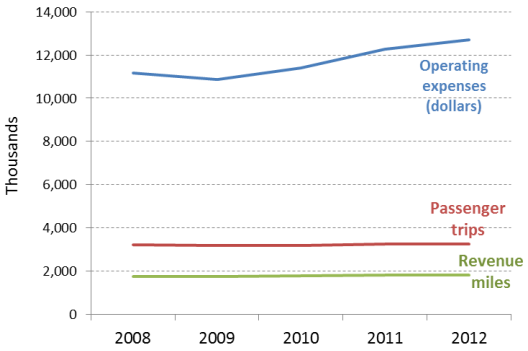
* 2006-2010 American Community Survey 5-year estimate

** 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.

Figure 4.39:
Operating statistics: DTA Regular Route service



Source: National Transit Database, 2014

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.

DTA buses in downtown Duluth

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).

Table 4.13: DTA Fleet Maintenance Cycle

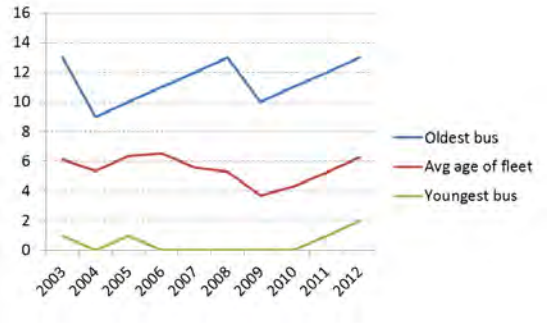
Vehicle Type	Operating life	Fleet size (2007)	Fleet turnover
Regular-route bus	12 years	63 buses	12 years
Downtown trolley	NA	2 trolleys	NA
STRIDE bus	5 years	9 vehicles	6 years

Source: Duluth Transit Authority, 2014

Hybrid-electric bus

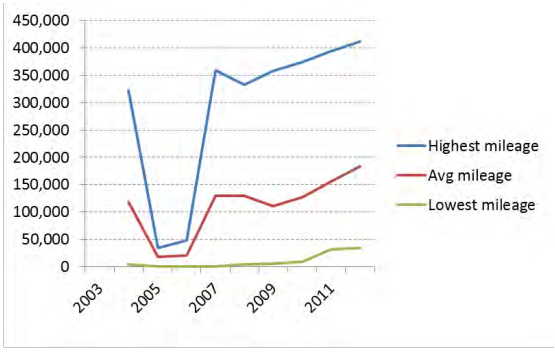
Looking at the age profile of the DTA's fleet of Regular Route buses over the past decade, it can be seen that the DTA has been able to maintain its targets (Figure 4.40). When looking at the data displayed in Figure 4.41, however, it's apparent these buses, overall are being driven more in order to 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).

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



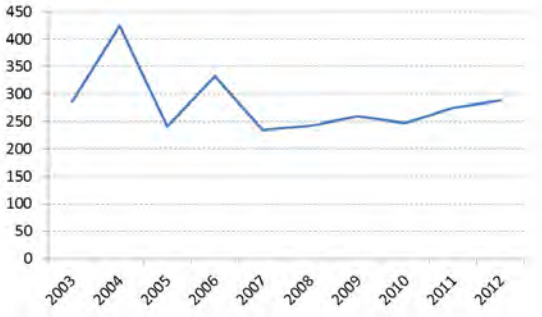
Source: National Transit Database (2104)

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

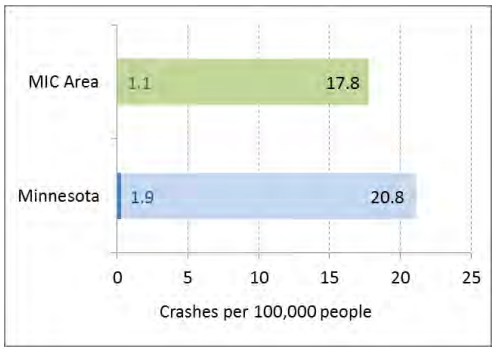
The DTA has established several standards that it strives to maintain regarding the safety and security of its transit services. It strives for zero passenger accidents, and it monitors, tracks and reports all safety and security related incidents on its buses and at its facilities, and it assesses passengers'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

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



Source: MnDOT Crash Mapping Application (2014).

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.

- 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

Higher cost ..... Lower cost

Air	Truck	Rail	Water	Pipeline

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:

Movement of Freight: Air

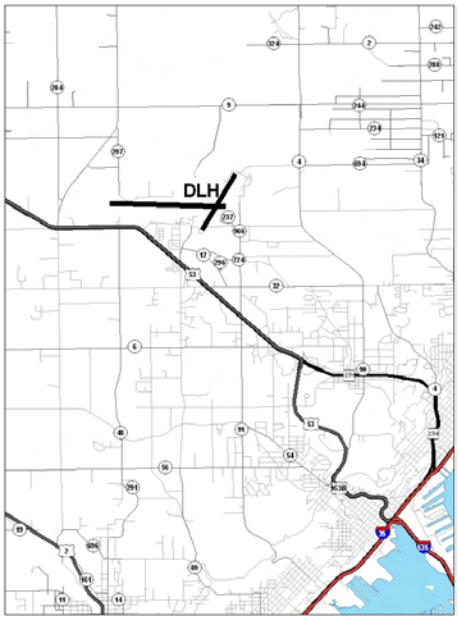
Air transportation is mostly known for moving people long distances in a short amount of time. That concept can also be applied to the movement of freight by air. Air freight by nature falls into the end of the freight service cost continuum (see Figure 4.44 on page 4-53) that is high value, low weight, 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.

Fed Ex plane at DLH

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.

Figure 4.45: Proximity of DLH to Major Highways



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

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 competiveness 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.

Rail cars at Midwest Energy facilities in Superior

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.

"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.

BNSF Locomotive in Superior

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.

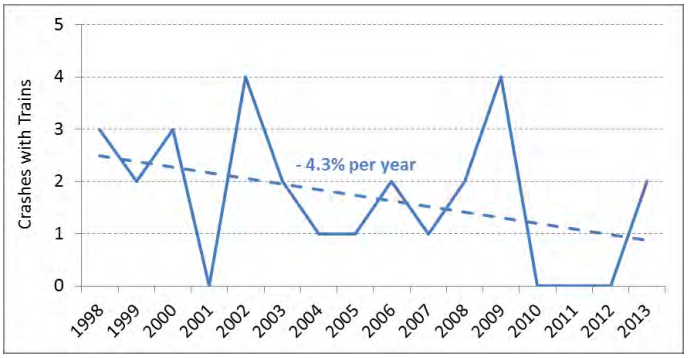
Rail crossings with public roadways is one area where rail safety falls into the public realm. State and federal guidelines dictate what type of rail crossing safety device is present. The amount of rail traffic and vehicle traffic along with crossing geometrics such as sight distances are the major 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

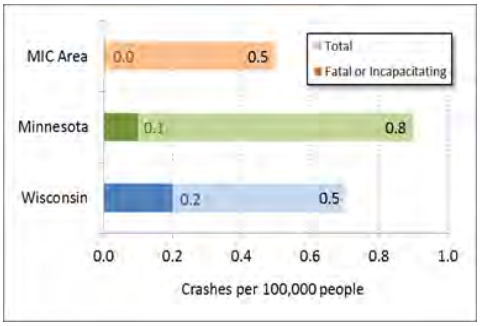
The Association of American Railroads has partnered with Operation Lifesaver, Inc., the Federal Railroad Administration and the Federal Transit Administration to launch a nationwide rail safety public education campaign designed to raise awareness about risky pedestrian and driver behavior around railroad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

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

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.

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

Movement of Freight: Truck

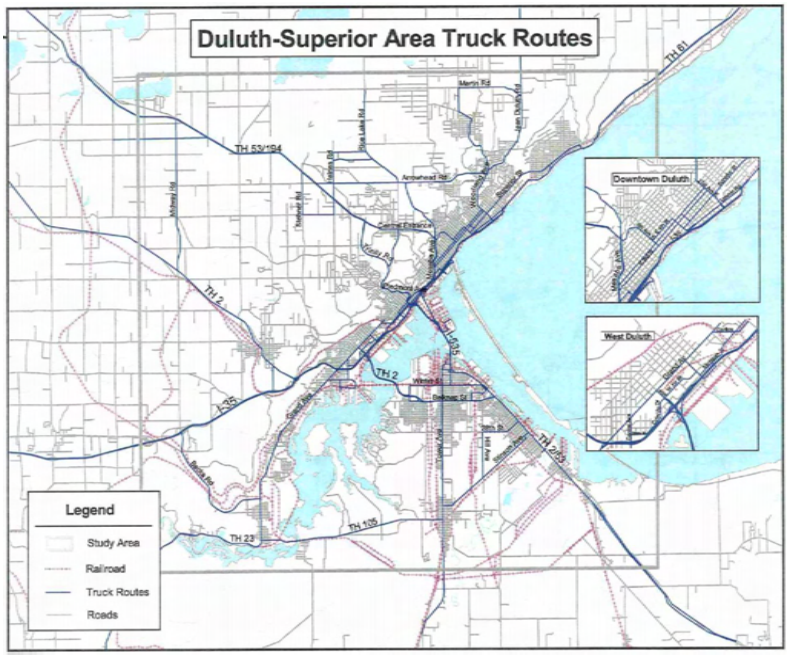
Freight handled by truck includes manufactured products, primary materials, intermodal freight delivered door to door, and drayage movements between modes of transportation. Freight carried by trucks tends to fall into the end of the freight service cost continuum (see Figure 4.44 on page 4-53) that is higher value, lower weight, and time sensitive. Moving freight by truck offers access to most freight terminals and is very flexible in terms of access and mobility. The trucking industry has evolved into a very important component of the freight logistics system.

Maintaining an efficient truck routing system is important to the local and regional economy to allow reasonable access to inputs and markets. MIC staff works with state, county and city road authorities to ensure the truck routing system is operating efficiently. This includes reviewing functional classification, state aid designations, crash data, truck counts, signage, port access, and oversize load routing.

Accessibility & Mobility

The major truck routes in the Duluth-Superior area include the Interstate Highway System, Trunk Highways (TH), county state aid highways (CSAH), municipal state aid (MSA) highways and other major roadways (Figure 4.48). These roadways, all functionally classified, are designed and maintained to carry large amounts of traffic including trucks. Many of these functionally classified roads are also part of the

Figure 4.48: MIC Area Designated Truck Routes



Types of Truck Carriers:

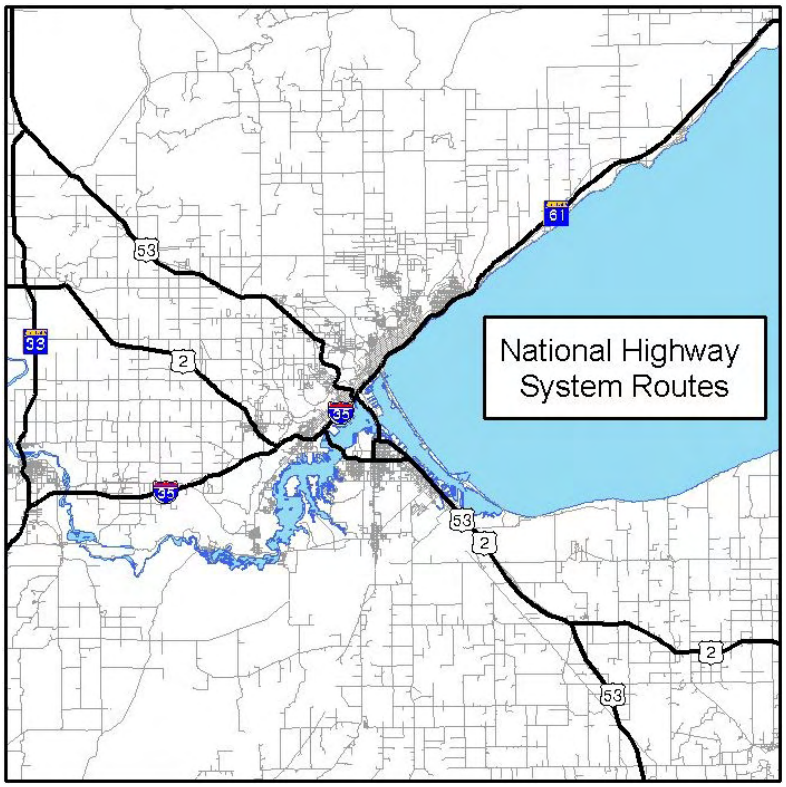
- **Truckload carriers**: dedicate an entire trailer to a single shipper's cargo
- **Less than truckload carriers:** consolidate cargo from several shippers and make multiple deliveries.
- **Private fleets:** trucks owned by large retailers that move goods to retail outlets.
- **Delivery trucks:** companies like UPS and Fed Ex that pick-up and deliver packages.

Trailer use for moving oversize-overweight loads from Duluth-Superior Port

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.

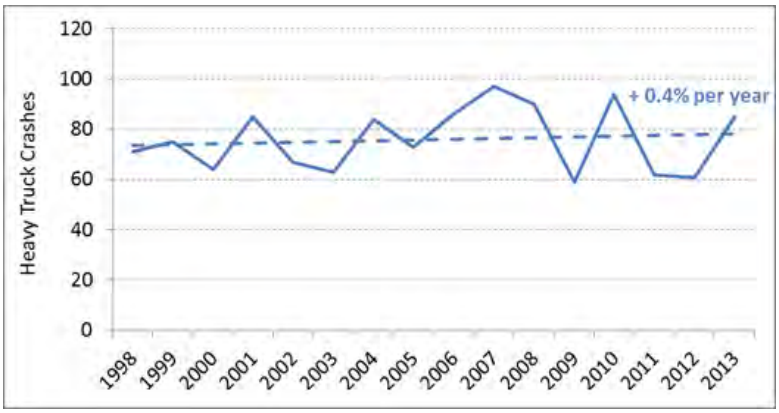
Much of the freight moving by truck through the MIC area passes through and may use either the Blatnik (Hwy 53 / I-535) of the Bong Bridge (Hwy 2) between Duluth and Superior. The Bong Bridge is the preferred bridge between Duluth and Superior for moving oversize/ overweight loads.

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.

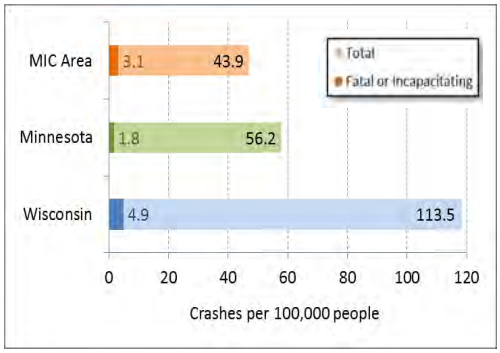
Recent efforts to reduce weather related crashes include the installation

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.

Freight Container at Intermodal Facility

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.

National Network of Truck Routes Sign

Movement of Freight: Maritime

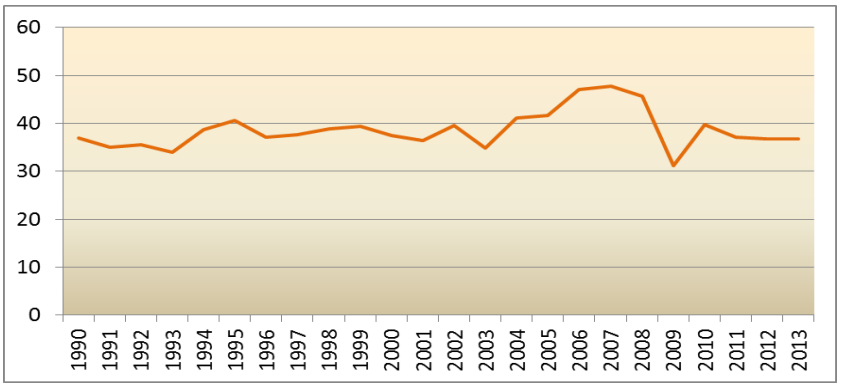
The movement of freight by water is the most efficient and environmentally friendly means of moving bulk commodities. The Duluth-Superior port is the premier bulk port on the Great Lakes, annually shipping approximately 40 million tons (see Figure 4.53). The primary commodities include iron ore, coal and grain. The regional economy relies heavily on the efficiency of these bulk materials moving through the port. According 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.

Ocean-going ship docked in Duluth

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 Tonnages (in millions) for the Duluth-Superior Port



Grain elevator facilities at the 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,

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.

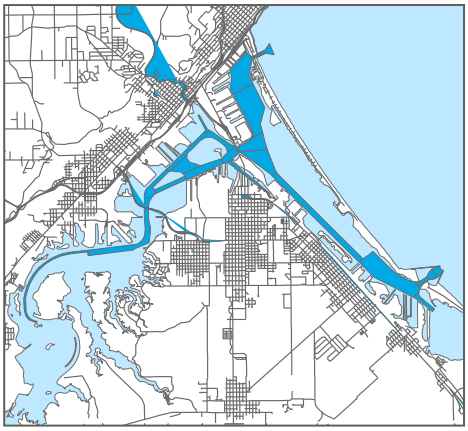
Figure 4.54: Helberg Drive on Rices Point

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 4.55: 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.

Management of dredge materials at Erie Pier

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. LSCWI 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.

CN ore docks in Duluth

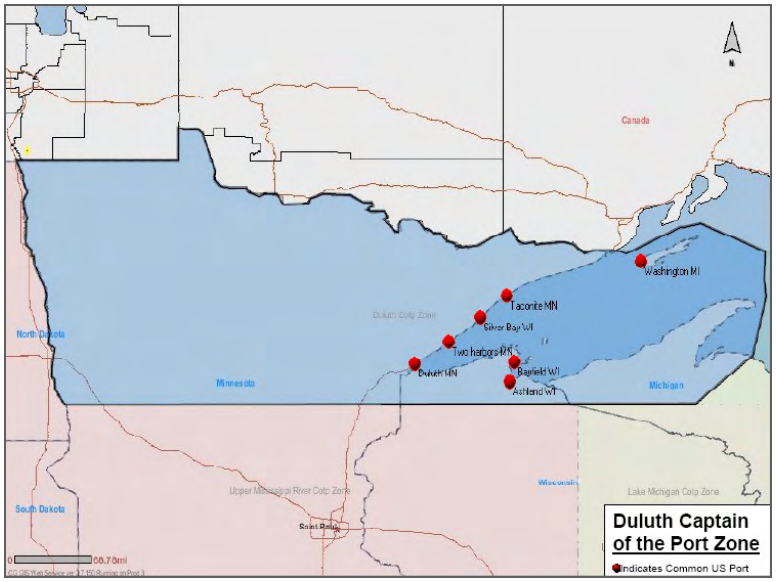
The majority of the port facilities in the Duluth-Superior port are privately owned and operated. Some are subsidiaries of large national companies. Midwest Energy Resources Company is a subsidiary of Detroit Edison and moves up to 20 million tons of low sulfur coal each year from the Powder River Basin 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.

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.

Lift of oversize cargo leaving Duluth for Alberta, Canada.

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.

- 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

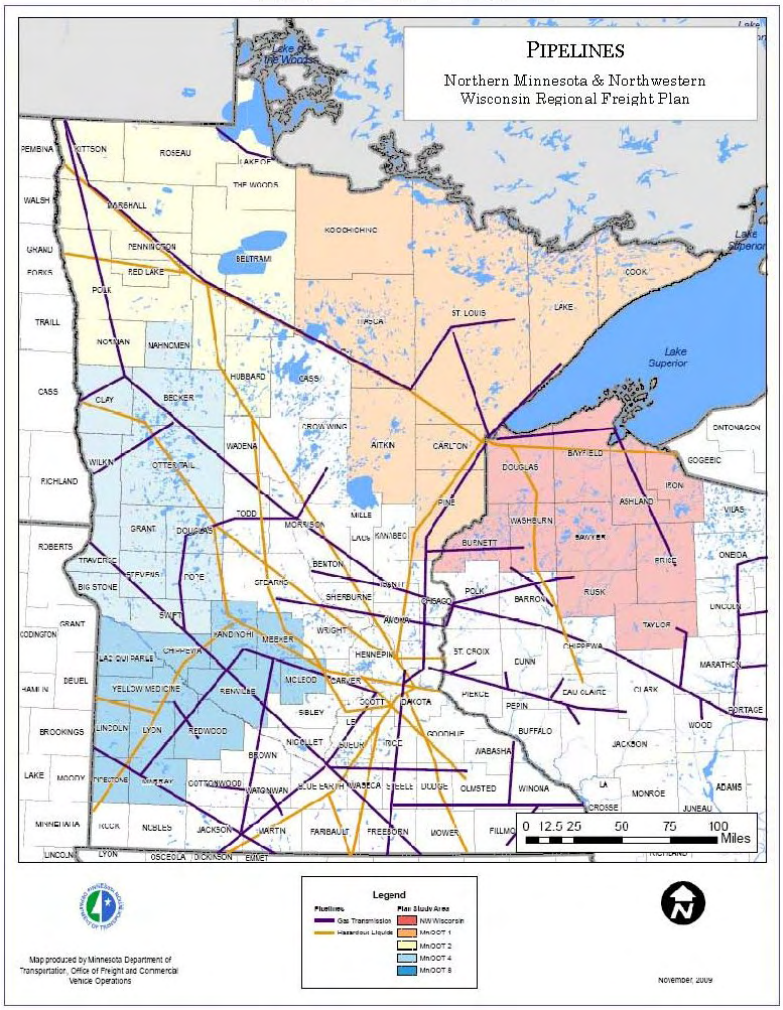


Figure 4.57 shows the extent of the pipeline network throughout Northern Minnesota and Northern Wisconsin. The system moves a significant tonnage of gas and hazardous liquids to and throughout the region, including the transportation of more than 75 different types of crude oil and natural gas. The end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

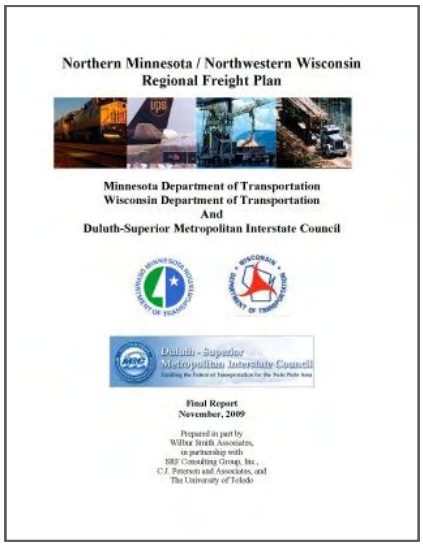
Several power and transmission companies account for the ownership and operation of regional pipeline. Magellan Midstream Partners L.P.

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.


Northern Minnesota / Northwestern Wisconsin
Regional Freight Plan

Minnesota Department of Transportation
Wisconsin Department of Transportation
And
Duluth-Superior Metropolitan Interstate Council

Final Report
November, 2009

Prepared in part by
Wilbur Smith Associates,
in partnership with
SRF Consulting Group, Inc.,
C.J. Petersen and Associates, and
The University of Toledo

Regional Freight Plan, adopted in 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

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

5. Projects & Funding

This section of CONNECTIONS 2040 explains how transportation improvements are funded in Duluth-Superior, and more specifically how federal funding gets applied to projects within the MIC area. This section describes how the area's long-range list of transportation improvement projects was developed, and how those projects were then assessed for air quality conformity and community impacts.

Planning and Funding Transportation Projects in Duluth-Superior

Because building and maintaining transportation infrastructure is expensive and typically takes years of planning and engineering before construction can begin, transportation projects require programming, which is the process of lining up federal, state, and local funding sources for such projects.

This chapter of Connections 2040 identifies future transportation projects that are being planned for in the Duluth-Superior area over the next 25 years. It also provides an estimation of the funding that will be available to finance those projects. Such estimates help members of the MIC and its local and regional transportation partners determine the financial feasibility of planned projects.

As explained in Chapter 2, the development and implementation of Connections 2040 is guided by a series of federal laws and regulations. Among these are 23 U.S.C 134(i)(2)(C) and 49 U.S.C 5303(f)(B), which require metropolitan transportation plans to be fiscally constrained. As such, this chapter contains the following:

- Financial assessment showing reasonably expected funding sources and demonstrating fiscal constraint (p. 5-7)
- 25-year list of transportation improvements, organized by jurisdiction (p. 5-12)
- Community impact assessment of planned projects (p. 5-31)
- Historical preservation and environmentally sensitive areas assessment of planned projects (p. 5-33)

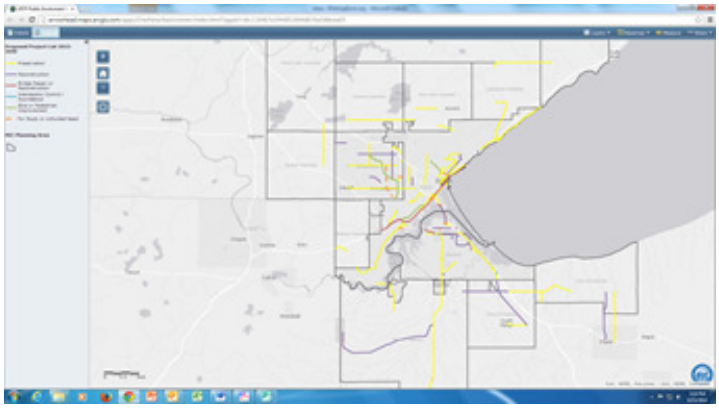
Planning Transportation Projects for 25 Years

The following pages contain future transportation projects that were identified through the development of CONNECTIONS 2040. The selection of these projects was based in part on the various transportation goals and objectives for the area (Chapter 1), the federal and state policies guiding this plan (Chapter 2), the various trends and projections for the area (Chapter 3), and the current performance of the existing transportation system (Chapter 4).

The projects that are listed on the following pages are organized according to the various transportation jurisdictions in the area. The

project ID numbers listed in the first column correspond with those labeled in an interactive project map that can be accessed at: www.dsmic.org/lrtp (see Figure 5.1 below and the information in sidebar at right). The locations of the projects are also illustrated in the Map 5.1 and Map 5.2 found on pages 5-32 and 5-34.

Figure 5.1: Connections 2040 interactive web map



The implementation of the projects identified in CONNECTIONS 2040 are being planned according to one of three timeframes: short-range (2015-2019), mid-range (2020-2024), and long-range (2025-2040). These timeframes represent the following distinctions:

Short-Range Projects (2015-2019)

Projects already planned and being programmed in either the Duluth Area or Superior Area Transportation Improvement Projects (TIPs). These documents identify federal, state, and local funding sources and amounts to be applied to the projects listed with in them.

Mid-Range Projects (2020-2024)

Projects identified by jurisdictions and already part of their ten-year capital improvement programs. Local funding sources have already been identified for many of these projects.

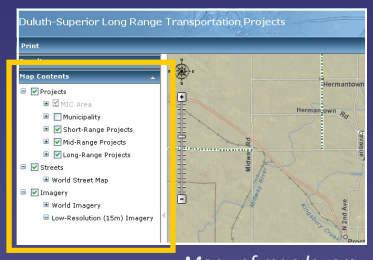
Long-Range Projects (2025-2040)

Projects that jurisdictions anticipate doing beyond 20 years out, but are currently not part of any capital improvement program. Federal, state, and local funding sources have not yet been identified for these projects, though such funding is reasonably expected to be available for them.

Using the *Connections 2040* Interactive Project Map:

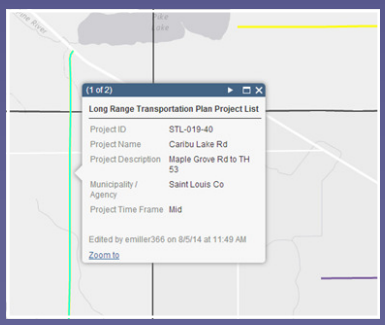
Projects identified in this long range plan can be viewed with an interactive map. The map provides for the ability to adjust the scale to improve viewing, as well as retrieve details about specific projects.

Projects are organized by the timeframe in which they're planned to implemented. All projects belonging to a timeframe can be added or removed from the map using the menu at the left of the map.



Menu of map layers

Using the cursor arrow to select individual projects and open a dialogue showing details about project costs, timeframe, and the responsible jurisdiction.



Click on projects in the map to get details about the individual projects.

Defining Project Types

For the purposes of this plan, the projects identified have been categorized according to the descriptors listed at right. This is useful for a number of reasons, but also provides for a quick glimpse of the area's investment priorities. Figure 5.2, for instance, shows how the number of projects categorized as either "Reconstruction" or "Preservation" represent 69% of the projects listed in the plan. This is in stark contrast to the 5% of the projects identified as either "Construction" or "Enhancements". This is, in large part, a reflection of the financial challenges being projected for the transportation system. Figure 5.3 shows that projects aimed at merely maintaining existing highway infrastructure and transit operations accounts for 97% of the $1.5 billion estimated total cost for all projects that can be funded with future revenues that can be reasonably anticipated.

Figure 5.2: Number of planned projects by type (2010-2035)

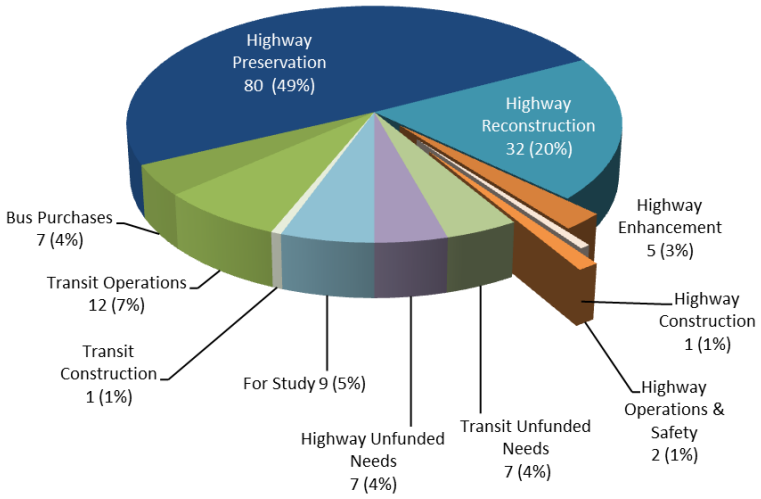
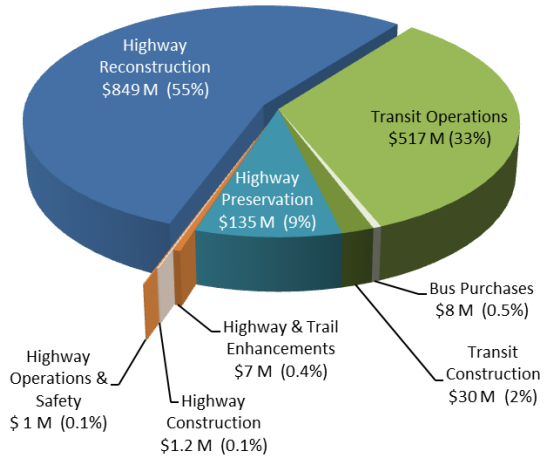


Figure 5.3: Total costs of planned projects by type (2010-2035)



Connections 2040 Project Types:

For the purposes of tracking and analysis, projects included in this plan have been classified as one of the following:

Construction

Projects resulting new infrastructure, such as the building of new facilities or additional lane capacity along existing roadways.

Enhancement

Elements being added to an existing facility that enhance the comfort, safety, or accessibility of that facility.

Reconstruction

Projects that rebuild or rehab existing facilities without adding more capacity or change roadway alignment.

Preservation

Projects that retain or restore the condition of existing facilities through repaving or similar activities.

Operations & Maintenance

Maintenance efforts or spot improvements aimed at maintaining existing levels of service or improving the efficiency and safety of existing facilities without adding capacity.

Vehicle Replacements

The purchase of new transit vehicles to replace older vehicles for the purpose of maintaining service quality and managing ongoing maintenance costs.

Unfunded Need

Needs that jurisdictions anticipate having to address within the next 25 years but would not be able to fund with the levels of revenue that can reasonably be expected to be available over that period of time.

For Study

A need or potential need that has been identified, but appropriate treatments have not yet been determined.

Identifying Projects based on Investment Priorities

As explained in Chapter 3, population and employment projections suggest a level of growth over the next 25 years that will produce capacity challenges in some locations throughout the roadway network. Over this same period, however, the cost of maintaining Duluth-Superior's existing transportation infrastructure is expected to more than double due to the rising cost of construction materials and the effects of inflation. Because of this, reconstruction and preservation projects were identified early on in the CONNECTIONS 2040 planning process as high priorities for future transportation investments in the area.

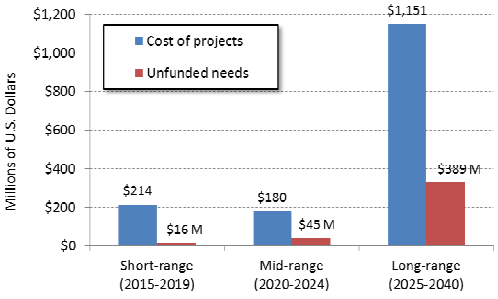
Project Selection

The projects included in this plan were identified in coordination with the various transportation jurisdictions in the area. Staff from the MIC engaged officials and representatives of the area's various municipalities and jurisdictions by reporting on baseline data regarding demographics and trends. This included estimates regarding the existing condition of transportation infrastructure and the projected costs of maintaining that infrastructure over the life of the plan. This information was then compared against the planning objectives and existing capital improvement plans (CIPs) of the jurisdictions in order to identify and prioritize transportation projects for inclusion in CONNECTIONS 2040.

Unfunded Needs

During the process of identifying projects, it became increasingly clear that more projects were being planned for the area than there would be funding available. This was verified through the method of financial assessment described on pages 5-7 through 5-11. Because federal law and regulations require metropolitan transportation plans such as CONNECTIONS 2040 to be fiscally constrained to only the sources of revenue that can be clearly identified and reasonably expected to be available, some projects had to be relegated to a status of "Unfunded Need". These projects, along with their estimated costs, are listed on pages 5-28 through 5-29. Even though the area's jurisdictions will continue to plan for them, the future implementation of these projects will be contingent upon sources of funding that cannot be identified at this time. Figure 5.4 shows the total estimated costs of these "unfunded" projects relative to those of the projects which have been deemed fundable. Tables 5.1 and 5.2 on the following page display this same information in terms of the different project types. More than $389 million dollars of projects have been identified as unfunded needs. Approximately 77% of this amount

Figure 5.4: Estimated costs of planned projects and unfunded needs (2015-2040)



Is associated with the reconstruction of area roadways and bridges and 19% is associated with projected shortfalls in funding needed to maintain existing levels of transit service in the area.

Table 5.1: Planned investments by time period and project type (millions)

Project Type	*Short-range (2015-2019)*	*Mid-range (2020-2024)*	*Long-range (2025-2040)*	*Totals*
Construction	$31.2	$0.0	$0.0	*$31.2*
Enhancement	$6.7	$0.0	$0.0	*$6.7*
Reconstruction	$53.5	$40.9	$755.0	*$849.4*
Preservation	$40.3	$61.9	$33.3	*$135.5*
Highway Ops. & Maint.	$0.5	$0.6	$0.0	*$1.1*
Transit Ops. & Maint.	$76.8	$76.2	$361.1	*$514.1*
Vehicle Purchases	$5.0	$0.7	$2.0	*$7.7*
Total	$214.0	$180.3	$1,151.4	*$1,545.7*

Table 5.2: Unfunded needs by time period and project type (millions)

Project Type	*Short-range (2015-2019)*	*Mid-range (2020-2024)*	*Long-range (2025-2040)*	*Totals*
Construction	- -	- -	$17.7	*$17.7*
Enhancement	- -	$3.5	- -	*$3.5*
Reconstruction	- -	$19.7	$184.8	*$204.4*
Preservation	- -	$4.9	- -	*$4.9*
Highway Ops. & Maint.	- -	- -	- -	- -
Transit Ops. & Maint.	- -	- -	$74.9	*$74.9*
Vehicle Purchases	$16.2	$17.0	$50.5	*$83.7*
Total	$16.2	$45.1	$327.9	*$389.1*

Projects identified as "For Study"

In addition to the projects identified as "unfunded needs", other projects (or potential projects) were identified, but for which appropriate solutions have not yet been determined. Examples of this are the potential design and construction of passenger terminals in Duluth and Superior for future high-speed rail service to the area. The feasibility of such a service is being studied at this time and it is too early to know size, extent, or scope of such projects. Projects like this were classified as being "For Study". These projects are listed on page 5-30. Because the extent of the work required for these projects has not yet been established, there are no cost estimates associated with them at this time.

FINANCIAL ASSESSMENT

This section describes the methods used to forecast the levels of revenue expected to be available to the MIC area jurisdictions for investments in surface transportation (i.e. public roads and transit services) over the next 25 years. It also describes the methods used to estimate system-level needs and determine jurisdictions' ability to fund the projects being identified in CONNECTIONS 2040.

Forecasting Future Revenues

The MIC consulted with staff from MnDOT District 1, WisDOT's NW Regional Office in Superior, and the DTA to develop estimates of the federal and state dollars that will be available to those agencies over the next 25 years. For estimates of local revenues, information was retrieved from the Minnesota Office of the State Auditor and the Wisconsin Department of Revenue regarding the amount of "capital outlay" that the area's cities and counties have historically directed to highway improvement projects. In all cases, these estimates represent a mix of federal, state, and local funding sources.

Table 5.3 shown at right displays the estimated average annual revenues available to MIC area jurisdictions. The jurisdictions of St. Louis County, MN and Douglas County, WI extend well beyond the MIC boundaries, and it was first assumed that they would, over time, spend a portion of their revenues equal to the percentage of their system that exists within the MIC area. Douglas County engineering, however, has communicated an intention to focus a majority of their resources on some specific roads within the MIC area in the coming years.

A slightly different approach was taken with the DOTs. Based on the relative numbers and sizes of other population centers in these regions - as well as the amount and expanse of existing DOT infrastructure within the MIC area - it was estimated that no more than 45% of MnDOT District 1's and no more than 16% of WisDOT NW Region's forecasted revenues could be reasonably expected to be available to the area over the life of the plan. Table 5.3, therefore, represents the average annual revenues according to these percentages.

Public revenues such as those in represented in Table 3, are subject to the effects of inflation over time. On the other hand, it is recognized that all levels of government in the U.S. are facing both funding shortfalls and public opposition to increased taxes. To model these realities, and an annual inflation rate of 1% was applied to the revenue estimates shown in Table 5.3, beginning in year 2015 and projected out 2040. This resulted in the short-, mid-, and long-range revenue forecasts shown in Table 5.4 on the following page.

Table 5.3: Estimated annual transportation revenues available to MIC area jurisdictions

Jurisdiction	*Avg. annual revenues*
MnDOT Dist. 1 [a]	$45,472,840
St. Louis County, MN [b]	$8,170,410
City of Duluth, MN	$8,020,865
City of Hermantown, MN	$477,510
WisDOT NW Region [a]	$8,839,520
Douglas County, WI [c]	$432,598
City of Superior, WI	$1,196,360
DTA [d]	$18,328,040

Sources: MnDOT District 1, WisDOT NW Region, Duluth Transit Authority, Minnesota Office of the State Auditor; Wisconsin Department of Revenue, 2009.

***a** - 45% of MnDOT District 1 revenues; 16% of WisDOT NW Region revenues.*

***b** - Estimating availability of 22.5% of county's highway expenses (based on portion of road miles w/n the MIC).*

***c** - Estimating availability of 100% of county's highway expenses.*

***d** - DTA revenues represent FHWA funding available for bus purchases, FTA funding available for operations and capital improvements, plus local and state revenue sources.*

Table 5.4: Estimated annual transportation revenues available to MIC area jurisdictions: 2015-2040

Jurisdiction	*Short range (2015-2019)*	*Mid range (2020-2024)*	*Long range (2025-2040)*	*Total*
MnDOT Dist. 1	$276,681,229	$204,506,786	$712,928,780	$1,194,116,795
St. Louis County, MN	$42,094,079	$44,241,300	$157,313,523	$243,648,903
City of Duluth, MN	$26,649,645	$28,009,045	$99,594,757	$154,253,448
City of Hermantown, MN	$3,619,418	$5,353,725	$12,694,782	$21,667,924
WisDOT NW Region	$45,541,340	$47,864,406	$170,196,588	$263,602,334
Douglas County, WI	$11,730,269	$12,328,630	$43,838,229	$67,897,128
City of Superior, WI	$9,924,127	$10,430,358	$37,088,338	$57,442,822
DTA	$82,600,000	$102,663,017	$363,421,857	$548,684,875

Forecasting System-level Needs

Once revenue forecasts were developed, an effort was made to estimate system-level needs for comparison. The purpose for doing this was to determine the potential costs of maintaining the existing system in addition to any construction projects (representing system expansion) that might be come to be identified in CONNECTIONS 2040.

Estimates were derived by gathering information about the existing condition of road pavements and the annual operating costs of maintaining current levels of transit service in the area. The future costs of addressing these needs were projected out to the year 2040 and were adjusted to account for the effects of inflation over those 25 years.

Estimating future roadway needs

Pavement condition ratings, as assessed by the individual jurisdictions, were used to estimate the levels of need that currently exist across the area's road network. The method of rating pavements differs among the jurisdictions, so the ratings were indexed and categorized according to one of three condition classes: "Good", "Fair", or "Poor". The cost-per-mile estimates shown in Table 5.5 were then applied to these totals to represent what it would take to maintain the miles of "Good" pavement and convert the miles of "Fair" and "Poor" pavements to a "Good" condition within the 25-year timeframe of this plan. These per-mile estimates were based on the average costs-per-mile of recent projects in the area and were vetted by jurisdiction officials.

Table 5.5: Cost-per-mile estimates to address pavement needs

Pavement condition	*DOTs*	*Municipalities*
"Good"	$155,000/mi	$68,000/mi
"Fair"	$1,600,000/mi	$700,000/mi
"Poor"	$7,000,000/mi	$3,100,000/mi

The methodology described above only produces, at best, a gross estimate of the long-term needs that each jurisdiction faces. For one thing, it assumes that each mile is alike in terms of its

dimensions and the cost of its materials. Secondly, those estimates are based on data that does not sufficiently speak to the potential needs that may exist with the road base and any infrastructure that may exist beneath the pavement; it does not account for the even greater costs that may be associated with the maintenance or reconstruction of bridges.

Because large bridge structures represent substantially greater investments per mile than roads, it was decided that any bridge projects identified for inclusion in the CONNECTIONS 2040 plan should be added on top of the estimated pavement needs. MnDOT and WisDOT both identified bridge projects, the estimated costs of which are represented in Figure 5.5 at right. As shown in that figure, the estimated costs of the bridge projects and pavement needs would be covered under the revenues projected.

The future looks more challenging for the local highway jurisdictions. When compared with the estimated pavement needs, projected revenues fall far short (Figure 5.6). Based on these estimates, area jurisdictions could be facing $1.2 billion in unfunded needs over the next 25 years. It is also important to note that, whereas the projected revenues shown in Figure 5.6 have been inflated, the costs of estimated need have not.

The challenges being forecasted with these estimates of system need were presented to jurisdictions and stakeholders early on in the development of CONNECTIONS 2040. They were prominent in discussions about the priorities for transportation investments in the area and helped to shape the list of projects that are identified on pages 5-12 through 5-29 of this plan, of which 93% are projects aimed at preserving or reconstructing existing roads and bridges.

Figure 5.5: Comparison of estimated needs and revenue projections for DOT facilities within the MIC area: 2015-2040

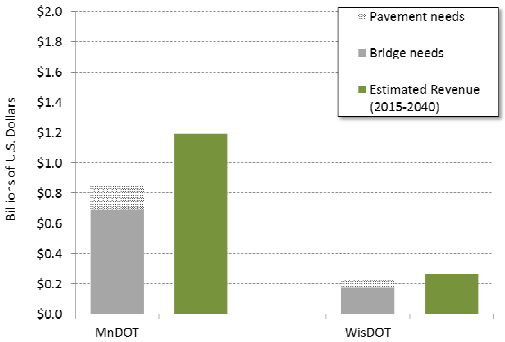
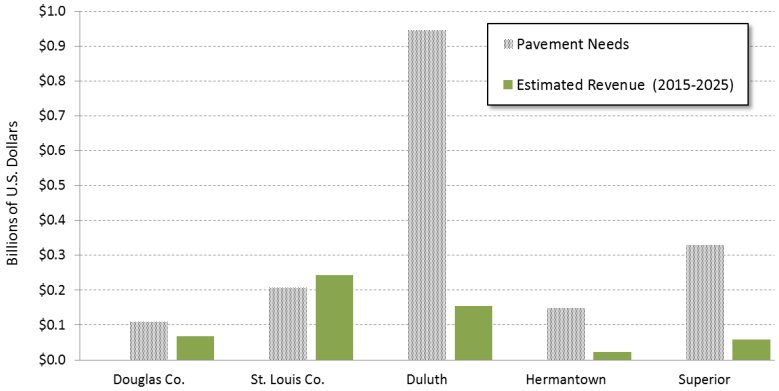


Figure 5.6: Comparison of estimated needs and revenue projections for local jurisdictions within the MIC area: 2015-2040



Estimating future transit needs

To estimate future needs for Duluth-Superior's public transit system, the current annual cost of operations and costs of bus replacements were forecasted out over 25 years.

The DTA spends approximately $11.6 million annually on operations and maintenance. It has also been spending approximately $500,000 per replacement vehicle for its fleet of regular route buses. It also spends approximately $145,000 to replace a 30-foot STRIDE bus and $65,000 to replace its smaller size STRIDE vehicles.

To ensure compliance with FTA regulations and meet its own objectives regarding passenger safety and comfort, as well as operational efficiency, the DTA maintains a vehicle replacement schedule of 10 regular route buses every other year and alternates between 3 and 6 new STRIDE vehicles in the intervening years. In order to continue this replacement schedule over the next 25 years, the DTA is planning to purchase 120 regular route buses and 39 STRIDE vehicles between 2015 and 2040.

The projected costs of maintaining the DTA's existing levels of service are shown in Table 5.6 below. Because the estimates used to build these projections were deemed to be more accurate than those used to estimate roadway needs, they were factored for a 3.5% annual rate of inflation, as was recommended by staff at the DTA. When these estimated future costs are compared to the revenues projected for the DTA over the coming 25 years, it appears that transit service could be underfunded by $40.5 million, and that this shortfall would occur after 2024 (Figure 5.7).

A large part of the projected funding shortfall comes from the fact that FHWA funding being "flexed" for bus purchases has been reduced by approximately 80% in the past few years, and the DTA has not been able to identify additional sources of funding to make up for that difference. That funding, therefore, could not be reasonably expected to be available in the future projections.

Figure 5.7: Comparison of estimated needs and revenue projections for DTA transit services within the MIC area: 2015-2040

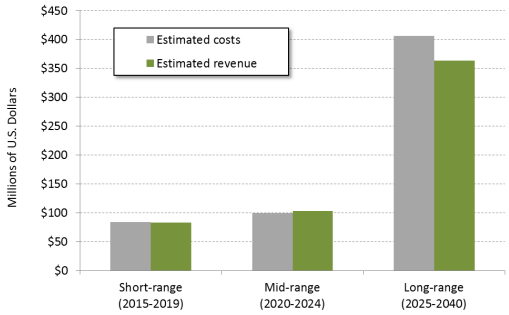


Table 5.6: Estimated financial resources to maintain existing levels of DTA transit service in the MIC area: 2015-2040

Expenditure	*Short range (2015-2019*	*Mid range (2020-2024)*	*Long range (2025-2040)*	*Total*
Operations and maintenance	$ 66.9 M	$ 79.5 M	$ 346.7 M	$ 493.1 M
Regular route bus	30 buses: $ 16.0 M	30 buses: $ 18.4 M	60 buses: $ 53.6 M	$ 88.0 M
30' STRIDE bus	6 buses: $ 0.9 M	6 buses: $ 1.1 M	18 buses: $ 4.7 M	$ 6.7 M
Small STRIDE vehicle	3 vehicles: $ 0.2 M	3 vehicles: $ 0.2 M	9 vehicles: $ 1.0 M	$ 1.4 M
Total	*$ 84 million*	*$ 99.2 million*	*$ 406 million*	*$ 589.2 million*

Comparing CONNECTIONS 2040 Projects to Forecasted Revenue

An assessment of the potential needs system wide helped in developing a long-range list of projects that prioritizes system preservation. That list of projects, however, also needed to be vetted against the levels of revenue expected to be available over the next 25 years. Table 5.7 shows the result of that assessment.

The estimated costs of future highway projects were adjusted to reflect a 5% annual rate of inflation, while transit projects were factored for a 3.5% rate of inflation. These costs were then compared to the levels of future revenues shown in Table 5.4 on page 5-8. The results showed a projected shortfall of $240 million dollars. To ensure a fiscally constrained transportation plan that represented preservation priorities, the MIC worked with the area jurisdictions to select a number of projects for removal. This resulted in the list of projects presented in the following pages. Projects that were removed from the original list are identified as "unfunded needs" on page 5-28.

Table 5.7: Results of a financial capability assessment of original list of CONNECTIONS 2040 projects.

Jurisdiction	*Short range (2015-2019*	*Mid range (2020-2024)*	*Long range (2025-2040)*	*Funded/Unfunded*
MnDOT Dist. 1	Revenues: $ 276,681,229 Costs: $ 8,823,943 Deficits: - -	Revenues: $ 204,506,786 Costs: $ 25,742,000 Deficits: - -	Revenues: $ 712,928,780 Costs: $ 675,000,000 Deficits: - -	Funded: $ 709,565,943 Unfunded: - -
St. Louis, County	Revenues: $ 42,094,079 Costs: $ 15,425,000 Deficits: - -	Revenues: $ 44,241,300 Costs: $ 19,896,320 Deficits: - -	Revenues: $ 157,313,523 Costs: $ 0 Deficits: - -	Funded: $ 35,321,320 Unfunded: - -
City of Duluth, MN	Revenues: $ 26,649,645 Costs: $ 25,065,760 Deficits: - -	Revenues: $ 28,009,045 Costs: $ 12,592,960 Deficits: - -	Revenues: $ 157,313,523 Costs: $ 68,234,000 Deficits: - -	Funded: $ 82,372,720 Unfunded: $23,520,000 *
City of Hermantown, MN	Revenues: $ 3,619,418 Costs: $ 3,500,000 Deficits: - -	Revenues: $ 5,353,724 Costs: $ 13,581,560 Deficits: ($ 8,227,835)	Revenues: $ 12,694,781 Costs: $ 13,867,000 Deficits: ($ 1,172,219)	Funded: $ 18,625,000 Unfunded: $ 12,323,560
WisDOT NW Region	Revenues: $ 42,094,079 Costs: $ 18,422,000 Deficits: - -	Revenues: $ 44,241,300 Costs: $ 157,313,523 Deficits: - -	Revenues: $ 157,313,523 Costs: $ 282,824,390 Deficits: ($ 112,627,802)	Funded: $ 150,375,550 Unfunded: $ 175,000,000
Douglas County, WI	Revenues: $ 11,730,269 Costs: $ 7,061,600 Deficits: - -	Revenues: $ 12,328,630 Costs: $ 29,490,440 Deficits: ($ 17,161,810)	Revenues: $ 43,838,229 Costs: $ 12,404,000 Deficits: - -	Funded: $ 29,267,600 Unfunded: $ 19,688,440
City of Superior, WI	Revenues: $ 9,924,127 Costs: $ 6,882,912 Deficits: - -	Revenues: $ 10,430,358 Costs: $ 5,970,729 Deficits: - -	Revenues: $ 37,088,338 Costs: $ 12,257,422 Deficits: - -	Funded: $ 25,111,063 Unfunded: - -
Duluth Transit Authority	Revenues: $ 112,600,000 ** Costs: $127,999,690 Deficits: ($ 15,399,690)	Revenues: $ 102,663,017 Costs: $115,503,797 Deficits: ($ 12,840,780)	Revenues: $ 363,421,857 Costs: $ 436,049,825 Deficits: ($ 72,627,968)	Funded: $ 573,433,399 Unfunded: $158,589,253

Total Deficit: ($ 240,058,104)

Projects identified as "unfunded need": $ 389,121,254

* Projects representing system expansion or a level of redesign and reconstruction that was deemed "unfunded" in light of Duluth's total projected preservation needs.

** Revenues include $30,000,000 includes a mix of FTA, State bond funds, and local and private investments for the construction of a downtown multimodal transit facility which have already been secured by the DTA.

List of Transportation Projects: 2015 - 2040

MIC staff met with all jurisdictions within the Duluth-Superior metropolitan planning area to identify those transportation projects they plan to pursue over the next twenty-plus years. These projects have been identified as jurisdictional needs or interests and are listed in the following pages by jurisdiction and timeframe: short-range (years 2015 to 2019), mid-range (years 2020 to 2024), or long-range (years 2025 to 2040). It should be noted that, due system-wide preservation needs, many more projects will be implemented in the mid-range and long-range years than those listed, but it is too early to identify specific those projects, costs or years of construction.

Projects eligible for inclusion in the CONNECTIONS 2040 project list are generally limited to functionally classified roadways, but some projects located on non-classified routes (e.g. bridges, trails, etc.) are included because they are eligible for other state program funding.

Most of the projects listed for implementation in the short-range are accompanied by the estimated federal, state and "other" funding sources (e.g. local match, bonding, assessments, etc.) that the jurisdictions plan to apply to them. Projects that do not show estimates for these individual sources are projects where information was still pending at the time of the CONNECTION 2040's release.

The following list of projects *does not* represent a "wish list" for the jurisdictions. It has been fiscally constrained within the levels of future revenues forecasted for the MIC area over the next 25 years. Estimated costs associated with the project list have been assessed using the methodology outlined in CONNECTIONS 2040. Projects that appear to exceed jurisdictions' ability to fund them with existing levels of funding, or for which non-traditional funding sources have yet been secured, are identified as "Unfunded Needs" on pages 5-28 and 5-29. Projects being planned for, but for which their design or extent of their costs can not yet be determined are shown as "For Study" on page 5-30.

Contents:

Explanation of gaps in Project ID numbers:
As projects were brought forward for potential inclusion in CONNECTIONS 2040, they were given a unique identifier. Subsequent analysis and discussions resulted in the rearranging or removal of some of these projects. In order to keep track of projects throughout the process, no ID numbers were changed, which is the reason for inconsistencies in the order of project ID numbers in the following lists.

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
M-001-40	INTERSTATE 35	Preservation			$1,500,000		$1,500,000
	I-35 In Duluth: drainage improvements, repairs, bridge column repair and painting						
M-002-40	MN STH 23	Appurtenance			$3,035,000	$496,572	$3,531,572
	***CIMS** MN 23, FROM I-35 TO BECKS ROAD*						
M-003-40	MN STH 23	*Preservation*			$3,200,000		$3,200,000
	MN 23 in Duluth: replace/rehabilitate Br 5757 over Mission Creek						
M-004-40	MN STH 39	*Preservation*					$592,371
	JCT TH-23 to W End Br 6544, Reclaim and Overlay						
Total:							$8,823,943

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
M-005-40	INTERSTATE 35	Reconstruction					$4,257,000
	Over Kingsbury Creek, Replace Br. No. 3633						
M-006-40	INTERSTATE 35	Reconstruction					$10,965,000
	Thompson Hill, From N End Br over DMIR RR to N End Br 69879 Over TH 23						
M-007-40	INTERSTATE 35	Reconstruction					$5,805,000
	Over CNRR, Replace, Br. No. 6501						
M-008-40	INTERSTATE 535	Preservation					$1,330,000
	Over Garfield Ave, Improve Br. No. 69808A						
M-009-40	INTERSTATE 535	Preservation					$1,330,000
	Over BNSF RR, Improve Br. No. 69809						
M-010-40	INTERSTATE 35	Preservation					$2,055,000
	At 27th Ave W, Redeck Br # 69834						
Total:							$25,742,000

Long-term Projects (2025-2040)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
M-011-40	INTERSTATE 535	Reconstruction					175,000,000*
	Blatnik Bridge						
M-012-40	INTERSTATE 35	Reconstruction					500,000,000*
	I-35 at I-535 Interchange Reconstruction ("Can of Worms").						
Total:							$675,000,000*

* Projects shown beyond the year 2025 are not identified in MnDOT's current 10-year Strategic Highway Investment Plan, 2011-2033. Although the financial capability analysis used in *Connections 2040* shows that the estimated cost of these projects is fundable under future revenue projections, MnDOT does not necessarily share these assumptions and considers these projects unfunded at this time.

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
STL-001-40	MARTIN RD *Midway Rd. to Rice Lake Rd*	Preservation	Exempt: S-10				$3,125,000
STL-002-40	ARLINGTON AVE *TH 53 (Trinity Rd) to Arrowhead Rd*	Preservation	Exempt: S-10				$2,000,000
STL-003-40	E 4TH ST *6th Ave E to Woodland Ave*	Reconstruction	Exempt: S-10				$6,000,000
STL-004-40	WEST TISCHER RD *Rice Lake Rd to Jean Duluth Rd*	Preservation	Exempt: S-10				$2,300,000
STL-005-40	BECKS RD *West County Line to Midway Rd.*	Preservation	Exempt: S-10				$1,100,000
STL-006-40	RICE LAKE RD *Construct sidewalk: Central Entrance to Arrowhead Rd*	Construction	Exempt: A-2				$400,000
STL-007-40	RICE LAKE RD *Intersection of Rice Lake Rd and Airport Rd*	Intersection Control	Exempt: E-2				$500,000
Total:							$15,425,000

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
STL-008-40	MAPLE GROVE RD *Midway Rd. to Lavaque Rd.*	Preservation	Exempt: S-10				$2,552,000
STL-009-40	MAPLE GROVE RD *Lavaque Rd. to 100' E. of Westburg Rd.*	Preservation	Exempt: S-10				$1,508,000
STL-010-40	STRAND RD *W. Tischer Rd. to Lester River Rd*	Preservation	Exempt: S-10				$498,800
STL-011-40	LESTER RIVER RD *60th Ave. East to Strand Rd*	Preservation	Exempt: S-10				$2,088,000
STL-012-40	CULBERTSON RD *Homestead Rd. to East County Line*	Preservation	Exempt: S-10				$932,640

STL-013-40	WEST KNIFE RIVER RD *W. Knife River Rd. to Culbertson Rd*	Preservation	Exempt: S-10	$508,080
STL-014-40	CALVARY RD *Howard Gnesen Rd. to Woodland Ave.*	Preservation	Exempt: S-10	$1,044,000
STL-015-40	AIRBASE RD *Arrowhead Rd. to TH 53*	Preservation	Exempt: S-10	$438,480
STL-016-40	LISMORE RD *N. Tischer Rd to Ryan rd.*	Preservation	Exempt: S-10	$2,784,000
STL-017-40	MORRIS THOMAS RD *Midway Rd. to Lavaque Rd*	Preservation	Exempt: S-10	$2,204,000
STL-018-40	MORRIS THOMAS RD *Lavaque Rd. to Piedmont Ave*	Preservation	Exempt: S-10	$2,436,000
STL-019-40	CARIBOU LAKE RD *Maple Grove Rd. to TH 53*	Preservation	Exempt: S-10	$1,162,320
STL-020-40	BECKS RD *TH 23 to County Bridge 235*	Preservation	Exempt: S-10	$1,160,000
STL-021-40	MIDWAY RD *Intersection of Midway Rd and Maple Grove Rd*	Intersection Control	Exempt: E-2	$580,000
Total:				$19,896,320

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DUL-001-40	SUPERIOR STREET: DOWNTOWN *6th Ave W to 4th Ave E Reconstruction*	Reconstruction	Exempt: S-10		$5,200,000		$5,200,000
DUL-002-40	AERIAL LIFT BRIDGE *Structural maintenance and painting*	Preservation	Exempt: S-19		$6,000,000		$6,000,000
DUL-003-40	TH23 IMPROVEMENTS *I-35 to Becks Road corridor enhancements with CIMS Grant*	Preservation	Exempt: A-2		$3,800,000		$3,800,000
DUL-004-40	WOODLAND AVE *4th Street to Kent Rd, and Calvary Rd to Martin Rd*	Preservation	Exempt: S-10	$920,000	$480,000		$1,400,000
DUL-005-40	RIDGEVIEW RD *Secondary access road ro Air National Guard Base*	Construction	Exempt: S-10	$1,000,000		$250,000	$1,250,000
DUL-006-40	CROSS CITY TRAIL *30th Ave W to Pulaski St*	Construction	Exempt: A-2	$1,784,951		$784,000	$2,568,951
DUL-007-40	LAKWALK TRAIL *20th Ave E to 23rd Ave E*	Construction	Exempt: S-10	$185,447		$46,362	$231,809
DUL-008-40	DECKER RD *Piedmont Ave to Mall Dr*	Preservation	Exempt: S-10	$900,000	$500,000		$1,400,000
DUL-009-40	NORTH SHORE SCENIC DR *Brighton Beach to McQuade Safe Harbor*	Preservation	Exempt: S-10		$3,215,000		$3,215,000
Total:							$25,065,760

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DUL-010-40	9TH STREET / 8TH STREET (MSA 134) *6th Ave. E. to Woodland Ave*	Preservation	Exempt: S-10				$1,429,120
DUL-011-40	RALEIGH ST *Grand Ave to Central Ave*	Preservation	Exempt: S-10				$603,200
DUL-012-40	6TH AVENUE E. and CENTRAL ENTRANCE *2nd St. to 9th St to Mesaba Ave*	Preservation	Exempt: S-10				$1,160,000
DUL-013-40	DOWNTOWN AVENUES *2nd Street Alley to 4th Street*	Preservation	Exempt: S-10				$1,160,000
DUL-014-40	AERIAL LIFT BRIDGE	Preservation	Exempt: S-10				$3,480,000

	Structural Rehabilitation and Painting						
DUL-015-40	COLLEGE ST *Kenwood Ave to Woodland Ave*	Preservation	Exempt: S-10				$1,002,240
DUL-016-40	SKYLINE PKWAY *11th S to Kenwood Ave*	Preservation	Exempt: S-10				$593,920
DUL-017-40	3RD STREET *Mesaba Ave to 21st Ave E*	Preservation	Exempt: S-10				$1,856,000
DUL-018-40	LAKE AVE *Railroad St to 13th St*	Preservation	Exempt: S-10				$733,120
DUL-019-40	CANAL PARK DR *Lake Ave to Buchanan S*	Preservation	Exempt: S-10				$575,360
Total:							$12,592,960

Long-term Projects (2025-2040)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DUL-020-40	AERIAL LIFT BRIDGE *Structural Rehabilitation and Painting*	Preservation	Exempt: S-10				$5,943,000
DUL-021-40	GARFIELD AVE *Superior Street to Bridge:*	Preservation	Exempt: S-10				$1,683,850
DUL-022-40	43RD AVENUE E. *London Rd. to Superior St*	Reconstruction	Exempt: S-10				$1,981,000
DUL-023-40	SKYLINE PKWAY *Hwy 2 to Vinland St*	Preservation	Exempt: S-10				$2,440,592
DUL-024-40	SKYLINE PKWAY *Haines Rd to 24th Ave W*	Preservation	Exempt: S-10				$2,551,528
DUL-025-40	CHAMBERSBERG AVE *Piedmont Ave to Anderson Rd*	Reconstruction	Exempt: S-10				$4,952,500
DUL-026-40	SUPERIOR STREET *45th Ave E to Expressway*	Preservation	Exempt: S-10				$2,971,500
DUL-027-40	RAILROAD ST *Canal Park Dr to Garfield Ave*	Preservation	Exempt: S-10				$2,575,300
DUL-028-40	JUNCTION ST / ST. MARIE *College St to Wallace Ave*	Preservation	Exempt: S-10				$1,782,900
DUL-029-40	PIEDMONT AVENUE *Superior St. to 3rd St.*	Preservation	Exempt: S-10				$990,500

DUL-030-40	10th STREET *27th Ave. W. to 24th Ave W*	Preservation	Exempt: S-10	$594,300
DUL-031-40	LONDON ROAD *10th Ave. E. to 26th Ave. E.*	Preservation	Exempt: S-10	$1,782,900
DUL-032-40	1ST STREET *Mesaba Ave to 8th Ave E*	Reconstruction	Exempt: S-10	$23,772,000
DUL-033-40	SUPERIOR STREET *Garfield Ave. to 40th Ave. W.*	Preservation	Exempt: S-10	$1,981,000
Total:				$44,714,000

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
H-001-40	STEBNER RD *Hwy 53 to Maple Grove Rd*	Reconstruction	Exempt: S-10	$1,600,000		$900,000	$2,500,000
H-002-40	HERMANTOWN RD *Stebner Rd to Engwalls Rd*	Preservation	Exempt: S-10			$500,000	$500,000
H-003-40	MALL DR *Haines Rd to Loberg Dr*	Preservation	Exempt: S-10			$500,000	$500,000
Total:							$3,500,000

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
H-005-40	STEBNER RD *Hermantown Rd to Maple Grove Rd*	Reconstruction	Exempt: S-10			$2,900,000	$2,900,000
H-007-40	ROSE RD *Midway Rd to Solway Rd*	Reconstruction	Exempt: S-10			$2,320,000	$2,320,000
Total:							$5,220,000

Long-term Projects (2025-2040)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
H-009-40	HERMANTOWN RD *Lavaque Rd to Ugstad Rd*	Reconstruction	Exempt: S-10				$3,962,000
H-010-40	ARROWHEAD RD *Stebner Rd to State Hwy 53*	Reconstruction	Exempt: S-10				$1,981,000
H-011-40	ARROWHEAD RD *Ugstad Rd to Stebner Rd*	Reconstruction	Exempt: S-10				$9,905,000
Total:							$9,905,000

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
W-001-40	STH 35 (TOWER AVE) *Tower Fire Lane to CTH B*	Preservation	Exempt: S-10		$83,000		$83,000
W-002-40	US HWY 2 (BELKNAP ST) *Banks Avenue to Hill Avenue*	Reconstruction	Exempt: S-10	$8,117,000	$2,525,000	$2,960,000	$13,602,000
W-003-40	US HWY 53 *Bridge rehabilitation north of US Hwy 2 junction: B-16-0010, B-16-0011, and B-16-0012*	Preservation	Exempt: S-19		$1,679,000		$1,679,000
W-004-40	US HWY 2 (EAST 2ND ST) *Nemadji River to 37th Avenue E*	Preservation	Exempt: S-10		$1,230,000		$1,230,000
W-005-40	BLACK RIVER BRIDGE (STH 35) *Bridge rehabilitation: B-16-0085*	Preservation	Exempt: S-19		$343,000		$343,000
W-006-40	STONY BROOK CRK/NEMADJI RIVER BRIDGE (US HWY 35) *Replacement of box culvert and rip rap: B-16-0012*	Preservation	Exempt: S-19	$1,188,000	$297,000		$1,485,000
Total:							$18,422,000

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
W-007-40	STH 13 *CTH B to STH 105*	Preservation	Exempt: S-10	$5,011,200	$1,252,800		$6,264,000
W-008-40	STH 35 *Bridge deck sealing: B-16-0037*	Preservation	Exempt: S-19		$34,800		$34,800
W-010-40	US HWY 2 *Nemadji River to 37th Avenue E*	Preservation	Exempt: S-10		$1,540,480		$1,540,480
W-011-40	US HWY 2 *53rd Avenue to Belknap Street*	Reconstruction	Exempt: S-10	$8,017,920	$2,004,480		$10,022,400
W-012-40	US HWY 2 *Belknap Street to Blatnick Bridge (I-535)*	Preservation	Exempt: S-10	$2,012,600	$503,440		$2,516,040

W-013-40	STH 35 (TOWER AVE) *STH 105 to Belknap Street*	Preservation	Exempt: S-10		$1,753,920		$1,753,920
W-014-40	US HWY 2 *53rd Avenue to US Hwy 2*	Preservation	Exempt: S-10	$1,598,480	$399,040		$1,997,520
Total:							$24,129,160

Long-term Projects (2025-2040)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
W-015-40	STH 13 *Engdahl Road to US Hwy 2*	Preservation	Exempt: S-10				$4,496,870
W-016-40	US HWY 2 & MOCCASIN MIKE RD *Intersection: grade separation, access control*	Reconstruction	Exempt: E-4 Exempt: E-7				$18,225,200
Total:							$22,722,070

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DC-001-40	COUNTY TRUNK HWY C *From CTH K to CTH E*	Preservation	Exempt: S-10				$800,000
DC-002-40	COUNTY TRUNK HWY W *From Irondale Road to STH 105*	Preservation	Exempt: S-10				$1,000,000
DC-003-40	COUNTY TRUNK HWY Z *From CTH A to USH 2/53*	Reconstruction	Exempt: S-10	$3,993,600		$1,000,000	$4,993,600
DC-004-40	COUNTY TRUNK HWY C *Bridge Rehabilitation: B-16-0047*	Preservation	Exempt: S-19	$214,600		$53,400	$268,000
Total:							$7,061,600

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DC-005-40	COUNTY TRUNK HWY D *From USH 2 to STH 13*	Reconstruction	Exempt: S-10	$6,032,000		$1,508,000	$7,540,000
DC-006-40	COUNTY TRUNK HWY P *From USH 2 to STH 13*	Preservation	Exempt: S-10	$0		$1,856,000	$1,856,000
DC-007-40	COUNTY TRUNK HWY U *From CTH UU to STH 13*	Preservation	Exempt: S-10	$0		$406,000	$406,000
Total:							$9,802,000

Long-term Projects (2025-2040)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DC-008-40	COUNTY TRUNK HWY E *From CTH C to City Limits Road*	Reconstruction	Exempt: S-10	$9,923,200		$2,480,800	$12,404,000
Total:							$12,404,000

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
S-001-40	BELKNAP ST *Bong Bridge Approach to Texas Ave*	Preservation	Exempt: S-10				$392,413
S-002-40	N 5TH ST *Hammond Ave to Catlin Ave*	Preservation	Exempt: S-10				$285,037
S-003-40	E 7TH ST *Belknap Ave extension to 6th Ave*	Preservation	Exempt: S-10				$532,701
S-004-40	E 5TH ST *18th Ave E to 22nd Ave E*	Preservation	Exempt: S-10				$351,450
S-005-40	HENRY COHEN DR *N 40th St to N 46th St*	Preservation	Exempt: S-10				$316,879
S-006-40	MORTORELLI DR *Belknap to N 21st St*	Reconstruction	Exempt: S-10				$401,788
S-007-40	E 2ND ST *Nemadi River Bridge*	Preservation	Exempt: S-19				$52,000
S-008-40	BELKNAP ST *Hill Ave to Banks Ave*	Reconstruction	Exempt: S-10				$ 2,960,000
S-009-40	24TH AVE E *E 5th St to E 9th St*	Reconstruction	Exempt: S-10				$265,644
S-010-40	N 28TH ST *Hill Ave to E 3rd Street*	Preservation	Exempt: S-10				$803,000
S-011-40	BELKNAP ST SIDE STREET APPROACHES *Hill Avenue to Banks Avenue*	Reconstruction	Exempt: S-10				$522,000
Total:							$ 6,882,912

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
S-010-40	TOWER AVE *N 28th St to N 56th St*	Preservation	Exempt: S-10				$2,968,747

S-011-40	MARINA DR *Full Depth Reclamation and Overlay; bridge replacement*	Reconstruction	Exempt: S-10 Exempt: S-19				$1,536,987
S-012-40	N 37TH ST *Tower Ave to John Ave*	Preservation	Exempt: S-10				$180,396
S-013-40	N 58TH ST *Tower Ave to Hammond Ave*	Reconstruction	Exempt: S-10				$403,376
S-014-40	E 5TH ST *24th Ave E to 31st Ave E*	Preservation	Exempt: S-10				$445,037
S-015-40	E 3RD ST *50th Ave E to Cndy Rd E*	Preservation	Exempt: S-10				$436,184
Total:							$5,970,729

Long-term Projects (2025-2040)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
S-016-40	N 21ST ST *Viaduct Approaches*	Reconstruction	Exempt: S-10				$299,682
S-017-40	HILL AVE *N 28th to Belknap*	Reconstruction	Exempt: S-10				$2,104,171
S-018-40	N 28TH ST / 18TH AVE E *Hill Ave to E 2nd St*	Reconstruction	Exempt: S-10				$3,338,661
S-019-40	WINTER ST *Catlin Ave to Oaks Ave*	Reconstruction	Exempt: S-10				$1,951,533
S-020-40	WINTER ST *Oaks Ave to Maryland*	Reconstruction	Exempt: S-10				$1,025,687
S-021-40	STINSON AVE *N 56th St to Hill Ave*	Preservation	Exempt: S-10				$2,588,517
S-022-40	COUNTY RD E *E 2nd St to City Limits Rd*	Preservation	Exempt: S-10				$949,173
Total:							$12,257,422

Short-term Projects (2015-2019)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DTA-001-40	MULTIMODAL TRANSIT CENTER	Construction					$30,000,000
DTA-002-40	TRANSIT OPERATIONS: REGULAR ROUTE	Operations & Maintenance					$47,517,668
DTA-003-40	TRANSIT OPERATIONS: PARATRANSIT	Operations & Maintenance					$4,295,990
DTA-004-40	TRANSIT OPERATIONS: ADMINISTRATION & MAINTENANCE	Operations & Maintenance					$23,758,032
DTA-005-40	TRANSIT CAPITAL ASSISTANCE *Maintenance equipment, facility rehab, technology upgrades, etc.*	Operations & Maintenance					$1,273,000
DTA-006-40	BUS PURCHASE: REGULAR ROUTE *Fourteen diesel powered class 700 buses*	Vehicle Replacements					$3,885,000
DTA-007-40	BUS PURCHASE: PARATRANSIT VEHICLES *Six 30-foot vehicles*	Vehicle Replacements					$870,000
DTA-008-40	BUS PURCHASE: PARATRANSIT VEHICLES *Three vehicles smaller than25 feet*	Vehicle Replacements					$195,000
Total:							$111,794,690

Mid-term Projects (2020-2024)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DTA-009-40	TRANSIT OPERATIONS: REGULAR ROUTE	Operations & Maintenance					$60,449,197
DTA-010-40	TRANSIT OPERATIONS: PARATRANSIT	Operations & Maintenance					$6,264,968
DTA-011-40	TRANSIT OPERATIONS: ADMINISTRATION & MAINTENANCE	Operations & Maintenance					$27,870,522
DTA-012-40	TRANSIT CAPITAL ASSISTANCE *Maintenance equipment, facility rehab, technology upgrades, etc.*	Operations & Maintenance					$3,198,690
DTA-013-40	BUS PURCHASE: PARATRANSIT VEHICLES *Three 30-foot vehicles*	Vehicle Replacements					$507,675

DTA-014-40	BUS PURCHASE: PARATRANSIT VEHICLES *Three vehicles smaller than 25 feet*	Vehicle Replacements					$242,325
Total:							$98,533,377

Long-term Projects (2025-2040)

Proj. No.	Project Description	Type	AQ Status	Federal Cost	State Cost	Other Cost	Total Cost
DTA-015-40	TRANSIT OPERATIONS: REGULAR ROUTE	Operations & Maintenance					$200,571,088
DTA-016-40	TRANSIT OPERATIONS: PARATRANSIT	Operations & Maintenance					$32,597,279
DTA-017-40	TRANSIT OPERATIONS: ADMINISTRATION & MAINTENANCE	Operations & Maintenance					$118,402,964
DTA-018-40	TRANSIT CAPITAL ASSISTANCE *Maintenance equipment, facility rehab, technology upgrades, etc.*	Operations & Maintenance					$9,534,000
DTA-019-40	BUS PURCHASE: PARATRANSIT VEHICLES *Deficit for eighteen 30-foot vehicles*	Vehicle Replacements					$992,000
DTA-020-40	BUS PURCHASE: PARATRANSIT VEHICLES *Nine vehicles smaller than25 feet*	Vehicle Replacements					$1,008,000
Total:							$363,105,332

Projects Identified as "Unfunded Needs"

Project ID	Project	Jurisdiction	Timeframe	Estimated Cost
DTA-021-40-UF	BUS PURCHASE: REGULAR ROUTE *Ten diesel powered class 700 buses*	DTA	Short-range: 2015-2019	$3,115,000
DTA-022-40-UF	BUS PURCHASE: REGULAR ROUTE *Six electric class 700 buses*	DTA	Short-range: 2015-2019	$13,090,000
			Short-range unfunded needs:	**$16,205,000**

Project ID	Project	Jurisdiction	Timeframe	Estimated Cost
DC-004-40-UF	COUNTY TRUNK HWY C *Reconstruction - CTH W to STH 35*	Douglas County	Mid-range: 2020-2024	$19,688,440
H-004-40-UF	HERMANTOWN/PROCTOR TRUNK LINE TRAIL *Construct trail - Keene Creek Park to Hermantown Schools (6.5 miles)*	City of Hermantown	Mid-range: 2020-2024	$3,500,000
H-006-40-UF	UGSTAD RD *Resurfacing - US Hwy 53 to Maple Grove Rd*	City of Hermantown	Mid-range: 2020-2024	$4,861,560
DTA-023-40-UF	BUS PURCHASE: REGULAR ROUTE *Thirty diesel powered class 700 buses*	DTA	Mid-range: 2020-2024	$16,962,750
DTA-024-40-UF	BUS PURCHASE: PARATRANSIT VEHICLES *Deficit for six 30-foot vehicles*	DTA	Mid-range: 2020-2024	$7,670
			Mid-range unfunded needs:	**$45,020,420**

Project ID	Project	Jurisdiction	Timeframe	Estimated Cost
W-017-40-UF	BLATNIK BRIDGE *Reconstruction*	WisDOT	Long-range: 2025-2040	$175,000,000
DUL-034-40-UF	WASECA INDUSTRIAL ROAD *Construct new road from 61st Ave. W. to Grand Ave.*	City of Duluth	Long-range: 2025-2040	$17,720,000
DUL-035-40-UF	6TH AVE E - Redesign / Reconstruction *E 4th Street to E 9th Street*	City of Duluth	Long-range: 2025-2040	$5,800,000
H-011-40-UF	ARROWHEAD RD *Reconstruction - Ugstad Rd to Stebner Rd*	City of Hermantown	Long-range: 2025-2040	$9,905,000
DTA-025-40-UF	BUS PURCHASE: REGULAR ROUTE *Sixty diesel powered class 700 buses*	DTA	Long-range: 2025-2040	$47,040,000
DTA-026-40-UF	BUS PURCHASE: PARATRANSIT VEHICLES *Deficit for eighteen 30-foot vehicles*	DTA	Long-range: 2025-2040	$3,429,340
DTA-027-40-UF	TRANSIT OPERATIONS: REGULAR ROUTE	DTA	Long-range: 2025-2040	$74,944,494
			Long-range unfunded needs:	**$ 327,895,834**

Total unfunded needs: $ 389,121,254

Projects Identified as "For Study"

Project ID	Project	Juridiction	Timeframe
M-015-40-FS	I-35 TUNNELS *Rehabilitation needs*	MnDOT	Long-range: 2025 to 2040
W-017-40-FS	BLATNICK BRIDGE (I-535) *Redesign of bridge approaches*	WisDOT	Long-range: 2025 to 2040
STL-022-40-FS	ROUNDABOUT - Construction *Intersection of Rice lake Rd & Martin Rd*	St. Louis County	Mid-range: 2020 to 2024
DUL-036-40-FS	NLX STATION - Duluth *Design and construction*	Duluth / MnDOT	Long-range: 2025 to 2040
DUL-037-40-FS	ROUNDABOUT - Construction *Intersection of Junction Rd & 19th Ave E*	City of Duluth	Mid-range: 2020 to 2024
S-025-40-FS	NLX STATION - Superior *Design and construction*	Superior / WisDOT	Long-range: 2025 to 2040
H-012-40-FS	ANSDERSON RD - Change in functional class status; reconstruct to an urban design standard *Haines Rd to Stebner Rd*	City of Hermantown	Long-range: 2025 to 2040
H-013-40-FS	GETCHELL RD - Change in functional class status; reconstruct to an urban design standard *Maple Grove Rd to Stebner Rd*	City of Hermantown	Long-range: 2025 to 2040

Other Project Assessments

In addition to determining the capability of jurisdictions within the MIC area to finance the projects identified in CONNECTIONS 2040, a set of assessments were conducted to determine the potential of these projects to negatively impact area communities. These include social, environmental, and cultural impacts. Projects with potential impacts have been listed and mapped, and the MIC has contacted relevant federal, state and county agencies, as well as local stakeholder groups to both inform and consult with them about this information.

Environmental Justice & Community Impact Assessment

Each project being planned for in *Directions 2035* underwent an environmental justice (EJ)/Community Impact assessment to determine the potential of each project to have negative impacts on human health, cultural and environment al resources, economic development.

Environmental Justice (EJ):

The public policy goal of ensuring that low-income or minority populations do not bear disproportionately high or negative impacts as a result of the policies, programs and activities of federal agencies. It originates from Executive Order 12898 signed by President Clinton in 1994.

Project assessments were done by first mapping areas with high concentrations of minorities or low-income individuals in the Duluth-Superior area. This was done by determining which census tracts within the MIC planning area have a concentration of minorities greater than the area's average and which census tracts have household incomes at or below the poverty guidelines established by the Department of Health and Human Services (HHS).

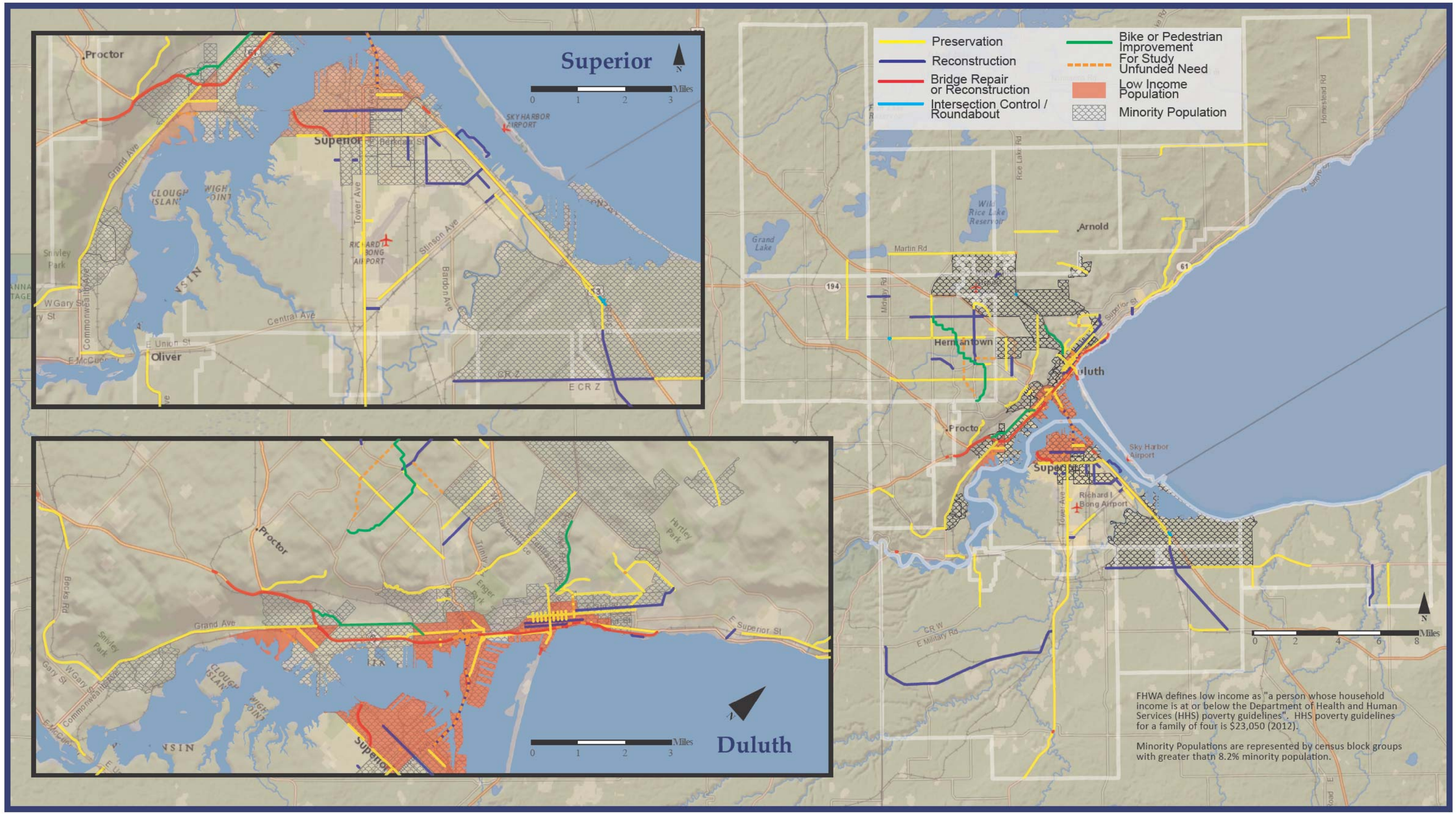
Geographic information system (GIS) software was then used to overlay the future transportation projects on top of this information. Special attention was given to those projects that involve expansion or significant alteration of the existing transportation system.

Map 5.1 on the following page shows the location of CONNECTIONS 2040 projects relative those census tracts with either a high concentration of minorities or household incomes below HHS guidelines. Due to the types and locations of the various projects, no projects stood out as having the potential for significant impact except the City of Duluth's E 6th St Reconstruction project (D-035-40 -UF) and MnDOT's "Can of Worms" reconstruction project (M-012-40) being planned beyond 2020.

As part of the MIC's LRTP outreach efforts, these projects were brought to the attention of area jurisdictions and community advocacy groups, as described in Chapter 6. No concerns were raised about these specific projects, but going forward, the MIC will

Duluth - Superior

Impact Assessment: Environmental Justice Analysis



Map 5.1

continue to discuss these projects with jurisdictions and stakeholders (see Agency consultation list, B) as ones that could have community impacts. Furthermore, these projects will be required to go through another round of assessments when it comes time for these projects to be programmed into the area TIPs.

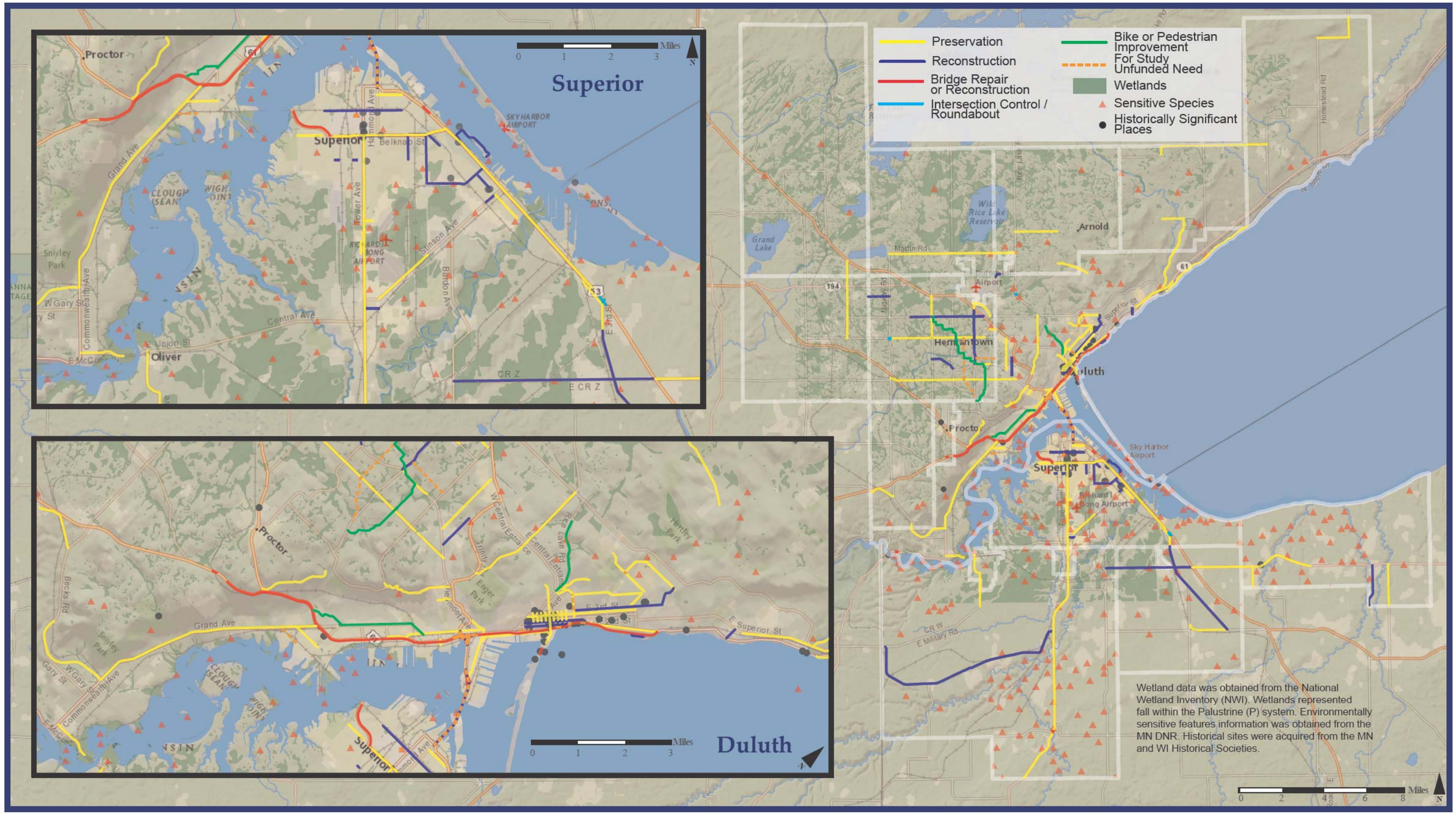
Historical Preservation & Environmentally Sensitive Areas Assessment

The MIC also assessed each of the projects identified in CONNECTIONS 2040 in terms of their potential impacts to environmentally sensitive areas, or areas with historically significant sites or structures. This was done using a process similar to the one used for the community impact assessment. GIS was used to determine the proximity of future projects to environmentally sensitive areas identified via data provided by the Minnesota and Wisconsin DNRs, or listed on the national, or state historical preservation registries (see Map 5.2 on the following page).

This assessment was done in preparation for the interagency consultation that is necessary to satisfy the MIC's requirements regarding the National Environmental Policy Act (NEPA). The MIC notified all relevant federal, state, local and tribal agencies about the projects it's identified as having potential impacts to historical sites or sensitive areas. Following this consultation process, no concerns have been communicated from regarding the projects identified in CONNECTIONS 2040.

Duluth - Superior

Impact Assessment: Environmental Sensitivity Analysis



Map 5.2

6. Participation

This section of CONNECTIONS 2040 outlines the MIC's process for ensuring participation from area stakeholders and the general public. It describes the various actions that were undertaken to distribute information and gather input during its development.

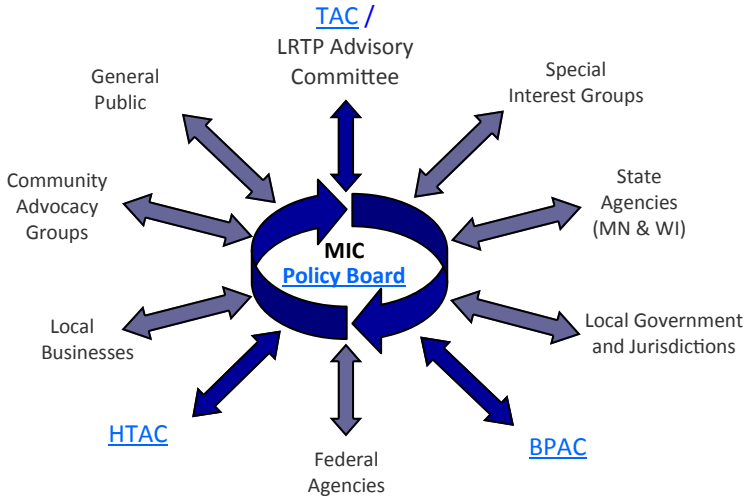
Engaging Others in Duluth-Superior Transportation Planning

Involving others in the process of planning for their communities is important, as professional planners and engineers are not always aware of certain issues encountered by some members of the community, nor can they account for every potential effect that might result from a specific policy or action. That is why the Metropolitan Interstate Council (MIC) is not only federally obligated to be transparent and inclusive in its transportation planning activities, but is committed to engaging community members in the process of planning for their community and to facilitating the active exchange of information on a continual basis.

Ensuring involvement in the planning process

Starting with its official advisory committees (BPAC, HTAC, TAC), the MIC's staff and Policy Board works with a diverse group of officials and public representatives with different interests in local transportation issues. But the MIC also reaches out to engage people with various perspectives and expertise from a broad range of groups, organizations, government agencies and the community at large (Figure 6.1 and Appendix B-2 and B-3).

Figure 6.1: MIC Stakeholder Involvement



The MIC's website (www.dsmic.org) is a primary outreach tool to connect with those in the community who may have an interest in local transportation planning issues but who have not yet been

Audience at a MIC public outreach meeting

The MIC's outreach responsibility:

"The MPO is responsible for actively involving all affected parties in an open, cooperative, and collaborative process that provides meaningful opportunities to influence transportation decisions."

Source: The Transportation Planning Process: Key Issues - USDOT (2009)

"It is the goal of the MIC's public involvement efforts to increase awareness of and encourage participation in the MIC's planning activities, as well as to broaden the range of voices and views expressed"

Source: Citizen Participation in Transportation Planning: MIC Public Involvement Plan (2013)

identified by the MIC. The MIC uses its website to provide searchable access to all its planning documents, studies and other resources, as well as to information about current and ongoing MIC activities and related information. The website also provides contact information and opportunities for users to request information and provide comments.

The MIC's Planning Process

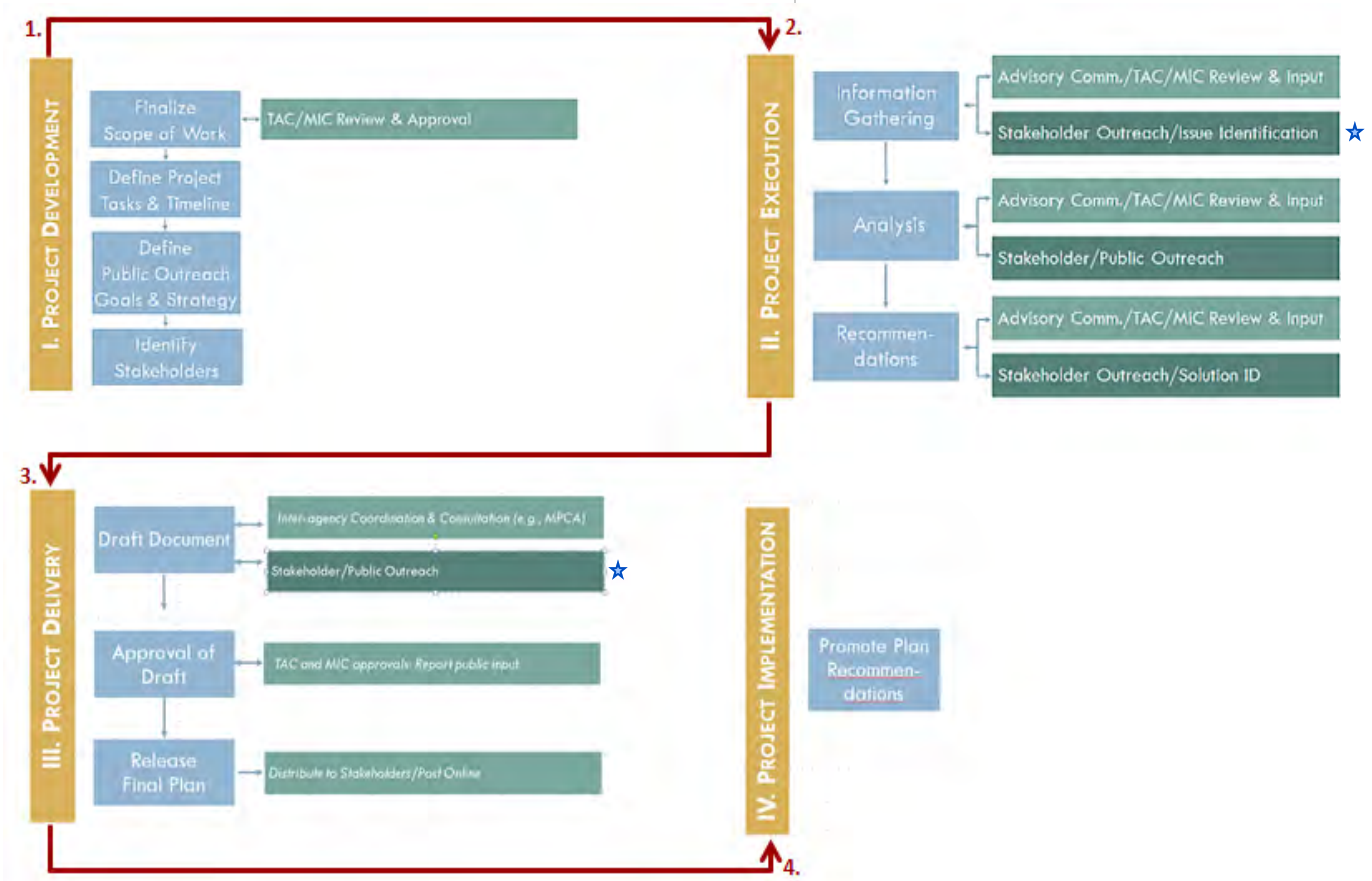
All of the MIC's planning activities embody the 3-C planning process (comprehensive, continuing, and cooperative) and follow the general steps outlined in its Public Involvement Plan (PIP). By disseminating information and soliciting comments regarding ideas, issues, scope, and alternatives throughout the planning process, the MIC aims to ensure that all stakeholders, including the general public, are given ample opportunity to have a real influence throughout the planning and decision-making processes and thus help to shape the local policies, programs and projects of their own communities.

Although the scope and specific activities will vary from one planning effort to the next, the MIC begins every new initiative by establishing a stakeholder involvement strategy that is tailored to

The MIC's general involvement efforts:

a. Works with a diverse policy board & advisory committees.
b. Follows a public involvement plan (PIP).
c. Maintains a website for disseminating information and receiving comments.
d. Regularly reviews and updates specific objectives and strategies for public participation.

Figure 6.2: The MIC's General Planning Process



that effort and then proceeds with a process similar to the one outlined in figure 6.2 and in Appendix B-18.

Traditionally Underserved Populations

Nationwide, low-income individuals and groups of racial and ethnic minority have historically been underserved in urban planning processes, and subsequent legislation and policy, such as the Executive Order on Environmental Justice, have been developed to ensure that these groups receive more consideration and have more input in planning decisions that affect their communities.

It is estimated that over 24,000 individuals (18%) of the population are living in poverty, and that approximately 8% of the MIC area's population is of a racial or ethnic minority. In addition, 5% of the population is estimated to speak a language other than English as their primary language, and potentially could have limited proficiency in reading or understanding public information. Together, these groups represent the MIC area's *traditionally underserved* population (Figure 6.3).

The MIC works regularly with a number of local agencies and organizations such as Community Action Duluth on transportation issues as they relate to low-income and minority groups in the MIC area. The MIC works to consider the impacts that planning decisions may have on individuals of these groups, which includes public transit and non-motorized modes of transportation. To ensure the consideration and participation of these groups, the MIC will continue to take the following actions:

a. Utilize geographic information systems (GIS) applications to collect and analyze current demographic data in relation to local transportation issues or proposed improvements.

b. Work closely with local organizations that advocate for low-income, racial minority and non-English speaking members of the community to remain aware of specific transportation issues being encountered by these populations and ensure early and continuing engagement with members of these communities.

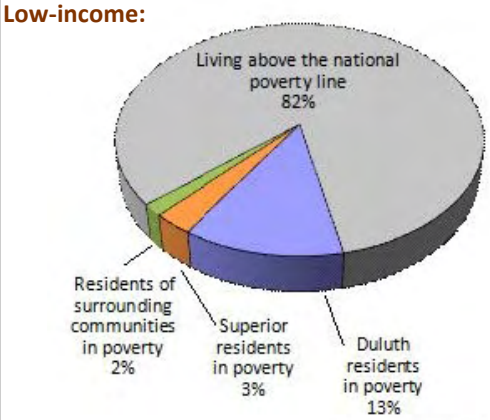
c. Ensure EJ considerations are included in the TIP criteria so that potential impacts of planned projects are identified and addressed early in the TIP development process.

d. Perform community impact assessments on all transportation improvement projects that are programmed to receive federal funding.

e. Explore ways the MIC website can be improved to at least notify the MIC if and when someone with limited English proficiency is requesting assistance with accessing information.

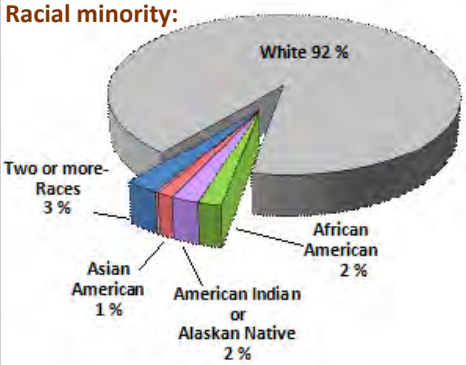
Figure 6.3: "Traditionally Underserved" Populations in Duluth-Superior

Low-income:



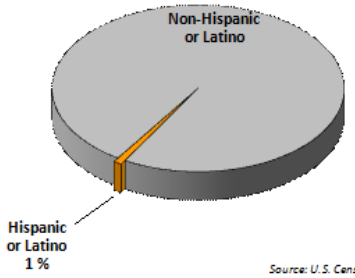
Source: U.S. Census Bureau, 2010.

Racial minority:



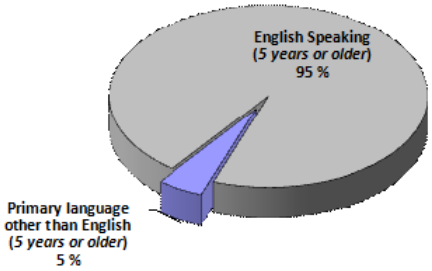
Source: U.S. Census Bureau, 2010.

Latino ethnicity:



Source: U.S. Census Bureau, 2010.

Non-English speaking:



Source: U.S. Census Bureau, 2010

Engaging the Freight Sector

MIC staff has made an effort, in accordance with the previous LRTP, Directions 2035, to become more involved with a number of different freight related groups, including private sector businesses as well as academic staff and government agencies involved in freight planning and infrastructure. This has allowed MIC staff to take advantage of freight training opportunities and to be involved in discussions about how to improve the freight network.

Mid-America Freight Coalition

The Mid-America Freight Coalition is a regional organization that cooperates in the planning, operation, preservation, and improvement of transportation infrastructure in the Midwest. The ten states (Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio and Wisconsin) share key interstate corridors, inland waterways, and the Great Lakes; they signed a Memorandum of Understanding in 2006, demonstrating their willingness to meet freight demand with regional cooperative efforts.

Minnesota Freight Advisory Committee

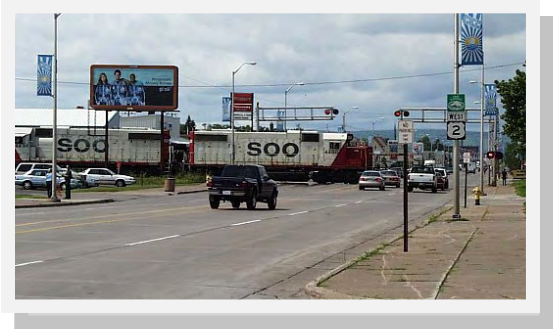
The MFAC is facilitated by MnDOT staff and is a partnership between government and business that meets quarterly to exchange ideas and recommend policy and actions. The goal of this committee is to develop and promote safe, productive and sustainable freight transportation in Minnesota.

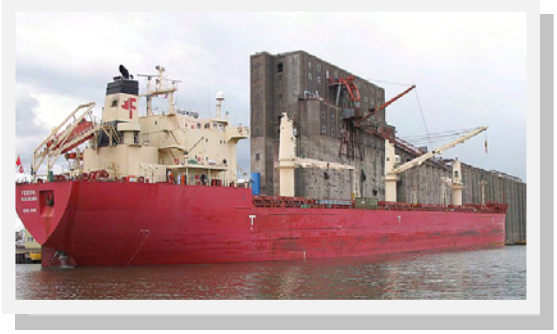
Duluth-Superior Transportation Association

MIC staff has joined the DSTA to better network with area transportation professionals. Members represent all modes of transportation including air, motor carriers, rail and water as well as commercial shippers, purchasers, manufacturers, government agencies, educators and students with an interest in transportation. The DSTA meets monthly and is a new forum for sharing information about the MIC and its projects.

Propeller Club

The Propeller Club of Duluth-Superior was chartered in 1933 and continues to be an active network of maritime industry stakeholders in the Twin Ports. Membership in the nonprofit, all-volunteer organization totals nearly 90, including port tenants, terminal operators, public officials, maritime engineers, pilots, and others - all focused on promoting harbor improvements and advocating for maritime interests along the Great Lakes-St. Lawrence Seaway. Monthly lunch meetings feature presentations on various topics related to shipping in the Duluth-Superior port. This is a good networking opportunity and a chance to learn about happenings in the local shipping industry.





Multimodal freight is an important transportation sector in Duluth and Superior. The MIC has forged connections with several related stakeholder groups in recent years.

The MIC's Public Participation Goal

Because the participation of stakeholders is integral to the planning process, the MIC includes "Public Involvement" as one of nine major goals for the Long Range Transportation Plan (Chapter 1).

During the development of *Connections 2040*, members of the public were invited to prioritize these goals (described in more detail on page 6-12). Survey respondents ranked the overall transportation goal of Public Involvement as 4th-most important out of 9—up from its previous rank of 6 for the previous LRTP.

MIC's public involvement objectives were revised as part of the process of updating LRTP, and are shown below:

Goal 4: Public Participation

Provide ongoing and effective opportunities for public participation so the needs and interests of all users of the transportation system are taken into consideration

Objective (1): Ensure the public has a variety of opportunities for information and involvement

Strategies to accomplish objective (1):

a. Implement methods and techniques put forward in the 2013 MIC PIP
b. Ensure the proper timing of announcements to allow meaningful input to be incorporated into decision making process
c. Coordinate planning and outreach efforts with local jurisdictions and transportation partners

Objective (2): Ensure efforts to inform and engage disenfranchised groups impacted by transportation decisions

Strategies to accomplish objective (2):

a. Ensure compliance with Environmental Justice and Title VI requirements
b. Broaden contact base and invite participation from churches, community clubs, group homes, and special needs facilities
c. Establish convenient contact centers at high-traffic and/or centrally-located areas and events, such as mall kiosk, fair/festival booth, etc.
d. Seek ways to regularly encourage participation in transportation planning

Specific Federal *Outreach* Requirements:

a. Provide reasonable public access to information.[1,2,3]
b. Incorporate the use of electronic methods and visualization techniques.[1,2,3]
c. Provide early & continuous opportunities for involvement.[1,2,3]
d. Offer timely information to citizens, affected agencies, private entities and other interested parties.[1,2,3]
e. Give adequate notice of public involvement activities and ample time for public review and comment at key decision points.[1,2,3]
f. Hold public meetings at convenient times and accessible locations.[1,2,3]
g. Ensure the inclusion of non-motorized users, the disabled, the elderly, minority, low-income and other traditionally "underserved populations".[1,2,5,6,7,8]
h. Include the consideration of the potential impacts of decisions on social and natural resources and reach out to relevant agencies and stakeholders.[1,2,3,4]
i. Develop and regularly review a public participation plan.[1,2,3]

Sources of regulations:

1. *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU); Sections 1107 and 6001.*
2. *23 Code of Federal Regulations (CFR); Parts 450.210 and 450.316.*
3. *23 United States Codes (USC) 128 and 135*
4. *National Environmental Policy Act (NEPA)*
5. *Title VI of the Civil Rights Act*
6. *28 CFR 36 Americans with Disabilities Act (ADA)*
7. *Executive Order 12898 on Environmental Justice*
8. *Executive Order 13166 on Limited English Proficiency*

Objective (3): Improve strategies and methods to get the word out, receive feedback and increase public interest

Strategies to accomplish objective (3):

a. Increase use of real-time consumer technologies (e.g. smartphone apps, social media, etc.)
b. Implement methods and techniques put forward in the 2013 MIC PIP
c. On an annual basis review the PIP and other efforts to determine what worked and what did not work and who was missed

Outreach & Involvement During Development of *Connections 2040*

The MIC is obligated to meet a number of federal requirements regarding stakeholder outreach, discussed in detail in the MIC's Public Involvement Plan (PIP). The public participation strategy and stakeholder identification tool (Appendix B-10) were used as the MIC's "road map" for getting good stakeholder participation in the development of *Connections 2040, as* illustrated in the process illustrated in Figure 6.4 at right.

Using MIC website as a principal outreach tool

A web page specific to the LRTP update (www.dsmic.org/lrtp) was created as one of the MIC's initial steps in ensuring stakeholder involvement in updating the Duluth-Superior LRTP (Figure 6.5). This webpage was used throughout the process to post updated information about the project's development. It included an interactive map of the LRTP project list and a link to a brief survey regarding peoples' opinions about local transportation priorities (Survey Results, Appendix B-29), along with information about the LRTP and contact information for people to email comments (Comments Received, Appendix B-), submit questions, and/or leave their email address to be added to the MIC's *Connections 2040* mailing list.

Assessment of website's effectiveness:

While the website greatly increased the MIC's outreach abilities, and 91 people completed the survey, only three comments were received via the website, and only two visitors asked to be added to the LRTP mailing list.

Figure 6.4: LRTP Development and Stakeholder Engagement Process

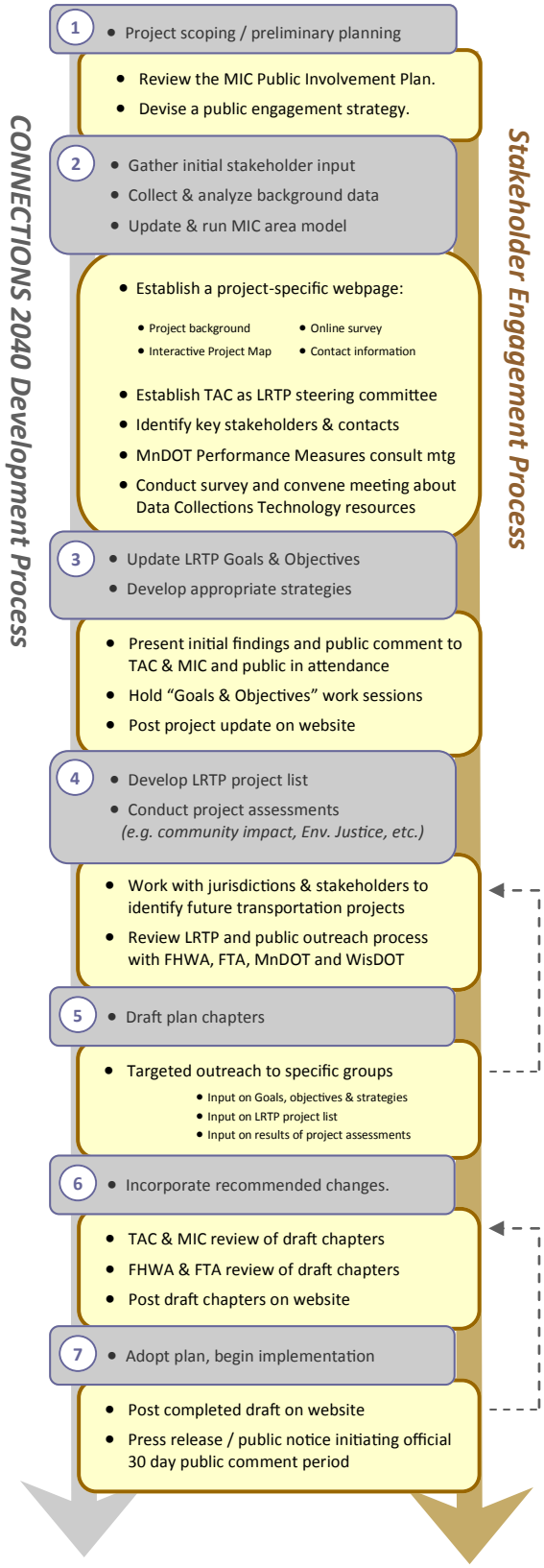


Figure 6.5: LRTP Webpage - Interactive Map & Public Survey

Things that could be improved:

a. Add a counter to record the number of visits the website receives.
b. Explore ways of better advertising the web page.
c. Explore other methods, in addition to providing email links to MIC planning staff, that would allow and encourage public comments that are viewable by others and to which MIC staff could respond publicly.

CONNECTIONS 2040 Steering Committee

As stated in the MIC's Public Involvement Plan, "communication with the elected officials and community representatives on the MIC Policy Board and its advisory committees is a cornerstone of our

public involvement." The MIC used its principal advisory board, the Transportation Advisory Committee (TAC) and its Policy Board as a combined steering committee (makeup of Steering Committee, Appendix B-2) for updating the Duluth-Superior LRTP. This is because the both bodies are comprised of Duluth-Superior public officials and professionals who represent the area's various jurisdictions and interests.

These groups have acted as the LRTP steering committee in the past two updates and are familiar with the various requirements of the document. The varied perspectives of these two bodies were relied upon right away to help to further identify an initial list of key stakeholders to contact directly as the updating process began.

The regularly scheduled meetings of the TAC and MIC Policy Board also allowed members from other stakeholder groups and the general public at large two opportunities every month (one midday and one in the evening) to have direct access and provide immediate input about the LRTP update process.

Data verification

Data collection occurred early on in the update process to determine population and socioeconomic trends occurring throughout the MIC area, and this information was presented as it was developed at the monthly LRTP subcommittee sessions during the monthly TAC meetings.

Assessment of steering committee effectiveness:

The TAC & MIC policy boards represent a diverse group of backgrounds and perspectives; staff deemed the regular meeting times, and the groups' prior familiarity with the LRTP process was very beneficial.

Things that could be improved:

a. Have a stronger representation of "traditionally underserved" populations (i.e. low income and minority groups).

Directing outreach to stakeholder groups

Information was also presented and comments solicited at quarterly meetings of the MIC's Harbor Technical Advisory Committee (HTAC) and Bicycle and Pedestrian Advisory Committees, which together represent a wide representation of city, county, state, federal, industry and citizen groups and agencies (makeup of advisory committees, at right, and in Appendix B-3).

Groups the MIC contacted about the LRTP update process:

LOCAL STAKEHOLDERS

Airport, port and transit authorities
Area colleges and universities
Chambers of commerce
Community advocacy groups
Commuter groups
Counties, cities and townships representatives
Duluth-Superior Transportation Association
Economic development organizations
Engineering and architecture firms
Environmental groups
Industry groups
Local business groups
Local planning departments
Local media
Neighborhood groups
Police departments
Propeller Club
Public health agencies
School districts
Social services
Trails & recreation organizations
Utility and sanitary service providers

REGIONAL & STATESTAKEHOLDERS

Intercity transit services
Duluth Transit Authority (DTA)
Regional economic development organizations
Regional planning organizations
MnDOT and WisDOT
Tribal communities
State DNRs and MN Pollution Control Agency.
Regional rail operators
Mid-America Freight Coalition
Minnesota Freight Advisory Committee

NATIONAL STAKEHOLDERS

Army Corps. Of Engineers
Environmental Protection Agency
Federal Highway Administration
Federal Transit Administration
National industry groups
US Coast Guard
US Fish & Wildlife Service

Stakeholder identification

As part of the 2013 update of the Public Involvement Plan, a comprehensive stakeholder mailing list was compiled that included interested parties (agencies, interest groups and individuals who have been engaged in current and recent planning activities or "opted in" to our planning mailing lists) as well as traditionally underserved groups and individuals as defined in Section 450.316 of the Federal Register and as identified in the MIC's Title VI plan. (see Fig. 6.6 at right and Appendix B-10) for steps and matrix from the MIC's 2013 Public Involvement Plan that were used).

In addition to those whom the MIC directly contacted, anyone who visited the CONNECTIONS 2040 website were invited to submit their email address or other contact information if they were interested in receiving future notices and updates about the LRTP. In this way, the MIC hoped to be continually expanding the mailing list from those who were not originally identified in the initial mailing list.

Communication with those on LRTP stakeholder list

Stakeholders on the mailing list were sent an initial notice informing them of the MIC's LRTP update process and encouraging them to do the following:

a. Visit the CONNECTIONS 2040 webpage for additional information and opportunities to comment.
b. Participate in the upcoming "Goals & Objectives" work session.
c. Attend each month's meetings of the TAC and MIC to get regular project updates and provide direct input into the process.
d. Forward the email or notice on to others who they think should be notified.

Effectiveness of Stakeholder Identification:

Outreach was comprehensive regarding public agencies, private business, special interests, and community advocacy groups, but the stakeholder mailing list contains significantly more contacts on the MN side than the WI side.

Things that could be improved:

a. Better assess the balance of MN and WI contacts earlier in the process.
b. Actively solicit additional WI contacts if representation among the different stakeholder categories appears disproportionate between the two states.

Figure 6.6: Stakeholder Identification Matrix

Stakeholder Identification Tool for LRTP

As part of the 2013 update of the Public Involvement Plan, a comprehensive stakeholder contacts list was developed that included interested parties (agencies, interest groups and individuals who have been engaged in current and recent planning activities or "opted in" to our planning mailing lists) as well as traditionally underserved groups and individuals as defined in Section 450.316 of the Federal Register and as identified in the MIC's Title VI plan.

Required Stakeholders (per 23CFR 450.316 (a) & (b); MIC Public Involvement Plan and outreach priorities)	(List specific contacts)
1. Citizens/General Public *People who live and work in the Duluth-Superior area, including:*	MIC-LRTP-01 / List 767
(a) Those individuals and groups directly impacted by the results and recommendations of the plan or study, i.e., located inside or in close proximity to the study area; those individuals and groups who opt in to receive more information	
(b) Community clubs and neighborhood groups	
(c) Civic groups and service organizations such as the Rotary, Lions Club and Kiwanis Club	
(d) People and groups involved recent MIC plans and studies (within the past two years)	
2. Government and Public Agencies (Coordinated Planning) *Government agencies and officials responsible for other planning activities within the Duluth-Superior area that are affected by transportation, including:*	MIC-LRTP-02 / List 768
(a) Local elected officials from the cities, counties, and townships within the MIC Planning Area or Study Area	
(b) Local professional staff from the cities, counties, and townships within the MIC's Planning Area or Study Area—Engineering and Planning, Fire and Police, etc.	
(c) City and County planning commissions	
(d) Area organizations responsible for planning activities with transportation interests (e.g., small area plans and/or policy studies	
(e) Formal and informal groups representing area transportation-related interests such as traffic safety, parking, Parks and Recreation, etc.	
(f) State and Federal officials—legislators representing the study area in both MN and WI	
(g) State and Federal agencies, including the planning and modal divisions of MnDOT and WisDOT, FHWA and FTA	
3. Public Transportation Interests *Representatives of both operators and users of transit, including:*	MIC-LRTP-03 / List 769
(a) Duluth Transit Authority staff	
(b) Organizations and individuals who represent the needs of transit-dependent persons	
4. Private Transportation Interests *Demand response operators and other private transportation interests, including:*	MIC-LRTP-04 / List 770
(a) Private transit operators and taxi services	
(b) Other:	
5. Multimodal Freight Interests *Representatives of both freight-generating businesses (shippers) and providers of multimodal freight transportation services, including:*	MIC-LRTP-05 / List 771
(a) Trucking firms	
(b) Railroads and rail operators	
(c) Duluth Seaway Port Authority and harbor-related businesses	
(d) Duluth Airport Authority and airport-related businesses	
6. Non-Motorized/Active Transportation Interests *Representatives of non-motorized (active) modes of transportation, including:*	MIC-LRTP-06 / List 772
(a) Users of pedestrian facilities, affiliated interest groups	
(b) Users of bicycling facilities, affiliated interest groups	
(c) Mn Department of Public Health	
(d) Health promotion and active lifestyle advocacy groups	
7. Human Services Interests *Representatives of traditionally underserved populations, including:*	MIC-LRTP-07 / List 773
(a) Disabled	
(b) Low-income	
(c) Minority	
(d) Low-English Proficiency (LEP) clients	
(e) Human Services transportation providers	
8. Resource Preservation and Protection Interests *Representatives of agencies, organizations and groups involved with land use management, conservation, and protection of historical, archeological and environmental/natural resources:*	MIC-LRTP-08 / List 774
(a) MnDNR and WisDNR	
(b) Minnesota Pollution Control Agency	
(c) Other environmental/natural groups and agencies:	
(d) Historical/archeological preservation groups and agencies:	
9. Business and Economic Development Interests *Representatives local businesses and area economic development groups, including:*	MIC-LRTP-09 / List 775
(a) Chambers of Commerce, Downtown Councils	
(b) Business Improvement Districts & Development Associations	
(c) Business representatives, e.g., private developers, small business owners who have some familiarity with the MIC or its recent plans and studies	
(d) Other:	
10. Education Interests *Representatives of all elementary, middle school, high school and higher educational institutions, including:*	MIC-LRTP-10 / List 776
(a) ISD 709 (Duluth) School District and the School District of Superior	
(b) Elected school board members representing K-12 education for both Duluth and Superior	
(c) PTA and other interested K-12 parents, educators and neighborhood residents	
(d) College of St. Scholastica—administrators; interested staff, students and neighborhood residents; student associations; courses with urban planning and/or transportation focus	
(e) University of Minnesota-Duluth (UMD)—administrators; interested staff, students and neighborhood residents; student associations; courses with urban planning and/or transportation focus	
(f) University of Wisconsin-Superior (UWS)—administrators; interested staff, students and neighborhood residents; student associations; courses with urban planning and/or transportation focus	
(g) Lake Superior College (LSC)—administrators, interested staff, students and neighborhood residents; student associations	
(h) Wisconsin Indianhead Technical College-Superior (WITC)—administrators; interested staff, students and neighborhood residents; student associations	
11. Tribal and Federal Lands *When the MPA includes Indian Tribal and Federal public lands, the MIC will involve in the development of the LRTP and the TIP:*	MIC-LRTP-11 / List 777
(a) Indian Tribal government(s)	
(b) Federal land management agencies	
(c) Recipients of funds under 23 U.S.C. 204 (Federal Lands Highway Program)	
12. Other / Miscellaneous *Any other project stakeholders with transportation-related interests not listed above?*	MIC-LRTP-12 / List 778
(Specify):	
13. Local Media Contacts *Local and regional media contacts to whom we send public meeting notifications and project-specific press releases.*	MIC Media Contacts / List 192
(a) Newspaper and television reporters with government and city beats and who have picked up MIC-related and transportation-related stories over the past year	
(b) Duluth News Tribune managing editor	
(d) Superior Telegram reporter or managing editor	
(e) Area radio stations—News Directors	
(f) Area broadcast TV news stations—News Directors	
(g) Specialized publications (Duluth Woman, North Shore Voice, etc.)	
(h) Neighborhood newspapers or newsletters	

Seeking Input from Traditionally Underserved Populations

Community advocacy groups which the MIC works with regularly regarding local transportation issues were identified as the "primary contacts" to traditionally underserved populations during its initial outreach efforts. Various members of these organizations were included on the LRTP stakeholder mailing list and notified directly about the LRTP update and opportunities for involvement.

Staff from the MIC also introduced the *Connections 2040* process at a number of meetings with local community advocacy groups and informed those attending of opportunities to become involved in the process. These occurrences are documented in the MIC's LRTP outreach log found in Appendix B-34 of this plan.

During the development of *Connections 2040* the MIC also considered outreach to non-English speaking individuals, but data regarding the number and specific language requirements of such individuals in the Duluth-Superior area is scant, and the MIC was unable to determine a cost-effective approach of targeting communication to non-English speaking peoples.

As development of the plan progressed and future transportation projects were identified, staff also conducted an environmental justice (EJ) assessment of those projects (see Chapter 5) and undertook a targeted outreach effort to notify representatives of these groups of the potential impacts (or opportunities) that specific projects may have on members of traditionally underserved populations.

MIC staff present demographic trends and proposed transportation projects in consultation with staff members from Community Action Duluth, local advocates for low-income, minority and disabled people and transit users

Effectiveness of outreach to traditionally underserved communities:

No comments were received by individuals identifying themselves as low-income or of a racial minority. Efforts by the MIC staff to speak at scheduled events of traditionally underserved individuals were either not responded to, or faced scheduling conflicts.

Things that could be improved:

a. Work to identify, early on, opportunities throughout the year to present directly to audiences of traditionally underserved peoples.
b. Work with counties and local community groups to better identify non-English speaking needs within the Duluth-Superior metro area.

Prioritizing LRTP Goals and Objectives

MIC staff conducted several work sessions at TAC and MIC meetings to update Plan goals, objectives, and strategies (Chapter 1). Participants at the sessions were asked to rank the priority of various objectives, and to assist in identifying strategies the MIC could employ to address them.

External stakeholders were notified and invited to participate via distribution of meeting materials and LRTP website. The LRTP mailing list and MIC blog (www.duluthsuperioropenmic.org) were employed to advertise the survey.

Online Survey

The survey questions and results from the survey are summarized in Figure 6.7, at right, and detailed responses are included in Appendix B-22 an B-29)

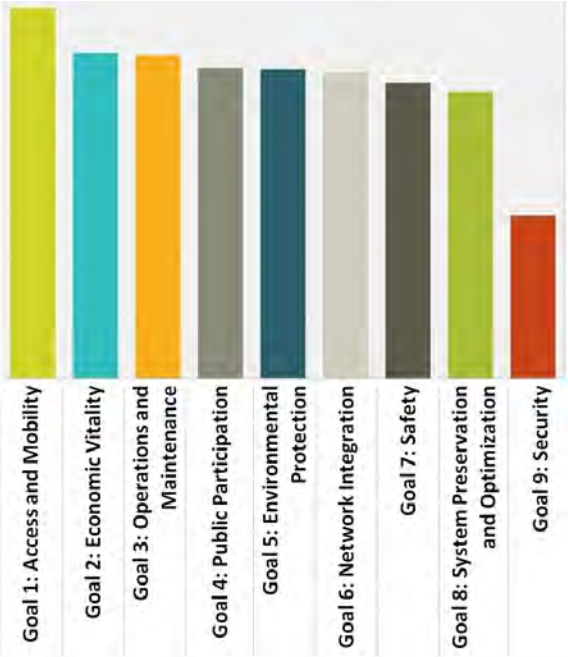
Effectiveness of engaging others in updating the goals, objectives and strategies:

No one representing the community of Proctor, MN (who were not members of either the TAC or MIC boards) participated in the online survey; no one representing tribal interests completed the survey, attended the Consultation Workshop, or responded to our emails. Eight of the 92 survey respondents discontinued the survey when it came to the question about prioritizing the nine goals. A comment on the survey suggested that the language of the survey was too technical for the average (non-planner) population.

Things that could be improved:

a. Simplify the language of the survey to make it more accessible to the average (non-planner) population.
b. Hand out "Goals & Objectives" worksheets after LRTP presentations at other outreach meetings with a link to the survey; allow people to respond at their leisure.

Figure 6.7: Prioritization of Goals from Public Survey



Seeking Input on the LRTP's List of Proposed Projects

Once area trends were determined and the goals, objectives and strategies were updated, the MIC met with members of the various jurisdictions to identify future transportation improvement projects to be identified in the *Connections 2040*.

The list of projects that resulted was presented at the July 2014 MIC and TAC meetings, which were open for public comment. Notices were sent out to stakeholders that the list could be reviewed via an

interactive map on the *Connections 2040* webpage.

The project list was also presented at the July DTA Operations meeting, to the TAC and MIC at the August 2014 meetings, as well as to participants of the consultation meeting on DATE. Comments on projects were also sought from targeted groups identified in the discussion below.

Effectiveness of stakeholder notification of projects:

No comments were received after the initial release of the project list.

Things that could be improved:

a. Make use of local newspaper's and blog site's online forums to post notices about opportunity to review the draft project list.

Targeted Outreach

After the list of transportation projects was compiled, staff at the MIC performed a series assessments to determine which projects, if any, posed potentially negative impacts to the area's environmental, cultural, or financial resources in the area, or whether they posed disproportionately negative impacts for low-income or minority populations. This process is discussed in further detail in Chapter 5.

Consultations

Once projects with potential impacts were identified, MIC staff notified relevant agencies (see list at right) by first identifying appropriate contacts within those agencies, then sending them an email describing the specific projects and maps showing the location and extent of those projects.

The results from these consultations are summarized at right, and the more detailed comments (as well as the work session materials) are included in Appendix B.

Effectiveness of engaging other agencies in project assessments:

Since the vast majority of projects in Connections 2040 are not expansion related projects, MIC staff did not expect many concerns to be raised.

Things that could be improved:

a. Identify and notify appropriate contacts earlier on; host an informational meeting explaining the LRTP process, its relevance to their organizations, and specific actions the MIC would like them to take.
b. Request a response by a specified date, but follow up with an inquiry if no comment is returned.

Project assessments performed

As required by FHWA, projects submitted for inclusion in the Duluth-Superior LRTP underwent assessment to determine their potential impact on/ regarding following items:

a. Historic Preservation Sites

b. Environmental Justice analysis

c. Environmentally Sensitive areas

d. Financial capability of jurisdictions

Groups contacted — Consultation about potential impacts of projects on environmental/historic/cultural resources

a. Area Agency on Aging

b. Community Action Duluth
c. Minnesota Pollution Control Agency (MPCA)

d. Minnesota DNR & Wisconsin DNR

e. Duluth & Superior Soil & Water Conservation Districts
f. Western Lakes Superior Sanitary District (WLSSD)

g. Minnesota & Wisconsin Historical Societies

h. Duluth Heritage Preservation Commission

i. Duluth Preservation Alliance

j. Minnesota Fond du Lac Band of Lake Superior Chippewa, Bois Fort Band of Chippewa, and Grand Portage Band of Chippewa

k. Wisconsin St. Croix Band of Chippewa, La Courte Oreilles Band of Ojibwa, Red Cliff Band of Lake Superior Chippewa, and Bad River Band of Lake Superior Chippewa.

Soliciting Comment Throughout the Process

As draft chapters of the plan were completed, they were reviewed at the monthly meeting of the LRTP advisory committee. Changes that were recommended were incorporated, and then the week that the plan was released for public review, emails were sent out to mailing list recipients and advisory committee members, inviting them to also review the materials in advance.

Stakeholder input was sought throughout the development of *Connections 2040*. In general, much of the input came through various members of the LRTP steering committee, in response to the arrangement or presentation of drafted plan materials. A significant number of comments were received that determined the priorities of the Goals & Objectives as shown in Chapter 1. Verbatim comments, and the MIC's responses to them, can be viewed in Appendix B.

As comments were received they were reported to the LRTP steering committee members and to the MIC Policy Board.

The MIC also solicited comments through the following methods:

a. Link to planning staff email to submit comments.
b. Inviting stakeholder's on the LRTP mailing list to email or call the MIC with comments.
c. Encouraging comments or questions during outreach meetings; highlighting contact information for others to record and respond to later.

All comments received through these methods (as well as the MIC answers or actions in response to them) can also be found in Appendix B.

MIC staff talk to and take comments from those who stopped by the LRTP Public Informational Display on DATE at the Holiday Center in downtown Duluth

Draft Document

Comments received about the draft document will be summarized and distributed to all TAC and MIC members after the close of the official review period (September 30th) and prior to the Policy Board's scheduled action to vote on adoption of the plan (October 22nd).

Legal Notices

Legal notices were published in the Duluth and Superior papers on August 31st, to notify readers of a month-long official comment period extending from September 1 through 30. Press releases were sent to local media outlets to further inform the public of the official review period and of the specific dates and times of two upcoming public meetings in which the public would have an opportunity to provide input and ask questions in person. Staff contact information was included in the press releases, and the

Poster advertising public meetings and information about the draft LRTP

public was invited to direct their comments and questions to the MIC staff at any time during the official review period.

Paid Advertisements

The MIC placed one print advertisement in the Superior Telegram (September 16) and two in the Duluth News-Tribune (September 17 and 24), as well as a notice on the Duluth News-Tribune website (September 17-24) inviting people to attend the upcoming public meetings during the public comment period.

Press Releases

The MIC distributed three press releases inviting comment on the public comment period for the draft document and publicizing the public meetings.

Email to Stakeholders, Administrative oversight, and MIC and advisory committees

The MIC emailed stakeholders, administrative oversight representatives, and MIC and advisory committees inviting comment three times during the public comment period about the draft document and to publicize the public meetings.

Public Meetings

Four public meetings were held during the 30-day comment period and any comments were incorporated into the final document and reported to the TAC and MIC according to the process spelled out in the Public Involvement Plan.

Conclusion

The MIC is committed to carrying out its duties to ensure an open and transparent planning process, and to engage the participation of a variety of stakeholder groups and the public at large. It carried this commitment forward in the development of its updated LRTP, which began with a stakeholder involvement strategy. This strategy lead the MIC to carry out a number of efforts, including the development of a project website with interactive features; all of which were aimed at improving the amount of input and involvement received.

The MIC has attempted to assess the effectiveness of its LRTP involvement efforts, and ways that these efforts might be improved upon. The MIC will use this information in subsequent updates of the Duluth-Superior LRTP and continue to find ways of effectively delivering information and encouraging participation.

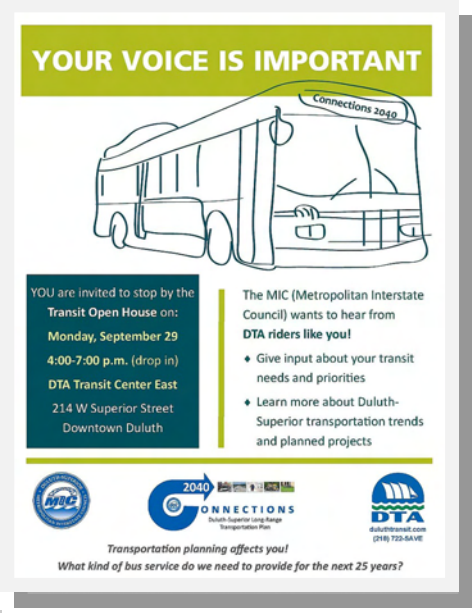
Public Meetings about the draft LRTP:

Thursday, Sept 11
5:00-7:00pm
Community Action Duluth
2424 W Fifth Street, Duluth, MN

Thursday, Sept 18
4:00-6:00pm
Superior Public Library
1530 Tower Avenue, Superior, WI

Thursday, Sept 25
4:00-6:00pm
Arrowhead Regional Development Commission (ARDC)
221 W First Street, Duluth, MN

Monday, Sept. 29
4:00-7:00 p.m. (drop in)
DTA Transit Center East
214 W Superior Street. Duluth, MN



Poster advertising the public meeting at the DTA transit center

Appendix A - Connections 2040

Duluth-Superior Metropolitan Area Travel Demand Model Update

Prepared for:

Duluth-Superior Metropolitan Interstate Council

Prepared by:

URS

August 2014

Introduction

The purpose of this report is to document the development of the Duluth-Superior area travel demand model, developed in support of the Metropolitan Interstate Council (MIC) and the Duluth-Superior Metropolitan Area Long Range Transportation Plan. The travel demand model was updated and validated for existing year conditions and travel demand is forecasted for the year 2040. This is an update that follows the model update done in January 2009.

The model was developed based on 2010 socio-economic data and roadway inventory and which is considered as the most recent existing year conditions available. The demographic data was forecasted for the forecast year 2040. This report discusses about the three major steps that were involved in the 2010 model update:

- ***Model Development Summary***
- ***Base Year Model Validation (2010)***
- ***2040 Travel Demand Model Forecast Results***

MODEL DEVELOPMENT SUMMARY

What is a travel demand model?

The practice of travel demand forecasting is roughly 35 years old and was mainly used to provide and objective tool for evaluating major infrastructure investments and preparing long-range, regional transportation plans. These travel forecasts were produced with mainframe software programs. Eventually improved micro-computerized model procedures emerged out that could predict travel changes in response to changes in development patterns, transportation systems, and demographics given certain assumptions about travel behavior based on existing conditions.
The region's demographic characteristics such as population, size of households, vehicles available and employment are the inputs used to estimate the number of trips made. These trips are then distributed and "loaded" onto a computerized network representing the street system to determine traffic volumes on individual roadway segments.

Most travel demand models use what is often referred to as the "four-step process." The four-steps include:

- Trip Generation,
- Trip Distribution,
- Mode Choice, and
- Trip Assignment.

The Duluth-Superior Area has a relatively low percentage of daily trips made using public transit. Because of this, and due to the time and cost restraints, the Duluth-Superior model does not include a mode split element in the sense of separating transit and auto trips. However, the model does generate "person trips", which are converted to auto trips using an auto occupancy factor for various trip purposes.

Forecasting traffic volumes on alternative proposed freeway and street alignments is a common model application. However, it must be remembered that transportation models are only a part of a larger set of engineering analysis tools, and in-and-of-itself provides limited insight into the "right" decision. The main advantage of a validated model is that it provides a systematic analysis process so that alternatives can be evaluated in an even-handed manner.

The remainder of this report documents the development of the Duluth-Superior travel demand-forecasting model to incorporate current transportation, socioeconomic, and land use characteristics. It also documents the results of the model validation process, the projection of future social and economic conditions, and the development of future traffic forecasts for the 2040 Long-Range Transportation Plan.

The following documentation describes the methodology used in developing the Duluth-Superior Travel Demand Model. The model was developed using the travel demand modeling software CUBE Voyager by Citilabs.

Transportation Analysis Zones (TAZs)

Transportation Analysis Zones (TAZs) are sub areas of the region that are used to geographically summarize land use, demographical, and travel data. TAZs are developed based on Census blocks and block groups as defined by the US Census Bureau. In urban areas, blocks are typically much smaller than TAZs, while blocks in rural areas are usually too large to be used directly for modeling purposes.

Table 1: New TAZ numbering by MCD

	TAZ Numbering		
Duluth C	1	to	353
Superior C	354	to	497
Hermantown C	498	to	546
Proctor C	547	to	565
Oliver V	566	to	567
Superior V	568	to	569
Duluth T	570	to	573
Lakewood T	574	to	578
Rice Lake T	579	to	591
Canosia T	592	to	602
Grand Lake T	603	to	612
Solway T	613	to	621
Midway T	622	to	628
Superior T	629	to	632
Parkland T	633	to	638
Lakeside T	639	to	639
External TAZs	640	to	659

A comprehensive review of TAZ system in 2005 model update as an effort to improve model accuracy and detail resulted in increasing the number of area TAZs from 336 to 639. The increase in TAZs was not due to an increase in the coverage area, but rather the splitting of larger TAZs into smaller ones. The near doubling of the TAZ system provided the increased detail needed to improve "traffic loading points" within the model network to better replicate existing travel patterns. The TAZ numbering system that was updated in 2005 as shown in **Table 1** was used for the 2010 model update.

External TAZs – In order to account for the vehicular trips that do not originate within or travel through the study area, "External TAZs" are identified on the study area perimeter at major road crossings. The 2005 model included 20 external TAZs. The same external stations were assumed to hold good for the 2009 model update. **Table 2** shown below lists the external station locations in the Duluth-Superior region.

Table 2: External TAZs

640	CSAH 61 / Scenic Highway
641	STH 61
642	CSAH 37 / Jean Duluth Road
643	CSAH 34 / Howard Gnesen Road
644	CSAH 4 / Rice Lake Road
645	CSAH 48 / Lavaque Road
646	US 53 / Miller Trunk Highway
647	CSAH 46
648	US 2
649	CSAH 45
650	I-35
651	STH 23
652	CTH B
653	STH 35
654	CTH A
655	CTH K
656	Anderson Hill Road
657	CTH E
658	US 53 / US 2 (WI)
659	STH 13

Network Development

The model network refers to the computerized representation of the study area's transportation system. The model network includes all roads functionally classified as a collector or higher. The model network also includes some key local roads where they added unique access between the Traffic Analysis Zones (TAZ) and the regional roadway system.

Links – The models network is made up of road segments called links. Each link is a line between two points or nodes. Nodes generally represent intersections where two or more roads connect.

Centroids and Connectors – Centroids refer to Nodes that represent TAZs. TAZ trip data is assigned to a corresponding centroid and loaded to the road network by centroid connector links, which represent the local road networks or drive access to the larger road system. Centroid placement within the TAZ boundary is important to accurately reflect the center of trip activity and distance to the road system to ensure trips load onto the network similar to actual traffic patterns.

Network Data

The following roadway network data was gathered, reviewed and updated where necessary:

- Distance
- Facility type (functional classification)
- 2010 Annual Average Daily Traffic
- Number of through-lanes
- Area type
- Lane capacity
- Travel time
- Posted speed limit
- Model speed
- One-way or two-way
- Cross section type
- Turn lanes
- Capacity (estimated from generalized standards extrapolated from the Highway Capacity Manual and approved by the MIC and assigned according to facility type, area type, and number of lanes)

A description of each link attribute is explained in **Appendix A** attached to this report.

Tables 3 – 6 list the capacity assumptions for freeways, arterials, and collector/local streets provided by MnDOT. Total Daily Capacity was set at Level of Service (LOS) D, which is highlighted in bold text. The column number corresponding to the identified LOS (A-F) indicates the upper limit for that LOS classification. **Figure 1** provides LOS descriptions. These capacities are based on conditions and assumptions, which are identified below the tables.

Table 3: Urban/Rural Freeway Total Daily Traffic Capacity

Lanes	A	B	C	D	E	F
Volume/Capacity	0.28	0.45	0.65	**0.85**	1.0	> 1.0
4-lane AADT (vpd)	< 25,000	40,000	60,000	**77,500**	90,000	> 90,000
6-lane AADT (vpd)	< 37,500	62,500	90,000	**115,000**	135,000	> 135,000
8-lane AADT (vpd)	< 50,000	80,000	118,000	**155,000**	180,000	> 180,000

Typical Conditions and Assumptions:

- Free-flow speed: 55 mph to 60 mph
- Portion of AADT in Peak Hour: 0.092

Source: MnDOT

Table 4: Suburban/Urbanizing Arterial Total Daily Traffic Capacity

Lanes	A	B	C	D	E	F
Volume/Capacity		0.50	0.70	**0.90**	1.0	> 1.0
2-lane AADT (vpd)		< 8,500	12,000	**15,000**	17,000	> 17,000
4-lane AADT (vpd)		< 17,000	24,000	**30,000**	34,000	> 34,000

Typical Conditions and Assumptions:

- Signal Spacing: ¼ mile to ½ mile
- Free-flow speed: 35 mph to 40 mph
- Signal Cycle Length: 80s to 90s
- Portion of AADT in Peak Hour: 0.09
- Effective Green Ration (g/C): 0.50
- Left-turn lanes: Yes

Source: MnDOT

Table 5: Urban/Urban Core Arterial Total Daily Traffic Capacity

Lanes	A	B	C	D	E	F
Volume/Capacity		0.50	0.70	**0.90**	1.0	> 1.0
2-lane AADT (vpd)		< 8,000	11,000	**14,500**	16,000	> 16,000
4-lane AADT (vpd)		< 16,000	22,000	**29,000**	32,000	> 32,000

Typical Conditions and Assumptions:

- Signal Spacing: 500 ft to 1/8 mile.
- Free-flow speed: 30 mph
- Signal Cycle Length: 70 seconds
- Portion of AADT in Peak Hour: 0.09
- Effective Green Ration (g/C): 0.50
- Left-turn lanes: Usually

Source: MnDOT

Table 6: Collector/Local Street by Area Type Daily Total Daily Traffic Capacity

	Lanes	B	C	D	E
Rural	2	9,444	10,222	**11,222**	12,556
	4	19,000	20,556	**22,444**	25,333
Suburban	2	N/A	7,444	**9,333**	9,778
	4	N/A	16,333	**18,778**	19,667
Urban	2	N/A	5,333	**8,667**	9,333
	4	N/A	11,333	**17,444**	18,000
Dense Urban	2	N/A	N/A	**8,667**	8,889
	4	N/A	N/A	**17,444**	18,000

N/A = Not achievable given assumptions below

Typical Conditions and Assumptions:	Rural	Suburban	Urban	Dense Urban
▪ Signal Density per mile	0.08	3	5	10
▪ Free-flow speed	50	40	35	30
▪ Signal Cycle Length	110	90	80	70
▪ Effective green ratio	0.45	0.45	0.45	0.45
▪ Adj. sat. flow rate	1,850	1,800	1,750	1,700
▪ Portion of AADT in Peak Hour	0.09	0.09	0.09	0.09
▪ % lefts, % rights	10	10	10	10
▪ Left-turn bay	Yes	Yes	Yes	Yes

Source: Highway Capacity Manual, URS Corp.

Figure 1: Levels of Service Descriptions

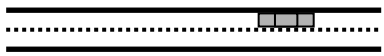
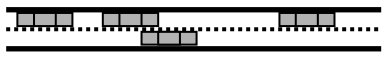
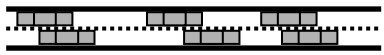
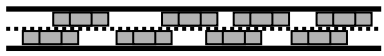
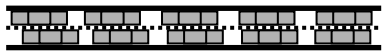
	Level of Service	Description
A		**FREE FLOW.** Low volumes and no delays.
B		**STABLE FLOW.** Speeds restricted by travel conditions, minor delays.
C		**STABLE FLOW.** Speeds and maneuverability closely controlled due to traffic volumes.
D		**STABLE FLOW.** Speeds considerably affected by change in operating conditions. High-density traffic restricts
E		**UNSTABLE FLOW.** Low speeds, considerable delay, volume slightly over capacity.
F		**FORCED FLOW.** Very low speeds, volumes exceed capacity, long delays with stop-and-go traffic.

Figure 1 attempts to describe what a driver would experience at each LOS. LOS A represents the least amount of traffic on a roadway, which provides drivers with free flow vehicle maneuverability and no traffic related delays. In contrast, LOS F represents very restricted vehicle maneuverability, slower speeds and longer delays due to the amount of traffic on the roadway.

Trip Generation

The trip generation model estimates the number of trips produced by and/or attracted to a transportation analysis zone (TAZ). The number of trips generated within a zone is a function of the demographic, socioeconomic, and land use characteristics of the zone. Trip generation models have three parts: trip production, trip attraction, and trip balancing which involves normalizing or scaling process that "matches" the total number of production and attraction trip ends.

Trip generation models are designed to produce estimates of either person trips or vehicle trips, depending on the derivation of the trip rates or equations. A model that produces estimates of vehicle trips in the trip generation step of the process precludes the application of a separate mode choice model because the mode has been predetermined to be auto (or vehicle) for all of the trips generated. The MIC area trip generation model rates and equations calculate person trips. Vehicle occupancy rates are applied to derive vehicle trips.

Two different levels of trip generation were developed within the MIC travel model:

- *Internal Trip Generation*: Internal trip generation was based on the procedures outlined in *Travel Estimation Techniques for Urban Planning*, NCHRP Report 365, Transportation Research Board, 1998. The MIC model utilized trip generation rates and production equations that were derived from the 2000 National Household Transportation Survey (NHTS) data and add-on data for Wisconsin. While these trip rates are specific to Wisconsin, they include survey data from Superior and are based on communities similar in size and characteristics as that of the MIC metropolitan planning area.

- *External Trip Generation (Including Internal-to-External Trips)*: Trip generation for internal-to-external and external-to-internal (I-E) traffic was based on traffic counts available from MnDOT and WisDOT.

Trip Purposes

By utilizing the National Household Transportation Survey (NHTS) data and add-on data for Wisconsin and WisDOT's assistance, two additional trip purposes were added by subdividing Home-based-other trips into home-based-shopping, home-based-school, and home-based-other.

The more trip purposes that the model accounts for, the more sensitive the model will be to changes in the projected demographics of the area. A balance between the number of trip purposes, the statistical relevance of the purposes, and the effort involved in modeling the trip purposes must be found. Using the NHTS data, five trip purposes have been defined for use in the model.

There are five trip purposes that were used for the MIC model trip purposes. They are listed below:

- Home-based work (HBW),
- Home-based Shopping (HBSh),
- Home-based school (HBSc),
- Home-based other (HBO), and
- Non-home based (NHB) trips.

As a general rule, the greater the number of trip purposes that can be successfully modeled, the more sensitive the model will be to changes in future socioeconomic conditions. The trip characteristics of each trip purpose are unique to that trip purpose and the question becomes how fine a distinction can be made among home-based non-work trip purposes.

The HB-Shopping, HB-Other, and HB-School trip purposes are subdivisions of the HB-Non-Work trip purpose. Each of these trip purposes has different characteristics in terms of average trip length and trip frequency. HB-Other trips include all trips from home that are not for any of the other HB trip purposes. Examples of such trips include a trip from home to the doctor's office for a medical appointment or a trip on personal business.

It is possible not to differentiate among these types of trips and assume that all HB-Non Work trips are governed by the same determinants and people behave in a similar manner when taking different types of non-work trips. This would imply that differences in average travel times and average trip frequencies between, say, HB-School and HB-Shopping trips would not be distinguished, and a single set of variables would be used to model both trip purposes. Intuitively we know that there are differences between these types of travel, and aggregation of the two purposes would represent a weakness in a model.

The discussion of internal trip generation parameters is divided into trip production and trip attraction sections.

Trip Productions

The trip generation model estimates the number of motorized person trips to and from each TAZ by purpose in the study area. In this step socioeconomic data are used to estimate the number of daily-motorized person trips within the study area (i.e. internal-internal) and with origins or destinations outside the study area (i.e. external-internal or internal-external).

Production Trip Generation Rates – URS will work with the Wisconsin Department of Transportation (WisDOT) to develop and apply new trip rates based on the National Household Transportation Survey results.

WisDOT purchased "add-on" surveys for Wisconsin communities from which trip rates by purpose were developed. Trip rates solely from Superior, WI survey data was not created. However, Superior survey data was combined with other MPO survey data to create trip rates. These trip rates were averaged with trip generation rates of similar sized Wisconsin communities for use in the Duluth-Superior Trip Generation Model. It is reasonable to assume that travel behavior data from

similar sized Wisconsin communities would not differ dramatically from travel behavior in Duluth and thus it is reasonable to apply such rates to the Duluth-Superior trip generation model. Trip Production rates in the travel demand model are listed below in **Table 7**.

Table 7: Trip Generations Rates - Productions

Home Base Work					
		WORKERS/HH			
AUTOS		**0**	**1**	**2**	**3+**
	0	0.0236	0.834	2.533	2.816
	1	0.026	1.148	2.835	4.004
	2+	0.069	1.617	3.022	5.309

Home Base Shopping					
		HH SIZE			
AUTOS		**1**	**2**	**3**	**4+**
	0	0.480	1.449	1.397	1.747
	1	0.733	1.887	1.751	1.892
	2+	0.770	1.934	2.302	2.941

Home Base School					
		HH SIZE			
AUTOS		**1**	**2**	**3**	**4+**
	0	0.064	0.368	0.556	2.256
	1	0.062	0.334	1.388	2.741
	2+	0.089	0.246	1.205	3.256

Home Base Other					
		HH SIZE			
AUTOS		**1**	**2**	**3**	**4+**
	0	0.605	2.626	2.038	5.628
	1	1.171	3.555	5.526	5.992
	2+	1.184	3.192	5.178	7.640

Non Home Based					
		HH SIZE			
AUTOS		**1**	**2**	**3**	**4+**
	0	0.670	2.150	2.139	2.831
	1	1.164	2.455	3.081	4.188
	2+	1.391	3.060	4.525	5.550

TAZ socioeconomic data – As the above trip rates indicate, the demographic data required for calculating productions included the number of households by the number of workers per household and the number of vehicles available and the number of households by household size and the number of vehicles available. This information was pulled from the Census Transportation Planning Package (CTPP) for year 2010.

Trip Productions Summary – Applying the trip generation rates for productions to the demographic data from the 2010 US Census and CTPP, the following trip productions were estimated for the MIC Planning Area for the base year 2010 and for the forecast year 2040. **Table 8** below lists the Trip Productions Summary for 2010 and 2040.

Table 8: Trip Productions Summary

Type	2010		2040 Conservative Scenario		2040 Aggressive Scenario	
	Trip ends	% Trips	Trip ends	% Trips	Trip ends	% Trips
HBW	89,599	16%	97,389	16%	106,212	16%
HBshop	90,130	16%	98,133	16%	107,072	16%
HBSch	89,412	16%	86,496	14%	93,014	14%
HBO	157,681	28%	171,693	28%	187,277	28%
NHB	142,217	25%	154,958	25%	169,082	26%
Total	**569,039**	**100%**	**608,669**	**100%**	**662,657**	**100%**

Trip Attractions

Trip attraction relates the trips attracted to a TAZ by the type and intensity of employment in that zone. Trip attraction models are linear regression models that quantify the relationship between different types of employment and the attractiveness of a TAZ for corresponding trip purposes.

Attraction Trip Generation Rates – Attraction trip generation rates shown below in **Table 9** were developed from the WI NHTS add-on sample and used the following variables to estimate trip attractions for each trip purpose. These rates are applied to the household and vehicle availability data provided by MIC to obtain trips.

- Households
- Total Employment
- Retail Employment
- Service Employment
- Other Employment
- School Enrollment

Table 9: Trip Generations Rates - Attractions

Trip Purpose	Variable	Attraction Rate Estimate
Home-Based Work Attractions	Total Employment	1.18
Home-Based Shopping Attractions	Retail Employment	8.42
Home-Based Other Attractions	Households	1.13
	Retail Employment	0.86
	Service Employment	0.51
Non Home-Based Attractions	Households	0.68
	Retail Employment	6.99
	Service Employment	0.97
	Other Employment	0.01
Home-Based School Attractions*	High School Enrollment	1.71
	Middle School Enrollment	1.62
	Elementary School Enrollment	1.29
	Junior College Enrollment	1.20
	University/College Enrollment	2.38

* School trip attraction rates are based on Trip Generation: 7th Edition; Institute of Transportation Engineers; 2003 in order to better reflect trip differences between school grade levels and student travel behaviors. University and college enrollment figures were adjusted to reflect students living on-campus.

TAZ socioeconomic data – Employment data by sector is available through the 2010 CTPP except only at the old TAZ boundaries. The CTPP data was then assigned to the new TAZ system based proportionately on the locations and employment from the businesses database.

Trip Attractions Summary – Applying the trip generation rates for attractions to the socioeconomic data, the following trip attractions were estimated for the MIC Planning Area for the base and forecast years in the 2009 model update. **Table 10** provides trip attraction summary for base and forecast years for the 2009 MIC model update. **Table 11** lists the Employment Summary for 2010 as well as projections for 2040 forecast year.

Table 10: Trip Attractions Summary

Type	2010		2040 Conservative Scenario		2040 Aggressive Scenario	
	Trip ends	% Trips	Trip ends	% Trips	Trip ends	% Trips
HBW	85,264	17%	94,611	18%	101,380	18%
HBshop	70,054	14%	75,064	14%	79,914	14%
HBSch	89,412	18%	86,496	16%	93,014	16%
HBO	104,618	21%	113,315	21%	122,658	22%
NHB	149,938	30%	161,905	30%	173,324	30%
Total	**499,287**	**100%**	**531,391**	**100%**	**570,290**	**100%**

Table 11: Employment Summary and Projection

	Households	Service Employment	Retail Employment	Other Employment	Total Employment
2010	63,792	49,761	8,320	13,471	71,552
2040 Conservative	69,095	54,061	8,915	16,490	79,466
2040 Aggressive	75,530	57,150	9,491	18,573	85,214

Special Generators – During the validation process, large trip attractors were identified and reviewed as candidates for special generators. Because model volume estimates were consistent with observed traffic volumes, and trips to these TAZs appeared reasonable, special generators were not used. As noted earlier however, the daily trip generation rates for primary and secondary schools, junior college, and university school trips are based on the ITE's *Trip Generation*, 7th Edition.

Though no special generator zones are there in this model, it is to be noted that the home base work (HBW) trips from and to the TAZ 509 that has the airport were adjusted in the model to reflect the airport trips.

Trip Balancing

Balancing Productions and Attractions – Because each trip consists of a productions/origin and an attraction/destination, the number of trip productions and trip attractions for each trip purpose need to be the same. Attraction trips are generally balanced to production trips since there tends to be more confidence in census household data and trips per household tend be more consistent than trips based on employment data. The MIC model balanced attraction trips to production

trips except for home-based school trips. These trips were balanced to attraction trips, which were based on actual school enrollment data at individual school locations.

External Trips

External trips relate to trips that have either the origin or destination outside the Model Study area (external to internal, internal to external; i.e. E-I trips) or are through-trips that have both their origin and destination outside the study area (external to external; i.e. E-E trips). External trips are counted as vehicle trips corresponding to the Annual Average Daily Traffic (AADT) volume at the external station along the study area perimeter.

Ideally, external trip pattern data would come from an origin-destination survey conducted at each external station site. An Origin-Destination (O-D) survey was completed in 2003 by WisDOT on the Wisconsin side of the MPO study area. However, an O-D survey was not conducted for the Minnesota side. The Wisconsin data was used to allocate E-E and E-I trips for Wisconsin external stations. The Transportation Research Board's NCHRP Report 365: *Travel Estimation Techniques for Urban Planning* provided guidance for estimating E-E trip percentages and distribution for external stations in Minnesota.

The percent of E-E trips for the base year 2010 for this model update, were determined as mentioned above using the NCHRP 365 procedures. The initial 2010 E-E trip matrix was then balanced using a series of iteration processes. The final balanced 2010 E-E trip table was then used as an input into a FRATAR model with appropriate ADT growth rates to get the 2040 E-E balanced trip table. MIC provided URS with the projected ADT counts for the base and forecast year's external stations.

Trip Distribution

The trip distribution model links trip productions in the region with trip attractions to create matrices of interzonal and intrazonal travel, called trip tables. The critical output of trip distribution is trip length and travel orientation (suburb to CBD, CBD to suburb, etc.), and the resulting magnitude of traffic volumes. The most common form of model used for trip distribution is the gravity model. The gravity model theory states that the number of trip interchanges between two transportation analysis zones will be directly proportional to the number of productions and attractions in the zones, and inversely proportional to the spatial separation between the zones. The gravity model requires three data inputs:

1. *Travel Impedance* – URS updated the travel times and checked for reasonableness for the 2005 model update. The same data has been assumed to hold good as the zone structure has not changed between 2005 and 2008.

2. *Terminal Times* – URS updated the terminal times for the 2005 model update. The same data has been assumed to hold good as the zone structure has not changed between 2005 and 2008.

3. *Gravity Model & Friction Factors* – Friction factors developed for 2005 model update were assumed to be valid for the current model update as 2000 Census data is still the latest data available.

An iterative process of the gravity model brings attraction estimates by zone in-line with trip generation estimates. The first model iteration overestimates trips to highly accessible areas and underestimates trips to inaccessible areas. The program computes a balancing factor by dividing estimated attractions into input attractions. The resulting factor is applied to estimate attractions in the next cycle. **Table 12** shows the number of trips distributed in the MIC area model for 2010 and 2040 by trip purpose. The same trip lengths are used for the 2009 MIC model update.

Table 12: 2010 & 2040 Average Trip Lengths

Trip Purpose	2010	2040 Conservative Scenario	2040 Aggressive Scenario
HBW	15.8	16.0	16.1
HBshop	14.1	14.1	14.1
HBsch	14.2	14.4	14.5
HBO	12.9	12.9	12.9
NHB	14.0	14.0	13.6
E-I	22.3	22.3	22.2

Note: Average Trip Lengths are in minutes.

Mode Choice

A mode choice model was not developed as part of this or past travel demand models, which is common for small MPO's, where transit trips tend to make up a relatively small proportion of trips and the costs of developing mode choice models are prohibitive.

Auto Occupancy – Auto occupancy rates are used for converting person trips to vehicle trips. Auto occupancy rates by trip purpose for similar communities generated from the 2000 National Household add-on data for Wisconsin were provided by WisDOT and applied to the MIC model.

Traffic Assignment

The traffic assignment is the last step of the traditional 4-step process, which is the process of loading vehicle trips between zones onto specific segments of the roadway network. The resulting traffic forecasts and related data are some of the most commonly used outputs from the entire modeling process. Therefore, a great deal of effort is spent to make these forecasts as accurate as possible. Inevitably, even after model validation, estimated link volumes will differ from ground counts.

Vehicle trips loading onto the highway network use a range of path-building algorithms, and typically iterate each assignment to account for congestion on the system. The equilibrium method used in the MIC model is an iterative process that searches for the best combination of the current and previous iterations. Equilibrium is achieved when no trip can reduce travel impedance by changing paths.

The equilibrium model adjusts the travel time for each path based on congestion as defined by the volume-to-capacity ratio. This is known as a capacity restrained assignment. These adjustments are made through volume-delay equations that estimate the delay associated with traffic volumes for each segment in the system. Speed/delay curves serve to adjust the operating speed of a facility downward as volume-to-capacity ratios increase and the facility reaches capacity. Therefore, in an equilibrium assignment model, traffic will be diverted to alternative routes as traffic and congestion increase on parallel facilities.

Based on the premise that different facilities respond differently to congestion, three different speed/delay curves were used for the traffic assignment element of the MIC area model. Separate speed/delay curves were used for the freeways as well as the higher speed multi-lane arterials. A single curve was used for the remainder of the system.

Model Calibration & Validation

Model calibration and validation are terms often used interchangeably. While linked with calibration, validation refers to checking model results against observed data. Once the model results fall within an acceptable range of error, the model is considered valid. The assumption is that if the model can replicate existing conditions, it can reliably forecast future conditions. Calibration, in contrast, is the process of adjusting model parameter values until the model volumes reach the validation criteria. Validation typically occurs through an iterative process with calibration.

Highway assignment models are calibrated and validated based primarily on the comparison of estimated model volumes to traffic counts and achieving an acceptable level of error. At the very minimum, the model should include traffic counts on ten percent of the area-wide highway segments being analyzed plus on all screenline links. This ten percent goal also applies to the distribution of counts in each functional classification. **Table 13** shows the percentage of links having counts in the MIC model. Thirty-four percent of all the links in the network have counts.

Table 13: Links with Counts by Functional Class

Functional Class	Number of Links	Links with Counts	% Links with Counts
Freeway & Expressway	94	71	76%
Principal Arterial	403	280	69%
Urban Minor Arterial	1,062	695	65%
Urban Collectors	1,256	527	42%
Rural Minor Arterial	118	72	61%

A validated model is one that can accurately replicate existing traffic patterns and trip-making characteristics for a given area. Validation ensures that the model provides a firm foundation for forecasting future traffic conditions. Comparing traffic volumes from the highway assignment model with observed traffic counts provides one of the best opportunities to check the accuracy of model outputs.

It is important to recognize that traffic counts are themselves only estimates of traffic volume. Base ground counts should be thought of as approximations of existing traffic, just as the base model estimate is an approximation to existing traffic. Counts could have errors caused by variation in the mix of vehicles or may not be appropriately adjusted for season or day-of-the-week variations. Errors could also be due to mechanical counter failure, field personnel mistakes, or improper count location.

Validation

Model validation is usually performed at different levels. First, system-wide performance is reviewed to determine if regional inputs or parameters should be changed. Second, assigned volumes on different facility types are reviewed to check if speed and capacity assumption need to be changed. Third, specific corridors and links are checked for network coding errors or trip loading errors.

Absolute criteria for assessing the validity of all model systems are not precisely defined. However, a number of target values have been developed. These commonly used values provide guidance for evaluating the relative performance of particular models. The Federal Highway Administration (FHWA) and the Michigan Department of Transportation defines targets for daily volumes by facility type as shown below in **Table 14**.

Table 14: Percent Difference Targets for Daily Traffic Volumes by Facility Type

Facility Type	FHWA Targets	MDOT (MI)
Freeway	+/- 7%	+/- 6%
Major Arterial	10%	7%
Minor Arterial	15%	10%
Collector	25%	20%

Source: *Model Validation and Reasonableness Checking Manual*, Travel Model Improvement Program, US Department of Transportation June 2001.

The MIC model validation results system-wide and by facility type are indicated in **Table 15**. The table shows that the model is under-estimating traffic volumes by less than four percent on the entire transportation network, which is within an acceptable percentage of error. All model volumes by functional class are also well within the percent of acceptable error. The model is slightly over-assigning traffic volume on Freeway and Expressway links. The model under-estimates traffic volumes on the urban minor arterials, and over-assigns traffic slightly on rural minor arterials. The model under-assigns urban collector traffic, although the results from the model overall are still well within the acceptable percentage of error.

Table 15: MIC Model Volumes vs. Traffic Counts by Functional Class

Functional Class	Model ADT	Count ADT	Model/Count %
Freeway & Expressway	1,082,957	1,035,280	4.6%
Principal Arterial	1,811,298	1,882,911	-3.8%
Urban Minor Arterial	2,304,211	2,559,207	-10.0%
Urban Collectors	705,994	875,798	-19.4%
Rural Minor Arterial	126,136	136,655	-7.7%
Total	6,030,597	6,489,851	-7.1%

Another system validation check is to look at model volumes compared to traffic counts according to the total volume of traffic the roadway carries as shown in **Table 16**. The model tends to over-estimate the lowest volume roads and the highest volume roads. Links with the middle ranges tend to be slightly under-estimated. However, all ranges of traffic volumes fall within acceptable percentage of error.

Table 16: Model volumes vs. traffic counts by Range of Traffic Volumes

Traffic Volume Range	Links	Model ADT	Count ADT	Model/Count %
0 - 1,000	419	255,722	238,011	7%
1001 - 2,500	647	1,068,949	1,125,519	-5%
2,501 - 5,000	409	1,274,466	1,510,771	-16%
5,001 - 10,000	335	2,196,421	2,348,769	-6%
10,001 - 20,000	74	928,728	950,008	-2%
20,001 - 30,000	18	435,999	450,000	-3%
Total	1902	6,160,285	6,623,078	-7%

A more stringent measure of model accuracy is provided by the root mean square error (RMSE) between estimated and observed link volumes. This measure summarizes the error in individual link volumes and eliminates the tendency of VMT summaries to obscure results due to compensating errors.

The RMSE output for the MIC area model along with an acceptable percent RMSE by ADT count range is shown in **Table 17**. As shown in this table, the MIC model is well within the limits of RMSE acceptability for links with volume ranges greater than 2,500. The amount of error for low volume links is not within the percent acceptable range. Because the MIC model includes numerous low volume links, the typical range of acceptability category of 0-5,000 was subdivided between 0-2,500 and 2,500-5,000. By doing this, it becomes apparent that the high number of low volume links (<2,500) explains why the total RMSE is outside the acceptable desired RMSE percentage.

Table 17: RMSE by ADT Count Ranges

Volume Range	Links with Counts	Model RMSE %	Acceptable %
0 - 2,500	1,066	71%	45% - 55%
2,501 - 5,000	409	51%	45% - 55%
5,001 - 10,000	335	29%	35% - 45%
10,001 - 20,000	76	21%	27% - 35%
20,001 - 30,000	18	16%	24% - 27%
0 - 30,000	**1,904**	44%	**32% - 39%**

2040 Traffic forecasts

Following the calibration and validation of the base year model, the next step in the process was to use the calibrated base year model to test future year socioeconomic and roadway system improvement assumptions, and to ultimately determine future year traffic forecasts. For the MIC area, the future forecast year for the 2010 Model Update is 2040. It is assumed that all of the

socioeconomic growth and roadway system improvements in the model will occur by 2040. The 2040 estimated volume presented in this section of the report is directly related to the socioeconomic and roadway system changes expected to occur in the area over the next 30 years.

The level of future roadway system improvements and capacity expansions represent the final piece of information necessary for projecting future traffic volumes.

The 2040 Model forecasts are based on 2040 population and employment forecasts, from which trips are calculated. Production and Attraction Trips summaries are indicated in the trip generation section of this report.

Because travel demand models have some range of error, particularly at the individual link level, 2040 model volumes are adjusted to account for those individual link errors. For links with traffic counts, the absolute difference and the percentage difference between the base year model volumes and the base year traffic counts are averaged and applied to the 2040 model volumes. Since a traffic count is needed, only some links are adjusted.

Table 18 lists system-wide vehicle miles traveled (VMT) and vehicle hours traveled (VHT) for the 2010 base year model and the 2040 conservative scenario and 2040 aggressive scenario models. Given the 2040 growth assumptions, the model estimates an increase in the vehicle miles of travel to increase by 36 percent. The amount of time spent in traveling on the system is estimated to increase by 46 percent. The percentage increase in traffic and travel times is estimated to outpace the 6 percent population growth that is forecast. This is reasonable considering that most of the areas planned to accommodate growth will likely occur on the urban fringe resulting in greater distances between home, jobs, and commercial areas.

Table 18: 2040 Forecast Summary Data

	VHT	VMT
2010	67,894	3,010,946
2040 Conservative	89,766	3,755,722
2040 Aggressive	98,962	4,103,340
% Change	46%	36%

As with all models, the MIC area model was developed with the most current information available. As new information become available, it should be incorporated to the extent possible to further improve and refine the model.

APPENDIX A – Field Definitions

Segment Distance – Segment distance is the length of each link (in miles). This attribute is automatically read by TP+ from the geographic network file, so accuracy in network development is critical in attaining realistic segment distances and reliable travel time calculations. Distance was recalculated in GIS (i.e. ArcMap) to ensure accuracy.

Facility Type (Functional Classification) – This is the type of highway facility that each link represents. The following facility types were used:

- Facility Type 01 = Urban/Rural Interstate
- Facility Type 02 = Urban/Rural Freeway
- Facility Type 03 = Urban/Rural Freeway Ramps
- Facility Type 04 = Urban/Rural Expressway
- Facility Type 11 = Urban Principal Arterial (Other)
- Facility Type 12 = Urban Minor Arterial
- Facility Type 13 = Urban Collector
- Facility Type 14 = Urban Local
- Facility Type 21 = Rural Principal Arterial
- Facility Type 22 = Rural Minor Arterial
- Facility Type 23 = Rural Major Collector
- Facility Type 24 = Rural Minor Collector
- Facility Type 25 = Rural Local
- Facility Type 99 = Zone Centroid Connector

Annual Average Daily Traffic (AADT) – The observed average daily traffic volumes were collected from MnDOT, WisDOT coverage count programs. These traffic counts define the actual traffic conditions to which the traffic modeling results will be compared.

Number of Lanes – The number of through lanes for each link in each direction. Note that this does not include turning lanes at intersections for the purposes of travel demand modeling.

Surrounding Area Type – Area Type indicates the generalized land use surrounding a given link within the network. Table 5.4, from the WisDOT's *Model Inputs Standards Guide*, provides guidance for determining TAZ area types. The Four area type codes used in this model are:

- Area Type 10 = Rural
- Area Type 20 = Suburban
- Area Type 30 = Urban
- Area Type 40 = Dense Urban

Table 5.4: Area Type Definitions

Population (density) by Area Type		Employment (density) by Area Type	
0-500	Rural	0-500	Rural
500-1,000	Suburban	0-5,000	Suburban
1,000-5,000	Urban	5,000-10,000	Urban
5,000+	Dense Urban	10,000+	Dense Urban

- If Employment Type = Dense Urban then Area Type is Dense Urban
- If Employment Type = Urban then Area Type is Urban
- If Employment Type = Suburban AND Population Type = Dense Urban OR Urban then Area Type is Urban
- If Employment Type = Suburban AND Population Type = Suburban OR Rural then Area Type is Suburban
- If Employment Type = Rural AND Population Type = Rural then Area Type is Rural

Lane Capacity – The hourly capacity per lane assigned based on WisDOT's *Model Inputs Standards Guide*. Lane capacity was not used in calculating total daily link capacities, which were provided by MIC staff and MnDOT.

Travel Time – Travel time is calculated along each network roadway link as a function of the segment's distance and model speeds. This refers to non-congested travel time.

Posted Speed Limit – This is the actual speed limit posted on a road by the respective state transportation departments.

Model Speed – This is the speed used in the network to determine travel time on the roadway link. This value is based on a lookup table and may vary from the posted speed limit.

The model speed lookup table used in the MIC model is from WisDOT's *Model Inputs Standards Guide* and is listed below (see Table 5.5). In some situations, these values may have been adjusted within a reasonable range based on specific known roadway characteristics and/or as part of the model calibration process.

Table 5.5: Model Speed Look-up Table

Functional Classification Group	Speed (MPH)			
	Dense Urban	Urban	Suburban	Rural
Interstate	55	65	65	70
Freeway	55	60	60	65
Expressway	40	45	55	65
Principal Arterial	35	40	50	55
Minor Arterial	30	35	45	50
Major Collector	NA	NA	40	45
Minor Collector	NA	NA	40	45
Collector	25	30	35	NA
Local	25	25	25	25
Ramps	35	35	35	35
Centroid	15	15	25	35

Source: WisDOT, STN and Wisconsin Statewide Model

Cross Section Type – The type of roadway cross-section for each link in the network.

- Cross Section 1 = Undivided
- Cross Section 2 = Divided
- Cross Section 3 = Center Turn Lane

Screenline – Screenlines are used to validate models by verifying that major regional traffic flows estimated by the model are consistent with observed regional traffic flows.

Turn Lane Geometry – Turn lane geometry were assigned as follows

- Geo_ID 0 = No Turn Lane
- Geo_ID 1 = Single Left Turn Lane
- Geo_ID 2 = Double Left Turn Lanes
- Geo_ID 3 = Single Right Turn Lane
- Geo_ID 4 = Double Right Turn Lanes
- Geo_ID 5 = Single Left and Right Turn Lanes
- Geo_ID 6 = Double Left and Single Right Turn Lanes
- Geo_ID 7 = Single Left and Double Right Turn Lanes
- Geo_ID 8 = Double Left and Right Turn Lanes

G/C Ratio – Estimated green time to Cycle length.

- Low Signal Priority – GC = .45
- Medium Signal Priority – GC = .50
- High Signal Priority – GC = .55

Intersection Control – The type of Intersection control corresponding to the link approach.

- Control 0 = Freeway Link
- Control 1 = Signalized Intersection
- Control 2 = All Way Stop
- Control 3 = Two Way Stop
- Control 4 = Yield
- Control 5 = No Intersection Control Listed
- Control 6 = Centroid Connector

One-way Indicator – An indicator for a one-way or two-way link included in the network. A "0" indicates that a link is two-way, while a "1" indicates the link is a one-way facility.