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Metropolitan Council of
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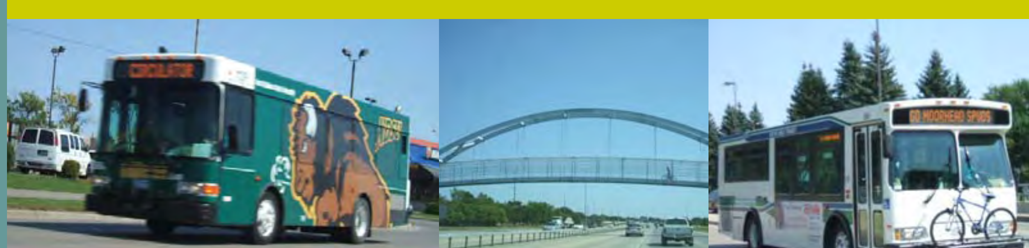
Long-Range Transportation Plan

For the Fargo-Moorhead Metropolitan Area

December 2009



The Fargo-Moorhead Metropolitan Area

Long-Range Transportation Plan

December 2009

Prepared by the Fargo-Moorhead Metropolitan Council of Governments

The preparation of this document was funded in part by the United States Department of Transportation with funding administered through the North Dakota & Minnesota Department's of Transportation, the Federal Highway Administration and the Federal Transit Administration. Additional funding was provided by the Minnesota Department of Transportation and through local contributions from the governments of Fargo, West Fargo, and Cass County in North Dakota; and Moorhead, Dilworth, and Clay County in Minnesota. The United States Government and the States of North Dakota and Minnesota assume no liability for the contents or use thereof.

Resolutions of Support

Fargo-Moorhead Metropolitan Council of Governments
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RESOLUTION

Whereas, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG), is the metropolitan planning organization designated by the Governors of North Dakota and Minnesota to maintain the metropolitan area's transportation planning process in accordance with federal regulations;

Whereas, the Fargo-Moorhead Metropolitan Council of Governments has undertaken the task of updating its Metropolitan Transportation Plan, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding;

Whereas, the metropolitan transportation planning process was guided by the Metropolitan Transportation Technical Committee (TTC) composed of a wide cross-section of local multi-modal technical experts including engineers, planners, transit directors, and state and federal transportation officials;

Whereas, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Plan;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) was prepared using an extensive intermodal planning process;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) has been approved by the governing bodies of the cities of West Fargo and Fargo and Cass County in North Dakota, and by the cities of Moorhead and Dilworth and by Clay County in Minnesota;

Now, Therefore Be It Resolved, that Fargo-Moorhead Metropolitan Council of Governments Policy Board does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan (2009-2035), and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan transportation system.;

Approved and adopted this 10th day of December, 2009

Attest:

Julie Nash, Metro COG Policy Board Chair

Witnessed By:

Wade Kline, Metro COG Executive Director

CASS COUNTY GOVERNMENT

RESOLUTION #2009-17

Board of County Commissioners

Scott Wagner
Fargo, North Dakota

Vern Bennett
Fargo, North Dakota

Ken Pawluk
Fargo, North Dakota

Darrell W. Vanyo
West Fargo, North Dakota

Robyn Sorum
Horace, North Dakota

WHEREAS, the Cass County Board of Commissioners is the duly elected governing body for Cass County Government and is responsible for the planning and development of a safe and functional transportation system;

WHEREAS, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG), is the metropolitan planning organization designated by the Governors of North Dakota and Minnesota to maintain the metropolitan area's transportation planning process in accordance with federal regulations;

WHEREAS, the Fargo-Moorhead Metropolitan Council of Governments has undertaken the task of updating its Metropolitan Transportation Plan, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding;

WHEREAS, the metropolitan transportation planning process was guided by the Metropolitan Transportation Technical Committee (TTC) composed of a wide cross-section of local multi-modal technical experts including engineers, planners, transit directors, and state and federal transportation officials;

WHEREAS, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Plan;

WHEREAS, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) was prepared using an extensive intermodal planning process;

WHEREAS, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area;

NOW, THEREFORE BE IT RESOLVED, that the Cass County Board of Commissioners does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan (2009-2035), and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan transportation system.

Approved and adopted this 5th day of October, 2009.

BY:

Robyn Sorum, Chairwoman
Cass County Commission

ATTEST:

Michael Montplaisir
Cass County Auditor

Heather Worden
Commission Assistant

Box 2806
211 Ninth Street South
Fargo, North Dakota 58108

701-241-5609
Fax 701-241-5728
www.casscountygov.com

CERTIFICATE

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF CASS)

I, Dennis R. Walaker, the duly elected, qualified and acting Mayor of the City of Fargo, North Dakota; and

I, Steven Sprague, the duly appointed, qualified and acting City Auditor of the City of Fargo, North Dakota,

DO HEREBY CERTIFY:

That the foregoing is a full, true and correct copy of the original Resolution, which Resolution was duly adopted by the Board of City Commissioners of the City of Fargo, North Dakota, at the meeting of the Board held November 2, 2009 at which Regular Meeting all members present voted in favor of the adoption of the Resolution; and

That such Resolution is now a part of the permanent records of the City of Fargo, as such records are now filed in the office of the City Auditor.

(SEAL)

Dennis R. Walaker
Dennis R. Walaker, Mayor of the
City of Fargo, North Dakota

ATTEST:

Steven Sprague
Steven Sprague, City Auditor

On this 2nd day of November, 2009, before me, Sharon M Plecity, a Notary Public in and for Cass County, in the State of North Dakota, personally appeared Dennis R. Walaker, known to me to be the Mayor of the City of Fargo, North Dakota, and Steven Sprague, City Auditor of the City of Fargo, a municipal corporation under the laws of the State of North Dakota, and they acknowledged to me that they executed the foregoing instrument.

SHARON M. PLECITY
Notary Public
State of North Dakota
My Commission Expires July 31, 2014

Sharon M Plecity
Notary Public
Cass County, North Dakota

(SEAL)
My Commission Expires:

RESOLUTION ADOPTING
FARGO MOORHEAD AREA LONG RANGE TRANSPORTATION PLAN (2009-2035)

BE IT RESOLVED BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF FARGO:

RESOLUTION

WHEREAS, the Board of City Commissioners is the duly elected governing body for the City of Fargo and is responsible for the planning and development of a safe and functional transportation system;

WHEREAS, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG), as the metropolitan planning organization designated by the Governors of North Dakota and Minnesota to maintain the metropolitan area's transportation planning process in accordance with federal regulations;

WHEREAS, the Fargo-Moorhead Metropolitan Council of Governments has undertaken the task of updating its Metropolitan Transportation Plan, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding;

WHEREAS, the metropolitan transportation planning process was guided by the Metropolitan Transportation Technical Committee (TTC) composed of a wide cross-section of local multi-modal technical experts including engineers, planners, transit directors, and state and federal transportation officials;

WHEREAS, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Plan;

WHEREAS, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) was prepared using an extensive intermodal planning process;

WHEREAS, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area;

NOW, THEREFORE BE IT RESOLVED, that City of Fargo City Commission does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan (2009-2035), and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan transportation system.;

Approved and adopted this day of , 2009

Attest: By:

City of WEST FARGO
www.westfargo.org

Sharon Schacher, Finance Director
Larry M. Weil, Planning Director
Wanda J. Wilcox, City Assessor
Dorinda Anderson, Business Development Director
Jim Brownlee, CPA, Administrator

RESOLUTION

Whereas, the West Fargo City Commission is the duly elected governing body for the City of West Fargo and is responsible for the planning and development of a safe and functional transportation system;

Whereas, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG); as the metropolitan planning organization designated by the Governors of North Dakota and Minnesota to maintain the metropolitan area's transportation planning process in accordance with federal regulations;

Whereas, the Fargo-Moorhead Metropolitan Council of Governments has undertaken the task of updating its Metropolitan Transportation Plan, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding;

Whereas, the metropolitan transportation planning process was guided by the Metropolitan Transportation Technical Committee (TTC) composed of a wide cross-section of local multi-modal technical experts including engineers, planners, transit directors, and state and federal transportation officials;

Whereas, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Plan;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) was prepared using an extensive intermodal planning process;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area;

Now, Therefore Be It Resolved, that West Fargo City Commission does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan (2009-2035), and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan transportation system.

Approved and adopted this 21 day of September, 2009

Attest:

James Brownlee

James Brownlee, City Auditor

By:

Rich Mattern

Rich Mattern, President of the Board of City Commissioners

COUNTY COMMISSIONERS
1st District - WAYNE INGERSOLL, Moorhead
2nd District - JERRY WALLER, Dilworth
3rd District - JON EVERT, Comstock
4th District - KEVIN CAMPBELL, Moorhead
5th District - GRANT WEYLAND, Moorhead
Office Telephone: (218) 299-5002
Fax: (218) 299-5195

CLAY COUNTY

RESOLUTION 2010-23

Whereas, the County Board of Commissioners is the duly elected governing body for Clay County and is responsible for the planning and development of a safe and functional transportation system;

Whereas, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG), as the metropolitan planning organization designated by the Governors of North Dakota and Minnesota to maintain the metropolitan area's transportation planning process in accordance with federal regulations;

Whereas, the Fargo-Moorhead Metropolitan Council of Governments has undertaken the task of updating its Metropolitan Transportation Plan, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding;

Whereas, the metropolitan transportation planning process was guided by the Metropolitan Transportation Technical Committee (TTC) composed of a wide cross-section of local multi-modal technical experts including engineers, planners, transit directors, and state and federal transportation officials;

Whereas, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Plan;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) was prepared using an extensive intermodal planning process;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area;

Now, Therefore Be It Resolved, that the Clay County Board of Commissioners does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan (2009-2035), and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan transportation system.

Approved and adopted this 13th day of April, 2010.

Attest: Vijay K. Sethi

Vijay K. Sethi, County Administrator

By: Kevin Campbell

Kevin L. Campbell, County Board Chair

Clay County Courthouse
807 11th Street North
P.O. Box 280
Moorhead, Minnesota 56561-0280

RESOLUTION 09-18

Whereas, Dilworth City Council is the duly elected governing body for the City of Dilworth and is responsible for the planning and development of a safe and functional transportation system;

Whereas, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG), as the metropolitan planning organization designated by the Governors of North Dakota and Minnesota to maintain the metropolitan area's transportation planning process in accordance with federal regulations;

Whereas, the Fargo-Moorhead Metropolitan Council of Governments has undertaken the task of updating its Metropolitan Transportation Plan, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding;

Whereas, the metropolitan transportation planning process was guided by the Metropolitan Transportation Technical Committee (TTC) composed of a wide cross-section of local multi-modal technical experts including engineers, planners, transit directors, and state and federal transportation officials;

Whereas, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Plan;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) was prepared using an extensive intermodal planning process;

Whereas, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area;

Now, Therefore Be It Resolved, that the City of Dilworth does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan (2009-2035), and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan transportation system.;

Approved and adopted this 28th day of September, 2009.

Mayor ____________________
Keith Coalwell

ATTEST: ____________________
Ken L. Parke, City Administrator

RESOLUTION

WHEREAS, the Moorhead City Council is the duly elected governing body for the City of Moorhead and is responsible for the planning and development of a safe and functional transportation system; and

WHEREAS, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG), as the metropolitan planning organization designated by the Governors of North Dakota and Minnesota to maintain the metropolitan area's transportation planning process in accordance with federal regulations; and

WHEREAS, the Fargo-Moorhead Metropolitan Council of Governments has undertaken the task of updating its Metropolitan Transportation Plan, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding; and

WHEREAS, the metropolitan transportation planning process was guided by the Metropolitan Transportation Technical Committee (TTC) composed of a wide cross-section of local multi-modal technical experts including engineers, planners, transit directors, and state and federal transportation officials; and

WHEREAS, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Plan; and

WHEREAS, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) was prepared using an extensive intermodal planning process; and

WHEREAS, the Fargo-Moorhead Area Long Range Transportation Plan (2009-2035) provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Moorhead that the City of Moorhead does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan (2009-2035), and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan transportation system.

PASSED by the City Council of the City of Moorhead this 12th day of October, 2009.

APPROVED BY:

MARK VOXLAND, Mayor

ATTEST:

JILL WENGER, City Clerk

#2009-1028

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December 2009

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Preface: Development of this Plan

The overall preparation process for this plan can be broadly defined through the following components, which were necessary to the logical identification of transportation needs and to guiding the investment of transportation funds.

Public Input

The public was asked to provide input on known issues and opportunities related to the regional transportation system. A variety of methods were used to engage the public and collect their comments.

First, ten focus groups were convened to engage specific, targeted segments of the population, including:

1. Freight
2. Bicycles and Pedestrians
3. Commerce and Business
4. Higher Education
5. School Districts
6. Transportation Security
7. Environment
8. Transit
9. Elder Care and those with Limited Mobility
10. Low Income Residents and New Americans

Issues identified by the focus groups were then presented to the public at a public open house held in downtown Fargo during the Fargo Streetfair, an annual regional event that draws 50,000 people. The public was asked to rank the focus group issues by priority.

Simultaneously, an on-line public input survey collected public input over a 20 day period. The survey was advertised at the Streetfair open house as well as through the press and public meeting notices.

The public input collected was important not only to identifying existing system deficiencies, but also in understanding the public's desires for the future of the regional transportation system.

Following the development of a draft plan, the public was again consulted for comments and feedback through a one-day public open house. The public was encouraged to provide reaction to the possible policy recommendations in Chapter 2, as well as reviewing Chapter 5 project lists and the alternative growth scenario in Chapter 6.

Inventory of Existing Conditions

An important component of developing the plan was an assessment of the current transportation system. Chapter 1 of this document is an assimilation of existing information on roadways, bridges, railroads, airports, transit, bicycle facilities, and pedestrian facilities. It also describes the freight characteristics within the metropolitan area. All of this information was valuable, as it helped Metro COG staff understand the existing state of the transportation network and how it functions in the present. In order to fully understand the future needs of the network, the existing state of the network needed to be fully assessed. Further, the existing conditions data also helped identify the following: (a) the need for preventative maintenance, (b) existing facilities that lack continuity, (c) high crash locations, and (d) other limitations of the existing transportation system that needed to be addressed by proposed future projects.

Assessment of Transportation System Needs

Growth in travel demand is mainly the result of growth in households and jobs, combined with changes in the travel behavior of the residents in and around the study area. Therefore, it was very important to quantify future job and household growth and estimate their location. It was also important to determine whether there had been significant travel mode choice changes since the last plan, such as increases or decreases in transit ridership, car-pooling, bicycling, pedestrian activity, etc. Chapter 2 explains the process used to assess land use and demographic changes, to develop job and household projections at the metropolitan level, and to allocate that growth to traffic analysis zones (TAZs).

A computer based modeling software called Cube (by Citilabs) was used to develop a traffic projection model for the Fargo-Moorhead (F-M) area based on existing conditions and projected job/household growth. The travel demand was assessed in four important model runs.

First, Metro COG and staff from the Advanced Traffic Analysis Center (ATAC) at NDSU ran the model using base-year 2005 socio-economic data (i.e., the TAZ data) and the base-year 2005 network. This was used to calibrate the model to known traffic count data that was collected on area roadways in 2005. If the model can accurately replicate known conditions, it is assumed that it will accurately forecast conditions if the TAZ data or network characteristics are changed.

Second, 2015 socio-economic data was used in the model with a 2015 network, which was developed by updating the 2005 network with roadway projects that had been completed since 2005, and by adding projects that have been scheduled for construction in the latest Transportation Improvement Program (TIP). This model output provides a relatively short-range future look at how the roadway network can be expected to function in the next 5 years.

Third, the 2035 socio-economic data was used in the model with the 2015 "existing plus committed" network. In essence, the model output reflected what might happen if the state and local jurisdictions stopped making roadway investments after 2015 but the region continued to grow. The goal of this model run was to highlight key or critical areas where proposed future projects might be necessary to alleviate future congestion.

Fourth, the travel demand model was used to assess 2035 socio-economic data on a 2035 network, which was developed by adding the projects listed in Chapter 5 to the 2015 network. The third and fourth model runs listed here were then compared against one another to evaluate the impact of the investments shown in Chapter 5.

The assessment of needs section also provides policy-level discussion and analysis of issues, emerging issues, and other subjects that were identified as being important to the future of the transportation system. Policies are evaluated and recommendations are identified and incorporated into the Regional Development Framework.

Regional Development Framework

The Regional Development Framework establishes the overall vision for the regional transportation network. It represents an integration of known existing issues (as identified in Chapter 1), projected future travel demand and policy recommendations (from Chapter 2), public input, and guidance from existing state-wide plans, policy documents, and state and federal guidelines.

For the first time in a Fargo-Moorhead Long-Range Transportation Plan, the goals and objectives also include specific performance measures to assess progress made, over time, toward the attainment of the plan's goals. The identification of these performance measures will be an important part of prioritizing local needs and assuring that appropriate and impactful investments are made on behalf of the limited public dollar.

Revenue Forecasts and Maintenance Evaluation

To fulfill federal requirements, and to guide the development of a realistic and achievable plan, it was necessary to forecast revenue that would "reasonably" be expected to be available for future transportation investments. Utilizing funding information provided by local jurisdictions, trends based on past funding, and the TIP; short-, mid-, and long-range revenue forecasts were developed for all applicable jurisdictions. The forecasts were also delineated by funding for "Maintenance and Operations" and funding for "New Construction and Reconstruction" projects. For those jurisdictions that support public transit service (i.e., Fargo, Moorhead, and Clay County), revenue projections were also made for transit funding.

Within Chapter 4, an analysis of roadway maintenance and operations needs versus expected funding is performed to determine if sufficient funding is being made available to maintain and preserve the existing and future transportation networks.

The fiscal constraint analysis for new and reconstruction projects is demonstrated in Chapter 5 by jurisdiction and by time-frame.

Multi-Modal Transportation System Projects

Chapter 5 is a synthesis of all the chapters that precede it. A list of transportation system projects was developed for each jurisdiction based on: a.)existing conditions data, b.)publically identified issues, c.)deficiencies and opportunities, d.)the fourth travel demand model run (i.e., 2035 TAZ data on the 2015 roadway network), and e.)the goals, objectives, and performance measures of the Regional Development Framework. The projects were then prioritized and placed in a time-frame based on the following methodology:

1. Projects already programmed in the TIP were automatically put in the short-range time-frame for each jurisdiction
2. Every attempt was made to include projects in the appropriate time-frame when the project was in a jurisdiction's ten-year Capital Improvement Plan or for which the jurisdiction had already developed an implementation timeframe

3. Projects were arranged based on input from jurisdictional staff on approximate implementation schedules or local priorities for implementation
4. The remaining projects were prioritized based on the stated performance measures within this plan
5. Finally, the fiscal constraint requirement was applied. If a project did not fit within the fiscal constraint requirement of a given time-frame, it was pushed back to the next time-frame
6. If a project was a low priority and did not fit within the fiscal constraint of any time-frame, it was added to the "Illustrative" project list

A careful review of the project lists was made to help ensure that multi-jurisdictional projects were placed in the same time-frame for all relevant jurisdictions. In a few cases, fiscal constraint could not be met for one of the participating jurisdictions, so the project was classified/labeled "Illustrative."

For those non-TIP projects which did not already have a project-level cost estimate, a year 2009 planning-level cost estimate was developed by SRF Consulting Group, Inc based on the project description and limits. The 2009 project costs were then inflated at a 4% compounded rate to 2012 project costs for the short-range timeframe, 2017 for the mid-range, and 2027 for the long-range.

An Alternative Growth Scenario

All of the work preceding Chapter 6 is based on one fundamental assumption – that the F-M region will continue to grow in much the same way that is has grown for the past several decades. Chapter 6 evaluates the costs and benefits of changing that pattern of growth. Through the development of multiple strategic planning scenarios, a community can make more informed choices about its future and how it can achieve its goals. Using smart growth principals, Alternative Growth Scenario B reallocated the jobs and households from the 2035 socio-economic TAZ data to increase average densities and mixed-uses in the urban core. On average, the number of households was increased 5 to 10 percent in areas that are already substantially developed. Where jobs were present, they were also increased by the same amount. Where jobs were not already present, a small number of neighborhood retail jobs were added to represent mixed-use development.

While not prescriptive, the analysis of Alternative B does provide local residents and leaders with valuable information as to the costs and benefits of another potential future urban form.

Protecting the Environment

Chapter 7 is a high-level discussion of potential environmental impacts if the projects in Chapter 5 are constructed as well as some of the mitigation options that are available to the jurisdictions. In many cases, specific environmental impacts could not be assessed without further refinement of the project description or field surveys of the project location. This Chapter is simply meant to serve as an initial indicator to the implementing agencies of 1.) the kinds of environmental issues to be aware of, 2.) the potential for environmental impacts of the various projects, and 3.) available choices for mitigation of those impacts.

The chapter presents information about relevant environmental regulations and guidelines, summarizes the process to evaluate the potential for environmental impacts, and presents a series of maps that shows which projects are near or within identified environmental or cultural resources, including Prime Agricultural Land.

Plan Monitoring

Throughout this plan, it is noted that some issues will require more time or more resources than this planning process could allocate to bring about consensus and help the local jurisdictions move forward. It also notes many activities, such as the performance measures identified in Chapter 3, which will require the on-going commitment of resources and/or staff time.

Chapter 8 assembles these activities into a single location as a reference guide for both Metro COG and its member jurisdictions. It is envisioned that as future work plans are developed, this chapter will provide ideas and direction for staff to consider which will bring about the successful implementation of this plan and overcome real or anticipated barriers that may prevent the further evolution of the regional transportation system.

Plan Development Guidance and Direction

Metro COG's Transportation Technical Committee (TTC) monitored and guided the development of this document throughout its development. The TTC meets monthly, and was regularly updated on the plan development process or directly solicited for input.

Metro COG's Policy Board, which is comprised of elected or appointed officials from each of Metro COG's member jurisdictions, was also regularly updated or consulted throughout the plan development process.

In addition, there were many meetings that occurred with TTC members, Policy Board members, and/or representatives of other agencies outside of the formal TTC or Policy Board meetings.

A few notable examples of such meetings include:

- A half-day meeting with technical staff to discuss the development and specification of regional performance measures
- Numerous meetings with jurisdictional staff to develop and refine the Chapter 5 project lists
- A one-hour brown bag lunch meeting with Policy Board members and stakeholder representatives to discuss the policy implications of the draft LRTP
- A 90-minute consultation with the Metro COG Environmental Review Group to evaluate the environmental implications of the plan

And, of course, there were literally hundreds of e-mails and phone calls to various staff members and stakeholders regarding thousands of details contained herein.

Metro COG wishes to note its appreciation of the close coordination and input provided by members of the Transportation Technical Committee and other jurisdictional staff, leaders, and stakeholders in the completion of all components of this LRTP. This planning process was indeed coordinated, continuous, and comprehensive.

Chapter 1: Existing Conditions

The MPO

The Fargo-Moorhead Metropolitan Council of Governments (Metro COG) is the federally designated Metropolitan Planning Organization (MPO) for the Fargo-Moorhead Metropolitan Statistical Area as defined by the Census Bureau. All urban areas with a population of more than 50,000 have an MPO with a basic mission to help ensure the wise investment of limited federal transportation dollars by identifying and prioritizing transportation needs and opportunities. To accomplish this mission, the MPO works closely with the staff and decision-makers of its member jurisdictions, the Federal Highway Administration, the Federal Transit Administration, the state departments of transportation, and the public. Metro COG's goal is to execute a continuous, cooperative, and comprehensive planning process so as to develop the highest quality public investment plans for our changing society.

An update of the Long-Range Transportation Plan (LRTP) is required every five years according to federal regulations. The plan must be maintained current and valid before local jurisdictions can receive federal funding for transportation improvements within the urban area. The last Plan was adopted in 2004.

The purpose of the LRTP is:

- To identify concerns of the public with regards to the existing and future transportation system
- To identify the need for future transportation improvements, changes in travel behavior and adjustments to urban growth plans
- To determine which transportation improvements are technically sound, environmentally suitable, financially feasible, and socially acceptable
- To establish a detailed short-range program of projects that satisfies the above criteria and addresses present and future demands, and to provide a long-range list of improvements that will require additional study prior to programming and implementation

Adoption of the LRTP at the local level, followed by FHWA concurrence makes the transportation projects identified in the plan eligible for federal and state funding. Projects included in the project lists will be scheduled for funding and construction within Metro COG's Transportation Improvement Plan (TIP). Though it is anticipated that projects on the short-range project lists will be programmed first, it is likely that some of the projects from the mid-range and long-range lists will also be programmed for funding and construction before this plan is updated again in 2014.

As regional planning organizations, many MPOs are tasked with responsibilities above and beyond their federal mandates, and Metro COG is no exception. In the past Metro COG has worked on projects such as workforce housing, mosquito abatement, community development, and retrofitting the Red River dams. However, transportation planning is always the MPOs core purpose and federally mandated role.

Map 1.1 on page 1.3 shows Metro COG's planning area and the various jurisdictions which comprise the metropolitan area.

Metro COG is governed by a 14 member Policy Board, comprised of elected and appointed officials from:

- The City of Fargo
- The City of Moorhead
- The City of West Fargo
- The City of Dilworth
- Cass County, North Dakota
- Clay County, Minnesota

The Policy Board establishes overall policy for all aspects of Metro COG's planning program.

In addition, Metro COG facilitates numerous committees and technical advisory groups that help inform the decision-making process. The reader is encouraged to visit Metro COG's website (www.fmmetrocog.org) for more information.

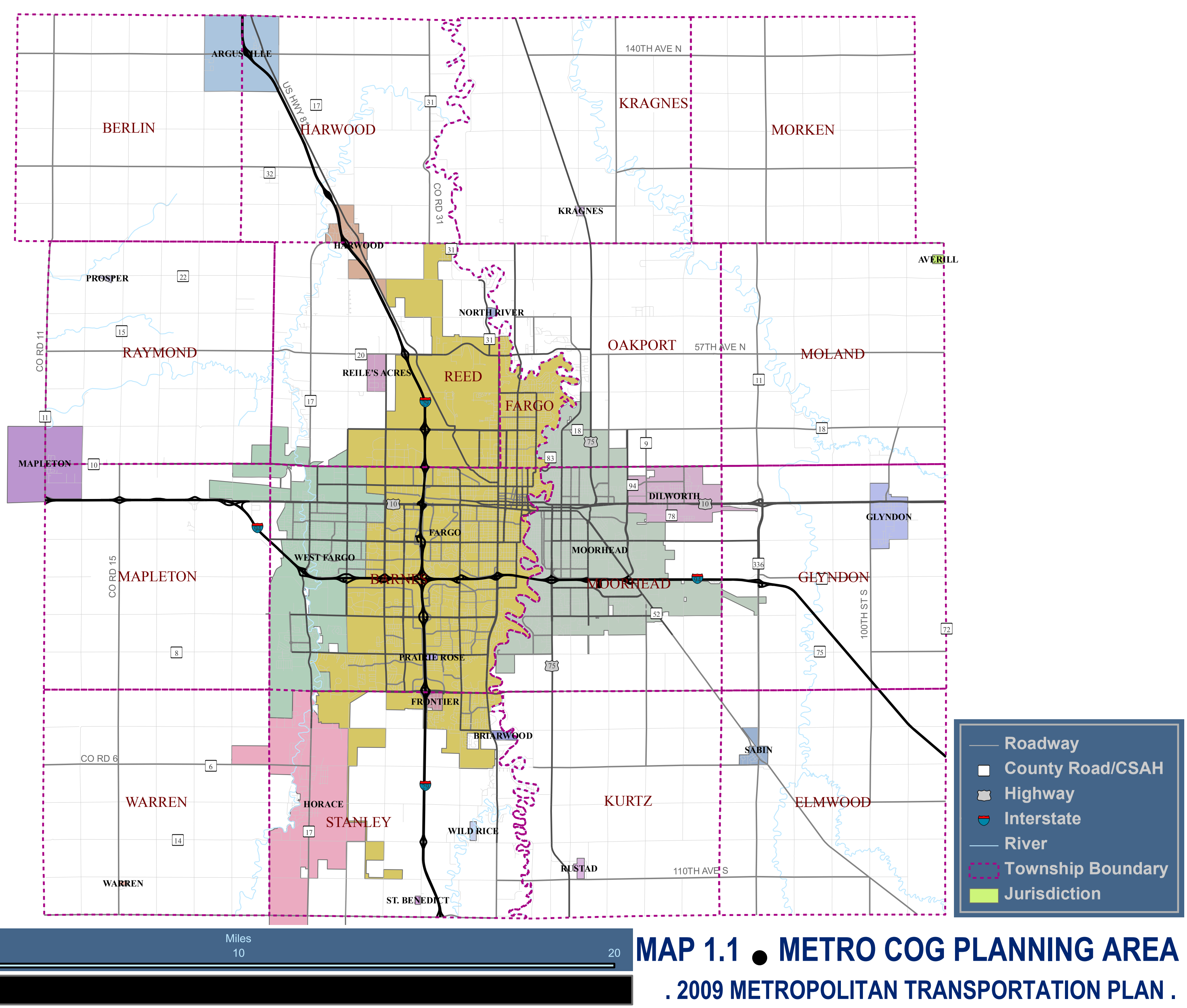
The development of this document was guided by Metro COG's Transportation Technical Committee (TTC), whose membership includes:

- Wade Kline, Chairman, Metro COG Executive Director
- Robert L. Bright (Retired), Chairman, Metro COG Executive Director
- Jim Gilmour, Fargo Planning Department
- Jeremy Gorden, Fargo Traffic Engineer
- Julie Bommelman, Fargo Transit Director
- Deb Martzahn, Moorhead Planning Department
- Bob Zimmerman, Moorhead Engineering Department
- Lori VanBeek, Moorhead Transit Director
- Larry Weil, West Fargo Planning Department
- Chris Brungardt, West Fargo Public Works
- Stan Thurlow, Dilworth Planning Department
- Keith Berndt, Cass County Engineering Department
- Tim Solberg, Cass County Planning Department
- Tim Magnusson, Clay County Planning Department
- David Overbo, Clay County Engineering Department
- Georgia Beaudry, Clay County Transit
- Stacey Hanson, North Dakota Department of Transportation
- Stephanie Hickman, Federal Highway Administration, North Dakota Division
- Mark Johnson, Formerly of Federal Highway Administration, North Dakota Division
- Jody Martinson, Minnesota Department of Transportation
- Shiloh Wahl, Minnesota Department of Transportation

The TTC provided technical direction, feedback, input, and recommendations throughout the development of this MTP and their assistance was as instrumental to its successful completion as it will be to its successful implementation at the local level.

In addition, support and guidance was provided by the following notable individuals:

- Cindy Carlsson, Minnesota Department of Transportation



MAP 1.1 • METRO COG PLANNING AREA

. 2009 METROPOLITAN TRANSPORTATION PLAN .

- Tim Mitchell, Formerly Federal Highway Administration, Minnesota Division
- Susan Moe, Federal Highway Administration, Minnesota Division
- Paul Benning, North Dakota Department of Transportation

Functional Classification

Assessing existing conditions is an important first step of any plan. The roadway systems for the Fargo-Moorhead urban area and the entire Metro COG planning area are shown on pages 1.6, 1.7 and 1.8.

Roadways are classified based on their function.

> **Principal Arterial Roadways** provide an integrated network of routes that serve major centers of activities. They are high traffic volume corridors, usually have long trip lengths, and are a link between the higher and lower classifications. Land access is not prohibited for Principal Arterials, but access spacing standards are restrictive as design speeds tend to be high. Curb-side parking is typically prohibited.
>
> **Minor Arterial Roadways** interconnect Principal Arterials and provide access to smaller developed areas. They often link cities and towns. They offer slightly more access than Principal Arterials and often carry slightly less traffic.
>
> **Collector Roadways** provide service to important travel generators (schools, recreational areas, and employment centers) that are not served by higher classifications. They also collect traffic from lower classifications and channel it to the higher classifications.
>
> **Local Roadways** provide direct access to land and links to the higher classification routes. Locals have the lowest volumes of traffic and short trip lengths. This classification includes all roads not designated as higher classifications.

The functional classification of roadways is also a factor in funding roadway improvement projects. Federal transportation funding assistance can only be used for roadways classified as Collector and above. Local roadway improvements must be funded locally.

The Federal Highway Administration (FHWA) provides guidelines as to the number of miles of roadway that can be functionally classified as Collector and above:

Table 1. Federal Functional Classification Guidelines

Guidelines on extent of urban functional systems		
	Range (percent)	
System	**Vehicle Miles Traveled**	**Miles of Roadway**
Principal Arterial Roadways	40-65	5-10
Principal Arterials plus Minor Arterials	65-80	15-25
Collector Roadways	5-10	5-10
Local Roadways	10-30	65-80

Source: http://www.fhwa.dot.gov/planning/fcsec2_1.htm#fsc

The constraints of these guidelines have lead to the development of a fifth functional classification within the Fargo-Moorhead region:

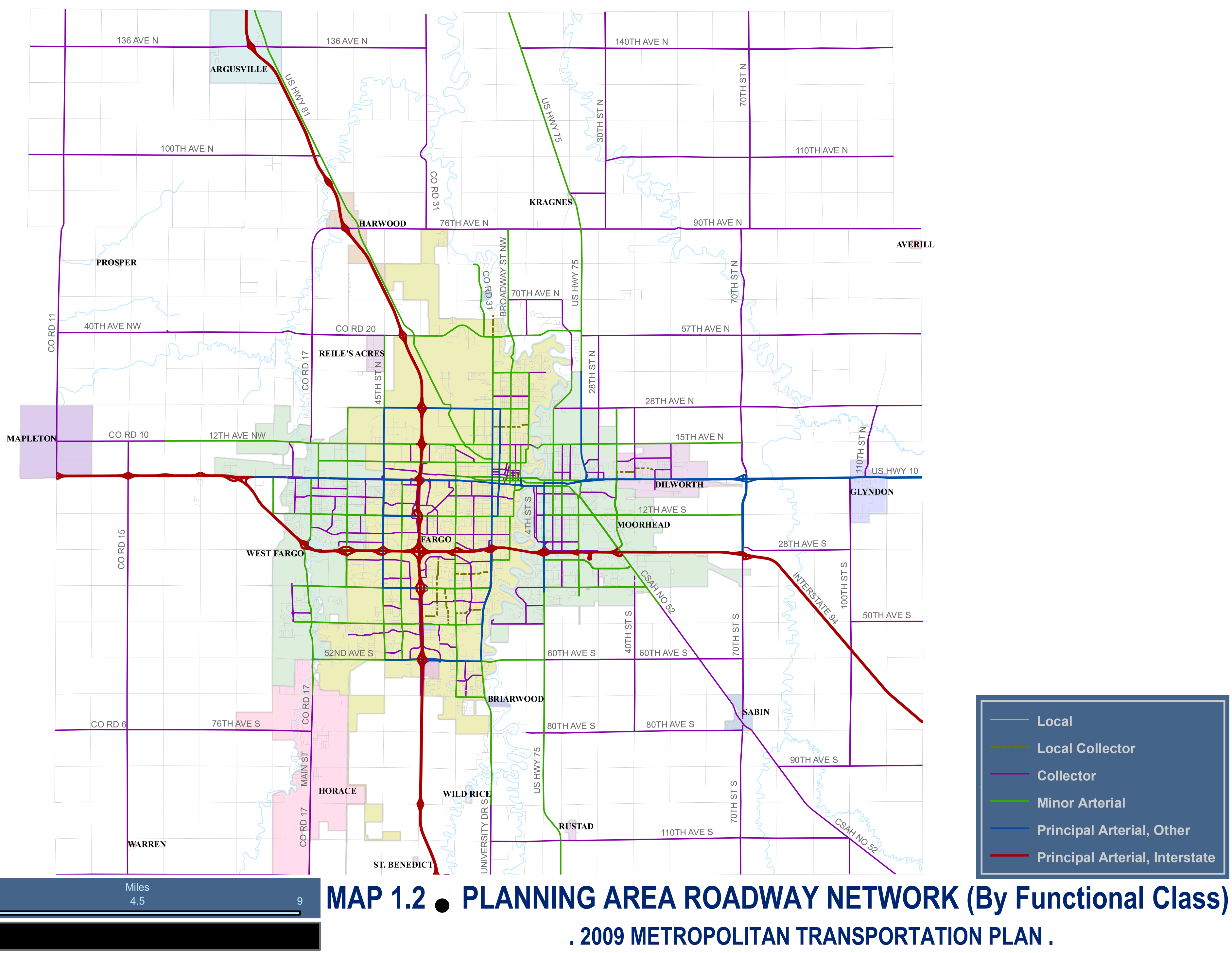
> **Local Collector Roadways** which have many of the characteristics of Collectors, such as similar access standards, design speeds, and parking practices, but are maintained locally and are not eligible for Federal funding assistance.

The development of the Local Collector designation stems from an understanding that some roadways should and do function as collectors even though their addition to the federally recognized functional classification network would result in more than 10% of roadway miles being classified as Collector Roadways. The guidelines in Table 1 simply indicate that there is a limit to the number of roadway miles for which the federal funding assistance can be used, but they do not limit the number of miles of roadway that can *function* as Collector Roadways.

Table 2. 2008 Fargo Moorhead Urban Area Roadway Classification

	Functional Classification (Approximate Number of Miles)				
Jurisdictions	**Principal Arterial**	**Minor Arterial**	**Collector**	**Local**	**Total**
Fargo	84.3	76.6	53.15	337.64	551.68
West Fargo	9.69	19.13	20.77	104.38	153.97
Moorhead	21.38	37.11	22.82	145.68	226.99
Dilworth	4.15	1.51	4.27	22.44	32.77
Metropolitan Urban Area	119.51	134.35	101.01	610.54	965.41

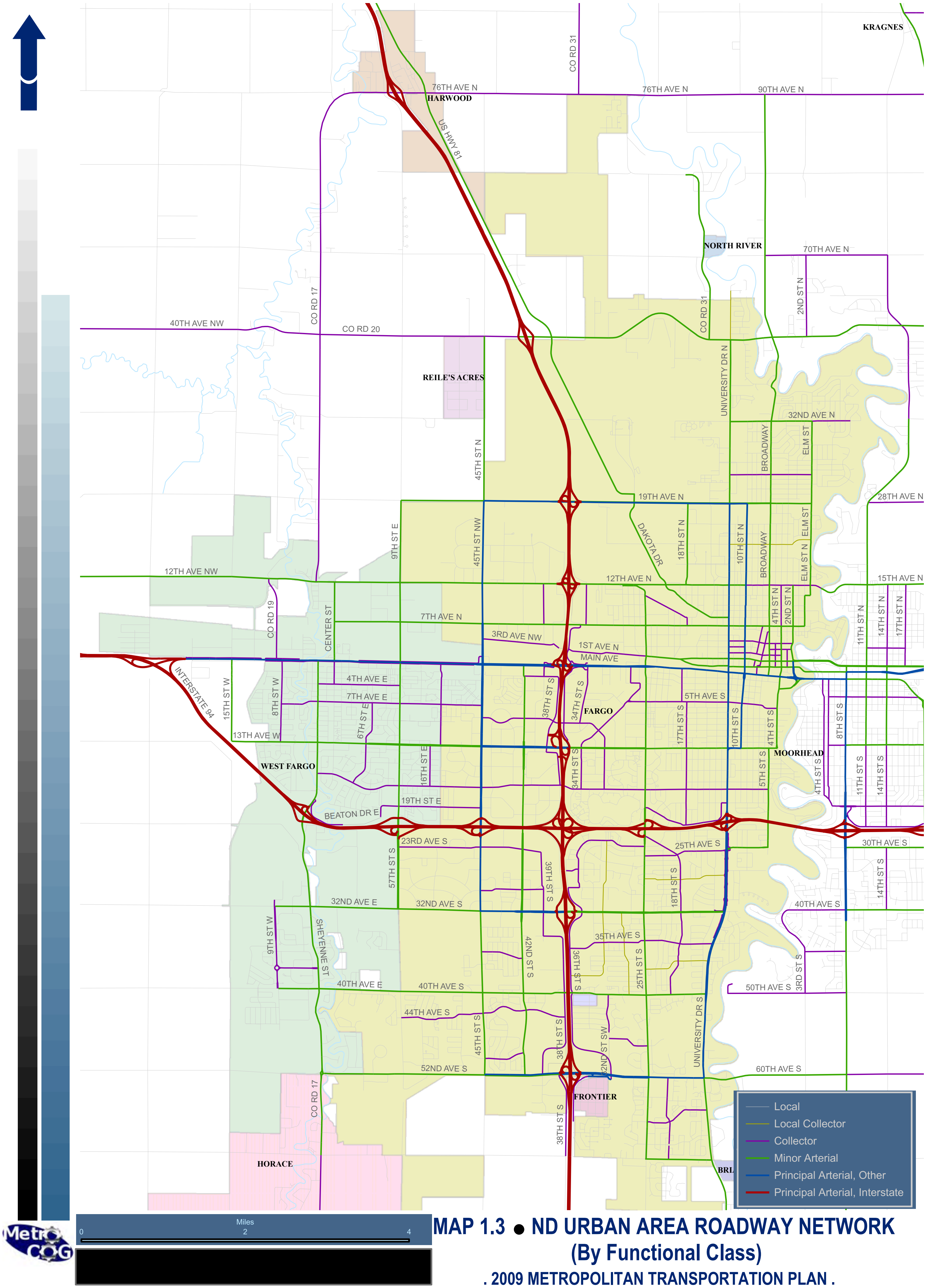
Source: 2009 Metro Profile



MAP 1.2 • PLANNING AREA ROADWAY NETWORK (By Functional Class)

. 2009 METROPOLITAN TRANSPORTATION PLAN .

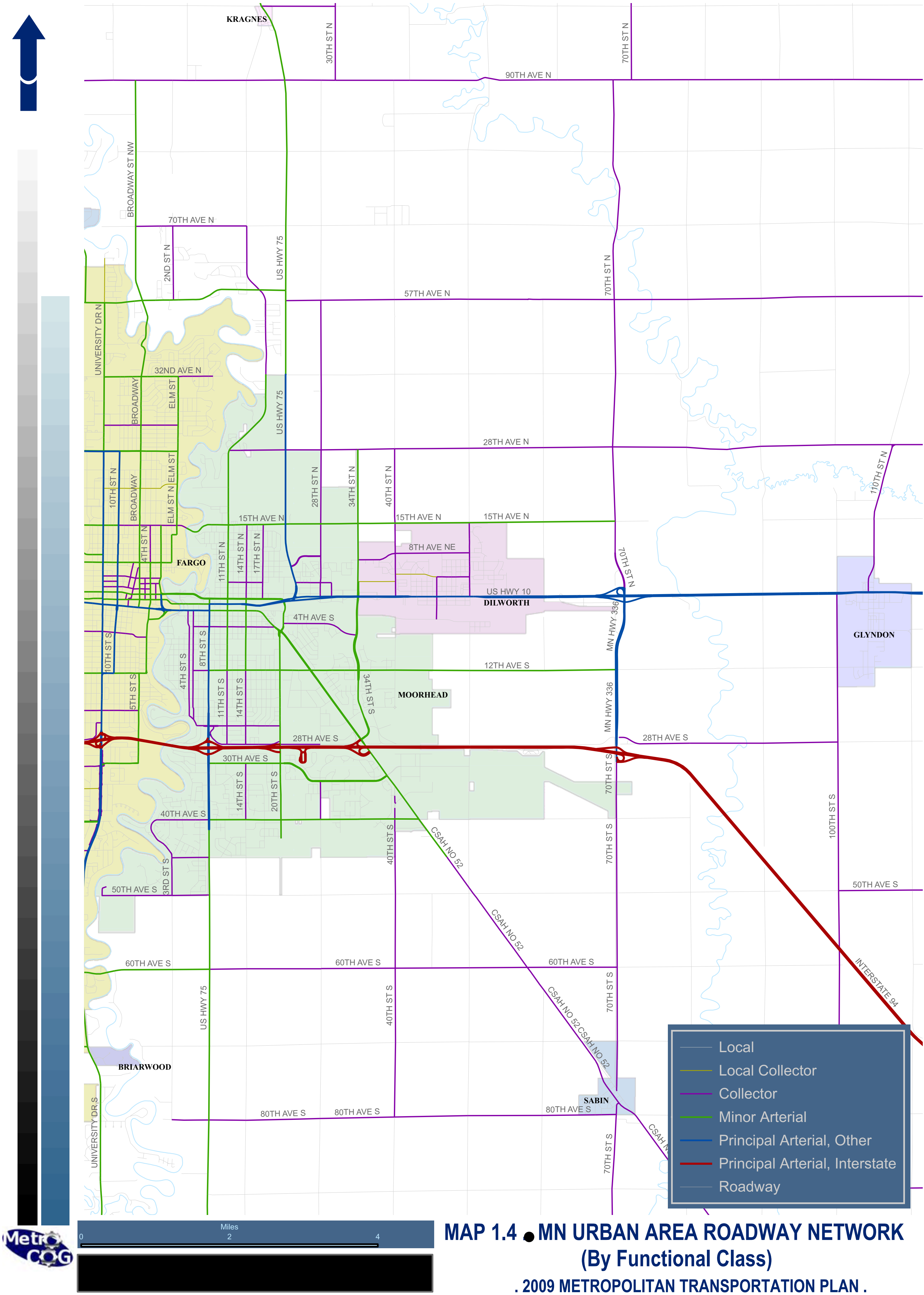
Metro COG



MAP 1.3 ● ND URBAN AREA ROADWAY NETWORK

(By Functional Class)

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.4 • MN URBAN AREA ROADWAY NETWORK
(By Functional Class)

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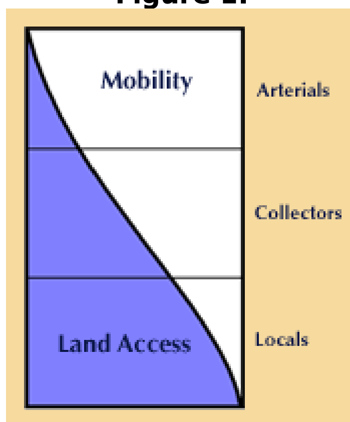
In functional terms, the classification of a roadway indicates a trade-off between speed of travel and access to adjacent land use. Higher travel speeds necessitate fewer access points such as driveways and intersections, while more access points necessitate lower travel speeds. This relationship can be shown graphically, as below.

Figure 1.



The relationship between the number of access points per mile of roadway and safety is well researched and documented. There is a strong positive relationship between access density and the number of crashes that occur. Roadways with more access points generally have lower free-flow speeds while roadways with higher speed limits generally have fewer access points.

Table 3.

Representative Accident Rates (Crashes per Million VMT) by Type of Median -- Urban & Suburban Areas

	Median Type		
Total Access Points per Mile	**Undivided**	**Two-Way Left Turn Lane**	**Non Traversable Median**
< 20	3.8	3.4	2.9
20.01 - 40	7.3	5.9	5.1
40.01 - 60	9.4	7.9	6.8
> 60	10.6	9.2	8.2
Average	9	6.9	5.6

Source: Texas Department of Transportation, Roadway Design Manual, 2002

Table 4.
Access Points & Freeflow Speeds

Access Points per Mile	Reduction in Freeflow Speed, mph
0	0
10	2.5
20	5
30	7.5
40 or more	10

Source: Reilly, W., et al, Capacity and Service Procedures for Multi-Lane Rural and Suburban Highways, ***Final Report NCHRP Project 3-33*** *JHK & Associates and Midwest Research Institute, May 1989*

National Highway System

In 1995, a system of roadways was designated by Congress as the National Highway System (NHS) for the United States. The stated purpose of the designation was to facilitate infrastructure improvement spending on transportation projects that were important to the Nation's economy and interstate commerce. The map on page 1.11 shows the NHS system within the Fargo-Moorhead metro area.

Interregional Corridors

In 2000, the Minnesota Department of Transportation identified and adopted a statewide system of arterial roadways that are critical to serving the economic interests of Minnesota. This system, the Interregional Corridor (IRC) System, is comprised of two percent of the roadway miles in the state of Minnesota, but accounts for over 30 percent of the vehicle miles traveled. Within the Fargo-Moorhead area, there are three designated IRC roadways:

- I-94 is designated as a high priority IRC
- TH 336 between I-94 and US 10 is designated as a medium priority IRC
- US 10 is designated as a medium priority IRC east of TH 336

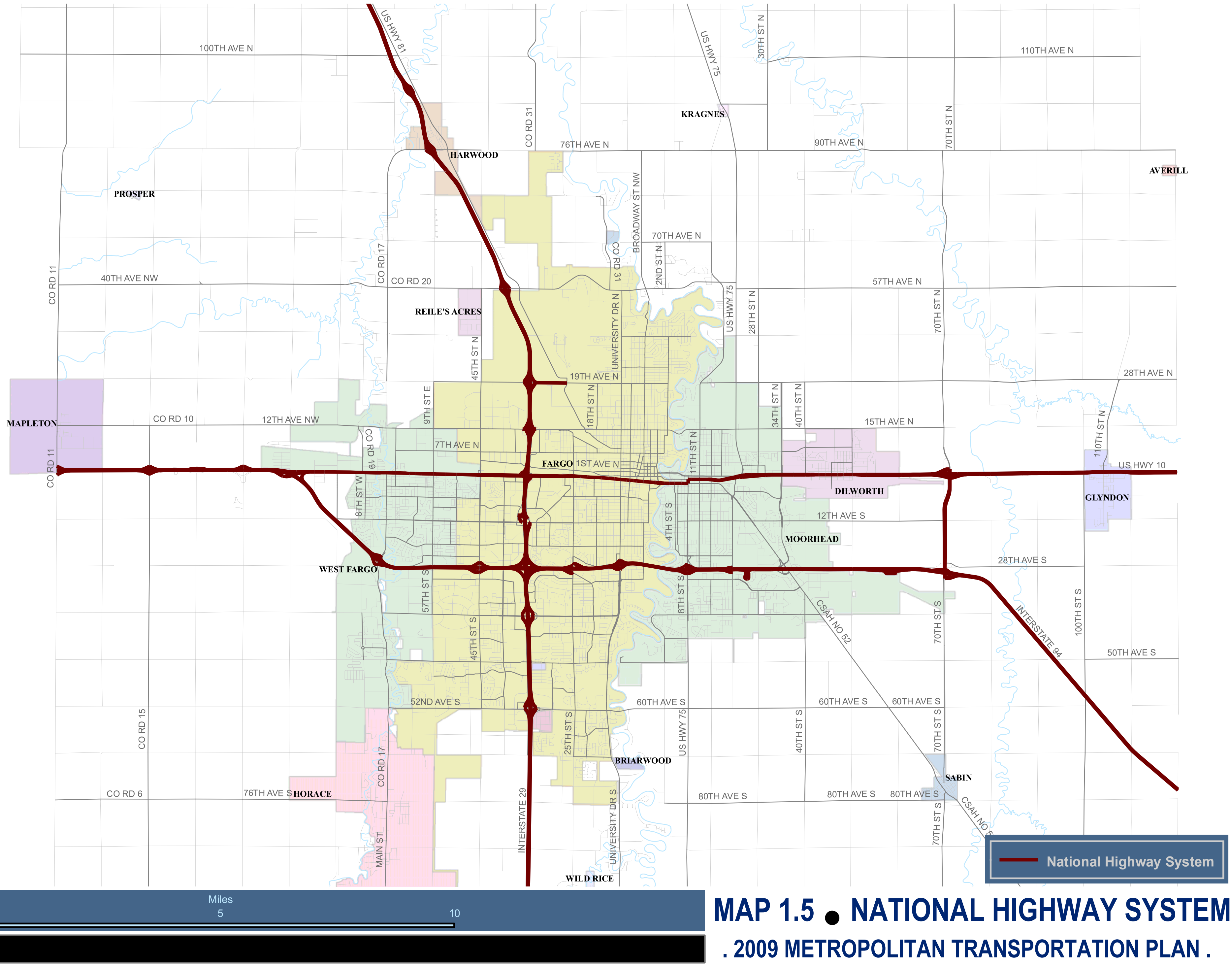
Vehicle-Miles-Traveled

Vehicle-Miles-Traveled (VMT) is the total number of miles traveled by vehicles on a corridor or within an area. The mileage used for VMT is an estimate based on traffic volume data collected at sites throughout the F-M area.

Table 5. Daily 2005 VMT by Jurisdiction

Jurisdiction	VMT Reported
Fargo	1,845,042
Moorhead	482,413
West Fargo	169,523
Dilworth	41,029
Metro Area	2,538,007

Source: Advanced Traffic Analysis Center, NDSU



MAP 1.5 • NATIONAL HIGHWAY SYSTEM

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There is data that suggests that state-wide VMT leveled off or reduced during the summer of 2008 as gas prices increased. The same may be true at a regional metro-wide level.

Roadway Surfaces

The type of roadway surface is an important characteristic of a roadway. Roads with high traffic volumes will require road surfaces that have a long lifespan and require minimum maintenance. The least durable surface is gravel. Portland cement concrete (PCC) is the most durable surface and can handle high traffic volumes without regular maintenance.

Table 6. Fargo Pavement Classification

Classification	Mileage	% Mileage
Asphalt	251.95	57%
Composite	32.02	7%
Gravel	19.81	4%
PCC	139.44	31%
TOTAL	443.22	100%

Source: City of Fargo

Table 7. Moorhead Pavement Classification

Classification	Mileage	% Mileage
Asphalt	43.88	50%
PCC	2.32	3%
Gravel	7.15	8%
Paved	33.65	39%
TOTAL	87	100%

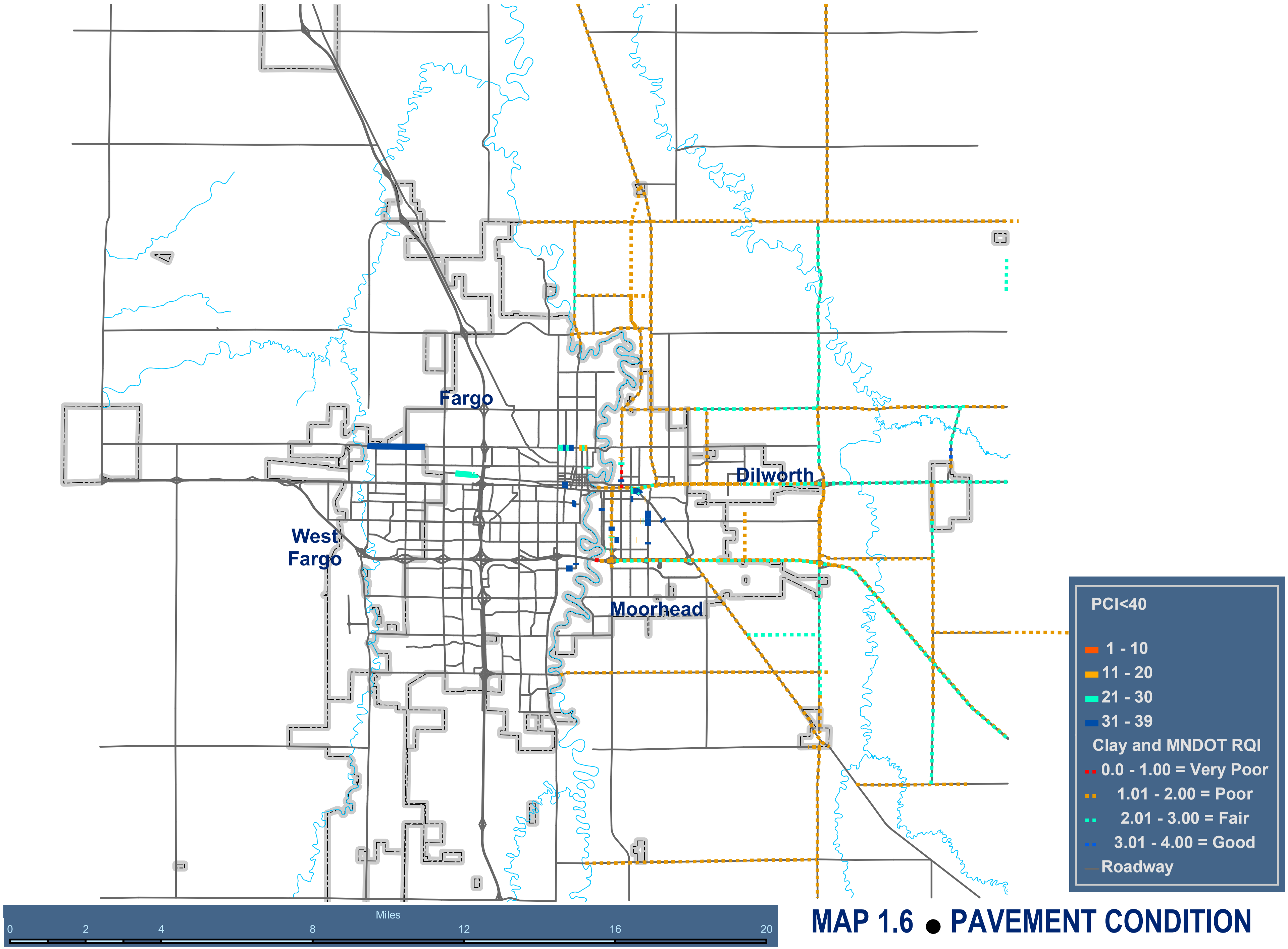
Source: City of Moorhead

Table 8. Cass County Pavement Classification

Classification	Mileage	% Mileage
Asphalt	272.79	42%
PCC	37.49	5.8%
Asphalt/PC	4.2	1%
Gravel	326.83	51%
Unknown	4.06	0.6%
TOTAL	645.37	100%

Source: Cass County

Roadway surface data is not available for West Fargo, Dilworth, or Clay County



MAP 1.6 ● PAVEMENT CONDITION

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Good pavement conditions are important for sustaining the safe flow of traffic. Moreover, every roadway represents a substantial investment of public dollars and regular maintenance is an important component of preserving the value of that investment. The map on (page 1.13) highlights those sections of the functionally classified roadway network for which the Pavement Condition Index (PCI) is below 40 or where ride quality is less than 2.0, representing roadways that need immediate repair or total reconstruction. Roadways in fair condition (PCI between 40 and 70) may require chip seal or overlays to maintain their functionality and/or safety. Roadways in good or excellent condition require little or no immediate maintenance.

Table 9. Fargo Pavement Conditions

PCI Range	Mileage	% Mileage	
85-100	201.89	46%	Excellent
70-84	129.63	29%	Good
40-69	71.33	16%	Fair
0-39	12.56	3%	Poor
Others	27.80	6%	
TOTAL	443.21	100%	

Source: City of Fargo

Table 10. Moorhead Pavement Conditions

PCI Range	Mileage	% Mileage	
85-100	3.94	5%	Excellent
70-84	21.16	24%	Good
40-69	19.47	22%	Fair
1-39	1.7	2%	Poor
Unrated	40.98	47%	
Total	87.25	100%	

Source: City of Moorhead

Table 11. Cass County Ride Quality Conditions

PCI Range	Mileage	% Mileage	
85-100	152.35	24%	Excellent
70-84	110.77	17%	Good
40-69	48.36	7%	Fair
1-39	0.37	0%	Poor
Unrated	332.37	52%	
Total	644.22	100%	

Source: Cass County

The Mn/DOT and Clay County measure their pavement quality through a Ride Quality Index (RQI), which is determined when a specially equipment van drives over the roadway and on-board instruments measure the movement, bounce, shocks, and other forces felt by the cabin occupants.

Table 12. Mn/DOT Ride Quality Conditions

RQI Range	Mileage	% Mileage	
4.01-5.0	0	0%	Excellent
3.01-4.0	0	0%	Good
2.01-3.0	24.76	36%	Fair
1.01-2.0	44.66	64%	Poor
0-1.0	0	0%	Very Poor
Total	69.42	100%	

Source: Mn/DOT District 4

Table 13. Clay County Ride Quality Conditions

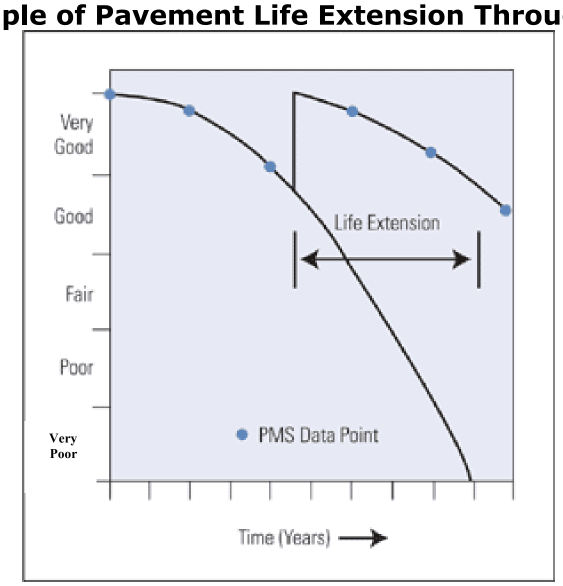
RQI Range	Mileage	% Mileage	
4.01-5.0	0	0%	Excellent
4.0-3.01	0.37	0%	Good
2.01-3.0	20.94	19%	Fair
1.01-2.0	85.63	80%	Poor
0-1.0	0.73	1%	Very Poor
Total	107.67	100%	

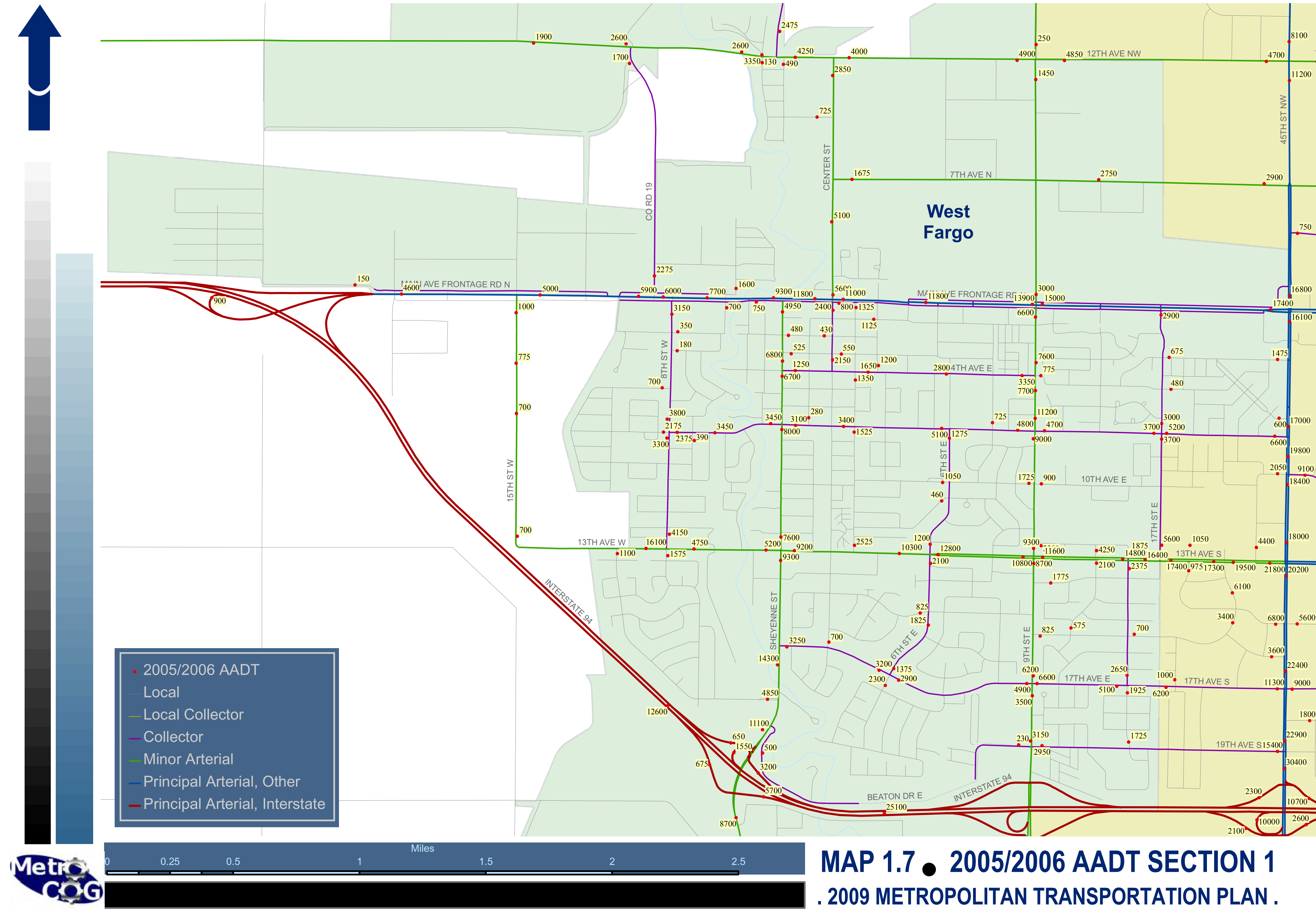
Source: Clay County

Pavement conditions or ride quality data is not available for West Fargo, Dilworth, or NDDOT.

Proper management of pavement and roadway surface conditions can extend the service life of a roadway and save money by avoiding and/or delaying costly reconstruction.

Figure 2. Example of Pavement Life Extension Through Preservation





MAP 1.7 ● 2005/2006 AADT SECTION 1

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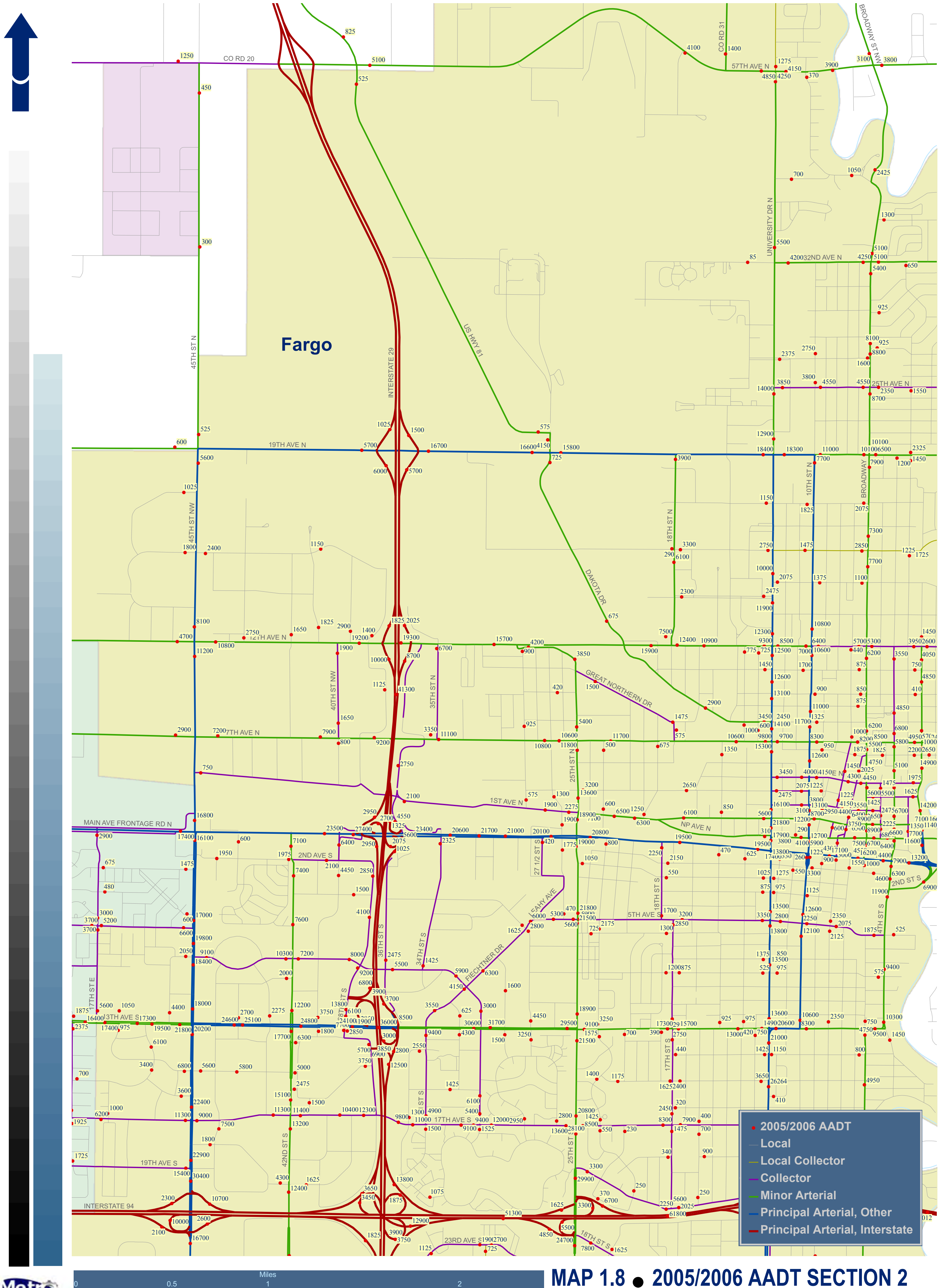
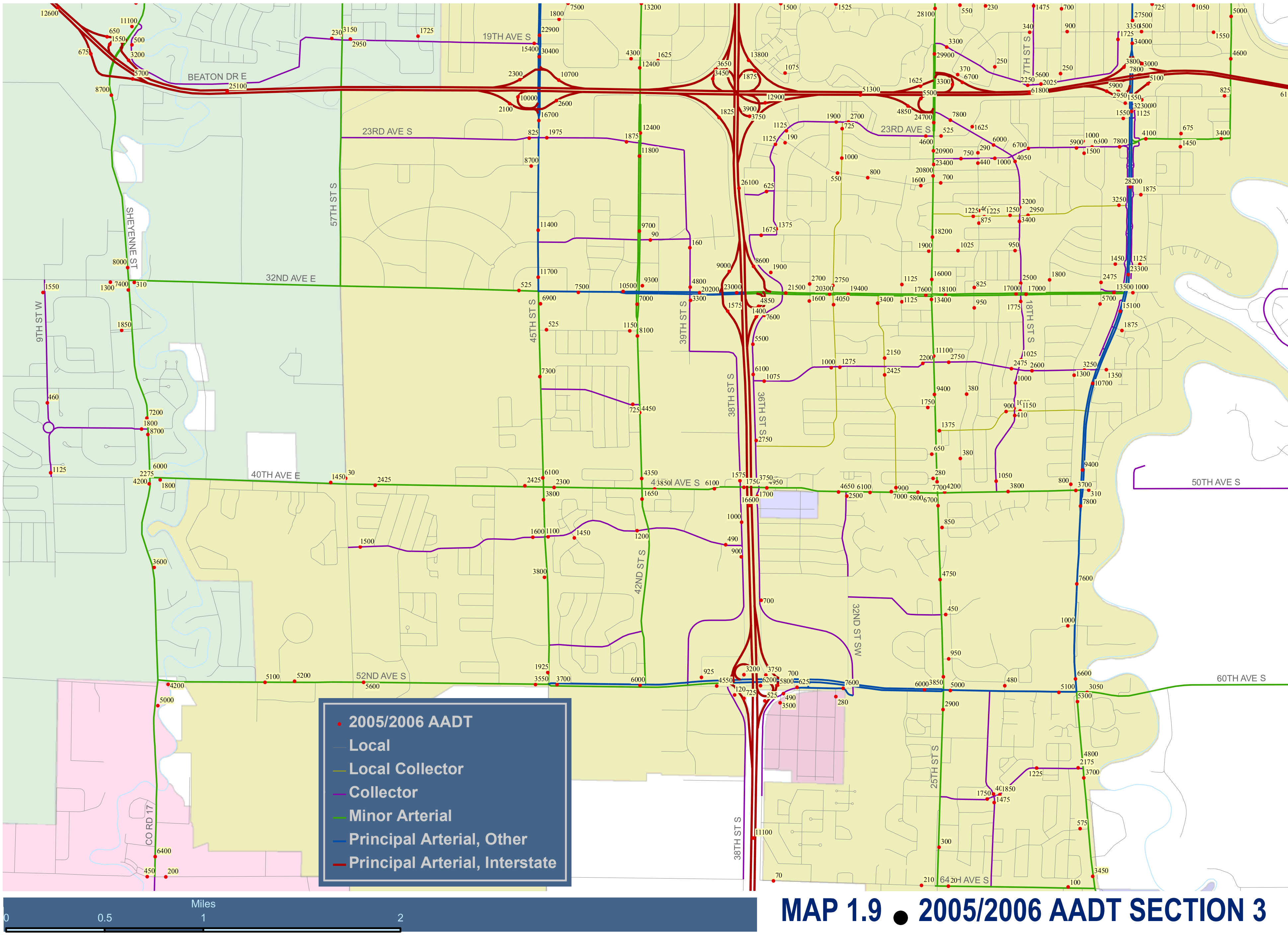


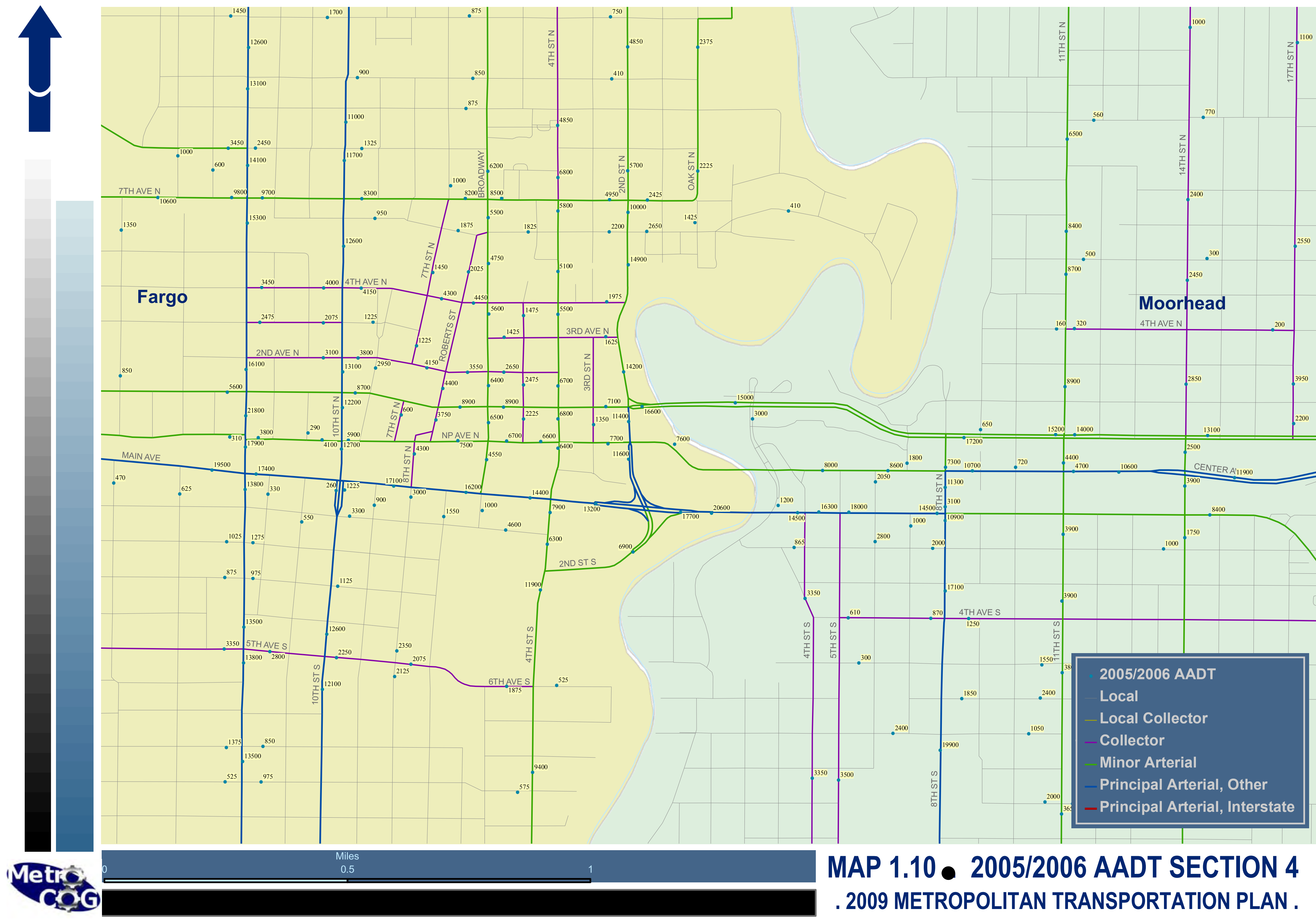
MAP 1.8 • 2005/2006 AADT SECTION 2

. 2009 METROPOLITAN TRANSPORTATION PLAN .



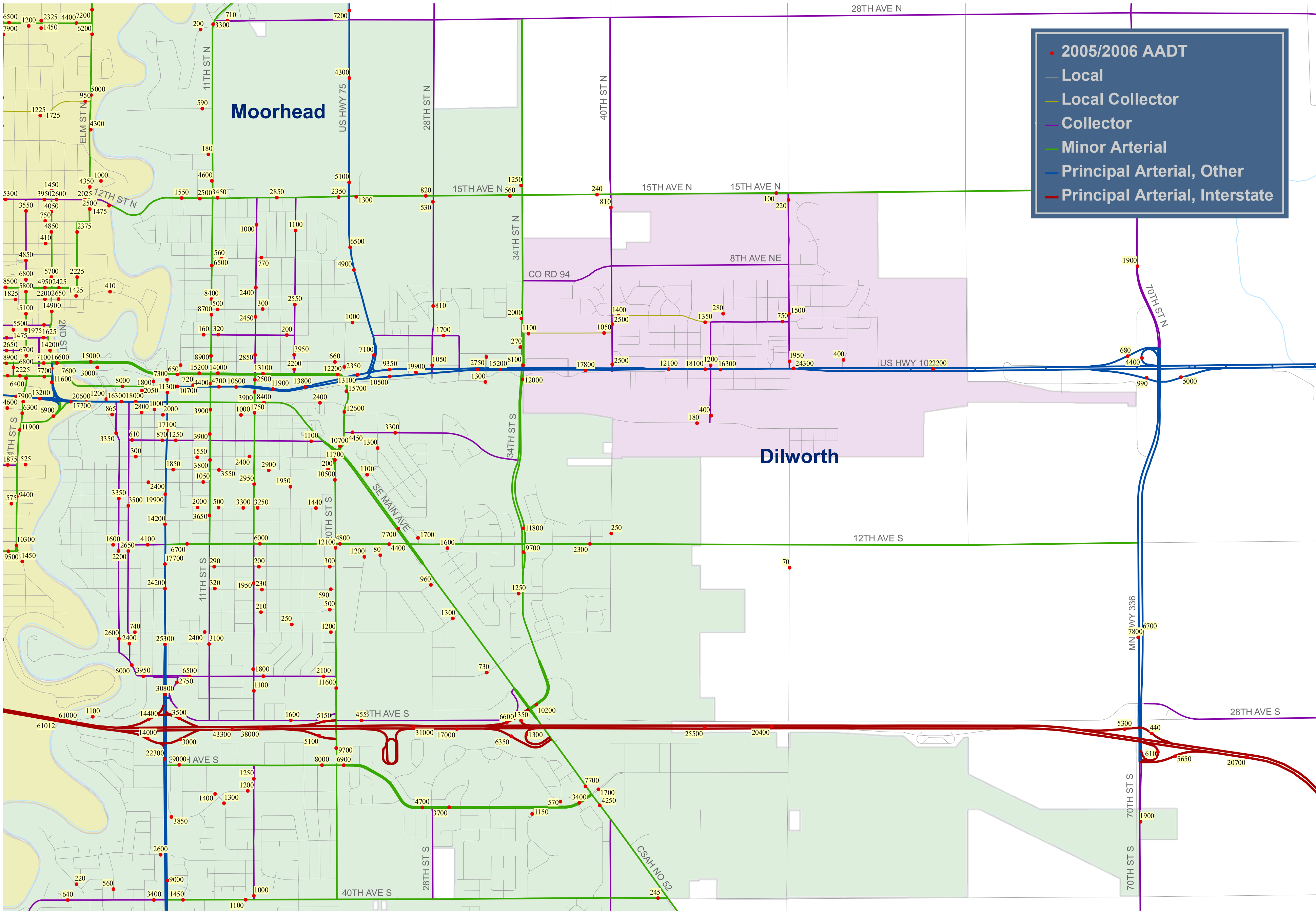
MAP 1.9 • 2005/2006 AADT SECTION 3

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.10 ● 2005/2006 AADT SECTION 4

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.11 ● 2005/2006 AADT SECTION 5

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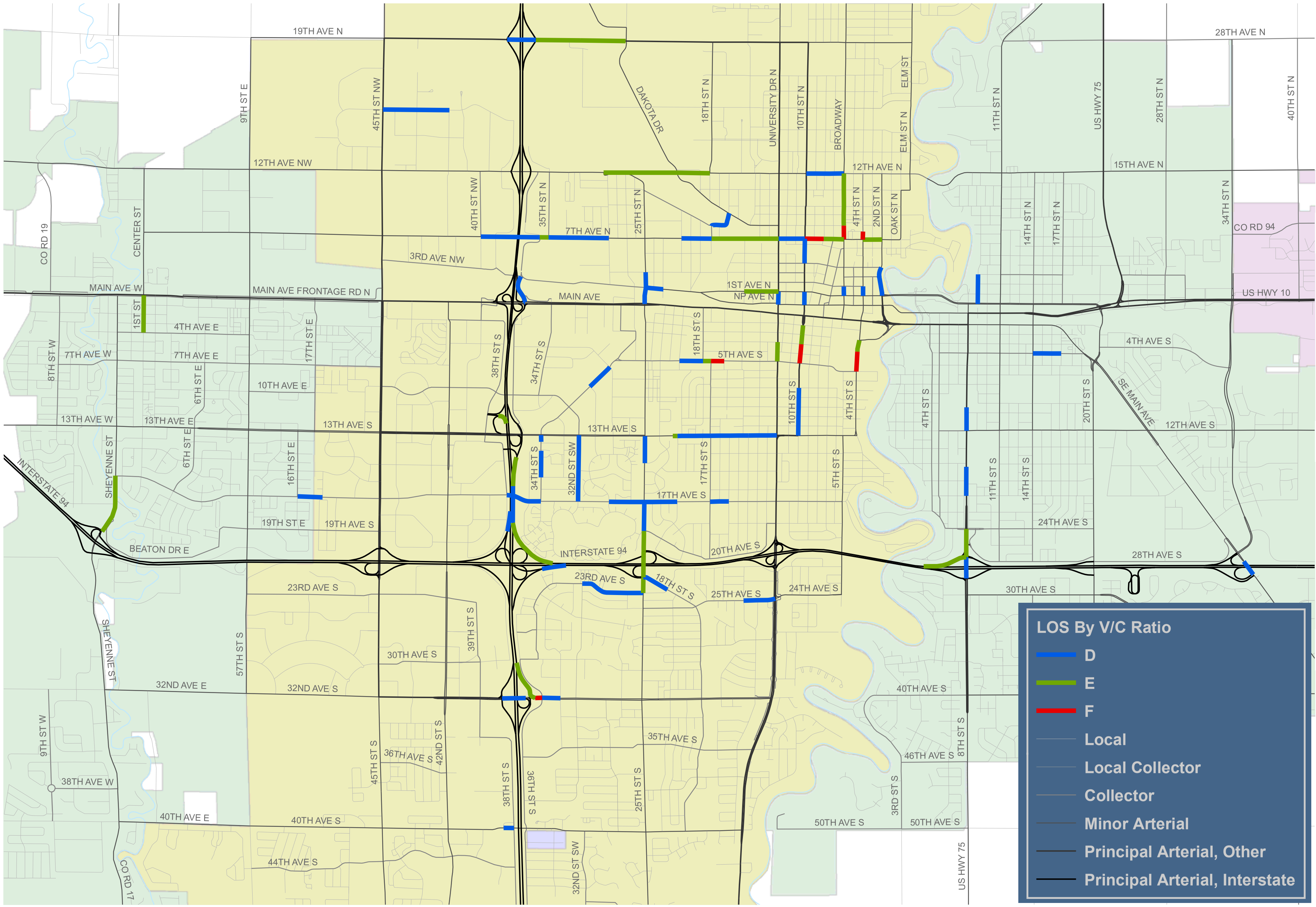
Traffic Volumes & Roadway Capacity

Traffic volume data throughout the metro area was collected in 2005 and 2006. Traffic volume is measured in Annual Average Daily Traffic (AADT). Traffic count data was collected for a 48 hour period and then adjusted by seasonal, day of the week, and traffic-mix factors to determine the AADT. These baseline volumes were used for various purposes, including identifying roadway geometric deficiencies or congestion areas, identifying future transportation project improvements, and calibrating the regional traffic forecast model, among others.

When the volume data is compared to known roadway geometrics and carrying capacity, it can indicate areas of roadway congestion. The Volume-over-Capacity ratio (V/C) is a descriptive statistic that can highlight segments of roadway that are experiencing less than desirable traffic flow. A two-tiered definition of level of service (LOS) based on volume-capacity ratios was used to complete this analysis. This was necessary because the forecast model treats freeways differently than arterials. The Metro COG regional model included different volume-delay functions that vary by roadway types, as do most new forecast models. Table 14 provides a translation table that equates V/C ratios for arterials/collectors and interstate highways to LOS, the most common measurement of congestion. In LOS, a grade is assigned between A and F to indicate the extent to which traffic is able to move freely. LOS A means no congestion while LOS F represents gridlock. LOS C or above is considered to represent heavy traffic moving at or near the posted speed limit while LOS D or lower suggests increasing mobility problems. Map1.12 presents the existing (2005) peak-hour LOS for the metro area.

Table 14. Level of Service and Volume-Capacity (V/C) Relationship

Level of Service	Description	Arterials/ Collectors	Interstate Highways
D	Generally stable flow, but with noticeable congestion, moderate delays and limited maneuverability	0.7 - 0.85	0.85 - 1.0
E	Unstable or constrained flow, with periodic system breakdowns	0.85 - 1.0	1.0 - 1.2
F	Unstable flow, frequent and sustained system breakdown	>1.0	>1.2



MAP 1.12 ● 2005 LEVEL OF SERVICE (LOS) D, E AND F

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Access Management & Network Connectivity

As noted earlier, there is a relationship between roadway safety and access control. All else being equal, more points of access to a roadway such as driveways and intersecting roadways strongly correlate to higher crash rates. In August of 2000, Metro COG established regional access management guidelines as outlined in Table 15 below.

Table 15. Fargo-Moorhead Metro Area Access Management Guidelines

Facility Type	**Desired Spacing between Access Points**	**Minimum Spacing between Access Points**
Functionally Classified Roadways in Less Developed Areas	1320′	660′
Urban Arterials	660′	330′
Urban Collectors	300′	150′

The guidelines were created after staff compiled standards from each jurisdiction's ordinances, and therefore represent a range of local standards. Further, since the local data was predominately taken from city regulatory practices, the guidelines themselves tend to be oriented to city streets within the urbanized areas.

In 2002, the Minnesota Department of Transportation developed Access Management Guidelines which are not entirely consistent with the Metro Area Guidelines as set forth in Table 15 above. They take a different approach to the matter of intersections and driveways. The Metro Area Guidelines, for example, treat all access points as equals whether it is a full movement intersection or a driveway that serves a single business. The Mn/DOT guidelines establish separate desired spacing guidelines for full-movement intersections and conditional secondary intersections like driveways. A summary of Mn/DOT Access Guidelines in provided on page 1.24. In the coming years, the MPO may wish to explore the possibility of updating and expanding upon the local guidelines, working toward a single standard within the metro area.

Network connectivity is the flip side of the access control coin. Limiting access to the transportation network too severely can result in longer trips lengths, more congestion on busy arterials, longer delays at arterial intersections, and degradation of emergency vehicle response times. The network should be designed to move people as efficiently as possible (i.e., minimizing time and resources spent), regardless of mode of travel. The Access Management Guidelines attempt to do that by balancing access and connectivity. For an urban minor arterial the FM Metro Access Management Guidelines suggest that eight to 16 connections per mile are ideal. This is consistent with some other research that has been done to define an "optimal" level of connectivity[1]. However the study did not consider all modes of travel nor the possibility that increased connectivity would result in more travel demand. At this time, there cannot be any general conclusions about an ideal number of connections to a corridor. Eight to sixteen intersections per mile is a fairly broad range, but each corridor must be examined individually and recommendations based in part on professional judgment.

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[1] Kloster, T., J. Daisa, and R. Ledbetter. 2000. "Linking Land Use and Transportation through Street Design." Transportation Research Circular E-C019, Transportation Research Board, Washington, D.C. December

Table 16: Summary of Mn/DOT Recommended Access Spacing

Summary of Recommended Access Spacing

Category	Area or Facility Type	Typical Functional Class	Intersection Spacing: Primary Full Movement Intersection	Intersection Spacing: Conditional Secondary Intersections	Signal Spacing	Private Access
1	**High Priority Interregional Corridors**					
1F	Freeway	Principal Arterials	Interchange Access Only		⊘	⊘
1A-F	Full Grade Separation	Principal Arterials	Interchange Access Only		⊘	⊘
1A	Rural, ExUrban & By Pass	Principal Arterials	1 mile	1/2 mile	INTERIM ONLY By Deviation Only	By Deviation Only
2	**Medium Priority Interregional Corridors**					
2A-F	Full Grade Separation	Principal Arterials	Interchange Access Only		⊘	⊘
2A	Rural ExUrban By Pass	Principal Arterials	1 mile	1/2 mile	STRONGLY DISCOURAGED By Deviation Only	By Exception or Deviation Only
2B	Urban Urbanizing	Principal Arterials	1/2 mile	1/4 mile	STRONGLY DISCOURAGED By Deviation Only	By Exception or Deviation Only
2C	Urban Core	Principal Arterials	300-660 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
3	**High Priority Regional Corridors**					
3A-F	Full Grade Separation	Principal & Minor Arterials	Interchange Access Only		⊘	⊘
3A	Rural, ExUrban & By Pass	Principal & Minor Arterials	1 mile	1/2 mile	1 mile	Permitted Subject to Conditions
3B	Urban Urbanizing	Principal & Minor Arterials	1/2 mile	1/4 mile	1/2 mile	By Exception or Deviation Only
3C	Urban Core	Principal & Minor Arterials	300-660 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
4	**Principal Arterials in Metro Area and in Primary Trade Centers**					
4A-F	Full Grade Separation	Principal Arterials	Interchange Access Only		⊘	⊘
4A	Rural, ExUrban & By Pass	Principal Arterials	1 mile	1/2 mile	1 mile	By Deviation Only
4B	Urban Urbanizing	Principal Arterials	1/2 mile	1/4 mile	1/2 mile	By Exception or Deviation Only
4C	Urban Core	Principal Arterials	300-660 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
5	**Minor Arterials on All Systems**					
5A	Rural, ExUrban & By Pass	Minor Arterials	1/2 mile	1/4 mile	1/2 mile	Permitted Subject to Conditions
5B	Urban Urbanizing	Minor Arterials	1/4 mile	1/8 mile	1/4 mile	By Exception or Deviation Only
5C	Urban Core	Minor Arterials	300-660 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
6	**Collectors on All Systems**					
6A	Rural, ExUrban & By Pass	Collectors	1/2 mile	1/4 mile	1/2 mile	Permitted Subject to Conditions
6B	Urban Urbanizing	Collectors	1/8 mile	Not Applicable	1/4 mile	Permitted Subject to Conditions
6C	Urban Core	Collectors	300-660 feet dependent upon block length		1/8 mile	Permitted Subject to Conditions
7	**Specific Access Plan**					
7	All	All	By Adopted Plan			

Revised as of 3/20/2002

In the Fargo-Moorhead area, there are a number of physical features that can limit the connectivity of the roadway network such as the interstate highway system, railroads, and rivers. In each case the cost of breeching the barrier (e.g., building a bridge or underpass) is very high which limits or reduces implementation timeframes. In many cases, the surrounding land has already been developed which adds additional complexity, cost, and controversy to any potential project. In the case of the railroads, additional at-grade crossings may be undesirable or strongly discouraged by the railroad, leaving a bridge or underpass as the only option.

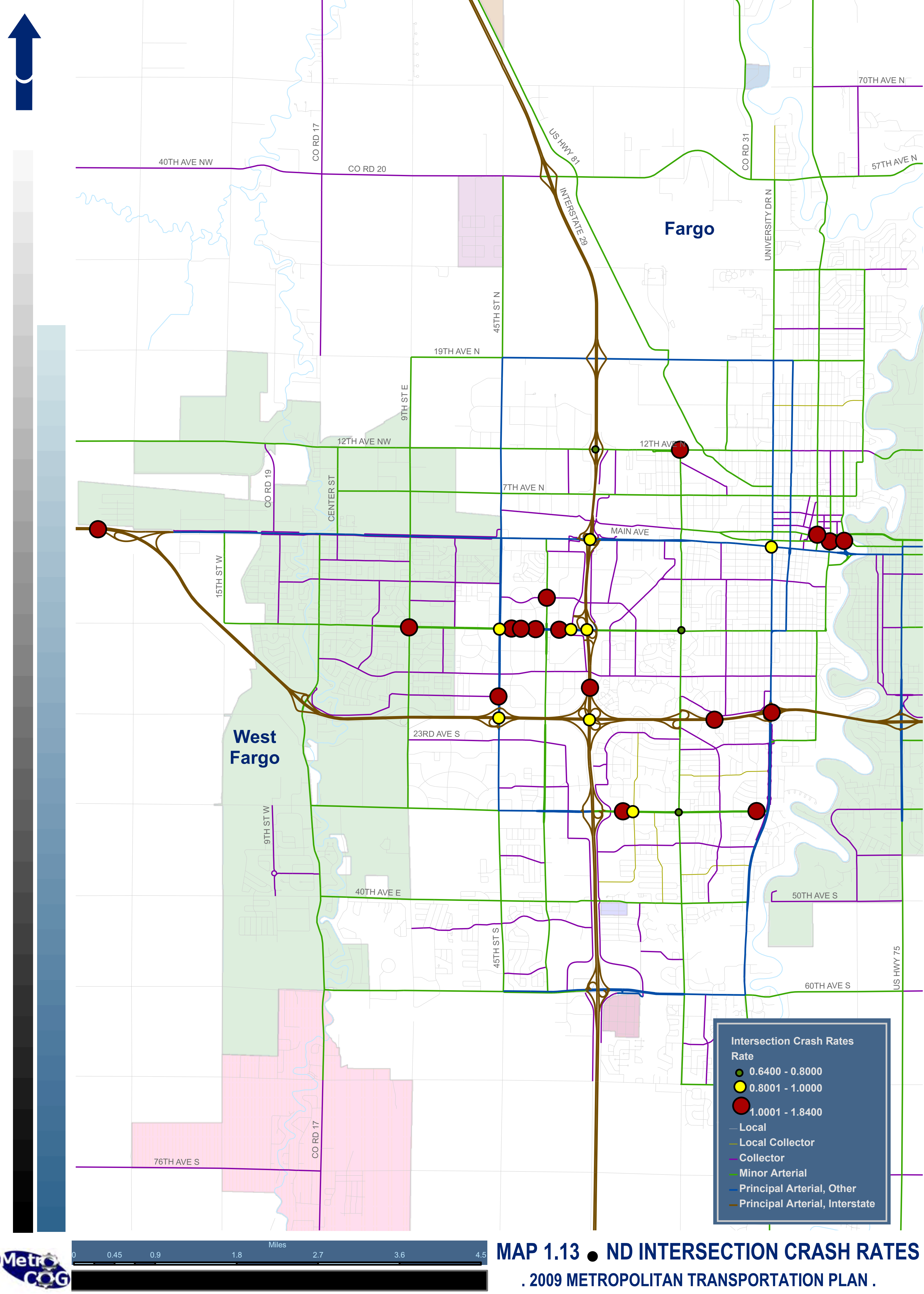
Crash Data

Crash data for the metro area was obtained from the North Dakota and Minnesota Departments of Transportation. The data from NDDOT and Mn/DOT is displayed in Maps 1.13 and 1.14. A high number of crashes at an intersection may be the result of geometric deficiencies, inadequate intersection control, or some other problem for which there is an engineering solution. They can also be a function of high traffic volumes. Where there are more vehicles there is simply more opportunity for crashes to occur. Any analysis must evaluate crash locations based on a common standard, such as the crash rate per million vehicles entering the intersection, which is then evaluated against the average crash rate for a facility of that type.

For the North Dakota crash data, intersection crash rates were provided by the NDDOT. For the Minnesota data, intersection crash rates were defined to include any crash that occurred within 0.05 miles of an intersection (about 264 feet). Defining the intersections area of influence differently would impact the crash rates in most cases. Some of the crashes identified here may not have been a function of intersection geometrics. This analysis is only intended to suggest that further investigation into the exact nature and cause of the crashes at the identified intersections may be warranted.

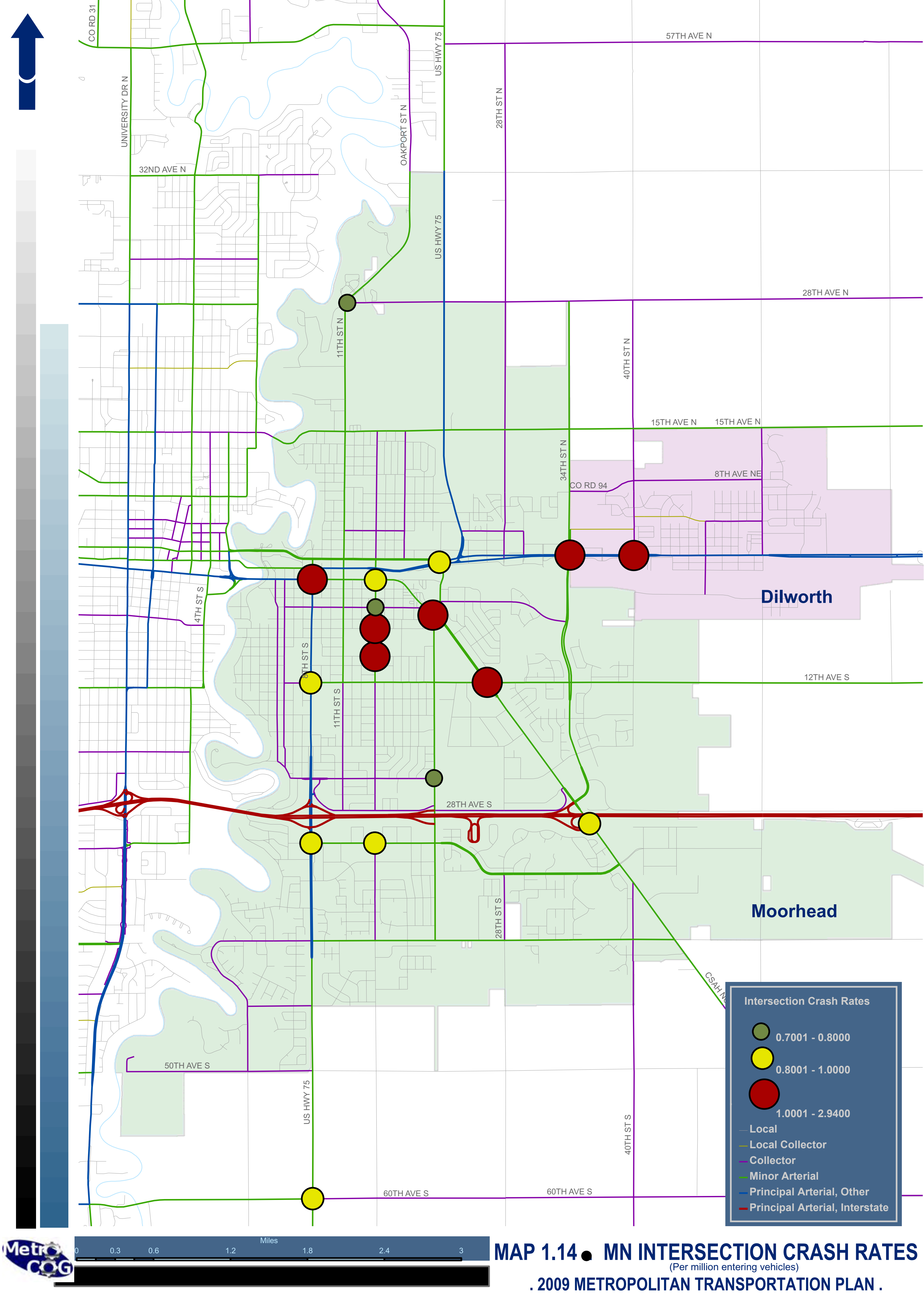
For the three-year period from 2005 to 2007, the highest crash rate locations for the North Dakota portion of the Metro COG planning area were:

- 13th Avenue South in Fargo at 44th Street SW – 54 crashes; 1.84 crashes per million vehicles (pmv)
- NP Avenue in Fargo at 4th Street North – 25 crashes; 1.66 pmv
- 13th Avenue South in Fargo at 40th Street South – 46 crashes; 1.54 pmv
- Broadway in Fargo at 1st Avenue North – 24 crashes; 1.5 pmv
- NP Avenue in Fargo at 2nd Street North – 32 crashes; 1.53 pmv
- I-94 Main Avenue Crossover in West Fargo – 25 total crashes; 1.4 pmv
- 12th Avenue North in Fargo between 19th Street and 29th Street – 24 total crashes; 1.38 crashes per million vehicles (pmv)
- 32nd Avenue South in Fargo at 15th Street South – 26 crashes; 1.35 pmv
- 13th Avenue South in Fargo at 43rd Street South – 41 crashes; 1.34 pmv
- 13th Avenue East in West Fargo at 9th Street SE – 29 crashes; 1.31 pmv
- 13th Avenue SW in Fargo at 43 ½ Street SW – 37 crashes; 1.23 pmv
- 42nd Street South in Fargo at 9th Avenue South – 23 crashes; 1.13 pmv
- I-29 in Fargo at the I-94 interchange – 70 crashes; 1.11 pmv
- 25th Street South in Fargo at the I-94 south ramps (18th Street) – 45 crashes; 1.07 pmv
- 32nd Avenue South in Fargo at 32nd Street – 23 crashes; 1.03 pmv
- 45th Street SW in Fargo at 19th Avenue SW – 47 crashes; 1.02 pmv
- I-94 in Fargo at the University Drive interchange – 67 crashes; 1.02 pmv



MAP 1.13 • ND INTERSECTION CRASH RATES

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.14 • MN INTERSECTION CRASH RATES

(Per million entering vehicles)

. 2009 METROPOLITAN TRANSPORTATION PLAN .

The highest intersection crash rates for the Minnesota portion of the Metro COG planning area were:

- County State-Aid Highway 9 and Trunk Highway 10 in Dilworth – 87 total crashes; 2.94 crashes per million vehicles (pmv)
- SE Main Ave and 12th Ave South in Moorhead – 55 total crashes; 2.82 pmv
- 14th Street and 9th Avenue South in Moorhead – 23 total crashes; 2.19 pmv
- 8th Street and Main Avenue in Moorhead – 71 total crashes; 2.11 pmv
- 14th Street and 6th Avenue South in Moorhead – 15 total crashes; 1.44 pmv
- 14th Street and Main Avenue in Moorhead – 47 total crashes; 1.34 pmv
- 34th Street and Trunk Highway 10 in Dilworth and Moorhead – 59 total crashes; 1.22 pmv

There were other intersections that exceeded the expected crash rate (see Maps 1.13 and 1.14).

Bridges

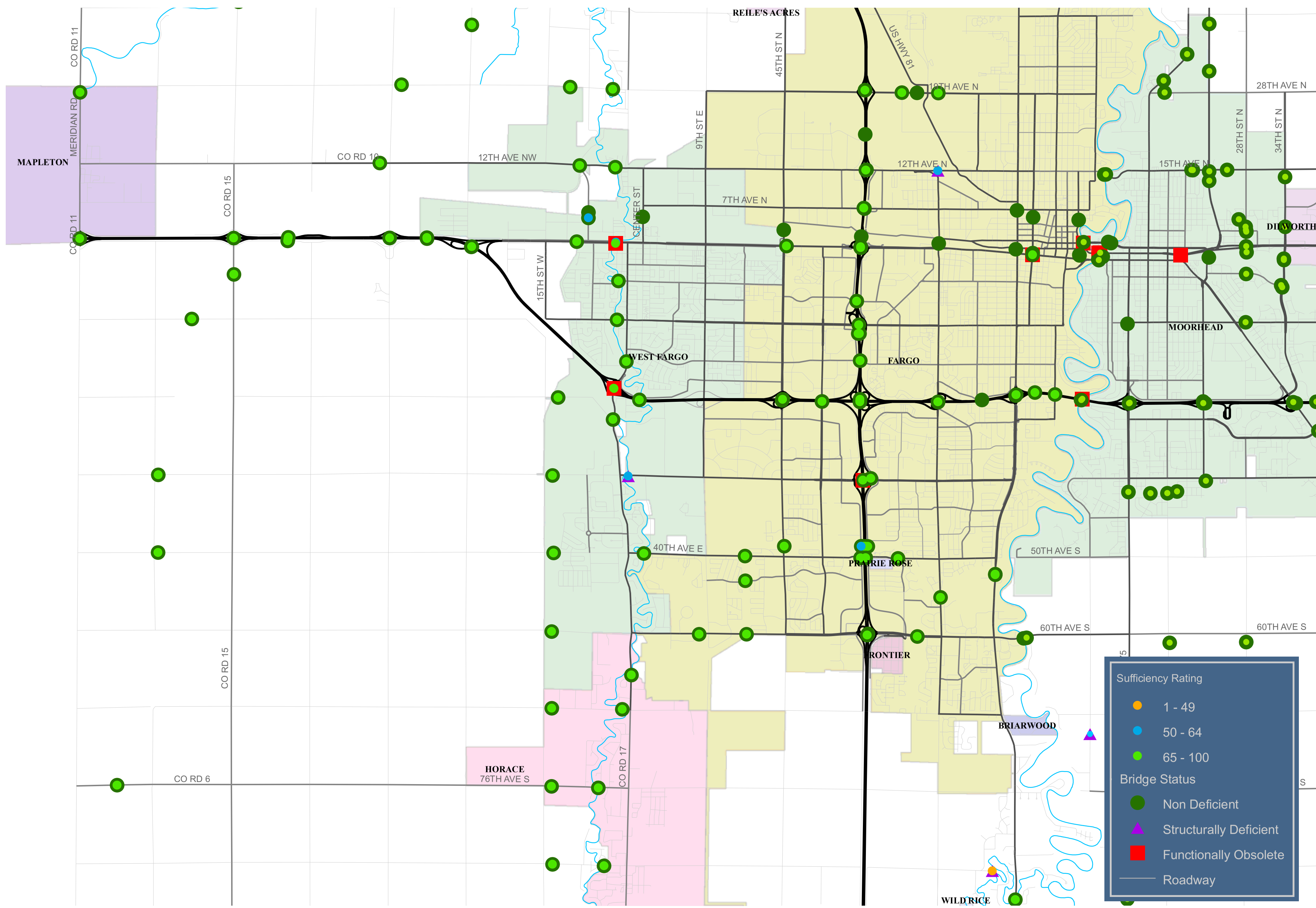
Bridges are an important aspect of any transportation network, as they allow for continuity of travel despite the presence of barriers such as rivers, ditches, railroads, or interstate highways. It is important to assess the condition of existing bridges and estimate when transportation funds will be needed to repair or reconstruct them. The North Dakota and Minnesota Departments of Transportation are responsible for bridge inspections in the FM area, except Clay County inspects bridges on its county road system and the City of Moorhead inspects bridges under their jurisdiction. Following the inspection, bridges are assigned a sufficiency rating between 0 and 100. The following guidelines are currently used in the FM area. A bridge sufficiency rating between 65 and 100 indicates that the bridge is in good to excellent condition. Between 64 and 50, the bridge rating indicates that bridge repair can eliminate or postpone the need for a more costly reconstruction or replacement project. Bridges with ratings below 50 are eligible for federal bridge funding.

A bridge sufficiency rating includes a multitude of factors: inspection results of the structural condition of the bridge, traffic volumes, number of lanes, road widths, clearances, and importance for national security and public use. The point value compares the existing bridge to a new bridge designed to current engineering standards.

A bridge qualifies for federal replacement funds if is has a sufficiency rating of 50 or below. It qualifies for federal rehabilitation funds if it has a sufficiency rating of 80 or below.

The bridge's sufficiency rating provides an overall measure of the bridge's condition and is used to determine eligibility for federal funds. However, they do not tell the whole story. Bridge inspectors also provide a status ranking as either "Adequate," "Functionally Obsolete," or "Structurally Deficient."

Bridges are considered structurally deficient if significant load carrying elements are found to be in poor condition. The fact that a bridge is classified under the federal definition as "structurally deficient" does not imply that it is unsafe**.** A structurally deficient bridge, when left open to traffic, typically requires significant maintenance and repair to remain in service and eventual rehabilitation or replacement to address deficiencies. To remain in service, structurally deficient bridges are often



MAP 1.15 ● BRIDGE CONDITION

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Figure 3. Bridge Status

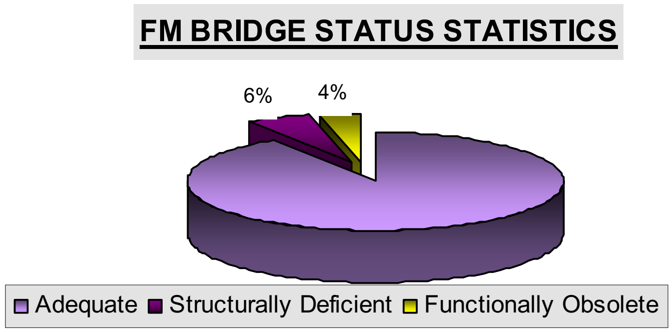
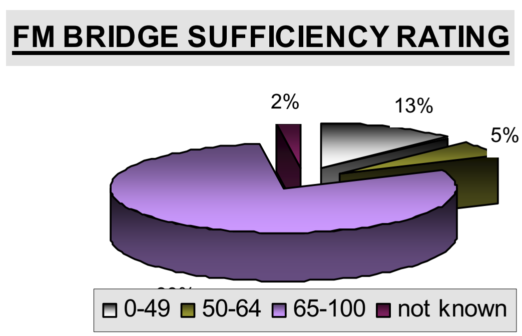


Figure 4. Bridge Sufficiency Ratings



posted with weight limits to restrict the gross weight of vehicles using the bridges to less than the maximum weight typically allowed by statute.

Bridges that are functionally obsolete may be in good condition, but do not meet current engineering standards. For instance, they may have inadequate lane width or vertical clearance to serve today's traffic demands. Being functionally obsolete does not mean that the structure is inherently unsafe.

The sufficiency ratings and status for FM area bridges are provided in Map 1.15.

The FM metropolitan area has 11 bridges over the Red River and 261 other bridges and structures (such as box culverts). Of that total, approximately 142 bridges are located in the North Dakota portion of the Metro COG planning area, while 119 are in the Minnesota portion.

Twenty bridges have been identified as having sufficiency ratings between 50 and 64 percent (eleven in the Minnesota portion of the Metro COG planning area, and 9 in the North Dakota portion). Another ten bridges have been identified as having sufficiency ratings below 49 percent, all of them in Clay County, Minnesota, outside of the urban area. Most notably, there is a cluster of bridges over the Buffalo River north-east of the metro area that are both structurally deficient and have a low sufficiency rating. Eighteen bridges are identified as structurally deficient (15 in Minnesota; 3 in North Dakota). Nine bridges are identified as being functionally obsolete.

In rural areas, bridges may carry very low traffic volumes, but the weight and size of modern farming equipment may result in bridges being structurally deficient or functionally obsolete. Because bridges are expensive to build and maintain, both Cass and Clay Counties have begun to abandon and remove bridges where alternative routes are available to serve a field or other destination.

Non-Automobile Transportation Options

A healthy transportation network is diverse and provides residents with transportation options. Roadways are expensive investments -- about $1 million per lane mile for a typical arterial – so managing the demand for roadway capacity is an important part of the wise investment of public tax revenue in transportation infrastructure. The next five sections discuss the state of alternative transportation choices above and beyond single-occupant motor vehicles.

Bicycle Network

As a form of transportation, bicycles have been around longer than motor vehicles. Today they are often one of the first forms of transportation used by children and young adults. For many, acquiring a driver's license means that bicycling stops being a form of transportation and is thought of more as a form of exercise or recreation. The truth is, even if bicycles are used for exercise or recreation they never stop being a form of transportation. The inherent transportation aspect of bicycles can never be separated from the other uses. Whether you regularly commute to work by bike, ride only on the weekends to your local ice cream shop, or ride to help maintain your health you are transporting yourself from one place to another. In many cases, those trips would occur as motor vehicle trips if they could not be made as bicycle trips.

In both North Dakota and Minnesota, bicycles are legally recognized as vehicles and have the right to use any public right-of-way, except interstate highways because cyclists cannot maintain the required minimum speed. In rural areas, bicyclists are encouraged to ride on the shoulders of highways because of the speed differential between motorized vehicles and bicycles. But within the urban area of Fargo-Moorhead, adult bicyclists can ride on any local, collector, or arterial roadway. However, it must be recognized that bicyclists vary in skill and comfort levels when driving a bicycle on a public roadway and mingling with motorized traffic. To create a bicycle network that is accessible and safe for a wide range of the citizenry certain accommodations must be made.

Metro COG recognizes five kinds of infrastructure accommodations that are made for bicyclists.

1. A **shared-use path** is a paved surface that is typically between 8 and 12 feet wide and is used by pedestrians, bicyclists, joggers, rollerbladers, and other

people who are moving under their own power. Shared-use paths can be found adjacent to, but separate from, a roadway much like a sidewalk, or can occupy their own right-of-way, such as along a river or other natural feature where a roadway is impractical, infeasible, or unnecessary.
2. A **bicycle lane** is an area on a roadway surface, at least 4 feet wide, that is designated for use by bicyclists. At a minimum, the bicycle lane is separated from the automobile lane by a 6-inch stripe, though other on-pavement markings and signage are often used as well.
3. A **shoulder** is similar to a bicycle lane in that it is separated from the driving lane by a stripe, but it is typically found on rural roadways and also serves as a break-down lane for motor vehicles.
4. A **signed-shared roadway** does not have a designated area striped off for use by bicyclists, but adjacent bicycle route or trailblazing signage alerts motorists to be on the look-out for bicyclists, and identifies the roadway to bicyclists as a preferred route. Standard driving lanes are 11 – 12 feet wide, but may vary.
5. A **wide-curb lane** is a roadway curb-side driving lane that is at least 14 feet wide (exclusive of parking or the gutterpan) and so it can comfortably accommodate both automobiles and bicycles, but does not (necessarily) have adjacent signage identifying it as a preferred bicycle route.

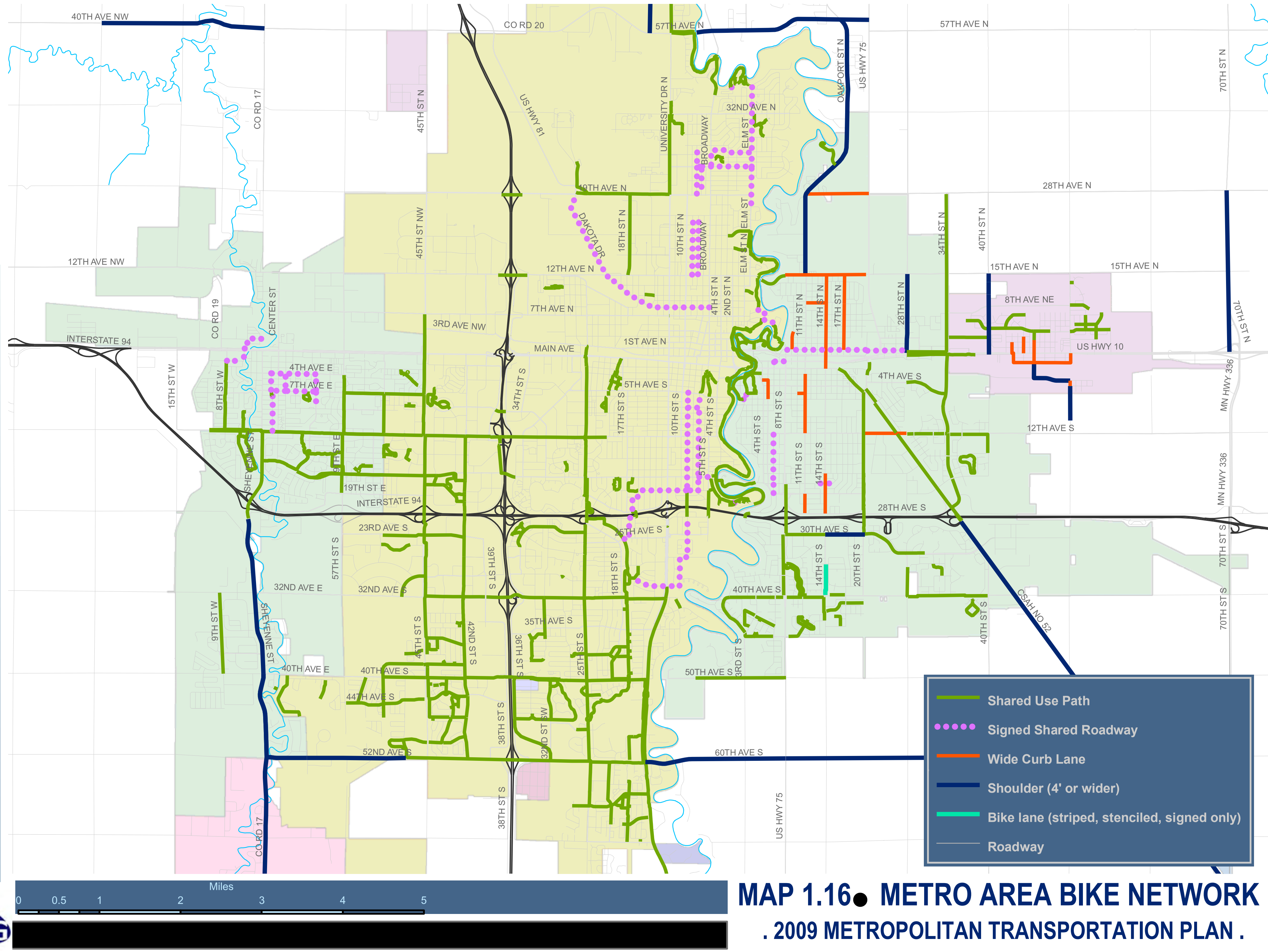
Table 17. 2008 Bicycle Network by Facility Type (Miles)

Facility	Jurisdiction				Total	Percentage
	Dilworth	Fargo	Moorhead	West Fargo		
Shared-Use Path	4	88.7	29	25.4	147 miles	76.4%
Bicycle Lane	0	0	0.4	0	0.4 miles	0.2%
Shoulder	1.6	2.1	5	4.6	13.3 miles	6.9%
Signed-Shared Roadway	0	14.1	2.9	6.3	23.3 miles	12.1%
Wide-Curb Lane	1.6	0	6.7	0	8.3 miles	4.3%
Total	**7.2**	**104.9**	**44**	**36.3**	**192.3 miles**	**100%**
Percentage	**3.7%**	**54.6%**	**22.9%**	**18.9%**	**100%**	

Source: Metro COG GIS Dataset

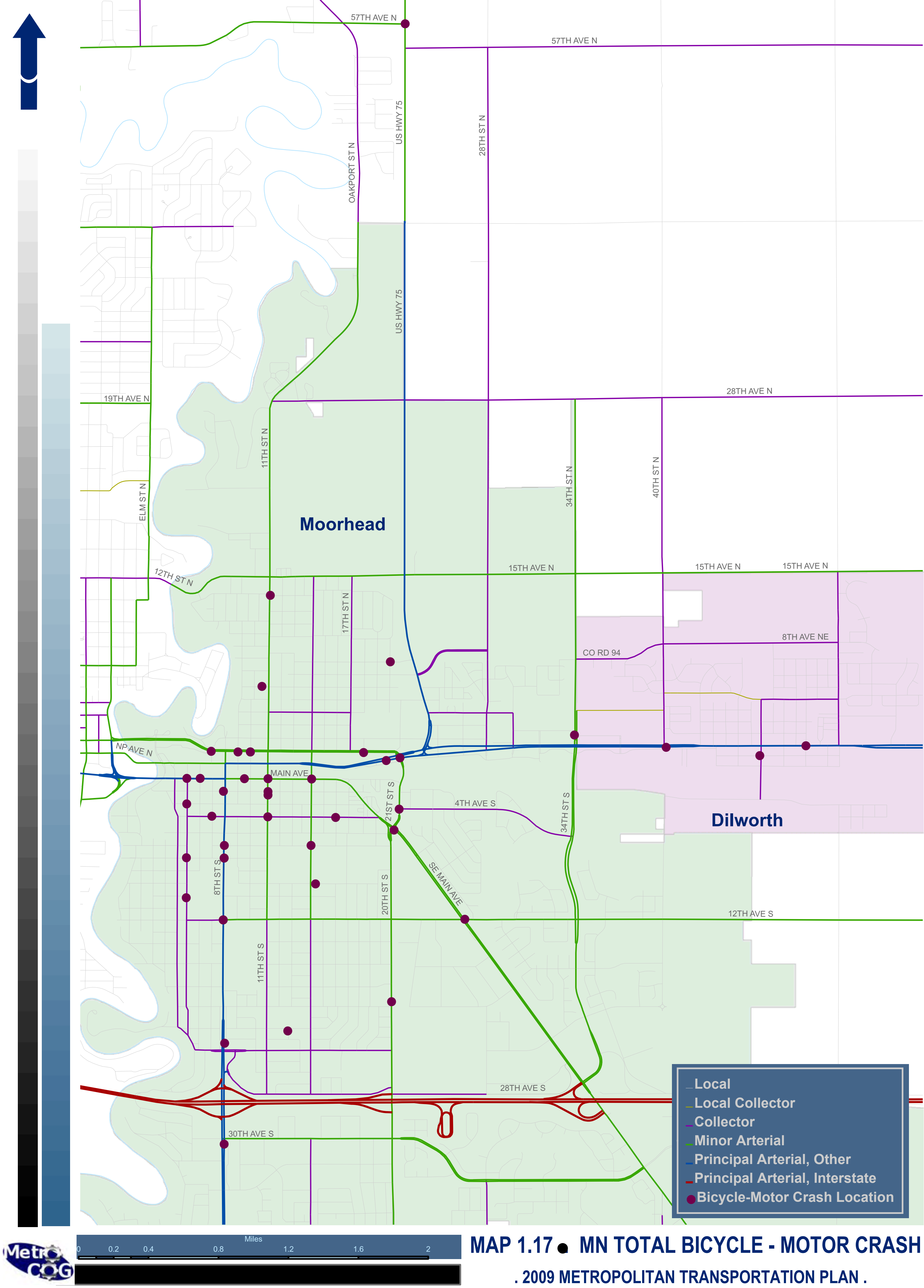
Metro COG completed a Metropolitan Bicycle and Pedestrian Plan in 2006 and helped to establish a regional vision for the regional bicycle and pedestrian network. The plan identifies not only needed capital projects, but also engineering, planning, safety, education, encouragement, and enforcement goals and objectives.

The plan recognizes that bicycle facilities have thus far been put in place on a site-by-site basis as roadways are reconstructed or as other opportunities arise. The Metro Bicycle-Pedestrian Plan calls for the stitching together of these separate pieces of facilities into one comprehensive network with good connections and transitions between the various elements. The plan puts particular emphasis on the need to establish a regional principal bikeway network that will allow and promote bicycle



MAP 1.16● METRO AREA BIKE NETWORK

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.17 ● MN TOTAL BICYCLE - MOTOR CRASH

. 2009 METROPOLITAN TRANSPORTATION PLAN .

commuting to work or school as a viable form of transportation. According to the plan spacing between principal bikeway routes should not be more than 2 miles, and they should be well signed to allow navigation of the system to major destinations without use of a map.

Extraterritorial routes provide opportunities for persons bicycling to and from the Fargo-Moorhead urbanized area, and can serve as important connections between the metropolitan bicycle network and state or national bicycle routes. Significant extraterritorial bikeways include Cass County Highway 17, Cass County Highway 14, Clay County Highway 12, and Clay County Highway 26. The 2006 Metropolitan Bicycle and Pedestrian Plan identifies future extraterritorial bikeways to directly connect the F-M urban area with surrounding communities such as Harwood, Argusville, Mapleton, Sabin, and Glyndon.

There are also three interstate bicycle routes that pass through the Fargo-Moorhead area. Adventure Cycling Association has a long-established Northern Tier Route that begins in Washington State and ends in Maine. The route enters the F-M urban area from the west via U.S. 81, and exits the urban area via U.S. 10 to Hawley, Minnesota. More recently there has been an attempt to establish a U.S. Bicycle Route System to connect America through a network of numbered interstate bicycle routes. Most of the routes are still in the planning phase. There is a map of prioritized corridors available through Adventure Cycling or the American Association of State Highway and Transportation Officials (AASHTO). The corridors identified as “Prioritized” are not specific routes, but 50-mile wide areas where routes may be developed. Two such prioritized corridors pass through Fargo-Moorhead. The first is Corridor 20, an east-west corridor from Oregon to Michigan. The second is Corridor 55, a north-south corridor from the Canadian border to the Mexican border. It is expected that actual routes will be established within these corridors in the coming years.

The crash data provided by the state departments of transportation can be queried for crashes that involved bicycles and motor vehicles. Again, by mapping this kind of data certain geometric, intersection control, or roadway configuration problems may be uncovered. The occurrence of multiple crashes in a single location does not imply that a geometric or engineering deficiency exists – it is only an indication of a possible deficiency.

Bicycle crash data for the Minnesota portion of the Metro COG planning area shows 43 reported crashes involving a bicycle for the 5-year period of 2002 to 2006.

- 63% of those crashes were right-angle crashes
- According to the accident report completed by the investigating police officer, 44% were caused in whole or in part by the cyclist failing to obey traffic laws
- 37% involved a cyclist aged 18 or younger
- 19% involved a motor vehicle making a right turn
- There were no bicycle-motor vehicle accidents that resulted in a fatality

Geographically, most of the crashes were spread around the Moorhead-Dilworth metro area. There were, however, three areas where multiple bicycle crashes occurred in close proximity to one another.

The first area was 8th Street in Moorhead (TH 75) between 6th Avenue South and 12th Avenue South (about a half mile distance) where five bicycle crashes occurred.

Concordia College lies immediately west of 8th Street in this area. Three of these five crashes involved college-aged bicyclists. The remaining two crashes involved younger teen bicyclists. The intersection of 8th Street and 7th Avenue South is currently signalized, but there are no Walk/Don't Walk indicators at the intersection.

The second area was 11th Street in Moorhead between 2nd Avenue South and 4th Avenue South where 3 bicycle related crashes occurred.

The third area was Main Avenue in Moorhead between 5th and 6th Streets where two crashes occurred.

All three areas should be investigated for possible geometric deficiencies or other contributing factors that could be mitigated with physical safety features.

Street sweeping and pavement surface maintenance are essential for the safety of bicyclists. Each of the local governments has different programs for street sweeping. Three of the four jurisdictions own street sweeping equipment. The City of Moorhead has the most extensive program, sweeping all streets within the city limits weekly and cleaning areas downtown twice per week. The cities of West Fargo and Fargo run street sweepers continually starting in early spring and ending late into the fall. Dilworth relies on Mn/DOT for sweeping services. Currently, while all of the jurisdictions monitor pavement quality through their pavement management program, none of them monitor pavement conditions specifically for the bicycling environment. While it is true that the bike-ability of a roadway deteriorates with the general pavement condition, it is possible for relatively good pavement to have cracking or heaving at the pavement edges where bicyclists are more likely to ride.

Pedestrians & Sidewalks

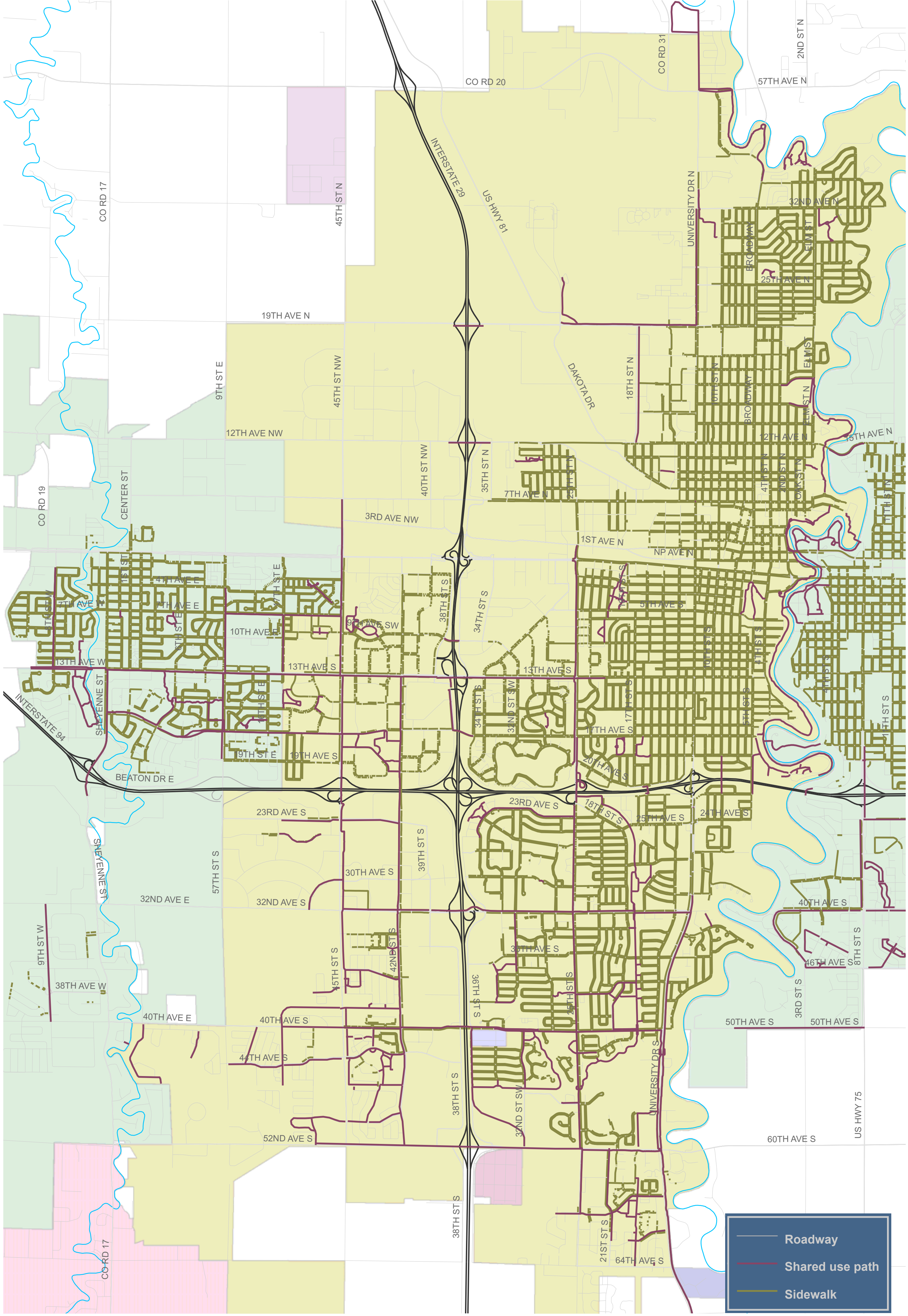
Like bicycling, walking, for many people, is often one of their first forms of transportation. For short trips, walking is usually the easiest and most efficient way to transport a person if appropriate facilities and connections exist. Residents of the Fargo-Moorhead area are fortunate that most functionally classified roadways have sidewalks on at least one side.

Table 18. Metropolitan Sidewalk Width Standards

Jurisdiction	Width	
Fargo	Residential	Minimum width 4.5 feet
	Commercial	Minimum width 4.5 feet
West Fargo	Residential	Minimum width 4 feet
	Commercial	Minimum width 6 feet
Moorhead	Residential	Minimum width 4.5 feet
	Commercial	Minimum width 4.5 feet
ADA	Residential	Minimum width 3 feet
	Commercial	Minimum width 3 feet

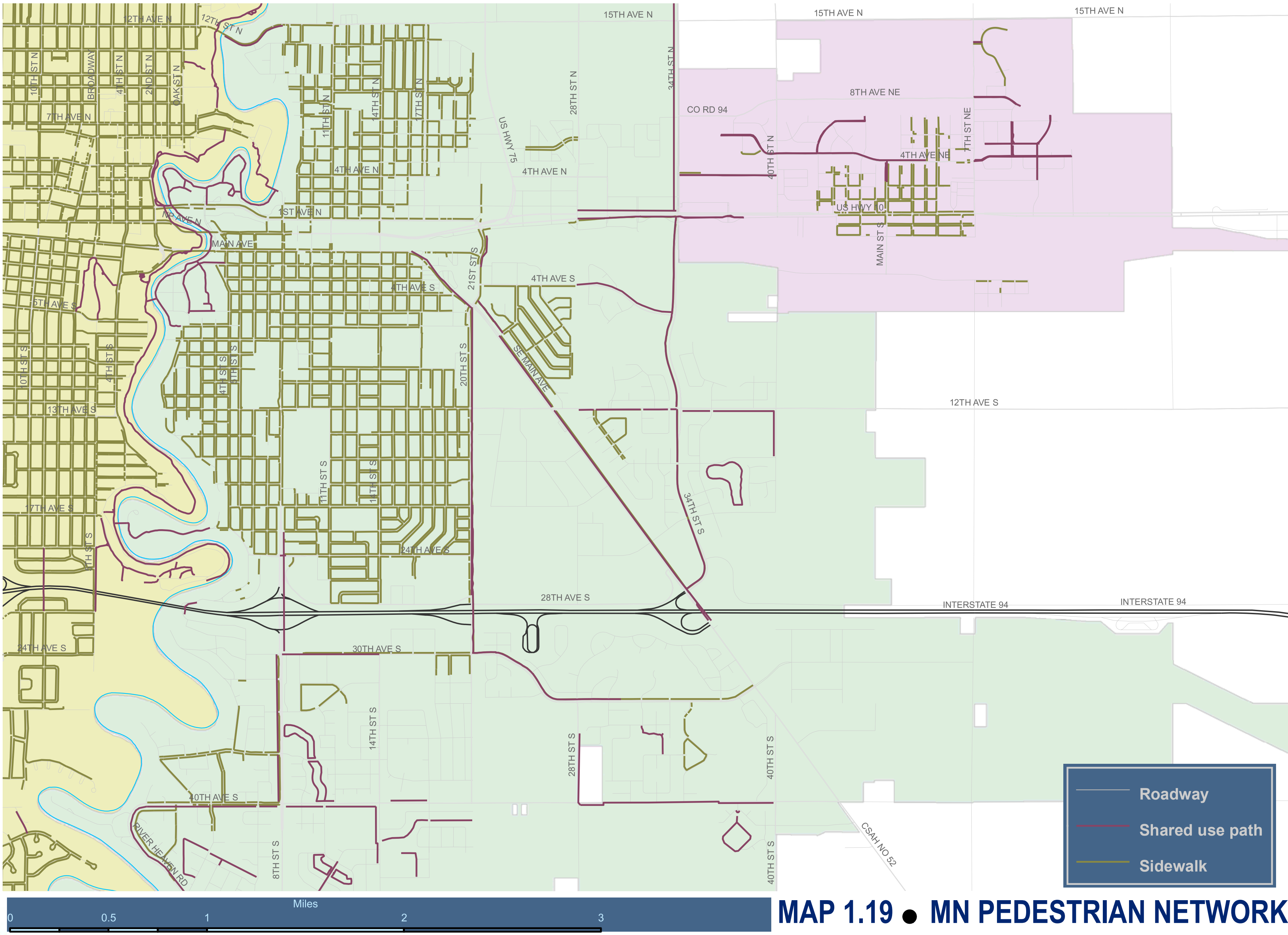
Source: City of Fargo, City of Moorhead, City of West Fargo

Missing system links force pedestrians onto the street or to cross the street at unmarked locations. Using aerial photographs, Metro COG staff inventoried sidewalks along all functionally classified roadways in the FM area. This inventory is shown in Maps 1.18 and 1.19. Eliminating the gaps in the pedestrian network can help create a safe and more livable community.



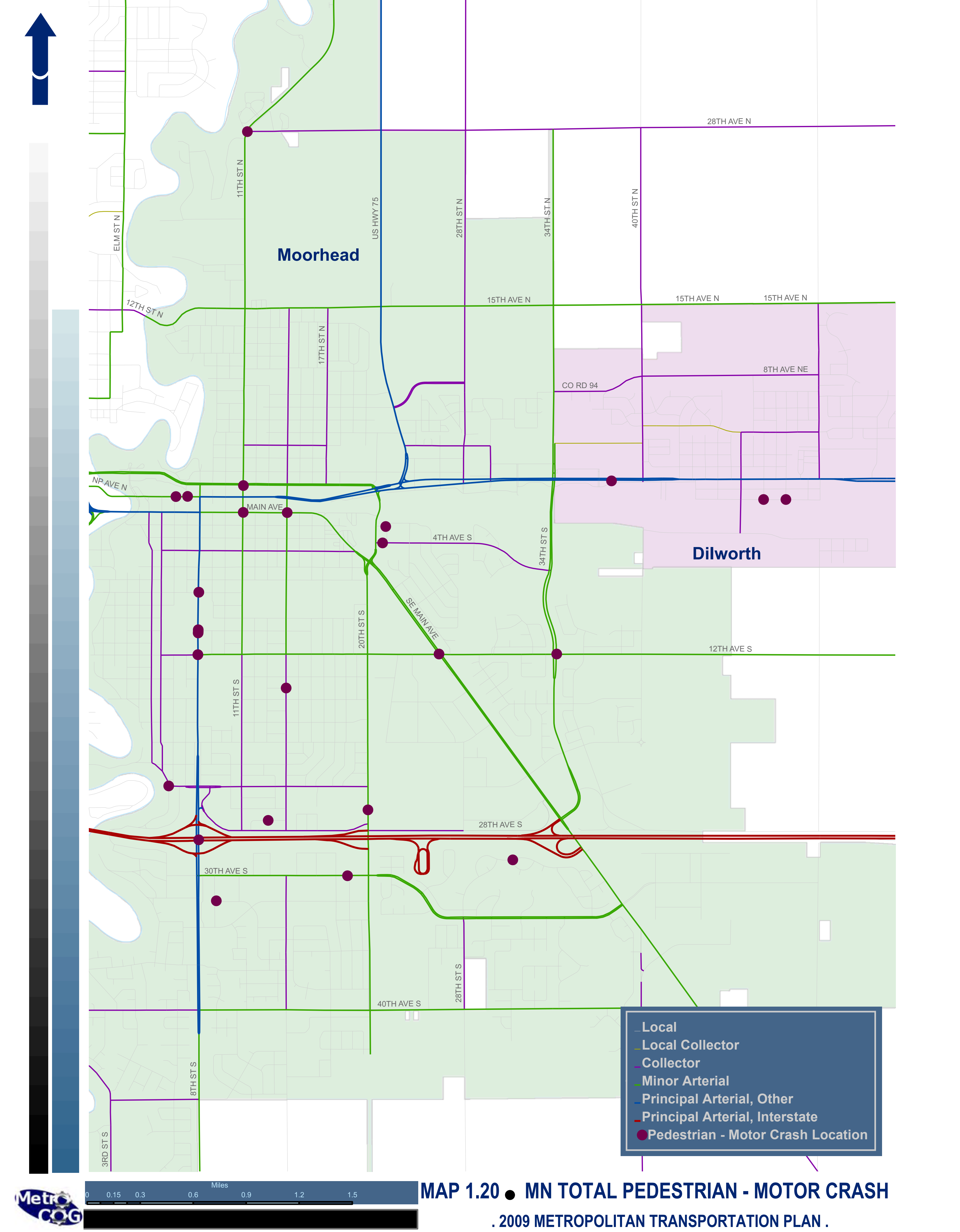
MAP 1.18 ● ND PEDESTRIAN NETWORK

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.19 ● MN PEDESTRIAN NETWORK

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.20 • MN TOTAL PEDESTRIAN - MOTOR CRASH

. 2009 METROPOLITAN TRANSPORTATION PLAN .

The Americans with Disabilities Act (ADA) of 1990 prohibits public entities from designing new facilities or altering existing facilities, including sidewalks and trails in such a way as to make the facility inaccessible to people with disabilities. Currently, the City of Fargo has set aside $100,000 per year to bring all their sidewalks up to ADA standards. The City of Dilworth sets aside approximately $2,000 per year to install curb cuts. The Cities of Moorhead and West Fargo replace sidewalks on a request basis to provide accessibility for handicapped individuals, and in conjunction with street reconstruction and new construction projects.

Proper maintenance is essential for ensuring user safety and encouraging increased use of the shared-use path and sidewalk networks. Primary maintenance activities in the FM area include snow removal and sweeping.

The City of West Fargo Street Department provides snow removal on shared-use paths along streets and sidewalks for which they are responsible under a private contract. The West Fargo Park District grooms all shared-use paths within parks for cross-country skiing.

Snow removal on some sidewalks and shared-use paths within the City of Fargo is completed by the Public Works Department, Park District, and School District. In 1996, the city created a map noting the snow removal responsibility areas. Snow is removed on shared-use paths located along the roadway network or those that are heavily used by pedestrians, such as school routes. Areas in Rose Creek, Edgewood Park, Prairiewood and near the Red River are groomed for cross-country skiing during years with significant snowfall.

The City of Moorhead Parks and Recreation Department is responsible for snow removal on shared-use paths. The Parks Department grooms all paths in River Oaks, M.B. Johnson Park, Gooseberry Park, and Woodlawn Park for cross-country skiing, and removes snow from all other paths within the City, except in the Allison Development, where concerns have been raised about equipment harming residential property. In the winter of 2000-2001, the Park and Recreation Department began removing snow from the shared-use paths in Vikingship Park and grooming a cross-country skiing route near the path. The City of Dilworth does not remove snow or groom any of its shared-use paths.

It should be noted that ADA standards require that any shared-use path that functions as a sidewalk <u>must</u> be cleared of snow.

The crash data provided by the DOT's can be queried for crashes involving motor vehicles and pedestrians. Identifying high crash locations may be important to uncovering roadway design, intersection control, or other physical deficiencies of the pedestrian network. It should be noted that multiple crashes occurring in one location does not imply an engineering or geometric deficiency exists. Drivers and pedestrians must always take responsibility for their own actions. However, the occurrence of multiple crashes in a single location can be an indicator of a possible physical geometric deficiency.

In Moorhead and Dilworth 27 crashes involving pedestrians and motorized vehicles were reported between 2002 and 2006, of which:

- 44% involved a pedestrian or driver (or both) aged 18 or younger
- 78% involved a pedestrian or driver (or both) aged 24 or younger

There were two locations where multiple pedestrian crashes occurred in that five year period.

The first was on 8th Street in Moorhead between 12th Avenue South and 7th Avenue South. In this half-mile stretch of roadway seven crashes involving pedestrians occurred. Concordia University is immediately adjacent to 8th Street in this location. All of the reported crashes involved college-aged pedestrians or drivers or both.

The second location was on Center Avenue between 6th Street and 8th Street in downtown Moorhead where 2 pedestrian crashes occurred.

Both locations should be investigated for possible geometric deficiencies or other possible safety features that could mitigate risk to pedestrians.

Safe Routes to School

In 1962, the Institute of Traffic Engineers created *A Program for School Crossing Protection*. A part of the program urged the preparation of "Safe to School" route maps as a means of helping parents choose the safest routes for their children to walk to school. "Safe to School" routes are designed so as to minimize the number of major streets that the children have to cross while maximizing the advantage and protection offered by existing traffic controls. In some cases, children may be required to walk longer distances to avoid hazardous locations or to make use of existing safety control measures.

With the passage of the 2004 Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) a Federal Safe Routes to School program was established and a small account was created with which to fund Safe Routes to School projects. The Federal Safe Routes to School (SRTS) program was established with three goals in mind:

1. to enable and encourage children, including those with disabilities, to walk and bicycle to school
2. to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age
3. to facilitate the planning, development and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools

The SRTS grants require no local match (though jurisdictions do often supplement the SRTS funding with local dollars), but the relatively modest funding levels make for a competitive application and award process. In Minnesota in 2007, for example, the state had $1.55 million in SRTS grants to award, but received $11.5 million in grant applications. Grants can be given for infrastructure improvements such as sidewalks, bikeways, signage, pavement markings, etc. or for programs that educate and encourage children to walk and bike to school.

Federal legislation states that 10 to 30 percent of each states SRTS allocation should be spent on non-infrastructure activities. The intent of this language is to ensure that education, encouragement, enforcement and evaluation activities are included as a significant part of SRTS activities. Both capital improvement projects and education/enforcement activities must take place within 2 miles of a primary or middle school (grades K – 8).

The City of Dilworth received an SRTS grant in 2007 to complete sidewalk connections through neighborhoods. In 2009, the City of Fargo received an SRTS grant for bicycle and pedestrian educational and promotional activities.

There is no planning requirement to receive an SRTS grant, but planning can help jurisdictions identify and prioritize their needs for creating safe routes to schools. Metro COG's Regional Bicycle and Pedestrian Coordinator updates one local jurisdiction's Safe Routes to School plan each year on a rotating four-year schedule. Moorhead's plan update was largely completed in 2008 and Fargo's SRTS plan update is underway in 2009. West Fargo's plan is scheduled for update in 2010 and the Dilworth-Glyndon-Felton consolidated school district will begin their update in 2011.

Transit

Public transit is a critical part of the Metro Area transportation network. Public transit is provided by a number of different transportation providers throughout the metro area. Service types and methods vary by provider and what follows is a summary of the existing public transportation network in the Metro Area.

The Metro areas primary public transit system is operated by Metro Area Transit (MAT). MAT provides 23 year round and seasonal fixed routes which cover Fargo, Moorhead, and West Fargo. MAT also operates the Federal required complimentary ADA Paratransit service, known as MAT Paratransit.

MAT is composed of two separate, but coordinated municipal transit departments. The City of Fargo operates 15 fixed routes within Fargo and West Fargo. Service to West Fargo is provided by Fargo through an annual service contract. The City of Moorhead operates 6 fixed routes during the day and 2 evening fixed routes within the City of Moorhead. Map 1.21 demonstrates the existing Fixed Route system of MAT.

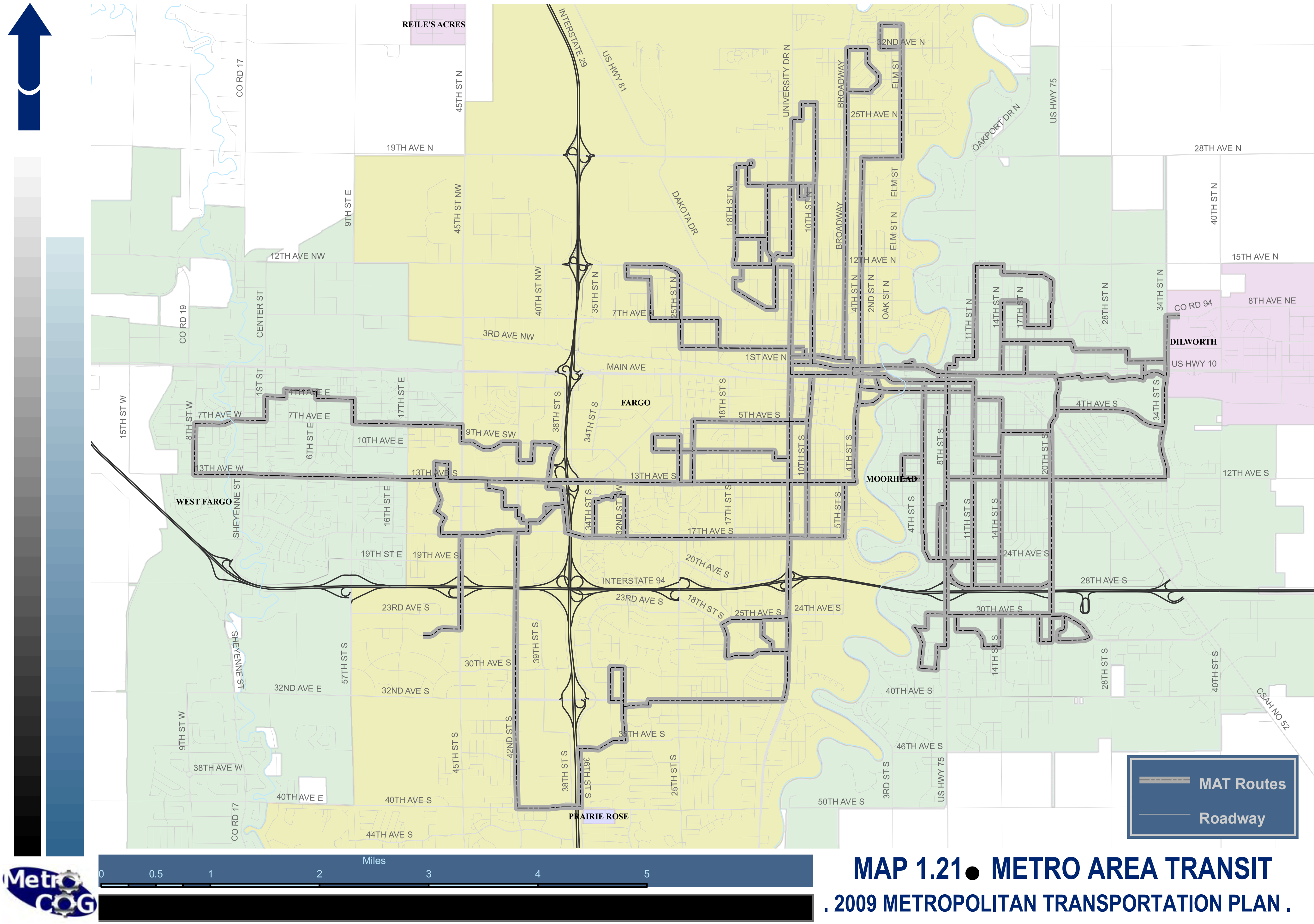
The City of Fargo and the City of Moorhead jointly contract with First Transit for driver services and fixed route dispatch. The entire MAT Fleet is stored and maintained at the Metro Transit Garage (MTG). The MTG is owned jointly by the City of Fargo and the City of Moorhead. Maintenance on all MAT vehicles is provided by the City of Fargo. The existing MAT Fleet is summarized in Table 20.

Table 19. MAT Fixed Route Ridership

	2002	2003	2004	2005	2006	2007
Fargo	495,702	536,011	559,106	661,752	713,647	757,729
Moorhead	288,324	281,730	280,279	316,976	345,228	356,732
Total	*784,026*	*817,741*	*839,385*	*978,728*	*1,058,875*	*1,114,461*

Source: 2008 Metro Profile

MAT also provides a complimentary ADA service as required by Federal law. MAT Paratransit provides complimentary ADA services anywhere inside the city limits of Fargo, West Fargo, Moorhead and Dilworth. The MAT Paratransit service area exceeds the ¾ fixed mile fixed route service area required by ADA. MAT Paratransit



MAP 1.21 ● METRO AREA TRANSIT

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Table 20. MAT Fixed Route Fleet

Vehicle ID	Year/Make	Type of Service	Owner	Anticipated Replacement Year
1131	1993 Gillig	Fixed Route	Fargo	2009
1121	1997 New Flyer	Fixed Route	Fargo	2009
1122	1997 New Flyer	Fixed Route	Fargo	2009
1123	1997 New Flyer	Fixed Route	Fargo	2009
1124	1997 New Flyer	Fixed Route	Fargo	2009
1125	1997 New Flyer	Fixed Route	Fargo	2009
1143	1997 New Flyer	Fixed Route	Fargo	2009
1129	2001 Ford	Fixed Route	Fargo	n/a
1130	2002 Ford	Fixed Route	Fargo	n/a
1135	2002 Ford	Fixed Route	Fargo	n/a
1126	2002 Gillig	Fixed Route	Fargo	2014
1127	2002 Gillig	Fixed Route	Fargo	2014
1128	2002 Gillig	Fixed Route	Fargo	2014
1139	2004 Gillig	Fixed Route	Fargo	2016
1140	2004 Gillig	Fixed Route	Fargo	2016
1141	2004 Gillig	Fixed Route	Fargo	2016
1142	2004 Gillig	Fixed Route	Fargo	2016
1173	2007 New Flyer	Fixed Route	Fargo	2019
1174	2007 New Flyer	Fixed Route	Fargo	2019
1175	2007 New Flyer	Fixed Route	Fargo	2019
1176	2007 New Flyer	Fixed Route	Fargo	2019
9741	1997 New Flyer	Fixed Route	Moorhead	2009
370	2003 Orion	Fixed Route	Moorhead	2015
371	2003 Orion	Fixed Route	Moorhead	2015
380	2003 Orion	Fixed Route	Moorhead	2015
381	2003 Orion	Fixed Route	Moorhead	2015
382	2003 Orion	Fixed Route	Moorhead	2015
590	2005 Orion	Fixed Route	Moorhead	2017
591	2005 Orion	Fixed Route	Moorhead	2017
592	2005 Orion	Fixed Route	Moorhead	2017
593	2005 Orion	Fixed Route	Moorhead	2017

Source: 2009 Metro Profile

Table 21. MAT Paratransit Fleet Inventory

Vehicle ID	Year/Make	Type of Service	Owner	Anticipated Replacement Year
1152	2003 Ford	Paratransit	Fargo	2007
1153	2003 Ford	Paratransit	Fargo	2007
1154	2003 Ford	Paratransit	Fargo	2007
1170	2006 Ford	Paratransit	Fargo	2010
1171	2006 Ford	Paratransit	Fargo	2010
1172	2006 Ford	Paratransit	Fargo	2010
1178	2008 Ford	Paratransit	Fargo	2013
1179	2008 Ford	Paratransit	Fargo	2013
1180	2008 Ford	Paratransit	Fargo	2013
1181	2008 Ford	Paratransit	Fargo	2013
1182	2008 Ford	Paratransit	Fargo	2013
1151	2003 Ford	Paratransit	Moorhead	2009
1150	2006 Ford	Paratransit	Moorhead	2011
1177	2008 Ford	Paratransit	Moorhead	2013

Source: 2009 Metro Profile

is operated jointly between the City of Fargo and the City of Moorhead and the costs are shared pro-rata based on ridership, the terms of which are spelled out in a joint powers agreement (JPA) between the two cities. As per the JPA governing MAT Paratransit the City of Fargo provides eight 19-passenger buses. The City of Moorhead provides three 19-passenger buses. MAT Paratransit has two full-time and one part-time reservationist, all of which are employed by the City of Fargo.

Fargo Senior Services

Fargo Senior Services (FSS), a subsidiary of the Fargo Park District, operates Metro Senior Ride which serves Fargo, West Fargo, Dilworth, and Moorhead. Metro Senior Ride is provided through a web of formal and informal arrangements between FSS and the metro communities. Metro Senior Ride was expanded to cover Dilworth and Moorhead in 2008 through the planning and coordination done as part of the 2007-2011 Metro Transit Plan. FSS operates Metro Senior Ride with a fleet of 8 vehicles. Seven of the vehicles are funded informally by the City of Fargo with Federal Transit Administration (FTA) grants. Local match on these vehicles is provided by FSS. The City of Dilworth is currently leasing a van to FSS to provide the Moorhead and Dilworth portion of Metro Senior Ride. FSS also provides prescheduled senior grocery trips in Fargo and West Fargo.

FSS provides a limited rural transit service to Cass County. Cass County Rural Transit provides a prescheduled system to all of Cass County. Cass County Rural Transit operates a route in the northern and southern portions of the County, and focuses on bringing residents into Fargo for medical or other needed services. FSS is also the transit operator for 6 other rural County transit systems in eastern North Dakota including Ransom, Richland, Sargent, Trail, Steel, and Grand Forks.

Clay County Rural Transit

Clay County Rural Transit (CCRT) currently operates two daily commuter routes to the F-M metro area from Detroit Lakes via US Highway 10 and Barnesville via Interstate 94. CCRT is operated by a third party contractor, Productive Alternatives, and does provide a limited dial a ride service within Moorhead and Dilworth. CCRT also offers dial-a-ride service on selected days throughout Clay County, and provides transportation under contract to Heartland Industries, a Day Training and Habilitation (DTH) provider located in Moorhead.

Handi-Wheels Transportation

Handi Wheels has operated in the Metro area as a provider of disabled and specialized transportation since the late 1970s. Handi-Wheels has established a role as a critical part of the community transportation network in the Metro area. In recent years Handi-Wheels prominence has increased in part due to its provision of niche job access service. Handi-Wheels operates a fleet of six vehicles, a fleet that has grown through the use of Job Access Reverse Commute (JARC) funds it has been receiving since 2005. In 2008 Metro COG prepared a Strategic Operations Plan for Handi-Wheels to assist it in addressing a number of critical operational and administrative issues. Moving forward, Handi-Wheels is viewed as valuable provider of transportation in the Metro area.

Table 22. Other Transportation Providers Fleet Inventory

Provider	# in Fleet	Service Type	Owner
Fargo Senior Services	8	Senior Ride	FSS/Fargo*
Cass County Rural Transit	1	Rural Transit	FSS
Clay County Rural Transit	6	Rural Transit	Clay County
Handi Wheels	6	Demand Response	Handi-Wheels**

** Senior Ride vans are purchased with City of Fargo FTA Fund; Dilworth leases one vehicle to FSS*
*** Handi-Wheels operates with capital provided by the City of Fargo and the Fargo Housing Authority*

Other Specialized Transportation Providers

As part of work done annually through the publication of the *Directory of Special Transportation Services* and work completed with the Specialized Transportation element of the 2007 Metro Transit Plan, Metro COG has collected a tremendous amount of information on smaller transportation providers in the Metro area. Based on recent inventory, there are roughly 25 to 30 smaller transportation providers in the Metro area providing a range of services. Some of these services are operated by human or social agencies and other are operated by non/for-profit providers, and are open to the general public. In total, Metro COG estimates a fleet of roughly 130 vehicles between these various providers.

Table 23. Ridership for Other Services

	Route	2003	2004	2005	2006	2007
Fargo Senior Services	Fargo/WF	37,868	37,031	35,328	43,231	43,604
	West Fargo	7,100	7,918	7,306	*	*
	Cass Co. Rural Transit	2,012	1,955	1,911	1,794	2,180
Clay County Rural Transit	Fixed	16,331	14,503	15,737	19,056	25,761
	Dial-A-Ride	1,763	1,366	1,330	746	**
HandiWheels	All	N/A	10,869	13,199	24,938	26,000
NDSU Circulator* **	All	40,703	147,746	179,181	182,411	194,042
Paratransit	Fargo	24,331	25,953	25,446	29,550	32,589
	Moorhead	7,941	9,950	10,958	12,290	13,438
	West Fargo	2,573	3,802	4,464	6,424	8,044
	Dilworth	318	4446	751	725	1,062

* Starting in 2006 West Fargo rides combined with Fargo Total
**Starting in 2007 ridership merged into one category
*** Ridership based on academic year (Aug 1 – July 31)

Transit System Initiatives and Recently Completed Studies

Coordination between the City of Fargo and the City of Moorhead in the provision of public transportation has grown tremendously over the last decade. The most significant accomplishment was the opening of the Metro Transit Garage (MTG) in 2007. As part of the process that lead to the planning, design and construction of the MTG, the Cities of Fargo and Moorhead formed a joint powers agreement (JPA) to facilitate additional system coordination. The JPA between the cities spelled out the formation of the MAT Coordinating Board. The MAT Coordinating Board allows for system coordination in the following areas:

- Coordinates the operations of the two transit systems related to procurement, route planning, fares, budgets, marketing, etc.;
- Comments on agreements for capital costs greater than $50,000 or service agreements lasting longer than one year;
- Coordinates and develops a concept and plan for the long-term merger of all functions of a transit system to be operated under a joint transit authority/board

Transit staff from Fargo and Moorhead co-located at the Ground Transportation Center (GTC) in 2005. Staff from both Cities moved to the MTG in 2007. The co-location has initiated an era of both formal and informal integration and consolidation of the two transit systems. The co-location of staff, the joint storage and maintenance of the fleet and the use of a single contract operator have put in place the necessary efficiencies to begin the process of longer range system coordination, and consolidation.

In 2007 the Metro Transit Plan was adopted and provides a fresh five year vision for public transit service in the Metro area. The Metro Transit Plan provided a framework for new and expanded services on the part of MAT, outlining a number of recommended operational and administrative improvements. The Metro Transit Plan outlined a three tier set of system enhancement and expansion priorities for MAT. The three tiers of priorities covered short, mid, and long range transit service improvements. A complete discussion of necessary future transit improvements from the Metro Transit Plan will be discussed in Chapter 2. The Metro Transit Plan also provides MAT with a *Framework for Coordination* to oversee the continued integration of transit service delivery in the metro area. Recognizing that in the long run, the metro area desires a standalone transit authority, the *Framework for Coordination* outlines a logical progression to further integrate and consolidate operations under a more uniform entity.

The Metro Transit Plan addressed the 2005 SAFETEA-LU requirement to prepare an adopted and coordinated plan for the delivery of human service transportation. The Metro Transit Plan addressed Job Access Transportation, Human Service Transportation, and Senior Transportation under the general heading of Specialized Transportation. The Metro Transit Plan defined human service transportation as services funded with Medicaid. The Metro Transit Plan inserts and updates relevant elements from the 2003 Metro Access to Jobs Studyand includes emerging trends in the area of human service (primarily Medicaid funded) transportation. In the end the Metro Transit Plan presented a consolidated set of barriers covering both job access and human service transportation. The Metro Transit Plan outlines a separate set of recommendations regarding senior transportation.

The Metro Transit Plan identified barriers to transportation in the areas of job access and human service. To assist in addressing the barriers, the Metro Transit Plan outlines a list of project concepts and project priorities. The Project Concepts/Priorities are considered a baseline set recommendations for the types of programs, activities, and facilities needed to adequately address the existing transportation deficiencies. The use of Federal Transit Administration (FTA) Funding, especially Sections 5307, 5310, 5316, and 5317 in the Metro area was expected help mitigate these barriers and implement project concepts/priorities as set forth in the Metro Transit Plan.

Since adoption of the Metro Transit Plan MAT in coordination with Metro COG have completed a number of timely sub-area transit studies aimed at better understanding system needs. In 2007 the City of Moorhead and Metro COG completed the Moorhead Expansion & Alignment (MEA) Study. The MEA addressed operational issues on existing MAT Routes and provided service expansion alternatives in the growth areas of Southeast Moorhead and Dilworth.

In 2007 the City of Fargo and Metro COG completed the NDSU Campus Access Study (CAS) to address anticipated transit demand associated with the development of Barry Hall and Klai Hall near the intersection 10th Street and 2nd Avenue in Fargo. The NDSU CAS estimated future transit demand based on enrollment projections for the facilities and provided MAT recommendations for service/infrastructure improvements to increase mobility between NDSU and Downtown Campus facilities.

In 2007 the City of Fargo, City of Moorhead and Metro COG completed the MAT Paratransit Options Analysis (POA). The MAT POA was initiated to address emerging operational and budgetary issues of MAT Paratransit. The MAT POA outlines a set of system enhancements to improve the efficiency of MAT Paratransit. Included within the recommendations of MAT POA was the development of a permanent Mobility Management Program.

In 2008 the City of Fargo completed the Southwest Metro Transit Study (SWTS). The SWTS outlined projected transit service needs in the Southwest Metro between 2009 and 2020. The SWTS outlined a full build transit system for the Southwest Metro and identified a number of existing service improvement and facilities in the study area.

One of the most innovative initiatives implemented by MAT in the past several years is the U-Pass Program. The U-Pass Program allows college students to ride any MAT route for free with their student ID. In exchange each participating college or university pays MAT (through a contract) a per student annual fee. The U-Pass Program was initiated at NDSU in 2001 and has since spread to all of the four major colleges and universities in the Metro area. The success of the U-Pass Program set the stage for innovative fixed route deployments in and around the NDSU Campus in 2002 and 2003. These service improvements have allowed for continued development of the NDSU campus without the addition of new surface parking.

Table 24. U-Pass Ridership by College

	NDSU	MSUM	Concordia	MSCTC	Total
2001-2002	44,315	X	X	X	44,315
2002-2003	84,720	34,873	X	X	119,593
2003-2004	50,709	49,895	12,788	X	113,392
2004-2005	102,044	50,279	12,362	4,059	168,744
2005-2006	108,028	59,826	15,758	15,196	198,808
2006-2007	140,712	74,164	15,489	18,464	248,829
2007-2008	180,346	89,907	18,237	30,665	319,155

Source: Metro Area Transit. Ridership is based on an academic year (Aug. 1 – July 31)

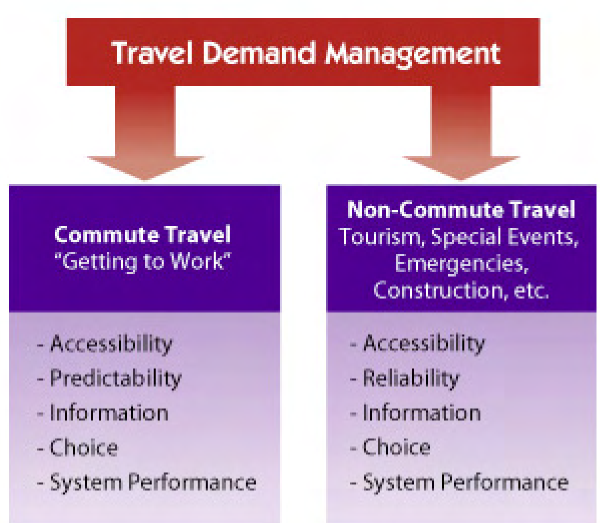
Travel Demand Management Strategies

In the 21st century, strategies to manage demand will be more critical to transportation operations than strategies to increase capacity (supply) of facilities. The inability to easily and quickly add new infrastructure coupled with the growth in passenger and freight travel have led to the need for transportation system managers and operators to pay more attention to existing and projected demands.

The original concepts of travel demand management (TDM) took root in the 1970s and 1980s from legitimate desires to provide alternatives to single occupancy commuter travel to save energy, improve air quality, and reduce peak period congestion. Today, managing travel demand has broadened to encompass the desire to optimize transportation system performance for commute and non-commute trips and for recurring as well as non-recurring events. Growth in population, number of vehicles and travelers, freight, and development has affected travel demand and reshaped travel patterns. The need to manage demand can occur in the middle of the day, evenings, or on weekends. Demand-oriented approaches are needed to address the transportation issues created by growth and the variability in demand for use of the systems.

TDM is comprised of a wide range of programs designed to maximize the people-moving capability of the transportation system. Good TDM can occur simply by providing more information to roadway users. Knowing that a particular roadway is congested so the user can choose an alternative route not only saves the user time, but also helps to relieve the congested roadway more quickly which saves everyone time. Shifting trips from single-occupant vehicles to carpools, transit, or bicycles also helps to manage travel demand. More recently, the connection between land use and transportation has been examined for possible travel management efficiencies. For example, instead of strictly segregating land uses, mixing

Figure 5. Travel Demand Management



residential with some commercial and light industrial land uses has been found to decrease the overall demand for roadway capacity[2].

Some common TDM strategies include:

- Carpools
- Transit
- Vanpools
- Flexible work hours
- Bicycle Commuting
- Parking management
- Telecommuting
- Transportation management associations
- High-Occupancy Vehicle Lanes

Vehicle occupancy counts conducted in 1984 and 1991 indicated that the average occupancy per vehicle in the F-M area was 1.3 persons. More recent counts have not been conducted; however, regional and national data indicates that average vehicle occupancy has been declining.

According to the 2000 Census, 82 percent of all work trips in the F-M area occurred via single-occupant vehicle, 9 percent by carpool, 5 percent walked, 3 percent worked at home, and about 1 percent used public transportation. Nationally in 2000, 76 percent of workers drove alone to work, 12 percent carpooled, 3 percent walked, 3 percent worked at home, and 5 percent took public transportation.

The combined use of transit and walking provides obvious benefits to the overall transportation network. Continually linked pedestrian facilities are necessary to connect neighborhoods to transit routes. Selected locations should have shelters to protect transit riders from the elements. There are currently 23 shelters located in Moorhead and 49 shelters in Fargo.

In recent years, Fargo and Moorhead MAT have added bicycle racks to buses to give bicycle/transit riders another option. Each bicycle rack can accommodate two bicycles. A free permit must be obtained at the GTC to use the bike racks. When obtaining the permit, the rider will be trained by a MAT staff member on the appropriate use of the bike rack.

Table 25. Monthy Bike-on-Bus Averages

	2005	2006	2007	2008
Fargo Routes	544	799	1,022	1,081
Moorhead Routes	162	279	405	526

Source: Metro Area Transit

The bike-on-bus program has been very successful, growing in popularity each year. In fact, the program may be too successful. Metro COG was informed by a focus group that it is becoming more common for bike-on-bus riders to find the rack full when the bus arrives, leaving the riders in a situation wherein they must decide to

[2] Lawrence Frank & Company. 2005. "Travel Behavior, Environmental, and Health Impacts of Community Design and Transportation Investment", Seattle, WA

wait for the next bus and hope it has space in its bike rack or leave their bike at the bus stop.

In 2007 Metro COG conducted a Transportation Management Association (TMA) Survey to determine the existing level of participation in TDM strategies and the level of interest in the potential development of an area Transportation Management Association. The survey also collected data on exemplary TDM efforts across the U.S. Metro COG staff conducted public surveys and one-on-one surveys with several major regional employers. The survey points out that bicycling and walking are effectively limited in the F-M region due to the winter weather conditions, and notes that transit acts as a strong intra-modal operative supplementing bicycling and walking as forms of transportation. It also notes that major employers are a possible target market for initial TDM strategies, and establishes the vision that it should be possible for employees of major employers to live in the F-M area without owning a private vehicle.

As part of the TMA Feasibility Survey Metro COG surveyed 961 employees from seven different major regional employers. Some of the significant findings from the survey include:

- 55% of those surveyed lived within 5 miles of their place of employment
- Over 20% said that they would never shift modes of transportation from their private vehicle, no matter how expensive the price of gasoline was. Another 26% indicated that they would only shift modes if gasoline were more than $5 a gallon.
- The most commonly mentioned (24.6%) incentive for walking or biking to work was "more sidewalks or bike paths near home or place of employment"
- 75% of respondents indicated that either reduced cost bus passes, free bus passes, or the ability to use their employee ID to ride the bus for free would incentivize them to use transit

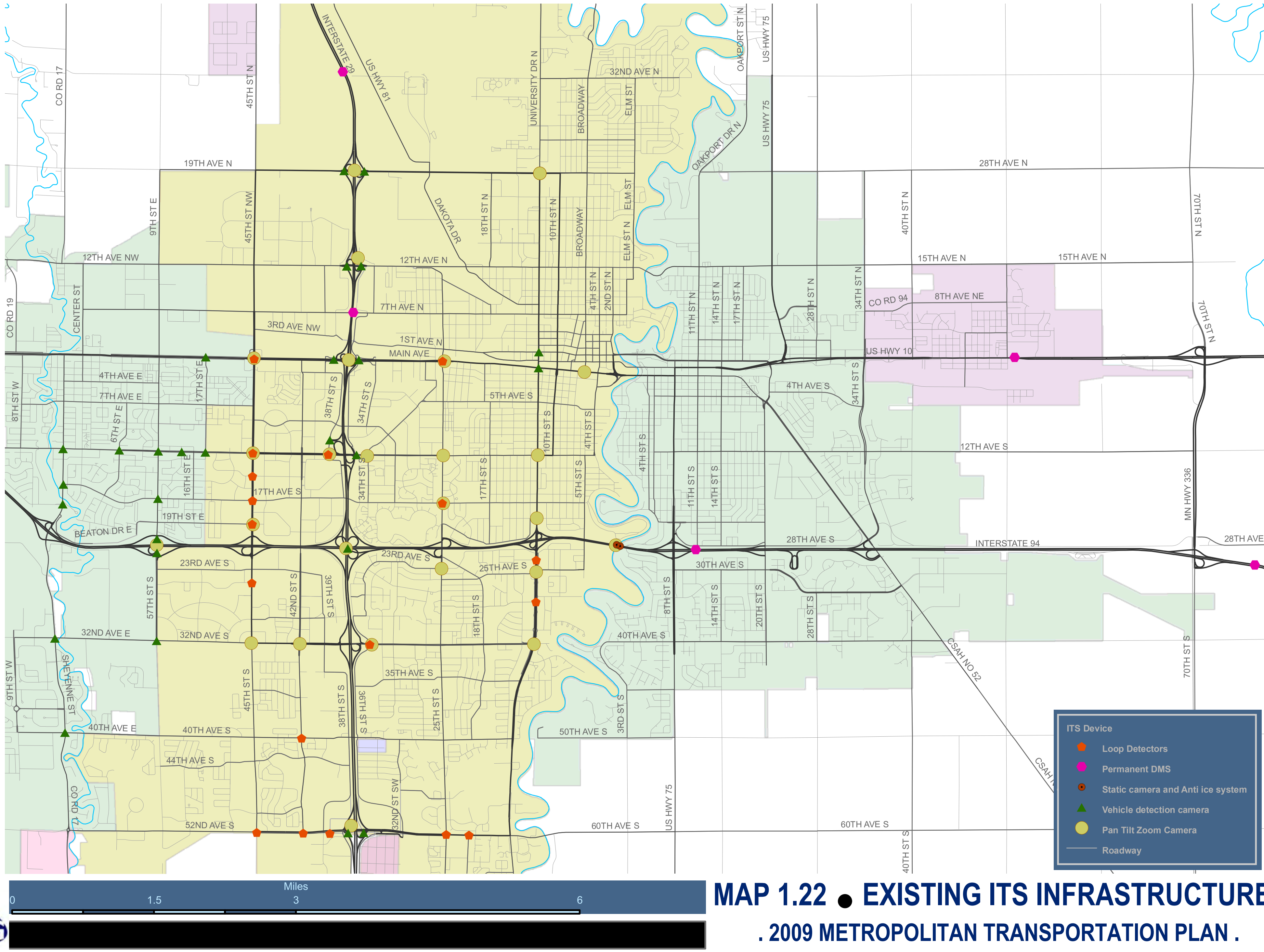
Intelligent Transportation Systems (ITS)

ITS generally refers to any program or tool that gathers real-time information regarding the state of the transportation network, and then provides that information to the user. For instance, in-pavement sensors can be used to measure free flow speeds on a section of highway. When speeds drop below a threshold, a variable message sign can be triggered to warn approaching motorists of congestion ahead and the sign can even suggest alternative routes.

The goal of ITS is to improve the safe and the efficient use of the transportation network. ITS tools and programs can be stand-alone or can be part of a comprehensive TDM strategy or program. Given the enormous costs of adding roadway capacity, ITS is often a cheaper option for achieving better performance out of existing roadways.

Metro COG completed an update to the F-M Regional ITS Plan in 2008. That plan establishes a vision for ITS to "achieve higher level of regional coordination in the areas of traffic management, operations, incidents response, security, and the dispersion of real time (traffic) information."

The plan took stock of ITS deployments between 1998 and 2007, and characterized them as being "extensive". Each jurisdiction had deployed separate systems with



MAP 1.22 ● EXISTING ITS INFRASTRUCTURE

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an emphasis on functionality, but not interoperability, which limits their effectiveness. The value of system interoperability was recognized in the 1998 plan, and recent advancements in technology have made achieving a widely interoperable system much easier.

Going forward, the interoperability of ITS systems will be important to maximize certain components of the transportation network while achieving efficiencies on a regional scale. An ITS system in City X that can communicate with traffic management systems in City Y simply provides for a more efficient transportation network. The F-M area does have a regional ITS Architecture in place, providing guidance on the development of ITS systems and the flow of information between entities within the region.

Aviation

The Fargo-Moorhead Study Area is served by three airports: Hector International Airport, Moorhead Municipal Airport, and West Fargo Municipal Airport. Hector International is owned and operated by the Fargo Municipal Airport Authority. Moorhead and West Fargo Municipal Airports are each owned and operated by the respective cities. The location of the three airports is shown in Map 1.23.

Hector International Airport

Hector International Airport was established in 1928, with the first scheduled commercial flights provided by Northwest Airlines Inc. Northwest continues to operate in Fargo following its merger with Delta Air Lines. In 1931, Martin Hector donated over 160 acres of land to the City of Fargo for airport development. Runway 17-35 was constructed with a length of 1,200 feet shortly after the land donation. In 1953, the eastside terminal building was constructed to provide services for the airlines operating out of Fargo. Continual increases in air traffic activity resulted in the construction of the westside terminal building in 1986. At present, the airport encompasses approximately 2,500 acres. An expansion/modification project was completed for the terminal building in 2008.

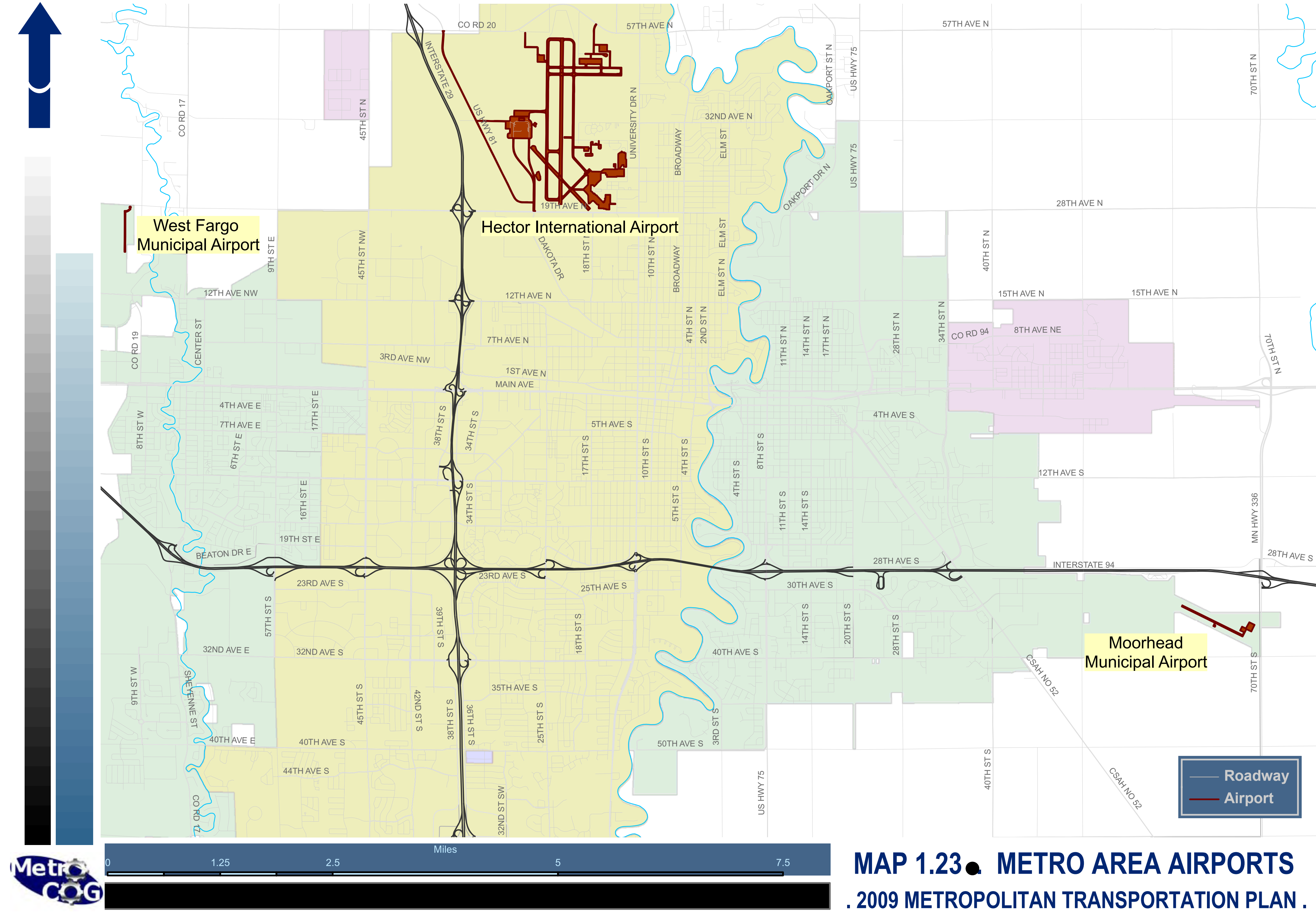
Hector International has three runways:

- 18-36 with a grooved concrete surface is 9,000 feet long and 150 feet wide
- 9-27 with a grooved concrete surface is 6,300 feet long and 100 feet wide
- 13-31 with an asphalt surface is 3,800 feet long and 150 feet wide

Runway 18-36 is used primarily for commercial and National Guard airplanes, while runways 9-27 and 13-31 are preferred by general aviation planes.

Runway 9-27 is used by commercial carriers, and by the National Guard during severe crosswinds.

- All three runways have lighting and navigation aids for continual operations at night. The runway surface conditions are excellent to good for 18-36, 9-27, and 13-31. The 2001 plane population at Hector International was 182-based aircraft. The airport provides a terminal building for airline operations, rental cars, baggage handling, restaurant, and gift shop uses. It also provides conventional and maintenance hangars for the North Dakota Air National Guard and for area businesses such as Fargo Jet Center, Red



MAP 1.23 • METRO AREA AIRPORTS

. 2009 METROPOLITAN TRANSPORTATION PLAN .

River Aero, Vic's Aircraft Sales, and the Fargo Air Museum. There are approximately 25 to 30 commercial aircraft landings each day at Hector International.

In 2008, Hector International was served by 5 commercial airlines:

- Northwest Airlines provided non-stop service to Minneapolis
- Delta Air Lines provided non-stop service to Salt Lake City
- United Express provided non-stop service to Chicago and Denver
- Allegiant Airlines provided non-stop service to Las Vegas, Orlando, and Phoenix
- Frontier Airlines provided non-stop service to Denver

The number of boarding passengers during 2003-2007 is shown below.

Table 26. Hector Airport Commercial Passenger Activity

Year	Number of Boarding Passengers
2003	243,097
2004	256,004
2005	275,200
2006	305,218
2007	297,964
2008	324,434

Source: Fargo Airport Authority

There are also nine cargo carriers that provided service to Hector International in 2008, and the airport has a 24/7 Customs and Border Protection Office.

Table 27. Significant Customs Activities at Hector International Airport

Inspection Type	2002	2003	2004	2005	2006	2007	2008
Air-Freight Cargo	470	324	301	25	30	31	34
Truck-Line Cargo	88	70	59	179	223	244	233
Railroad-Freight Cargo	157	93	87	8	2	0	0
Total Cargo	**715**	**487**	**447**	**212**	**255**	**275**	**267**

Source: U.S. Customs Service: Fargo, ND

Table 28. Air Cargo Report for Hector International

	2003	2004	2005	2006	2007	2008
Total Landed Weight*	62.91	63.06	78.76	79.1	68.49	46.73

*millions of pounds

Air cargo is intermodal cargo in that it must be transported to and from the airport, usually in trucks. Therefore, the more air cargo that lands at Hector International, the more truck traffic the airport experiences.

A portion of Hector International is part of a general purpose foreign trade zone (FTZ) that covers over 1,000 acres within the City of Fargo. A foreign trade zone is akin to a free trade zone, where, under certain conditions, imports and exports can receive duty-free treatment from U.S. Customs. Normally, when a company imports materials or parts, it must pay the prevailing tariff duty to the Customs Service. But if the company is located in an FTZ, and the material or part is used to add value to some final product, the initial duty is deferred. Duties are triggered when the final product is sold in the United States (and can be less than it would have been under initial importation); if the final product is re-exported to other countries, then all duties that would have otherwise applied to imported materials are waived. Activity at Hector International's FTZ has been light up to this time, but remains a potential resource for economic development and freight generation in the future.

Moorhead Municipal Airport

Moorhead Municipal Airport was constructed in 1996 to serve Moorhead's industrial and business needs. The airport is located on 124 acres, located four miles east of Moorhead. A major expansion project was conducted in 2002. Moorhead Municipal Airport has one runway and one taxiway, 12-30, which has an asphalt surface with dimensions of 4,300 feet long and 75 feet wide, and the surface is in excellent condition. PAPI navigational aides have also recently been installed. The airport provides conventional and maintenance hangars to serve aircraft. Currently, 25 aircrafts are based at Moorhead Municipal Airport. Nighttime landings are possible with a high-intensity rotating beacon and pilot activated lights on the runway. The airport also has a helicopter pad and a crop spraying loading facility serving aerial applicators.

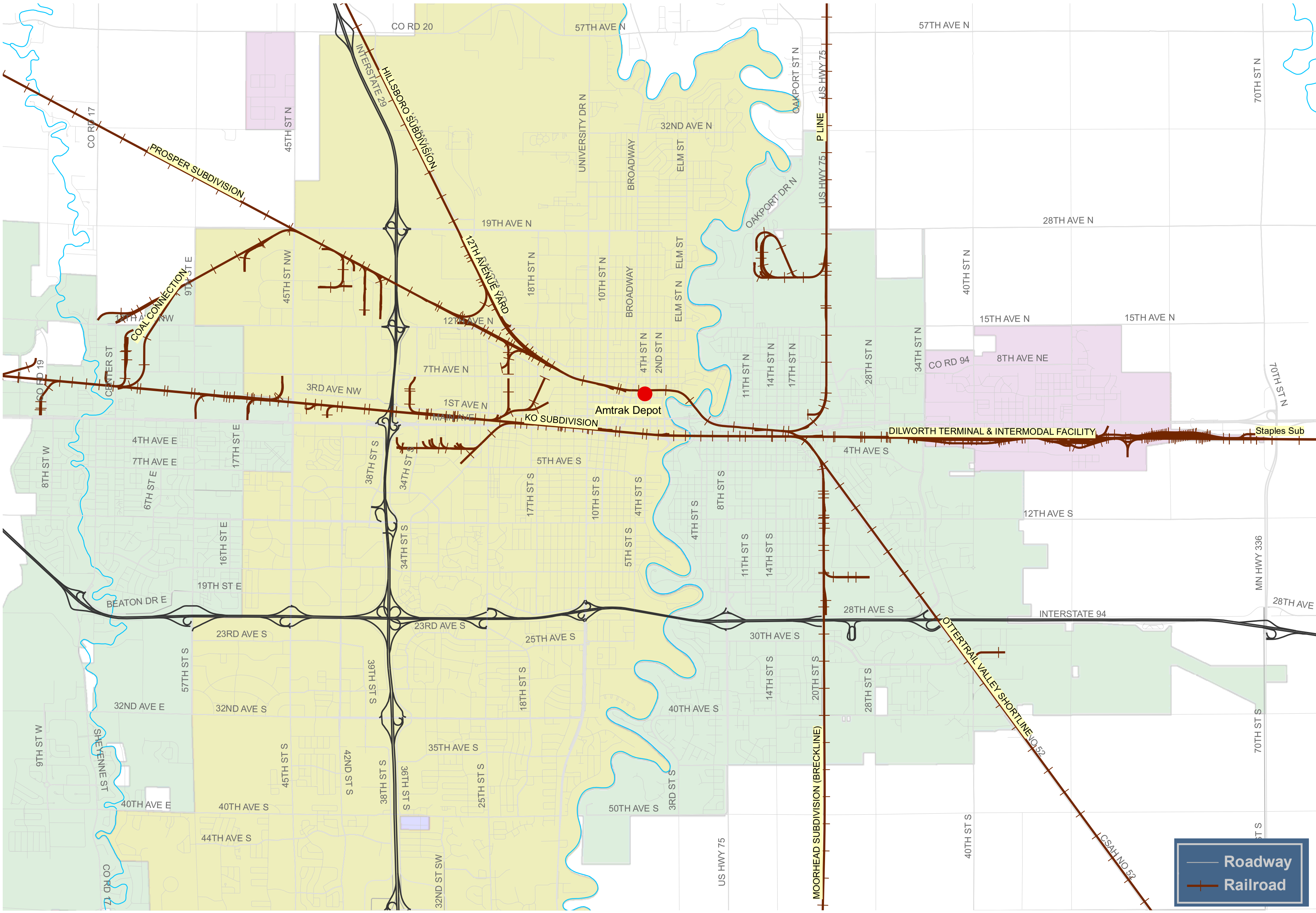
West Fargo Municipal Airport

West Fargo Municipal Airport is a single-runway airport that serves West Fargo and its surrounding area. The airport is located two miles north of West Fargo. The one runway, 17-35, has an asphalt surface with dimensions of 2,400 feet long and 50 feet wide, and the surface is in good condition. The airport currently has a population of 40 aircrafts and has 12 hangars to provide maintenance and storage for its aircraft. Night operations are possible with pilot-activated lights on the runway and a 24-hour beacon.

Rail

Both Fargo and Moorhead were founded as "railroad towns." In fact, Moorhead is named for William G. Moorhead, an executive with the Northern Pacific Railroad, which bridged the Red River in what is now downtown Fargo-Moorhead in 1871. Fargo is named for William Fargo, President of the Northern Pacific Railroad and one of the founders of the Wells Fargo & Co. express business. The arrival of the railroad and the Homestead Act fueled the movement of immigrants from the overcrowded east to the F-M area. Today, the urban area is traversed by a major east-west railroad facility, with more minor rail lines branching into and out of the urban area in a number of directions. In addition to the railway corridors, other important rail infrastructure is also present in the region. A large rail yard with an intermodal freight facility is located in Dilworth, with a smaller yard in Fargo.

The majority of tracks in the region are owned by the Burlington Northern Santa Fe Railway (BNSF). One line, entering Moorhead from the south-east, is owned by



MAP 1.24 ● METRO AREA RAILROAD NETWORK

. 2009 METROPOLITAN TRANSPORTATION PLAN .

BNSF, but leased to and operated by the Ottertail Valley Railroad. In the south-west part of the metro area, a rail corridor owned by the Red River Valley & Western short-line railroad serves the city of Horace, North Dakota. BNSF identifies its various rail lines by a subdivision name.

The Staples Subdivision is the main track that connects the F-M area with other portions of Minnesota and the nation. East of Dilworth, this track follows TH 10 to the Minneapolis/St. Paul area, and is a very heavily traveled track, carrying 50 to 60 trains per day. It connects with the KO Subdivision just east of Dilworth.

The KO subdivision is the main east-west track that traverses the region, and it also carries 50 to 70 trains per day on average. The right-of-way consists of a double set of tracks in most locations. West of the region, the track traverses North Dakota, Montana, Idaho, and Washington State en route to steam ship ports of the Pacific northwest, which are the source of much of the train traffic traveling through the F-M area. The KO Subdivision also connects with the rail corridors serving the coal fields of Wyoming, which also generate train traffic for Fargo-Moorhead. Coal trains pass through the F-M area on their way to electricity generating plants in Minnesota and further east

The "P" Line serves the American Crystal Sugar plant in Moorhead as well as other customers north of the metro area. The track goes to Perley, Minnesota, and typically serves about 3 trains per week to move agricultural products. Freight shipped into the American Crystal Sugar plant in Moorhead includes coal, limestone, and coke. Freight shipped from the plant includes sugar and beet pulp products.

The Moorhead Subdivision, sometimes called the Breckenridge Line, carries eight to ten trains per day, hauling cargos of all kinds. Anheuser-Busch is a major customer of BNSF along this line, receiving grain and sending it back out after it has been cleaned. A spur branches off of the Breckenridge Line into the Busch facility.

The Hillsboro Subdivision is a continuation of one of the tracks that goes through the 12^{th} Avenue Fargo yard. The Hillsboro and Prosper Subdivisions break off from the KO Subdivision in Moorhead and follow a different alignment through the central business districts of Fargo and Moorhead. The track carries two Amtrak trains per day – one eastbound and one westbound – and also carries eight to ten freight trains per day.

The Prosper Subdivision is also a continuation of a track that goes through the 12^{th} Avenue Yard in Fargo after branching off of the KO Subdivision in Moorhead. Approximately 17 trains per day use this track, which also provides access to a spur serving Cargill and Harvest States Elevators.

The Ottertail Valley Railroad hauls mostly coal or empty coal cars, anhydrous ammonia, and grain. Trains generally go to the Dilworth rail yard, unless they are hauling coal, in which case they go to the Fargo 12^{th} Avenue yard. The tracks go to Fergus Falls, Minnesota and serve communities like Sabin and Barnesville along the way. Approximately ten trains a day travel into or out of Moorhead along this track.

The Red River Valley & Western Short Line serves the grain elevator in Horace with approximately one train every two weeks. From Horace, the grain is carried to Wahpeton or Casselton where it is picked up by BNSF. There is no direct connection between this track and other tracks within the F-M area.

The Dilworth Terminal and Intermodal Facility, located just south of US Trunk Highway 10 in Dilworth is a major facility for BNSF. A large amount of freight handling, rail car switching, and train dispatching occurs at this yard. It is the largest intermodal facility in the area, meaning that is possesses the capability to unload or load trailers or containers between rail cars and semi trucks. In 2003, this facility loaded or unloaded approximately 1,300 trailers or containers per month. By 2009, the intermodal facility existed in name only. Intermodal containers from this facility are actually trucked to the St. Paul, Minnesota intermodal yard where they are transferred to rail cars. The Dilworth Terminal is also a major regional unloading site for General Motors' vehicles. Approximately three to four rail cars of automobiles are unloaded here each day. After being unloaded, some vehicles are driven away individually by auto dealers, while others are hauled away on semi trucks. Two to three semi trucks are required to haul away the cars dropped off by one rail car. Many of the trains that enter the metropolitan area from the east either stop to exchange freight at this terminal, or are slowed/stopped by dispatchers who monitor the train traffic.

The 12th Avenue Yard in Fargo is an operational center for BNSF, handling maintenance, crew changes, switching of rail cars, etc. Much of the coal that comes into the urban area goes through the 12th Avenue Yard, which has become a storage and staging area for 110-car unit coal and grain trains. Other freight hauling activity that occurs at the yard includes the loading and unloading of freight for industries located near the yard, and a team track for handling smaller shipments of freight of all kinds.

Amtrak provides daily rail passenger service to the F-M area, which is part of the Empire Builder Line running between Chicago and Seattle. Amtrak also provides express service for packages and carries mail. Freight data for Amtrak is not available, but passenger ridership information is provided below.

Table 29. Amtrak Ridership

Year	Ridership	% Change
1998	16,223	n/a
1999	16,577	2.18%
2000	15,546	-6.22%
2001	14,738	-5.20%
2002	11,637	-21.04%
2003	13,869	19.18%
2004	15,456	11.44%
2005	18,812	21.71%
2006	22,771	21.05%
2007	22,259	-2.25%
2008	24,142	8.5%

Source: 2009 Metro Profile

As of the printing of this document, the Minnesota Department of Transportation was in the process of completing a statewide rail plan that included analysis of existing conditions and potential improvements of passenger rail service. To date, no passenger rail service improvements for the Fargo-Moorhead area have been identified within the plan. It does forecast 2030 demand for rail service between Fargo-Moorhead and the Twin Cities at 36,000 passengers per year, ranking the F-M area as 12th in total demand out of 16 possible destinations.

In terms of traffic operations, rail movements can have a major impact in the F-M region. There are over thirty at-grade roadway-rail crossings in the metro area. Some rail lines carry only a few trains each day, while the K-O mainline can carry upwards of 80 trains each day. In 2004, the Main Street crossing in Dilworth was estimated to be closed by train traffic over 180 times each day due mostly to train yard switching and train-building activity in the Dilworth yard. Traffic delay caused by rail movement is an issue of concern in the community. In 2000, there were an estimated six million train-vehicle exposures at metro area crossings resulting in over 450 hours of vehicle delay in the peak hour alone. In the case of Dilworth, the City remains concerned about the response time of emergency services vehicles to addresses on the south side of the railroad tracks. Traffic queues in downtown Moorhead can become quite long when trains pass through, especially during the peak afternoon travel time. Going forward, if efficient traffic operation on the region's arterial roadways is to be achieved, recognition of rail-induced travel delays must be made and addressed. The most obvious remedy is to grade separate the roadway from the railroad, as has occurred on many arterials, but this is an expensive solution and not always feasible given right-of-way constraints in the urban core. Other ITS-based solutions show promise in being able to mitigate, to some extent, the traffic delays.

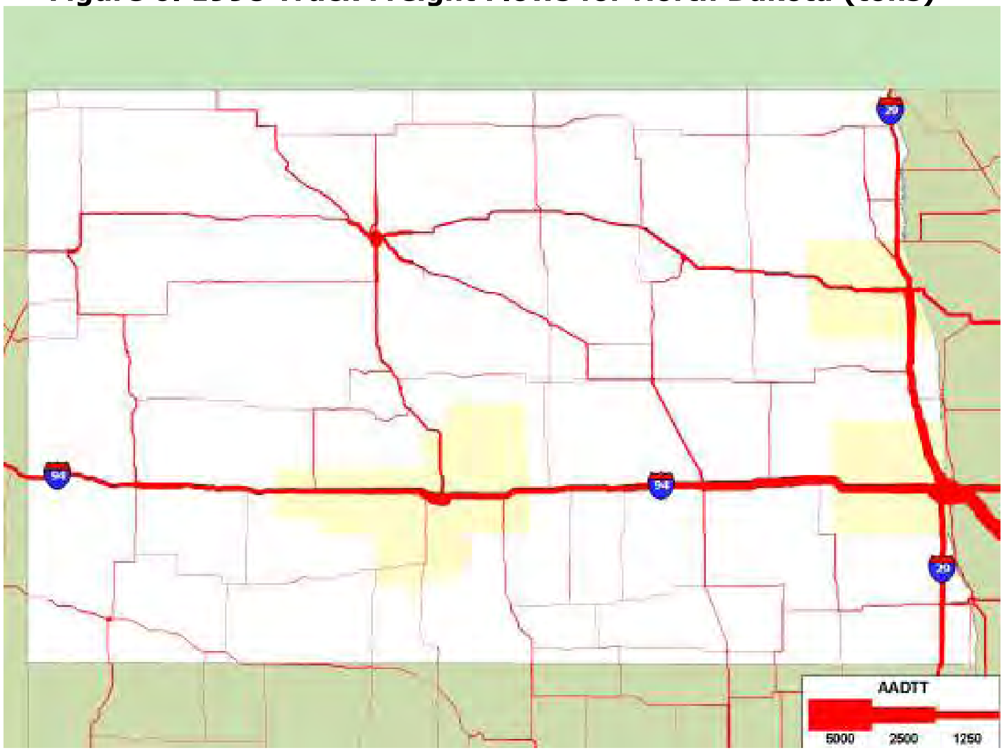
Freight Movement

An efficient freight system is essential for the economic competitiveness of any region. Metro COG completed the Fargo-Moorhead Freight Assessment in 2007, providing a guidebook for the development of a regional freight planning program. Freight movement by air and rail has been addressed in previous sections. This section will concentrate on freight movement by truck.

The F-M area is a regional economic center for eastern North Dakota and western Minnesota. As such, it is home to a number of big-box retail businesses, a large regional shopping center, and numerous restaurants and supporting businesses all of which generate and attract freight movement. Two interstate highways intersect within the urban area, I-29 and I-94, offering reasonably easy and fast interstate truck freight access. The area is also home to a number of large freight-generating manufacturers, such as Integrity Windows, DMI Industries (electricity generating wind towers), Case-New Holland (agricultural equipment), Bobcat Company (construction and earth-moving equipment), Swanson Health Products (nutritional supplements), and Tecton (custom fiberglass and composites).

The interstate highway system also creates freight flow-through. Trucks moving between Chicago and Seattle, or Kansas City and Winnipeg, for example, pass through the F-M area. Even though the freight does not originate or terminate in the F-M area, preserving interstate capacity for this through-movement is still in the economic best interests of the F-M region. The map below shows that most of the truck freight entering or leaving the state of North Dakota flows through the F-M area. Data from 2005 shows that about 5.72% of all traffic using the I-94 Red River Bridge between Fargo and Moorhead is heavy truck (i.e., 5 axles or more)

Figure 6. 1998 Truck Freight Flows for North Dakota (tons)



Source: USDOT Commodity Flow Survey, 2002

Table 30.

Biggest Destinations for North Dakota Truck Freight	
State	**Tons of Truck Freight (000's)**
Minnesota	5,333
South Dakota	696
Illinois	271
Montana	212
Nebraska	193
Total	**6,705**

Source: USDOT Commodity Flow Survey, 2002

Table 31.

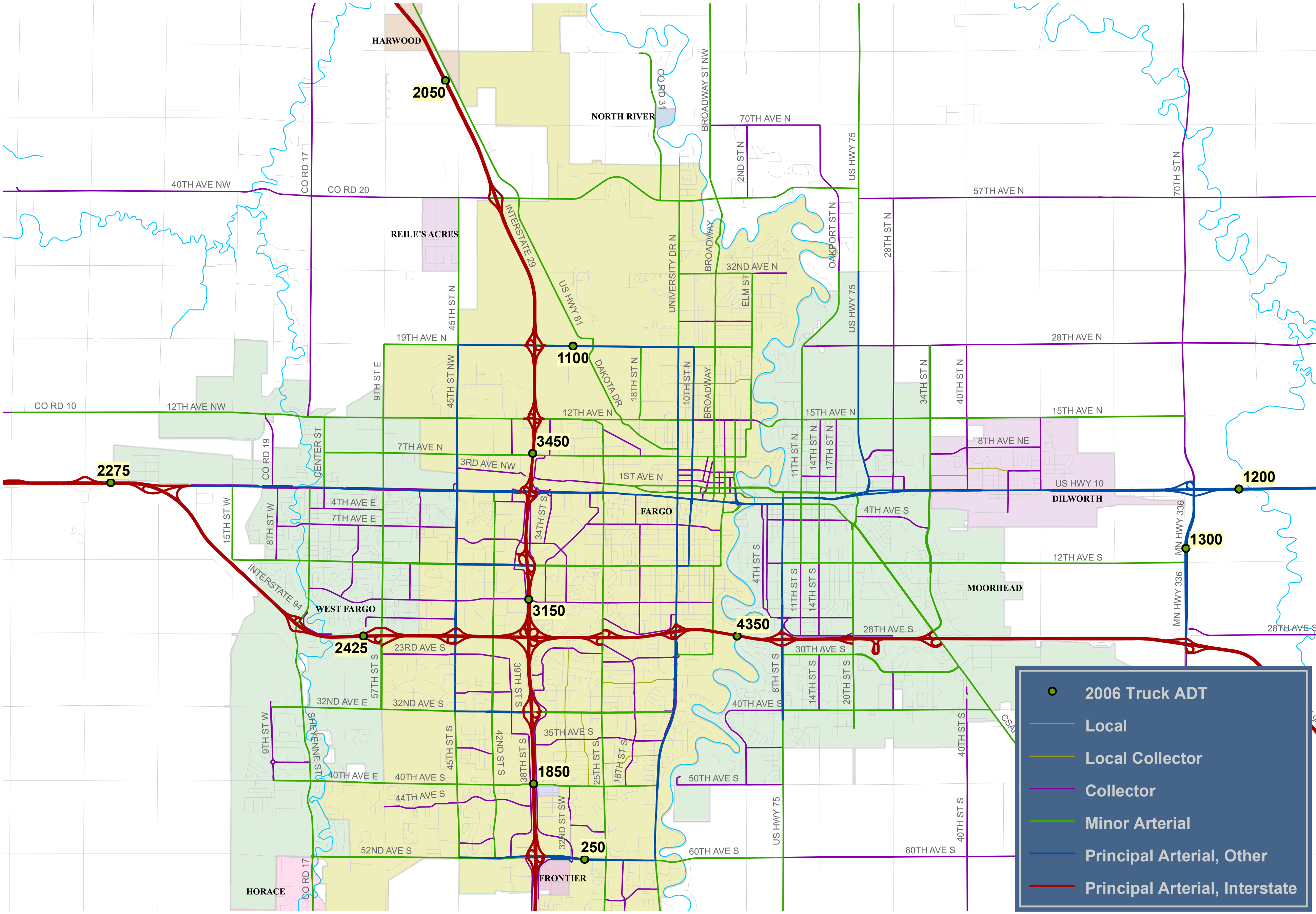
Biggest Shippers of Truck Freight to North Dakota	
State	**Tons of Truck Freight (000's)**
Minnesota	3,808
Wisconsin	469
Iowa	343
Montana	285
South Dakota	260
Total	**5,165**

Source: USDOT Commodity Flow Survey, 2002 traffic. This translates into about 24,400 trucks a week, or over 1 million trucks each year.

According to the 2002 Commodity Flow Survey from the USDOT, Minnesota is both the biggest destination for North Dakota freight, and the biggest shipper of freight to North Dakota. The data does not provide specifics about the F-M urban area. Logistically speaking, even while the F-M area is a regional economic engine, it is also a satellite community for the much larger Minneapolis/St. Paul urban area. The economic diversity and mass of the Twin Cities area draws many different trucking firms and numerous truck trips, resulting in overall lower freight transportation costs between the Twin Cities and Des Moines, for example, than between the Twin Cities and Fargo-Moorhead, even though the distance is roughly the same. Simply put, the vast majority of truck freight flowing to or from the Fargo-Moorhead area flows to or from the Twin Cities.

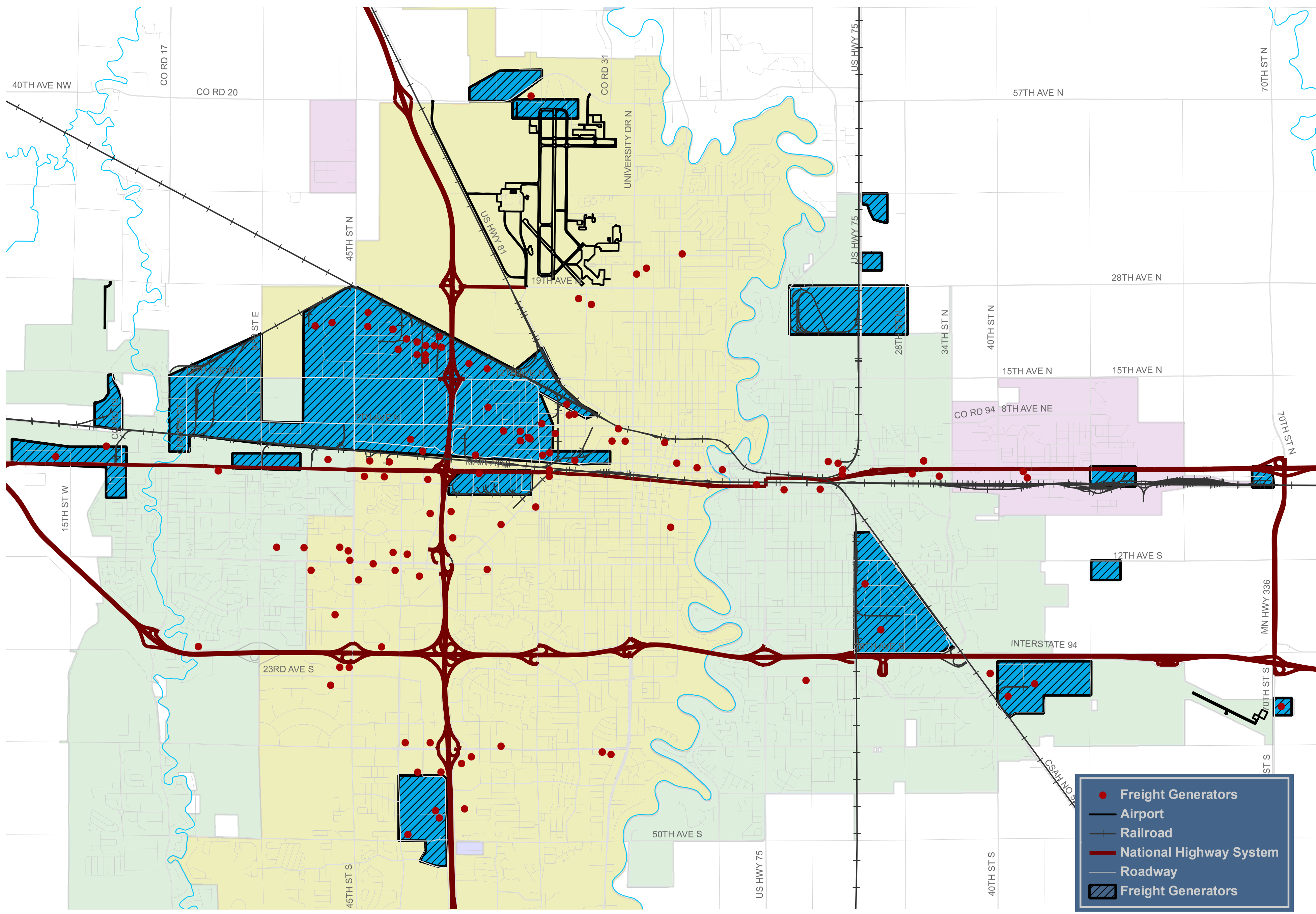
Local trucking companies report that, in general, there is more outbound freight from the F-M area than there is inbound freight. The USDOT Commodity Flow Survey data above appears to support this observation. This imbalance in freight capacity demand does increase the costs of moving freight to the F-M area. Ideally, every truck hauling freight from the F-M area would be guaranteed a return load. However, when the availability of a return load is not guaranteed, truck companies tend to increase their drayage fees to mitigate the risk of "dead heading" (empty hauling) back to the F-M area. Metro COG has mapped areas of freight generation and/or attraction within the F-M area (see map on next page). The larger areas identified tend to be industrial parks, while the dots represent individual businesses, which may be retail or industrial in nature. A map of identified truck routes also follows. Cass and Clay Counties, along with NDDOT and Mn/DOT impose weight restrictions on some roads during the spring, limiting the maximum allowable weight per axle. These restrictions are intended to protect the roadway investment during the spring thaw when moisture conditions and varying temperatures can make the roadways susceptible to damage by heavy trucks.

A Freight Focus Group (focus groups are discussed in more detail in Chapter 3) indicated little current concern for the efficient movement of trucks on the regional roadway network. Participants stated that maintaining good pavement conditions was important, but their larger concern was maintaining the F-M area's relative economic competitiveness in terms of freight movement in an environment of rising fuel costs. They pointed out that businesses generally try to balance transportation costs with the other costs. The F-M area is not a large commercial market, and many freight intensive businesses located here sell their products in the larger urban markets of the Twin Cities, Chicago, etc. The businesses choose to locate here and incur the transportation costs of getting their products to those markets because other costs (land, labor, etc.) are lower here and offset the higher transportation costs. As fuel costs rise, the benefit of locating in the F-M area is diminished, except, perhaps, for agriculturally based businesses.



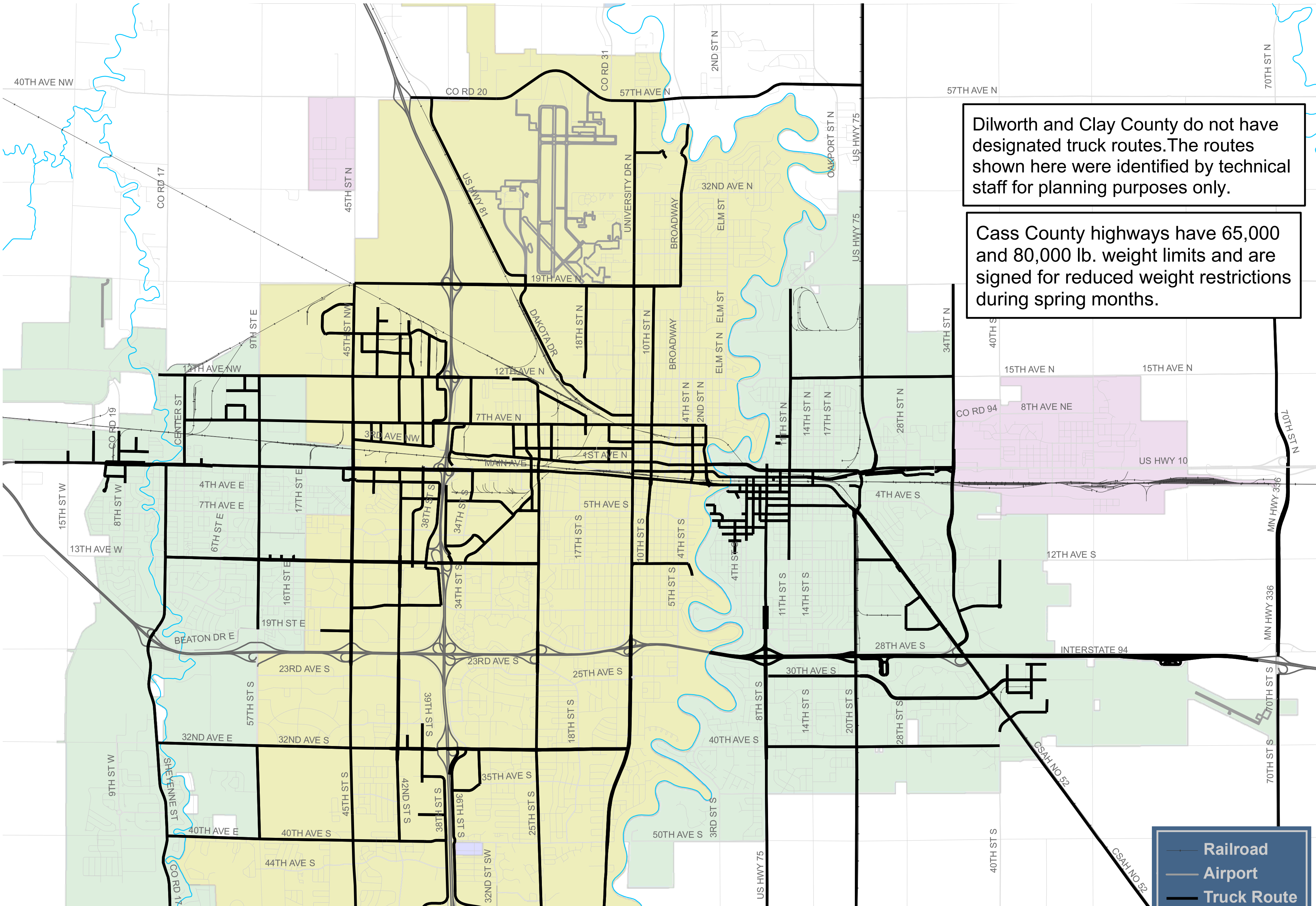
MAP 1.25 ● METRO AREA TRUCK ADT

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.26 • FREIGHT GENERATORS

. 2009 METROPOLITAN TRANSPORTATION PLAN .



Dilworth and Clay County do not have designated truck routes. The routes shown here were identified by technical staff for planning purposes only.

Cass County highways have 65,000 and 80,000 lb. weight limits and are signed for reduced weight restrictions during spring months.

MAP 1.27 • TRUCK ROUTES

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Land Use

There is a critical link between land use and transportation. Decisions in one area can easily impact the other. Zoning a regional shopping center on a rural, two-lane gravel road can result in critical transportation needs and public investment, just as building a bridge across a river can open up new land for development. In the past, land use decisions and transportation decisions were often made independent of each other. Today, the important connection between land use and transportation choices is recognized at all levels of government.

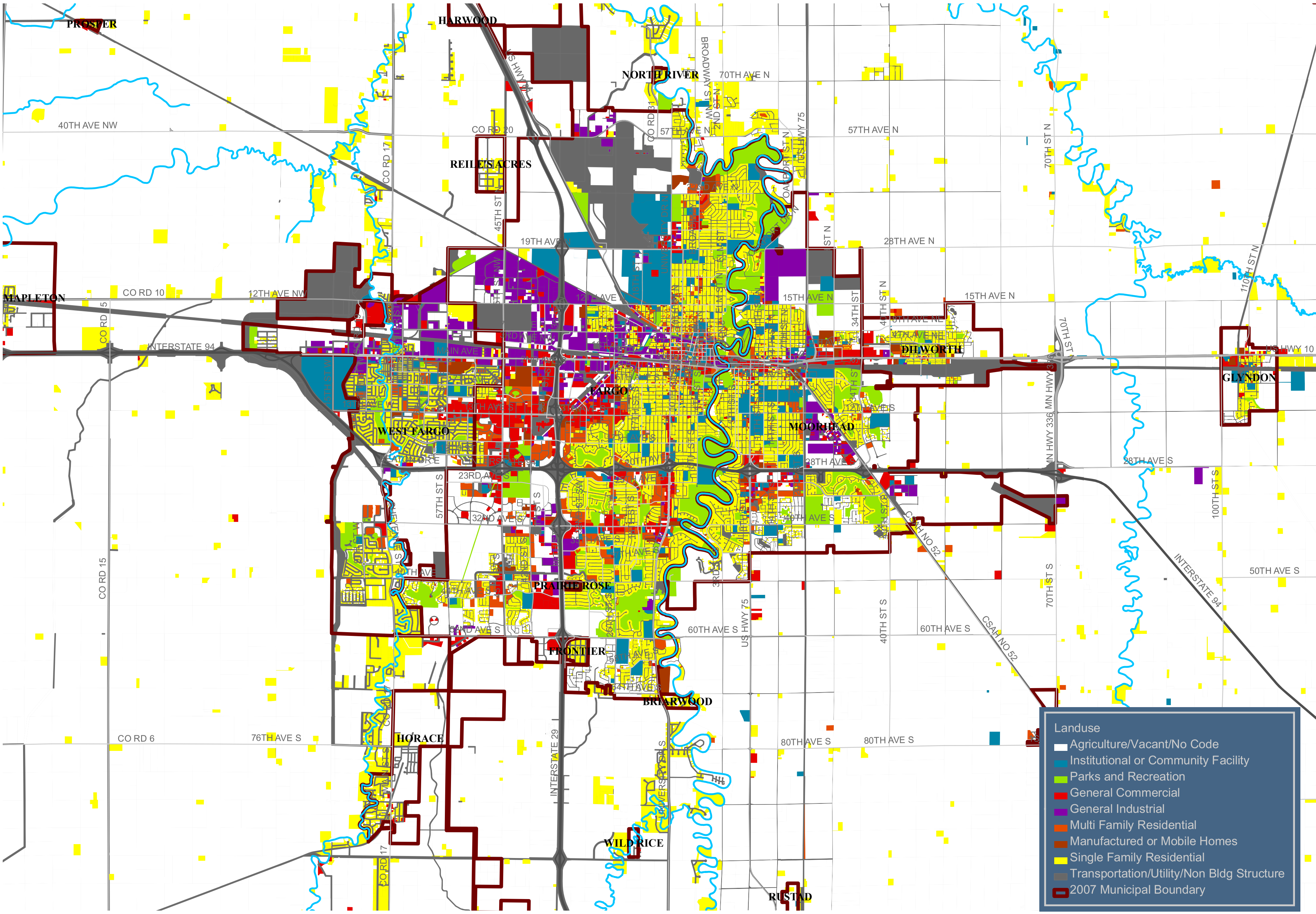
Of course land use and transportation choices are also related to other independent factors such as market conditions, demand for housing, population demographics, and other socio-economic conditions and forces. Students and workers in low-paying jobs typically need apartments, not large single-family homes. A growing population needs additional retail and commercial opportunities. A healthy industrial sector often needs good railroad service and efficient interstate access.

Transportation networks are influenced by all of these forces, conditions, and demands. The transportation network is to a community what the circulatory system is to the human body. It moves energy throughout the body, touching and connecting all other systems. The more efficient the circulatory system is, the more potential that can be realized in all other systems. The analogy, while not perfect, does highlight some important aspects of any transportation network. First, it serves many users and is important to the success of almost any aspect of society from industry to retail; from education to the arts; from the environment to law enforcement. Everyone depends on the transportation network. Secondly, an efficient transportation network is important. Bottlenecks, slow travel speeds, limited transportation choices, or a transportation system that is not accessible by everyone can limit the potential of any community and create inefficiencies in the other systems served by transportation.

The Map 1.28 shows existing land use in the F-M area. Note the large areas of industrial and commercial development adjacent to the I-29 corridor. There are roughly 40,000 jobs (about 40% of all jobs in the metro area) located within two miles of the I-29 and Main Avenue interchange, representing a large trip generator across all modes of transportation. It also represents a challenge to the transportation network. Not surprisingly, many of the busiest roadways within the metro area are also found within two miles of the I-29 and Main Avenue interchange.

Between 2001 and 2007 the NDDOT devoted considerable resources to adding lane-capacity to I-29 within two miles of the Main Avenue interchange.

Of significance, 82.5% of all "Office/Bank" acres, and 69% of all "Commercial" acres are located in the City of Fargo. These land use choices have a transportation impact. We know from 2000 Census data that Fargo is a daily net importer of about 7,600 workers from the three other metro area cities (See Map 1.29) because there are more jobs in Fargo than Fargo residents can fill. The metro area as a whole also imports workers from surrounding communities.



MAP 1.28 • LAND USE

. 2009 METROPOLITAN TRANSPORTATION PLAN .

A more detailed breakdown of land use by acreage follows.

Table 32. Metropolitan Area 2007 Land Use Acreage

Land Use	Fargo	West Fargo	Moorhead	Dilworth	Total	Percent of Metropolitan Total
Commercial	1,197	211	2163	66	**1,737**	**3.7%**
Industrial	1,730	762	603	11	**3,105**	**6.6%**
Single Family	4,679	1,874	2,261	273	**9,087**	**19.3%**
Multi-Family	1,161	226	278	28	**1,694**	**3.6%**
Other / Rural Residential	217	16	37	4	**247**	**0.5%**
Manufactured Housing	177	86	53	36	**351**	**0.7%**
Office/Bank	648	27	106	3	**785**	**1.7%**
Institutional / Community / Public Assembly/Military	850	200	322	15	**1,308**	**2.78%**
Schools and Universities	1,076	110	433	3	**1,621**	**3.4%**
Parks & Recreation	2,223	336	1,198	39	**3,795**	**8.1%**
Agriculture/Vacant / No Code	8,472	2,965	4,164	911	**16,592**	**35.3%**
Transportation/ Utility / Non Building Structure	3,027	2,426	807	419	**6,679**	**14.2%**
Total	**25,456**	**9,238**	**10,527**	**1,808**	**47,027**	**100%**

Source: 2008 Metro Profile

Population & Demographics

Table 32 details regional population Census data, Metro COG's 2006 population estimate, and population projections by jurisdiction.

The urban area population has grown by over 30% in the last 16 years – an average annual rate of 1.9%. This has occurred while the rural areas of both North Dakota and Minnesota have remained stable or in some cases experienced a decrease in population. The latest demographic forecast, completed in 2006 for Metro COG by McKibben Demographic Research, suggests that the growth trend will continue but at a decreasing rate. These population forecasts are discussed in greater detail in later chapters. The MSA or Metropolitan Statistical Area is a Census Bureau defined area that includes all of Cass County, North Dakota and Clay County, Minnesota.

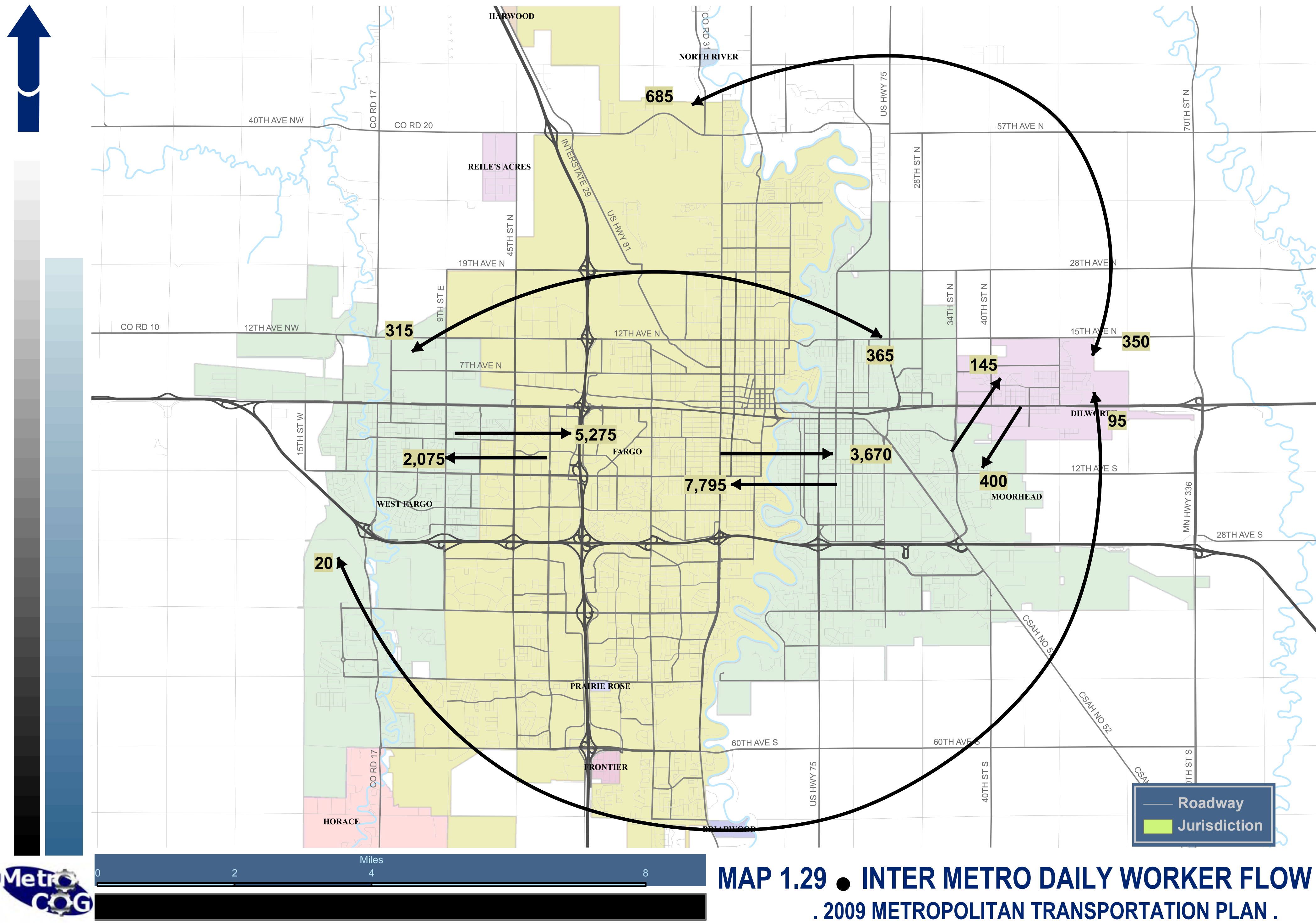
Table 33. Historic and Forecasted Population

Jurisdictions	Population 1990	Population 2000	Population 2008	Population Projections 2015	Population Projections 2035
Fargo	74,111	90,599	93,531	112,870	142,740
Moorhead	32,295	32,177	36,012	40,920	51,670
West Fargo	12,287	14,940	23,708	27,840	28,870
Dilworth	2,562	3,001	3,677	4,440	5,190
Urban Total	121,255	140,717	156,928	186,070	228,470
Metro Cass	86,398	105,539	117,239	140,710	171,610
Rural Cass	16,479	17,599	22,679	22,430	29,580
Cass Total	102,874	123,138	139,918	163,140	201,190
Metro Clay	34,877	35,178	39,689	45,360	56,860
Rural Clay	15,565	16,120	16,078	18,650	23,410
Clay Total	50,442	51,229	55,767	64,010	80,270
MSA Total	153,269	174,367	195,685	227,150	281,460

Population Source: U.S. Census Bureau, McKibben Demographic Research
Projection Source: McKibben Demographic Research

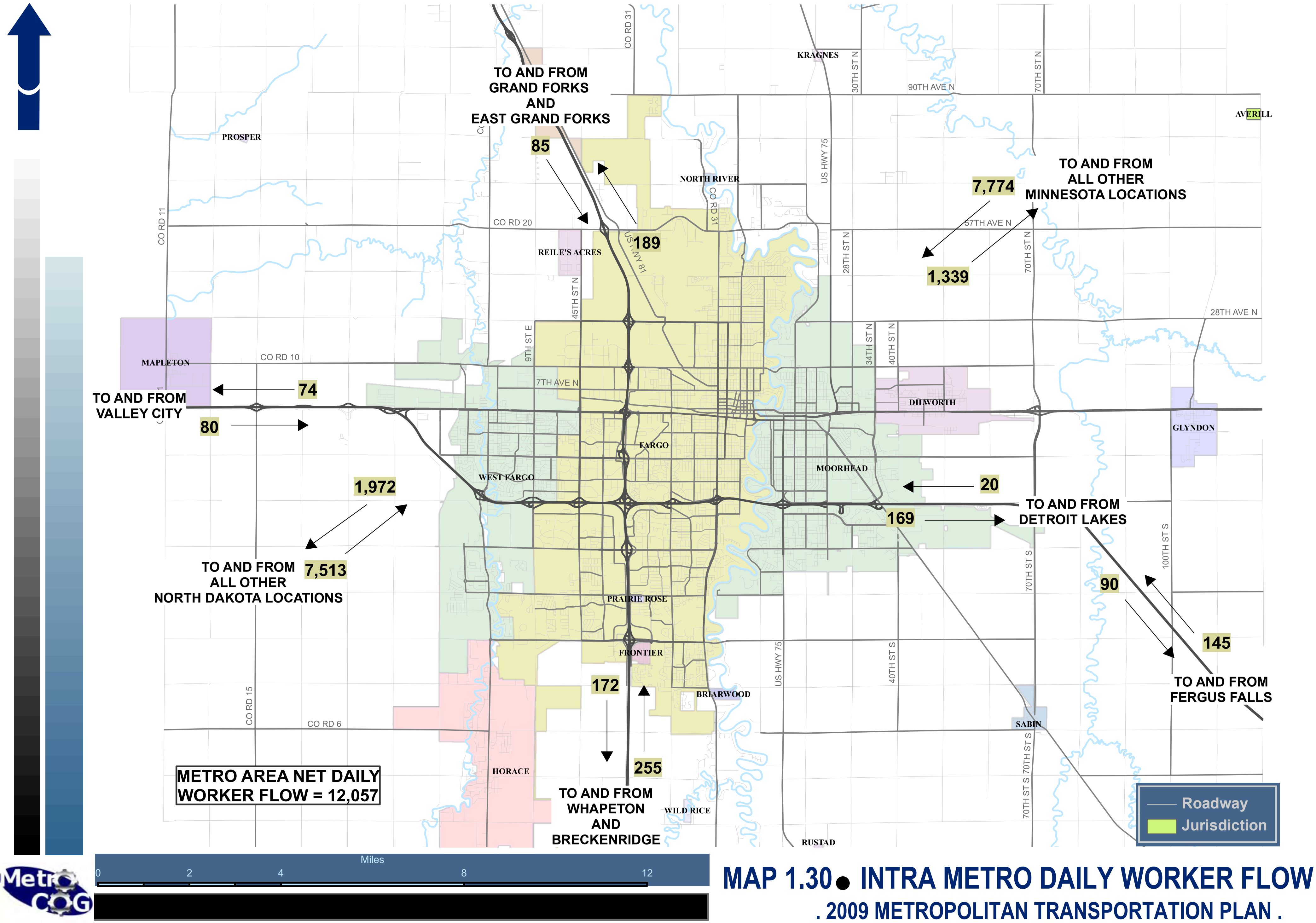
About 7,800 Moorhead residents travel daily into Fargo for work. About 5,200 workers travel daily into Fargo from West Fargo. Clearly, Fargo is the commercial and employment center for the metro area. There may be many reasons for this – tax structures, incentives, public policy, transportation infrastructure and access, cost of land, the synergy created by locating several stores in close proximity to one another – and all of the reasons may be inter-relating with one another in complex ways. Whatever the causes, it is the responsibility of the transportation network to move people and goods into the commercial and employment center of the metro area.

We also know that the metro area as a whole is a daily net importer of about 12,000 workers from other communities (See Map 1.30). The Minnesota Department of Transportation classifies the Fargo-Moorhead area as a Level 1 Regional Trade Center. It is the urban area to which residents of nearby communities travel to for jobs, goods, and services. Combining the population and land use data yields population density, as shown in Table 33.



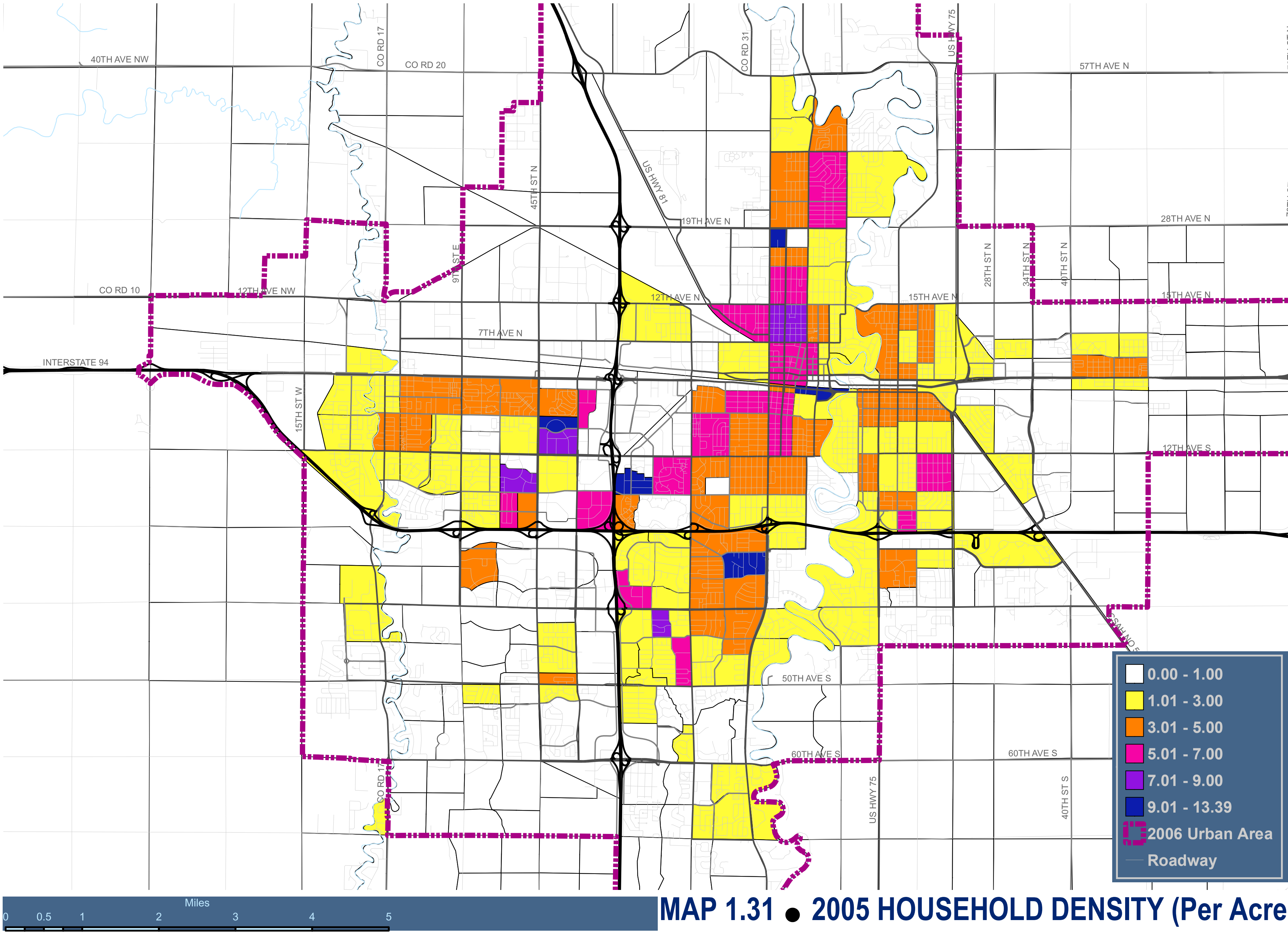
MAP 1.29 ● INTER METRO DAILY WORKER FLOW

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.30 ● INTRA METRO DAILY WORKER FLOW

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 1.31 ● 2005 HOUSEHOLD DENSITY (Per Acre)

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Table 34. Average Residential Densities by Jurisdiction in 2006

City	Residential Acres	Total Households	Avg. HH/Acre	Population	Avg. Persons/HH	Avg. Persons/Acre
Fargo	5,778	42,928	7.43	99,208	2.31	17.17
Moorhead	2,658	12,685	4.77	34,762	2.74	13.08
West Fargo	2,091	7,944	3.80	20,790	2.62	9.94
Dilworth	361	1,328	3.68	3,472	2.61	9.62
Metro Total	10,888	64,885	5.96	158,232	2.44	14.53

Source: Metro COG GIS Analysis

Within each jurisdiction, there can be wide variability in household density from neighborhood to neighborhood. The development of cities is founded on the idea that goods and services can be more efficiently provided when people live close together.

Within each city, there is no one "right" density. Instead, providing a variety of density choices will appeal to the broadest segment of the residential housing market. Residents and city governments must weigh the potential cost of land use and transportation choices against the potential benefits/constraints.

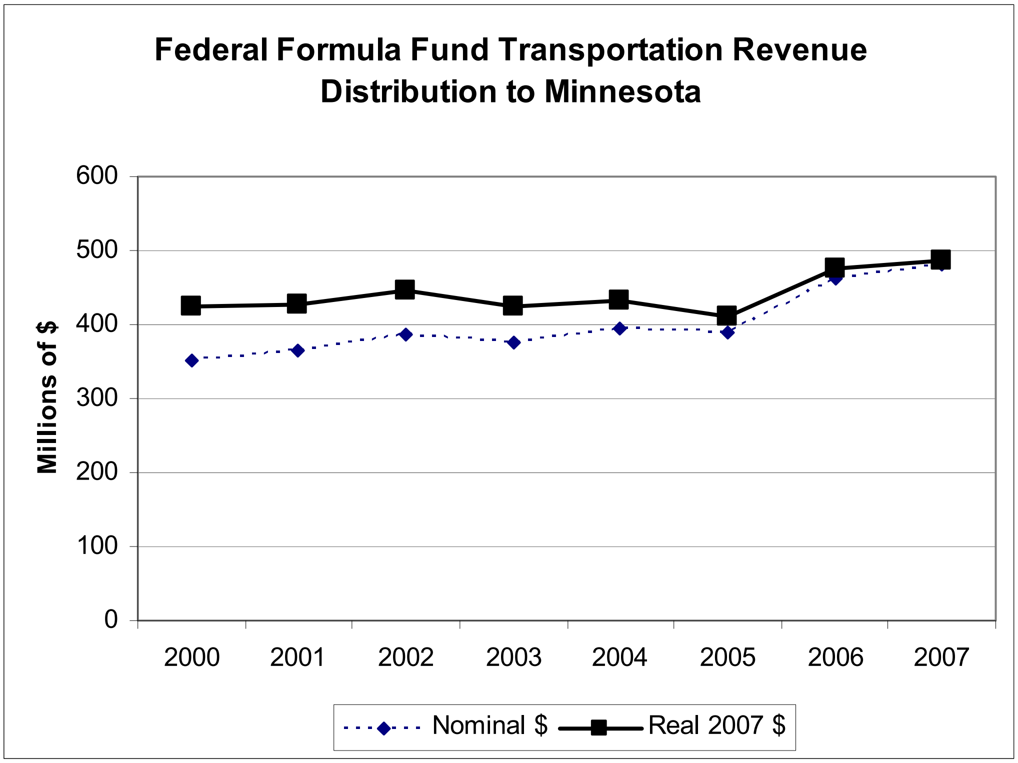
Funding

As noted previously, roadways are an expensive public investment. Over the past few years, the average cost of constructing or reconstructing an arterial roadway in the F-M area has been about $1 million per lane per mile. Once built, of course, the roadway must be maintained which adds an on-going financial responsibility to the budget. Currently, the average cost for a mid-sized transit bus is about $300,000, with additional annual associated maintenance costs. Transportation is a significant public investment, funded by tax payers, local governments, state governments, and the federal government.

A glance at historical federal funding levels indicates that while the nominal annual transportation investment has grown, it has increased only slightly ahead of the consumer price index. The following illustrative chart (Fibure 7) shows the federal formula funds as distributed to the state of Minnesota. In real terms, funding between 2000 and 2008 increased at an average annual rate of 1.8%.

The Report of the National Surface Transportation Policy and Revenue Study Commission, a bipartisan body whose creation and mandate was part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), states that the U.S. needs to invest at least $225 billion annually from all sources for the next 50 years to upgrade existing transportation infrastructure to a state of good repair and create a system to sustain and ensure strong economic growth. Currently, the U.S. spends less than 40% of that amount.

Figure 7.



Source: Minnesota Statewide Transportation Plan 2009-2028 (Draft)

Much of the federal revenue for transportation comes from the Federal Highway Trust Fund. The fund was created in 1956 to ensure funding for the construction of the Interstate Highway System. Every time a consumer purchases gasoline, they pay a federal tax, and that money is put into the trust fund. Since 1993 the federal gas tax rate has been 18.4 cents per gallon. Over most of its life, the trust fund received more money in revenue than it paid out. Since 2000, however, expenditures from the account have exceeded revenues. This is due, in part, to rising fuel efficiencies in the vehicle fleet. Among those with less fuel efficient vehicles, as fuel prices increase people avoid transportation costs or find more efficient ways to travel in order to conserve income, so revenues to the highway trust fund decrease. Late in 2008, with gas prices near an all time high and consumers actively working to conserve fuel, the USDOT warned that the trust fund would be empty unless Congress acted. Congress did divert $8 billion from the general fund to highway trust fund, but, on its own, this action will only delay the date that the trust fund will be empty.

As fuel costs raise, roadway, shared-use path construction costs, and transit operation costs rise accordingly. Asphalt is made using petroleum products. Concrete requires a lot of energy to produce. A large part of the roadway or pathway construction / reconstruction process is earth moving, which requires heavy equipment that runs on fuel. For transit, the connection between higher fuel costs and higher operating costs is obvious. Taken together, a funding paradox is created – as gas prices increase, transportation infrastructure costs also increase, but transportation revenues decrease.

The federal share of transportation is identified through a multi-year funding authorization. The last bill, the Safe, Accountable, Flexibile, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) covered the years 2005-2009. The authorization only identifies funding targets. The actual appropriation of dollars occurs annually, and can be lower than the identified target depending upon the financial situation at the time. State Departments of Transportation can receive federal transportation funds in three ways: as part of a formula, a discretionary program, or an earmark.

Formula funds are apportioned to states by a mathematical formula that is based on factors such as the population of the state and how much the state contributes to the Federal Highway Account. Discretionary and earmark funds are distributed by Congressional designation or through a competitive process such as the USDOT's Urban Partnership Agreement program.

Debate on the next federal transportation funding bill is expected to be taken up by the Congress in 2009. In the current economic and political environment, there appears to be little desire to raise taxes, and it is unclear how much more tolerance there is for more debt financing. A new President and new committee leaders in Congress add to the uncertainty regarding the future of federal transportation funding.

Many of the forces impacting the federal funding picture are also shaping state funding of transportation. The recession, fuel prices, and other macro-level forces are changing state budgets, but not always in the same way or to the same extent in every state.

In the state of North Dakota, transportation revenue is derived, in part, from a fuel tax of 23 cent-per-gallon and motor vehicle registration fees. Revenue from the motor vehicle fuel tax is forecasted to decrease by over 8% from the 2005-2007 to the 2007-2009 biennium, and legislative appropriations to the NDDOT were decreased by over 5% over the same time period. Transfers to Cities, Counties, and the State Highway Fund grew by less than one-half percent between 2005 and 2009, while North Dakota's construction cost index increased over 34% between 2005 and 2007[3].

In Minnesota, transportation revenue is derived from a motor fuel tax (25 cents per gallon as of October 2008), motor vehicle sales tax, and vehicle registration fees. Thirty-eight percent of the revenue is provided directly to cities and counties in the form of state-aid. The remaining 62% goes to the State Trunk Highway Fund for operation, maintenance, engineering, and construction needs of the state trunk highway system. Between 2000 and 2005, Minnesota transportation revenues grew by about 1.8% per year. In 2006 and 2007, state transportation revenues actually declined. In February 2008 the Minnesota legislature enacted Chapter 152 which, among other things, raised the motor fuel tax from 20 to 25 cents per gallon, increased the motor vehicle registration tax, and authorized $1.7 billion in bonding to finance highway needs statewide.

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3 Statement of Francis Ziegler, Director, North Dakota Department of Transportation Regarding Federal Transportation Infrastructure Investment Issues for North Dakota Before the Committee on the Budget United States Senate Minot, North Dakota, March 27, 2008

At the local level transportation is generally funded in a variety of ways – through sales tax, property tax, assessments or other local revenue streams. The exact method of generating and distributing local dollars for transportation can vary greatly from jurisdiction to jurisdiction. For example, the City of Fargo uses a quarter-cent sales tax for infrastructure needs, giving it the ability to fund some major transportation improvement projects without federal or state assistance. Other cities do not have a similar local revenue stream for infrastructure.

Most local governments do receive transportation revenue from the state DOT's. The City of Moorhead receives State-Aid funds to help maintain some of its roadways, for instance. The counties also receive state assistance for transportation. In Minnesota, any city with a population of less than 5,000 is not eligible to receive direct state or federal funding assistance. Instead, the county in which they are located must "sponsor" the project and apply for the aid. However, sometimes there is limited incentive for the County to sponsor the city's project because it would compete for the same funding stream as the county's own project(s). The cities of Dilworth and Glyndon both have populations less than 5,000, thereby no direct access to federal or state transportation funding assistance. At the local level transportation infrastructure is often paid for using a mix of federal, state, and local transportation funding dollars.

Chapter 2: Needs Assessment

Traffic Forecast Model

By analyzing the past, current, and future growth of an area, traffic forecasts can be accurately projected. Growth can be measured by the amount of future development planned within a given area over a certain number of years. It can also be quantified by identifying the future increase of people, households, and jobs relative to land development in a given area. Projected changes in households and jobs within and around a community are the primary demographic features used to project the future traffic volumes. As the population of an area increases, the urban area also typically grows. Further, as the urban area grows, its transportation system should adapt to this growth, since land use and transportation are strongly linked.

The first step in the development of an accurate traffic forecasting model is to build a model that can accurately recreate known (in this case, base year 2005) conditions. The basic components of this model are:

- The Land Use in the base year, including characteristics such as
  - Population and Age Cohorts
  - The number and locations of households (single and multi-family)
  - The number and locations of jobs (retail, service, and other)
- The Roadway Network in the base year, including characteristics such as
  - The number of lanes for each roadway link
  - Intersection controls such as stop signs and traffic signals
  - Posted speed limits
  - Functional classification of each link
  - The average daily traffic (ADT) on the links

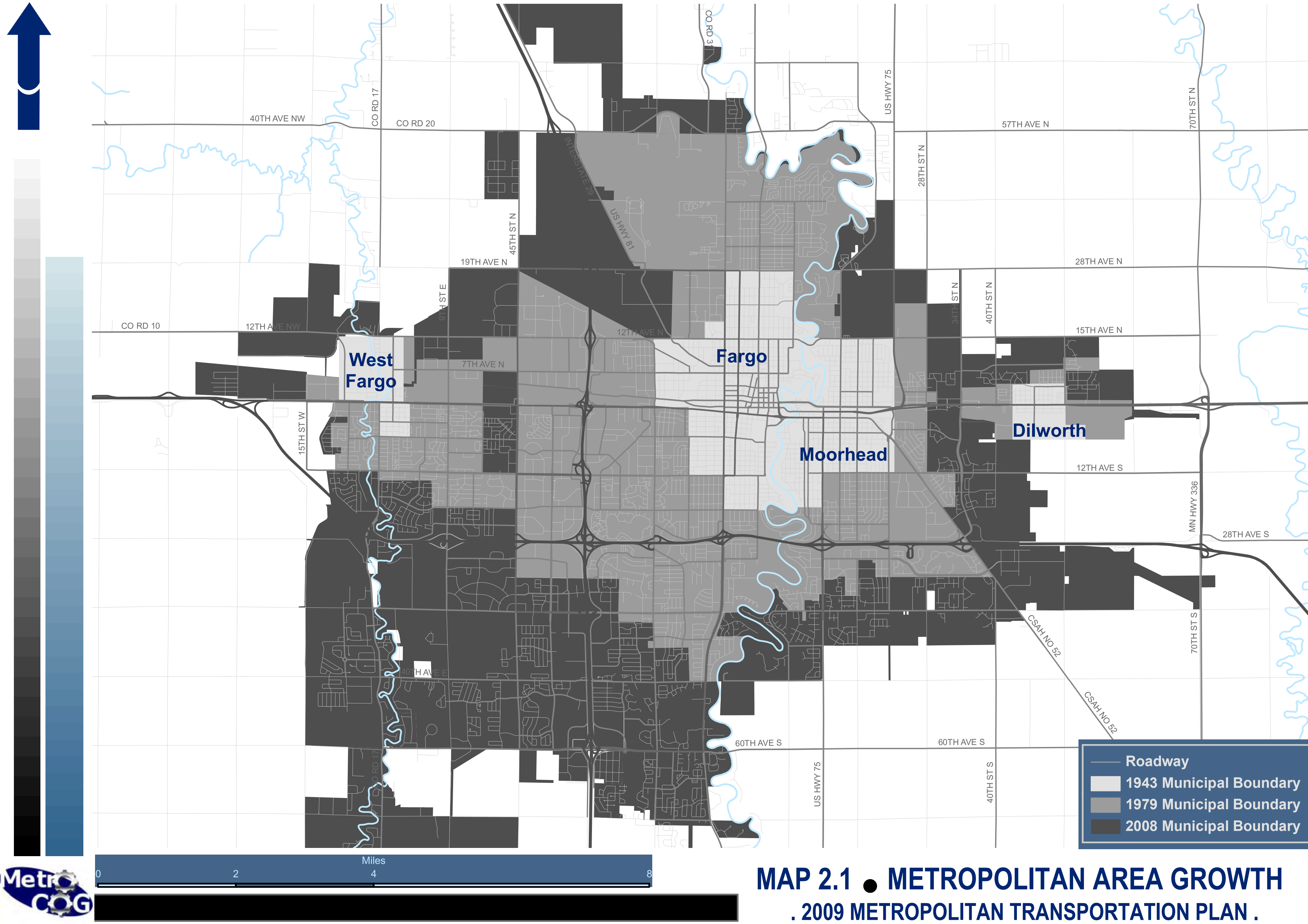
Complete technical information on the development and calibration of the regional travel demand model is available in Appendix C.

Land Use

Metro COG staff completed a comprehensive land use update in 2006. Parcel-level land data was acquired from the local jurisdictions and categorized into the various land uses that were defined by Metro COG and local planning staff. Existing land use data is discussed in some detail on pages 1.66 through 1.68 of the existing conditions chapter.

The total area encompassed by the four core urban cities has increased from 41,194 acres (about 64 square miles) in 2001 to 47,027 acres in 2008 – an increase of 14 percent. Map 2.1 shows the past pattern of growth of the F-M metropolitan area for 1943, 1979, and 2008. Map 2.2 is a composite map of future projected land use.

The basic level of data for the traffic model is the Traffic Analysis Zone (TAZ). The Metropolitan Statistical Area was divided up into 543 TAZs such that the land use within each TAZ was roughly homogenous and the borders between TAZs were major roadways, natural features, or transportation barriers (e.g., railroads, etc.). This was easily accomplished within the developed urban area. In more rural areas, TAZs become larger and sometimes less homogenous because smaller TAZs would simply not generate or attract many trips.



MAP 2.1 ● METROPOLITAN AREA GROWTH

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Data for population and households characteristics in 2005 was readily obtainable from the U.S. Census Bureau, and the appropriate number of households (single-family and multi-family) was assigned to each TAZ based on Census data. The population assigned to each TAZ is divided into age cohorts because the model includes a special trip generator to calculate school-related trips. The age cohorts used by the model were Ages 5-14 (elementary and middle school students) and Ages 15-17 (high school students). The model needed to differentiate between high school aged students and younger students because many high school aged students are able to drive themselves to school.

Existing 2005 jobs data was purchased from InfoUSA, a company that regularly surveys businesses regarding the number of Full-Time Equivalent jobs at each job site location. The jobs data included the type of business by Standard Industrial Classification (SIC) code, which was then translated into one of three job types for the model data – Retail jobs, Service jobs, and all Other jobs. The appropriate jobs data was then assigned to each TAZ.

Roadway Network

In 2001, the Advanced Traffic Analysis Center (ATAC) at North Dakota State University was contracted by the North Dakota Department of Transportation to fulfill the traffic modeling needs of all there North Dakota MPOs. The staff at ATAC worked closely with Metro COG staff to develop the current iteration of the travel demand model on CUBE, a software package developed and serviced by Citilabs.

After developing the TAZ structure, a roadway network was built to accurately represent the metropolitan area's existing roadway system. The model calculates capacity for each roadway segment based on the roadway classification and the lane configuration. For rural and interstate highways, ATAC used the Highway Capacity Manual (HCM) to calculate capacity. The capacity for interstates was based on the number of lanes and speeds along each section, while the capacity for rural roads was determined based only on the number of lanes in each section of highway. This technique varied for urban streets, where capacity was based on the functional class, number of lanes, and intersection configuration. Each street by functional class had a default capacity applied. If the roadway had more than one lane, left turn lanes, or right turn lanes, the capacity was increased by an appropriate amount. Table 35 shows the capacity constraints applied to each roadway.

Some impedance was attributed to specific roadways based on characteristics not otherwise accurately represented or captured in the model. Impedance was added to:

- 12th Avenue/15th Avenue North toll bridge to represent the additional cost of using the bridge
- North-South roadways in Moorhead between Main Avenue and 1st Avenue North from the Red River to 21st Street to represent the travel delay associated with trains that blocking those roadways
- Main Street in Dilworth south of TH 10 to represent the roughly 180 roadway closures each day resulting from train traffic
- 4th Avenue South in Moorhead at 8th Street to account for the heavy traffic flow on the arterial and the relative difficulty that east-west traffic faces in crossing 8th Street at this location

Table 35. Capacities for Rural and Urban Streets

Functional Class		Capacities (vehicles per hour per lane)				
		One-Lane	**Multi-Lane (per lane)**	**Each Additional Lane**	**Each Right-Turn Lane**	**Each Left-Turn Lane**
Rural	Interstate	*	1800	*	*	*
	Non-Interstate	1500	1700	*	*	*
Urban	Interstate	*	1700	*	*	*
	Major/One-Ways	1000	*	800	300	75
	Minor	675	*	600	200	75
	Collector/Local	450	*	400	100	75

Not all roadways were included in the modeled network. The model is intended to contain all of the roadways functionally classified as Collector or above. A few local roads were included in the model in areas where staff had a specific concern about the roadway capacity or to provide more realistic connection options between higher functionally classified roadways.

Since delay at controlled intersections influences route selection for motorists, estimates of control delay were developed. An average control delay was assigned to signalized and stop sign controlled intersections based on roadway functional classification.

Table 36. Modeled Node Delays

	Node Delay (sec/vehicle)	
Functional Classification	**Traffic Signal**	**Stop Sign**
Interstate	-	-
Major Arterial	8	10
Minor Arterial	8	10
One-Way	8	10
Collector	30	10
Local	30	10

The Four-Step Model Process

Computerized travel demand forecasting has long been viewed as a four-step process:

1. Trip Generation
2. Trip Distribution
3. Mode Choice
4. Assignment

Step 1: Trip Generation

The Fargo-Moorhead model was set up to calculate trip generation based on jobs and households. The model contains trip generation rates for single-family households, multi-family households, retail jobs, service jobs, and other uncategorized jobs. Household trips were always trip productions. Trips generated by job sites were largely trip attractions, but a small percentage were designated as trip productions. Some trips were estimated to stay within each TAZ.

Table 37. Vehicle Trip Generation Rates

		Percentage of Trips by Purpose		
Dwelling Category	**Daily Vehicle Trip Rate**	**Home-to-Work**	**Home-to-Other**	**Non-Home-Based**
Single Family	9.55	0.2	0.57	0.23
Multi-Family	6.47	0.2	0.57	0.23

Source: ATAC, based on NCHRP, Report 365, Table 3

A special trip generator was built into the model to estimate school trips because these facilities attract significantly more trips than job-related trips. Concordia College, Minnesota State University, Moorhead (MSUM) and North Dakota State University (NDSU) were treated as special attractors. Surveys were used to gather primary data from NDSU students regarding their trip-making behavior, which was then aggregated and turned into trip rates to-and-from home, to-and-from work, etc. These rates were then applied to the current enrollment for each college to determine the campus's attractiveness for trips.

The attractiveness of high schools and grade schools were calculated independently. Again, primary source survey data was used to estimate trip-making behavior. The initial value of attractions per zone was set to the number of students enrolled in the school within that zone. The population was divided into two different age groups to distinguish between high school (some of whom possess a driver's license) and grade school aged students. In the case of primary and secondary schools, the model was coded in such a way that only school trips from within the school's district could be assigned to the school. For example, Fargo South High School could only attract trips from zones located in south Fargo.

Step 2: Trip Distribution

Once the trip generation step was complete, the model was used to determine the number of trips between zones. The model uses a "gravity model" to determine the attractiveness of a zone for trips.

With gravity, the distance between two bodies and their mass determines how attracted the bodies are to one another. In the regional traffic model the distance between a trip generator and trip attractor determines how likely a trip will be distributed to that attractor.

In the real world, a household is much more likely to visit a grocery store a block away rather than traveling miles across town to shop for groceries. Using the gravity model, the grocery store a block away is much more likely to attract trips than the store across town. However, the "mass" or size of the attractor also plays a part. A large regional shopping center like West Acres attracts trips from all over the metro area because no matter how far away it may be from any household it has a lot of mass in terms of the number of retail jobs located there, which attract both work trips and non-work (i.e., shopping) trips.

In the traffic model, trips are produced within TAZs based on the number and type of households located there and then distributed between TAZs based on the relative attractiveness of each zone, which is a function of the distance of the zone from the zone of origin and its "mass" of retail jobs.

Special consideration was given to the attractiveness of Hector International Airport, located in TAZ 42 in the travel demand model. The total annual enplanements in 2005 (549,209) was divided by 365 to obtain average daily trips to the airport.

Applying the methodology described here results in unbalanced production and attraction totals. For the travel demand model each trip production must be matched with a trip attraction. In general, trip productions were considered to be more accurate, so the total number of attractions was divided by the total productions and the resulting factor was applied to each TAZs attraction total.

Table 38. Total Adjusted Productions and Attractions by Trip Purpose

Trip Purpose	Total Trip Productions	Total Trip Attractions
Home-Based-Work	159,347	159,347
Home-Based-Other	452,513	452,513
Non-Home-Based	99,546	99,546
University	9,942	9,942
High School	9,027	9,027
Grade School	20,185	20,185

Step 3: Mode Choice

The Fargo-Moorhead regional model does not currently include a mode choice step. All trips are assumed to be taken by personal automobile. According to data from the 2000 Census, less than 1% of all work trips in the region were taken by transit. The Transportation Technical Committee made the decision to exclude transit trips from the model since it did not seem to be worth the time and effort of developing the mode choice step within the model to accurately capture less than 1% of all trips.

The same Census data indicates that about 3.7% of all work trips in the region are taken by bicycle or by walking. The Census is taken in April, so the percentage recorded is likely to be higher than the percentage of biking or walking commute trips in winter months, but it may be lower than the percentage of trips in summer months. Also, because of the way the Census data is gathered, it is impossible to tell what percentage of the total number of trips were bicycle trips versus walking trips. Because of the likely seasonal variability in the data and inability to separate bicycle from walking trips in the Census data set, the Transportation Technical Committee also decided to exclude bicycle and walking trips from the model.

It should be noted that some metropolitan areas use the mode choice in their regional models as a goal setting tool. Regardless of the overall percentage of trips that use transit, bikes, or walking, those modes could be included in the F-M model in order to measure the impacts of transportation and land-use choices.

Step 4: Assignment

Once the model knows how many trips from one zone will travel to another, it assigns those trips to the roadway network. This is done through an equilibrium assignment, which is generally considered to be the best method of assigning trips. Using equilibrium assignment, the model assigns all trips to the network and calculates travel times. The model then reassigns all trips and recalculates travel times to try to improve upon the first assignment. That is, the model strives to minimize travel times in much the same way that drivers attempt to reach their destination with the most efficient route, even if it is not the most direct route. In an iterative process, the model continues reassigning and recalculating travel times until it cannot improve upon the previous assignment.

Roadway design capacity, posted speed limits, delays at controlled intersections, and other roadway characteristics play a part in calculating the travel times.

In the case of the 2005 base year model, three time periods were modeled: the A.M. peak hour, the P.M. peak hour, and the off-peak period. The model reached equilibrium after 20 iterations for the A.M. time period, after 14 iterations for the P.M. time period, and after 8 iterations for the off-peak time period.

The four step process was used for calculations of both the base year model and the future (2015 and 2035) traffic models.

Calibration of the Model

The model is considered calibrated when base year (2005) simulated traffic volumes are closely matched to the actual observed and/or documented traffic counts. If the model is accurately representing existing traffic conditions, there is a reasonable level of comfort that the model will accurately predict future traffic conditions. Nevertheless, it is important to examine the model's future traffic projections to make sure they are logical and sensible given local travel tendencies and preferences.

During the calibration, any of the data collected or assumptions used during the four step process above can require adjustments or corrections to adequately calibrate the model. Typically, calibration is a time consuming and tedious process. Adjustments made to correct one system deficiency often create other system deficiencies. Therefore, it is not possible to perfectly simulate actual traffic conditions. The Federal Highway Administration (FHWA) has developed criteria or guidelines for determining an acceptable level of error in model calibration. These criteria were used to determine if the F-M traffic model was adequately calibrated.

Vehicle Miles Traveled

The observed vehicle miles traveled (VMT) for roads on the functional class system in the F-M area in 2005 were 2,538,007. The model arrived at an estimated 2005 VMT of 2,498,412, a difference of one-and-a-half percent, well within the acceptable federal standard of five percent difference.

Table 39. Vehicle Miles Traveled

Jurisdiction	VMT Reported	VMT Modeled	Difference	% Difference
Fargo	1,845,042	1,823,416	-21,626	-1.17%
Moorhead	482,413	430,514	-51,899	-10.76%
West Fargo	169,523	172,657	3,134	1.85%
Dilworth	41,029	71,825	30,796	75.06%
ND	2,014,565	1,996,073	-18,492	-0.92%
MN	523,442	502,339	-21,203	-4.03%
Metro Area	2,538,007	2,498,412	-39,595	-1.56%

Screenlines
Screenlines compare the total observed traffic counts from all roadways in the network that cross the screenline with the total traffic volume estimated by the model. For example, one screenline used to evaluate the F-M model was the Red River. The total of all traffic counts on the bridges crossing the Red River throughout the study area were compared to the total estimated by the model. For this particular screenline the volumes estimated by the model were 0.59 percent higher than the 2005 counts. This was within the range considered acceptable by FHWA.

Table 40. Screenline K Factors and Modeled Results

Screenline	K Factor	Avg. Daily Traffic	Modeled Traffic	% Difference
I-29	0.80	96,200	91,500	-4.89%
I-94	0.33	135,075	136,400	0.98%
Red River	0.30	109,950	110,600	0.59%
Railroad	0.40	122,875	122,800	-0.06%

Comparison to Base Year Counts
Modeled traffic volumes were compared to actual traffic counts. A certain level of error is accepted because no model can perfectly recreate reality. The table below shows the percentage of links that meet each FHWA range criterion. Note that the F-M model met criteria on 75% of the roadway links with 2005 daily traffic volumes over 2,500.

Table 41. Model Assignment by Modeled Traffic Volume Range

Daily Traffic Volume Range	Above Criteria	Meets Criteria	Below Criteria	Within Criteria
>25,000	0	1	1	95%
25,000 to 10,000	6	131	23	82%
10,000 to 5,000	35	134	22	71%
5,000 to 2,500	33	129	15	72%
2,500 to 1,000	46	72	13	56%
<1,000	34	27	2	43%
Total	**154**	**511**	**76**	**69%**

Given these statistics and measurements, the 2005 base year model was considered to be adequately calibrated and ready to be used for the 2015 and 2035 projections.

Developing Traffic Forecast Scenarios

Once the base year model is completed and calibrated, modeled traffic scenarios can be developed that are based on modifying land use, modifying the roadway network, or modifying both. To develop a future year modeled traffic, a forecast for all of the socio-demographic TAZ data as well as a future roadway network must be developed.

Three modeled traffic scenarios were prepared. The first two used a projected 2015 roadway network, based largely on projects already programmed for completion. The first used a projected 2015 network with projected 2015 socio-demographic data. The second used a projected 2015 network with projected 2035 socio-economic data. The purposed of this second model run was to demonstrate what might happen if transportation investment stopped after 2015 but regional population growth did not. In this way, the biggest constraints and most important transportation issues could come to the fore. Working closely with local jurisdictions projects to address these forecasted issues were developed and a future 2035 transportation network was developed. The last model run used the projected 2035 network and the projected 2035 socio-economic data and served as a "check" to help ensure that all the long-range projects, taken together, adequately addressed modeled capacity problems.

There were two more model runs performed as part of the development of an alternative growth scenario. Alternative 2035 "Scenario B" used 2035 socio-demographic data distributed to the TAZs based on a set of metrics established by the TTC and agreed to by the Policy Board. They included measures such as higher densities, more mixed-uses, and a higher percentage of in-fill redevelopment in the core urban area, as opposed to continued growth at the urban fringe. Scenario planning is a strategic planning tool that has been around for some time. One of the challenges in planning is that the future is inherently unpredictable. The only certainty about the future is that it will be different than today. By planning for only one possible future, a community can expose itself to certain risks. What if the future does not unfold as planned? By developing multiple future scenarios, a community can enhance its ability to respond to change, manage and prioritize use of limited resources, avoid potential negative consequences, seize opportunities, and assess transportation's impact on the community overall. The reader is encouraged to review the details of the alternative growth scenario in Chapter 6. However, please note that the needs and projects identified in Chapters 2, 3, 4, and 5 are not based on Scenario B. Instead, they were developed assuming that future growth will occur much like past growth has occurred.

Population Forecast

Household and job projections are based partially on population projections, as well as on historical trends of those two characteristics. Since reliable population, household, and job growth data are such an important aspect of transportation planning, it is important that the projections be prepared by demographic experts who take many different factors into account when making their forecasts. Metro COG retained Dr. Jerome McKibbin of McKibbin Demographic Research to assist in making population, household, and employment projections. Dr. McKibbin worked closely with Metro COG's member jurisdictions to solicit key information from them and ensure their understanding and comfort with the projections.

Dr. McKibbin prepared two growth projections. The first could be labeled as a "most likely" scenario, based on conservative assumptions regarding future population growth components and future population growth trends showing little variation from their existing path. The second scenario makes more aggressive assumptions regarding growth components and could be labeled as a "high growth" scenario. By consensus of the Transportation Technical Committee and the Metro COG Policy Board, the "high growth" scenario was used for purposes of transportation planning and is presented below:

Table 42. Metropolitan Area Population Projections (High Growth Scenario)

Jurisdiction	2005	2010	2015	2020	2025	2030	2035
Cass County*	18,880	20,520	22,430	24,650	26,900	28,610	29,580
Fargo	97,610	105,600	112,870	120,010	127,340	135,050	142,740
West Fargo	19,880	24,430	27,840	29,680	30,440	30,040	28,870
Clay County*	17,480	18,820	18,650	19,800	20,960	22,190	23,410
Moorhead	34,230	36,890	40,920	43,640	46,360	49,110	51,670
Dilworth	3,360	3,920	4,440	4,840	5,160	5,210	5,190
Metro Total	174,367	191,440	210,180	227,150	242,620	257,160	281,460

Source: McKibbin Demographic Research
**Figures represent all of Cass and Clay County except for Fargo, West Fargo, Moorhead, and Dilworth*

On an overall metropolitan-wide basis, the projected population between 2005 and 2035 reflects an average annual growth rate of two percent.

<u>Household Forecast</u>

Household projections are based on a combination of population growth, age trends of the population and average persons per household. The growth in households was primarily projected based on the expected composition of the population in future years. For example, since the elderly and "empty nesters" will continue to increase as a percentage of the population over the next 30 years, the average number of persons per household was expected to continue to decline. This was only one factor of many that the demographer used to project household growth. The full text of the 2006 *Demographic Forecast for the Fargo-Moorhead Metropolitan Statistical Area* is available on Metro COG's website for review by the reader if more information or details are desired. The table below shows the projected household growth for each jurisdiction.

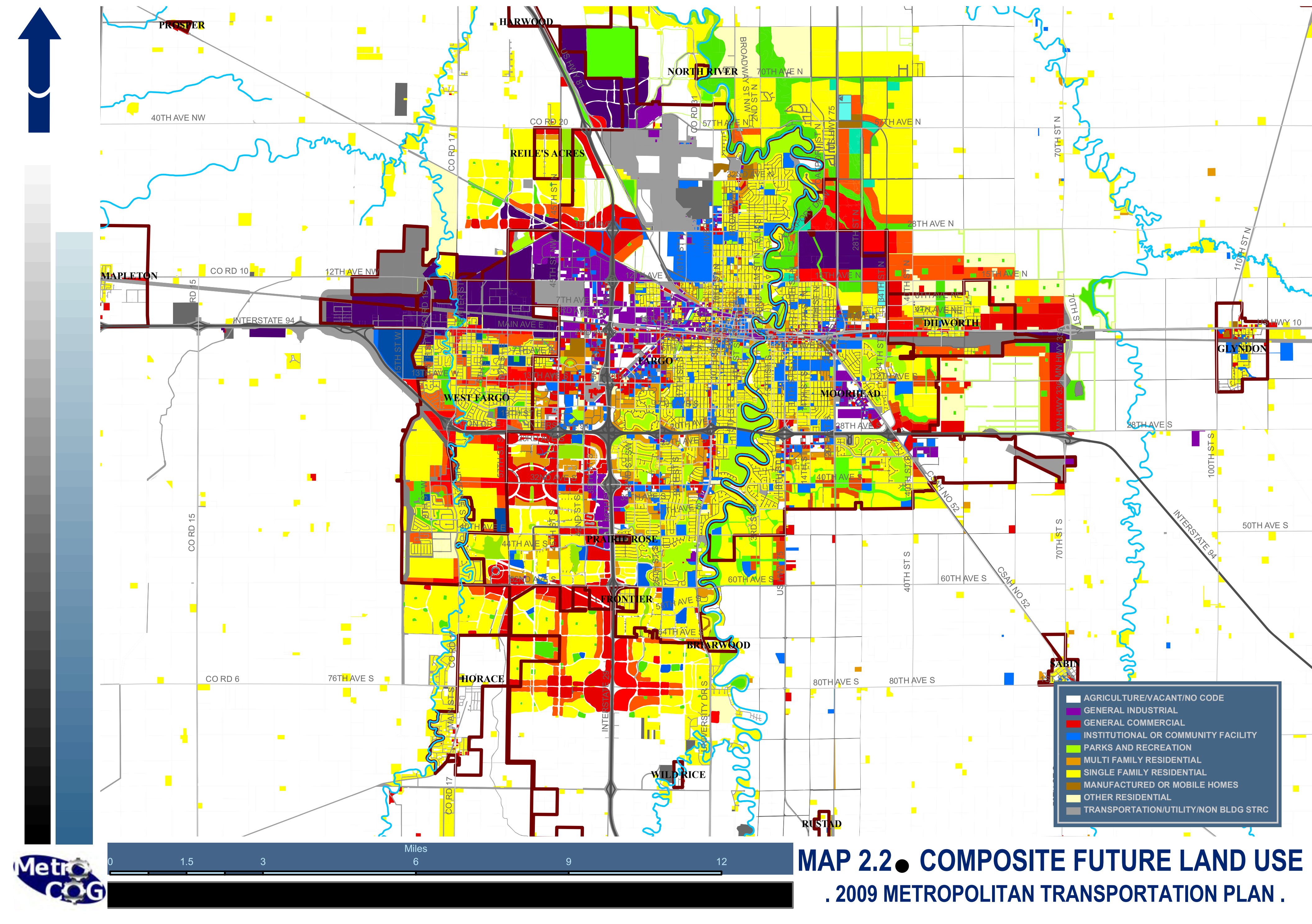
Table 43. Metropolitan Area Household Projections (High Growth Scenario)

Jurisdiction	2005	2010	2015	2020	2025	2030	2035
Cass County*	3,296	3,295	3,415	3,565	3,588	3,566	3,614
Fargo	83,046	90,010	95,578	100,334	105,140	110,975	117,860
West Fargo	6,928	7,623	8,015	8,208	8,603	8,687	8,955
Clay County*	3,265	3,308	3,289	3,461	3,560	3,491	3,377
Moorhead	13,783	14,846	15,631	16,573	17,027	18,201	19,071
Dilworth	1,288	1,385	1,442	1,474	1,538	1,572	1,625
Metro Total	111,606	120,467	127,370	133,615	139,456	146,492	154,502

Source: McKibbin Demographic Research
**Figures represent all of Cass and Clay County except for Fargo, West Fargo, Moorhead, and Dilworth*

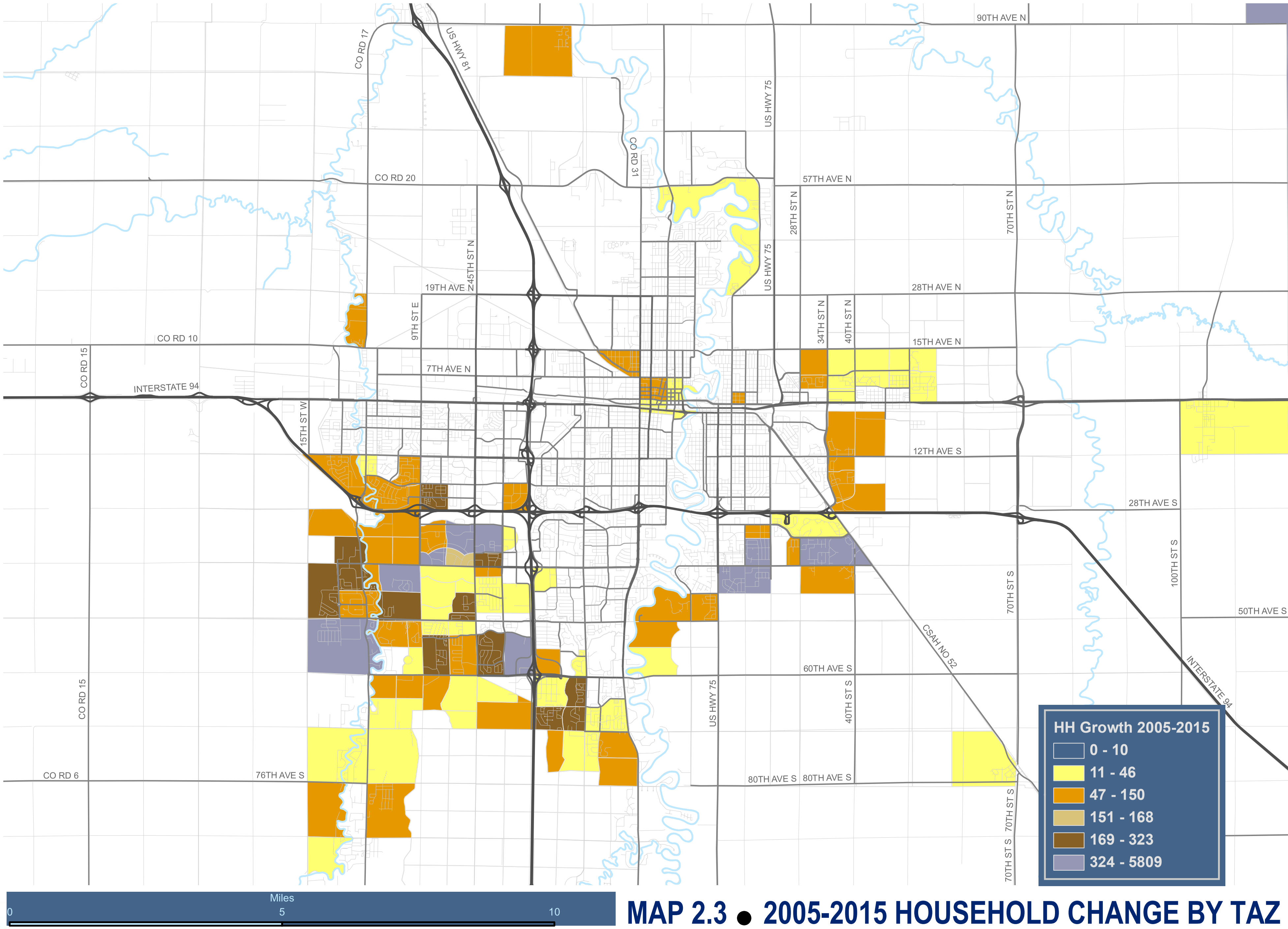
<u>Jobs Forecast</u>

Generally speaking a household generates trips while jobs attract trips. Forecasting future jobs is an altogether different task than forecasting population or households. The latter are to some extent functions of the demographic characteristics of the existing population. Jobs, however, are a function of economic variables such as interest rates, employment, profits, and technology. When one examines the past 30 years and how the nature of the job market has changed, it is easy to appreciate



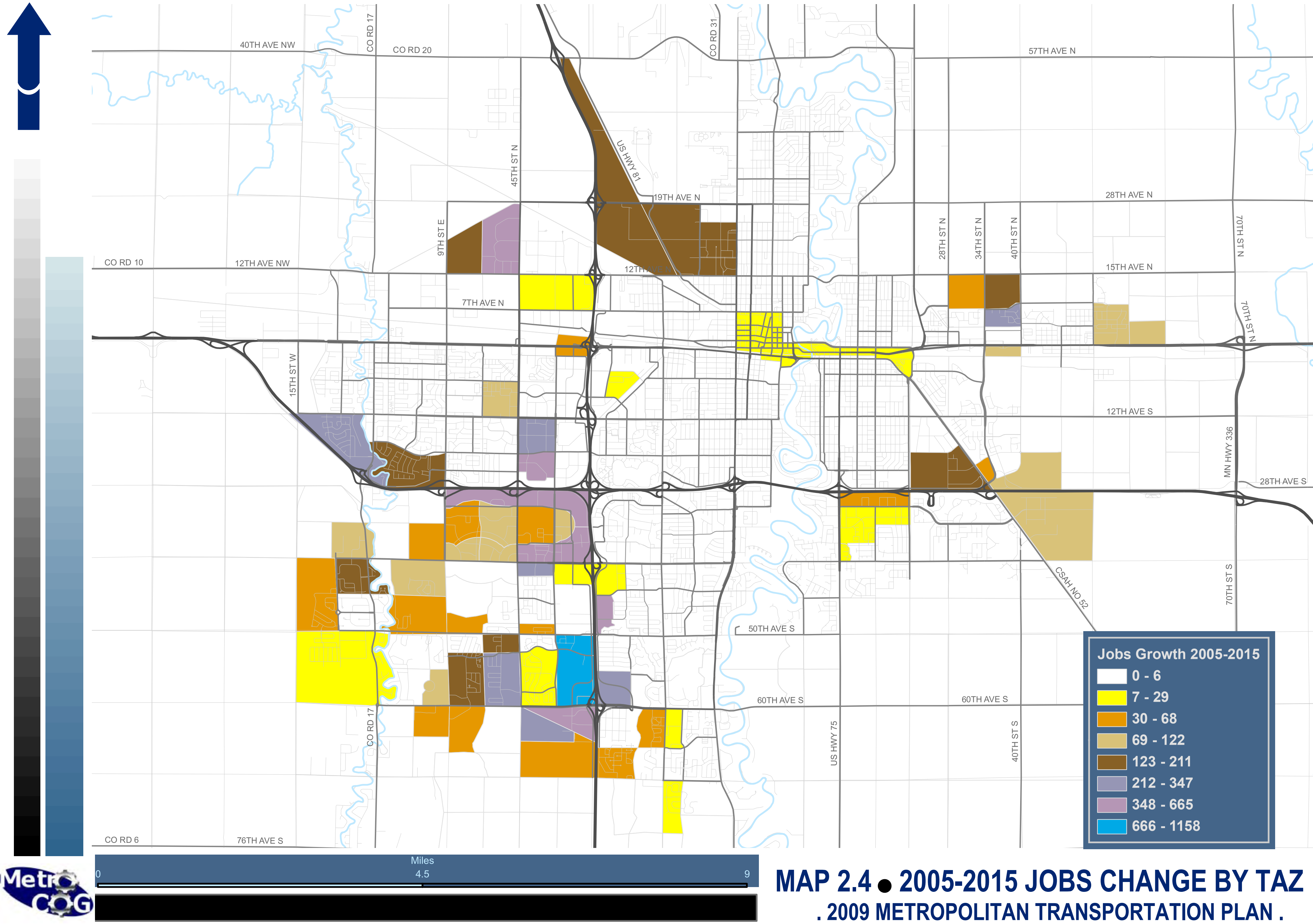
MAP 2.2 ● COMPOSITE FUTURE LAND USE

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 2.3 ● 2005-2015 HOUSEHOLD CHANGE BY TAZ

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 2.4 ● 2005-2015 JOBS CHANGE BY TAZ

. 2009 METROPOLITAN TRANSPORTATION PLAN .

the difficulty in forecasting job growth within the next 30 years. So, for purposes of the traffic model, a basic assumption is made: the proportion of jobs to residents will remain roughly constant over time. In this way, the job forecast also becomes a function of demographics. As population increases, we assume that retail, industrial and the service sector will also increase to serve that new population. Since there are only two years for which traffic projections are made (2015 and 2035), Jobs forecasts were developed only for those years.

Table 44. Jobs Projections

Year	Metro Pop Forecast (High Growth)	Jobs	Ratio of Jobs to Population
2000	174,367	101,459	0.581
2015	227,150	139,602	0.614
2035	281,460	161,003	0.572

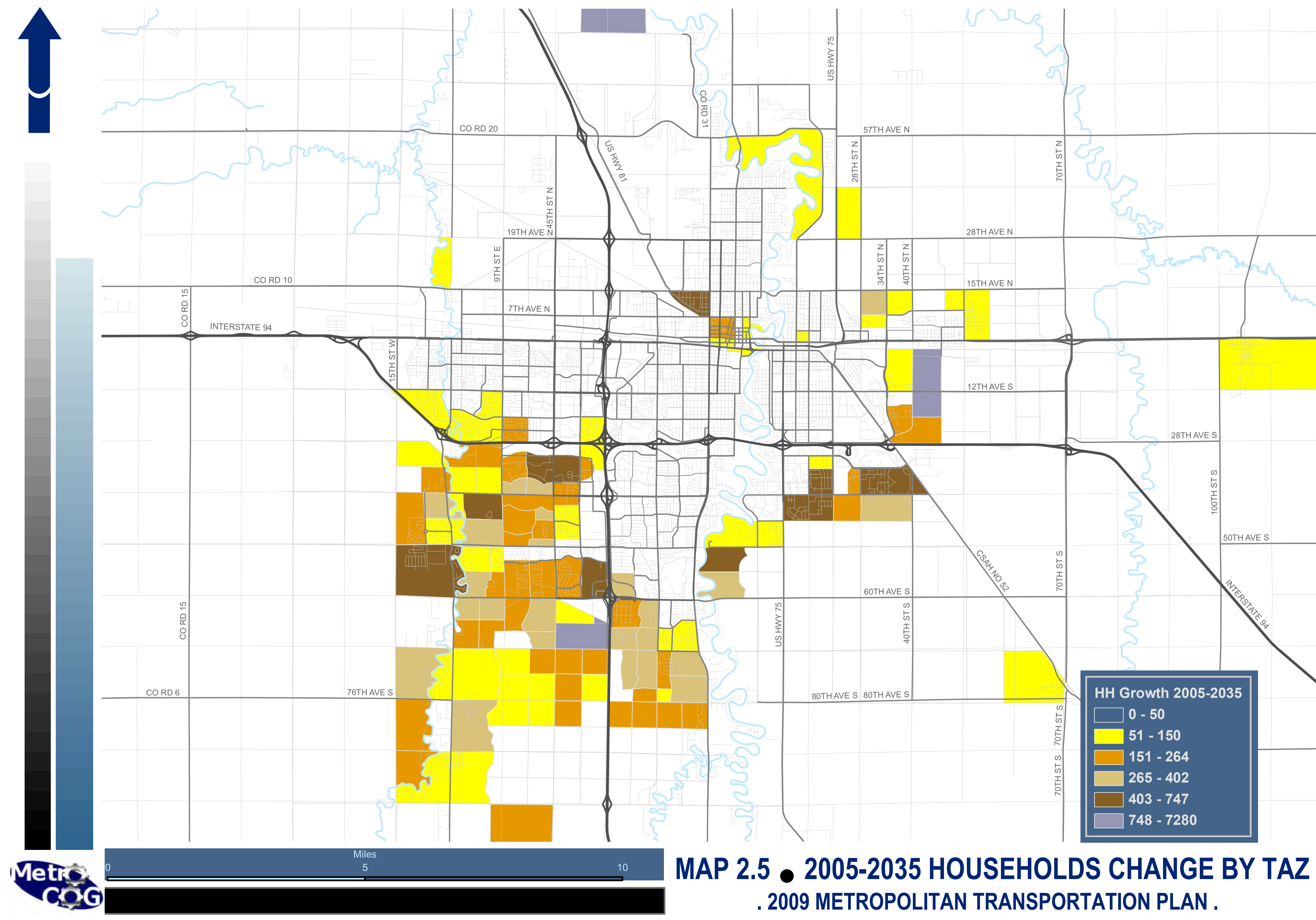
<u>Location of Household and Job Growth</u>

For the development of the 2015 forecast model and the 2035, the future land-use plans for each jurisdiction were examined to identify areas of future growth. Maps of the anticipated land use patterns were overlayed with the TAZ structure and the areas for each land use classification (i.e., residential, commercial, industrial, recreational, etc.) were measured within each TAZ. Then a typical factor was applied to the area to determine the total possible number of households and jobs within that TAZ. For instance, if a TAZ was undeveloped in 2005, but was anticipated to experience some level of development in 2015 or 2035 and showed 100 acres of future low-density residential zoning, the typical factor for low density households per acre was applied (3.5) to determine that at full build-out the TAZ could contain as many as 350 households. The typical factors were derived from existing conditions data for the metro area and are listed on Table 45.

Table 45. Typical Factors

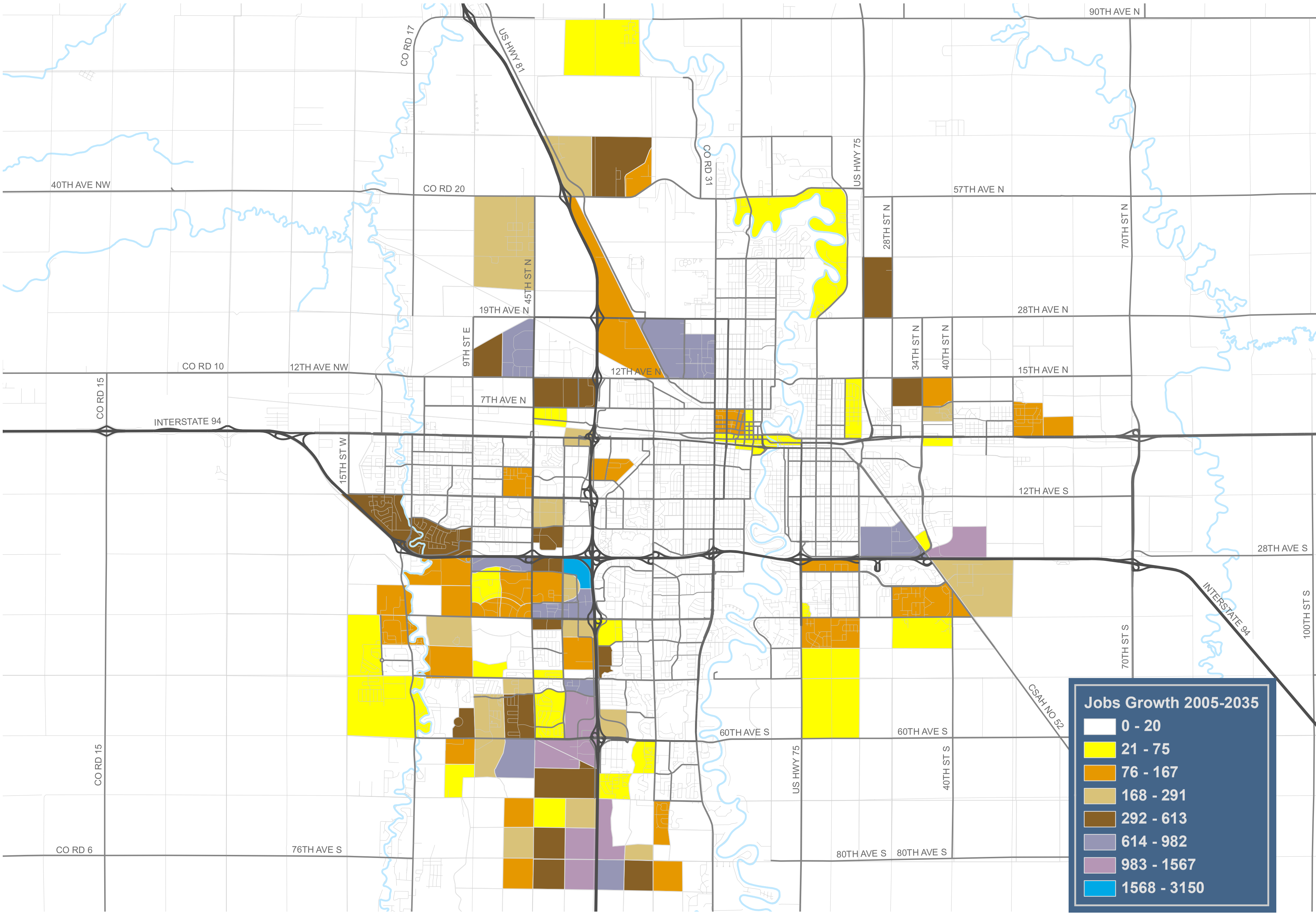
Zoning Type	Average Households per Acre	Average Jobs per Acre
Rural Residential	0.75	
Low-Density Residential	3.5	
Medium-Density Residential	10	
High-Density Residential	20	
Commercial/Retail		11.04
Office		40.34
Industrial		5.33
Schools/Public		5.13

After determining the full potential build-out of households and jobs for each TAZ, planners from each jurisdiction were consulted to determine to what extent each TAZ would be built-out by 2015 and 2035 based on the development pressure that is anticipated for each TAZ. The planner's input was reconciled with the target household and job forecasts for each jurisdiction, and in some cases small adjustments had to be made so that the allocated jobs and households did not exceed the forecasted jobs and households for that jurisdiction. For 2035, some (but limited) redevelopment of TAZs was assumed. Additional jobs and households were allocated to TAZs in downtown Fargo and Moorhead based on the redevelopment that has been occurring over the past several years.



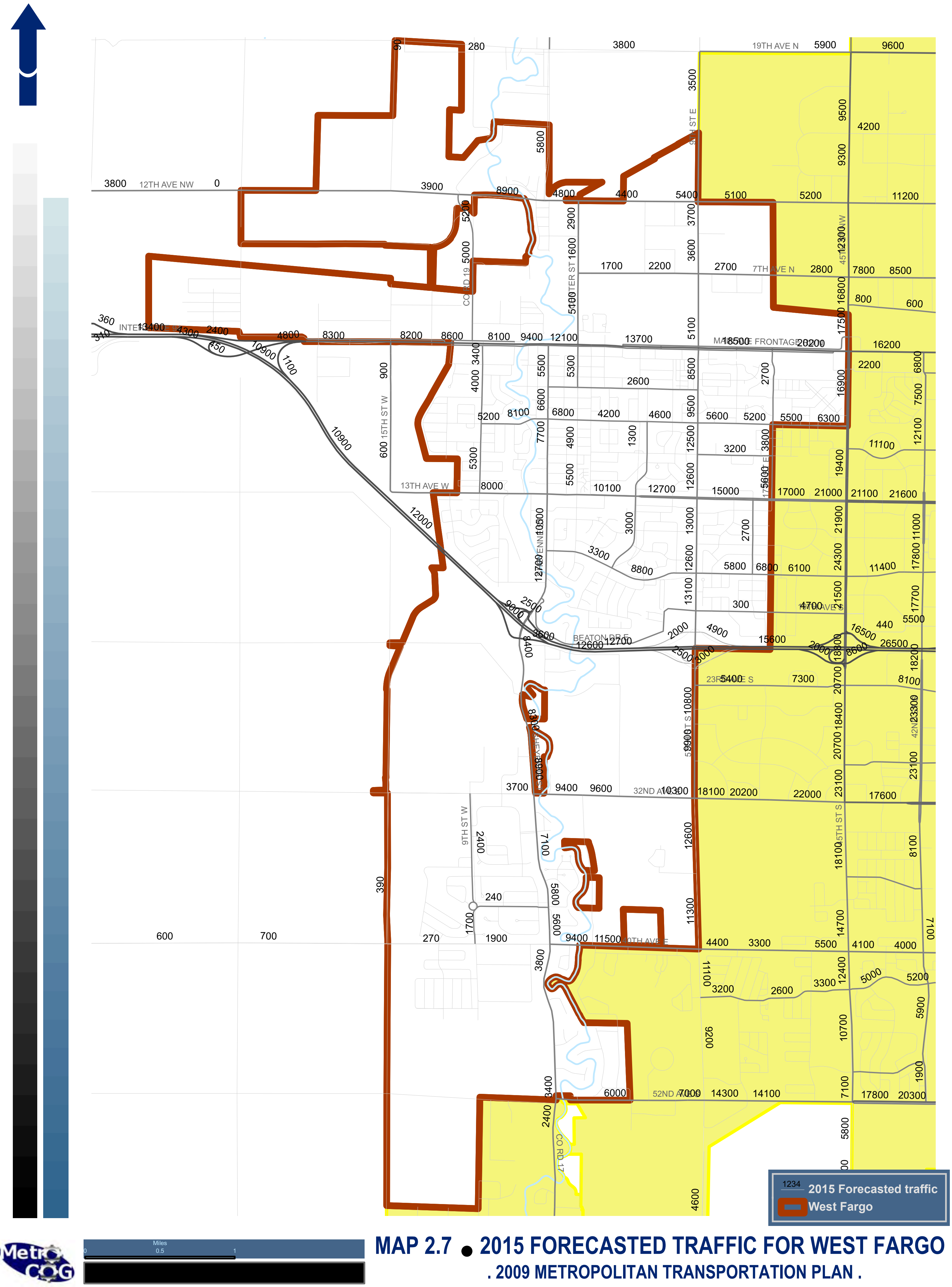
MAP 2.5 ● 2005-2035 HOUSEHOLDS CHANGE BY TAZ

. 2009 METROPOLITAN TRANSPORTATION PLAN .



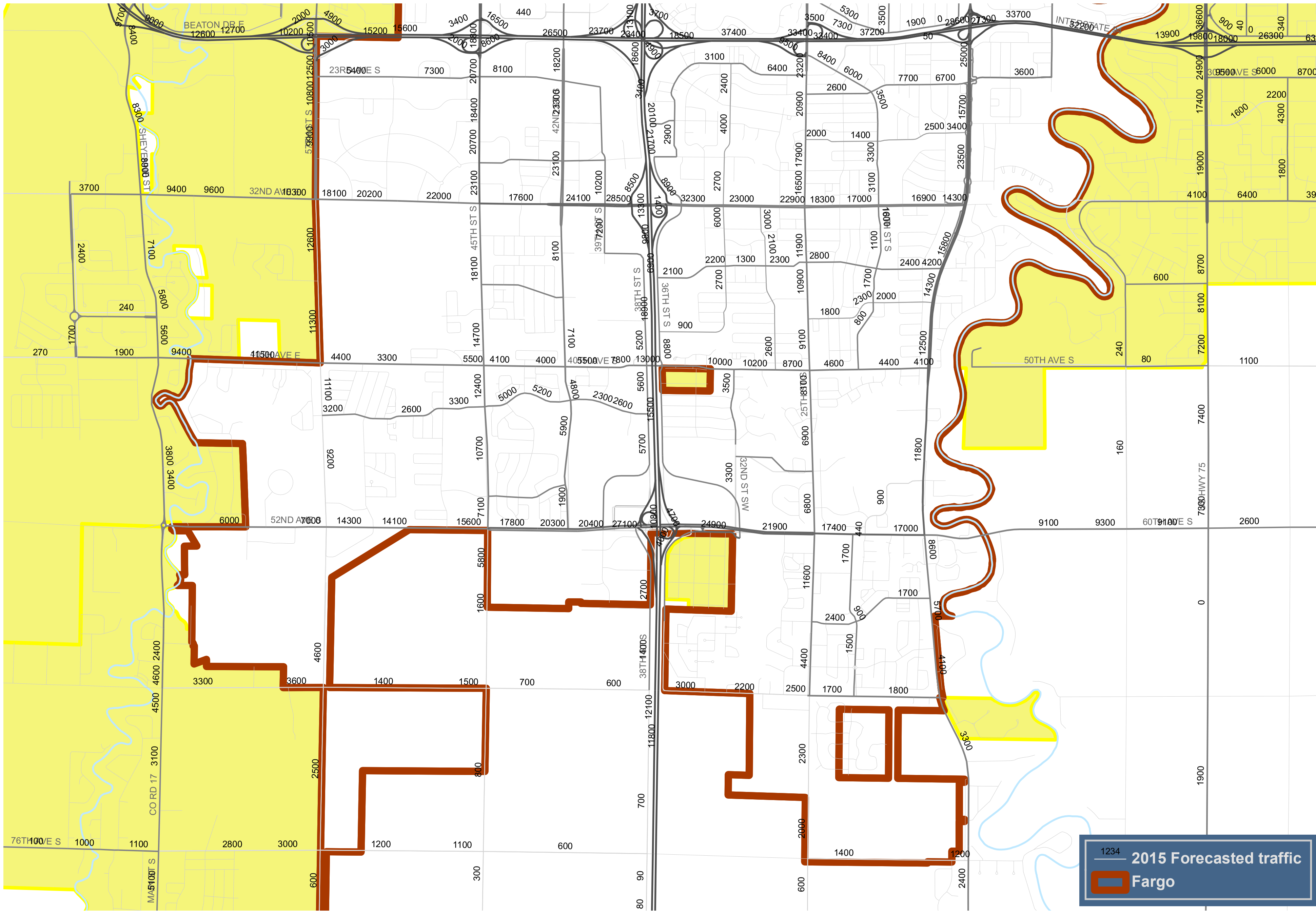
MAP 2.6 • 2005-2035 JOBS CHANGE BY TAZ

. 2009 METROPOLITAN TRANSPORTATION PLAN .



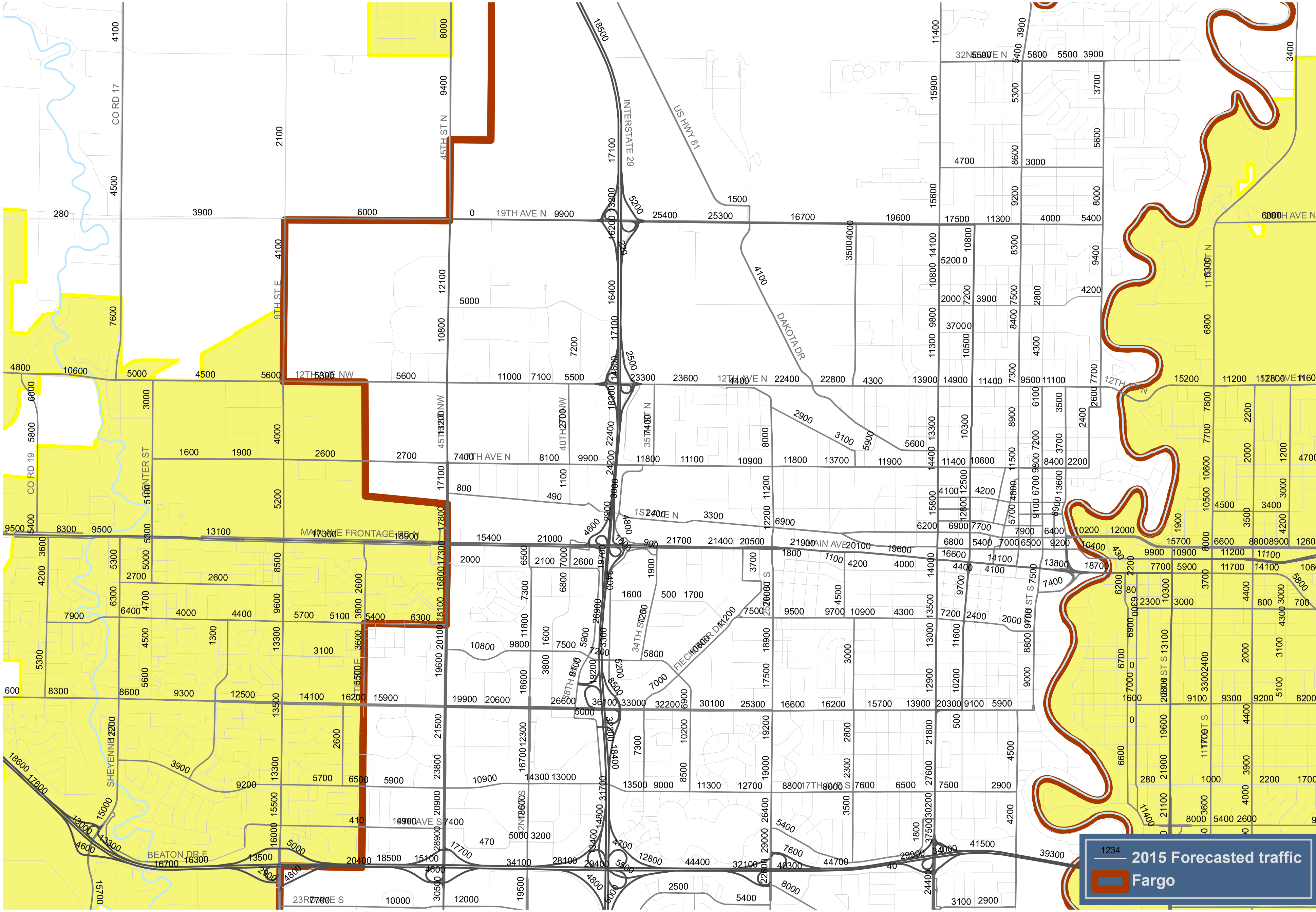
MAP 2.7 • 2015 FORECASTED TRAFFIC FOR WEST FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



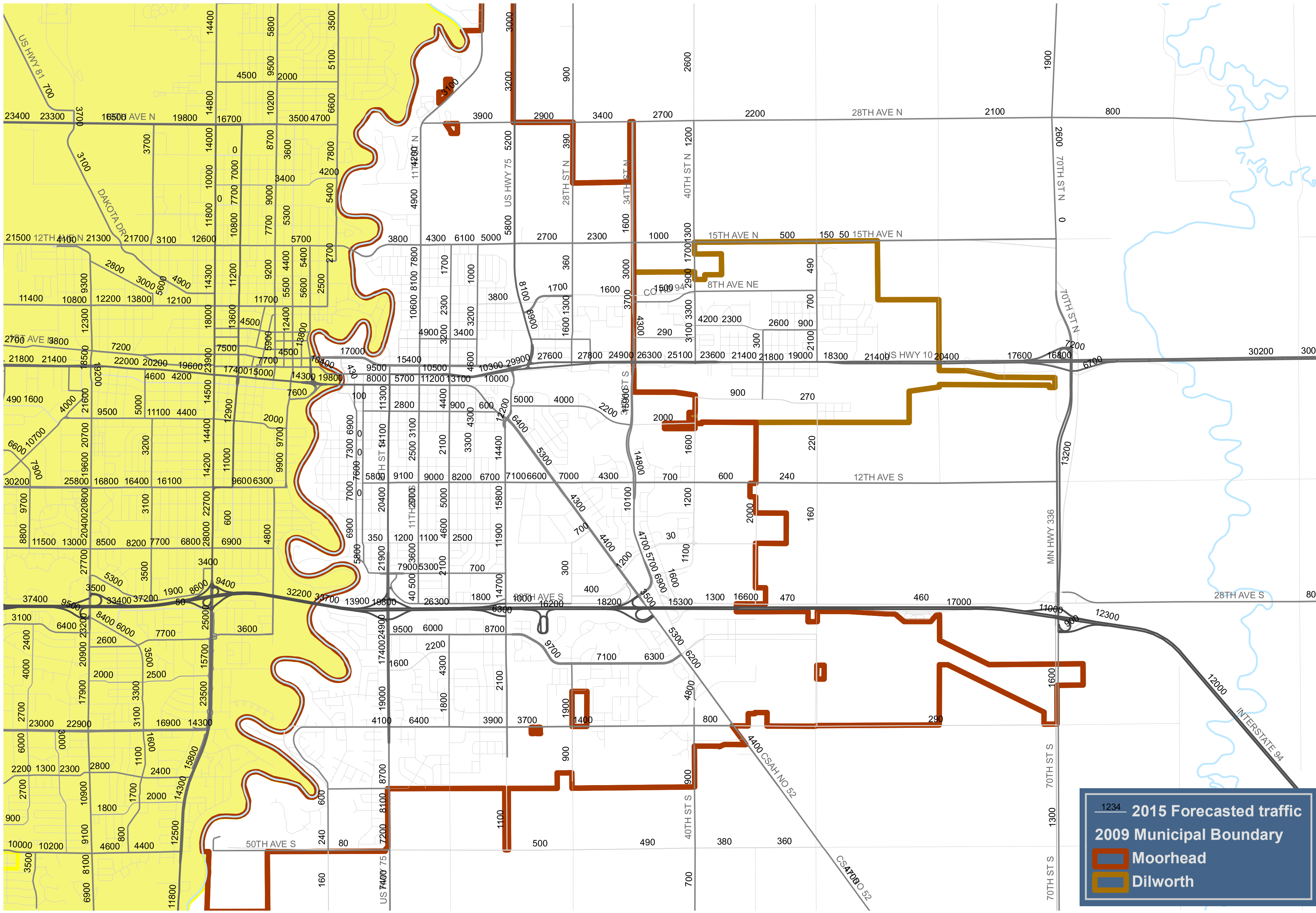
MAP 2.8 ● 2015 FORECASTED TRAFFIC FOR SOUTH FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 2.9 • 2015 FORECASTED TRAFFIC FOR NORTH FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 2.10 • 2015 FORECASTED TRAFFIC FOR MOORHEAD AND DILWORTH

. 2009 METROPOLITAN TRANSPORTATION PLAN .

The 2015 forecast is shown in Maps 2.6 through 2.9. The 2035 forecast (using the projects identified in Chapter 5) is shown at the end of Chapter 5. The Alternative B scenario is discussed in more detail in Chapter 6.

Project Identification

The 2035 modeled traffic (using the 2015 network and 2035 socio-economic date) was used to identify future capacity constraints. Looking at the traffic forecast maps on the previous pages, potential roadway investment projects can be identified based on future modeled levels of service.

Following the development of the Chapter 5 project lists, the model was used again to model future ADT using the 2035 socio-economic data on the 2035 network. Those maps are located at the end of Chapter 5.

It is one thing to know where a project is needed, but quite another to know exactly what to do about a projected problem. A methodology to evaluate potential projects was needed.

Project Evaluation

Once potential projects have been identified, they need to be evaluated to determine the most appropriate course of action. It is not enough to know that there may be roadway congestion along a certain corridor without knowing what could be done to mitigate the capacity issue. Identifying the most appropriate solution will help local government invest the public's money most efficiently.

The Federal Highway Administration and State Departments of Transportation have used, for several years, a Congestion Management Process (CMP) to evaluate improvement strategies. The CMP, which has evolved from what was previously known as the Congestion Management System (CMS), is a systematic approach, collaboratively developed and implemented throughout a metropolitan region, that provides for the safe and effective management and operation of new and existing transportation facilities through the use of demand reduction and operational management strategies. The CMP is required to be developed and implemented as an integral part of the metropolitan planning process in Transportation Management Areas (TMAs) – urbanized areas with a population over 200,000, or any area where designation as a TMA has been requested. Although the CMP is not required in non-TMAs like the F-M area, the CMP represents the State DOT's current practice in addressing congestion, and should be considered in metropolitan areas that are facing current and future congestion challenges. Current population forecasts predict that the Fargo-Moorhead region will surpass 200,000 residents by 2020, at which time Metro COG will need to have a CMP in place. By beginning the establishment of the process now, Metro COG anticipates that final implementation of its CMP in 2020 will be made more efficiently and effectively for its member jurisdictions.

The CMP is a 7-step process that develops, institutes, and monitors performance measures over an identified area or network (for more information, visit http://www.fhwa.dot.gov/resourcecenter/teams/planning/cms.cfm). In this document, the development and identification of performance measures is discussed in Chapter 3. But here it is important to discuss some of the strategies used to manage the transportation system. To that end, Metro COG has identified the following toolbox of improvement strategies as a framework for addressing roadway congestion issues:

Congestion Management Toolbox

1. Traffic Operations Measures
2. Travel Demand Management measures
3. Transit operational and/or capital improvements
4. Bicycle/Walking improvements and encouragement
5. Growth management, including land use changes
6. Access management
7. Intelligent Transportation Systems
8. General purpose capacity expansion

Metro COG envisions that when cities and agencies find themselves considering roadway capacity projects, that they would use this toolbox as a checklist, giving explicit consideration to each strategy. Not every strategy will be right for all projects, and some strategies may be only partially effective. But it is important that each strategy be evaluated for effectiveness. The intent is not to dictate specific strategies, but instead, to encourage Metro COG member jurisdictions to implement the most appropriate and cost effective strategies for every project. For example, it is possible that a Traffic Operations Measure may adequately address a particular issue, in which case there may be no need to look for TDM or Capacity-Adding solutions.

Some of the strategies within the toolbox are briefly defined here, though additional strategies as determined applicable should be evaluated:

1. **Traffic Operations Measures**
   - *Parking Management*

     Parking requirements can be adjusted for factors such as availability of transit, a mix of land uses, or pedestrian-oriented development that may reduce the need for on-site parking. This encourages transit-oriented and mixed-use development. Providing preferential or free parking for High Occupancy Vehicles (HOVs) can encourage ridesharing and reduce Vehicle Miles Traveled (VMT). Peak period on-street parking restrictions can free up space for an additional travel lane, bus, or HOV lane. Rigid enforcement is necessary. Costs will include design, construction, and maintenance costs for signing and striping.

   - *Goods Movement Management*

     Managing the time and location of truck deliveries and pick-ups may help minimize congestion in business districts. Buy-in from the private sector will be important, as will enforcement.

   - *Traffic Calming*

     This slows down and reduces traffic in a specific area, improving pedestrian safety, reducing congestion, and improving the overall livability of the area. Lane narrowing, road diets, and reduced building setbacks are all traffic calming measures in addition to the more typical treatment measures such as curb extensions, speed tables, etc.

Traffic calming measures can cause undesirable displacement of traffic onto parallel corridors. Public buy-in is important. Costs are generally minimal, and vary by design.

2. **Travel Demand Management Measures**
   - *Ridesharing*
     This is typically arranged / encouraged through employers or transportation management agencies (TMA), which provides ride-matching services. It can reduce vehicle-miles-traveled and reduce the percentage of single-occupant vehicles. There will be start-up costs in the first year for the private sector, but second year costs tend to decline.

   - *Alternative Work Hours*
     This allows workers to arrive and leave work outside of the traditional commute period. It can be on a scheduled basis or true flex-time arrangement. Participants can experience improved travel times. There are no capital costs, but there are potential costs associated with outreach, publicity, and costs to the employer associated with accommodating alternative work schedules.

   - *Telecommuting*
     Employees work at home instead of commuting to the office. They might do this all the time, or only a few days per week. There are often first-year implementation costs for the private sector, but second year costs tend to decline. Vehicle Miles Traveled and Single Occupant Vehicles will decline.

3. **Transit Operational and/or Capital Improvements**
   - *Increase Bus Frequency or Coverage*
     This provides better accessibility to transit for a greater share of the population. Increasing bus frequency reduces the time-cost of taking transit, making it a more attractive transportation choice. Express service (i.e., with limited stops) should be considered for major trip attractors. Implementation may take several years if additional buses are necessary, and transit operating costs will increase.

   - *Reduce Transit Fares*
     This encourages additional transit use by reducing the out-of-pocket costs for choosing transit. The fare reduction can be general, or targeted to a specific employer. Transit will lose farebox revenue unless the loss can be offset through operating subsidies.

   - *Implement Park-and-Ride Lots*
     These are particularly helpful for longer distance commutes from the exurban area. Effectiveness could be increased when used in conjunction with High-Occupancy-Vehicle lanes or other transit advantage such as signal priority. Costs will include the physical costs of the lot and shelters.

4. **Bicycle/Walking Improvements and Encouragement**
   - *New Sidewalks and Pedestrian Connections*

Providing a contiguous sidewalk network increases pedestrian safety and encourages pedestrian trips. Sometimes important connections can be made that provide a competitive advantage to walking trips versus driving. Sidewalks should be ADA compliant. Improved safety features such as pedestrian crossing signals at roadway intersections, pedestrian islands, curb extensions, lighting, or raised crosswalks may also be necessary.

- *Improved Bicycle Facilities*
  Bicyclists can ride on any roadway, but providing additional facilities or safety features can encourage mode shifting from automobiles. Providing and identifying a contiguous bicycle network is an important element. Striping on-road bike lanes can often be done without increasing overall roadway width. Signed-Shared roadways are possible with wide curb lanes. Other important considerations include signage, pavement quality, and availability of bike racks. Some capital costs are likely. Additional right-of-way or pavement improvements may be necessary.

- *Exclusive Non-Motorized Right-of-Ways*
  Green space, parks, and abandoned railways can provide important opportunities for bicycle network connections and give bicycles an important competitive advantage over automobiles. Right-of-way, construction, and maintenance costs are necessary considerations.

5. Growth & Land Use Management

- *Pedestrian Oriented Development*
  Maximum block lengths, building setback restrictions, and streetscape enhancements are examples of design guidelines that can encourage more pedestrian activity. The overall goal would be to discourage automobile use for short trips, such as in a downtown or other compact, mixed-use area. Capital costs are largely borne by the private sector, but public incentives may be necessary.

- *Mixed-Use Development*
  This allows some trips to be made without automobiles. People can walk to restaurants and other services rather than use their vehicles. Some mode shifting is likely to occur, and vehicle miles traveled should decrease. Public economic incentives may be necessary to encourage developer buy-in. Local ordinances should be reviewed to ensure consistency.

- *Infill and Compact Development*
  This takes advantage of infrastructure that already exists, rather than building new infrastructure on the fringes of the urban area. It can increase transit, walking, and bicycling trips and reduce vehicle miles traveled. Economic incentives may be necessary to encourage developer buy-in. Local ordinances should be reviewed to ensure consistency.

- *Transit Oriented Development*
  This clusters housing and/or businesses near transit stations in a highly walkable environment. It can increase transit trips and

decrease vehicle trips. Economic incentives may be necessary to encourage developer buy-in. Local ordinances should be reviewed to ensure consistency.

6. **Access Management**
   - *Left Turn, Curb Cuts, and Driveway Restrictions*
     Turning vehicles can impede traffic flow and are more likely to be involved in crashes. By limiting the locations at which left turns can be made, the carrying capacity of roadways can be improved and accident rates can be reduced. Costs can range from simple striping or signage to installation of median barriers.

   - *Minimum Intersection/Interchange Spacing*
     This reduces the number of conflict points and merging areas, which in turn reduces incidents and delay. Roadway carrying capacities can increase, improving travel times and reducing delays for through traffic. Costs are mostly in the design.

   - *Collector-Distributor Roads*
     These are used to separate exiting, merging, and weaving traffic from through traffic at closely spaced interchanges. Improved mobility and reduced crashes can result. Additional right-of-way may be necessary, as well as design and construction costs.

   - *Auto Restriction Zones*
     This refers to any land area where automobile traffic is regulated, controlled, or restricted in some manner. A variety of techniques can be used to accomplish this including physical barriers, parking controls, exclusive use lanes, and turn prohibitions. They are most often used to facilitate existing pedestrian, bicycle, or transit movements. Complete prohibition of automobiles is often not necessary to achieve the desired results. Costs vary by size and purpose of the ARZ. Public-sector buy-in is crucial.

7. **Intelligent Transportation Systems**
   - *Traffic Signal Coordination*
     This improves traffic flow and reduces emissions by minimizing stop times. It is fairly easy to implement, but may involve some capital costs if the signal controllers or bungalows are not set up for coordination.

   - *Ramp Metering*
     Ramp meters allow freeways to operate at their optimal flow rates, thereby speeding travel and reducing collisions. Capital costs can be significant, and a centralized control system is necessary.

   - *Traveler Information Systems*
     This provides information and data to travelers, such as real time speed estimates, on the web, over wireless devices, or through roadside dynamic message signs. It can also provide transit vehicle locations, advanced road closure notices, or suggest alternative routes. It reduces travel times and delays, and can lead to some

mode shifting. Design, implementation, and operations costs are variable.

- *Incident Detection and Management*
  This is an effective way to alleviate non-recurring congestion. Systems typically include video monitoring, dispatch systems, and sometimes roving service vehicles. It can reduce accident delays and reduce travel times. Capital and operating costs are variable, and can be substantial.

- *Network Surveillance and Control*
  The traffic environment can be monitored through a number of data gathering devices, including CCTV, in-road detectors, or other devices. The information can be made available to any number of agencies, partners, or the general public. The greatest benefit is realized when all the data is sent to a central Traffic Operations Center (TOC) that can also affect network flow, such as turning ramp meters on or off, adjusting traffic signal timings, and using dynamic message signs to suggest alternate routes to drivers. Costs can be significant depending upon the surveillance and control devices used and the staffing needs of the TOC.

- *Congestion Pricing*
  The intent would be to "price" the use of highways and/or certain roadways such that there is a sufficient supply for those willing to pay. Individual drivers will react to the price by either 1) accepting it, 2) adopting another mode of transportation, 3) choosing another route, or 4) forgoing the trip. Congestion can be substantially reduced and revenue is generated for the maintenance of the facility. Pricing can be fairly constant, being reviewed annually, or (if a TOC is present) pricing can be very dynamic, changing with traffic conditions. Implementation costs can be significant and acceptance by the public at large is often difficult to achieve. Furthermore, a centralized information center is important to setting an appropriate cost, which increases implementation costs.

8. General Purpose Capacity Expansion

- *Increase Number of Lanes without Widening Roadway*
  Takes advantage of "excess" width in the roadway cross section used for shoulders, medians, wide driving lanes, or parking lanes. Costs can be minimal, such as restriping. Costs are more substantial if removal of median(s) is necessary.

- *Geometric Design Improvements*
  This includes widening to provide shoulders, additional turn lanes at intersections, improved sight lines, and auxiliary lanes on highways to improve merging/diverging. Traffic flow is often improved. Costs vary by design.

- *HOV Lanes*
  This increases the corridor's carrying capacity while also providing an incentive for single-occupant drivers to shift to ridesharing. These lanes are most effective as part of a comprehensive effort to

encourage HOVs, including publicity, outreach, park-and-ride lots, rideshare matching services, or preferential parking conditions for HOVs. Congestion is often reduced, travel times are improved, and transit use can increase while bus travel times decrease. Enforcement is an on-going cost to consider, along with barriers, right-of-way, and community impacts.

- *One Way Streets*
  These improve the carrying capacity of roadways by reducing turning movement conflicts and simplifying traffic signal timing coordination. Parallel streets can provide opposing one-way movement, or a single corridor can provide "reversible" one-way movement depending on the time of day. Costs include signage and adjusting intersection traffic control devices. There can be community impacts, especially in a business district. Vehicle miles traveled may increase even while travel times decrease. Enforcement will be a on-going consideration.

- *Super Arterials*
  This involves converting existing major arterials with signalized intersections into "super streets" that feature some grade-separated intersections. Capacity and mobility are increased, but costs are substantial. Adjacent properties can be impacted and community buy-in will be important.

- *Add Lanes*
  This is the traditional way to mitigate congestion. Capacity is increased and congestion can be reduced in the short-term. In the long-term, the added capacity can induce travel and congestion can return. In dense urban areas, costs can be very high and there can be environmental and community impacts.

Metro COG will systematically apply this toolbox to projects and studies and encourages its member jurisdictions to do the same.

Roadway congestion issues have already been the subject of detailed corridor studies completed in the metropolitan area. In those cases, the recommendations of the corridor study are incorporated into the project lists in Chapter 5.

Roadway System Needs

The sections that follow analyze some known issues and attempt to identify roadway system needs based on those analyses. Following each discussion, a short assessment table summarizes the options and analysis and measures technical feasibility, based on how construct-able the option is, environmental sensitivity, based on the potential environmental impacts of the option (with input from Metro COG's Environmental Review Group), and Social Acceptability, based on the number of positive or negative responses each option received at a public input meeting held in August 2009 to review the draft version of this document.

Interstate Highways

The Regional Travel Demand Model forecast for both 2015 and 2035 indicates that the majority of future traffic flow issues will be located on interstate mainlines or on interstate ramps. The interstate highways are very attractive transportation facilities because of their higher posted speed limits and relative lack of delay. As the urban area continues to grow, the attractiveness of the interstate highways to travel from one end of the urban area to another will also increase. Added to this increasing local demand for interstate capacity is the growth in traffic that passes through the F-M region on the highways, such as interstate freight.

The importance of the interstate highways respective to the region's economic competitiveness and attractiveness for future development cannot be overstated. It is vitally important that the operational capacity of the interstate highways be monitored and managed so that they continue to provide high-speed travel across and through the F-M urban area.

It must be recognized that there is a limit to how much additional capacity can be added to the interstate highways. There is a limited amount of right-of-way, but, more importantly, the addition of capacity may only induce higher demand for interstate capacity. This "induced demand" phenomenon has been observed and studied in many other locations. When an interstate highway is expanded to relieve congestion, which it does – temporarily – more vehicles are attracted to the highway which leads to even more congestion within a few years of the expansion project.

Managing the supply of interstate capacity alone will not solve the congestion problem. The demand for interstate capacity must also be managed.

Managing the demand for interstate capacity can be done in several ways. One method is **road pricing**, which simply means that the roadway user pays for the ability to reduce their travel time. Road pricing is sometimes used in conjunction with high-occupancy vehicle (**HOV**) lanes, such that a vehicle carrying two or more passengers pays less (or nothing) than a single-occupant vehicle. It appears that **ramp metering** can also successfully manage demand for interstate capacity by smoothing the flow of traffic onto the interstate and by imposing a time cost (as opposed to a monetary cost as in road pricing) on the user. Finally, **zoning** may also help reduce demand for interstate capacity. If the distance between jobs and population is decreased through more mixed-use developments and wide-spread commercial nodes, the need to travel long distances also decreases.

At the same time that demand for interstate capacity is being managed, it will be important to ensure that the arterial network is functioning as efficiently as possible. The Metro Operations Plan has several recommendations for maximizing arterial operations, such as signal coordination, establishment of a regional traffic operations center, and other ITS intensive initiatives. The prevalence of train traffic in the metro area can hinder arterial operations, especially in areas with few grade separated arterials. Methods for mitigating the impacts of train operations should be explored.

As of the printing of this document, Metro COG continues to work closely with its jurisdictional partners on an interstate operations study designed specifically to measure future operational issues and identify recommendations to address them. However, it is safe to say at this point that future interstate projects will need to address both the supply and demand for interstate capacity.

Recommendations:

1. Complete the Interstate Operations Study and implement its recommendations
2. Address both the supply and demand for interstate capacity
3. Attempt to maximize the efficiency of arterial operations, especially in the peak travel times

Table 46. Assessment of Interstate Operations Options

	Capacity Expansion	Road Pricing	Ramp Metering	Zoning
Improves Interstate Operations	Yes, temporarily	Yes	Yes	Possibly
Public Financial Costs	High	Med	Med	Low
Technically Feasible	Yes, but limited	Yes	Yes	Yes
Environmentally Sensitive	No	Yes	Yes	Yes
Socially Acceptable	2 negative responses; 1 positive	1 negative response; 1 positive	2 positive responses	3 positive responses

Regionally Significant Transportation Infrastructure

There are a number of system roadway needs and issue areas that inter-relate with one another. They include:

- Red River Bridge Crossing Corridors
- Perimeter Roadway Network
- Interstate Operations
- Intelligent Transportation Systems
- Security
- Operations and Management of area roadways

This section will synthesize those issue areas into a cohesive vision for the region.

The first issue area is the potential need for an additional **Red River Bridge crossing** in the south metro. The ability to develop Red River bridge crossings has proven difficult given the substantial social, environmental, and fiscal impacts associated with new crossings. Furthermore, implementation of a bridge crossing is often times not feasible because areas adjacent to the river are already developed when the need for a new crossing becomes evident.

In 1997, the City of Fargo undertook a study to identify and preserve at least one new bridge crossing location between 52nd Avenue South and 112th Avenue South, knowing that the crossing may not be needed for 20 years or more. In 2001, Metro COG became involved in the project and Clay County represented the interests of the Minnesota side of the river in the study process. Over the course of six years, three planning project phases, and extensive public input, three potential crossing corridors were identified and evaluated: 1.) 70th Avenue South, 2.) 76th Avenue South, and 3.) a 70th/76th Avenue South Hybrid.

The stakeholders recognized the wisdom of preserving a future bridge corridor even while they did not agree on where the corridor should be. Clearly, planners cannot simply walk away from the concept of an additional south bridge corridor, because neither governing body has recommended the "No Build" alternative. Yet, planning for a future corridor is difficult given the lack of consensus as to the location.

A 2006 Metro COG modeling project indicated that, under full-build conditions, there would be little difference between how much daily traffic would be served by a 70th Avenue South corridor versus a 76th Avenue South corridor. The project also indicated that if the metro area continues to grow in the future in a way similar to how it has grown in the past (i.e., the majority of jobs located in Fargo with surrounding communities providing daily workers who migrate into Fargo), then a future south bridge corridor will be important to maintain orderly flow of traffic into and out of Fargo.

Since the completion of the planning study, other issues and concerns have arisen. The Fargo School District has sited a high school on the 70th Avenue Corridor just east of 25th Street. This may impact the appropriateness of preserving a bridge crossing on that same corridor. In 2009, the original 2001 study was re-evaluated in a technical memorandum and Option 3 -- a 70th/76th Avenue South Hybrid -- was removed from further consideration. The memo recommended preserving right-of-way for possible bridges at both 70th Avenue South and 76th Avenue South until more is known about the nature of flood protection projects and consensus is achieved on a final bridge crossing location.

The next issue area is **Perimeter Roadways**. For some time, Metro COG and its member jurisdictions have emphasized the importance of having a high quality, reliable arterial roadway system in the periphery of the urbanized area. This system of roadways was identified as the Metropolitan Beltline and was intended to serve as an alternative route for drivers who wish to bypass the City, or freight haulers who would prefer a route with lower traffic volumes. For example, truckers hauling sugar beets may wish to avoid urban traffic on their way to or from the piling station. This perimeter roadway would provide such a route for them.

The rate at which the metro area has grown makes identifying perimeter roadways difficult. Ten years ago, Fargo's 52nd Avenue South was considered part of the Metropolitan Beltline. Today it is a quickly urbanizing corridor that no longer provides an opportunity to bypass the urban area. If investments had been made in 52nd Avenue South – upgrading pavement thickness to allow it to carry heavier trucks, for example – would that investment have been cost effective knowing that by 2009 the corridor can no longer serve its perimeter movement function?

Though the idea of identifying perimeter roadways has been around for some time, it has resulted in little or no discernable investments being made in identified perimeter roadways. Having never been fully realized, the original concept of identifying Perimeter Roadways has lately come into question. Why do it? What does it really mean?

The next issue area deals with **Interstate Operations**. Without question, the I-29 and I-94 corridors through the F-M metropolitan area carry more traffic than any other corridors. They are important not only to residents of the F-M area, but they are also important state, regional, and national transportation infrastructure that connect the F-M area to the rest of the world. Preserving the efficient movement of vehicles and freight through the F-M area via the interstate highways is one of the most important local transportation priorities.

Over the past decade, both the NDDOT and Mn/DOT have spent considerable resources to help maintain smooth, efficient traffic flows on the interstates. But, it must be recognized that there is a limit to how much new capacity can be added within the existing right-of-way. Land use adjacent to the corridors is largely developed within the urban core. If operations are to be preserved, other means of system preservation may be necessary. There have been some discussions of the potential need for an Interstate Bypass or Reliever Route around the metro area. An Interstate Bypass would be built to Interstate standards, while a Reliever Route might be a County Highway or other arterial that provides some time saving advantage to the interstate traveler.

Much like the original Perimeter Roadway concept, an Interstate Reliever Route or Bypass would allow interstate traffic to avoid congestion and facilitate the efficient movement of traffic around the perimeter of the metro area. These two ideas, while slightly different in intent, are very similar. A Perimeter Roadway is not necessarily an Interstate Bypass, but an Interstate Bypass is, by definition, a Perimeter Roadway. An Interstate Reliever Route is essentially a Perimeter Roadway.

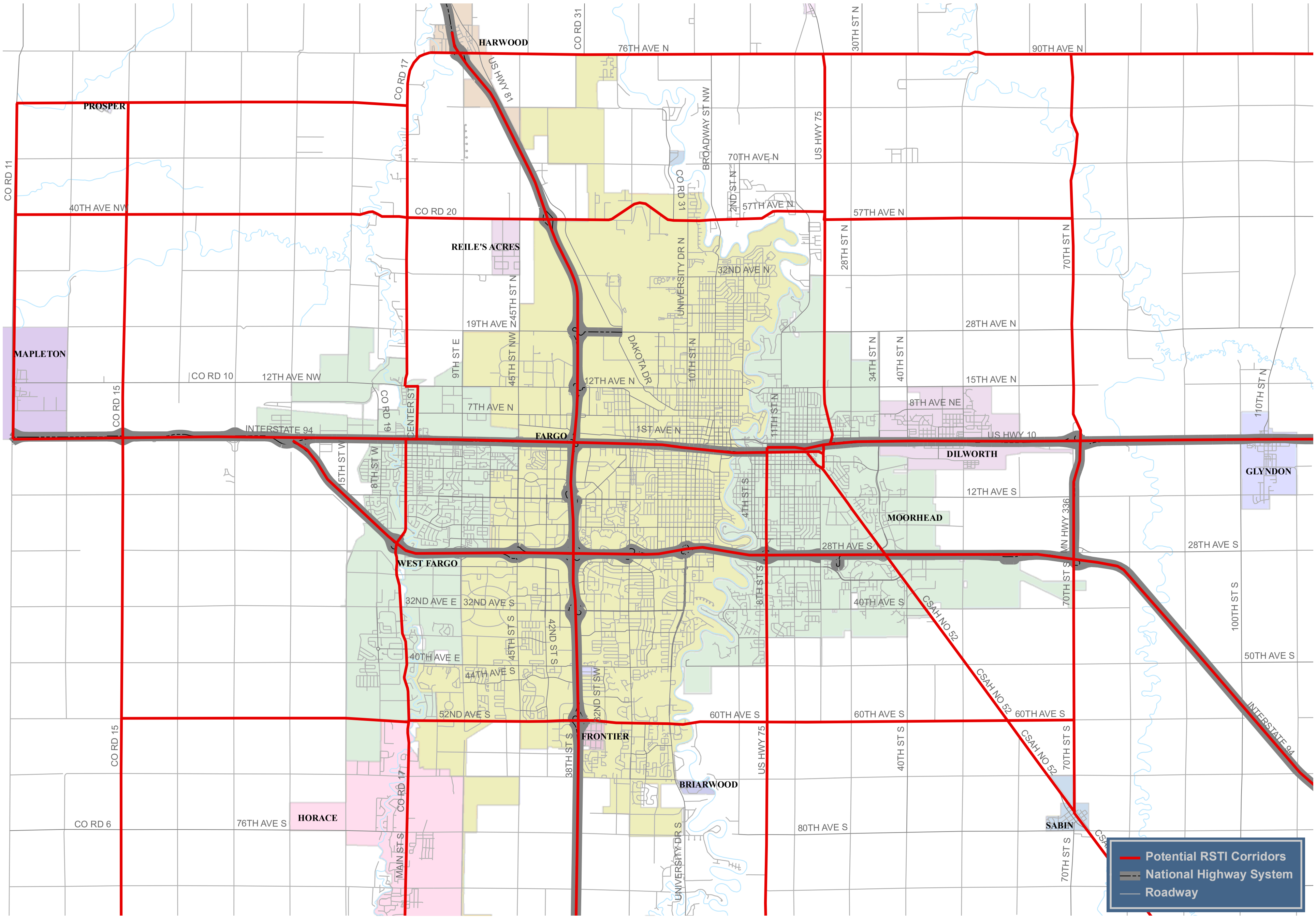
There are some issues to consider when it comes to successful, large scale diversion of traffic around the metro area.

First, there are some residents who feel that diverting traffic away from the city may not be a desirable goal. Through-traffic provides revenue to local businesses, particularly those adjacent to the interstates. As a matter of policy, do the local jurisdictions wish to make it easier for through-traffic to avoid the urban area?

Second, a successful Bypass or Reliever Route that diverts significant traffic away from the urban area will quickly become a target for additional land-use development, perhaps exacerbating urban sprawl and defeating the intent of the corridor to allow the urban area to be avoided. Knowing that transportation facilities are an input into land-use planning, would the development of an efficient Bypass or Reliever Route lead to costly "leap frog" development?

Third, the relative lack of Red River bridges and interstate overpasses severely limits the number of corridors which can serve as Reliever Routes without the need for substantial public investment. Is the development of an efficient Reliever Route or Bypass worth the cost?

In 2008 Metro COG staff began a systematic evaluation of the current state of interstate operations, as well as the development of (in cooperation with ATAC) a traffic simulation model to forecast future interstate traffic operations. As pointed out in the previous analysis section regarding interstate operations, in the long-term system capacity will not be enough to accommodate the projected supply. Interstate operations can only be protected by addressing the demand for interstate capacity, through ramp metering, congestion pricing, or some other means of controlling the use of the interstates for local trips. A robust **incident management** program can also help preserve and protect valuable interstate capacity, as has been shown in other cities. This is not to suggest that at some point in the future additional interstate-grade transportation facilities will not be needed within the urban area. On the contrary, it would be prudent to preserve corridors for just such a possibility.



MAP 2.11 ● POTENTIAL RSTI CORRIDORS

. 2009 METROPOLITAN TRANSPORTATION PLAN .

But within the current interstate right-of-ways, there is a finite amount of space for additional traffic lanes and limited acreage for additional interchanges based on existing arterial roadway alignments. In short, the supply of interstate existing capacity is running out while demand for interstate capacity continues to grow, and the cost of providing additional interstate capacity would be very expensive.

The next issue areas can all be considered together – they are **ITS, Roadway Operations and Management, and Security.** These three issue areas are very much related. The purpose of Intelligent Transportation Systems (ITS) is to help ensure efficient roadway operations and management. Within the ITS plan, emphasis is placed on inter-jurisdictional signal coordination, operations, and monitoring of traffic conditions. ITS, in other words, is one means by which efficient roadway operations and management can be further realized.

Locally, security has been defined in terms of ensuring that the transportation system continues to function during times of natural or man-made disasters through system management and investments in critical **Regionally Significant Transportation Infrastructure (RSTI)**. ITS has also been identified as playing a role in this regard. Dynamic Message Signs (DMSs) and other traveler information systems can alert drivers of evacuation or emergency detour routes. Putting all of these ideas together, a picture of regional transportation needs begins to emerge. There is a need for regional arterial roadway corridors that are highly contiguous across multiple jurisdictions, and which can operate efficiently on a day-to-day basis, but could also serve as emergency detours or evacuation routes during times of disaster. It would be important that these corridors be flood protected or built at elevations high enough that they would not flood in a 100-year flood event. Prior to being urbanized, these corridors should be identified and preserved. It is possible that some of these non-urban identified RSTI corridors could act as Reliever Routes or Perimeter Roadways for truckers or drivers who wish to avoid urban traffic.

These RSTI corridors are more than typical urban arterials. Their regional continuity would make them highly attractive for many trip purposes and one could expect longer average trip lengths than found on the average urban minor arterial. The efficient operation of these corridors would be a regionally significant issue, and so they may be high priority corridors for the deployment of ITS traffic monitoring and control devices.

The scale of this identified network should be smaller than the typical 1 mile spacing of the urban arterials – perhaps one RSTI corridor every 2 to 4 miles. Given the regional nature of the corridors and anticipated longer trip lengths, strict access management should be employed where possible to help maintain higher travel speeds. Thicker pavement may be desired on RSTI corridors so that they can handle truck traffic if they need to serve as emergency detours. To preserve efficient operations, ITS, cross-jurisdictional signal coordination, and traffic monitoring should be employed on those sections of the Regional Arterial network in areas that are already built, but where access management standards may not be met. These Regional Arterial corridors would be akin to Category 3 corridors in Mn/DOTs Access Spacing Guidelines (Table 16).

Like the functional classification system, RSTI corridors should only end at other RSTI corridors. A framework for RSTI corridors have been identified on the Map 2.11.

The final determination of RSTI corridors should be done only after careful review and deliberation by the ITS Committee, the Traffic Operations Group, and the regional Transportation Technical Committee. Applying the RSTI moniker to a corridor would mean that the corridor would be held to a higher standard of operations, management, continuity, and access control. Some corridors may require additional public investment to meet these standards. Region-wide buy-in from appropriate agencies and staff will be important to successful implementation of the RSTI concept.

Recommendations:
1. Metro COG should work with local stakeholder groups to identify RSTI corridors within the urban area and define their operational standards, including pavement thickness, roadway elevation standards, and ITS priority.
2. RSTI corridors outside the urban area can be identified and preserved with limited access and sufficient right-of-way until the area is urbanized.
3. If consensus is achieved as to the future location of a new south bridge corridor, full consideration should be given to including it as part of the RSTI network.
4. Sufficient planning and investment should be done so that RSTI routes would serve as emergency detour and evacuation routes. It should be remembered that RSTI routes will also serve to deliver needed supplies or services to the area in an emergency situation.
5. Metro COG should collaborate with its cognizant agencies to identify and preserve corridors for possible future urban interstate-grade roadways.

Table 47. Assessment of RSTI and other potential regional roadway improvements

	RSTI	South Bridge	Perimeter Roadways	Interstate Reliever Route
Improves Arterial Connectivity	Possibly	Yes	Possibly	No
Improves Transportation Security	Yes, if RSTI designation is tied to design standards like ITS and roadway elevation minimums	Possibly	Possibly	Yes, but impact is localized
Facilitates Freight Movement at Perimeter of Urban Area	Yes	Yes, but only until the area urbanizes	Yes	Yes
Improves Urban Interstate Operations	Possibly, if they interchange with the Interstate(s)	No	Possibly, if they interchange with the Interstate(s)	Yes
Improves Operations of Urban Arterials	Yes	No	No	No
Technically Feasible	Yes	Yes	Yes	Yes
Environmentally Sensitive	Yes, if operational improvements reduce traffic delays	Yes, if it reduces traffic delays and/or vehicle miles traveled	Possibly, if it reduces traffic delays	Possibly, if it reduces traffic delays
Socially Acceptable	1 negative response; 3 positive	1 negative response; 3 positive	1 negative response; 1 positive	2 positive responses

12^{th} Ave N / 15^{th} Ave N Toll Bridge

The existing toll bridge is owned and operated by The Bridge Company. A contract between The Bridge Company and the cities of Fargo and Moorhead specifies that ownership of the bridge will pass from The Bridge Company to the cities as early as 2013. However, a clause within the contract allows it to be extended for five additional years if The Bridge Company has not yet recovered their investment and a reasonable rate of return.

The travel demand forecast model indicates that if the toll is removed from the bridge when it passes into possession of the cities, traffic will increase dramatically – from an estimated 1,475 vehicles per day in 2005 to over 15,000 vehicles per day in 2035. There clearly appears to be significant latent demand for additional bridge capacity between the two cities. However, expanding bridge capacity at this location is not a simple matter. As discussed above in regard to the interstate highways, the most efficient use of any facility considers both the supply and demand for capacity. This particular bridge connects two largely residential neighborhoods. The demand for bridge capacity appears to be driven by the developments that lie west (e.g., NDSU) and east (e.g., Easten commercial area) of the residential neighborhoods. Expanding bridge capacity may solve the problem on the bridge, but may lead to capacity issues within the neighborhoods where there is little remaining right-of-way to add additional lanes, and may induce even more demand for the bridge corridor leading to more congestion.

The simplest solution involves maintaining the road price on the bridge, possibly at a reduced rate. At the current toll of 75-cents the bridge is being severely under-utilized. At a zero toll the bridge is predicted to be severely over-utilized. The most appropriate toll lies somewhere in between – perhaps 25 cents. The overall goal would be to allow a sufficiently reasonable utilization of this transportation resource without fostering a level of traffic that is inappropriate for the surrounding land use and existing local road network. The toll revenue could be used to help pay for the maintenance of the bridge. There does appear to be sufficient excess capacity on the three downtown bridges to accommodate traffic displaced by the toll if it remains.

Table 48. Assessment of Toll Bridge Options

	Remove Toll	**Keep Toll**	**Lower Toll**	**Remove Toll and Traffic Calm**
Reduces Congestion	No	Yes	Yes	Yes
Allows Appropriate Use of Bridge	No	No	Yes	Yes
Net Public Financial Impact	Neg	Pos	Pos	Neg
Technically Feasible	Yes	Yes	Yes	Yes
Environmentally Sensitive	No, induces congestion	Yes	Yes	Yes
Socially Acceptable	2 negative responses; 1 positive	3 positive responses	2 negative responses; 1 positive	1 negative response; 2 positive

Recommendation:

1. When the bridge passes into public ownership, keep the toll, but lower it to a level that fosters an appropriate level of usage.

Freight

There appears to be some desire among local businesses to improve access to intermodal freight facilities. This was heard both from the focus groups that were convened as part of the planning process for this document, as well as from the Intermodal Freight Advisory Committee. In 2004, the Intermodal Freight Advisory Committee explored the possibility of locating a larger intermodal yard in the F-M area. Increasing competitiveness requires a decrease in shipping costs for companies that transport resources into the metro area and for companies that ship finished goods and bulk goods into North American and international markets. Communities which can provide ready access to the efficient shipment of goods are at a distinct competitive advantage. To be successful, a local intermodal facility must meet one of two criteria: 1) it must have traffic volume large enough to generate efficient shipment sizes to final destinations without being consolidated with other traffic and, 2) it must have ancillary services available to the railroad that would give it a reason to stop and receive extra cars. Additionally, the Burlington Northern Santa Fe Railway Company (BNSF) offers the following additional criteria: 1) Service to market that does not overlap with an existing intermodal facility, 2) Weekly minimum volumes that allow trainload volumes and economic efficiencies, 3.) An inbound and outbound balance, 4) Sustainable growth over the long term.

The existing Dilworth intermodal facility is relatively small – only 7 acres in size. In 2003, the Dilworth intermodal facility, which is operated by Trailer Transfer, had 8,900 lifts. Assuming two lifts per container, that translates into about 4,450 containers inbound and/or outbound from the Dilworth yard. In 2009 Metro COG received information that the current terminal operates only as a "paper ramp." BNSF markets the facility as an intermodal hub, but all containers are actually trucked to the BNSF terminal in St. Paul where they are loaded onto trains. In effect, the existing Dilworth intermodal yard is not used at all as a transfer facility or intermodal yard. At one time, the Dilworth yard was performing 17,000 lifts per year, so there is definite growth potential at the current site. However, there are some barriers to using the Dilworth intermodal yard. First, eastbound container trains no longer stop in Dilworth. This decision was made by BNSF, who is under contract by the large steamship companies, in order to improve the freight through-put for the west coast shipping yards. However, a 2001 freight study indicates that 65% of all Fargo-Moorhead outbound container freight is destined for locales in the eastern U.S. If a Fargo-Moorhead company wishes to ship a container or trailer east, they must truck that container to the Minneapolis intermodal yard, which increases their drayage costs. Second, the Dilworth yard is constrained from a land development or expansion perspective and will most likely never get any larger at its present location. There are other barriers as well. The steamship companies must provide the containers in which to ship the freight and there is currently a shortage of containers as freight volume at larger U.S. intermodal yards and in foreign countries like China and India increases. The in-balance of freight movement from the Dilworth yard (predominantly outbound) means that containers shipped out rarely come back to be refilled.

The 2004 study did estimate (based on extrapolated survey data) sufficient local demand to make a larger F-M intermodal yard economically viable. However, larger trends within the economy seem to make such a yard unlikely. The railroads prefer spacing intermodal facilities at least 500 miles apart. The F-M area is almost exactly half way between the Minneapolis intermodal yard (about 240 miles away) and the Winnipeg intermodal yard (about 220 miles away). Intermodal shipping containers are scarce and are increasingly attracted to the growing economies of Asia. But perhaps more importantly, the F-M area simply does not have the size to be of significant interest to the steamship or railroad companies. In conclusion, the F-M area does not currently ship enough freight to warrant a larger intermodal yard, thus putting the area at a competitive disadvantage which will make it difficult to attract large freight shippers. There is some sentiment that if local shippers could organize into a cooperative or coalition, they may place themselves in a better position to attract the attention of and negotiate with the railroad. A freight shipper's cooperative could also help attract large regional manufacturers that could become potential generators of inbound freight.

More broadly, the movement of goods into, out of, through and around the metro area is a matter of concern. As noted previously, the economic competitiveness of the region in a world-wide economy is dependent (at least partially) upon the efficient movement of freight – especially truck freight. In 2007, Metro COG completed the Fargo-Moorhead Freight Assessment, which sets goals and objectives for building a freight planning program. Progress toward achieving those goals has been steady, but measured. Metro COG staff has found only limited support among private freight generating or freight hauling companies for greater public involvement in general freight trucking issues. This may be due, in part, because (as reported at the Freight Issues Focus Group) there are no perceived wide-spread regional truck movement issues. A few localized, very specific issues were raised dealing with curb radii at specific intersections or low-hanging overhead power lines. Overall, the generators and movers of truck freight appear to be satisfied with the levels-of-service provided by the existing roadway network. Subdued interest from private companies may also be a function of the lack of understanding regarding Metro COG as an organization and its role in surface transportation. In that case, sparking greater interest will take some time as Metro COG works to build a mutually-respectful relationship with the freight industry. In any case, Metro COG will continue to pursue the goals and objectives of the 2007 Freight Assessment. Even though truck movement may not be an issue today, transportation issues may exist in the future. Therefore Metro COG should continue to pursue a mutually beneficial relationship with the freight sector to facilitate a coordinated and inclusive process.

More recently, Metro COG completed a comparison study of freight planning for several MPOs in the upper Midwest. This study was initiated in response to the FHWA planning review of Metro COG, completed in the summer of 2008. The study compared and contrasted Metro COG's current freight planning practices with those of Sioux Falls, SD; Omaha, NE; and Des Moines, IA. Many similarities were noted between Metro COG's freight planning efforts and those of the other MPO's. However, some key differences were also brought to light. All three MPO's have representatives of the freight community as a member on their Transportation Technical Committee, their Policy Committee, or both. Sioux Falls, for example, has a representative of a private transportation carrier, a railroad representative, and an air transportation representative on their Technical Advisory Committee. Omaha has a representative of the Airport Authority on their Technical Advisory Committee. In Des Moines, the Aviation Director is a non-voting member of the Policy Committee, while the Deputy Aviation Director is a non-voting member of the Transportation Technical Committee. This kind of active, continuous interaction between freight movers and public transportation officials may be one of the best ways to build the relationships that Metro COG seeks with regional freight companies.

Table 49. Assessment of Freight Options

	Expanded Intermodal Freight Facility	Freight Representatives on TTC	Freight Component of Travel Demand Model	Regional Freight Shippers Coalition
Freight Shippers Support	Yes	Unknown	Unknown	Yes
Improves Regional Freight Shipping Capacity	Yes	Possibly	Possibly	Possibly
Decreases Regional Freight Shipping Costs	Yes	No	No	Possibly
Technically Feasible	Not Currently	Yes	Yes	Yes
Environmentally Sensitive	Yes, if it reduces number of trucks on highways	No significant impact	No significant impact	No significant impact
Socially Acceptable	2 positive responses	1 positive response	1 positive response	1 negative response; 2 positive

Recommendations:

1. Metro COG should explore possible interest in and the potential for including freight movers on its Transportation Technical Committee.
2. Metro COG should explore the potential of organizing a regional shippers coalition or cooperative, which may carry more weight with the railroad and help attract large businesses that will generate more inbound intermodal freight.
3. Metro COG should continue to pursue the goals of the 2007 Freight Assessment.
4. Metro COG will continue to support the development of a regional freight component to the regional travel demand model.
5. Metro COG will continue to support the expansion of regional intermodal freight shipping capacity.

Downtown Revitalization

Like many cities in the 1980's, Fargo-Moorhead experienced a general transition of commercial interests from the downtown area to newer "suburban" areas. But through a series of initiatives such as the Neighborhood Revitalization Initiative, Downtown Renaissance Zone, Tax Increment Financing tools, new Main Avenue Bridge and bridgeheads, railroad quiet zone, and redevelopment of the Broadway streetscape, downtown Fargo and Moorhead have begun to experience significant reinvestment and infill development. According to the 2007 Downtown Framework Plan, 140 apartment or condo units were constructed or rehabilitated in downtown Fargo between 2000 and May of 2007. Similarly approximately 78 units were built or reconstructed in downtown Moorhead over the same time frame. The same study also reports that "Almost all retail space that has survived from the 60's and 70's era has been improved and reoccupied." Very little vacant downtown retail space remains and lease rates are increasing. Almost all of the redevelopment that has occurred has been compact and mixed-use in nature.

As the downtown area comes back to life, certain pressures are applied to the transportation system. As jobs and households migrate into the downtown area, so too does the demand for roadway capacity. Limited right-of-ways limit how wide roadways can be without significant additional expense and neighborhood disruption. Every additional automobile with a destination downtown requires a place to park.

However, the downtown area does have some significant transportation advantages as well. The density and mixed-use nature of the downtown limits auto-trip generation rates. An automobile is not needed if you can walk to your favorite restaurant. Additionally, the downtown is very well served by public transit. The Ground Transportation Center (GTC) is located in downtown Fargo at NP Avenue and 5th Street. All buses that provide transfer service at the GTC pulse into and out of the facility every 30 minutes. The grid street system favors bicyclists, and pedestrian sidewalks are plentiful. If any area possesses certain inherent characteristics that make mode-shifting, intermodal, and multi-modal transportation options viable realities, that area is downtown.

As downtown redevelopment continues, care should be taken to consider transportation as an important element that can complement the success of such redevelopment.

Recommendations:

1. Implement the recommendations of the 2007 Downtown Framework Plan.
2. Right-sizing properties is important. Large multi-story buildings of offices and commercial property may quickly overwhelm the transportation system. Conversely, increasing densities in areas that have excess transportation capacity may improve the efficiency of the transportation network.
3. Continue to develop ADA compliant pedestrian connections between major activity anchors. Improve pedestrian wayfinding infrastructure and aesthetic treatments.
4. Encourage and incorporate bicycles as a legitimate transportation mode, moving them from the sidewalks to the street, securing sidewalks for the safe conveyance of pedestrians.
5. Expand the U-pass transit program model to downtown employers
6. Provide complete streets that balance the needs of all modes of transportation.
7. Provide enough parking to serve downtown, with consideration given to economics, availability of resources and future investment opportunities. Locate surface parking behind buildings or within structures.
8. Capacity improvements on roadways leading to or from the downtown may be necessary as the downtown area revitalizes.

Table 50. Assessment of Downtown Options

	Improved Bicycle Connections Downtown	Improved Pedestrian Connections Downtown	U-Pass Transit Policy for Downtown Employers	Mixed Use & Residential Development Downtown	"Right Sizing" Residential and Commercial Development Downtown
Supports Economic Growth Downtown	Yes	Yes	Yes	Yes	Yes
Supports Cultural Growth Downtown	Yes	Yes	Yes	Yes	Yes
Improves Capacity of Downtown Roadways	Yes	Yes	Yes	Yes	No, but helps avoid capacity problems
Technically Feasible	Yes	Yes	Yes	Yes	Yes
Environmentally Sensitive	Yes	Yes	Yes	Yes	Yes
Socially Acceptable	4 positive responses	3 positive responses	3 positive responses	3 positive responses	4 positive responses

Exurban Growth

The economics of urban growth seem to vary little over time or space. As the core urban area grows, more and more capital and services are required and expected by the citizenry, driving up the cost of "city living" and providing a competitive advantage to the smaller surrounding communities. Some residents escape the hustle and bustle of high cost urban living for the quiet suburban lifestyle, and the process starts all over again for the next town down the road. The F-M urban area has not been immune to this process.

It is important to note that the cycle of exurban growth is made possible by a safe and reliable transportation system. Homeowners, like businesses, have to balance their land costs (i.e., their mortgage) with the costs of transportation. Fuel, maintenance, and time costs are taken into consideration when the homeowner decides how far from work they want to live. When fuel costs are low, it is relatively easy for commuters to drive to work in the F-M area from considerable distances, as shown on the daily worker flow map (Map 1.30 on page 1.71). There is currently very little congestion or other disincentive to make exurban living more costly than urban living in and around the F-M area. In the summer of 2008, when fuel costs were relatively high, some urban areas in the U.S. reported a renewed interest in urban living as former suburbanites made the choice to live closer to where they worked. Of course, some people will always prefer exurban living to urban living even if exurban living is more costly.

From a certain perspective, exurban communities can be thought of as providing affordable housing for urban workers who cannot afford to live in the urban area. Ironically, it is these workers who may suffer the most if and when fuel costs do rise, putting an additional strain on an already tight household budget.

Low densities and long distances between the urban core area and exurban towns can make existing transportation infrastructure inefficient in terms of commuter trips. However, as discussed previously, easy freight movement through exurban areas can provide a competitive advantage and make an urban area more attractive for business and industrial development. The Fargo-Moorhead metro area needs to maintain good transportation connections with the rest of the world, but this can be a highly-selective process. Some corridors such as the interstate system and U.S. Trunk Highways can and will take investment precedence over other roadways. Thus, towns along those corridors are more likely to grow as commuter towns. In this way, some efficiencies are gained. Investing in corridors like I-94 can be done to both ease freight movement and commute times for exurban communities. Clearly, it is important to maintain some high quality connections between the urban area and surrounding communities. But, the ability to provide high quality exurban connections is always limited by resources.

It is also important that metro jurisdictions strive to keep the costs of "urban living" low. High property costs within the urban area can exacerbate the flight of workers from the urban area, leading to greater transportation needs in non-urban commuter areas. Obviously, a larger city is expensive to maintain and operate and so costs will never be on par with that of exurban communities. But the cost differential should be minimized to the extent possible.

Table 51. Assessment of Exurban Transportation Options

	Exurban Transit Connections	**Holding Down Costs of Urban Living**	**Increasing Capacities on Exurban Roadways**
Supports Affordable Housing	Yes	Yes	Yes
Supports Urban Economic Development	Yes	Yes	No, if it induces urban population flight; Yes, if it improves exurban freight flows
Technically Feasible	Yes	Yes	Yes
Environmentally Sensitive	Yes	Yes, if it shortens commutes	No, if it induces longer commutes
Socially Acceptable	1 negative response; 2 positive	3 positive responses	2 negative responses

Recommendations:

1. Provide rural transit service where demand warrants.
2. Rural and exurban transit routes should utilize highways to the maximum extent possible.
3. Provide and/or identify park-and-ride lots in exurban areas where rural commuters can gather to catch the bus.
4. Urban jurisdictions should strive to minimize the property cost differential between themselves and exurban commuter towns.

Aging Population

In the year 2000, about 1 in 7 people within the Fargo-Moorhead Metropolitan Statistical Area was age 65 or older. Current demographic forecasts predict that by 2035, 1 in 4 residents will be 65 or older. Nationally, people over the age of 65 are the fastest growing segment of the population, and they present certain specific transportation challenges. Several studies[1] have been devoted to understanding these challenges.

The elderly have a significantly higher chance of being involved in a traffic accident than younger people. A decline in vision, hearing, reaction time, cognitive function, and physical ability all contribute to their increased risk of a crash. Additionally, the chance of serious injury or death occurring because of a crash also increases due to age related characteristics. Steps to reducing these risks fall into three general categories: 1) Improving roadway conditions, 2) Improving driving performance of the elderly, and 3) Reducing miles driven by the elderly.

Improving roadway conditions may involve increasing the legibility of signage. By making signs more conspicuous and increasing the distance at which the sign can be read, the time to make a driving decision is also increased. Sign redundancy can also allow for more decision making time. Reflective road lines and road signs may be important to helping older drivers see more clearly at night. Painted curbed medians are more visible and provide more safety than unpainted curbs or paint-only medians. Increasing the yellow time for traffic signals also increases the time available for situation assessment and reaction. Where deployed, these strategies have shown some benefit for both elderly drivers, and younger, less experienced drivers.

Improving driving performance of the elderly can be accomplished through education and training programs. States can also implement policies for more frequent license renewal for older drivers, which can also include more frequent vision and hearing tests. There are currently some areas of the country that use a Medial Advisory Board to assist in licensing decisions based on medical assessments.

Lastly, decreasing the number of miles driven by the elderly may involve improving transit services and improving pedestrian facilities like sidewalks and signal timings at busy intersections to allow more pedestrian crossing time. Mixing residential land-uses in close proximity with retail, services, and public transportation will help facilitate the safe and efficient needs of elderly citizens.

Recommendations:

1. Provide signs that are legible from longer distances and provide sign redundancy at important decision points.
2. Provide reflective road lines (especially on highways and high traffic corridors), reflective signs, and painted-curb medians.
3. Consider driver education programs and more frequent license renewal for older drivers.
4. Decrease miles driven by older drivers by improving transit service, neighborhood walkability, and mixed land uses.

[1] Dellinger A, Langlois J, Li G. (2002). Fatal Crashes Among Older Drivers: Decomposition of Rates into Contributing Factors. *American Journal of Epidemiology*. 155, 234-242; Schlundt D, Warren R, Miller S. (2004). Reducing Unintentional Injuries on the Nation's Highways. *Journal of Health Care for the Poor and Underserved*. 15, 76-98; Transportation in an Aging Society (1988). Committee for the Study on Improving Mobility and Safety for Older Persons. Transportation Research Board National Research Council. *Special Report 218*.

Table 52. Assessment for Aging Population Strategies

	More Redundant and Legible Signs	More Frequent Drivers License Renewal	Improved Alternative Modes of Transportation
Improves Safety for Older Drivers	Yes	Yes	Yes
Increases Assessment and Decision-Making Time	Yes	No	No
Technically Feasible	Yes	Yes	Yes
Environmentally Sensitive	Negligible Impact	Negligible Impact	Yes
Socially Acceptable	1 negative response; 3 positive	4 positive responses	5 positive responses

Other Corridors Already Studied

In addition to some of the corridors and intersections analyzed in the preceding pages, there have been planning studies already completed over the past few years for several areas, including:

- 8th Street in Moorhead from 24th Ave South to 60th Ave South
- 20th Street in Moorhead from 4th Ave South to 60th Ave South
- 32nd Avenue South in Fargo from 25th Street to Sheyenne Street in West Fargo
- 52nd Avenue South in Fargo from University Drive to Veteran's Boulevard (originally known as 9th Street in Fargo and 57th Street in West Fargo)
- 40th Avenue South in Fargo from 45th Street in Fargo to 14th Street West in West Fargo
- 64th Avenue South in Fargo from University Drive to Veteran's Boulevard
- 25th Street in Fargo from 13th Ave South to 32nd Ave South
- 25th Street in Fargo from 52nd Ave South to 100th Ave South

This document includes the recommendations from those planning studies by reference. The reader is invited to contact Metro COG for copies of those plans if more detail is desired.

Management and Operations

The central challenge of M&O is to squeeze greater efficiency out of existing infrastructure. Roadways are an expensive investment and underutilizing them is a waste of limited resources. Effective system management maximizes transportation system performance through a coordinated and integrated decision making approach to construction, preservation, maintenance, and operation of transportation facilities with the goal of safe, reliable, predictable, and user-friendly transportation. M&O is an umbrella term that includes many fields of transportation, such as Incident Management, Intelligent Transportation Systems, Traveler Information Services, Transit Signal Priority, Signal Coordination, Work Zone Management, and Congestion Management.

M&O should not be viewed in isolation because it supports many other planning issues. M&O strategies can:

- Support economic vitality by improving system reliability.

- Increase safety by focusing attention on operational strategies such as driver education, speed enforcement, and technologies to improve pedestrian safety.
- Increase security by improving communication and coordination between agencies.
- Enhance the environment, energy conservation, and quality of life by avoiding the need to develop new transportation infrastructure with negative environmental impacts and helping drivers reduce the time they spend stuck in traffic.

Intelligent Transportation Systems (ITS)

Coordinated management of the transportation network and access to transportation data often requires deployment of physical mechanisms to monitor, record, or display information. To create a truly regional system, these mechanisms sometimes need to be able to communicate with other mechanisms in other jurisdictions.

The framework for ITS Architecture for the F-M area was first completed in 2005 and was updated in 2007. The Architecture provides guidance for developing ITS systems through Systems Engineering Analysis, and also identified information flows between different entities. These flows may have one or more standards associated with them covering format, content, or protocol used to exchange information.

Identified needs from the ITS Regional Architecture Study include:

1. Improve traffic operations and safety.
    a. Peak-period traffic management
    b. Incident traffic management
    c. Special events traffic management
    d. Work-zone and road construction management
    e. Winter weather impact management
2. Enhance tools for system monitoring and management.
    a. Better system performance data
3. Enhance traveler information and customer service.
4. Enhance transit operations to improve service and increase transit use.
5. Coordinate emergency and security management.

The ITS Regional Architecture also identifies market packages to support the needs.

The Fargo-Moorhead Metro ITS plan (2008) picks up where the Regional Architecture stops and identifies elements to support the market packages, along with deployment strategies and timelines. The identified elements include closed circuit television cameras, traffic signal systems integration, and the development of a Traffic Operations Center (TOC) to coordinate traffic management, traveler information, maintenance management and data collection. Additionally, Metro COG worked with its jurisdictional members to develop a Metro Traffic Operations Action Plan (2009), which identifies and prioritizes specific steps and actions to further the development of an interoperable traffic system.

Many of the performance measures in the Regional Development Framework (in Chapter 3) are de facto M&O strategies, emphasizing an objectives-driven performance-based approach to transportation planning. As can be seen in Figure 8 below, regional operational objectives flow directly from the goals and vision of a plan and are developed through regional coordination and collaboration. Operational objectives help to actualize what it means to accomplish the goals and objectives of this plan. They are specific, measurable statements related to the attainment of regional goals.

An example of how performance measures flow from goals and objectives and how they may lead to projects is provided below. More information on the Goals,

Figure 8.

Goal -- What the region wants to accomplish	Reduce the number and severity of transportation system crashes			
Operational Objectives -- Specific measurable statements relating to the attainment of goals	Reduce Intersection Crash Rates by 10% over the Next 5 Years		Reduce Vehicle-Bicycle Crashes by 20% over the next 5 Years	
Performance Measures -- Metric used at a regional basis to track system-wide performance	Intersection Accident Rates		Accident Rates for Those Involving Bicycles or Pedestrians	
Strategies -- Approaches to achieve objectives	Consider all intersection design options, including three-quarter access and roundabouts	Install pedestrian countdown timers	Provide and maintain appropriate roadway crossing safety measures	Provide higher safety standards where higher bike or ped crossings exist
Projects -- Initiatives identified to carry out strategies	Medians, roundabouts	Ped countdown timers	Crosswalks, pedestrian refuge islands	Curb bulbs, speeds zones, Hawk signal systems

Objectives, and Performance Measures specific to this plan is provided in later chapters. Obviously, data is important to M&O performance measures. For every performance goal there needs to be a way to measure goal attainment. Also, some M&O strategies to help achieve the performance goal may require hardware, such as traffic cameras, dynamic message signs, or GPS units on public vehicles.

Recommendations:

1. Support the development of a Traffic Operations Center.
2. Plan for and program devices to monitor roadway operations and performance.
3. Support initiatives to provide real-time travel information to the public.

Table 53. Assessment of Roadway Operations Options

	Monitor Roadway Operations	Regional Traffic Signal Coordination	Real-Time Traveler Information	Regional Performance Measures
Results in More Efficient Use of Roadways	Yes	Yes	Yes	Yes
Reduces Travel Delay	Yes	Yes	Yes	Yes, over the long run
Technically Feasible	Yes	Yes	Yes	Yes
Environmentally Sensitive	Yes	Yes	Yes	Yes
Socially Acceptable	3 positive responses	3 positive responses	2 positive responses	2 positive responses

Transit

To some extent, MAT has the image or reputation of providing transportation services to those who have no other choice, such as the elderly, the handicapped, or those who do not, for whatever reason, hold a driver's license. In a sense, transit is often seen as providing a social safety net service, but not a service that contributes to the economic vitality of the region nor one that makes the transportation system operate more efficiently. This is typical of public transit in the United States, particularly in mid-sized metropolitan areas.

Relatively few potential transit riders in the F-M area who have other transportation options choose to ride transit. The only exception is college and university students who participate in the U-Pass Program. With the U-Pass Program and with some of the services which have grown up around the NDSU campus there are lessons that can be learned for how to draw in other choice riders to the MAT system.

The image of transit has been identified as a transportation barrier. Transit is often viewed as a service for those people that have no other transportation choice; not for everyone. This image contributes to reluctance on the part of choice riders to choose MAT.

In addition to the image issue, there are other reasons that residents who own a reliable personal automobile rarely make the choice to ride transit. First, transit is an additional transportation expense. The resident's car payment or insurance costs are not reduced when they ride transit, so the cost of bus fare is an additional cost in the household budget. Second, taking transit often takes longer than driving which is an additional time 'cost' allocated to a person's busy day.

Going forward, the overall vision for MAT can be summed up in an observation from a focus group participant who stated, "Owning a car should not be a requirement for living in Fargo-Moorhead." There appears to be significant public support and a potential fiscal need for growing transit beyond its perceived "social safety net" role to one that supports the region's economic vitality. This means attracting more choice riders.

The image issue should largely be manageable through operations. As more workers and "suits" ride transit, the image of transit should naturally change. The influx of more college students on MAT has been helpful in changing the perception of who uses transit and what the function of transit is within the larger transportation network in the metro area.

If transit is to attract more choice riders, the relative cost of transit must be reduced. In the summer of 2008 when gas prices spiked near $4 a gallon, many households decided that the additional expense of transit fare was relatively inexpensive compared to filling up the gas tank, and some shifted modes of travel – at least temporarily. Over the long-term, if gas prices remain high, household budgets will likely adjust to the higher cost of gasoline and choice riders will likely migrate back to their automobiles. To attract more choice riders MAT could consider incentives and marketing schemes which reduce the relative cost of riding, such as free or reduced fare zones. Reducing headways and introducing limited-stop buses would reduce the relative time cost of transit.

The recent implementation of the U-pass program is a good example how transit can successfully reduce its relative cost. Most local university students do have personal automobiles. But parking on campus requires a parking pass, a cost that can run as high as $110 a year, or the student must park on an off-campus residential street and walk to campus. By charging an activity fee to all students and providing unlimited fare-free rides to students, MAT successfully addressed the relative monetary cost of transit. By reducing headways and targeting investments to high-demand destinations for students, MAT successfully addressed the time cost issue. As a result, student ridership on MAT has grown.

The U-Pass model should be considered for other potential regional partners, such as downtown businesses, large industrial employers, major retailers, the school districts, and large singular employers such as Microsoft or MeritCare. The revenue provided in the cost agreement would allow targeted investment in transit services to better serve those partners and their employees. Each partner will be different and may have unique needs. MAT should remain flexible and open to addressing those needs. In particular, maintaining the current pulse system may not be possible or desirable for all routes. For example, a large employer may begin a shift at 8 am, but the pulse schedule would dictate that the bus arrives at either 7:35 or 8:05. In such a case, it may be more advantageous for the bus to serve that employer by arriving at 7:50 am, even if it means that the bus is not synchronized with the pulse schedule. The need for evening service and other special accommodations should also be considered, especially as it was identified as choice barrier for second-shift workers during the public input phase of this plan.

In addition to providing improved service to partners, MAT should continue to improve basic region-wide service. The need for "social safety net transportation" will remain and probably grow in the future as the median age of residents climbs. Dedicated local transit funding should be identified for improving basic transit services throughout the region. Such funding could also help replace uncertainties in future state and federal funding streams and may assist in offsetting the need for future fare increases.

Under current law, when the metro area achieves a population of 200,000 or more, Federal Transit Administrative (FTA) Section 5307 funds can no longer be used to support transit operations. Instead these urbanized formula dollars would be used for capital purchases or preventative maintenance only. In 2000, the metro area had a population of approximately 140,717. Demographic forecasts estimate the urban population will be 228,000 by 2035. Dedicated local transit funding will also be necessary to replace lost federal operations revenue if existing levels of service are to be maintained. The inability to use FTA Section 5307 funds for operations could happen as soon at 2022. For purposes of this plan (see Chapter 5) only that revenue which can reasonably be expected in the future was used to establish the fiscal constraint to the purchase of capital equipment like new buses. Therefore, future funding projections for MAT have assumed the removal of FTA Section 5307 from the operations funding stream starting in 2022, and the replacement of those funds with funds generated locally through a regional transit authority.

Obviously, service cannot be improved everywhere. Limited financial resources make it necessary to prioritize transit investments. If transit is to move beyond providing only a social transportation safety net to providing a service that people choose, the prioritization process should reflect the needs of choice riders. To that end, the following prioritization guidelines are offered (adapted from the recommendations of the Institute of Transportation Engineers (1989):

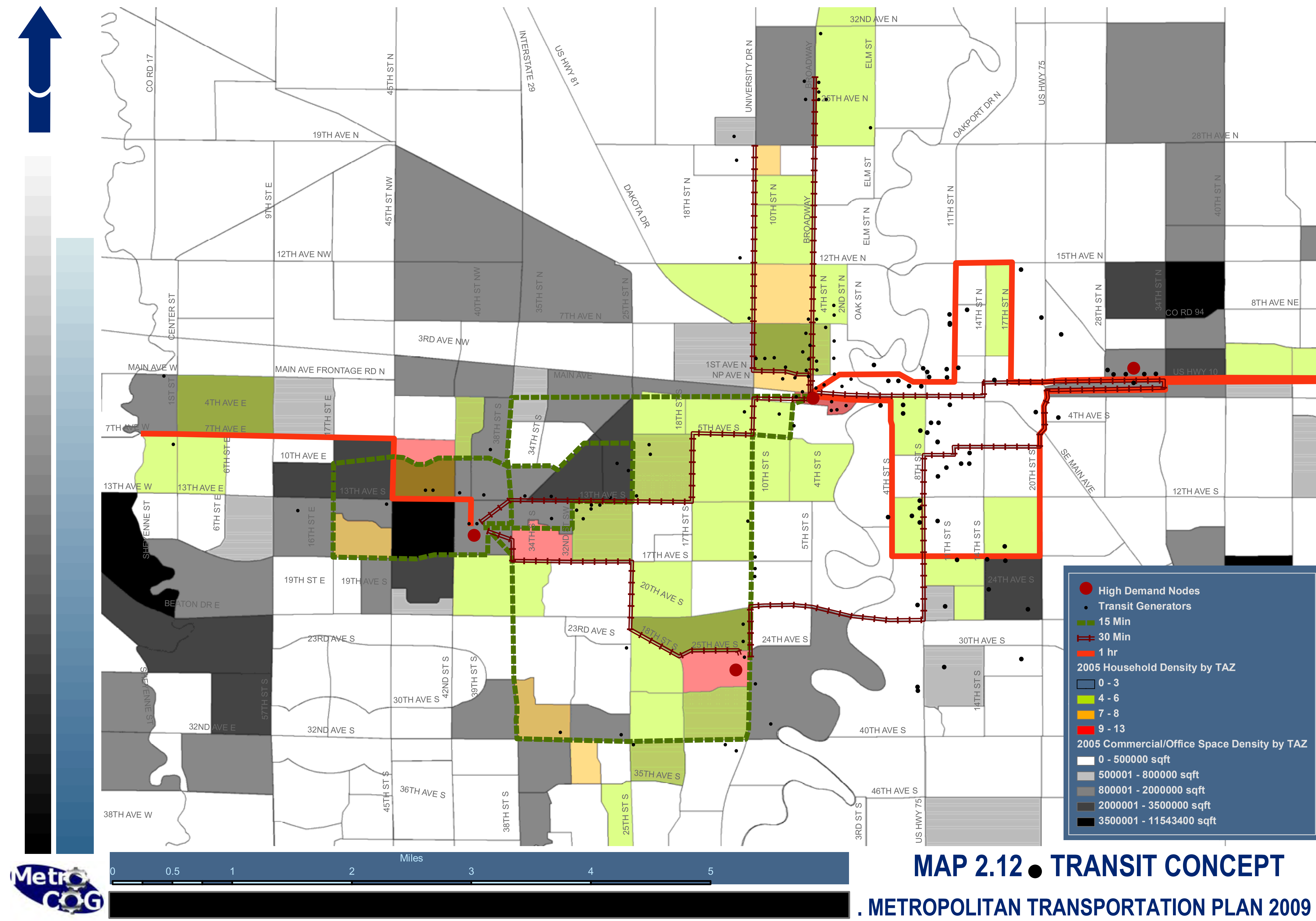
- At least one bus per hour should be provided where residential densities are 4 to 6 units per acre and/or there are 500,000 to 800,000 square feet of commercial/office space.
- At least one bus every 30 minutes should be provided where residential densities are 7 to 8 units per acre and/or there are 800,000 to 2 million square feet of commercial/office space.
- More frequent service and/or limited stop feeder buses should be considered for destinations where residential densities are 9 or more units per acre and/or there are more than 3.5 million square feet of commercial/office space.

In addition, the following service guidelines are offered:

- Simplify routes by establishing more direct routes and avoiding circuity. Routes should not be more than 20 percent longer in distance than comparative trips by car.
- Routes should be as short as possible to serve their markets.
- Overcome barriers to provide seamless, bi-state service to high demand locations.
- Express service should utilize freeways to the maximum extent possible.
- Regular service should be provided between 6 a.m. and midnight Monday through Friday; late night "Owl Service" can be provided on selected routes.
- Provide passenger shelters at stops that serve 20 or more boarding and transferring passengers daily.

Maximum headways can vary through the course of the work day as demand does. For example, 15 minute headways to the Central Business District may be appropriate between 6 and 9 a.m., but 30 minute headways on the same routes may be appropriate between 9 a.m. and 4 p.m. As the F-M area develops over the next 30 years, changes in densities and land-use may occur in the core urban area. MAT should adjust as these changes occur to meet the demands of the traveling public. All else being equal, increased accessibility increases land value and in turn the potential intensity of development. The relative availability of transit service may impact the achievable densities within the urban core.

The map on the following page was developed to reflect some key transit service routes and suggested headways based on the guidelines provided above.



MAP 2.12 • TRANSIT CONCEPT

. METROPOLITAN TRANSPORTATION PLAN 2009 .

In addition to providing service within the urban area, transit can support communities that surround the metro area. As Map 1.30 shows, over 12,000 workers migrate into the F-M urban area daily. In 2007 Metro COG met with several of the area's major employers to identify their desires for Transportation Demand Management programs and options. There was support and interest in providing more information and education relative to learning how to ride the bus and read the bus schedule. Several employers were interested in enhanced regional shuttle service from outlying areas such as Wahpeton, North Dakota and Detroit Lakes, Minnesota. As previously noted, it is important that transit officials continue to investigate the potential for rural bus routes to exurban commuter towns.

Table 54. Assessment of Transit Options

	Expand U-Pass Program to Large Employers	Provide More Frequent Service	Simplify Routes	Transit Oriented Land Use Development
Attracts More Choice Riders to Transit / Improves Roadway Ops	Yes	Yes	Yes	Yes
Technically Feasible	Yes	Yes	Yes	Yes
Environmentally Sensitive	Yes	Yes, if it reduces the number of cars on the roads	Yes, if it reduces the number of cars on the roads	Yes
Socially Acceptable	3 positive responses	1 positive response	1 negative response; 3 positive	2 positive responses

Recommendations:

1. MAT should meet annually with the 20 largest employers in the FM area to review their transportation needs.
2. MAT should continue to develop incentives for businesses (i.e., U-pass or Metro type programs) to encourage choice ridership.
3. Routes should be regularly re-evaluated to provide appropriate levels-of-service (including headway goals) and to simplify routes.
4. Barriers to the regionalization of transit routes should be identified and targeted for mitigation.
5. Continue making progress toward the goal of a regional transit authority by 2020.

Bicycles

The F-M bikeway network should meet the needs of *all* bicyclists, including those that choose to ride on shared use paths and those who choose to ride on the road. At the present time there is an imbalance in the types of bikeways in the F-M area. Shared use paths are by far more prevalent than any other kind of bicycle accommodation (see Map 1.16). There are 147 miles of shared use paths in the F-M area with 23.3 miles of signed shared roadway coming in a distance second. The F-M area is fortunate to have a considerable amount of neighborhood scale grid streets which provide a high level of connectivity between trip generators. Greater connectivity allows for greater route choice which is important to minimizing travel time -- be it on a bicycle or in a motor vehicle.

There is much room for growth in connectivity of the region's bikeway network. Fluid connections between shared use paths and on-road bikeways would increase levels of connectivity. Improvements in connectivity can be as simple as providing bicycle route signage and way-finding signs or as complex as re-striping roadways, striping bicycle lanes, constructing roadway shoulders or shared use paths.

Public input gathered by Metro COG for the 2009 MTP update speaks to a desire for better bicycle route signage. Increased bicycle route signage would help bicyclists find shared use path connections or provide the choice of using bicycle lanes or low volume, low speed roadways. Students, residents and visitors might be more inclined to use a bicycle if they had way-finding signs that would let them operate without a map. The Manual of Uniform Traffic Control Devices (MUTCD) has signing standards so implementation is simple and the cost is relatively low.

One type of bikeway facility that is relatively inexpensive when compared to constructing shared use paths is the bicycle lane. A bicycle lane is an on-road striped, stenciled and signed lane dedicated for bicycle use and is usually 4'-6' in width. Public input gathered in 2008 for the MTP update strongly suggested bicyclists would enjoy commuting to work and doing errands by bicycle if there was a significantly more complete bicycle lane network in the FM Area. There is less than a half mile of striped bicycle lanes in the FM urban area. Moorhead is the only community that has a bicycle lane (striped, stenciled and signed). Bicycle lanes create a sense of place for bicyclists and yet don't legally constrain bicyclists to operate only in the bicycle lane. There are design standards that have been well established. Striping techniques are found in the MUTCD. Once bicycle lanes are installed they do need to be cleaned on a regular basis.

Shared use paths provide a level of service for bicyclists that can be very high or very low based on the intent of the bicyclist and the popularity of the shared use path. Shared use paths are shared by pedestrians, in-line skaters, runners, etc. and therefore may be inappropriate for bicyclists riding over 10 mph. Stopping distances become too great and reaction times cannot accommodate the random nature of children, dogs and other users of shared use paths. However, shared use paths in their own right-of-way such as those located adjacent to the Red River can provide very relaxing and scenic views for the recreational bicyclist, while still offering commuter connections. Limited roadway crossings and the presence of roadway underpasses make for a very relaxing and fluid bicycle riding experience. However, shared use paths within a roadway's right-of-way can be very problematic. The greatest safety challenge for bicyclists on shared use paths within roadway rights-of-way is crossing at roadway intersections. Oftentimes, motorists do not see bicyclists on shared use paths at roadway intersections. There is obviously a responsibility on the part of both the motorist and the bicyclist to operate their vehicles safely but the setback of shared use paths in a roadway's right-of-way can make it difficult for even a safe motorist to notice a bicyclist about to cross an intersection.

Due to existing land use patterns in the metro area urban trips favor the bicyclist over the pedestrian in many respects. The downtown area successfully accommodates both modes of transportation. Bicycle trips of one to two miles are easily accomplished by almost all bicyclists. Most bicycle trips of two to four miles will get people to significant consumer and educational destinations in the F-M area. The flat terrain in the F-M area makes five to ten mile bicycle trips very feasible in the summer.

According to the Nationwide Personal Transportation Survey, 40 percent of urban auto trips are less than two miles. These trips are the most polluting due to the need for a vehicle's pollution control devices to warm up before they are functioning at 100% of there capability. Though the F-M area currently meets or exceeds all federal air quality standards it is worth considering the fact that the pollution created by the F-M area does go elsewhere. Greening our environment by using less polluting forms of transportation offers benefits to other parts of the region and country. Thinking globally and acting locally could have many positive benefits for all residents of the United States. Traveling by bicycle in the F-M area is one way to move the greening effort forward in a very affordable way.

During the bicycle and pedestrian focus group meetings held for the MTP update several messages were consistently voiced by the public. The following are just a few of these messages: there is a desire to see more striped bicycle lanes, more education for bicyclists and motorists in relation to operating safely together, more bikeway connectivity between major trip generators, better maintenance of bikeway facilities, improved signage of bicycle routes, more complete streets, and continued Safe Routes to School efforts. Creating an active bicycling culture means that the bicyclist is given equal consideration in local roadway planning, share the road campaigns are conducted on an on-going basis, the bicycle is seen as a vehicle of utility not just recreation, and policy makers recognize and respond to the needs of bicyclists on a regular basis. The creation of this culture is just getting started in the F-M area but has already been in development for many years in many parts of the United States. In those areas with a vibrant bicycle commuting culture, the era of the *one size fits all* bicycle facility is long gone. AASHTO's Guide for the Development of Bicycle Facilities and the Mn/DOT Bikeway Design Manual are examples of documents that recognize the need for multiple types of bicycling facilities.

With the passage of the Intermodal Surface Transportation Efficiency Act of 1991 consideration of bicycle facilities was mandated. The U.S. Department of Transportation has spoken directly to the need to consider bicycle facilities in all roadway reconstruction and construction projects. Around the United States, three foot passing rules are being signed into law, sidepath laws are continuing to be removed from state law, *Complete Streets* policies are being signed into law, and tobacco settlement monies are being used to explore and promote active living programming. There is even a national bicycle commuter tax benefit available to all employers as of January 1, 2009. There is a very real national movement that recognizes the health, fiscal, and personal benefits of the bicycle as a form of transportation. Clear, well thought out bicycle planning will allow the F-M region to see safe, efficient and balanced transportation as the local standard.

The F-M area is not alone in its journey to become healthier and more active in the coming decade. Minneapolis, Minnesota and Madison, Wisconsin are two examples of urban areas that have significant populations of bicyclists. These cities have worked diligently to recognize the needs of bicyclists because there is an understood value to providing transportation options and providing options for active living and active transportation for all their residents. Levels of interest in bicycling appear to be growing in the F-M area and awareness by local jurisdictions of the need to provide a more diverse set of bicycle facilities is becoming evident as more on-road bicycle facilities are complimenting the extensive shared use path system already in existence.

The F-M area holds great promise to be a bicycle friendly community. As the core urban area densifies, higher education institutions grow and as areas in Dilworth and

West Fargo grow there will be a need and a demand for a more connected, diverse bikeway network.

Recommendations:
1. Create a bicycle network that meets the needs of all bicyclists
2. Work to identify and close gaps in the existing bicycle network with the most appropriate kinds of on- or off-road facilities
3. Improve bicycle route signage to make the bicycle route network more visible, usable, and attractive

Complete Streets

A Complete Street is a road that is designed to be safe for drivers, bicyclists, transit vehicles, and pedestrians of all ages and abilities. The Complete Streets concept focuses not just on an individual road, but on changing the decision-making process so that all users are routinely considered during the planning, designing, construction, and operations of all roadways. It is important to understand that Complete Streets is not prescriptive. It works at a contextual level using known tools that will slow motorized vehicles and increase the awareness of motor vehicle drivers to the existence of bicyclists and pedestrians. Complete Streets focuses on roadway users and is about making multimodal accommodations a routine practice in transportation planning and roadway design. The idea is to integrate all roadway users into the planning and design processes so as to create financial and planning efficiencies.

What would the Complete Streets mean for the F-M Metro Area? The City of Charlotte, NC developed an Urban Street Design Guidelines document (www.charmeck.org/Departments/Transportation/Urban+Street+Design+Guidelines.htm) which uses a six step process to develop Complete Streets treatments that recognize all street users, all land use contexts, and all transportation contexts. The steps could easily be used in the F-M region, and include:

1. Define the land use context.
2. Define the transportation context.
3. Identify deficiencies for bicyclists, pedestrians, transit drivers, transit passengers, and motorists.
4. Identify future objectives for bicycle, pedestrian, transit and auto use as well as for land use in the area concerned.
5. Define the street type or types desired and provide an initial cross-section or several alternatives, then discuss the trade-offs.
6. Select the final cross-section .

It is important to note that Complete Streets makes efficient use of existing infrastructure and available planning and construction dollars. Complete Streets treatments are often retro-fits to existing roadways in order to maximize the utility of the corridor. Some examples of Complete Streets are provided on page x.

If implemented, Complete Streets policies would likely result in more striped and stenciled bicycle lanes, signed shared roadways, shoulders, and wide outside lanes to compliment connections to shared use paths. Bikeway connections to major educational, recreational, and social destinations would likely be more accessible.

Figure 9. Examples of Complete Streets

Before Complete Streets

After Complete Streets

Before Complete Streets

After Complete Streets

Several examples of Complete Streets policies from other cities is provided in Appendix D.

Recommendations:

1. Metro COG should develop a local Complete Streets policy primer for use by local jurisdictions and support the adoption of Complete Streets policies and processes.
2. Local jurisdictions should give consideration to the adoption of Complete Streets policies.
3. A public education campaign should be undertaken to advise motorists and bicyclists on the proper protocol for interaction on local roadways.
4. Support improved bicycle route signage.

Bikeway System Gaps

The 2006 Metropolitan Bicycle and Pedestrian Plan identified gaps in the principal bikeway network as an issue of significant concern. The principal bikeway network is an identified interconnected system of bikeway facilities that serve as significant commuter routes and provide access to major bicycle trip generators. One of the purposes in creating the principal bikeway network was to help prioritize network investments.

Since the printing of the 2006 bicycle plan, it has become apparent that there are also numerous system continuity needs at a micro level.

While shared-use paths are the most prevalent kind of bikeway facility in the metro area, greater consideration needs to be given to on-road facilities. This may necessitate a need for improved connections between on-road and off-road facilities. It may also mean that some connections between important bikeways be made with an on-road connection, such as a signed-shared roadway.

Recommendations:

1. Local jurisdictions, with the assistance of Metro COG, should emphasize investment to minimize identified gaps in the existing bikeway network, utilizing on-road connections where appropriate.

Extraterritorial Bikeways

The majority of the extraterritorial bikeways in the F-M area are paved shoulders 4' to 6' in width with variability in surface quality. These two characteristics play heavily into the decision making process a bicyclist goes through when deciding whether to ride on the roadway (in the travel lane) or on the shoulder. The value of on-road extraterritorial bikeways to the recreational cyclist is significant. On-road extraterritorial bikeways allow for fluid, continuous routing with little stopping necessitated by traffic controls. This opportunity to ride continuously is appealing to those bicyclists who are looking for a good workout over a predetermined amount of time or distance. For those bicyclists commuting to work or out doing errands, the ability to move quickly and directly toward their destination is valuable. Though the numbers of these types of bicyclists is relatively small in the F-M area their numbers appear to be growing.

As areas adjacent to the urban fringe of Fargo and Moorhead grow it is likely that more people will consider using the extraterritorial bikeway network for recreation and for utility. Horace is an example of a town that has potential to grow significantly in the next ten years. At this point, Horace residents can ride a bicycle north on County Road 17 into West Fargo or Fargo. The 6' shoulder between Horace and 125th Avenue South and the 8' shoulder between 125th Avenue South and 52nd Avenue South have plenty of room for a group of bicyclists to move along without inhibiting the flow of automobiles. These widths are likely to increase the level of perceived safety by bicyclists and motorists.

The extraterritorial bikeway network plays a direct role in connecting cross-country bicyclists to the Fargo-Moorhead area. Sixtieth Avenue South in Moorhead is an extraterritorial bikeway that lies on the Northern Tier National Bicycle Route. The Northern Tier National Bicycle Route runs from Anacortes, WA to Bar Harbor, ME. Every summer, a handful of cross-country bicyclists travel through the F-M area, following the Northern Tier Route. The Sixtieth Avenue South bikeway is a paved shoulder, like much of the Northern Tier Bicycle Route. Highway 81 which is a future extraterritorial bikeway also lies on the Northern Tier Bicycle Route and is used regularly for group recreational bicycle rides. A majority of Highway 81 mileage within the FM area has no paved shoulder.

Roadway shoulders of 4'-8' in width that are clean and have a smooth, continuous surface provide the necessary infrastructure for most moderately skilled to advanced recreational and utilitarian bicycle riders. Extraterritorial bikeways with these types of shoulders will add significant connectivity to the extraterritorial bikeway network as well as create a more inviting setting for moderately skilled to advanced bicyclists.

Recommendations:

1. At least one adequate and well-maintained extraterritorial bikeway should be provided to each exurban community within the Metro COG planning area.
2. Extraterritorial bikeways for communities beyond the Metro COG planning area can be planned and coordinated through appropriate agencies and governing bodies.

Bicycle Route Maintenance

As use of bikeways increases and as companies seek employees from outside the Fargo-Moorhead area there will likely be more maintenance requests and greater demand to avail oneself of bikeway facilities on a year-round basis, especially shared use paths. Designation of bikeways constitutes higher levels of care and maintenance which if not attended to can lead to legal issues. The Guide for the Development of Bicycle Facilities, published by the American Association of State Highway Transportation Officials (AASHTO), speaks to the operation and maintenance of bikeways and their relationship to jurisdictional liability.

> *The jurisdiction responsible for the operation, maintenance and policing of bicycle facilities should be established prior to construction. In addition to construction costs, operating and maintenance costs should be considered and included in the overall budget for the facility. Neglecting routine maintenance eventually may render bicycle facilities unrideable and such deteriorating facilities may become a liability to the state or community. Bicyclists should be encouraged to report bicycle facilities that are in need of maintenance. A central contact person who can authorize maintenance work should be designated to receive such reports.* (AASHTO Guide for the Development of Bicycle Facilities, 1999)

Maintenance concerns have been brought to the Metropolitan Bicycle and Pedestrian Committee during 2008. The concerns pertained to the maintenance and repair of shared use paths in the FM area. No specific policies for bikeway maintenance have been established nor has any dedicated funding mechanism for bicycle facility maintenance or repair been created by any of Metro COG's jurisdictions. It is not absolutely clear if such dedicated funding is needed. It may simply be that there is a need to educate local public works, engineering and planning staff about due care of bikeway facilities. Shared use paths seem to be the most popular type of bikeway facility for the majority of residents in the FM area thus it is natural that this would be where most concerns would lie.

Recommendations:

1. The designation of an on-road bicycle facility should be directly tied to a higher standard of acceptable pavement quality and roadway edge cleanliness.
2. Regular inspection and routine maintenance of bikeway facilities should occur.
3. Local jurisdictions should consider the adoption of bikeway maintenance policies.
4. Metro COG should work with its member jurisdictions to define appropriate pavement quality, cleanliness, and other indexes for principal regional bikeways.

Bicycle and Pedestrian Bridge Crossings of the Red River

The ability to cross the Red River by bicycle or by foot is valued by residents of both Moorhead and Fargo. Bicycle and pedestrian counts have shown that bicycle and pedestrian use on the shared-use paths adjacent to the Red River are some of the highest in the metro area. A continued effort to add bicycle and pedestrian porosity across the Red River in the downtown area will add usability to the bikeway system and may spur further planning for future bicycle and pedestrian crossings. At the present time, approximately 90 days of access to the existing bike-ped bridges is lost each year due to flooding and the need to wait for weight restrictions to be lifted so that cranes can lower the bridges into their usable positions.

An important ancillary consideration should be focused on providing adequate bikeway connections to existing and planned crossing locations. The 2008 Red River Greenway Study recommends that development of a greenway adjacent to the river continue, including the creation of new shared use paths. Opportunities to expand the Red River Greenway should be pursued, with an eye toward ultimately connecting all segments of shared-use paths and bicycle routes into a contiguous system.

Recommendations:

1. Continue to investigate and pursue ways of making bike-ped bridges over the Red River usable irrespective of seasonal conditions/impledìments.
    a. Implement the recommendations of the 2006 Lifespan & Replacement Study of the Fargo-Moorhead Bicycle/Pedestrian Bridges.
2. Construct more Red River crossings at locations identified in the 2008 Red River Greenway Study.
    a. MB Johnson Park
    b. Riverside Cemetery
    c. Lemke Park/River Oaks Park

    d. 40th Avenue South
    e. South River Estates
3. Identify and analyze other potential bridge locations as existing conditions warrant.
4. Reserve adequate greenway, right-of-way or easements adjacent to the Red River as per the 2008 Red River Greenway Study.
5. Connect bicycle and pedestrian bridge crossing locations via the Red River Greenway.

Table 55. Assessment of Strategies to Close Gaps in Bicycle Network

	Complete Streets Policies	Improve Bike Route Connectivity	Bike Education Campaign	Improved Bike Route Signage
Helps Induce More Bicycle Trips	Yes	Yes	Possibly	Possibly
Improves Safety for Cyclists	Yes	Possibly	Yes	Yes
Technically Feasible	Yes	Yes	Yes	Yes
Environmentally Sensitive	Yes	Yes	No significant impact	No significant impact
Socially Acceptable	5 positive comments	5 positive comments	1 negative comment; 4 positive	5 positive comments

Safe Routes To School

Infrastructure is a key foundational element for getting to school safely but is not the only aspect of bicycle and pedestrian movement to and from school sites that is considered today. Activities such as walking school buses and bicycle pools have become part of the planning toolbox of those planners and interested citizens developing Safe Routes to School (SRTS) programs, maps, or associated studies. The Program embraces these approaches to increasing safety, comfort and environmental consciousness for students and their parents.

Planning for SRTS activities – both walking and biking – holds numerous benefits for motorists and non-motorists. Planning for increased walking and bicycling to school sites may enhance sidewalk conditions on which many people walk for recreation or for trips of utility (e.g., walking to the corner grocery store). Pedestrian countdown timers are being installed in the F-M region. The countdown timers provide more information to motorists and pedestrians allowing both parties to better gauge the most appropriate action to take when at an intersection. The promotion and education related to SRTS programs such as walking school buses or bicycle pools may reduce the lack of willingness by parents to let their children walk or bicycle to school. These group activities may help FM communities take back their streets and neighborhoods through a united effort to be proactive and not reactive in the face of everyday risks relative to walking and bicycling. Enhancements such as re-striping crosswalks and stop bars may add to the sense of safety that individuals feel when walking or bicycling in their neighborhoods. Those with visual disabilities or aural disabilities may gain benefits from new assistive devices that may be added for the sake of children with disabilities who desire to walk or bicycle to and from school. SRTS programming immediately engages adults, school staff, law enforcement and planners as well as engineers and advocates. SRTS programming is about community efforts to keep kids safe and healthy. As the F-M region grows, SRTS planning may be able to play a role in reducing local roadway congestion during peak hour travel times. SRTS planning and programming holds benefits for the children and the region as a whole. SRTS planning needs to be supported so as to maximize the health and the safety of the region's children as well as maximize the efficiency and safety of the region's roadways.

Pedestrians

Planning for pedestrian movement on a regional level can be difficult to visualize. Since many pedestrian trips are of a half-mile or less in length it may not be seen as a regional issue. For purposes of this discussion, trips made by wheelchair, power chair, or other assistive methods will be included whenever reference is made to pedestrian trips. The accessibility provided by the Americans with Disabilities Act (ADA) establishes compliant sidewalks and public spaces that provide an opportunity for all citizens to safely access daily destinations.

The relationship between transit and walking is strong. It is clear that transit use has increased dramatically in the past five years with the growth of MAT's U-Pass program and M3 program. It is safe to assume that walking trips have increased as well since almost all transit trips begin and end with a walking trip to and from the bus. The Metropolitan Bicycle and Pedestrian Plan speaks to the need to perform a pedestrian facility inventory (i.e., gap analysis). This analysis should be completed within the next year with the scheduled Bike/Pedestrian Plan Update.

A high level of attention should be given to ADA requirements. Metro COG should take a leadership role in assisting the local jurisdictions in meeting or exceeding ADA standards. For example sidewalks with curb-ramps are not consistently available in all urban areas of the region.

The issue of clearing snow from sidewalks is regularly identified as an issue. Stronger enforcement of snow clearing ordinances may be necessary. For those who are physically unable to clear their sidewalks, assistance programs should be considered.

Lastly, sidewalks or pedestrian-ways, such as shared-use paths, should always be constructed on both sides of all roadways. The alarming rise in obesity, diabetes, and other health risks among the U.S. population points to a need for an urban form that encourages physical activity, especially among children.

Travel Demand Management

In 2007, Metro COG surveyed local businesses regarding Travel Demand Management (TDM) issues, and conducted a series of interviews with some key personnel within the businesses. The overall sense that Metro COG staff came away with after these meetings was that these major employers were interested in being a part of regional TDM efforts but needed some direction and guidance. A transportation management association may be the missing link to organize, educate and motivate local and regional employers in the process of offering TDM options.

The success of a Transportation Demand Management (TDM) program depends heavily on how the programs are administered. TDM programs can be administered in a number of different ways. One way is through the creation of a Transportation Management Association (TMA). TMAs are created to be the sole or primary organization responsible for the implementation of TDM programs and services in a business district, community or region.

In the 1980's, Transportation Management Associations began to emerge as public-private partnerships designed to address traffic congestion and air quality problems in communities throughout the United States emerged. Over 125 TMAs are in operation today throughout the United States. The appeal of a TMA lies in the synergy created by multiple organizations and individuals banding together to address and accomplish more than any one government agency, employer, developer or resident could alone. The need for TMAs stems from the realization that each group has a great influence on the transportation network and air quality.

There is no Transportation Management Association (TMA) in the F-M area though there was a West Acres TMA in the late 1990's that was formed with Congestion Mitigation and Air Quality Improvement Program monies from the North Dakota Department of Transportation to ease congestion issues in and around the West Acres Mall caused by major construction on the I-29 project. The general conclusion from research efforts conducted in 2007 by Metro COG is that there are numerous small-scale TDM opportunities available. There appears to be significant potential for a TMA that is based out of the downtown business district or associated with SW area of Fargo (e.g. 45th Street corridor) and/or the higher education institutions in the Fargo-Moorhead area.

Since Metro Cog's meeting with MeritCare in 2007, MeritCare has begun working with Metro Area Transit (MAT) and the City of Fargo to reduce the number of staff members that drive their automobiles to work by providing a year-round bus pass if the staff member gives up his or her parking pass. There are conditions attached to this program to motivate staff to remain consistent in their use of the MAT system for commuting purposes. Staff is able to use their M3TRO card for personal trips as well. The M3TRO Program has approximately fifty participants and is growing.

Table 56. Assessment of TDM Options

	Flexible Work Hours	**Organized Carpool or Vanpool**	**Telecommuting**	**High Occupancy Vehicle Lanes**
Improves Roadway Operations	Yes	Yes	Yes	Yes
Public Financial Costs	Low	Low	Low	High
Private Financial Costs	Med	Med	High	Low
Technically Feasible	Yes	Yes	Yes	Yes
Environmentally Sensitive	Yes	Yes	Yes	Yes
Socially Acceptable	1 negative comment; 3 positive	3 positive comments	3 positive comments	1 positive comment

Recommendations:

1. Metro COG should work with MAT, local jurisdictions, and local businesses to explore the possibility and gauge interest in forming one or more Transportation Management Associations.

Chapter 3: Regional Development Framework

This planning document is only the latest in a series of planning documents that impact the F-M metro area. The intent of this chapter is to collect and synthesize relevant planning recommendations from other plans along with the public input that was solicited as part of the planning process for this MTP. The end result should be a set of Regional Development Framework Goals and Objectives to guide both the development of this plan, and the physical development of the region as a whole. The vision that is enunciated within this chapter will serve as the overall transportation planning vision for the F-M urban area for at least the next five years.

The next few sections discuss the regulations, guidelines, and recommendations that have been made at various levels of government regarding how the F-M urban area should develop respective to the transportation planning process.

Federal

SAFETEA-LU, the most recent federal transportation act, provides broad guidance to all states and MPOs regarding transportation plan development and operations. Like any act of Congress, once signed into law, SAFETEA-LU was codified into a set of federal regulations. Laws dealing with MPOs and transportation planning are written into the Code of Federal Regulation (CFR), Title 23, Part 450, including the requirement that metropolitan transportation processes be continuous, cooperative, and comprehensive, and that projects, services, and strategies address the following:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the security of the transportation system for motorized and non-motorized users.
4. Increase accessibility and mobility of people and freight.
5. Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
6. Enhance integration and connectivity of the transportation system, across and between modes, for people and freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.

Further, the metropolitan transportation plan shall, at a minimum, include:

1. The projected transportation demand of persons and goods in the metropolitan area over the period of the transportation plan.
2. Existing and proposed transportation facilities that should function as an integrated metropolitan transportation system, giving emphasis to those facilities that serve important national and regional transportation functions over the period of the transportation plan.
3. Operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods.

4. Consideration of the results if the congestion management process.
5. Assessment of capital investment and other strategies to preserve the existing and projected future metropolitan transportation infrastructure and provide for multimodal capacity increases based on regional priorities and needs.
6. Design concept and design scope descriptions of all existing and proposed transportation facilities.
7. A discussion of types of potential environmental mitigation activities and potential areas to carry out these activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan transportation plan.
8. Pedestrian walkway and bicycle transportation facilities.
9. Transportation and transit enhancement activities.
10. A financial plan that demonstrates how the adopted transportation plan can be implemented.

In addition, the metropolitan transportation planning process shall include a proactive public involvement process that supports early and continual involvement of the public in the planning process. The transportation plan shall address at least a twenty-year planning horizon, and include both short-range and long-range strategies/actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods.

States

Both North Dakota and Minnesota maintain statewide transportation plans as well as other plans such as statewide strategic safety plans.

In North Dakota that state strategic transportation plan is titled "TransAction II". The plan was developed to help the state focus the use of resources to meet the ever-changing and growing transportation demands of residents, visitors, and businesses. TransAction II is a broad long-range plan that does not focus on specific projects, but rather on policies and strategies to help North Dakota achieve its shared transportation vision.

The plan identifies North Dakota's Transportation Goals as:

1. Safe and secure transportation for residents, visitors, and freight.
2. A transportation system that allows optimum personal mobility.
3. A transportation system that allows the efficient and effective movement of freight.
4. A transportation system that supports economic diversity, growth, and competitiveness with consideration of environmental and social impacts.
5. Funding sufficient to protect and enhance North Dakota's transportation infrastructure and address future transportation needs.
6. A transportation environment where communication, cooperation, and collaboration exists.

The plan also identifies 12 strategic initiatives to help accomplish the goals listed above. While all of the initiatives pertain specifically to the NDDOT, they do provide some guidance to Metro COG and its member jurisdictions as to important transportation goals for the state.

The TransAction II initiatives are:

1. Strategically prioritize the use of transportation resources, and define levels of service to be provided and maintained.
2. Enhance communication and facilitate cooperation and collaboration between and within governmental units, tribal authorities, modes of transportation, and the public and private sectors.
3. Improve the performance of priority transportation corridors and facilities.
4. Consider economic viability when developing projects, programs, and statewide plans.
5. Develop a statewide freight mobility strategy.
6. Appropriately use technologies to enhance North Dakota's transportation system by improving service, performance, mobility, safety, and security.
7. Promote public/private sector partnerships that bring about selected transportation initiatives.
8. Promote and actively participate in regional and national transportation initiatives, programs, studies, and projects.
9. Emphasize safety and security in planning, developing, and maintaining the transportation system.
10. Assess and plan for personal mobility options, both motorized and non-motorized.
11. Monitor key issues affecting personal and freight mobility.
12. Consider environmental and social impacts when developing transportation plans, programs, and projects.

Minnesota has just completed an update to their statewide transportation plan. The policy, strategy, and performance measure goals listed in the statewide plan include:

1. Reduce the number of fatalities and serious injuries for all travel modes.
2. Ensure the structural integrity of the transportation systems serving people and freight.
3. Maintain and operate the statewide transportation system in an efficient, cost-effective and secure manner.
4. Maintain and strengthen Minnesota's strategic multimodal connections to the Upper Midwest, the nation and the world.
5. Enhance the movement of people and freight between regional trade centers within Minnesota by providing efficient, multimodal transportation connections.
6. Provide mobility and address congestion in the Twin Cities by optimizing use of the existing system and making strategic capacity investments in both highways and transit.
7. Provide for the changing transportation needs of people and freight within Greater Minnesota regions and metropolitan areas by planning regionally for critical investments and improving coordination across modes and jurisdictions.
8. Support local efforts to increase jobs, expand housing, and improve community livability through more coordinated planning, complementary design, and timely communication among land use and transportation authorities.
9. Improve the energy efficiency and environmental sustainability of Minnesota's transportation system.
10. Strengthen accountability and transparency in the delivery of Minnesota's transportation system.

Both states have also completed Statewide Strategic Safety Plans, which share many of the same goals and emphasis areas, including:

- Reducing impaired driving
- Increasing seat belt use
- Curbing aggressive driving
- Reducing lane and roadway departure crashes
- Improving intersection safety
- Increasing safety and safety awareness among young drivers

The Minnesota Department of Transportation also recently completed the Western Minnesota Regional Freight Study, which was a multi-modal transportation planning effort to gain a better understanding of the demands from freight being placed on regional transportation infrastructure and provide a framework to that addresses the following goals:

1. Examine regional and local issues not captured in previous freight planning efforts
2. Document the existing freight transportation network in Western Minnesota and identify any constraints or bottlenecks
3. Identify industry- or region-specific issues and trends as they relate to freight transportation
4. Plan for improvements to freight movements specific to the region
5. Strengthen freight considerations in public project planning and investment decision-making

The study analyzed and made the following recommendations relative to issues or infrastructure within the MPO planning area:

- Investigate potential large generators of inbound intermodal freight to the BNSF Dilworth Intermodal Ramp to create a better balance of inbound and outbound freight. Inbound container freight for manufacturers could help balance the outbound agricultural traffic at Dilworth, making the intermodal terminal more viable.

- Harmonize truck size and weight regulations and create a uniform permitting system to improve the economic competitiveness of the Upper Midwest region.

- Consider the adoption of tiered truck network metrics as a means to identify and/or integrate commercially advantageous freight-related improvements into the project prioritization process.

- Expand 511 Traveler Information Services to include more information on weight or bridge height restrictions, road closures, alternate routes and border crossings.

- Provide advanced information on the availability of truck parking stalls at rest areas, including the I-94 rest area in Moorhead, through the use of dynamic message signs or 511 information. Increasingly, drivers are finding these stalls filled to capacity, resulting in drivers driving on to find an alternate parking location (which may violate regulatory requirements for maximum on-duty and drive time) or parking on Interstate interchange ramps, creating an unsafe condition.

- Identify sites with the highest number of crashes/animal crossings and engage Mn/DOT District personnel in planning for the deployment, operation, and maintenance of wildlife collision avoidance systems. Monitor the area to assess system effectiveness.

- Identify corridors that would benefit from alternate route planning, such as corridors that regularly experience service interruptions due to weather events or flooding. Develop a comprehensive communications plan and ensure that information is clearly communicated in a standard format to all affected entities, communications networks, and travel information media.

- Identify rural intersections and truck entry area that have low lighting and/or poor visibility, which may be exacerbated during peak freight movements (such as harvest season) and provide advanced warning signalization.

- Consider designating commercial commodity "super-haul" truck corridors to handle the increasing number of over-dimension and over-weight truck loads, such as wind tower sections and turbine blades.

- Establish a regional freight advisory committee at the District level.

- Develop advanced traffic signal warnings on rural routes, especially on trunk highways with posted speeds over 45 mph.

All of these statewide goals, objectives and strategies will be used to guide the development of the local goals and objectives within this plan.

Readers can find the NDDOT Statewide Strategic Transportation Plan (Transaction II) on the internet at http://www.dot.nd.gov/public/transaction.htm. The Minnesota Statewide Transportation Plan can be found at http://www.dot.state.mn.us/planning/stateplan/download.html.

Local Governments

All of Metro COG's member jurisdictions develop and maintain a number of planning documents to help guide development and investment decisions. Of significant importance are Comprehensive Plans (Comp Plans) and city Growth Plans that identify future land use, utilities, green space, and transportation needs. These plans provide an overall vision for how a city can grow while maintaining or improving quality of life for residents by identifying strategic goals, actions, and policy direction.

While specific goals and objectives can vary from jurisdiction to jurisdiction, there are also many commonalities that become apparent during the review of local growth and comp plans, which include:

- City of Fargo's 2007 Growth Plan
- City of West Fargo's 2008 Comprehensive Plan
- City of Moorhead's 2004 Comprehensive Plan
- City of Moorhead's South and East (2005) and Moorhead North and East (2008) Growth Plans
- City of Dilworth's 2005 Growth Area Plan

It is not the intent of this document to over ride any of the goals, objectives, or recommendations made in those plans. On the contrary, this document will attempt to support those already adopted plans.

However, it must be recognized that this document views land-use at a different scale – as a larger metropolitan region. As such it will focus on larger, macro-level goals and defer micro-level goals to each specific jurisdiction.

There are some themes that are common among the comp and growth plans listed above:

Focus on the Neighborhood
Many of the plans speak to a desire to refocus planning attention at a neighborhood level, creating vibrant and quality environments within easy reach of any resident. Neighborhood schools, parks, commercial centers, and public art are just some of the proposed ways to achieve this.

Walkability/Bikability
Many of the plans also place great emphasis on "quality of life" issues. Providing a continuous, interconnected network of sidewalks, bike routes, and multi-use paths is often mentioned as being instrumental to maintaining that quality of life.

Environmental Protection
Preserving quality green space within the urban environment is a goal of most comp plans. Green space is often equated to recreational opportunities within a city. But the importance of preserving our natural resources (e.g., soil quality, water quality, etc.), limiting sprawl (i.e., agricultural land preservation), and being more energy efficient is also recognized.

Connections
A majority of the plans suggest/recommend greater connectedness among and between residents a significant goal. Civic spaces and a multi-modal transportation system are often mentioned as means to achieve this connectedness.

Other Local Plans

Other non-government bodies also write plans, some of which were also reviewed and considered as part of the development of this document, including:

- The Greater Fargo-Moorhead Economic Development Corporation's (GFMEDC) Growth Plan
- The GFMEDC's Moving the Lines: Transitioning to a High-Tech Economy Community Strategic Planning Initiative
- Fargo Public School's 2005 Strategic Plan
- West Fargo Public School's Strategic Plan
- Moorhead Public School District's 2007 Strategic Plan
- Metro COG's 2006 Regional Workforce Housing Profile

In addition to these plans, Metro COG has developed or participated in the development of numerous corridor studies, regional plans, studies, and analyses.

Metro COG staff did make an attempt to acquire local environmental plans from watershed districts and other natural resource groups, agencies, and coalitions, but as of the publication of this document, none have been found or provided.

Metro COG did, at the suggestion of FHWA through a planning review in the summer of 2008, form an Environmental Review Group which provided input on the development of the MTP at several points. In addition, Metro COG anticipates convening the ERG several times a year to discuss future plans/activities administered by Metro COG to accommodate specific input on those processes.

In 2008, Metro COG staff completed a comprehensive review of the existing long-range transportation plan and identified some emerging transportation issues. The issues were reviewed and approved by the Transportation Technical Committee and Policy Board, and are outlined as follows:

A. Population forecasts recently completed for Metro COG by McKibben Demographic Research indicates continued significant population growth in the urban area, putting further strain on the existing transportation network.

    a. The demographic forecasts also identified an increasing number of older people living in the urban area in the future, at least partly as a function of the metro area's role as regional medical services provider. This will certainly affect transportation systems, but it may be more difficult to predict in what way. It may be prudent to begin monitoring for possible increases in "front door" services such as grocery delivery and medical house calls, increased demand for transit, and/or changes in the traffic crash rates.

    b. The demographic forecasts also noted that low birth rates coupled with the aging baby-boomers may lead to low growth or perhaps even declining population beginning in 2030 assuming the international migration rate to the Fargo-Moorhead area does not change. It may become necessary for the region's businesses to actively recruit New Americans and migrant workers to the area if decision-makers want population growth to continue. A large influx of New Americans or international migrant workers to the area could also impact the demand for certain transportation services.

B. Amenities such as multi-use paths have been identified nationally as being important in attracting and keeping a skilled workforce. Locally, multi-use paths have been identified in surveys as being important to current residents.

    a. There may be need to better balance transportation choices away from "auto-centric" facilities to more "complete streets" and public transportation options (see D below).

C. Under current conditions the Federal Highway Trust Fund will be depleted of its balance in 2009, which will severely limit the availability of Federal funding assistance for transportation projects and transportation planning activities.

D. There is a growing need, even outside the Highway Trust Fund issues identified above, to use existing transportation infrastructure more efficiently.

Adding roadway capacity cannot be the first or only answer to level-of-service issues as such an approach is unsustainable in the long-run. Other approaches such as achieving operational efficiencies, deploying Intelligent Transportation Systems, or implementing transit oriented growth principles may be more cost effective solutions.

E. Growing demand for just-in-time freight may add further pressure to an already strained transportation system, particularly the interstate highway system.

   a. The need for more efficient, more effective intermodal freight options may be needed to maintain the regions economic competitiveness.

   b. There has been a correlation between the signing of the North American Free Trade Agreement (NAFTA) and an increase in international freight trucking on U.S. highways. Additional free trade agreements may also spur additional truck traffic.

   c. As interstate travel increases (as both a function of freight and non-freight trips) the need to protect the efficient operation of the interstate highways increases.

F. The relative lack of bridge connections across the Red River and Fargo's continued lead in jobs production will make it increasingly difficult for workers who live in Minnesota to commute to jobs in North Dakota.

G. The revitalization of Downtown Fargo-Moorhead could change commute patterns and/or levels-of-service on Downtown roadways and on arterials connecting to the Downtown system.

H. The growth of ex-urban communities like Horace, Harwood, Casselton, Mapleton, Glyndon, and others will increase the number of transportation planning challenges as well as increase commuting times and distances.

I. The "greening" of the U.S. economy and the desire to break America's dependence on foreign oil may lead to some transportation challenges. For example, typical Interstate Highway overpasses are not built high enough to accommodate the height of the wind tower sections which are manufactured in West Fargo. Also, plans to build high capacity ethanol plants in the region will most likely lead to an increase in trucks hauling corn on local highways.

J. Planning for the security of transportation resources is a growing need and a federal mandate.

Early Public Input

The opportunity for stakeholders and the public to provide input early in the planning process is important to properly shaping and directing the plan. The community as a whole is smarter than any one individual. In this case, for instance, it would be impossible for Metro COG staff to drive every roadway, walk every sidewalk, ride every bus, and bike every pathway in order to identify needs and opportunities. But collectively, the community does so. It then becomes Metro COG's responsibility to solicit and encourage the public's participation in the planning process in order to create an all-encompassing transportation plan. This was accomplished through multiple methods.

A series of issue-specific focus groups were convened in which invited guests met to discuss metropolitan transportation from a specific point-of-view. In all, ten focus groups were convened covering the following perspectives:

- Freight
- Bicycles and Pedestrians
- Commerce and Business
- Higher Education
- School Districts
- Security
- Environment
- Transit
- Elder Care and those with Limited Mobility
- Low Income Residents and New Americans

A public input kiosk was established in a storefront on Broadway in downtown Fargo during the 2008 Fargo Street Fair, an annual regional event that draws approximately 50,000 people. The kiosk was manned from 9 a.m. until 7 p.m. during the first two days of the street fair.

A public on-line survey regarding transportation issues was developed and posted to the Metro COG website for a 20 day period in July 2008.

More detailed information on all of the early public input activities is included in Appendix A.

Focus Group Input

About 75 stakeholders and local residents participated in the focus group process. Even though each focus group was considering transportation needs and opportunities from a unique perspective, there were several themes and phrases repeated by many of the groups.

Density and Mixed-Uses
The idea repeated most often was the need for affordable density coupled with mixed land-uses. As one focus group participant said, "We want to be able to walk to the corner grocery store." Several participants spoke of the environmental benefits of being able to complete more trips without using a motor vehicle. A school district representative observed that he sees more children walking and biking to school in those neighborhoods that have higher residential densities around the school.

Better Bicycle Route Connectivity
Somewhat related to the first issue, many groups voiced a need for a more bicycle friendly urban environment in which one can get from "here" to "there" using a connected set of bicycle facilities. Clear route identification to high traffic generators like the college campuses was also desirable.

More Bus Shelters
More than being a simple discomfort, the lack of bus shelters was seen as being a barrier to transit ridership. The need for more amenities within

shelters, such as wintertime heating, lighting, and more frequent cleaning, was also mentioned.

Transit Service to Industrial Areas
For most, this was an economic development issue. Companies need workers and workers need jobs, but the lack of transit service to the industrial parks is preventing some workers from connecting to jobs. Focus group participants recognized that continuous service to the industrial parks may not be realistic since demand for transit service is usually limited to short periods of time prior to and just after the end of work shifts. However, they recommended a shuttle service or short-term route be made available for peak demand times.

These were the most commonly mentioned issues and opportunities. Many other valid, important, and significant issues and opportunities were identified during the focus group input process. A complete summary of input received from the focus groups is provided in Appendix A. All of the input was considered during the development of the Regional Development Framework of this plan.

Kiosk Storefront Input
An information kiosk was set up in a Broadway storefront during the 2008 Downtown Fargo Streetfair, an annual regional event that attracts residents from all over Fargo-Moorhead. The public was invited to view input received from the focus groups and the public could also add their own ideas to the list generated by the focus groups. They were also encouraged to fill out general comment cards and/or paper copies of the survey as well. About 43 members of the public signed-in at the kiosk, though several more viewed the information without signing in.

The focus group input that the public reviewed was grouped together into issue areas under a single title. The public was asked to indicate the ideas with which they agreed and the ideas with which they disagreed. By keeping track of which issue areas received the most public support, a simple prioritization of the focus group input developed. For each member of the public that agreed with an issue area, that issue received a +1, and for each member of the public that disagreed with it, it received a -1.

The top focus group issue areas are listed below along with the final scores based on public support:

- Transit needs a better image (6)
- Buses should run on a grid rather than pulsing at the GTC (5)
- We need more bus shelters (4)
- We need bus service to Dilworth (4)
- We need bus pullouts so that traffic can keep moving while the bus picks up/drops off (4)
- We need to conserve transportation dollars by building roads right the first time (4)
- We need transit to serve high-traffic areas like the industrial parks (3)
- We need to begin planning for light rail (3)
- We need rural transit for those who work full-time in Fargo-Moorhead but cannot afford to live here (3)
- We need to explore the possibility of MAT providing services to the school districts (3)

It is instructive to note that 9 of the top 10 priority areas concern public transit. It is also instructive that the majority of all the issue areas identified by the focus groups deal with public transit. Throughout the focus group and public input process, the state of the roadway network was rarely mentioned. Transit, which by 2000 Census data accounts for about 1% of all work trips in the Fargo-Moorhead area, was by far the most often talked about issue.

Public Survey

The survey was developed by Metro COG both to solicit general public comment, but also to solicit feedback on a series of specific questions. There were 56 survey responses received. In cases where survey responses were received from the same IP address, survey answers were compared to account for possible survey responses that were submitted multiple times from the same person. Following this process, 49 survey responses were accepted as valid. The survey questions and percentage of positive response for each answer are below. In all cases, survey respondents were able to select multiple answers for each questions so the percentages do not sum to 100.

"If gasoline prices remain at current levels or continue to rise in the future, how will it affect your travel behavior?

59.18%	Will drive less by scheduling and consolidating trips
42.86%	Will buy a more fuel efficient vehicle
36.73%	Will ride bicycle to work/school more often
22.45%	Will ride the bus to work/school more often
20.41%	Will walk to work/school more often
8.16%	Will carpool with other employees/students
8.16%	My behavior will not change
6.12%	Other
4.08%	Will move closer to where I work/attend school

This survey was conducted in the summer of 2008 when gas prices were near $4 a gallon. It is instructive to note that 50% to 60% of respondents chose options designed to allow them to continue using their personal motor vehicles. One-third to one-fifth of the public appeared willing to consider switching modes of transportation.

"If you were Mayor of your city, what would be your top priorities for the city's transportation dollars"

69.39%	Add more buses to serve more areas of the city
46.94%	Make buses run more often
44.90%	Build more bikeways and bike bridges to improve bikeway system continuity
36.73%	Improve roadway pavement conditions
32.65%	Make bus routes more intuitive and easier to understand
32.65%	Provide incentives to promote ride-sharing, telecommuting, and flex-time scheduling to decrease traffic
22.45%	Build more roadway underpasses under railroad lines
20.41%	Invest in technology to keep motorists informed of traffic conditions and improve traffic flow
14.29%	Build more roadway capacity to improve traffic flow
14.29%	Add signs to the bikeways so riders know where to go
12.24%	Build more roadway bridges over the Red River

8.16%	Create a special transportation fund for projects that enhance the region's economic competitiveness
6.12%	Other
6.12%	Try to reduce crashes through safety improvements, education campaigns, etc.
4.08%	Retro-fit roadway infrastructure to make it easier and safer for older drivers to travel
2.04%	Build an intermodal freight yard

"If you were Mayor of your city, what transportation policies or practices would you put into place?"

44.90%	Require bicycle lanes or shoulders on new roadways
44.90%	Require sidewalks on both sides of new roadways
38.78%	Require developers, planners, and engineers to build a street network that balances the needs of all forms of transportation
36.73%	Require bike paths adjacent to new roadways
36.73%	Require more mixed-use development so that people can live closer to where they work and shop
28.57%	Emphasize preservation of the existing transportation infrastructure over building new facilities
26.53%	Emphasize the need for a transportation system that is accessible by citizens with limited mobility
26.53%	Adjust residential and commercial densities to better utilize existing roadway capacities
26.53%	Require developers, planner, and engineers to build a street network in more of a grid pattern rather than curvilinear street with a lot of cul-de-sacs
26.53%	Require roadways to be numbered or named in alphabetical order to make it easier to find addresses
20.44%	Emphasize more/better environmental protection in transportation projects
12.24%	Require developers to put parking lots behind commercial building so that the storefronts can be closer to the sidewalk and roadway
12.24%	Require traffic calming in all school zones
6.12%	Other
4.08%	Find more sources of local funding for transportation
2.04%	Hold simulated disaster/evacuation exercises

Again, we see strong interest in a multi-modal transportation network.

The last question in the survey did not allow multiple responses. It was a question that was written following the focus group meetings in which a number of different groups each independently brought up the idea of planning for light rail.

"In your opinion, should the F-M region begin planning for a light-rail transportation system?"

48.98%	Yes
44.90%	No

The public appears more-or-less evenly split on this issue. Light rail is tremendously expensive[1] and takes years of planning to build. However, some early planning and

[1] A survey of some light rail projects completed in the United States between 2003 and 2007 show an average cost of $45 million per mile.

right-of-way preservation could be done relatively inexpensively. Given the time and resource constraints of this plan, a future light-rail corridor planning study is suggested as a future study in Chapter 8. Local consensus on the need for such a study has not been achieved.

The public input represented here is only a summary of all the public input received, which is presented in more detail in Appendix A. All public input was considered as part of the planning process of this document.

The Regional Vision

One of the most important goals of this plan is to take note of all of the input from Metro COG's cognizant agencies, the public, and Federal and State transportation guidelines and regulations, along with relevant local transportation data and information in order to synthesize it into a comprehensive vision for the future of the transportation system in the Fargo-Moorhead metro region. This textual vision was used to formulate a series of regional goals and objectives for the transportation system.

There appears to be growing consensus and concern among the scientific community regarding the non-sustainability of automobile-centric development and its overall impact on the environment. There are indications from the Federal government that green-house gas emissions may be a big part of the next transportation authorization. There also appears to be a growing consensus regarding the need for America to be energy independent and to minimize our reliance on foreign sources of oil. This issue is often framed not just as a financial concern, but a national security concern as well. Other areas of transportation environmental impact, such as clean drinking water, appear to be emerging environmental issues as well.

Public health is also an issue of growing concern. The obesity pandemic, rising rates of asthma and diabetes, and other health issues have been tied to our auto-centric urban form and the lack of physical activity experienced by the average American. The presence of usable non-motorized transportation networks is often cited as a way to encourage active living and healthy lifestyles.

In the early public input phase of this plan, the public consistently expressed its desire to move beyond automobile-centric growth and development throughout the public input process for this plan. It may also be a financial necessity. Roadway construction and maintenance is expensive and financial resources are limited. Continuing to address traffic operations only from the capacity side may not be enough. The demand for roadway capacity should also be addressed. Roadways have to operate as efficiently as possible so as to minimize the need to build new ones or widen existing ones. Limited transportation funds will need to be used as efficiently and effectively as possible. Intelligent transportation systems (ITS) and non-infrastructure congestion mitigation processes can also play a role in efficiently circulating traffic.

Transit needs to evolve beyond its current role as a "social safety net" transportation provider and become a transportation provider of choice for an increased share of the commuting public. Every transit trip means one less automobile trip on the roadway network, improving roadway levels-of-service and efficiency. Demographic trends also suggest that there will be a growing number of older residents and possibly residents for whom English is not their first language. Both groups will require certain levels of public transit to serve their respective transportation needs. The need for transit to evolve is also rooted in finances. When the metro area surpasses 200,000 residents (possibly as soon as 2020) MAT will no longer be able to use their FTA 5307 dollars to fund operations. A local source of funding will need to be found to replace those federal operations dollars, which are currently about 40% of MAT's operations buget. A local regional transit authority can be one part of the solution, as can greater buy-in from local businesses or TMAs through bulk-purchase programs similar to the U-Pass program.

Non-motorized forms of transportation, along with transit, should be given equal consideration in the planning and design phases of transportation projects and should be provided with distinct competitive advantages where possible. The connectivity and contiguousness of sidewalks and bicycle routes is an important local consideration in encouraging demand for non-motorized trips. It may also result in improving the physical health and well-being of area residents, as well as being important to attracting and retaining a skilled and creative workforce.[2]

The prioritization of transportation projects using limited financial resources will become increasingly competitive, so an objective and performance-based prioritization process will become increasingly important. Some of the more important considerations in the prioritization process include addressing existing congestion, the prevention of congestion, the efficient movement of goods, safety of the traveling public, and the operation of the transportation system during times of natural or man-made disasters.

Finally, the linkage of land-use planning with transportation planning must be strengthened rather than one simply reacting to the other. The urban form itself can encourage or suppress demand for specific types of transportation. If the demand of single-occupant-vehicles is to be adequately addressed, land use must be part of the proposed solution.

Regional Development Framework

This regional development framework and the goals, objectives, and strategies contained herein are designed to address and consolidate all of the Federal, State, Local, Public Input, guidance, and regulations noted on previous pages into one comprehensive regional vision.

For the outline that follows, the goals, objectives and strategies are listed as:

1) Goal

a) Objective

i) Strategy

Performance measures designed to measure and evaluate overall goal attainment are listed under their own heading. More detail on the data sources and calculations for the performance measures is provided in Appendix X.

[2] Florida, Richard. *The Rise of the Creative Class and How It's Transforming Work, Leisure, Community & Everday Life,* 2003, Hazard Press.

1) **Reduce the number and severity of transportation system crashes**

   a) *Improve intersection safety*

      i) Identify high crash-rate intersections and analyze crash types.

      ii) Require adequate building setbacks in land-use and zoning policies for corner lots to maintain adequate sight distances.

      iii) Consider all intersection design options, including three-quarter access and roundabouts.

      iv) Install pedestrian countdown timers.

      v) Provide timely winter maintenance such as snow plowing, and ice and slush removal as appropriate.

      vi) Develop a regional signal timing manual to provide uniformity in signal operations.

   b) *Reduce roadway and lane departure crashes*

      i) Consider safety options like rumble strips, rumble stripes, and cable barriers and install as appropriate.

      ii) Minimize or eliminate skewing of lanes.

      iii) Establish consistency with metropolitan access management guidelines.

   c) *Improve roadway safety for bicyclists and pedestrians*

      i) Provide and maintain appropriate roadway crossing safety.

      ii) Implement additional safety measures where higher bike or ped crossings exist.

      iii) Provide appropriate bicycle and pedestrian facilities adjacent and parallel to roadways.

      iv) Support a higher measure of safety for corridors that cross major barriers like rivers, interstate highways, and railroad tracks.

   d) *Recognize that driver behavior is often a significant contributing factor in crashes*

      i) Support law enforcement efforts to decrease crash rates, such as sobriety check points, seat belt use encouragement, and speed enforcement.

      ii) Support restriction of cell phone use by drivers.

iii) Support increased driver education efforts.

iv) Design roadways to be self-regulating (especially for speed) to the maximum extent possible.

Performance Measures:

Annually

(1) Intersection crash frequency for arterial-arterial, arterial-collector, and collector-collector intersections

(2) Crash frequency for arterial and collector links

(3) Crash frequency for those involving bicycles or pedestrians

2) Be Good Stewards of the Public's Money

a) Form public-private partnerships to achieve transportation goals where appropriate

i) Broaden the availability of MAT bulk purchase plans (e.g., the U-Pass program, M3TRO, etc.) to the community at large.

ii) Explore public-private partnerships to pay for new transit services, transit shelters, and transit operations.

iii) Build and maintain relationships with area businesses to increase the understanding of each party for the other's needs and constraints.

b) Encourage infill development and redevelopment to minimize costs of new infrastructure and public services

i) Utilize Congestion Management Toolbox (page 2.22).

ii) Create and/or revitalize neighborhoods for full and efficient utilization of existing services like roads, sewers, potable water, emergency services, and schools.

c) Utilize good pavement management practices to extend pavement life

i) Monitor pavement surface conditions and schedule timely investments.

ii) Schedule preventative maintenance and overlays before roadway surfaces are deteriorated.

d) Identify and prioritize needs through good planning

i) Preserve future regional corridors through right-of-way preservation and/or early purchase of right-of-way.

ii) Develop a needs prioritization matrix that allows multiple projects to be compared to one another based on objective, measureable criteria.

iii) Support and promote exurban land use coordination and encourage regional land use planning.

e) Optimize value throughout the project design and construction process

i) Use innovative contract practices (e.g., Design-Build, lane rental, and pay for performance, etc.) as appropriate.

ii) Utilize Value Engineering process to maximize project cost effectiveness.

Performance Measures:

Annually

(1) Comparison of total urban area lane miles vs. total number of households

Every 5 years

(2) Vehicle hours traveled as reported by the regional travel demand model

(3) Percent of system miles that meet good ride quality index or pavement quality index

3) Maintain and Improve the Region's Economic Competitiveness

a) Maintain and improve efficient freight movement

i) Protect operational capacity of Interstate highways in the metro area.

ii) Build and maintain relationships with area businesses to increase the understanding of their freight needs.

iii) Establish land development requirements that ensure adequate transportation planning and roadway design for truck stop/truck service developments.

iv) Support the growth of regional intermodal freight capacity.

v) Support recommendations of the 2009 Western Minnesota Freight Study.

b) Provide transportation solutions for the metro area workforce that lives in surrounding exurban communities

i) Provide rural transit service where demand warrants.

ii) Consider organized ridesharing or van-pooling where service is needed but funding does not allow or demand is not sufficient to justify fixed-route transit service.

iii) Assess park and ride needs for exurban commuters.

c) *Rehabilitate/Rebuild critical bridges as appropriate*

i) Prioritize bridges based on ADT, truck traffic, and available alternatives.

ii) Continue to monitor bridge conditions and schedule rehab/repair work accordingly.

d) *Develop and maintain roadway connectivity that is appropriate for the facility type and land-use environment*

i) Build arterials and collectors in a grid pattern to more evenly disperse traffic.

ii) Identify future potential river, interstate, and railroad bridge crossing locations and preserve right-of-way.

iii) Eliminate or minimize cul-de-sacs within developments; encourage highly connective local streets.

e) *Provide public transportation to large employers*

i) Study the potential of increasing of service through van pooling, organize ride-sharing, and others.

ii) Explore extended evening service for fixed route buses.

f) *Help attract growth sector businesses*

i) Develop and maintain access to competitively-priced, reliable, and business friendly air service to the F-M area.

ii) Keep average commute times low.

iii) Improve bicycle route network connectivity.

Performance Measures:

Annually

(1) Truck volumes on arterial corridors

(2) Rural Transit Ridership

(3) Track Availability of Rural Transit Services

(4) Number of freight and passenger airlines serving the F-M region

(5) Miles of bicycle routes

Every 5 years

(6) Average commute time

(7) Average Daily Traffic, Volume-to-Capacity ratios, and Level of Service on freeways and major arterials

(8) Bridge structural deficiency ratings

(9) Number of jobs within one-quarter mile of fixed route transit

4) Manage and Operate Roadways Efficiently

a) Enhance regional coordination of traffic signal operations on arterials

i) Develop necessary multi-jurisdictional legal and cost sharing agreements.

ii) Create a technical advisory committee to ensure timely and efficient implementation of Metropolitan Traffic Operations Action Plan (Metro Ops).

iii) Develop uniform regional policies and standards for such items as geometric design, basic signal settings, signal timing/phasing, pedestrian countdown placement, in-street pedestrian signs, midblock crosswalk locations, dark signals, battery backup systems, etc.

iv) Enhance training of traffic operations staff and ensure a uniform level of expertise; ensure all signal operators are fluent in Synchro and are using it for evaluating signal timing and operations.

v) Develop a pool of funds to facilitate procurement of technical assistance services to support implementation of the Metro Ops Action Plan.

vi) Develop a priority list of projects, hardware, and software needed to facilitate regional interoperability.

b) Evolve toward the centralized management of transportation system devices and personnel

i) Metro COG will revalidate and gather consensus and direction for the Traffic Operations Center (TOC) Working Group.

ii) Develop a concept of operations for a centralized "hybrid" TOC.

iii) Connect the Fargo Signal Shop, NDSU, and the NDDOT Fargo TOC to allow for the joint distribution and consumption of traffic related data, imagery and signals systems operations.

iv) Metro COG will lead the regional partners in a continuous dialogue with the Regional Dispatch Center concerning the long-term relationship between regional operations strategies and incident management. This will include an open discussion as to the Regional Dispatch Center's relationship to the longer term project of creating a regional TOC.

v) Connect Mn/DOT and West Fargo with the existing operations center.

vi) Implement technical elements of the 2008 F-M Metro ITS Plan (e.g., CCTV, sensors, signs, etc.).

vii) Create agreements necessary (e.g., MOUs, cost sharing, service contracts, etc.) to facilitate regional project deployment.

viii) Study the formation of a regional traffic board for the administrative and technical aspects of regional traffic management.

c) Manage congestion to improve traffic flow and conserve energy

i) Establish multijurisdictional protocols for special events (e.g., FargoDome events, parades, etc.).

ii) Develop region-wide protocols to respond to incidents and emergencies (flooding, hazmat, terrorism, etc.).

iii) Ensure region-wide coordination among traffic, emergency, and maintenance agencies (police, fire, DOTs, Public Works, Regional Dispatch Center, Metro Transit, etc.).

iv) Regularly monitor peak hour travel times on key corridors.

v) Study corridors experiencing congestion; schedule and fund appropriate measures to relieve congestion.

vi) Continue development and maintenance of a regional traffic demand model to forecast future corridor levels-of-service.

d) Utilize Travel Demand Management practices as appropriate

i) Implement recommendations and action steps as set forth in the 2007 TMA Feasibility Study.

ii) Continue to assess interest in the development of a Transportation Management Association in specific areas where driving a single-occupant automobile may not be the most efficient form of transportation (e.g., downtown, colleges, and/or southwest area of Fargo).

iii) Encourage large employers to stagger shift start times.

e) Develop system operations and performance measures for the region's transportation system

i) Create the necessary physical or virtual connections among the regional partners to allow for the distribution and consumption of traffic related information/data.

ii) Metro COG will review and revise its annual traffic counting program to ensure it supports the collection of timely information relative to the operational performance of the regional transportation system.

iii) Each system operator will review its traffic counting and data collection programs to ensure it is working to address the objective of gathering data relevant to understanding the operational performance of the regional transportation system.

iv) Develop a program that is regularly collecting and analyzing data on the operations of the region's transportation system; archive the date for future use.

v) Regularly consult with stakeholders such as the Red River Dispatch Center, Metro Area Transit, local emergency responders, and special user groups to discuss system operations.

vi) Metro COG, in cooperation with ATAC, will annually prepare a joint report on the state of systems operations in the Metro Area, which will also document the current state of traffic data collection in the metro area and make recommendations for data collection improvements, if necessary.

vii) Identify and address hot spots of operational deficiency based on available data.

f) Cooperate across jurisdictional boundaries to create a seamless transportation network

i) Member jurisdictions should continue participation in Metro COG.

ii) Extend Metro COG services to neighboring jurisdictions as appropriate.

iii) Continue development and maintenance of a regional traffic demand model to forecast future corridor levels-of-service.

iv) Consider expansion of the Metropolitan Planning Area after completion of the 2010 Census.

g) Support Complete Streets concept for the purpose of optimizing personal mobility

i) (Re)Construct roadways that balance the needs of motor vehicles, transit, pedestrians, and bicyclists.

h) Ensure that the transportation system will operate in times of manmade or natural disasters

i) Create redundancy for critical system elements, including CCTV, sensors, and fiberoptics.

ii) Identify Regionally Significant Transportation Infrastructure (RSTI) and establish protocol for tracking changes and modifications to RSTI.

iii) Develop contingency plans for critical network links with pre-identified emergency detour routes.

iv) Support the development of a centralized information gathering center that will operate in times of emergencies.

v) Support Metro COG's participation in groups such as Emergency Services Management and other opportunities for regional coordination and collaboration on issues of transportation security and incident response.

<u>Performance Measures:</u>

<u>Annually</u>

(1) Arterial travel times, Average Daily Traffic, volume-to-capacity ratios and levels-of-service

(2) Annual survey of region's largest employers regarding state of Travel Demand Management practices

(3) Local, regional, and state emergency disaster plans, as necessary.

<u>Every 5 years</u>

(4) Level-of-service traffic modeling analysis with Red River bridge closures in order of susceptibility by flooding

5) Provide an Improved, Safe and Efficient Public Transit Service

a) MAT should mutually coordinate with local school districts to identify needs and coordinate services (e.g., buses that provide service for students involved in after school activities, etc.).

i) Mutually coordinate with school districts to ensure that transportation is available for Adult Education, ESL, and other educational classes.

b) Implement recommendations of the 2007 Metropolitan Transit Plan and supplemental studies, analyses, and reports such as the Moorhead Expansion and Alignment Study and the Southwest Metro Transit Study.

i) Continue coordinating with the MAT Board on plan implementation, issue identification, and development of the next Transit Plan.

c) Prioritize transit corridors and provide service that corresponds to the needs and schedules of the traveling public.

i) Explore the need for limited-stop service between high-demand destinations and implement as appropriate.

ii) Explore the need for increased bus frequency along high-demand corridors and implement as appropriate.

iii) Develop service alternatives that improve travel times from north to south and allow for the interconnection of cross-town routes.

iv) Continue working toward a regional transit service system/structure regardless of jurisdictional boundaries.

v) Balance the need for better service on existing routes with route expansion and/or route modifications.

d) *Make transit more accessible*

i) Consider eliminating fares or establishing a fare-free zone in the core urban area by identifying alternative forms of local match or funding sources.

ii) Continue exploring corridor-specific routes (e.g., 25th Street and 9th/57th Street) and implement as appropriate.

iii) Continue U-Pass program and expand the concept to the larger community through voucher or bulk purchase policies (e.g., M3TRO).

iv) Continue to monitor Paratransit usage by agencies and facilities.

v) Provide more shelters; examine possibility of providing higher quality shelters (e.g., with heat and seating, etc.) at high-boarding locations.

vi) Improve shelter maintenance and snow clearance around shelters.

vii) Manage the image of public transit to attract more choice riders. Marketing transit as an environmentally friendly transportation choice has been successful in other areas.

viii) Balance service for non-choice riders with needs of choice riders and commuters.

e) *Explore local dedicated taxes or other fees to augment and eventually replace FTA Section 5307 fund for transit operations in the F-M Metro Area*

<u>Performance Measures:</u>

<u>Annually</u>

(1) Transit rider satisfaction survey

(2) Number of transit boardings

(3) Number of transit shelters

6) Improve Bicycle Route Connectivity

a) *Implement recommendations of the 2006 Metropolitan Bicycle and Pedestrian Plan*

i) Strive to meet the needs of all bicyclists, including commuters, children, basic adult and recreational riders.

b) *Close gaps in the bicycle network, especially the principal bikeway network*

i) Jurisdictions should analyze existing network gaps and recommend solutions, which may include shared-use paths or on-road bicycle facilities such as bike lanes or signed-shared roadways.

ii) Build additional bike-pedestrian bridges over rivers and other barriers (e.g., railroads, interstate highways, etc.), where feasible.

iii) Improve usability of existing bike-pedestrian bridges through the installation of new lift mechanisms and/or addressing elevation issues.

c) *Improve bike route signage, way-finding, and pavement markings*

i) Provide destination signage at regular intervals on major bike routes.

ii) Provide "Metro Trails" trailblazing signage on principal bikeway network to establish and identify the regional bikeway network.

iii) Provide signage that directs riders to destinations or other bike routes.

iv) Establish a system of bike route nodes which include facilities like bike racks, bathrooms, map kiosks, potable water, benches, garbage cans, and other necessary amenities and infrastructure.

v) Provide consistent template of signage within metro area.

d) *Build "complete streets" that balance the needs for all modes of transportation with adjacent land uses*

i) Ensure safe transitions/connections between on-road bike routes and multi-use paths.

ii) Review and revise jurisdictional codes, ordinances, and regulations to incorporate Complete Streets concepts/principles, where applicable.

e) *Encourage and support education efforts for both bicyclists and motorists regarding interaction and proper protocol on local roadways*

i) Identify funding for bike/motorist education effort.

f) *Establish an evaluation and rehabilitation program for bicycle and pedestrian facilities throughout the metro area*

i) Consider neighborhood "adoption" of bike routes and shared-use paths for maintenance and periodic evaluation.

ii) Establish one phone number for the reporting of maintenance issues by the public; post the number on the back side of Metro Trails signs.

iii) Roadway segments of the Principal Bikeway Network should be held to a pavement quality standard that specifically recognizes the needs of bicyclists.

g) *Connect the F-M metro area by bike route with surrounding communities and areas of interest (e.g., Buffalo River State Park, etc.)*

Performance Measures:

Annually
(1) Bicycle counts on identified bike routes

(2) Crash frequency for those involving bicycles or pedestrians

Every 5 Years:
(3) Number of commuting trips made by bicycle or walking

(4) Pavement quality index for bicycle routes

7) Build a Livable Community with a High Quality of Life

a) *Encourage more mixed-use development*

i) Plan for neighborhood commercial and retail such that many daily needs of neighborhood residents can be met within the neighborhood.

ii) Keep industrial land uses separate or adequately buffered from residential land uses.

b) *Encourage more areas of compact development for all income levels*

i) Provide quality green space for every neighborhood because higher densities are more attractive when coupled with quality green space (e.g., Fargo's Island Park neighborhood).

ii) Require appropriate right of way easements for public access to green space.

iii) Provide a variety of housing options and densities within each neighborhood.

iv) Utilize zoning practices that provide flexibility to support/encourage mixed uses and higher densities.

v) Encourage high quality buildings; focus on use and form.

c) *Reinvest in core neighborhoods*

i) Promote redevelopment in marginal neighborhoods and underutilized parcels.

ii) Where sufficient excess transportation and utility capacity exists, encourage mixed-uses and higher densities.

iii) Support and encourage historical integrity and unique neighborhoods.

d) *Improve connections between people*

i) Consult with transit when making land-use decisions (as illustrated by Fargo's Comprehensive Policy Plan, Policy Letter 302); consider transit oriented development land use forms.

ii) Provide sidewalks on both sides of each roadway.

iii) Capitalize on opportunities to provide advantages for walking and biking within neighborhoods (e.g., where cul-de-sacs are unavoidable, encourage developers to use one lot to provide a shared-use path connection to adjacent streets, sidewalks or green space, etc.).

iv) Provide ADA compliant sidewalk curb-cuts at new intersections and continue retrofitting older intersections to make them ADA compliant.

v) Encourage and promote public art.

vi) Create overlapping systems for pedestrians, transit, vehicles, and bicycles that provide for ease of movement within and between neighborhoods.

vii) Create opportunities for public gatherings.

viii) Identify gaps in the existing pedestrian network and schedule improvements to close those gaps.

e) *Build and maintain neighborhood-scale schools that are easily accessed by walking or biking*

i) Encourage school districts to build schools at the center of neighborhoods with enrollment areas bounded by high traffic corridors.

ii) Building elementary or middle schools adjacent to arterials should be avoided.

iii) Discourage school sites that are surrounded by parking lots.

f) *Conserve prime agricultural land and environmental resources*

i) Require a minimum 450’ setback from the center of navigable rivers.

ii) Establish a program of right-of-way dedication to allow for the development and expansion of river Greenway corridors, support flood mitigation, preserve river vegetation, and bank stabilization.

iii) Consider energy usage design standards and their long-term costs for citizens.

iv) Encourage native plantings or retention of native species adjacent to drainage ditches, roadways, utility corridors and within green spaces.

v) Use regional stormwater ponds.

vi) Support narrower street widths to reduce impermeable surfaces which in turn may also reduce special assessments for property owners.

vii) Limit sprawl and the unnecessary construction and maintenance of infrastructure

viii) Protect the rural character of extraterritorial areas until such time as municipal facilities can support urban scale development in these areas.

g) *Design corridors and transportation infrastructure that is context sensitive*

i) Avoid planning residential neighborhoods adjacent to interstate highways and major arterial roadways when possible.

ii) Work with developers to provide deep lots and extra buffering when residential land use along arterials is unavoidable.

iii) Provide street shade-trees on both sides of neighborhood collector roadways.

iv) Support traffic calming for local residential streets.

v) Consider maximum parking limits within land development codes and encourage shared parking among adjacent businesses.

vi) Encourage landscaping within large parking lots.

vii) Encourage rear parking lots in commercial areas.

viii) Use detailed, human-scale design.

ix) Establish land development code regulations further limiting the spacing and type of billboards (off-premises advertising) along arterials and collector roadways.

<u>Performance Measures:</u>

Annually

(1) Average number of households per acre

(2) Average population per acre

(3) Assessed housing value ranges

(4) Number of new households vs. linear feet of utility infrastructure expansion

Every 5 years

(5) Increase in households or jobs by TAZ

Performance Measures

Performance measurement is the use of objective, statistical evidence to determine progress toward a specific defined objective. They are key to setting goals and standards, detecting and correcting problems, managing and improving functionality, and documenting accomplishments. This plan makes the first attempt within a FM MTP to establish a set of regional performance measures for the transportation network. Given tightening budgets and growing needs, developing a basket of objective performance-based criteria will help identify and prioritize needs to ensure that available funding is being directed to the most appropriate projects.

Following the development of the goals and objectives above, a list of potential performance measures was created to help measure their attainment. It became quickly apparent that the list of possible performance measures would need to be pared down to those that were most vital, relevant, and which could be measured at a reasonable cost. It was also clear that some of the goals and objectives were not performance-based, but rather process-based. For example, the objective of forming public-private partnerships to achieve transportation goals certainly could be measured (e.g., one public-private partnership, two public-private partnerships, etc.) but its measurement is not one of transportation system performance. Instead, the formation of a public-private partnership is but one means to the ultimate end of being good stewards of the public's money. It is a potential course of action; not a system performance issue that needs to be measured. The complete list of potential performance measures was pared based on input and assistance of jurisdictional staff.

Performance objectives work with performance measures. For example, "intersection crash rates" is one performance measure, but the performance objective may be to reduce the crash rate by 10% over five years. This being the first regional foray into the world of performance measures, it was not always clear what an appropriate regional performance objective might be for each measure. Expanding on the example above, would a 10% regional reduction in crash rates be realistic and achievable given available funding? That is difficult to quantify, so for the next five-year period, Metro COG will collect and monitor crash frequency data with the expectation that reasonable performance objectives will be more easily ascertained by the time this plan is updated in 2014. For now, performance objectives will simply be measured in terms of any positive impact, as seen in Table 57.

Table 57. F-M Metro Area Regional Performance Measures

Performance Measure	Performance Objective for Next 5 years	Calculation	Data Requirements	Frequency of Measurement	Data Sources
Intersection crash rates	Any reduction	∑(Ri=2*C*1,000,000/ ∑AADTs*Y*365) / ∑ all FC intersections	Number of crashes by location	Annually	State DOTs
Roadway link crash rates	Any reduction	∑(Ri=2*C*1,000,000/ AADT*Y*365) / ∑ all FC links	Number of crashes by location	Annually	State DOTs
Crash frequency involving bicycles or pedestrians	Any reduction	number of crashes involving bike or ped / current population	Number of crashes involving bicycles or pedestrians; population	Annually	State DOTs; Census Bureau
Vehicle Hours Traveled (VHT)	Any reduction	(2010 VHT / 2010 Pop) - (2005 VHT / 2005 Pop)	Total VHT in Region; population	5 years	Regional Travel Demand Model; Census Bureau
Urban lane miles vs. households	Any reduction	Urban area lane miles / households	Urban area lane miles; number of urban area households	Annually	GIS; Census Bureau
Ride Quality	Any increase	(2010 Total miles of good pavement or ride quality / 2010 total system miles measured) – (2005 total miles of good pavement or ride quality / 2005 total miles)	Pavement quality or ride quality	5 years	State DOTs and/or local jurisdictions
Truck volumes on arterials	Any increase	∑ AADTs of commercial trucks at specific locations	Truck AADTs at specific locations	Annually	State DOT's; Metro COG
AADT	Any reduction	Average AADT (by FC) / population	Average AADT by FC	Every 5 years	State DOT's; Metro COG
V/C Ratios	Any reduction	∑ V/C / number of links measured	V/C ratios on FC roads	Every 5 years	Travel Demand Model
Rural Transit Ridership	Any increase	Total number of rides provided	Total number of rides provided by rural transit service	Annually	Transit providers
Average Bridge Rating	Any increase	∑ bridge deficiency ratings / total number of bridges	Bridge structural deficiency ratings	Every 5 years	State DOTs or local jurisdictions
Jobs within quarter mile of transit service	Any increase	Total number of jobs within one-quarter mile of fixed-route transit service	Transit routes; number of FTE jobs at each business	Every 5 years	GIS; transit providers; Jobs data by location
Passenger airlines	Any increase	Total number of passenger airlines providing regular, scheduled service to Hector International Airport	Total number of passenger airlines providing regular, scheduled F-M service	Annually	Airport Authority
Miles of bicycle facilities	Any increase	Total miles of shared-use path + total miles of bike lanes + total miles of bike-able shoulders + total miles of signed-shared roadways + total miles of wide curb lanes	Total miles of bicycle facilities by type	Annually	GIS; TIP, local jurisdictions
Average Commute Times	Any decrease	Average regional commute time	Average regional commute time	Every 5 years	Census Bureau Community Survey
Arterial Travel Times	Any decrease	∑ average arterial travel times for specific corridors	Travel time runs on specific corridors	Annually	Metro COG
TDM Survey	Any increase	Number of large employers practicing some form of TDM	Survey of regional large employers	Annually	Metro COG

Performance Measure	Performance Objective for Next 5 years	Calculation	Data Requirements	Frequency of Measurement	Data Sources
Disaster plan coordination	Yes	Have local, regional, and state emergency plans been reviewed and coordinated? Yes or No	Written summary and comparison of local, regional, and state emergency plans with recommendations for coordination needs	Annually	Emergency managers
Flood Event LOS	Any decrease in regional VMT, VHT, and average V/C during flood events	Model the regional roadway network, removing bridges in order of susceptibility to flooding (up to 100 year flood event) and measuring V/C, VMT, and VHT each time a bridge is removed	Bridge deck elevations	Every 5 years	Regional Travel Demand Model
Transit Rider Satisfaction	Any improvement	∑ of Transit Rider satisfaction / total # of riders surveyed	Transit Rider Satisfaction Survey	Annually	Metro COG; Transit providers
Transit Boardings	Any increase	Total transit boardings / population	Transit boardings; population	Annually	Transit providers; Census Bureau
Number of Transit Shelters	Any increase	Total number of transit shelters / population	Number of transit shelters in service; population	Annually	Transit providers; Census Bureau
Bike Counts	Any increase	Total number of persons riding bicycles at specific locations	Total number of persons riding bicycles at specific locations	Annually	Metro COG
Bicycle and Pedestrian Commuters	Any increase	(Total work trips by bike + total work trips by walking) / Total work trips	Total work trips by bike; total work trips by walking; total work trips	Every 5 years	Census Bureau Community Survey
Bicycle Pavement Quality	Any increase	∑ of pavement quality / total links surveyed	Survey of pavement quality on bicycle routes	Every 5 years	Metro COG; local jurisdictions
Average Households per Acre	Any increase	Total number of households / total number of developed acres in urban area	Total number of households; total number of developed acres	Annually	Planning departments of local jurisdictions
Average population per acre	Any increase	Total population / total number of developed acres in urban area	Total population; total number of developed acres	Annually	Census Bureau; planning departments
Assessed Housing Values	No reduction	∑ assessed housing values / total number of houses assessed	Housing values	Annually	Jurisdictional assessors
New roads per household	Any decrease	Total lane miles of new roads / Total number of new households	Total number of lanes miles of new roads; total number of new households permitted	Annually	Local jurisdictions
Job and Household Density	Any increase	Total number of jobs within each TAZ; Total number of households within each TAZ	Total number of jobs by TAZ; total number of households by TAZ	Every 5 years	TAZ Allocations by Metro COG in coordination with local jurisdictions, Census Data, and jobs data

Ri = crash rate pre million entering vehicles
C = number of crashes
Y = number of years
FC = Functional Classification of Roadways
AADT = Average Annual Daily Traffic
V/C = Volume to Capacity Ratios
FTE = Full-time Equivalent
TDM = Travel Demand Management
LOS = Level-of-Service

Lastly, it should be noted that these performance measures or their calculations are subject to change over the next 5 year period as local staff gain more experience with them and as they are honed to measure very specific occurrences or phenomenon.

Project Prioritization

If Project Evaluation tells us what to do, Project Prioritization tells us when to do it. As often happens, identified needs are usually greater than the available resources to address them. By establishing a prioritization methodology, we can compare projects against one another and begin to establish a rough order in which projects should be implemented given the limitations of available funding.

Based on Federal regulation (23 CFR 450.324), the MPO – in this case, Metro COG – is responsible for identifying and prioritizing transportation improvement projects within the MPO planning boundary. There are many ways to prioritize projects. The ideal project prioritization methodology is:

- **Objective** – based on data, not opinion
- **Performance Driven** – projects are identified per regional transportation goals and objectives with consideration given to regional performance meaures
- **Logical** – clear and easy to understand
- **Simple** – collection of necessary data and application of the prioritization process should not involve significant time or effort
- **Responsive** – when conditions change, the prioritization changes accordingly

The prioritization of projects is necessary not only for the long-range transportation plan, but also for the Transportation Improvement Program (TIP), which is a construction/implementation schedule of transportation projects. Only projects listed in the long-range transportation plan are eligible for inclusion in the TIP, and thus are eligible for federal transportation funding assistance. The TIP is developed annually, though each TIP provides a four-year schedule of transportation projects, identifies the funding sources for each project, and identifies the year in which the funding will be obligated. Ideally, the prioritization of projects for the TIP would closely follow the prioritization process used for the long-range transportation plan. That is, the TIP prioritization process would support the goals, objectives, and performance measures of the long-range transportation plan.

Simply put, it is the responsibility of Metro COG to work with its member jurisdictions and define regional transportation project priorities. Metro COG staff recently surveyed the prioritization process of five other MPOs to assess what is being done elsewhere. This will inform the process as Metro COG begins re-defining and structuring a local prioritization process. Metro COG will work closely with its members to refine the exact process and achieve consensus for defining project priorities that will occur annually with each TIP cycle. However, the survey revealed some ideas and concepts for consideration.

Projects are typically submitted to a multi-step process:

1. Determine project eligibility
2. Rank all eligible projects
3. Prioritizes ranked projects.

Determining project eligibility can have many criteria, but at least three are required to determine eligibility for federal funds:

1. Does the project involve a roadway classified as Collector or above, or does it involve transit operations or capital, or does it involve bicycle or pedestrian facilities?
2. Is the project listed in the Long-Range Transportation Plan?
3. Has local funding been identified and set aside for the project?

When it comes to the actual ranking of eligible projects, again, criteria and considerations are wide-ranging. However, it is important that the criteria be as objective and performance driven as possible while not being overly-burdensome for local staff. This may require some delicate balancing of the ranking criteria. Giving preference or advantage to those projects that directly address the performance measures of this plan is preferable, but it may not be possible to measure the exact extent to which a project can, for example, reduce VMT.

Negative scoring should be considered for projects that may have a negative impact on ranking criteria.

The actual prioritization of projects would be done by the Transportation Technical Committee (or some sub-committee thereof), with approval by the Policy Board.

Jurisdictional staff submitting the projects for funding would be responsible for filling out the paperwork to determine project eligibility and project ranking criteria. Metro COG staff would verify that the information provided was correct and provide the ranked candidate project list to the Transportation Technical Committee for consideration.

Typically, for those MPOs surveyed, projects are prioritized for the farthest out-year of the TIP. Once programmed in the TIP, the MPO does not re-evaluate the choices made. For example, late in 2009 the MPOs will be prioritizing projects for 2014 construction. Once the 2014 schedule of projects is set, the MPO will generally not re-evaluate the schedule in 2011, 2012, or 2013. Doing so would seem to necessitate performing the ranking and prioritization process all over again.

One area in which all the MPOs surveyed seem to struggle is in comparing projects of different types against one another. Evaluating one roadway reconstruction project against another roadway reconstruction project is simple enough, but how does one compare a roadway reconstruction project against the purchase of a bus, or a project for signing bicycle routes? For this reason, all of the MPOs surveyed provide some room for a qualitative assessment of projects.

One final issue to consider is the weighting of certain criteria over others. While not necessary, there may be particular regional goals that we want to emphasize or address more quickly or more thoroughly than others. The weighting of criteria could change from year-to-year depending upon which performance objectives the region wants to address at that time.

Some potential criteria for the ranking process, as based on the goals, objectives, and performance measures of this plan, are listed:

Safety
- Does the project include appropriate safety infrastructure, such as roundabouts, rumble strips or rumble stripes, pedestrian refuge islands, pedestrian countdown timers at signalized intersections, appropriate on- or off-road bicycle signage and striping, curb extensions or other bicycle, pedestrian, or intersection crash mitigation measures?
- Does the project occur at an identified high crash intersection or along a high crash corridor?
- Does the project involve identified Regionally Significant Transportation Infrastructure?

Stewardship
- Does the project protect or rehabilitate existing pavement?
- Does the project involve a public-private partnership?
- Does the project utilize a non-roadway-infrastructure strategy from the Congestion Management Toolbox (e.g., parking management, ridesharing, alternative work hours, reduced transit fares, increased bus frequency, etc.)?
- Does the project add general travel lanes to a roadway?

Economic Competitiveness
- If the project concerns an arterial, will it include accommodations for commercial vehicles such as wider turn-radii, sufficient vertical clearances, etc.?
- Does the project replace or repair a structurally deficient bridge?
- Will the project address existing congestion within a quarter mile of a business that employs 50 or more employees at that location?

Operations
- Does the project facilitate regional traffic signal coordination?
    - Is the project part of the Metro Operations Action Plan?
    - Will hardware be installed that is necessary for regional interoperability?
- Does the project facilitate the development of a Traffic Operations Center?
    - Does the project implement an element of the 2008 ITS plan, such as CCTV, sensors, or dynamic message signs?
    - Does the project include important fiberoptics or wireless connections that allow for the distribution or consumption of traffic related data?
- Does the project address existing congestion?
- Does the project address traffic operations on an arterial?
- Does the project improve the safe and efficient movement of pedestrians, bicycles, and transit along a roadway corridor?
- Is the project for a roadway that is part of the identified Regionally Significant Transportation Infrastructure?

Transit
- As part of the project, will a bus be purchased to replace an older bus reaching the end of its service life?
- As part of the project, will a bus be purchased to provide a new transit route?
- As part of the project, will a bus be purchased to provide more frequency along an established high-demand transit route?
- Will the project provide a new bus shelter on an established transit route?

Bicycles

- Does the project address an identified gap in the Principal Bikeway Network? Does the project address a gap in the general bikeway network?
- Does the project improve bike route trailblazing and wayfinding signage?
- Does the project improve facilities like signage, potable water availability/drinking water, benches, bike lockers, or garbage cans at an identified bike node?
- Does the project improve pavement quality of an existing on- or off-road bikeway?
- Does the project connect the F-M urban area to a surrounding community by bikeway?

Community

- Does the project improve the ADA compliance of a transportation facility like a sidewalk, bikeway, bus, or street?
- Does the project implement a recommendation from a Safe Routes to School Plan?
- Does the project establish an element of the 2008 Greenway plan?

Annually Metro COG will engage stakeholders, the public, member jurisdictions, and partner agencies to identify transportation project priorities. No prioritization methodology should exclude human decision making from the project selection and scheduling process. Instead the ranking methodology should provide project selection guidance which can be reviewed by local decision-makers. There are always conditions and factors that cannot be adequately captured by an automated process. The state of project readiness, for instance, could change project scheduling, as could difficulty in acquiring right-of-way, cost over-runs on a current project, or any number of other factors. Metro COG recommends that ranked project lists should be reviewed annually by the Transportation Technical Committee and the Policy Board during the TIP candidate project selection process. The final candidate project list can only be approved by the vote of the Policy Board.

Consistency with Statewide Plans

The graphs that follow demonstrate the consistency between the goals and objectives of this regional long-range transportation plan and the North Dakota and Minnesota statewide transportation plans.

There is also demonstrable consistency between this plan and the Statewide Strategic Safety Plans through the objectives under Goal #1: "Reduce the number and severity of transportation system crashes", including "improving intersection safety" and "reducing lane and roadway departure crashes". Additionally, this plans recommendation to support more frequent drivers license renewals for older drivers is also a strategic statewide transportation safety issue, as older drivers are statistically more likely to be involved in crashes, and more likely to be seriously injured in crashes.

This table demonstrates the consistency of the Fargo-Moorhead Long Range Transportation Plan with the North Dakota Department of Transportation's statewide strategic plan, TransAction II

Fargo-Moorhead LRTP Goals	NDDOT Transaction II Goals: Safe and secure transportation for residents, visitors, and freight	A transportation system that allows for optimum personal mobility	A transportation system that allows the efficient and effective movement of freight	A transportation system that supports economic diversity, growth, and competitiveness with consideration of environmental and social impacts	Funding sufficient to protect and enhance North Dakota's transportation infrastrucutre and address future transportation needs	A transportation environment where communication, cooperation, and collaboration exist
Reduce number and severity of transportation system crashes	X		X			
Be good stewards of the public's money					X	X
Maintain and improve the region's economic competitiveness				X		X
Manage and operate roadway efficiently		X	X		X	
Provide more, better, and more efficient public transit service		X		X	X	
Improve bicycle route connectivity		X		X	X	
Build a livable community with a high quality of life		X		X		X

This table demonstrates the consistency of the Fargo-Moorhead Long Range Transportation Plan with the Minnesota Department of Transportation's statewide strategic plan

Fargo-Moorhead LRTP Goals / Mn/DOT Statewide Transportation Plan Goals

Mn/DOT Statewide Transportation Plan Goals	Reduce number and severity of transportation system crashes	Be good stewards of the public's money	Maintain and improve the region's economic competitiveness	Manage and operate roadways efficiently	Provide more, better, and more efficient public transit service	Improve bicycle route connectivity	Build a livable community with a high quality of life
Reduce the number of fatalities and serious injuries for all travel modes	X						
Ensure the structural integrity of the transportation systems serving people and freight				X			
Maintain and operate the statewide transportation system in an efficient, cost-effective and secure manner		X		X	X	X	
Maintain and strengthen Minnesota's strategic multimodal connections to the Upper Midwest, the nation and the world			X				
Enhance the movement of people and freight between regional trade centers within Minnesota by providing efficient, multimodal transportation connections		X	X	X			
Provide mobility and address congestion in the Twin Cities by optimizing use of the existing system and making strategic capacity investments in both highways and transit							
Support local efforts to increase jobs, expand housing, and improve community livability through more coordinated planning, complementary design, and timely		X					X
Improve the energy efficiency and environmental sustainability of Minnesota's transportation system				X	X	X	X
Strengthen accountability and transparency in the delivery of Minnesota's transportation system		X					

In addition, the Minnesota Statewide Transportation Policy Plan (2009) includes Policy 7: Greater Minnesota Metropolitan and Regional Mobility. The policy seeks to provide for the changing transportation needs of people and freight traveling within Greater Minnesota regions and metropolitan areas by planning regionally for critical investments and improving coordination across modes and jurisdictions. There are five identified strategies to achieving the policy, which are listed below along with a brief summary of how this plan addresses those strategies.

Mn/DOT Policy 7 Strategies

7A. Regional Planning: Public and private entities, including tribal and local governments, MPOs. RDCs, transit providers, and Mn/DOT should collaboratively develop and advance regional approaches to multi-modal transportation planning for Greater Minnesota.

> *This plan was developed in cooperation with the Cities of Fargo, Moorhead, West Fargo, and Dilworth as well as Clay County in Minnesota and Cass County in North Dakota. Additionally, Moorhead Metropolitan Area Transit, Clay County Regional Transit, Fargo Metropolitan Area Transit, Mn/DOT, and NDDOT were also regularly consulted throughout the development of the plan. The plan is multi-modal in nature, including projects, goals, objectives, and strategies that address roadways, buses, bicycles, pedestrians, freight, and Intelligent Transportation Systems (ITS).*

7B. Planning and Roadway Systems: Mn/DOT, MPO's, tribal and local governments will work together to plan for and maintain an interconnected network of roadways to serve mobility and access needs within each region.

> *This plan identifies several important interjurisdictional roadway corridor needs (e.g., 4th Avenue South corridor between Moorhead and Dilworth; 12th Avenue South Corridor preservation coordination between Moorhead, Dilworth, and Clay County; rebuilding and widening the 52nd/60th Avenue South Red River Bridge between Clay County and Fargo, etc.) as well as calling for the establishment of Regionally Significant Transportation Infrastructure (RSTI) and operational goals for RSTI.*

7C. Planning the Transit System: Mn/DOT, MPOs, RDCs, tribal and local governments, regional rail authorities and transit providers will work together to plan for and provide a coordinated transit system.

> *This plan establishes a vision for regional transit including providing some criteria for making exurban transit connections and for prioritizing urban transit corridors for more frequent service. Additionally, the vision set forth encourages the expansion of bulk-purchase plans to private businesses to help offset the anticipated reduction in operational revenue that will occur when the urban population exceeds 200,000.*

7D. Bicycle and Pedestrian Systems: MPOs, RDCs, Mn/DOT, and tribal and local governments should continue working to provide appropriate regional bicycle and pedestrian systems in Greater Minnesota.

> *This plan encourages the adoption of local ordinances that would make bicycle and pedestrian trips easier (e.g. complete streets policies, mixed-use development, etc.), the improvement of interjurisdictional bike-ped*

connections (e.g., upgrading the Red River bike-ped bridges, establishing bike routes to exurban satellite communities, etc.), and closing gaps in the urban regional bike-ped network.

7E. Freight Systems. MPOs, RDCs, tribal and local governments, regional rail authorities, port authorities, and Mn/DOT will work with state agencies, freight generators, shippers, and carriers to coordinate efforts to improve regional freight transportation in Greater Minnesota.

This plan reports that local freight generators, shippers and carriers feel that the roadway network functions well for the shipment of freight, but the primary freight issue is the lack of access to intermodal freight. This plan also recommends specific strategies to help improve the regional environment for intermodal shipping.

Chapter 4: Estimated Revenues

To fulfill the federal requirements of a fiscally constrained transportation plan, it is necessary to estimate revenues during the 25 year horizon of this plan. The principal financial planning direction from the federal and state governments is that projects contained in plans must be able to be paid for with funds that can reasonably be expected to be available during the planning period. SAFETEA-LU states that MPO's are required to prepare a financial plan as part of their Long Range Transportation Plan (LRTP) that is financially constrained by year and includes a demonstration of how implementing agencies can provide the requisite local match for projects while adequately operating and maintaining their existing transportation systems. The financial plan must demonstrate how the LRTP can be implemented, indicate public and private resources that are reasonably expected to be available, and, where proposed, discuss innovative strategies to finance projects and programs. Further, the financial plan must identify revenue and cost estimates for all projects in year-of-expenditure dollars. Beyond the first 10 years, the plan may use cost bands or ranges to estimate real dollar costs.

The most cost effective way for Metro COG to generate reasonable forecasts of future revenue was to use historical trends for each jurisdiction supplemented by information from Metro COG's most recent Transportation Improvement Program (TIP) fiscal analysis. The funding forecasts for each jurisdiction are shown in the tables on the pages that follow.

The Short-Term includes years 2010 through 2014. For this time period, revenues were largely estimated based on funding that has already been identified in the state and federally approved TIP.

The Mid-Term includes the years 2015 through 2019. For this time period, revenues were projected based on the trend shown in the TIP funding tables, along with historical data and input provided by the local jurisdictions.

The Long-Term includes the years 2020 through 2035 and its projected revenues were also based on the TIP trend, historical data, and input from the local jurisdictions.

Following the revenue tables in this chapter is a short analysis to determine if each jurisdiction will be able to meet the maintenance and operations needs of their roadway network. The analysis is general in nature as it is impossible to know exactly which roadways will need an overlay, for example, beyond about 2015. However, the analysis does provide a general indication of each jurisdiction's ability to meet maintenance needs (or not) based on current budgets and revenue that can reasonably be expected in the future.

A comparison of projected revenues and estimated project costs for new construction and re-construction projects by jurisdiction is provided in Chapter 5.

NDDOT Financial Analysis

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal																										
HPP																										
State Aid																										
Gas Tax	3.99	4.01	4.09	4.19	4.56	5.13	5.35	4.43	5.47	5.58	5.69	5.80	5.92	6.04	6.16	6.28	6.41	6.54	6.67	6.80	6.94	7.08	7.22	7.36	7.51	7.66
Sales Tax																										
Assessment																										
General Funds																										
Bonds																										
Other																										
Total	**3.99**	**4.01**	**4.09**	**4.19**	**4.56**	**5.13**	**5.35**	**4.43**	**5.47**	**5.58**	**5.69**	**5.80**	**5.92**	**6.04**	**6.16**	**6.28**	**6.41**	**6.54**	**6.67**	**6.80**	**6.94**	**7.08**	**7.22**	**7.36**	**7.51**	**7.66**

Short-Term Total: $20.84 *Mid-Term Total: $25.96* *Long-Term Total: $106.08*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	24.70	17.68	21.70	18.75	19.13	19.51	19.90	20.30	20.70	21.12	21.54	21.97	22.41	22.86	23.31	23.78	24.26	24.74	25.24	25.74	26.25	26.78	27.32	27.86	28.42	28.99
HPP																										
State Aid																										
Gas Tax	4.07	4.17	4.24	4.31	4.40	4.48	4.57	4.67	4.76	4.85	4.95	5.05	5.15	5.25	5.36	5.47	5.58	5.69	5.80	5.92	6.04	6.16	6.28	6.40	6.53	6.66
Sales Tax																										
Assessment																										
General Funds																										
Bonds																										
Other																										
Total	**28.77**	**21.85**	**25.94**	**23.06**	**23.52**	**23.99**	**24.47**	**24.96**	**25.46**	**25.97**	**26.49**	**27.02**	**27.56**	**28.11**	**28.67**	**29.25**	**29.83**	**30.43**	**31.04**	**31.66**	**32.29**	**32.94**	**33.59**	**34.27**	**34.95**	**35.65**

Short-Term Total: $123.14 *Mid-Term Total: $124.85* *Long-Term Total: $493.73*

Total System Revenues

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	24.70	17.68	21.70	18.75	19.13	19.51	19.90	20.30	20.70	21.12	21.54	21.97	22.41	22.86	23.31	23.78	24.26	24.74	25.24	25.74	26.25	26.78	27.32	27.86	28.42	28.99
State	8.06	8.18	8.33	8.50	8.96	9.61	9.92	9.10	10.23	10.43	10.64	10.85	11.07	11.29	11.52	11.75	11.98	12.22	12.47	12.72	12.97	13.23	13.50	13.77	14.04	14.32
Local	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**32.76**	**25.86**	**30.03**	**27.25**	**28.08**	**29.12**	**29.82**	**29.39**	**30.93**	**31.55**	**32.18**	**32.82**	**33.48**	**34.15**	**34.83**	**35.53**	**36.24**	**36.96**	**37.70**	**38.46**	**39.23**	**40.01**	**40.81**	**41.63**	**42.46**	**43.31**

Financial Summary for NDDOT

New and Reconstruction Revenue

For years 2010 – 2013, the revenues shown for new construction and re-construction projects are identical to those shown in the 2010-2013 Transportation Improvement Program (TIP), which schedules projects for completion based on a fiscal constraint criterion. It is worth noting that in the years 2006-2009, average annual expenditures by the NDDOT within the F-M metro area was $35.5 million, exceeding most of the annual revenues being shown in the table above. For these reasons, the revenues shown for the time period of 2010-2013 can be considered "reasonably expected to be available". Beginning in 2014, the revenues available from the previous year are inflated at a rate of 2% annually. This is consistent with the usual annual growth of nominal funding in the Federal transportation authorizations (see chart in Chapter 1, page 74). It should also be pointed out that a 4% annual growth rate in project costs was assumed in the next chapter, therefore the nominal annual increase in revenues results in a loss of real purchasing power over time.

Pavement, Maintenance & Operational Revenues

For the NDDOT, operations and maintenance revenues come entirely from state gas and motor vehicle revenues and have been somewhat predictable. The revenues shown for years 2010 through 2018 are identical to the forecasted revenue provided by the NDDOT for the 2010-2013 Transportation Improvement Program. The latest forecast from the North Dakota Office of Budget and Management for the 2007-2009 Biennium predicts that the state will collect over $127,000,000 in motor vehicle excise tax alone, only a small portion of which is shown budgeted here for roadway maintenance and operations within the Metro COG planning area.

There is some uncertainty surrounding the future of the gas tax. As more electric-hybrid vehicles and alternative fuel vehicles enter the fleet, gas tax revenues can be expected to decrease. There is also a significant negative correlation between the price of gas and gas tax revenue. There are currently high-level political discussions regarding the future of the gas tax and significant changes may be forthcoming. However, for planning purposes, the revenue forecasts here assume that regardless of what may happen to the gas tax in the future, the existing trends will not experience any substantial fluctuation.

Pavement, Maintenance & Operational Costs

Generally speaking, the NDDOT adds very few miles to its roadway network on an annual basis. Year-to-year, the number of miles for which the NDDOT is responsible is fairly stable and predictable. In those instances when new mileage is added (as with a new interstate ramp) the increase in mileage as a percentage of overall system is very small. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lane miles for which NDDOT is responsible, and which lie in the MPO planning area was developed. They were:

- Short-Range: = 193 (interstate) + 189 (non-interstate concrete) + 20 (asphalt) = 402 lane miles
- Mid-Range: = 197 (interstate) + 191 (non-interstate concrete) + 20 (asphalt) = 408 lane miles

- Long-Range: = 199 (interstate) + 191 (non-interstate concrete) + 20 (asphalt) = 410 lane miles

General cost estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of NDDOT engineers. The following cost estimates and life cycles were developed:

- Concrete Pavement Repair: $150,000 per lane mile; as needed
- Structural Overlay: $137,500 per lane mile; approximately every 20 years
- Chip Seal: $14,000 per lane mile; approximately every 7 years
- Asphalt Crack Seal: $700 per lane mile; approximately every 4 years

Chapter 5 includes bridge replacement projects for NDDOT within the MPO planning area, so bridge replacement has been excluded from this maintenance analysis.

The NDDOT will need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities. The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Obviously, some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. It was also assumed that a minimum 20% of all asphalt roadways would be overlayed during this time period. Further it was assumed that 20% of all concrete lane miles would be overlayed during this time period and 10% would be subjected to Concrete Pavement Repair.

NDDOT Short-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	38.2	$169,000	$6,455,800
Concrete Overlay	76.4	$154,000	$11,765,600
Chip Seal	10	$14,060	$140,600
Crack Seal	20	$675	$13,500
Asphalt Overlay	4	$134,000	$536,000
Total Needs			**$18,911,500**
Total Revenue			**$20,840,000**
Revenue - Needs			**$1,928,500**

In the short-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Mid-Range (2015-2019)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. It was also assumed that a minimum 20% of all asphalt roadways would be overlayed during this time period. Further it was assumed that 20% of all concrete lane miles would be overlayed during this time period and 10% would be subjected to Concrete Pavement Repair.

NDDOT Mid-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Concrete Pavement Repair	38.8	$213,500	$8,283,800
Concrete Overlay	77.6	$195,700	$15,186,320
Chip Seal	10	$16,450	$164,500
Crack Seal	20	$821	$16,420
Asphalt Overlay	4	$169,000	$676,000
Total Needs			**$24,327,040**
Total Revenue			**$25,960,000**
Revenue - Needs			**$1,632,960**

In the mid-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Long-Range (2020-2035)

It was estimated that all asphalt roadways would be crack sealed four times, and all roads would be chip sealed twice during this time period. It was also assumed that a minimum 60% of asphalt roadways would be overlayed during this time period. Further, it was assumed that 60% of all concrete roadway would be overlayed, and 30% would be subjected to concrete pavement repair during this time period.

NDDOT Long-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Concrete Pavement Repair	117	$316,000	$36,972,000
Concrete Overlay	234	$290,000	$67,860,000
Chip Seal	40	$26,336	$1,053,440
Crack Seal	80	$1,264	$101,120
Asphalt Overlay	12	$250,000	$3,000,000
Total Needs			**$108,986,560**
Total Revenue			**$106,080,000**
Revenue - Needs			**($2,906,560)**

In the long-range time period, 97% of anticipated maintenance needs can be met with expected revenues.

Based on this analysis it appears the NDDOT is currently meeting its roadway M&O needs, and will continue to do so through about 2033. While the 3% short-fall in the long-range time frame should not be minimized, it must be recognized that very small changes in the assumptions used in this analysis could erase that short-fall.

Cass County Revenue Projection

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal																										
HPP																										
State Aid																										
Gas Tax	3.20	3.26	3.33	3.40	3.46	3.53	3.60	3.68	3.75	3.83	3.90	3.98	4.06	4.14	4.22	4.31	4.39	4.48	4.57	4.66	4.76	4.85	4.95	5.05	5.15	5.25
Sales Tax																										
Assessment																										
General Funds	3.80	3.88	3.95	4.03	4.11	4.20	4.28	4.37	4.45	4.54	4.63	4.72	4.82	4.91	5.01	5.11	5.21	5.32	5.42	5.53	5.64	5.76	5.87	5.99	6.11	6.23
Bonds																										
Other																										
Total	**7.00**	**7.14**	**7.28**	**7.43**	**7.57**	**7.73**	**7.88**	**8.05**	**8.20**	**8.36**	**8.53**	**8.70**	**8.88**	**9.05**	**9.23**	**9.42**	**9.61**	**9.80**	**10.00**	**10.20**	**10.40**	**10.61**	**10.82**	**11.04**	**11.26**	**11.48**

Total Short-Range $36.42 *Total Mid-Range: $40.22* *Total Long-Range: $159.02*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	2.00	2.04	2.08	2.12	2.16	2.21	2.25	2.30	2.34	2.39	2.43	2.48	2.53	2.58	2.64	2.69	2.74	2.80	2.85	2.91	2.97	3.03	3.09	3.15	3.21	3.28
HPP																										
State Aid																										
Gas Tax	3.00	3.06	3.12	3.18	3.25	3.31	3.38	3.45	3.51	3.58	3.65	3.72	3.80	3.88	3.95	4.03	4.11	4.19	4.28	4.36	4.45	4.54	4.63	4.72	4.82	4.91
Sales Tax																										
Assessment																										
General Funds																										
Bonds																										
Other																										
Total	**5.00**	**5.10**	**5.20**	**5.30**	**5.41**	**5.52**	**5.63**	**5.75**	**5.85**	**5.97**	**6.09**	**6.21**	**6.33**	**6.46**	**6.59**	**6.72**	**6.85**	**6.99**	**7.13**	**7.27**	**7.42**	**7.57**	**7.72**	**7.87**	**8.03**	**8.19**

Short-Term Total: $26.01 *Mid-Term Total: $28.72* *Long-Term Total: $113.45*

Total System Revenues

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	2.00	2.04	2.08	2.12	2.16	2.21	2.25	2.30	2.34	2.39	2.43	2.48	2.53	2.58	2.64	2.69	2.74	2.80	2.85	2.91	2.97	3.03	3.09	3.15	3.21	3.28
State	6.20	6.32	6.45	6.58	6.71	6.84	6.98	7.13	7.26	7.41	7.55	7.70	7.86	8.02	8.18	8.34	8.51	8.68	8.85	9.03	9.21	9.39	9.58	9.77	9.97	10.17
Local	3.80	3.88	3.95	4.03	4.11	4.20	4.28	4.37	4.45	4.54	4.63	4.72	4.82	4.91	5.01	5.11	5.21	5.32	5.42	5.53	5.64	5.76	5.87	5.99	6.11	6.23
Total	**12.00**	**12.24**	**12.48**	**12.73**	**12.98**	**13.25**	**13.51**	**13.80**	**14.05**	**14.33**	**14.62**	**14.91**	**15.21**	**15.51**	**15.82**	**16.14**	**16.46**	**16.79**	**17.13**	**17.47**	**17.82**	**18.18**	**18.54**	**18.91**	**19.29**	**19.67**

Financial Summary for Cass County

New and Reconstruction Revenue

For years 2010 – 2013, the revenues shown for new construction and re-construction projects are identical to those shown in the 2010-2013 Transportation Improvement Program (TIP), which schedules projects for completion based on a fiscal constraint criterion. Starting in the year 2014, revenues from the previous year are inflated at 2% annually, which is consistent with historic growth trends for these revenue streams. Cass County uses a combination of federal and state gas tax revenues to fund construction projects. The revenues shown are for the entire County, of which the MPO planning area is but a small portion. It is not anticipated that Cass County would consistently spend all of its funds for construction projects within the MPO area, but this table does demonstrate that the County does have financial resources to call upon if necessary for a larger project. There is currently some uncertainty regarding the future of the gas tax. There are high-level discussions occurring about ways to reform the gas tax, or replace it with another kind of tax. For planning purposes, this revenue table assumes that no matter what the future of the gas tax, the existing revenue levels would not be made worse, nor significantly better.

Pavement, Maintenance & Operational Revenues

For Cass County, operations and maintenance revenues come entirely from state gas tax and local general funds. In this case, we again use existing revenues as a starting point, and then inflate them at roughly 2% annually, which approximates historical trends. Again, any potential future changes to the gas tax are presumed to have little impact on the overall level of funding available. The growth of the urban area is expected to result in an overall positive impact on that portion of property-tax revenue used for roads and bridges since a higher number of tax-paying properties generally correlates with higher tax revenue.

Pavement, Maintenance & Operational Costs

Generally speaking, on an annual basis the county does not add miles to its roadway network. Year-to-year, the number of miles for which the county is responsible is stable and predictable. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lanes miles for which Cass County is responsible, and which lie in the MPO planning area was developed. They were:

- Short-Range: 638 (paved) + 660 (gravel) = 1,238 lane miles
- Mid-Range: 638 (paved) + 660 (gravel) = 1,238 lane miles
- Long-Range: 638 (paved) + 660 (gravel) = 1,238 lane miles

It is assumed that, over time, these numbers will remain relatively constant.

General cost estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of the county engineer. The following cost estimates and life cycles were developed:

- Asphalt Overlay: $125,000 per lane mile; approximately every 20 years
- Asphalt Chip Seal: $12,500 per lane mile; approximately every 7 years
- Asphalt Crack Seal: $600 per lane mile; approximately every 4 years
- Gravel Roads: $2,000 per lane mile annually

Chapter 5 includes those overlay and bridge replacement projects for Cass County within the MPO planning area.

About 70% of the county's total lane miles lie outside the urban planning area. In addition, there are about 200 bridges outside of the planning area, about half of which are older than 50 years, and approximately 35 of which are structurally deficient.

The county will need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities. The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Obviously, some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. Overlay projects within the MPO area are included in the project lists in Chapter 5, and thereby removed from this analysis. It is assumed that 25% of the lane miles outside the MPO area will need to be overlayed during this time period. Also, it is assumed 15 bridges outside of the planning area will need to be replaced at an average cost of $1,150,000 (2009 dollars) each. All gravel roads receive maintenance every year, so lane miles were multiplied by 5 to estimate costs for this 5 year period.

Cass County Short-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	319	$14,060	$4,485,140
Crack Seal	638	$675	$430,650
Asphalt Overlay & Bridge Replacement (within MPO area)	(Included in Chapter 5 Project Lists)		
Asphalt Overlay (outside MPO area)	109	$140,608	$15,326,272
Bridge Replacement (outside MPO area)	15	$1,293,593	$19,403,895
Gravel Roads	3,300	$2,250	$7,425,000
Roadway Reconstruction (outside MPO area)	(Assumed to be paid for with funds not programmed in Chapter 5)		
Total Needs			**$47,070,957**
Total Revenue			**$36,420,000**
Revenue - Needs			**($10,650,957)**

In the short-range time period, 77% of anticipated maintenance needs for paved roads and bridges can be met with expected revenues.

Mid-Range (2015-2019)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. Overlay projects within the MPO area are included in the project lists in Chapter 5, and thereby removed from this analysis. It is assumed that 25% of the lane miles outside the MPO area will need to be overlayed during this time period. Also, it is assumed 15 bridges outside of the planning area will need to be replaced at an average cost of $1,150,000 (2009 dollars) each. All gravel roads receive maintenance every year, so lane miles were multiplied by 5 to estimate costs for this 5 year period.

Cass County Mid-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	319	$17,791	$5,675,329
Crack Seal	638	$854	$544,852
Asphalt Overlay & Bridge Replacement (within MPO area)	(Included in Chapter 5 Project Lists)		
Asphalt Overlay (outside MPO area)	109	$177,914	$19,392,626
Bridge Replacement (outside MPO area)	15	$1,637,000	$24,555,000
Gravel Roads	3,300	$2,847	$9,395,100
Roadway Reconstruction (outside MPO area)	(Assumed to be paid for with funds not programmed in Chapter 5)		
Total Needs			**$59,562,907**
Total Revenue			**$40,220,000**
Revenue - Needs			**($19,342,907)**

In the mid-range time period, 67.5% of anticipated maintenance needs for paved roadways and bridges can be met with expected revenues.

Long-Range (2020-2035)

It was estimated that all asphalt roadways would be crack sealed twice, and all asphalt roads would be chip sealed during this time period. All overlay projects within the MPO planning area are included in the project lists in Chapter 5, and so are removed from this analysis. It is assumed that 60% of paved roadways outside the MPO planning area will need to be overlayed during this time period. It is further assumed that 45 bridges outside the urban area will need to be replaced at an average cost of $1,150,000 (2009 dollars). All gravel roads receive maintenance every year, so lane miles were multiplied by 15 to estimate costs for this 15 year period.

Cass County Long-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	638	$26,336	$16,802,368
Crack Seal	1,276	$1,264	$1,612,864
Asphalt Overlay & Bridge Replacement (within MPO area)	(Included in Chapter 5 Project Lists)		
Asphalt Overlay (outside MPO area)	262	$263,000	$68,906,000
Bridge Replacement (outside MPO area)	45	$2,423,000	$109,035,000
Gravel Roads	9,900	$4,214	$41,718,600
Roadway Reconstruction (outside MPO area)	(Assumed to be paid for with funds not programmed in Chapter 5)		
Total Needs			**$279,793,432**
Total Revenue			**$159,020,000**
Revenue - Needs			**($120,773,432)**

In the long-range time period, 57% of anticipated maintenance needs for paved roadways and bridges can be met with expected revenues.

Cass County is currently not meeting its roadway M&O needs, and it appears the ability of the county to meet these defined needs will become less feasible further into the 25 year planning horizon. A higher proportion of the county's general funds may be necessary for M&O activities in order to adequately maintain their federal-aid system. It is currently likely that some maintenance is being deferred for lack of adequate funding. The County should resist diverting funding away from reconstruction to be used for maintenance and operations activities. Ultimately this process would result in gradually declining pavement quality, with patching and overlay work being done on roadways that may require more extensive reconstruction. The County should also resist deferring maintenance in order to save money, as it may ultimately result in roadways needing to be reconstructed more often (see graph on page 1.15). Appropriately timed maintenance saves money in the long-run. The county should continue its policy of not replacing bridges when an alternative is available, which should result in lower bridge maintenance needs and capital expenditures over the long-run. The County should not pave gravel roads when not warranted by traffic conditions, and should encourage densities of 1 dwelling unit per acre or higher to be developed within existing urban areas. The County should also consider doing cost-benefit analyses to determine if some lower-volume paved roadways should revert back to gravel. Gravel surfaces require more maintenance annually, but maintenance expenses are less/reduced in the long-run if the roadway is not subjected to heavy vehicles or heavy traffic volumes.

West Fargo Revenue Projection

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Federal																										
HPP																										
State Aid																										
Gas Tax																										
Sales Tax																										
Assessment																										
General Funds	0.40	0.43	0.47	0.50	0.54	0.58	0.62	0.66	0.71	0.75	0.80	0.84	0.89	0.94	1.00	1.05	1.11	1.17	1.23	1.29	1.36	1.44	1.51	1.59	1.68	1.77
Bonds																										
Other																										
Total	**0.40**	**0.43**	**0.47**	**0.50**	**0.54**	**0.58**	**0.62**	**0.66**	**0.71**	**0.75**	**0.80**	**0.84**	**0.89**	**0.94**	**1.00**	**1.05**	**1.11**	**1.17**	**1.23**	**1.29**	**1.36**	**1.44**	**1.51**	**1.59**	**1.68**	**1.77**

Short-Term Total: *$2.35* *Mid-Term Total:* *$3.32* *Long-Term Total:* *$19.68*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Federal	0.85	0.88	0.91	0.93	0.96	0.99	1.00	1.03	1.05	1.07	1.09	1.11	1.14	1.16	1.18	1.21	1.23	1.26	1.28	1.31	1.33	1.36	1.39	1.41	1.44	1.47
HPP																										
State Aid																										
Gas Tax																										
Sales Tax	0.30	0.31	0.31	0.32	0.32	0.33	0.34	0.34	0.35	0.36	0.37	0.37	0.38	0.39	0.40	0.40	0.41	0.42	0.43	0.44	0.45	0.45	0.46	0.47	0.48	0.49
Assessment	0.43	0.44	0.45	0.46	0.47	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.63	0.64	0.65	0.66	0.68	0.69	0.71
General Funds																										
Bonds																										
Other																										
Total	**1.58**	**1.62**	**1.67**	**1.70**	**1.75**	**1.80**	**1.82**	**1.87**	**1.91**	**1.94**	**1.98**	**2.02**	**2.06**	**2.10**	**2.15**	**2.19**	**2.23**	**2.28**	**2.32**	**2.37**	**2.42**	**2.47**	**2.51**	**2.57**	**2.62**	**2.67**

Short-Term Total: *$8.33* *Mid-Term Total:* *$9.34* *Long-Term Total:* *$36.96*

Total System Revenues (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Federal	0.85	0.88	0.91	0.93	0.96	0.99	1.00	1.03	1.05	1.07	1.09	1.11	1.14	1.16	1.18	1.21	1.23	1.26	1.28	1.31	1.33	1.36	1.39	1.41	1.44	1.47
State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Local	1.13	1.18	1.23	1.28	1.33	1.39	1.44	1.50	1.56	1.63	1.69	1.75	1.82	1.89	1.96	2.03	2.11	2.19	2.27	2.36	2.45	2.54	2.64	2.75	2.85	2.97
Total	**1.98**	**2.06**	**2.14**	**2.21**	**2.29**	**2.38**	**2.44**	**2.53**	**2.61**	**2.70**	**2.78**	**2.87**	**2.95**	**3.05**	**3.14**	**3.24**	**3.34**	**3.44**	**3.55**	**3.66**	**3.78**	**3.90**	**4.03**	**4.16**	**4.30**	**4.44**

Financial Summary for West Fargo

New and Reconstruction Revenue

For 2010, the revenues shown for new construction and re-construction projects are identical to those shown in the 2010-2013 Transportation Improvement Program (TIP), which schedules projects for completion based on a fiscal constraint criterion. West Fargo uses a combination of federal monies, local sales tax, and property assessments to fund construction projects. Starting in the year 2011, revenues from the previous year are inflated at 2% annually. Many construction projects are funded exclusively with assessments, including the construction of local and collector roadways necessary to serve new developments. As West Fargo grows, so to does its tax base and sales tax revenues. The 2% annual growth assumed in the chart is somewhat modest considering that West Fargo is the fastest growing city in North Dakota. Metro COG estimates that the number of households in West Fargo has grown at an average annual rate of over 6% for the last eight years. The 2% annual growth in federal revenues is consistent with historical trends.

Pavement, Maintenance & Operational Revenues

For West Fargo, operations and maintenance revenues come entirely from the city's general funds. Again, the growth in the urban area is expected to have an overall positive impact on available revenues for M&O. The growth rate reflected in the table on page 4.11 was developed to reflect the regional demographic forecast for the number of West Fargo households – about 3% annual growth between 2010 and 2015, then gradually diminishing to an annual growth rate of only 0.34% by 2035. Data from the U.S. Census shows that the annual increase in property values in North Dakota between 1940 and 2000 averaged 5.67%, which is also reflected in the annual growth in general funds.

Pavement, Maintenance & Operational Costs

As the city grows, so too will its roadway maintenance needs. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lane miles on the federal aid system in West Fargo was developed, including the projects identified in Chapter 5. They were:

- Short-Range: 208 (Local) + 25 (Collector) + 49 (Arterial) = 282 lanes miles
- Mid-Range: 248 (Local) + 31 (Collector) + 51 (Arterial) = 330 lanes miles
- Long-Range: 270 (local) + 34 (Collector) + 53 (Arterial) = 357 lane miles

The future estimates for local roadway miles was based on a West Fargo average of 22 lane miles of local roads per square mile in newer developments. The distribution of households to TAZs for 2015 and 2035 were used to estimate how much additional development would occur for the mid-range and long-range time periods.

General costs estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of engineers from all of Metro COG's member jurisdictions. The following cost estimates and life cycles were developed:

- Asphalt Overlay: $125,000 per lane mile; done once every 20 years
- Asphalt Chip Seal: $12,500 per lane mile; done every 7 years
- Asphalt Crack Seal: $600 per lane mile; done every 4 years

In addition to the growth in the number of lane miles, the city will also need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities.

The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Obviously, some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. All overlay projects are included in the project lists in Chapter 5, and thereby removed from this analysis.

West Fargo Short-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Chip Seal	141	$14,060	$1,982,460
Crack Seal	282	$675	$190,350
Asphalt Overlay	(Included in Chapter 5 Project Lists)		
Total Needs			**$2,172,810**
Total Revenue			**$2,350,000**
Revenue - Needs			**$177,190**

In the short-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Mid-Range (2015-2019)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. All overlay projects are included in the project lists in Chapter 5, and thereby removed from this analysis.

West Fargo Mid-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Chip Seal	165	$16,450	$2,714,250
Crack Seal	330	$821	$270,930
Asphalt Overlay	(Included in Chapter 5 Project Lists)		
Total Needs			**$2,985,180**
Total Revenue			**$3,320,000**
Revenue - Needs			**$334,820**

In the mid-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Long-Range (2020-2035)
It was estimated that all asphalt roadways would be crack sealed four times, and all roads would be chip sealed twice during this time period. All overlay projects are included in the project lists in Chapter 5, and thereby removed from this analysis.

West Fargo Long-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	714	$26,336	$18,803,904
Crack Seal	1,428	$1,264	$1,804,992
Asphalt Overlay	(Included in Chapter 5 Project Lists)		
Total Needs			**$20,608,896**
Total Revenue			**$19,680,000**
Revenue - Needs			**($928,896)**

In the long-range time period, 95.5% of anticipated maintenance needs can be met with expected revenues.

Based on this analysis it appears that West Fargo is currently meeting its roadway M&O needs, and will continue through the planning horizon established for this plan. While the 4.5% short-fall in the long-range time period should not be minimized, it must be recognized that very small changes in some of the assumptions used in this analysis could result in the closing of that revenue gap.

Fargo Revenue Projection

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal																										
HPP																										
State Aid																										
Gas Tax																										
Sales Tax																										
Assessment																										
General Funds	4.80	5.14	5.50	5.88	6.29	6.73	7.20	7.71	8.25	8.82	9.35	9.90	10.49	11.11	11.76	12.44	13.16	13.92	14.72	15.57	16.45	17.39	18.38	19.43	20.54	21.71
Bonds																										
Other																										
Total	**4.80**	**5.14**	**5.50**	**5.88**	**6.29**	**6.73**	**7.20**	**7.71**	**8.25**	**8.82**	**9.35**	**9.90**	**10.49**	**11.11**	**11.76**	**12.44**	**13.16**	**13.92**	**14.72**	**15.57**	**16.45**	**17.39**	**18.38**	**19.43**	**20.54**	**21.71**

Short-Term Total: $27.60 *Short-Term Total: $38.72* *Short-Term Total: $236.32*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	3.98	4.10	4.22	4.35	4.48	4.60	3.94	3.94	3.94	4.02	4.10	4.18	4.26	4.35	4.44	4.53	4.62	4.71	4.80	4.90	5.00	5.10	5.20	5.30	5.41	5.52
HPP																										
State Aid																										
Gas Tax																										
Sales Tax	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.51	5.62	5.73	5.85	5.96	6.08	6.20	6.33	6.45	6.58	6.71	6.85	6.99	7.13	7.27	7.41	7.56
Assessment	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.20	10.40	10.61	10.82	11.04	11.26	11.49	11.72	11.95	12.19	12.43	12.68	12.94	13.19	13.46	13.73	14.00
General Funds	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.79	1.82	1.86	1.89	1.93	1.97	2.01	2.05	2.09	2.13	2.18	2.22	2.26	2.31	2.36	2.40	2.45
Bonds																										
Other																										
Total	**21.13**	**21.25**	**21.37**	**21.50**	**21.63**	**21.75**	**21.09**	**21.09**	**21.09**	**21.51**	**21.94**	**22.38**	**22.83**	**23.29**	**23.75**	**24.23**	**24.71**	**25.20**	**25.71**	**26.22**	**26.75**	**27.28**	**27.83**	**28.38**	**28.95**	**29.53**

Short-Term Total: $106.88 *Mid-Term Total: $106.53* *Long-Term Total: $408.98*

Total System Revenues (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	3.98	4.10	4.22	4.35	4.48	4.60	3.94	3.94	3.94	4.02	4.10	4.18	4.26	4.35	4.44	4.53	4.62	4.71	4.80	4.90	5.00	5.10	5.20	5.30	5.41	5.52
State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Local	21.95	22.29	22.65	23.03	23.44	23.88	24.35	24.86	25.40	26.32	27.19	28.10	29.05	30.04	31.08	32.14	33.25	34.41	35.62	36.89	38.20	39.58	41.01	42.51	44.08	45.72
Total	**25.93**	**26.39**	**26.87**	**27.38**	**27.92**	**28.48**	**28.29**	**28.80**	**29.34**	**30.34**	**31.29**	**32.28**	**33.31**	**34.39**	**35.52**	**36.67**	**37.87**	**39.12**	**40.43**	**41.79**	**43.20**	**44.67**	**46.21**	**47.82**	**49.49**	**51.24**

Financial Summary for Fargo

New and Reconstruction Revenue

For years 2010-2018, the revenues shown for new construction and re-construction projects are identical to those shown in the 2010-2013 Transportation Improvement Program (TIP), which schedules projects for completion based on a fiscal constraint criteria. Starting in the year 2019, revenues from the previous year are inflated 2% annually. Fargo uses a combination of federal monies, local sales tax, property assessments and general funds to fund transportation construction projects. The voter-approved local sales tax is a half-cent sales tax to be used specifically for infrastructure projects, and is set to expire in 2029. Since the renewal of this sales tax has been approved by the voters at least once, this plan assumes that the sales tax will renewed again in 2029 and will be in effect at least through 2035. As Fargo grows, so too does its tax base and sales tax revenues. The 2% annual growth assumed in the chart is slightly lower than the growth in the number of households between 2005 and 2006 (2.24%), 2006 and 2007 (2.34%) and 2007 to 2008 (2.58%). The 2% annual growth in federal revenues is consistent with historical trends. Many construction projects are funded exclusively with assessments, including the construction of local and collector roadways necessary to serve new developments. Revenue from assessments is held constant through 2018, which can be interpreted as a "worst case scenario" given the past and forecasted growth in Fargo households.

Pavement, Maintenance & Operational Revenues

For Fargo, operations and maintenance revenues come entirely from the city's general funds. Again, the growth in the urban area is expected to have an overall positive impact on available revenues for M&O. The growth rate reflected in the table on page 4.15 was developed to reflect the regional demographic forecast for the number of Fargo households – about 6% annual growth between 2010 and 2020, then gradually diminishing to an annual growth rate of only 3.5% by 2035. Data from the U.S. Census shows that the annual increase in property values in North Dakota between 1940 and 2000 averaged 5.67%, which is also reflected in the annual growth in general funds.

Pavement, Maintenance & Operational Costs

As the city grows, so too will its roadway maintenance needs. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lane miles in Fargo was developed, including the projects identified in Chapter 5. They were:

- Short-Range: 676 (Local) + 202 (Collector) + 336 (Arterial) = 1,214 lanes miles
- Mid-Range: 794 (Local) + 220 (Collector) + 354 (Arterial) = 1,368 lanes miles
- Long-Range: 926 (local) + 239 (Collector) + 381 (Arterial) = 1,546 lane miles

The future estimates for local roadway miles was based on a Fargo average of 24 lane miles of local roads per square mile in newer developments. The distribution of households to TAZs for 2015 and 2035 were used to estimate how much additional development would occur for the mid-range and long-range time periods.

General costs estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of engineers from all of Metro COG's member jurisdictions. The following cost estimates and life cycles were developed:

- Asphalt Overlay: $119,000 per lane mile; done once every 20 years
- Asphalt Chip Seal: $12,500 per lane mile; done every 7 years
- Asphalt Crack Seal: $600 per lane mile; done every 4 years

In addition to the growth in the number of lane miles, the city will also need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities. The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Obviously, some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. It was also assumed that a minimum 20% of all federal aid roadways (collectors and arterials) would be overlayed during this time period. By policy the City of Fargo assesses 100% of the cost of repaving local streets to the fronting properties, and no city funds are used for that purpose.

Fargo Short-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	607	$14,060	$8,534,420
Crack Seal	1,214	$675	$819,450
Asphalt Overlay	107.6	$134,000	$14,418,400
Total Needs			**$23,772,270**
Total Revenue			**$27,600,000**
Revenue - Needs			**$3,827,730**

In the short-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Mid-Range (2015-2019)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. It was also assumed that a minimum 20% of all federal aid roadways (collectors and arterials) would be overlayed during this time period. By policy the City of Fargo assesses 100% of the cost of repaving local streets to the fronting properties, and no city funds are used for that purpose.

Fargo Mid-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	684	$16,450	$11,251,800
Crack Seal	1,368	$821	$1,123,128
Asphalt Overlay	115	$169,000	$19,435,000
Total Needs			**$31,809,928**
Total Revenue			**$38,720,000**
Revenue - Needs			**$6,910,072**

In the mid-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

<u>Long-Range (2020-2035</u>)
It was estimated that all asphalt roadways would be crack sealed four times, and all roads would be chip sealed twice during this time period. It was also assumed that a minimum 60% of all federal aid roadways (collectors and arterials) would be overlayed during this time period. By policy the City of Fargo assesses 100% of the cost of repaving local streets to the fronting properties, and no city funds are used for that purpose.

Fargo Long-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	3,092	$26,336	$81,430,912
Crack Seal	6,184	$1,264	$7,816,576
Asphalt Overlay	372	$250,000	$93,000,000
Total Needs			**$182,247,488**
Total Revenue			**$236,320,000**
Revenue - Needs			**$54,072,512**

In the long-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Based on this analysis it appears the City of Fargo is currently meeting its roadway M&O needs, and will continue to do so at least through the planning horizon of this plan.

Moorhead Revenue Projection

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal																										
HPP																										
State Aid	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Gas Tax																										
Sales Tax																										
Assessment																										
General Funds	1.30	1.39	1.49	1.59	1.70	1.81	1.92	2.04	2.17	2.30	2.44	2.59	2.74	2.91	3.08	3.27	3.46	3.67	3.89	4.12	4.37	4.63	4.91	5.20	5.52	5.85
Bonds																										
Other																										
Total	**1.53**	**1.62**	**1.72**	**1.82**	**1.93**	**2.04**	**2.15**	**2.27**	**2.40**	**2.53**	**2.67**	**2.82**	**2.97**	**3.14**	**3.31**	**3.50**	**3.69**	**3.90**	**4.12**	**4.35**	**4.60**	**4.86**	**5.14**	**5.43**	**5.75**	**6.08**

Short-Term Total: $8.63 *Mid-Term Total: $11.39* *Long-Term Total: $66.32*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	17.09	9.83	8.95	0.60	0.60	0.60	0.60	0.60	0.60	0.61	0.62	0.64	0.65	0.66	0.68	0.69	0.70	0.72	0.73	0.75	0.76	0.78	0.79	0.81	0.82	0.84
HPP																										
State Aid	7.66	2.72	2.29	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Gas Tax																										
Sales Tax																										
Assessment	7.56	2.96	10.18	3.46	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08	1.09	1.10	1.12	1.13	1.14	1.15	1.16	1.17	1.18
General Funds																										
Bonds	5.55	6.39	3.74	5.14	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Other																										
Total	**37.86**	**21.90**	**25.16**	**9.20**	**3.60**	**5.60**	**5.60**	**5.60**	**5.60**	**5.62**	**5.64**	**5.67**	**5.69**	**5.71**	**5.74**	**5.76**	**5.79**	**5.81**	**5.84**	**5.86**	**5.89**	**5.91**	**5.94**	**5.97**	**6.00**	**6.02**

Short-Term Total: $97.72 *Mid-Term Total: $28.02* *Long-Term Total: $93.24*

Total System Revenues (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	17.09	9.83	8.95	0.60	0.60	0.60	0.60	0.60	0.60	0.61	0.62	0.64	0.65	0.66	0.68	0.69	0.70	0.72	0.73	0.75	0.76	0.78	0.79	0.81	0.82	0.84
State	7.89	2.95	2.52	0.23	0.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Local	14.41	10.74	15.41	10.19	4.70	5.81	5.92	6.04	6.17	6.31	6.46	6.62	6.78	6.96	7.14	7.34	7.54	7.76	7.99	8.24	8.50	8.77	9.06	9.37	9.69	10.03
Total	**39.39**	**23.52**	**26.88**	**11.02**	**5.53**	**7.64**	**7.75**	**7.87**	**8.00**	**8.15**	**8.31**	**8.48**	**8.66**	**8.85**	**9.05**	**9.26**	**9.48**	**9.71**	**9.96**	**10.21**	**10.49**	**10.78**	**11.08**	**11.40**	**11.74**	**12.10**

Financial Summary for Moorhead

New and Reconstruction Revenue

Moorhead uses a combination of federal monies, state aide, property assessments and bonds to fund transportation construction projects. For years 2010-2014, the revenues shown for new construction and re-construction projects are identical to those shown in the 2010-2013 Transportation Improvement Program (TIP), which schedules projects for completion based on a fiscal constraint criteria. Starting in the year 2015, revenues from State Aid, Assessments, and Bonds, become regular and sustained. Starting in 2019, Federal revenue from the previous year is inflated 2% annually. As Moorhead grows, so too does its tax base. The 1% annual growth in assessments shown in the chart is consistent with the projected growth in the number of households between 2010 and 2035. The 2% annual growth in federal revenues is consistent with historical trends. Many construction projects are funded exclusively with assessments, including the construction of local and collector roadways necessary to serve new developments.

Pavement, Maintenance & Operational Revenues

For Moorhead, operations and maintenance revenues come from a combination of the city's general funds and municipal state aid. Again, the growth in the urban area is expected to have an overall positive impact on available revenues for M&O. The growth rate reflected in the table on the previous page was developed to reflect the regional demographic forecast for the number of Moorhead households – about 2% annual growth between 2010 and 2015, then gradually diminishing to an annual growth rate of only 1% by 2035. Data from the U.S. Census shows that the annual increase in property values in Minnesota between 1940 and 2000 averaged 4.81%, which is also reflected in the annual growth in general funds.

Pavement, Maintenance & Operational Costs

As the city grows, so too will its roadway maintenance needs. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lane miles in Moorhead was developed, including the projects identified in Chapter 5. They were:

- Short-Range: 291 (Local) + 76 (Collector) + 134 (Arterial) = 501 lanes miles
- Mid-Range: 326 (Local) + 77 (Collector) + 134 (Arterial) = 537 lanes miles
- Long-Range: 341 (local) + 80 (Collector) + 134 (Arterial) = 555 lane miles

The future estimates for local roadway miles was based on a Moorhead average of 20 lane miles of local roads per square mile in newer developments. The distribution of households to TAZs for 2015 and 2035 were used to estimate how much additional development would occur for the mid-range and long-range time periods.

General costs estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of engineers from all of Metro COG's member jurisdictions. The following cost estimates and life cycles were developed:

- Asphalt Overlay: $119,000 per lane mile; done once every 20 years
- Asphalt Chip Seal: $12,500 per lane mile; done every 7 years
- Asphalt Crack Seal: $600 per lane mile; done every 4 years

In addition to the growth in the number of lane miles, the city will also need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities. The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. The city has identified some overlay projects in Chapter 5, but Chapter 5 does not contain an exhaustive list of overlay projects for this time period. Therefore, for this analysis, it was assumed that 15% of federal-aid lane miles would be subject to overlay projects.

Moorhead Short-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	250.5	$14,060	$3,522,030
Crack Seal	501	$675	$338,175
Asphalt Overlay	31	$134,000	$4,154,000
Total Needs			**$8,014,205**
Total Revenue			**$8,630,000**
Revenue - Needs			**$615,795**

In the short-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Mid-Range (2015-2019)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. It was also assumed that 20% of all federal aid roadways (collectors and arterials) would be overlayed during this time period.

Moorhead Mid-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	268.5	$16,450	$4,416,825
Crack Seal	537	$821	$440,877
Asphalt Overlay	42	$169,000	$7,098,000
Total Needs			**$11,955,702**
Total Revenue			**$11,390,000**
Revenue - Needs			**($565,702)**

In the mid-range time period, 95% of anticipated maintenance needs can be met with expected revenues.

<u>Long-Range (2020-2035)</u>

It was estimated that all asphalt roadways would be crack sealed four times, and all roads would be chip sealed twice during this time period. It was also assumed that a minimum 60% of all federal aid roadways (collectors and arterials) would be overlayed during this time period. The reader will note that some Moorhead overlay projects are identified in the Long-Range project lists in Chapter 5 and are accounted for there.

Moorhead Long-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	1110	$26,336	$29,232,960
Crack Seal	2220	$1,264	$2,806,080
Asphalt Overlay	128	$250,000	$32,000,000
Total Needs			**$64,039,040**
Total Revenue			**$66,320,000**
Revenue - Needs			**$2,280,960**

In the long-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Based on this analysis, it appears that the City of Moorhead is currently meeting its roadway M&O needs, and will continue to do so at least through the planning horizon of this plan.

Dilworth Revenue Projection

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal																										
HPP																										
State Aid																										
Gas Tax																										
Sales Tax																										
Assessment	0.27	0.28	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.47	0.49	0.52	0.55	0.58	0.61	0.63	0.66	0.69	0.72	0.76	0.79	0.83	0.86	0.90	0.94
General Funds	0.27	0.28	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.47	0.49	0.52	0.55	0.58	0.61	0.63	0.66	0.69	0.72	0.76	0.79	0.83	0.86	0.90	0.94
Bonds																										
Other																										
Total	**0.53**	**0.56**	**0.60**	**0.64**	**0.68**	**0.71**	**0.75**	**0.80**	**0.84**	**0.89**	**0.94**	**0.99**	**1.04**	**1.10**	**1.16**	**1.21**	**1.27**	**1.33**	**1.39**	**1.45**	**1.51**	**1.58**	**1.65**	**1.73**	**1.80**	**1.88**

Short-Term Total: *$3.01* *Mid-Term Total:* *$4.00* *Long-Term Total:* *$22.03*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	0.20		0.20			0.20			0.20			0.20			0.20			0.20			0.20			0.20		
HPP																										
State Aid																										
Gas Tax																										
Sales Tax																										
Assessment	0.03	0.04	0.05	0.06	0.07	0.08	0.09	2.30	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28
General Funds																										
Bonds																										
Other																										
Total	**0.23**	**0.04**	**0.25**	**0.06**	**0.07**	**0.28**	**0.09**	**2.30**	**0.31**	**0.12**	**0.13**	**0.34**	**0.15**	**0.16**	**0.37**	**0.18**	**0.19**	**0.40**	**0.21**	**0.22**	**0.43**	**0.24**	**0.25**	**0.46**	**0.27**	**0.28**

Short-Term Total: *$0.65* *Mid-Term Total:* *$3.10* *Long-Term Total:* *$4.28*

Total System Revenues (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	0.20	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00
State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Local	0.56	0.60	0.65	0.70	0.75	0.79	0.84	3.10	0.95	1.01	1.07	1.13	1.19	1.26	1.33	1.39	1.46	1.53	1.60	1.67	1.74	1.82	1.90	1.99	2.07	2.16
Total	**0.76**	**0.60**	**0.85**	**0.70**	**0.75**	**0.99**	**0.84**	**3.10**	**1.15**	**1.01**	**1.07**	**1.33**	**1.19**	**1.26**	**1.53**	**1.39**	**1.46**	**1.73**	**1.60**	**1.67**	**1.94**	**1.82**	**1.90**	**2.19**	**2.07**	**2.16**

Financial Summary for Dilworth

New and Reconstruction Revenue

Under the current Area Transportation Partnership (ATP) process, Dilworth does not have direct access to federal transportation funds because they are a city of less than 5,000 residents. The city must find a project sponsor, such as Clay County or the City of Moorhead, to support the project at the ATP and to receive the funds if the Dilworth project is funded. This analysis assumes a minimal distribution of federal transportation dollars to Dilworth ($200,000 every 3 years). There is some historical basis for this assumption. The City of Dilworth does occasionally receive federal funds, such as the $175,000 in Safe Routes to School grant monies the City was awarded in 2008. Even so, Dilworth does not receive nor use federal transportation funds in the amounts typical for other Metro COG member jurisdictions. The $2.3 million assessment revenue shown in 2017 reflects the City's stated commitment to fund the construction of 8th Avenue North from CSAH 9 to 7th Street NE even if it must assess 100% of the construction costs to benefiting properties.

Pavement, Maintenance & Operational Revenues

For Dilworth, operations and maintenance revenues come from a mixture of assessments and general funds (property taxes). The 2010 maintenance revenue is taken from the city's average annual roadway maintenance revenue over the past 3 years (2006-2008). The forecasted growth in the urban area is expected to have an overall positive impact on available revenues for M&O. The growth rate reflected in the table on page 4.22 was developed to reflect the regional demographic forecast for the number of Dilworth households – about 2% annual growth between 2010 and 2015, then gradually diminishing to an annual growth rate of only 0.5% by 2035. Data from the U.S. Census shows that the annual increase in property values in Minnesota between 1940 and 2000 averaged 4.81%, which is also reflected in the annual growth in assessments and general funds.

Pavement, Maintenance & Operational Costs

As the city grows, so too will its roadway maintenance needs. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lane miles in Dilworth was developed, including the projects identified in Chapter 5. They were:

- Short-Range: 45.7 (Local) + 8.5 (Collector) + 0 (Arterial) = 54.2 lanes miles
- Mid-Range: 58.7 (Local) + 12 (Collector) + 0 (Arterial) = 70.7 lanes miles
- Long-Range: 69.7 (Local) + 12 (Collector) + 0 (Arterial) = 81.7 lane miles

The future estimates for local roadway miles was based on a Dilworth average of 21 lane miles of local roads per square mile in newer developments. The distribution of households to TAZs for 2015 and 2035 were used to estimate how much additional development would occur for the mid-range and long-range time periods.

General costs estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of engineers from all of Metro COG's member jurisdictions. The following cost estimates and life cycles were developed:

- Asphalt Overlay: $119,000 per lane mile; done once every 20 years
- Asphalt Chip Seal: $12,500 per lane mile; done every 7 to 10 years
- Asphalt Crack Seal: $600 per lane mile; which the City of Dilworth does every 2 to 3 years

In addition to the growth in the number of lane miles, the city will also need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities.

The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was estimated that 125% of all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. Further, it is assumed that 20% of all roadways would be overlayed in this time period.

Dilworth Short-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Chip Seal	27.1	$14,060	$381,026
Crack Seal	67.75	$675	$45,731
Asphalt Overlay	10.8	$134,000	$1,447,200
Total Needs			**$1,873,957**
Total Revenue			**$3,010,000**
Revenue - Needs			**$1,136,043**

In the short-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Mid-Range (2015-2019)

It was estimated that 125% of all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. It was also assumed that 20% of all roadways would be overlayed during this time period.

Dilworth Mid-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Chip Seal	35.35	$16,450	$581,507
Crack Seal	88	$821	$72,556
Asphalt Overlay	14	$169,000	$2,366,000
Total Needs			**$3,020,063**
Total Revenue			**$4,000,000**
Revenue - Needs			**$979,937**

In the mid-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Long-Range (2020-2035)
It was estimated that all asphalt roadways would be crack sealed five times, and all roads would be chip sealed twice during this time period. It was also assumed that a minimum 60% of all roadways would be overlayed during this time period.

Dilworth Long-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	163.4	$26,336	$4,303,302
Crack Seal	408.5	$1,264	$516,344
Asphalt Overlay	49	$250,000	$12,250,000
Total Needs			**$17,069,646**
Total Revenue			**$22,030,000**
Revenue - Needs			**$4,960,354**

In the long-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Based on this analysis, it appears that the City of Dilworth is currently meeting its roadway M&O needs, and will continue to do so through at least 2035.

Clay County Revenue Projection

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal																										
HPP																										
State Aid	1.70	1.70	1.70	1.80	1.80	1.80	1.85	1.89	1.92	1.96	2.00	2.04	2.08	2.12	2.16	2.21	2.25	2.29	2.34	2.39	2.44	2.48	2.53	2.58	2.64	2.69
Gas Tax																										
Sales Tax																										
Assessment																										
General Funds	1.90	2.00	2.10	2.21	2.32	2.44	2.56	2.69	2.83	2.97	3.12	3.28	3.45	3.63	3.81	4.01	4.21	4.43	4.65	4.89	5.14	5.40	5.68	5.97	6.27	6.59
Bonds																										
Other																										
Total	**3.60**	**3.70**	**3.80**	**4.01**	**4.12**	**4.24**	**4.41**	**4.58**	**4.75**	**4.93**	**5.12**	**5.32**	**5.53**	**5.75**	**5.97**	**6.21**	**6.46**	**6.72**	**6.99**	**7.28**	**7.57**	**7.88**	**8.21**	**8.55**	**8.91**	**9.28**

Short-Term Total: *$19.22* *Mid-Term Total:* *$22.91* *Long-Term Total:* *$111.75*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal			0.20			0.20			0.20			0.20			0.20			0.20			0.20			0.20		
HPP																										
State Aid	2.60	2.60	2.70	2.70	2.80	2.80	2.87	2.92	2.97	3.03	3.09	3.15	3.21	3.28	3.34	3.41	3.48	3.55	3.62	3.69	3.77	3.84	3.92	4.00	4.08	4.16
Gas Tax																										
Sales Tax																										
Assessment																										
General Funds																										
Bonds																										
Other	0.35	0.35	0.40	0.40	0.40	0.40	0.43	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.62
Total	**2.95**	**2.95**	**3.30**	**3.10**	**3.20**	**3.40**	**3.30**	**3.35**	**3.61**	**3.48**	**3.55**	**3.82**	**3.69**	**3.76**	**4.04**	**3.92**	**4.00**	**4.28**	**4.16**	**4.24**	**4.52**	**4.41**	**4.50**	**4.79**	**4.68**	**4.77**

Short-Term Total: *$15.50* *Mid-Term Total:* *$17.14* *Long-Term Total:* *$67.13*

Total System Revenues

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00
State	4.30	4.30	4.40	4.50	4.60	4.60	4.72	4.81	4.89	4.99	5.09	5.19	5.29	5.40	5.51	5.62	5.73	5.84	5.96	6.08	6.20	6.33	6.45	6.58	6.71	6.85
Local	1.90	2.00	2.10	2.21	2.32	2.44	2.56	2.69	2.83	2.97	3.12	3.28	3.45	3.63	3.81	4.01	4.21	4.43	4.65	4.89	5.14	5.40	5.68	5.97	6.27	6.59
Total	**6.20**	**6.30**	**6.70**	**6.71**	**6.92**	**7.24**	**7.28**	**7.50**	**7.92**	**7.96**	**8.21**	**8.67**	**8.74**	**9.03**	**9.52**	**9.62**	**9.94**	**10.47**	**10.61**	**10.97**	**11.54**	**11.73**	**12.13**	**12.75**	**12.98**	**13.44**

Financial Summary for Clay County

New and Reconstruction Revenue

For years 2010 – 2018, the revenues shown for new construction and re-construction projects are identical to those shown in the 2010-2013 Transportation Improvement Program (TIP), which schedules projects for completion based on a fiscal constraint criteria. Starting in the year 2019, revenues from the previous year are inflated at 2% annually, which is consistent with historic growth trends for these revenue streams. Clay County uses a combination of state aid and other county funds to complete construction projects. The revenues shown are only a portion of the County's total available revenue for road and bridge construction. The 2009 Clay County budget for Road and Bridge Construction was approximately $4.5 million. The $2.95 million shown in the revenue table on page 4.26 represents about two-thirds of the County's total budget. However, it would never be expected that the County would spend all available revenue within the MPO area. Any remaining funds shown in Chapter 5 as well as the revenue not accounted for on the table above would be available for road and bridge construction outside of the MPO area.

Pavement, Maintenance & Operational Revenues

For Clay County, operations and maintenance revenues come from state gas tax and general funds. The revenues shown are for the entire county and therefore the analysis on the pages that follow considers lane miles for the entire county. In this case, we again use existing revenues (as shown in the adopted TIP) as a starting point, and then inflate them at roughly 2% annually, which approximates historical trends. Again, any potential future changes to the gas tax are presumed to have little impact on the overall level of funding available. The growth of the urban area is expected to result in an overall positive impact on that portion of property-tax revenue used for roads and bridges. Additionally, an annual growth rate of 4% is included in the General Funds portion of the maintenance revenues to reflect the historical trend of rising property values over time.

Pavement, Maintenance & Operational Costs

Generally speaking, the county does not add miles to its roadway network on an annual basis. Year-to-year, the number of miles for which the county is responsible is stable and predictable. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lane miles for which Clay County is responsible, was developed. Information on how many lane miles are gravel versus paved was not available.

- Short-Range: 576 (within the MPO area) + 860 (outside the MPO area) = 1,436 lane miles (928 lane miles gravel + 562 lane miles paved)
- Mid-Range: 576 (within the MPO area) + 860 (outside the MPO area) = 1,436 lane miles (928 lane miles gravel + 562 lane miles paved)
- Long-Range: 576 (within the MPO area) + 860 (outside the MPO area) = 1,436 lane miles (928 lane miles gravel + 562 lane miles paved)

It is assumed that, over time, these numbers will remain relatively constant.

General costs estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of engineers from all of Metro COG's member jurisdictions. The following cost estimates and life cycles were developed:

- Asphalt Overlay: $125,000 per lane mile; approximately every 20 years
- Asphalt Chip Seal: $12,500 per lane mile; approximately every 7 years
- Asphalt Crack Seal: $600 per lane mile; approximately every 4 years
- Gravel Roads: $713 per lane mile annually

Chapter 5 includes those overlay and bridge replacement projects for Clay County within the MPO planning area.

The county will need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities. The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Obviously, some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. Overlay projects within the MPO area are included in the project lists in Chapter 5, and thereby removed from this analysis. It was assumed that 20% of the roadways outside of the MPO area would require overlay projects in this time period, and all gravel roads would require blading at least four times.

Clay County Short-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	281	$14,060	$3,950,860
Crack Seal	562	$675	$379,350
Asphalt Overlay	90	$134,000	$12,060,000
Gravel	3,712	$771	$2,861,952
Total Needs			**$19,252,162**
Total Revenue			**$19,220,000**
Revenue - Needs			**($32,162)**

In the short-range time period, 99.8% of anticipated maintenance needs for paved and gravel roads can be met with expected revenues.

Mid-Range (2015-2019)

It was estimated that all asphalt roadways would be crack sealed, and 50% of asphalt roadways would be chip sealed during this time period. Overlay projects within the MPO area are included in the project lists in Chapter 5, and so are removed from this analysis. It was assumed that 20% of the roadways outside of the MPO area would require overlay projects in this time period, and all gravel roads would require blading at least four times.

Clay County Mid-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	281	$17,791	$4,999,271
Crack Seal	562	$854	$479,948
Asphalt Overlay	90	$169,000	$15,210,000
Gravel	3,712	$938	$3,481,856
Total Needs			**$24,171,075**
Total Revenue			**$22,910,000**
Revenue - Needs			**($1,261,075)**

In the mid-range time period, 95% of anticipated maintenance needs for paved and gravel roadways can be met with expected revenues.

Long-Range (2020-2035)

It was estimated that all asphalt roadways would be crack sealed five times, and all asphalt roads would be chip sealed twice during this time period. Overlay projects within the MPO planning area are included in the project lists in Chapter 5, and so are removed from this analysis. It is assumed that 60% of roadways outside the MPO planning area will need to be overlayed during this time period, and that all gravel roads would require blading at least 12 times.

Clay County Long-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Chip Seal	1,124	$26,336	$29,601,664
Crack Seal	2,810	$1,264	$3,551,840
Asphalt Overlay	270	$250,000	$67,500,000
Gravel	11,136	$1,388	$15,456,768
Total Needs			**$116,110,272**
Total Revenue			**$111,750,000**
Revenue - Needs			**($4,360,272)**

In the long-range time period, 96% of anticipated maintenance needs for paved and gravel roadways can be met with expected revenues.

Based on this analysis it appears Clay County is largely meeting its minimum maintenance needs, and will continue to due so through at least 2035. This analysis did not include the cost of bridge rehabilitation or replacement, for which funds will be needed from other funding sources. The level of gravel road maintenance assumed in this analysis is very minimal. If the county were to spend more resources by blading and compacting more often or by adding gravel to road beds, the difference between maintenance costs and available revenues would grow unless additional funding were identified for those activities.

Mn/DOT Revenue Projection

Pavement, Maintenance, & Operational Revenue Sources (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal																										
HPP																										
State Aid	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.18	0.18	0.19	0.19	0.19	0.20	0.20	0.20	0.21	0.21	0.22	0.22
Gas Tax																										
Sales Tax																										
Assessment																										
General Funds																										
Bonds																										
Other																										
Total	**0.14**	**0.14**	**0.14**	**0.14**	**0.15**	**0.15**	**0.15**	**0.16**	**0.16**	**0.16**	**0.16**	**0.17**	**0.17**	**0.17**	**0.18**	**0.18**	**0.19**	**0.19**	**0.19**	**0.20**	**0.20**	**0.20**	**0.21**	**0.21**	**0.22**	**0.22**

Short-Term Total: $0.70 *Mid-Term Total: $0.78* *Long-Term Total: $3.07*

New Construction & Reconstruction Revenues by Source (Millions of Dollars)

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	11.18	10.73	11.85	0.00	0.00	1.54	1.54	10.60	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
HPP																										
State Aid		2.50	1.30	0.00	0.00	0.90	0.90		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Gas Tax																										
Sales Tax																										
Assessment																										
General Funds																										
Bonds																										
Other	0.98	0.30						2.65																		
Total	**12.16**	**13.53**	**13.15**	**0.00**	**0.00**	**2.44**	**2.44**	**13.25**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**	**2.44**

Short-Term Total: $38.84 *Mid-Term Total: $23.01* *Long-Term Total: $39.04*

Total System Revenues

Timeframe	Short-Term					Mid-Term					Long-Term															
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Federal	11.18	10.73	11.85	0.00	0.00	1.54	1.54	10.60	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
State	0.14	2.64	1.44	0.14	0.15	1.05	1.05	0.16	1.06	1.06	1.06	1.07	1.07	1.07	1.08	1.08	1.09	1.09	1.09	1.10	1.10	1.10	1.11	1.11	1.12	1.12
Local	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**11.32**	**13.37**	**13.29**	**0.14**	**0.15**	**2.59**	**2.59**	**10.76**	**2.60**	**2.60**	**2.60**	**2.61**	**2.61**	**2.61**	**2.62**	**2.62**	**2.63**	**2.63**	**2.63**	**2.64**	**2.64**	**2.64**	**2.65**	**2.65**	**2.66**	**2.66**

Financial Summary for Mn/DOT

New and Reconstruction Revenue

For years 2010 – 2013, the revenues shown for new construction and re-construction projects are identical to those shown in the 2010-2013 Transportation Improvement Program (TIP), which schedules projects for completion based on a fiscal constraint criterion. The $13.25 million shown in 2017 also has been shown in the approved TIP, and is based on Mn/DOT's 10-year capital improvement plan. For the period of 2014 through 2016 and 2018 to 2035, a flat $2.44 million annual revenue stream is shown based on the direction provided by Mn/DOT District 4 during the 2008 financial plan update to the LRTP. This annual allotment of $2.44 million can be considered a "worst case scenario" level of funding as the actual Mn/DOT programming in the MPO area for the years 2006-2009 has averaged about $5.2 million annually.

Pavement, Maintenance & Operational Revenues

For the Mn/DOT, operations and maintenance revenues come from the state through either state gas and motor vehicle revenues or from district-wide set-asides for preventative maintenance. The general (i.e., non-district) state revenues are difficult to predict as they tend to be programmed as needed and are very project specific. The district does very few purely maintenance projects. They do projects to improve ride quality and to maintain the federal-aid system, but the projects tend to also include culvert replacements, ADA improvements, and other elements that elevate the projects beyond simple maintenance activities. As such, those projects are accounted for in Chapter 5 of this document and the associated revenues appear in the "New and Reconstruction Revenue Sources" above. The district set-aside for preventative maintenance totals about $2.7 million for the twelve-county District. About 5% of the lane miles for which Mn/DOT District 4 is responsible lie within the MPO planning area, so 5% of the annual preventative maintenance revenue is listed in the revenue table above (about $135,000 in 2010). Beyond 2010, the preventative maintenance revenue is assumed to grow at about 2% annually.

There is some uncertainty surrounding the future of the gas tax. As more electric-hybrid vehicles and alternative fuel vehicles enter the fleet, gas tax revenues can be expected to decrease. There is also a significant negative correlation between the price of gas and gas tax revenue. There are currently high-level political discussions regarding the future of the gas tax and significant changes may be forthcoming. However, for planning purposes, the revenue forecasts here assume that regardless of what may happen to the gas tax in the future, the existing trends will not experience any fluctuation.

Pavement, Maintenance & Operational Costs

Generally speaking, the Mn/DOT adds very few miles to its roadway network on an annual basis. Year-to-year, the number of miles for which the Mn/DOT is responsible is fairly stable and predictable. In those instances when new mileage is added (as with a new interstate ramp) the increase in mileage as a percentage of overall system is very small. For each time period (short-range, mid-range, and long-range) an estimate of the number of roadway lanes miles for which Mn/DOT is responsible, and which lie in the MPO planning area was developed. Within the MPO area, Mn/DOTs responsibilities have both concrete surfaces (I-94 and MN-336) as well as asphalt surfaces (US-75 & US-10).

- Short-Range: = 11.8 (concrete) + 154 (asphalt) = 165.8 lane miles
- Mid-Range: = 11.8 (concrete) + 154 (asphalt) = 165.8 lane miles
- Long-Range: = 12.8 (concrete) + 154 (asphalt) = 166.8 lane miles

General costs estimates (in 2009 dollars) were developed for the MPO area by soliciting the input of Mn/DOT engineers. The following cost estimates and life cycles were developed:

- Concrete Pavement Repair: $100,000 per lane mile; as needed

In general, Mn/DOT does not do asphalt crack seal or chip seal projects in an urban area, so those activities as not shown in this analysis. Chapter 5 includes roadway resurfacing projects (mill and overlays) and bridge rehabilitation/replacement projects for Mn/DOT within the MPO planning area. These specific projects have been excluded from this maintenance analysis.

The Mn/DOT will need to contend with the growth in year-over-year inflation for the same goods and services (i.e., rising wages, fuel costs, vehicle and equipment purchasing costs, etc.). This plan assumes 4% annual cost inflation for maintenance activities. The year-of-expenditure was estimated as the middle year of each time period (i.e., 2012 for Short-Range; 2017 for Mid-Range; and 2027 for Long-Range). Obviously, some maintenance activities would occur previous to the middle year of each time frame (at a lower cost) and some would occur after the middle year (at a higher cost), but if one assumes approximately the same amount of activity occurs before and after the middle year, then the cost estimate for the entire time period should be accurate.

Short-Range (2010-2014)

It was assumed that 20% of all concrete lane miles would be subjected to CPR maintenance activities. Asphalt mill and overlay projects are listed accounted for in Chapter 5 of this plan, so are excluded from this analysis. Mn/DOT does not do asphalt chip seal or crack seal projects in urban areas.

Mn/DOT Short-Range Roadway Maintenance Analysis

Activity	Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	2.36	$112,486	$265,467
Asphalt Mill and Overlay	(Included in Chapter 5)		
Total Needs			**$265,467**
Total Revenue			**$700,000**
Revenue - Needs			**$434,533**

In the short-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Mid-Range (2015-2019)

It was assumed that 20% of all concrete lane miles would be subjected to CPR maintenance activities. Asphalt mill and overlay projects are listed accounted for in Chapter 5 of this plan, so are excluded from this analysis. Mn/DOT does not do asphalt chip seal or crack seal projects in urban areas.

Mn/DOT Mid-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Concrete Pavement Repair	2.36	$136,856	$322,980
Asphalt Mill & Overlay	(Included in Chapter 5)		
Total Needs			**$322,980**
Total Revenue			**$780,000**
Revenue - Needs			**$457,020**

In the mid-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

<u>Long-Range (2020-2035)</u>

It was estimated that 60% of concrete roadways would be subjected to CPR maintenance activity over this time frame.

Mn/DOT Long-Range Roadway Maintenance Analysis

Activity	**Lane Miles**	**Cost per Lane Mile**	**Cost for Activity**
Concrete Pavement Repair	7.68	$202,580	$1,555,814
Asphalt Mill & Overlay	(Included in Chapter 5)		
Total Needs			**$1,555,814**
Total Revenue			**$3,070,000**
Revenue - Needs			**$1,514,186**

In the long-range time period, 100% of anticipated maintenance needs can be met with expected revenues.

Based on this analysis it appears that Mn/DOT District 4 is currently meeting its maintenance needs within the MPO planning area, and will continue to do so through the planning horizon of this plan.

Fargo Transit Operations (FTA 5307) and Capital (FTA 5309) Projected Revenues*

		2010	2011	2012	2013	2014	Short-Term Total	2015	2016	2017	2018	2019	Mid-Term Total	2020	2021**	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Long-Term Total
Fargo Transit Operations (FTA 5307)	Federal	2.80	2.88	2.96	3.04	3.08	**14.75**	3.20	3.33	3.46	3.60	3.74	**17.32**	3.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**3.89**
	State																													
	Local	0.70	0.72	0.74	0.76	0.77	**3.69**	0.80	0.83	0.86	0.90	0.94	**4.33**	0.97	5.06	5.26	5.47	5.69	5.92	6.15	6.40	6.66	6.92	7.20	7.49	7.79	8.10	8.42	8.76	**138.39**
	Total	3.50	3.60	3.70	3.80	3.84	**18.44**	4.00	4.16	4.32	4.50	4.68	**21.65**	4.86	5.06	5.26	5.47	5.69	5.92	6.15	6.40	6.66	6.92	7.20	7.49	7.79	8.10	8.42	8.76	**142.28**
Fargo Transit Capital (FTA 5309 + Local match)		1.35	0.15	0.78	1.38	0.60	**4.25**	0.85	0.88	0.92	0.96	0.99	**4.61**	1.03	1.08	1.12	1.16	1.21	1.26	1.31	1.36	1.42	1.47	1.53	1.59	1.66	1.72	1.79	1.86	**30.32**

*Millions of dollars
**Beginning in 2021, it is assumed that the metro area popoulation will surpass 200,000 residents and FTA 5307 funding will no longer be eligible to support operations. Further, it is assumed that a regional transit authority will be in place, which will generate sufficient local transit operations dollars.

Moorhead Transit Operations (FTA 5307) and Capital (FTA 5309) Projected Revenues*

		2010	2011	2012	2013	2014	Short-Term Total	2015	2016	2017	2018	2019	Mid-Term Total	2020	2021**	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Long-Term Total
Moorhead Transit Operations (FTA 5307)	Federal	1.42	1.48	1.65	1.74	1.87	**8.16**	1.95	2.02	2.10	2.19	2.28	**10.54**	2.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.37**
	State																													
	Local	0.35	0.37	0.41	0.44	0.47	**2.04**	0.49	0.51	0.53	0.55	0.57	**2.64**	0.59	3.08	3.20	3.33	3.46	3.60	3.74	3.89	4.05	4.21	4.38	4.56	4.74	4.93	5.13	5.33	**82.53**
	Total	1.77	1.85	2.07	2.18	2.34	**10.20**	2.43	2.53	2.63	2.74	2.85	**13.18**	2.96	3.08	3.20	3.33	3.46	3.60	3.74	3.89	4.05	4.21	4.38	4.56	4.74	4.93	5.13	5.33	**84.90**
Moorhead Transit Capital (FTA 5309 + Local match)		0.70	0.19	0.19	0.22	0.20	**1.48**	2.62	0.24	1.74	0.25	0.11	**4.95**	0.12	0.12	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	**13.73**

*Millions of dollars
**Beginning in 2021, it is assumed that the metro area popoulation will surpass 200,000 residents and FTA 5307 funding will no longer be eligible to support operations. Further, it is assumed that a regional transit authority will be in place, which will generate sufficient local transit operations dollars.

Clay County Transit Operations and Capital Projected Revenues*

		2010	2011	2012	2013	2014	Short-Term Total	2015	2016	2017	2018	2019	Mid-Term Total	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Long-Term Total
Clay County Transit Operations (FTA 5307)	Federal	0.23	0.23	0.24	0.25	0.26	**1.21**	0.27	0.28	0.29	0.30	0.31	**1.44**	0.32	0.34	0.35	0.36	0.38	0.39	0.41	0.43	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	**1.01**
	State																													
	Local	0.06	0.06	0.06	0.06	0.06	**0.30**	0.07	0.07	0.07	0.07	0.08	**0.36**	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.12	0.12	0.12	0.13	0.13	0.14	0.15	**10.79**
	Total	0.29	0.29	0.30	0.31	0.32	**1.51**	0.33	0.35	0.36	0.37	0.39	**1.80**	0.40	0.42	0.44	0.46	0.47	0.49	0.51	0.53	0.55	0.58	0.60	0.62	0.65	0.67	0.70	0.73	**11.80**
Clay County Transit Capital (FTA 5309 + Local match)		1.35	0.15	0.78	1.38	0.06	**3.71**	0.74	0.77	0.80	0.84	0.87	**4.02**	0.90	0.94	0.98	1.02	1.06	1.10	1.14	1.19	1.24	1.29	1.34	1.39	1.45	1.50	1.56	1.63	**26.30**

*Millions of dollars

Chapter 5: Multi-Modal Transportation Plan

Before proceeding forward, it may be beneficial to look back at preceding chapters of this plan. Chapter 1 provided a review of existing conditions, including the identification of certain issues and opportunities. Chapter 2 introduced the Regional Travel Demand Forecast model, associated traffic projections as well as analysis of certain macro-level issues. Chapter 3 summarized agency guidance, outlined public input received regarding transportation issues, and established the regional transportation goals and objectives. Chapter 4 detailed the revenue that each jurisdiction could reasonably expect to be available for maintenance and construction activities. This chapter is the direct result of all previous chapters, listing projects to address the various transportation issues or meet regional goals, and prioritizing those projects based on specified criteria and as constrained by available revenues.

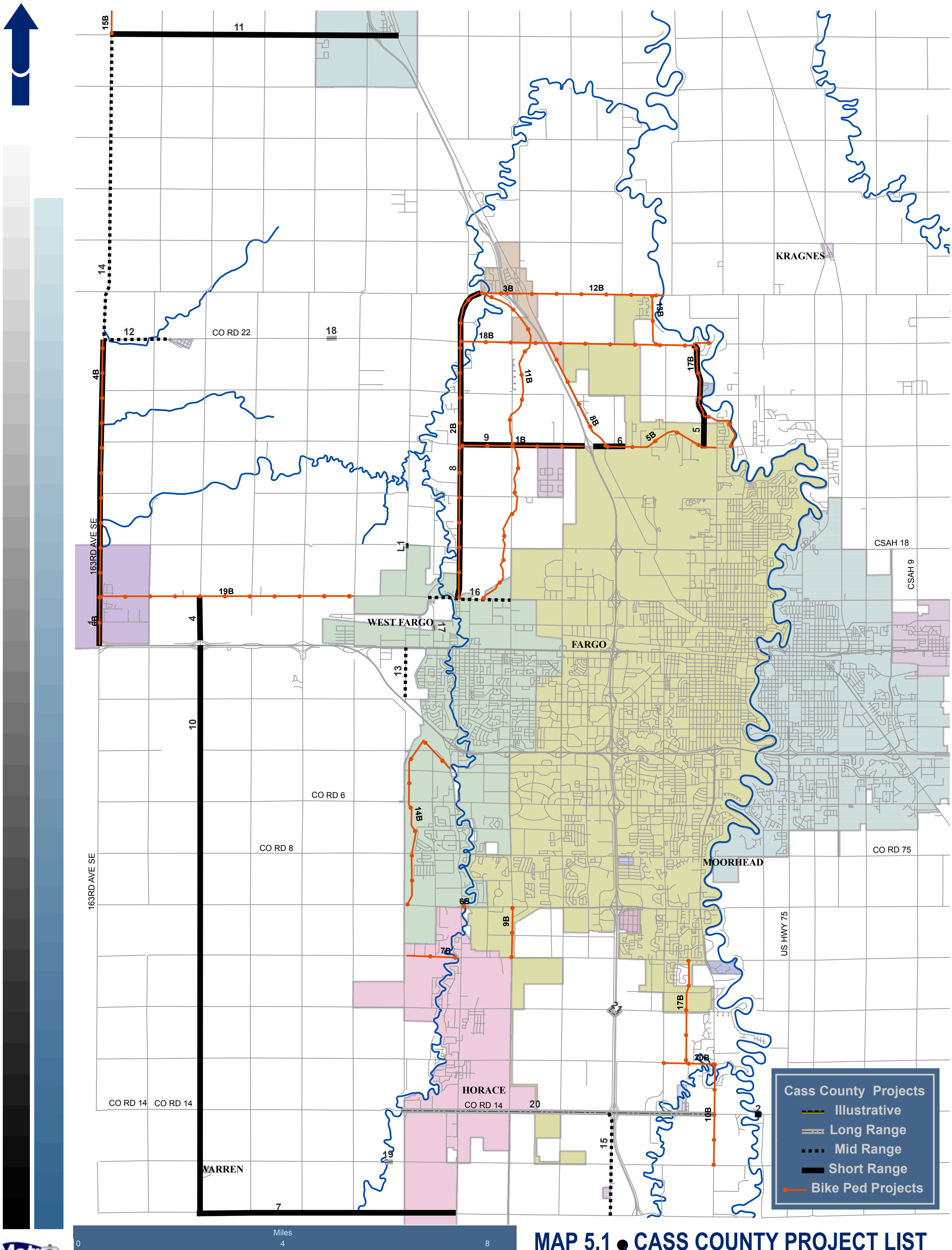
Projects that are already programmed in Metro COG's 2010-2013 TIP are shown as short-term projects. Projects listed in the Mid-Term and Long-Term tables will not necessarily be implemented in sequential order. However, because the projects listed in the mid-term table are considered to be higher priorities than those in the long-term table, the mid-term projects should be implemented before the long-term projects.

Many projects that appear in the short-term lists have detailed, design level cost estimates developed for them and the funding for most of them has already been identified. Mid- and Long-Term project costs were estimated using average unit costs in 2009 dollars, and then inflated at a flat 4% annual rate. Because it is difficult to know the exact year that any of the Mid- or Long-Term projects would be implemented (i.e., year of expenditure), project costs were estimated to the middle year of the bands (e.g., 2017 for Mid-Term Projects and 2027 for Long-Term Projects). This will mean that the project costs may be overestimated for those Mid-Term projects that will be implemented prior to 2017 and underestimated for those projects that will be implemented after 2017. When comparing the total cost for all Mid-Term projects with the total Mid-Term projected revenues, the fiscal constraint for each time frame still holds. This is true of all time frames.

Transit capital funding originates from a different source, so transit capital projects meet their own fiscal constraint, which is separate from funding for roads, highways, and bicycle infrastructure.

In those cases where a need was identified, but the costs and prioritization of the project did not fit within the fiscal constraint criteria, the project was relegated to the list of "Illustrative" projects. The Illustrative projects can be thought of as those projects which would be constructed <u>if</u> funding could be found for them. Since funding is not currently identified for them, they are not eligible for programming in the TIP at this time. If funding is identified for an "Illustrative" project, this plan will need to be amended, with opportunity provided for public comment, before the project could be programmed in the TIP.

Maps 5.12 – 5.15 at the end of this chapter show the forecasted 2035 average daily traffic on the regional roadway network, with the assumption that the projects identified in Chapter 5 are constructed or implemented.



MAP 5.1 • CASS COUNTY PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Cass County Potential Future Improvement Projects

1-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1	County Road 11 (I-94 to CR 10 East)	$281,250	(T)		System preservation
	Rehabilitate pavement	$225,000	(F)		
			(S)		
		$56,250	(L)		
2	Red River Crossings (in vicinity of 100th Ave S)	$350,000	(T)		System preservation
	Preserve adequate ROW for a 100th Ave S bridge corridor.	$280,000	(F)		
			(S)		
		$70,000	(L)		
3	Comprehensive Corridor Preservation Program	$1,000,000	(T)	costs could be incurrred if the county purchases ROW for preservation	System preservation
	Preserve future arterial roadway corridors as identified in the Fringe Land Use Guide and Transportation Plan through ROW dedication during platting or through advance purchase. (Examples: 40th Ave S, 52nd Ave S, 64th Ave S, 76th Ave S, 88th Ave S, 100th Ave S, 45th St, 9th St E, CR17, 81st St S, 93rd St S, and 105th St S)	$800,000	(F)		
			(S)		
		$200,000	(L)		
4	County Road 15 (I-94 to CR 10)	$350,000	(T)		System preservation
	Preserve ROW along CR 15 for future reconstruction	$280,000	(F)		
			(S)		
		$70,000	(L)		
5	Cass County Highway 31 (Hwy 20 to 2 miles north)	$703,125	(T)		System preservation
	Asphalt overlay from Hwy 20 to 2 miles north	$562,500	(F)		
			(S)		
		$140,625	(L)		
6	Cass County Highway 20 (I-29 to trucking business)	$1,195,313	(T)		Safety improvement
	Construct acceleration lane from I-29 to Reile's trucking business	$956,250	(F)		
			(S)		
		$239,063	(L)		
7	Cass County Highway 16 (Hwy 15 to Hwy 17)	$1,757,813	(T)		System preservation
	Concrete repair and overlay from Hwy 15 to Hwy 17 (5 miles)	$1,406,250	(F)		
			(S)		
		$351,563	(L)		

Cass County Potential Future Improvement Projects

1-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
		Estimated Cost: Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
8	Cass County Highway 17 (Hwy 10 to Harwood)	$2,460,938	(T)		System preservation
	Concrete repair and overlay from Hwy 10 to Harwood (7 miles total)	$1,968,750	(F)		
			(S)		
		$492,188	(L)		
9	Cass County Highway 20 (CR 17 to I-29)	$703,125	(T)		System preservation
	Asphalt overlay from Hwy 17 to I-29 (2 miles)	$562,500	(F)		
			(S)		
		$140,625	(L)		
10	Cass County Highway 15 (I-94 to Hwy 16)	$3,867,188	(T)		System preservation
	Overlay from I-94 to Hwy 16 (11 miles)	$3,093,750	(F)		
			(S)		
		$773,438	(L)		
11	Cass County Highway 4 (Hwy 11 to Hwy 81)	$2,003,906	(T)		System preservation
	Asphalt overlay and shoulder improvements from Hwy 11 to Hwy 81	$1,603,125	(F)		
			(S)		
		$400,781	(L)		

BICYCLES AND PEDESTRIANS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1B	County Road 20 (CR 17 to I-29)	$0	(T)	Costs will be included as part of a larger roadway project, and so are shown here as $0.	Improving bicycle network connectivity and access
	Construct a bikable shoulder when the roadway is rebuilt.	$0	(F)		
			(S)		
		$0	(L)		
2B	County Road 17 (West Fargo to CR 22)	$0	(T)	Costs will be included as part of a larger roadway project, and so are shown here as $0.	Improving bicycle network connectivity and access
	Construct a bikable shoulder when the roadway is rebult.	$0	(F)		
			(S)		
		$0	(L)		
3B	I-29 (Bridge at Harwood)	$2,812,500	(T)		Improving pedestrian safety
	Construct a safe walkway (safe route to school) over the bridge.	$2,250,000	(F)		
			(S)		
		$562,500	(L)		

Cass County Potential Future Improvement Projects

1-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
		Estimated Cost: Total / Federal / State / Local	(T) / (F) / (S) / (L)		
4B	Mapleton Shared Use Path	$703,000	(T)		Improving pedestrian safety & bike network connectivity
	Construct a shared use path from Community Center to I-94	$562,400	(F)		
			(S)		
		$140,600	(L)		
5B	CR 20 (CR81 to University Dr)	$30,000	(T)		Improving bicycle network connectivity and access
	Stripe and sign a bikable shoulder (relates to Fargo project 58B)	$24,000	(F)		
			(S)		
		$6,000	(L)		
6B	Sheyenne River Bridge at 52nd Ave S	$562,500	(T)		Improving bicycle network connectivity and access
	Construct a bridge over the Sheynne River connecting to multi-use paths on either side	$450,000	(F)		
			(S)		
		$112,500	(L)		
7B	Horace to Sheyenne Diversion	$562,500	(T)		Improving bicycle network connectivity and access
	Construct a shared-use path connecting the City of Horace to the shared-use path adjacent to the Sheyenne Diversion	$450,000	(F)		
			(S)		
		$112,500	(L)		
8B	CR 81 (CR 20 to Harwood)	$2,390,000	(T)		Improving bicycle network connectivity and access
	Construct a shared-use path connecting the City of Harwood with the City of Fargo	$1,912,000	(F)		
			(S)		
		$478,000	(L)		

Total Estimate Cost of Short-Range Projects	$21,733,156
Total Estimated Revenue for Short-Range*	$26,010,000
Total Revenue Remaining	$4,276,844

*County revenues were calculated for the entire county, of which only a portion lies within the MPO planning area. It is unrealistic to assume that all revenues would be spent within the planning area. Therefore, the public should not construe any remaining revenue as being unobligated.

Cass County Potential Future Improvement Projects

26-Oct-09

MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
12	Cass County Highway 22 (Hwy 11 to Prosper) Asphalt Overlay from Hwy 11 to Prosper (2 miles)	$889,570	(T)		System preservation
		$711,656	(F)		
			(S)		
		$177,914	(L)		
13	Cass County Highway 28 (Main Ave to 1 mile south) Asphalt overlay from Main Avenue in West Fargo to 1 mile south and 0.4 miles east	$622,699	(T)		System preservation
		$498,159	(F)		
			(S)		
		$124,540	(L)		
14	Cass County Highway 11 (Hwy 4 to Hwy 22) Asphalt overlay from Hwy 4 to Hwy 22 (5.9 miles)	$2,624,231	(T)		System preservation
		$2,099,385	(F)		
			(S)		
		$524,846	(L)		
15	Cass County Highway 21 (Hwy 14 to Hwy 16) Asphalt overlay from Hwy 14 to Hwy 16 (2 miles)	$889,570	(T)		System preservation
		$711,656	(F)		
			(S)		
		$177,914	(L)		
16	12th Avenue NW (9th St to CR 19) Reconstruct as an urban three-lane section with a 10' shared use path on north side and 5' sidewalk on south side; preserve right-of-way for a five-lane section. Realign CR 17 and/or Armour Street to form a four-legged intersection at 12th Ave NW. This project is linked to West Fargo Street Project #10	$9,000,000	(T)		Safety and capacity improvements in a growing area
		$7,200,000	(F)		
			(S)		
		$1,800,000	(L)		

BICYCLES AND PEDESTRIANS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
10B	University Drive (88th Ave S to 112th Ave S) Stripe and sign a bikable shoulder. Costs will likely be incurred as part of a larger roadway reconstruction project, so are shown here as $0.	$0	(T)		Improving bicycle network connectivity and access
		$0	(F)		
			(S)		
		$0	(L)		

Cass County Potential Future Improvement Projects

26-Oct-09

MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Estimated Cost:		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
11B	Along Drain 45 (12th Ave N to 76th Ave N)	$5,960,000	(T)		Improving bicycle network connectivity and access
	Construct a shared-use path from 12th Ave N to 76th Ave N	$4,768,000	(F)		
			(S)		
		$1,192,000	(L)		
12B	76th Avenue North (CR 17 to Red River)	$0	(T)		Improving bicycle network connectivity and access
	Stripe and sign a bikable shoulder. Costs will likely be incurred as part of a larger roadway reconstruction project, so are shown here as $0.	$0	(F)		
			(S)		
		$0	(L)		
13B	County Road 31 (76th Ave N to 64th Ave N)	$0	(T)		Improving bicycle network connectivity and access
	Stripe and sign a bikable shoulder. Costs will likely be incurred as part of a larger roadway reconstruction project, so are shown here as $0.	$0	(F)		
			(S)		
		$0	(L)		
14B	Sheyenne Diversion (Horace to West Fargo)	$4,270,000	(T)		Improving bicycle network connectivity and access
	Construct a shared-use path from Horace to West Fargo City Limits	$3,416,000	(F)		
			(S)		
		$854,000	(L)		
15B	CR 11 (CR 4 to CR 26)	$0	(T)		Improving bicycle network connectivity and access
	Stripe and sign a bikable shoulder. Costs will likely be incurred as part of a larger roadway reconstruction project, so are shown here as $0.	$0	(F)		
			(S)		
		$0	(L)		

Total Estimate Cost of Mid-Range Projects	$10,986,070
Total Estimated Revenue for Mid-Range*	$28,720,000
Total Revenue Remaining	$17,733,930

*County revenues were calculated for the entire county, of which only a portion lies within the MPO planning area. It is unrealistic to assume that all revenues would be spent within the planning area. Therefore, the public should not construe any remaining revenue as being unobligated.

Cass County Potential Future Improvement Projects

26-Oct-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
17	CR 19 (at the Prosper Line railroad tracks) Reconstruct RR grade separation on CR 19 just north of West Fargo city limits.	$6,583,904	(T)		Replacing structurally deficient bridge and system preservation
		$5,267,123	(F)		
			(S)		
		$1,316,781	(L)		
18	Bridge over County Drain #2 Replace bridge 2 miles west of Harwood	$2,633,561	(T)		Replacing structurally deficient bridge
		$2,106,849	(F)		
			(S)		
		$526,712	(L)		
19	112th Ave S Bridge over Sheyenne River 112th Ave S/County Highway -- 2 miles south & 1 mile west of Horace	$9,480,000	(T)		Replacing structurally deficient bridge
		$7,584,000	(F)		
			(S)		
		$1,896,000	(L)		
20	Cass County Highway 14 (Sheyenne River to CSAH 81/University Drive) Overlay asphalt surface	$2,765,000	(T)		System preservation
		$2,212,000	(F)		
			(S)		
		$553,000	(L)		
21	76th Avenue South (at I-29) If County Highway designation is given to 76th Ave S in the future, the County may be a participant in the construction of an interstate interchange at I-29	$10,500,000	(T)	Total project cost are estimated to be $42 million, to be shared with NDDOT and City of Fargo	Improving roadway network connectivity
		$8,400,000	(F)		
			(S)		
		$2,100,000	(L)		

BICYCLES AND PEDESTRIANS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
16B	County Road 11 (CR 10 to CR 22) Construct a bikable shoulder when the roadway is rebult. Costs will likely be absorbed as part of a larger roadway reconstruction project, so are shown here as $0.	$0	(T)		Improving bicycle network connectivity and access
		$0	(F)		
			(S)		
		$0	(L)		

Cass County Potential Future Improvement Projects

26-Oct-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
17B	Construct Shared-Use Path	$10,000,000	(T)		Improving bicycle network connectivity and access
	>Along Red River (CR 20 to CR 22) >North Drainage Ditch (West Fargo North city limits to CR 22) >20th Street (64th AVe S to 90th Ave S)	$8,000,000	(F)		
			(S)		
		$2,000,000	(L)		
18B	CR 22 (CR 17 to Red River)	$0	(T)		Improving bicycle network connectivity and access
	Stripe and sign a bikable shoulder from CR 17 to the Red River. Cost will likely be absorbed in a larger roadway recostruction project, so are shown here as $0.	$0	(F)		
			(S)		
		$0	(L)		
19B	CR 10 (CR 11 to West Fargo)	$0	(T)		Improving bicycle network connectivity and access
	Stripe and sign a bikable shoulder from CR 11 to West Fargo City Limits. Costs will likely be absorbed as part of a larger roadway reconstruction project, so are shown here as $0.	$0	(F)		
			(S)		
		$0	(L)		
20B	88th Ave S (University Dr to 25th St)	$0	(T)		Improving bicycle network connectivity and access
	Stripe and sign a bikeable shoulder. Costs will likely be absorbed as part of a larger roadway reconstruction project, and so are shown here as $0.	$0	(F)		
			(S)		
		$0	(L)		

Total Estimate Cost of Long-Range Projects	$41,962,465
Total Estimated Revenue for Long-Range*	$113,450,000
Total Revenue Remaining	$71,487,535

*County revenues were calculated for the entire county, of which only a portion lies within the MPO planning area. It is unrealistic to assume that all revenues would be spent within the planning area. Therefore, the public should not construe any remaining revenue as being unobligated.

Cass County Potential Future Improvement Projects

26-Oct-09

ILLUSTRATIVE PROJECT LIST

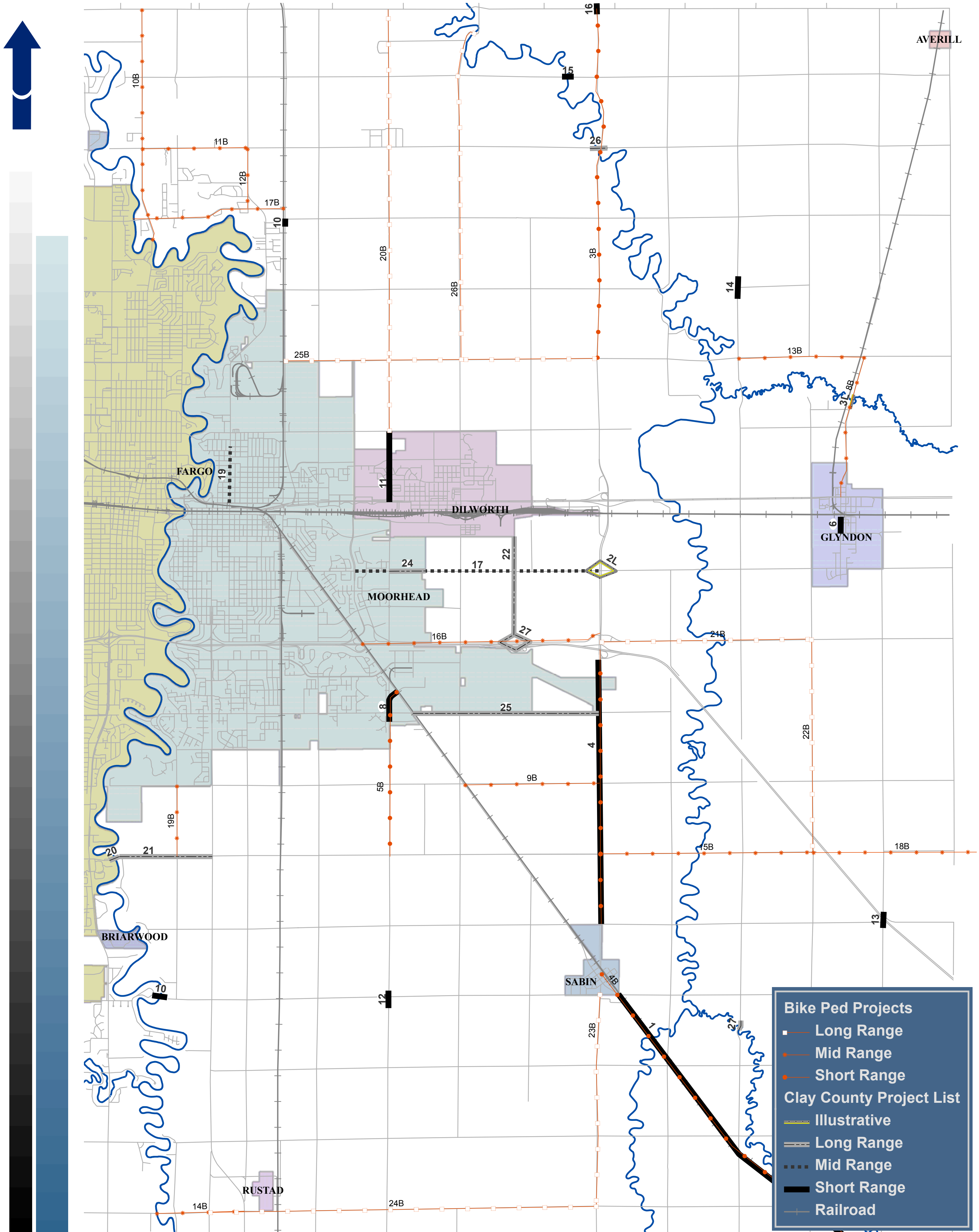
PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

ILLUSTRATIVE

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L1	Grade Raise 57th Street near Lake Sure Estates This low area is frequently inundated by drain 40, making access difficult and posing safety risks for residents. This project will require a hydraulic analysis and will likely require larger culver(s) or bridge to avoid any significant stage increase	$4,250,000 $3,400,000 $850,000	(T) (F) (S) (L)	Cost estimated in 2009 dollars	Improving transportation system security and safety
L2	Grade Raise 14th Street NW North of 19th Ave North This low area is frequently inundated 40, making access difficult and posing safety risks for residents. This project will require a hydraulic analysis and will likely require larger culver(s) or bridge to avoid any significant stage increase	$4,250,000 $3,400,000 $850,000	(T) (F) (S) (L)	Cost estimated in 2009 dollars	Improving transportation system security and safety



MAP 5.2 ● CLAY COUNTY PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Clay County Potential Future Improvement Projects

1-Dec-09

SHORT RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1	CSAH 52 (Barnesville to Sabin)	$3,100,000	(T)		System preservation & improving bicycle route connectivity
	Grading and 10 ton paving (13.7 miles total); includes striping of a wide shoulder that can serve as a bicycle facility	$2,480,000	(F)	STP	
		$620,000	(S)		
			(L)		
2	CSAH 52 (South County Line to 5th St.)	$1,900,000	(T)		System preservation
	Grading and 10 ton paving (1.5 miles)	$1,520,000	(F)		
		$380,000	(S)		
			(L)		
3	CSAH 11 (Sabin to TH 336)	$1,100,000	(T)		System preservation
	Grading (4 miles)	$960,000	(F)		
		$140,000	(S)		
			(L)		
4	Comprehensive Corridor Preservation Program	$350,000	(T)		Corridor preservation
	Preserve future arterial roadway corridors as identified in the Minnesota Extraterritorial Corridor Preservation Planning Study through ROW dedication during the platting or through advanced purchase.		(F)		
			(S)		
			(L)		
5	Red River Crossing	$50,000	(T)		Corridor preservation
	Preserve adequate ROW for a bridge corridor in the vicinity of CR 67 (pending Red River Crossing Study recommendation). Preserve the selected corridor between the Red River and TH 75.		(F)		
			(S)		
			(L)		
6	Parke Ave in Glyndon (4th St SE to 7th St SE)	$264,000	(T)		Improving pedestrian safety adjacent to school
	Regrade Parke Ave, underground utilities, and construct new pedestrian facilities as per the 2008 Pedestrian Safety Study	$211,200	(F)		
			(S)		
		$52,800	(L)		

Clay County Potential Future Improvement Projects

1-Dec-09

SHORT RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

#	Description	Estimated Cost: Total (T) / Federal (F) / State (S) / Local (L)		Explanation of Cost Breakdown	Notes
7	Preserve Red River Greenway	$0	(T)		Environmental resource preservation
	Preserve adequate space adjacent to the Red River for a greenway as per the 2008 Greenway Plan		(F)		
			(S)		
			(L)		
8	Preserve Red River Ped Bridge Crossings	$0	(T)		Improving bikeway connectivity
	Preserve public right-of-way for future bike-ped bridge crossing of the Red River, as identified in the 2008 Greenway Plan		(F)		
			(S)		
			(L)		
9	Preserve Glyndon 7th and 10th Street ROW	$182,000	(T)		Corridor preservation
	Preserve right-of-way such that 7th Street and 10th Street in the City of Glyndon can eventually connect to CR 17.	$145,600	(F)		
			(S)		
		$36,400	(L)		
10	TH 75 (at CSAH 22)	$159,375	(T)		Improving traffic operations
	Provide right turn lanes on eastbound CSAH 22 at TH 75.	$127,500	(F)		
			(S)		
		$31,875	(L)		
11	CSAH 9 (TH 10 to 15th Ave N)	$312,500	(T)		System preservation
	Mill and overlay CSAH 9 through Dilworth. Stripe and sign shoulders as a bike route from 1st Ave N to 4th Ave N	$250,000	(F)		
			(S)		
		$62,500	(L)		
12	CSAH 7 Bridge over Ditch #32	$700,000	(T)		Bridge replacement or rehabilitation
	Replace or rehabilitate bridge	$560,000	(F)		
			(S)		
		$140,000	(L)		
13	CR 69 Bridge over Ditch #58	$1,000,000	(T)		Bridge replacement or rehabilitation
	Replace or rehabilitate bridge	$800,000	(F)		
			(S)		
		$200,000	(L)		

Clay County Potential Future Improvement Projects

1-Dec-09

SHORT RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

#	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
14	CR 68 Bridge over Ditch #2 Replace or rehabilitate bridge	$1,400,000	(T)		Bridge replacement or rehabilitation
		$1,120,000	(F)		
			(S)		
		$280,000	(L)		
15	CR 94 Bridge over Buffalo River Replace or rehabilitate bridge	$1,600,000	(T)		Bridge replacement or rehabilitation
		$1,280,000	(F)		
			(S)		
		$320,000	(L)		
16	CSAH 11 over Ditch #65 Replace or rehabilitate bridge	$1,000,000	(T)		Bridge replacement or rehabilitation
		$800,000	(F)		
			(S)		
		$200,000	(L)		
17	CSAH 12 (S.P. 14-612-017) Clay Co. Rd 12 -- mill and bit surfacing (Tied to Mn/DOT Project #3 -- CR 12 and TH 75 Roundabout construction)	$475,000	(T)		Bridge replacement or rehabilitation
			(F)		
			(S)		
		$475,000	(L)		

BICYCLES AND PEDESTRIANS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1B	County Road 11 (CR 12 to I-94) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle route connectivity and access
			(F)		
			(S)		
			(L)		
2B	County Road 11 (CR 12 to Sabin) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle route connectivity and access
			(F)		
			(S)		
			(L)		

Clay County Potential Future Improvement Projects

1-Dec-09

SHORT RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
3B	CSAH 11 (CR 18 to CR 26) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle route connectivity and access
			(F)		
			(S)		
			(L)		
4B	CSAH 52 (CSAH 11 to CSAH 21) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle route connectivity and access
			(F)		
			(S)		
			(L)		
5B	CSAH 7 (CSAH 52 to CSAH 12) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle route connectivity and access
			(F)		
			(S)		
			(L)		
6B	CSAH 11 (I-94 to CSAH 52) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle route connectivity and access
			(F)		
			(S)		
			(L)		
7B	CSAH 7 (Sabin to I-94) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle route connectivity and access
			(F)		
			(S)		
			(L)		

Total Estimate Cost of Short-Range Projects	$13,592,875
Total Estimated Revenue for Short-Range	$15,500,000
Total Revenue Remaining	$1,907,125

Clay County Potential Future Improvement Projects

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SHORT RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

TRANSIT SHORT-RANGE

1T	Replace Class 400 Transit Vehicle #1	$77,200	(T)		
	Replace unit #1 in approximately 2013	$61,760	(F)		
			(S)		
		$15,440	(L)		
2T	Replace Class 400 Transit Vehicle #110	$77,200	(T)		
	Replace unit #110 in approximately 2013	$61,760	(F)		
			(S)		
		$15,440	(L)		
3T	Replace Class 400 Transit Vehicle #111	$80,300	(T)		
	Replace unit #111 in approximately 2014	$64,240	(F)		
			(S)		
		$16,060	(L)		

Total Estimate Cost of Short-Range Transit Projects	$234,700
Total Estimated Revenue for Short-Range Transit Projects	$265,000
Total Revenue Remaining for Transit	$30,300

Clay County Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
18	CSAH 16 (34th St to MN 336) Preserve ROW and construct two-lane rural section with turn lanes and bicycle lane as per growth and utility expansion.	$13,232,000	(T)		Corridor preservation & improving bicycle route connectivity
		$10,585,600	(F)		
		$2,646,400	(L)		
19	TH 75 (at CSAH 22) Provide right turn lanes on eastbound CSAH 22 at TH 75.	$227,000	(T)		Improving traffic operations
		$181,600	(F)		
		$45,400	(L)		
20	CSAH 3/11th Street (1st Ave N to 12th Ave N) Pavement restoration/rehabilitation of 11th Street in Moorhead	$533,000	(T)		System preservation
		$426,400	(F)		
			(S)		
		$106,600	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
8B	CSAH 19 (CSAH 18 to TH 10) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
9B	County Road 75 (CSAH 52 to CSAH 11) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
10B	CSAH 1 (Red River to CSAH 26) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
11B	County Road 93 (CSAH 1 to CR 96) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access

Clay County Potential Future Improvement Projects

26-Oct-09

MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
12B	County Road 96 (CSAH 22 to CSAH 26) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
13B	CSAH 18 (CR 68 to CSAH 19) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
14B	CSAH 8 (Red River to TH 75) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
15B	CSAH 12 (CSAH 11 to CSAH 17) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
16B	CSAH 14 (CSAH 52 to CSAH 11) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
17B	CR 20 (CSAH22 to Red River Bridge) Construct a shared-use path	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access
18B	CSAH 12 (CSAH 17 to TH 9) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access

Clay County Potential Future Improvement Projects

26-Oct-09

MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T) Federal (F) State (S) Local (L)		Explanation of Cost Breakdown	Notes
19B	3rd Street (50th Ave S to 60th Ave S) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	Improving bicycle network connectivity and access

Total Estimate Cost of Mid-Range Projects	$13,992,000
Total Estimated Revenue for Mid-Range	$17,140,000
Total Revenue Remaining	$3,148,000

TRANSIT MID-RANGE

	Description	Cost		Explanation of Cost Breakdown	Notes
4T	Replace Class 400 Transit Vehicle #1	$92,000	(T)		
	Replace unit #1 in approximately 2018	$73,600	(F)		
			(S)		
		$18,400	(L)		
5T	Replace Class 500 Transit Vehicle #108	$86,000	(T)		
	Replace unit #108 in approximately 2016	$68,800	(F)		
			(S)		
		$17,200	(L)		
6T	Replace Class 500 Transit Vehicle #109	$90,000	(T)		
	Replace unit #109 in approximately 2017	$72,000	(F)		
			(S)		
		$18,000	(L)		
7T	Replace Class 400 Transit Vehicle #110	$92,000	(T)		
	Replace unit #110 in approximately 2018	$73,600	(F)		
			(S)		
		$18,400	(L)		
8T	Replace Class 400 Transit Vehicle #111	$95,000	(T)		
	Replace unit #111 in approximately 2019	$76,000	(F)		
			(S)		
		$19,000	(L)		

Total Estimate Cost of Mid-Range Projects	$455,000
Total Estimated Revenue for Mid-Range	$455,000
Total Revenue Remaining	$0

Clay County Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
STREETS AND HIGHWAYS					
21	CSAH 12/60th Ave S Bridge (at Red River) Rebuild bridge structure. Raise deck and approaches above 100 year flood event level. Widen bridge structure to four-lanes. Project coordinated with City of Fargo project #27	$13,825,000 $11,060,000 $2,765,000	(T) (F) (S) (L)	Total project cost is $27.6 million; costs to be shared with the City of Fargo. A 50% share is assumed here.	Improving traffic operations by providing additional bridge capacity over Red River
22	CSAH 12/60th Ave South (Red River Bridge to TH 75) Rebuild as a four-lane minor arterial roadway, with appropriate bicycle and pedestrian facilties.	$13,700,000 $10,960,000 $2,740,000	(T) (F) (S) (L)		Congestion management and bikeway connectivity improvement
23	55th Street Coordinate with Cities of Dilworth and Moorhead to identify the centerline of this future arterial, and preserve at least 150 feet of right-of-way (170 feet at intersections) between 15th Ave N and I-94	$1,000,000 $800,000 $200,000	(T) (F) (S) (L)		Corridor preservation
24	55th Street and I-94 Interchange Preserve adequate right-of-way for a future interchange	$1,500,000	(T) (F) (S) (L)	Cost split (if any) to be determined at a later date	Improving arterial traffic operations by providing access to interstate
25	CSAH 16/12th Ave S (40th St to 46th Street) Construct a three-lane urban arterial section, while preserving enough right-of-way for a future five-lane section.	$2,370,000 $1,896,000 $474,000	(T) (F) (S) (L)		System preservation and improvement
26	CR 76 (CSAH 52 to CR 11) Reconstruct to paved roadway	$10,666,000 $8,532,800 $2,133,200	(T) (F) (S) (L)		System improvement
27	CR 93 Bridge over Buffalo River Replace or rehabilitate bridge	$7,584,000 $6,067,200 $1,516,800	(T) (F) (S) (L)		Bridge replacement or rehabilitation

Clay County Potential Future Improvement Projects

1-Dec-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
28	CR 68 Bridge over Stony Creek	$8,427,000	(T)		Bridge replacement or rehabilitation
	Replace or rehabilitate bridge	$6,741,600	(F)		
			(S)		
		$1,685,400	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
20B	40th Street North (15th Ave N to 90th Ave N) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	
21B	28th Ave S (MN 336 to 100th St) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	
22B	100th St S (28th Ave S to 60th Ave S) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	
23B	70th St S (80th Ave S to 110th Ave S) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	
24B	CSAH 8 (TH 75 to CSAH 11) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	
25B	CSAH 18 (TH 75 to CSAH11) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	

Clay County Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost Breakdown	
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
26B	CR 90 (CSAH 18 to CSAH 26) Construct a bikable roadway shoulder when the roadway is reconstructed.	$0	(T)	Cost of wide shoulder bikeway will be included in roadway reconstruction.	

Total Estimate Cost of Long-Range Projects	$59,072,000
Total Estimated Revenue for Long-Range	$67,130,000
Total Revenue Remaining	$8,058,000

TRANSIT LONG-RANGE

	Description	Cost		Explanation	Notes
9T	Replace Class 400 Transit Vehicle #1	$423,000	(T)		
	Replace unit #1 in approximately 2023, 2028, and 2033	$338,400	(F)		
			(S)		
		$84,600	(L)		
10T	Replace Class 500 Transit Vehicle #108	$129,000	(T)		
	Replace unit #108 in approximately 2026	$103,200	(F)		
			(S)		
		$25,800	(L)		
11T	Replace Class 500 Transit Vehicle #109	$134,000	(T)		
	Replace unit #109 in approximately 2027	$107,200	(F)		
			(S)		
		$26,800	(L)		
12T	Replace Class 400 Transit Vehicle #110	$423,000	(T)		
	Replace unit #110 in approximately 2023, 2028, and 2033	$338,400	(F)		
			(S)		
		$84,600	(L)		
13T	Replace Class 400 Transit Vehicle #111	$440,000	(T)		
	Replace unit #111 in approximately 2024, 2029, and 2034	$352,000	(F)		
			(S)		
		$88,000	(L)		

Clay County Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Total Estimate Cost of Long-Range Projects	$1,549,000
Total Estimated Revenue for Long-Range	$2,494,000
Total Revenue Remaining	$945,000

Clay County Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

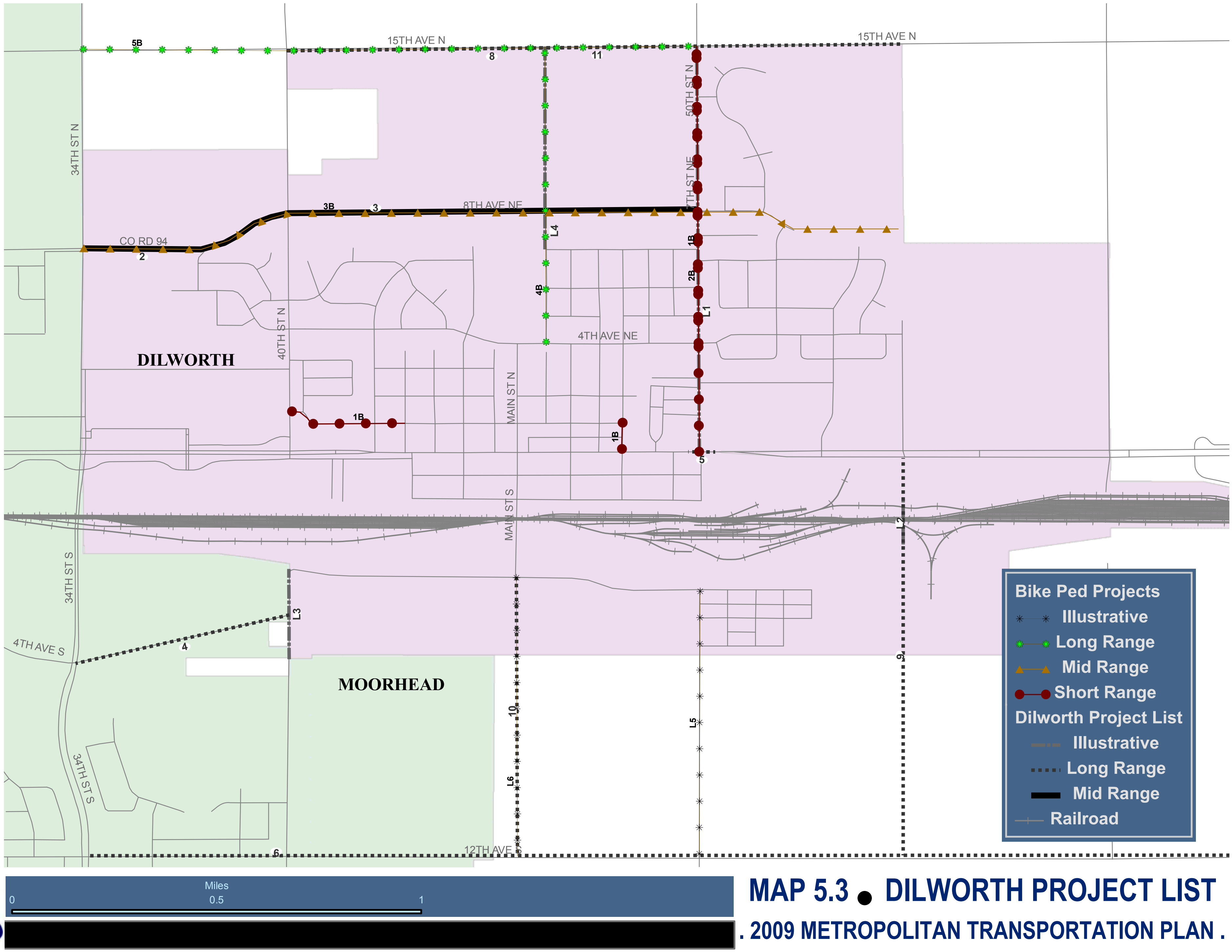
PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L1	South Side Red River Bridge Participate with Fargo in the construction of a four lane Red River Bridge and connecting roadway between the Red River and US 75.	$11,500,000 $9,200,000 $2,300,000	(T) (F) (L)	Total project cost is $23 M. Costs share to be negotiated between Fargo and Clay County.	Improving traffic operations by providing additional bridge capacity over Red River
L2	12th Avenue South & MN 336 Interchange Participate with Mn/DOT, Dilworth, and Moorhead in the construction of an interchange as per the 2006 Corridor Study	$20,000,000 $16,000,000 $4,000,000	(T) (F) (S) (L)	Total project cost is $20 M. Costs share to be negotiated between Mn/DOT, Clay County, and Moorhead.	Improving intersection safety & preserving traffic operations
L3	CSAH 19 Bridge over Buffalo River Replace or rehabilitate bridge	$4,700,000 $3,760,000 $940,000	(T) (F) (S) (L)		Bridge replacement or rehabilitation



MAP 5.3 ● DILWORTH PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Dilworth Future Improvement Projects

8-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

STREETS AND HIGHWAYS

Dilworth's highest priority short-range street project is the reconstruction of 7th Street NE (Project #L1 on Illustrative List). Project is listed as Illustrative until funding source can be identified.

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1B	Add signage to designated routes as shared-use >7th Street NE (4th Ave N to 15th Ave N) >1st Ave N (CSAH 9 to 4th Street NE) >4th Street NE (1st Ave N to Center Ave)	$30,000	(T)		Improves bike route connectivity
		$24,000	(F)		
			(S)		
		$6,000	(L)		
2B	7th Street NE (TH 10 to 15th Ave N) Construct a concrete shared use path. Costs included as part of a larger roadway reconstruction project.	$0	(T)		Improves pedestrian and bicyclist safety along corridor that currently has no sidewalks
		$0	(F)		
			(S)		
		$0	(L)		

Total Estimate Cost of Short-Range Projects	$30,000
Total Estimated Revenue for Short-Range	$650,000
Total Revenue Remaining	$620,000

Dilworth Potential Future Improvement Projects

26-Oct-09

MID-RANGE PROJECT LIST 2016 THROUGH 2021

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
2	8th Ave N (34th St to CSAH 9) Construct new urban 2-lane roadway with ROW preservation for a future four-lane facility and Class I bikeway from CSAH 9 to 34th St. (Planning process completed; construction completed from 34th St to 1/4 mile east. City seeking Congressional earmark funding for the remainder of corridor.)	$613,447	(T)	City will assess the cost to benefiting property owners	Corridor construction in an urbanizing area
		$0	(F)		
			(S)		
		$613,447	(L)		
3	8th Ave N (CSAH 9 to 7th St NE) Construct new urban 2-lane roadway with ROW preservation for a future four-lane facility and Class I bikeway from 7th St NE to CSAH 9. (Planning process completed; construction completed from 34th St to 1/4 mile east. City seeking Congressional earmark funding for the remainder of corridor.)	$2,134,000	(T)	City will assess the cost to benefiting property owners	Corridor construction in an urbanizing area
		$0	(F)		
			(S)		
		$2,134,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
3B	8th Avenue North (34th St to 14th St NE) Construct a shared-use path from 34th St to 14th St NE. Project to be completed (and costs to be absorbed) as part of a larger roadway construction project.	$0	(T)		Improves pedestrian and bicycle route connectivity in a growth area
		$0	(F)		
			(S)		
		$0	(L)		

Total Estimate Cost of Mid-Range Projects	$2,747,447
Total Estimated Revenue for Mid-Range	$3,100,000
Total Revenue Remaining	$352,553

Dilworth Potential Future Improvement Projects

1-Dec-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
4	**4th Avenue South** Coordinate with the City of Moorhead to identify the location of a future extension of 4th Ave S from 34th Street to CR 81. Preserve adequate right-of-way for this future collector.	$45,000 $36,000 $9,000	(T) (F) (S) (L)		Improves connectivity and access to south Dilworth
5	**7th Street NE at TH 10** Cost participate in the installation of traffic signals at the intersection of TH 10 if warrants are met	$120,000 $120,000	(T) (F) (S) (L)	Total project cost is est. to be $630,000, which would be shared with Mn/DOT. Cost reflected here is local Dilworth match only.	Improves intersection safety
6	**12th Avenue South** Coordinate with City of Moorhead to preserve at least 150 feet of right-of-way for this future arterial between 34th Street and MN 336.	$265,000 $212,000 $53,000	(T) (F) (S) (L)		Corridor preservation and access management
7	**12th Avenue South Interchange with MN 336** Preserve adequate right-of-way for this future interchange. Cost participate in the construction of the interchange if the area has been annexed into the Dilworth City Limits	$50,000 $40,000 $10,000	(T) (F) (S) (L)		Corridor preservation and access management
8	**15th Avenue North** Preserve at least 150 feet of right-of-way for this future arterial corridor	$400,000 $320,000 $80,000	(T) (F) (S) (L)		Corridor preservation and access management
9	**55th Street** Coordinate with the City of Moorhead to identify the centerline location for this future arterial between 12th Ave S and TH 10 and from TH 10 to 15th Ave N. Preserve at least 150 feet of right-of-way (170 feet at intersections) for this future arterial corridor.	$85,000 $68,000 $17,000	(T) (F) (S) (L)		Corridor preservation and access management
10	**Main Street (CR 81 to 12th Ave S)** Preserve the corridor through the platting process.	$100,000 $80,000 $20,000	(T) (F) (S) (L)		Corridor preservation and access management

Dilworth Potential Future Improvement Projects

1-Dec-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Estimated Cost: Total (T) Federal (F) State (S) Local (L)		Financial Feasibility: Explanation of Cost Breakdown	Notes
11	15th Avenue North	$3,160,000	(T)		Improves roadway surface conditions in a growth area
	Pave roadway surface from CSAH 9 to 7th Street NE	$100,000	(F)		
			(S)		
		$3,060,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
4B	1st Street NE (4th Ave N to 15th Ave N)	$0	(T)		Improves pedestrian and bicycle route connectivity in a growth area
	Construct a concrete shared use path. To be completed as part of a larger roadway project.	$0	(F)		
			(S)		
		$0	(L)		
5B	15th Avenue N (34th St to 7th St NE)	$30,000	(T)		Improves bicycle route connectivity
	Stripe and sign a bicycle lane.	$24,000	(F)		
			(S)		
		$6,000	(L)		

Total Estimate Cost of Long-Range Projects	$4,255,000
Total Estimated Revenue for Long-Range	$4,280,000
Total Revenue Remaining	$25,000

Dilworth Potential Future Improvement Projects

8-Dec-09

ILLUSTRATIVE PROJECT LIST

PROJECT AREA

Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

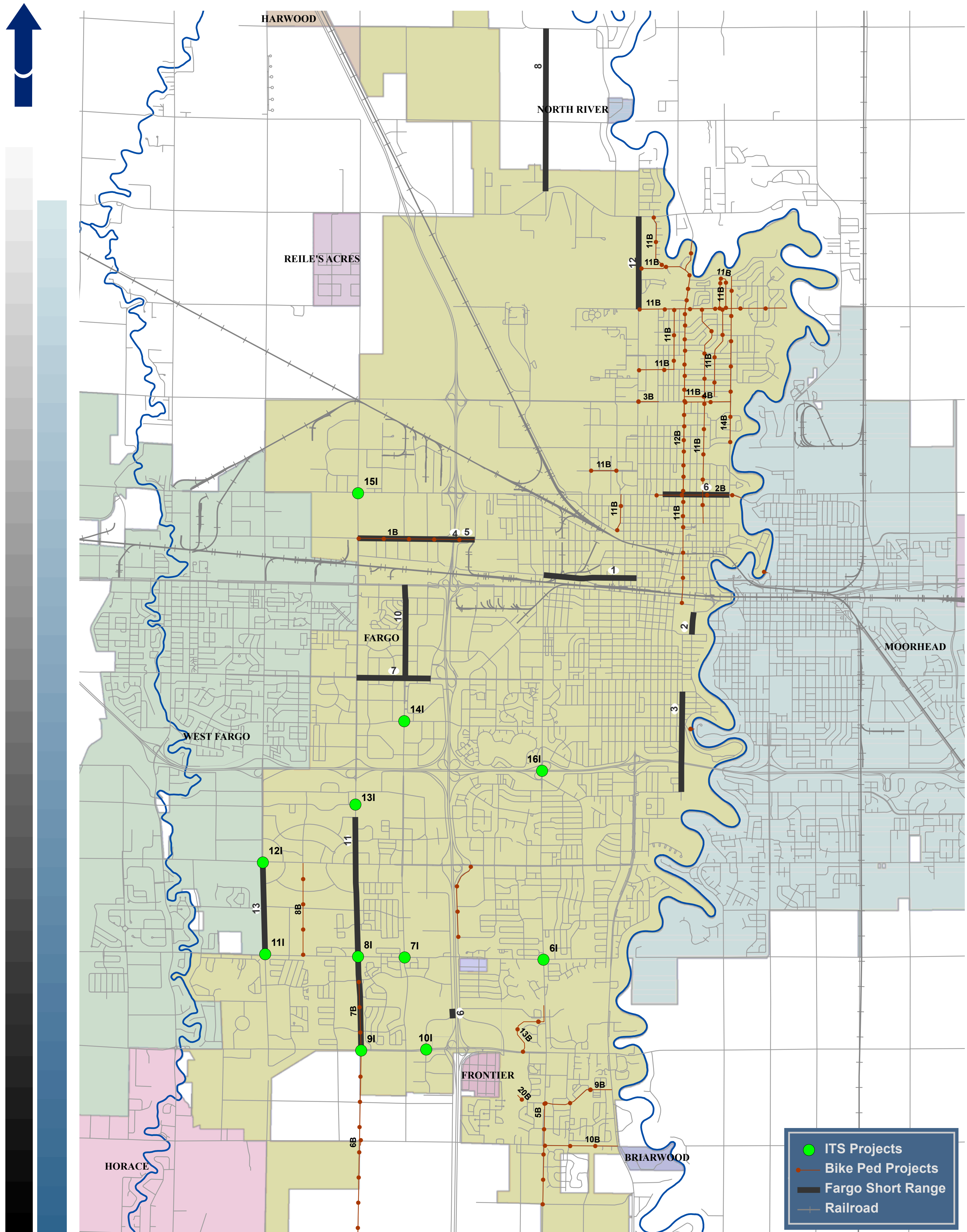
STREETS AND HIGHWAYS

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future. Cost estimates are listed in 2009 dollars.

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L1	7th Street NE (TH 10 to 15th Ave NE) Reconstruct as a two-lane urban roadway with turn lanes, ADA compliant sidewalks and adjacent bicycle path. (Planning process complete; city is seeking funding.)	$5,000,000	(T)		Improves safety and drainage along corridor while adding capacity in a growth area
		$4,000,000	(F)	HPP	
			(S)		
		$1,000,000	(L)		
L2	Dilworth Grade Separation Grade separation of BNSF tracks at 55th Street. Exact centerline location to be determined.	$10,000,000	(T)		Improves access and connectivity into south Dilworth
		$8,000,000	(F)		
			(S)		
		$2,000,000	(L)		
L3	40th Street S (Moorhead city limits to CR 81) Reconstruct as three-lane urban roadway with turn lanes, with ROW preservation for future five-lane facility.	$2,250,000	(T)		Corridor construction in an urbanizing area
		$1,800,000	(F)		
			(S)		
		$450,000	(L)		
L4	1st Street NE (7th Ave N to 15th Ave N) Construct a two lane urban Collector roadway with turn lanes and a separated Class I bikeway.	$1,500,000	(T)		Corridor construction in an urbanizing area
		$1,200,000	(F)		
			(S)		
		$300,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L5	50th Street South (CR 78 to 12th Ave S) Construct an appropriate on-road or off-road bicycle route connection from CR 78 to 12th Ave S	$437,500	(T)		Improves bicycle route connectivity in a growth area
		$350,000	(F)		
			(S)		
		$87,500	(L)		
L6	Main Street (CR 81 to 12th Ave S) Construct an appropriate on-road or off-road bicycle route connection from CR 81 to 12th Ave S	$437,500	(T)		Improves bicycle route connectivity in a growth area
		$350,000	(F)		
			(S)		
		$87,500	(L)		



MAP 5.4 • FARGO SHORT RANGE PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Fargo Potential Future Improvement Projects

26-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1	**1st Avenue North (University Dr to 25th St)** Reconstruct and widen 1st Ave to 3 lanes between University Dr and 25th St in Fargo. Project includes ADA compliant sidewalks.	$6,380,000	(T)		Helps manage congestion on Main Avenue
		$5,104,000	(F)		
			(S)		
		$1,276,000	(L)		
2	**4th Street South (2nd St S to 6th Ave S)** Maintain the existing section from 2nd St S to 6th Ave S. Widen the section between 6th Ave S and 13th Ave S from 34 ft to 38 ft. Project includes ADA compliant sidewalks.	$2,250,000	(T)		Addresses peak hour congestion
			(F)		
			(S)		
		$2,250,000	(L)		
3	**5th Street (14th Ave S to 24th Ave S)** Reconstruction of 5th Street from 14th Ave S to 24th Ave S (except for two block just north of I-94 overpass) and for 24th Ave S between 5th St and 9th St. Project includes ADA compliant sidewalks.	$3,000,000	(T)		System preservation
		$2,400,000	(F)		
			(S)		
		$600,000	(L)		
4	**7th Avenue North (at I-29)** New deck construction with appropriate on- or off-road bicycle facility. Project includes ADA compliant sidewalks	$1,100,000	(T)		System preservation
		$990,000	(F)		
			(S)		
		$110,000	(L)		
5	**7th Avenue North (35th St to 45th St)** Reconstruct a concrete 3 lane urban section and construct a separated bikeway, with appropriate on- or off-road bicycle facility. Project includes ADA compliant sidewalks.	$5,500,000	(T)		Improves safety by removing steep ditches and improves drainage
		$4,400,000	(F)		
			(S)		
		$1,100,000	(L)		
6	**12th Avenue North (9th St to Elm St)** Widen the roadway by 2 feet to a 36 ft section west of 4th St and 32 ft section east of 4th St. Project includes appropriate on- or off-road bicycle facility, which will connect to the existing shared-use path adjacent to the Red River, and ADA compliant sidewalks.	$5,000,000	(T)		Part of a utility project, but also helps preserve system
		$4,000,000	(F)		
			(S)		
		$1,000,000	(L)		
7	**13th Avenue South (38th to 44th St and 47th St to 52nd St)** Reconstruct as six lane urban section with adjacent ADA compliant shared-use path.	$15,750,000	(T)		Addresses existing safety issues and addresses congestion
		$12,600,000	(F)		
			(S)		
		$3,150,000	(L)		

Fargo Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
8	**25th Street N (CR 20 to CR 31)**	$12,650,000	(T)		Provides connectivity to a growth area
	Construct as a three-lane minor arterial, with ADA compliant sidewalks.	$10,120,000	(F)		
			(S)		
		$2,530,000	(L)		
9	**38th Street Southwest (at Drain #27)**	$2,110,000	(T)		Replaces bridge with rating below 50
	Replace bridge over Drain #27 (Rose Creek Coulee) in Fargo.	$1,688,000	(F)		
			(S)		
		$422,000	(L)		
10	**42nd Street (Main Ave to 13th Ave S)**	$3,000,000	(T)		System preservation
	Reconstruct 42nd Street, from Main Ave to 2nd Ave S, mill & overlay from 2nd to 13th ave S.	$2,400,000	(F)		
			(S)		
		$600,000	(L)		
11	**45th Street South (26th Ave S to 52nd Ave S)**	$21,100,000	(T)		Provides connectivity to a growth area
	Reconstruct and widen Fargo's 45th St from 32nd Ave S to 52nd Ave S. Project includes the extension of the existing shared-use path along the east side of 45th St, which currently ends at 44th Ave S., down to 52nd Ave S	$16,880,000	(F)		
			(S)		
		$4,220,000	(L)		
12	**University Drive (32nd Ave N to CR 20)**	$4,220,000	(T)		Provides connectivity to a growth area
	Construct a three-lane urban section from 32nd Ave to CR 20, with appropriate on- or off-road bicycle facility and ADA compliant sidewalks.	$3,376,000	(F)		
			(S)		
		$844,000	(L)		
13	**Veterans Blvd (32nd Ave S to 40th Ave S)**	$8,780,000	(T)		Provides connectivity to a growth area
	Reconstruct as a five-lane minor arterial with appropriate on- or off-road bicycle facility and ADA compliant sidewalks. Project costs shared with West Fargo	$7,024,000	(F)		
			(S)		
		$1,756,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1B	**7th Avenue North (35th St to 45th St)**	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(F)		
			(S)		
		$0	(L)		

Fargo Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
2B	12th Avenue North (9th St N to trail along Red River)	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(F)		
			(S)		
		$0	(L)		
3B	19th Avenue North (University Dr to 10th St)	$20,000	(T)		Improves bike route connectivity
	Construct appropriate on-road bicycle facility.	$16,000	(F)		
			(S)		
		$4,000	(L)		
4B	19th Avenue North (Broadway to Elm St)	$20,000	(T)		Improves bike route connectivity
	Construct appropriate on-road bicycle facility	$16,000	(F)		
			(S)		
		$4,000	(L)		
5B	25th Street South (58th Ave S to 73rd Ave S)	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(F)		
			(S)		
		$0	(L)		
6B	45th Street South (52nd Ave S to 76th Ave S)	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(F)		
			(S)		
		$0	(L)		
7B	45th Street (44th Ave S to 52nd Ave S)	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(F)		
			(S)		
		$0	(L)		
8B	52nd Street (32nd Ave S to 40th Ave S)	$0	(T)		Improves bike route connectiivity
	Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(F)		
			(S)		
		$0	(L)		

Fargo Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
9B	60th Avenue South (25th St to University Dr)	$562,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility	$449,600	(F)		
			(S)		
		$112,400	(L)		
10B	64th Avenue South (University Dr to 25th St)	$0	(T)		Improves bike route connecitivity
	Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(F)		
			(S)		
		$0	(L)		
11 B	Add Signage to Designate Route as Shared Roadway	$100,000	(T)		Improves wayfinding and improves safety by visibly identifying roadways as bike routes
	>Barrett Street from 19th Ave N to Dakota Drive >Centennial Drive from Barrett Street to 18th Street >10th Street from CR 20 to 37th Avenue North >37th Avenue North from University Drive to Broadway >Broadway from the Red River to Island Park >32nd Avenue from University Drive to Eagle Street >1st Street from 36th Avenue North to 32nd Avenue North >2nd Street from 36th Avenue North to 32nd Avenue North >36th Avenue North from 1st Street to 2nd Street >2nd Street from 32nd Avenue North to 20th Avenue North >3rd Street from 32nd Avenue North to 9th Avenue North >8th Street from 32nd Avenue North to 25th Avenue North >25th Avenue North from University Drive to 9th Street >20th Avenue North from 3rd Street to 2nd Street	$80,000	(F)		
			(S)		
		$20,000	(L)		
12B	Broadway (9th Ave N to 35th Ave N)	$25,600	(T)		Improves bike route connectivity
	Construct a bicycle lane.	$20,480	(F)		
			(S)		
		$5,120	(L)		
13B	Cook Coulee Bikeway	$351,500	(T)		Improves bike route connectivity in growth area
	Construct a shared use path from 52nd Ave S to Rose Creek Bikeway and Coulee to 52nd Ave S.	$281,200	(F)		
			(S)		
		$70,300	(L)		
14B	Elm Street	$17,700	(T)		Addresses gap in bike network
	Provide on-road bicycle facility from 15th Ave N to Edgewood Golfcourse Road	$14,160	(F)		
			(S)		
		$3,540	(L)		

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Financial Feasibility: Explanation of Cost Breakdown	Notes
15B	Lindenwood/Gooseberry Bridge	$500,000	(T)	Project costs to be shared with Moorhead. Only 50% of total project cost of $1 million shown here.	Viewed as Popular Amenity; improves bike route connectivity
	Construct a bike-ped bridge. Project costs to be shared with City of Moorhead (Moorhead project #5B)	$400,000	(F)		
			(S)		
		$100,000	(L)		
16B	Oak Grove/Memorial Bridge	$500,000	(T)	Project costs to be shared with Moorhead. Only 50% of total project cost of $1 million shown here.	Viewed as Popular Amenity; improves bike route connectivity
	Construct a bike-ped bridge. Project costs to be shared with City of Moorhead (Moorhead project #7B)	$400,000	(F)		
			(S)		
		$100,000	(L)		
17B	West of Meadow Creek (Coulee to 52nd Ave S)	$492,000	(T)		Improves bike route connectivity
	Construct a shared use path.	$393,600	(F)		
			(S)		
		$98,400	(L)		
18B	36th Street (32nd Ave S to 38th Ave S)	$351,500	(T)		Improves bike route connectivity
	Construct an 8" shared use path along the east side of the street.	$281,200	(F)		
			(S)		
		$70,300	(L)		
19B	52nd Avenue South (West of 45th St)	$0	(T)		Improves bike route connectivity
	Construct a grade-separated bike-ped crossing of 52nd Ave S somewhere west of 45th St	$0	(F)		
			(S)		
		$0	(L)		
20B	Drain 53 Bicycle-Pedestrian Bridge	$315,000	(T)		Improves bike route connectivity
	Construct a bike-ped bridge over Drain 53 at approximately 58th Ave S (in the Silverleaf Addition). This project will also construct a 10' shared use path from the bridge to 6,100 feet north, connecting it to the existing bike trail in the Timberline Addition.	$252,000	(F)		
			(S)		
		$63,000	(L)		

INTELLIGENT TRANSPORTATION SYSTEMS

1I	Various Locations	$250,000	(T)		Improves traffic operations and roadway efficiency
	Participate in Regional Integration of Traffic Signal Systems	$200,000	(F)		
			(S)		
		$50,000	(L)		

Fargo Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T) / Federal (F) / State (S) / Local (L)		Explanation of Cost Breakdown	Notes
2I	Various Locations	$23,400	(T)		Improves traffic operations and roadway efficiency
	Participate in Regional Traveler Information Management System	$18,720	(F)		
			(S)		
		$4,680	(L)		
3I	Various Locations	$130,000	(T)		Improves traffic operations and roadway efficiency
	Participate in Regional CCTV Management System	$104,000	(F)		
			(S)		
		$26,000	(L)		
4I	Traffic Operations Center	$15,000	(T)		Improves traffic operations and roadway efficiency
	Participate in the Development of a Regional Traffic Operations Center	$12,000	(F)		
			(S)		
		$3,000	(L)		
5I	Various Locations	$25,000	(T)		Improves traffic operations and roadway efficiency
	Participate in the ITS Network Infrastrucutre Deployment	$20,000	(F)		
			(S)		
		$5,000	(L)		
6I	40th Avenue South & 25th Street	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
7I	40th Avenue South & 42nd Street	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
8I	40th Avenue South & 45th Street	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		

Fargo Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total / Federal / State / Local		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
9I	52nd Avenue South & 45th Street	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
10I	52nd Avenue South & 38th Street	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
11I	Veterans Boulevard & 40th Avenue South	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
12I	32nd Avenue South & Veterans Boulevard	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
13I	45th Street & Amber Valley Parkway	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
14I	17th Avenue South & 42nd Street	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		
15I	12th Avenue North & 45th Street	$11,250	(T)		Monitors traffic operations and provides information to TOC
	Deploy CCTV	$9,000	(F)		
			(S)		
		$2,250	(L)		

Fargo Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
16I	25th Street at I-94	$288,000	(T)		Improves safety
	Install VMS underpass Flood Waring System.	$230,400	(F)		
		$57,600	(S)		
			(L)		

Total Estimate Cost of Short-Range Projects	$94,939,200
Total Estimated Revenue for Short-Range	$106,880,000
Total Revenue Remaining	$11,940,800

TRANSIT

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1T	Metro Mobility Manager	$228,000	(T)		
	Funded in conjunciton with Moorhead Transit (2010-2013)	$182,400	(F)	FTA 5317	
			(S)		
		$45,600	(L)		
2T	New Freedom Funds	$32,870	(T)		
	New Freedom Funds for CLS, Inc ADA vehicle purchase for agency trips	$26,296	(F)	FTA 5317	
			(S)		
		$6,574	(L)		
3T	GTC Maintenance	$200,000	(T)		
	Resealing and maintenance of GTC deck.	$160,000	(F)	FTA 5309 & 5307	
		$40,000	(L)		
4T	MAT Paratransit	$174,300	(T)		
	Replace 3 paratransit vehicles in 2010 (Units 1170, 1171, 1172).	$144,669	(F)	FTA 5307	
		$29,631	(L)		
5T	Miscellaneous Bus Support Equipment	$233,779	(T)		
	Purchases in 2009, 2010, 2011, 2012, 2013.	$187,023	(F)	FTA 5309	
		$46,756	(L)		

Fargo Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
6T	Replace Senior Ride Vehicle #1160	$48,672	(T)		
	Replace Unit #1160 in approximately 2011	$40,398	(F)	FTA 5309	
		$8,274	(L)		
7T	Fixed-Route Expansion Buses	$1,080,000	(T)		
	Purchased three expansion fixed-route transit buses in 2010	$896,400	(F)	FTA 5309	
		$183,600	(L)		
8T	Automated Stop Announcement	$250,000	(T)		
	Purchase equipment for automated stop announcements	$207,500	(F)	FTA 5309	
		$42,500	(L)		
9T	GTC and other Large Facility Improvements	$160,000	(T)		
	In 2013	$132,800	(F)	FTA 5309 & 5307	
		$27,200	(L)		
10T	Replace Senior Ride Vehicle #1161	$48,672	(T)		
	Replace Unit #1161 in approximately 2011	$40,398	(F)	FTA 5309	
		$8,274	(L)		
11T	Replace Senior Ride Vehicle #1163	$54,750	(T)		
	Replace Unit #1163 in approximately 2014	$45,443	(F)	FTA 5309	
		$9,308	(L)		
12T	Replace Senior Ride Vehicle #1165	$54,750	(T)		
	Replace Unit #1165 in approximately 2014	$45,443	(F)	FTA 5309	
		$9,308	(L)		

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
13T	Replace Senior Ride Vehicle #1166	$48,672	(T)		
	Replace Unit #1166 in approximately 2011	$40,398	(F)	FTA 5309	
		$8,274	(L)		
14T	Replace Senior Ride Vehicle #1155	$48,672	(T)		
	Replace Unit #1155 in approximately 2011	$40,398	(F)	FTA 5309	
		$8,274	(L)		
15T	Replace Senior Ride Vehicle #1158	$48,672	(T)		
	Replace Unit #1158 in approximately 2011	$40,398	(F)	FTA 5309	
		$8,274	(L)		
16T	Replace Senior Ride Vehicle #1156	$48,672	(T)		
	Replace Unit #1156 in approximately 2011	$40,398	(F)	FTA 5309	
		$8,274	(L)		
17T	Replace Senior Ride Vehicle #1159	$56,939	(T)		
	Replace Unit #1159 in approximately 2015	$47,259	(F)	FTA 5309	
		$9,680	(L)		
18T	Replace Paratransit Unit #977	$75,712	(T)		
	Replace Unit #977 in 2011	$62,841	(F)	FTA 5309	
		$12,871	(L)		
19T	Replace Paratransit Unit #979	$75,712	(T)		
	Replace Unit #979 in 2011	$62,841	(F)	FTA 5309	
		$12,871	(L)		

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Estimated Cost: Total / Federal / State / Local	(T) (F) (S) (L)	Financial Feasibility: Explanation of Cost Breakdown	Notes
20T	Replace Paratransit Vehicle # 1152	$85,166	(T)		
	Replace Unit #1152 in approximately 2014	$70,688	(F)	FTA 5309	
		$14,478	(L)		
21T	Replace Paratransit Vehicle # 1153	$85,166	(T)		
	Replace Unit #1153 in approximately 2014	$70,688	(F)	FTA 5309	
		$14,478	(L)		
22T	Replace Paratransit Vehicle #1154	$75,712	(T)		
	Replace Unit #1154 in 2011	$62,841	(F)	FTA 5309	
		$12,871	(L)		
23T	Replace Paratransit Vehicle #1178	$81,890	(T)		
	Replace unit #1178 in approximately 2013	$67,969	(F)	FTA 5309	
		$13,921	(L)		
24T	Replace Paratransit Vehicle #1179	$81,890	(T)		
	Replace unit #1179 in approximately 2013	$67,969	(F)	FTA 5309	
		$13,921	(L)		
25T	Replace Paratransit Vehicle #1180	$81,890	(T)		
	Replace unit #1180 in approximately 2013	$67,969	(F)	FTA 5309	
		$13,921	(L)		
26T	Replace Paratransit Vehicle #1181	$81,890	(T)		
	Replace unit #1181 in approximately 2013	$67,969	(F)	FTA 5309	
		$13,921	(L)		

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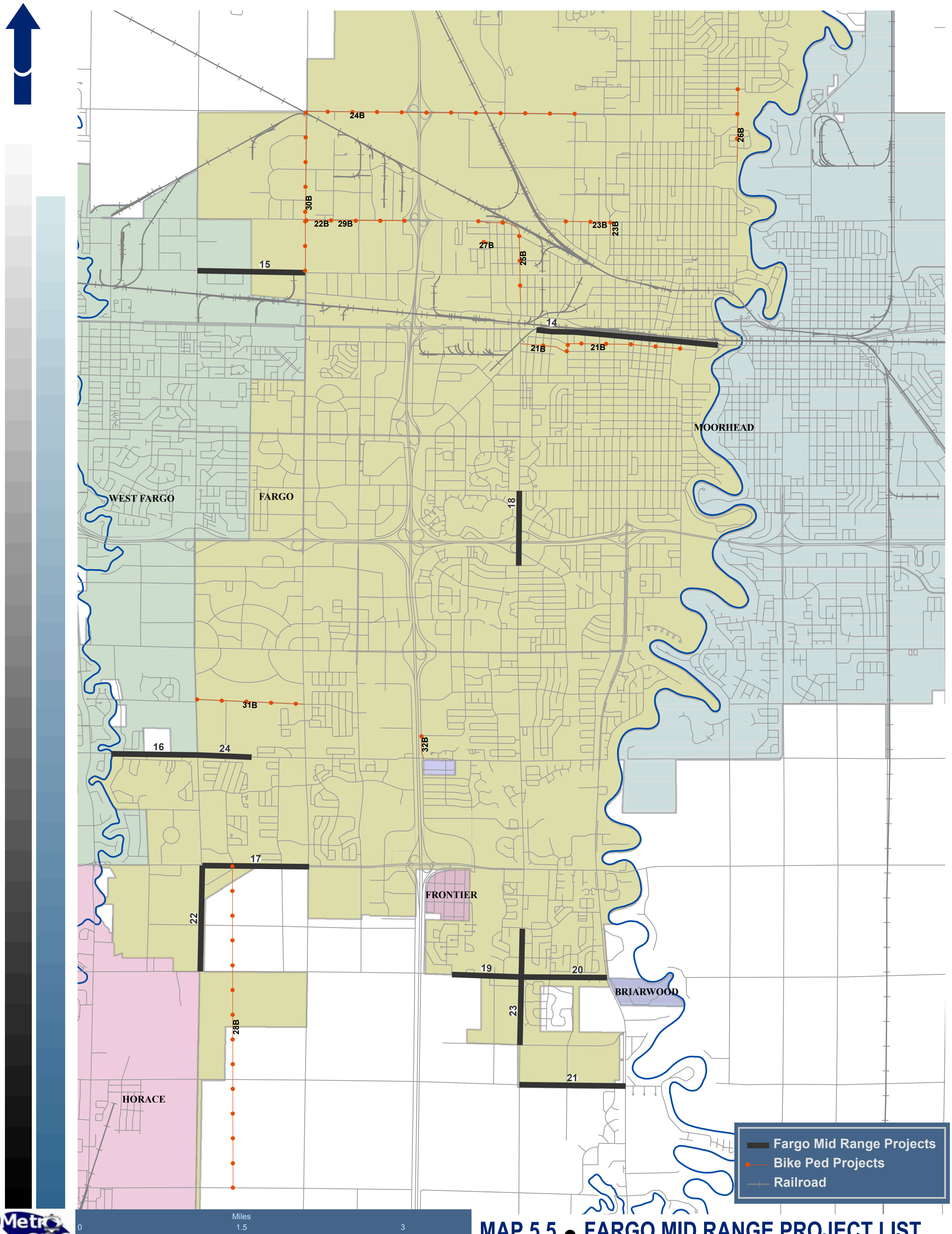
SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility Estimated Cost: Total Federal State Local	 (T) (F) (S) (L)	Explanation of Cost Breakdown	Notes
27T	Replace Paratransit Vehicle #1182	$81,890	(T)		
	Replace unit #1182 in approximately 2013	$67,969	(F)	FTA 5309	
		$13,921	(L)		
28T	Downtown Circulator	$288,000	(T)		
	Purchase bus for new downtown circulator route	$230,400	(F)	FTA 5309	
		$57,600	(S)		
			(L)		
28T	Participate in Transit ITS Application Deployment	$45,000	(T)		
		$36,000	(F)	FTA 5309	
		$9,000	(S)		
			(L)		

Total Estimate Cost of Short-Range Transit Projects	$3,696,468
Total Estimated Revenue for Short-Range Transit Projects	$3,712,000
Total Revenue Remaining	$15,532



MAP 5.5 • FARGO MID RANGE PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
14	Main Avenue (2nd St to 23rd St)	$3,380,000	(T)		System preservation and rehabilitation
	Rehabilitate Main Ave pavement and enhance as a Complete Street; add pedestrian enhancements and update lighting	$2,704,000	(F)		
			(S)		
		$676,000	(L)		
15	7th Avenue East (9th St E and 45th St)	$5,300,000	(T)		Addresses future congestion in a growth area
	Reconstruct as a three lane section between 9th St E and one-quarter mile west of 45th St.	$4,240,000	(F)		
			(S)		
		$1,060,000	(L)		
16	40th Avenue South (Veterans Blvd to Sheyenne River)	$5,700,000	(T)		Addresses future congestion in a growth area
	Reconstruct as an urban median-divided four-lane section with center left-turn bays and a 10' shared use path on north side.	$4,560,000	(F)		
			(S)		
		$1,140,000	(L)		
17	52nd Avenue South (45th St to Veterans Blvd)	$8,900,000	(T)		Addresses future congestion in a growth area
	Reconstruct as a five-lane divided minor arterial	$7,120,000	(F)		
			(S)		
		$1,780,000	(L)		
18	25th Street South (17th Ave S to 23rd Ave S)	$29,700,000	(T)		Addresses existing congestion
	Reconstruct corridor as a six-lane urban section, including the bridge structure over I-94. Add northbound right-turn I-94 onramp. Project includes shared use path on east side of roadway and bridge structure, and ADA compliant sidewalks.	$23,760,000	(F)		
		$1,800,000	(S)		
		$4,140,000	(L)		
19	64th Avenue South (Maple Valley Dr to 25th St)	$4,270,000	(T)		Provides connectivity to a growth area
	Reconstruct as a three-lane urban arterial with appropriate transition to a six-lane section west of Maple Valley Drive and ADA compliant sidewalks.	$3,416,000	(F)		
			(S)		
		$854,000	(L)		
20	64th Avenue South (25th St to University Dr)	$4,270,000	(T)		Provides connectivity to a growth area
	Reconstruct as a three-lane urban arterial with appropriate on- or off-road bicycle facility and ADA compliant sidewalks.	$3,416,000	(F)		
			(S)		
		$854,000	(L)		

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

No.	Description	Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
21	76th Avenue South (University Dr to 25th St)	$5,330,000	(T)		Provides connectivity to a growth area
	Pave as a two lane minor arterial; preserve right-of-way for possible future seven-lane arterial	$4,264,000	(F)		
			(S)		
		$1,066,000	(L)		
22	Veterans Blvd (52nd Ave S to 64th Ave S)	$10,000,000	(T)		Provides connectivity to a growth area
	Construct as a five-lane minor arterial, with ADA compliant sidewalks and appropriate on- or off-road bicycle route.	$8,000,000	(F)		
			(S)		
		$2,000,000	(L)		
23	25th Street (58th Ave S to 73rd Ave S)	$11,460,000	(T)		Provides connectivity to a growth area
	Construct a three lane roadway from 58th Ave S to 73rd Ave S including appropriate on- or off-road bicycle facility, and ROW preservation for future five lane facility. Project includes ADA compliant sidewalks.	$9,168,000	(F)		
			(S)		
		$2,292,000	(L)		
24	40th Avenue South (Veterans Blvd to Drain #27)	$4,500,000	(T)		Addresses safety and future congestion issues in a growth area
	Reconstruct as an urban five-lane minor arterial, including ADA compliant sidewalks.	$3,600,000	(F)		
			(S)		
		$900,000	(L)		

BICYCLES AND PEDESTRIANS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
21B	1st Ave S, 2nd Ave S, and 18th Street	$1,400,000	(T)		Improves bike route connectivity
	Construct appropriate on- or off-road bicycle facility along 1st Ave S from 18th St S to Broadway, along 18th St S from 1st Ave S to 2nd Ave S, and along 2nd Ave S from 18th St to 25th St	$1,120,000	(F)		
			(S)		
		$280,000	(L)		
22B	12th Avenue North (45th St to I-29)	$890,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$712,000	(F)		
			(S)		
		$178,000	(L)		
23B	12th Avenue North and Barrett Street (19th St to 11th Ave N)	$133,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility along 12th Ave N from 19th St to Barrett St and along Barrett St from 12th Ave N to 11th Ave N	$106,400	(F)		
			(S)		
		$26,600	(L)		

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
24B	19th Avenue N (45th St to 18th St)	$25,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$20,000	(F)		
			(S)		
		$5,000	(L)		
25B	25th Street North (3rd Ave N to 12th Ave N)	$978,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$782,400	(F)		
			(S)		
		$195,600	(L)		
26B	East side of Elm Street (15th Ave N to 23rd Ave N)	$623,000	(T)		Improves bike route connectivity
	Construct an on-road bicycle facility.	$498,400	(F)		
			(S)		
		$124,600	(L)		
27B	Madison School	$890,000	(T)		Improves bike route connectivity
	Link Madison School to 29th St N via shared use path.	$712,000	(F)		
			(S)		
		$178,000	(L)		
28B	53rd Street (52nd Ave to 88th Ave S)	$1,780,000	(T)		Improves bike route connectivity in growth area
	Construct most appropriate on-road or off-road bicycle facility.	$1,424,000	(F)		
			(S)		
		$356,000	(L)		
29B	45th Street and 12th Ave N	$1,334,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility along 45th St from 7th Ave N to 12th Ave N and then along 12th Ave N from 45th St to I-29.	$1,067,200	(F)		
			(S)		
		$266,800	(L)		
30B	45th Street (12th Ave N to 19th Ave N)	$890,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$712,000	(F)		
			(S)		
		$178,000	(L)		

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
31B	36th Avenue South (Veterans Blvd to 45th St)	$890,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility	$712,000	(F)		
			(S)		
		$178,000	(L)		
32B	36th Street (40th Ave S to 38th Ave S)	$1,120,000	(T)		Improves bike route connectivity in growth area
	Construct a shared use path with ped bridge over Rose Coulee, includes sidewalk widening along 38th Ave S from 32nd St to 38th St.	$896,000	(F)		
			(S)		
		$224,000	(L)		

Total Estimate Cost of Mid-Range Projects	$103,763,000
Total Estimated Revenue for Mid-Range	$106,530,000
Total Revenue Remaining	$2,767,000

TRANSIT

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
29T	Purchase Paratransit Vehicle -- 2017	$95,800	(T)		
	Purchase new paratransit vehicle for service expansion in approximately 2017	$79,514	(F)	FTA 5309	
			(S)		
		$16,286	(L)		
30T	Purchase Paratransit Vehicle -- 2019	$103,617	(T)		
	Purchase new paratransit vehicle for service expansion in approximately 2019	$86,002	(F)	FTA 5309	
			(S)		
		$17,615	(L)		
31T	Replace Senior Ride Vehicle #1160	$59,217	(T)		
	Approximately 2016	$49,150	(F)	FTA 5309	
			(S)		
		$10,067	(L)		
32T	GTC and other Large Faciliity Improvements	$177,914	(T)		
	Approximately 2018	$147,669	(F)	FTA 5309	
			(S)		
		$30,245	(L)		

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
33T	Replace Senior Ride Vehicle #1161	$59,217	(T)		
	Approximately 2016	$49,150	(F)	FTA 5309	
			(S)		
		$10,067	(L)		
34T	Replace Senior Ride Vehicle #1163	$66,611	(T)		
	Approximately 2019	$55,287	(F)	FTA 5309	
			(S)		
		$11,324	(L)		
35T	Replace Senior Ride Vehicle #1165	$66,611	(T)		
	Approximately 2019	$55,287	(F)	FTA 5309	
			(S)		
		$11,324	(L)		
36T	Replace Senior Ride Vehicle #1166	$59,217	(T)		
	Approximately 2016	$49,150	(F)	FTA 5309	
			(S)		
		$10,067	(L)		
37T	Replace Senior Ride Vehicle #1155	$59,217	(T)		
	Approximately 2016	$49,150	(F)	FTA 5309	
			(S)		
		$10,067	(L)		
38T	Replace Senior Ride Vehicle #1158	$59,217	(T)		
	Approximately 2016	$49,150	(F)	FTA 5309	
			(S)		
		$10,067	(L)		
39T	Replace Senior Ride Vehicle #1156	$59,217	(T)		
	Approximately 2016	$49,150	(F)	FTA 5309	
			(S)		
		$10,067	(L)		

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
40T	Replace Senior Ride Vehicle #1159	$59,939	(T)		
	Approximately 2015	$49,749	(F)	FTA 5309	
			(S)		
		$10,190	(L)		
41T	Replace Paratransit Vehicle #1152	$103,617	(T)		
	Approximately 2019	$86,002	(F)	FTA 5309	
			(S)		
		$17,615	(L)		
42T	Replace Paratransit Vehicle #1153	$103,617	(T)		
	Approximately 2019	$86,002	(F)	FTA 5309	
			(S)		
		$17,615	(L)		
43T	Replace Paratransit Vehicle #1170	$92,115	(T)		
	Approximately 2016	$76,455	(F)	FTA 5309	
			(S)		
		$15,660	(L)		
44T	Replace Paratransit Vehicle #1171	$92,115	(T)		
	Approximately 2016	$76,455	(F)	FTA 5309	
			(S)		
		$15,660	(L)		
45T	Replace Paratransit Vehicle #1172	$92,115	(T)		
	Approximately 2016	$76,455	(F)	FTA 5309	
			(S)		
		$15,660	(L)		
46T	Replace Paratransit Vehicle #1178	$99,632	(T)		
	Approximately 2018	$82,695	(F)	FTA 5309	
			(S)		
		$16,937	(L)		

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
47T	Replace Paratransit Vehicle #1179	$99,632	(T)		
	Approximately 2018	$82,695	(F)	FTA 5309	
			(S)		
		$16,937	(L)		
48T	Replace Paratransit Vehicle #1180	$99,632	(T)		
	Approximately 2018	$82,695	(F)	FTA 5309	
			(S)		
		$16,937	(L)		
49T	Replace Paratransit Vehicle #1181	$99,632	(T)		
	Approximately 2018	$82,695	(F)	FTA 5309	
			(S)		
		$16,937	(L)		
50T	Replace Paratransit Vehicle #1182	$99,632	(T)		
	Approximately 2018	$82,695	(F)	FTA 5309	
			(S)		
		$16,937	(L)		
51T	Purchase Paratransit Vehicle -- 2016	$92,115	(T)		
	Purchase new paratransit vehicle for service expansion (approximately 2016)	$76,455	(F)	FTA 5309	
			(S)		
		$15,660	(L)		
52T	Purchase Paratransit Vehicle -- 2018	$99,632	(T)		
	Purchase new paratransit vehicle for service expansion (approximately 2018)	$82,695	(F)	FTA 5309	
			(S)		
		$16,937	(L)		
53T	Purchase Paratransit Vehicle -- 2019	$103,617	(T)		
	Purchase new paratransit vehicle for service expansion (approximately 2019)	$86,002	(F)	FTA 5309	
			(S)		
		$17,615	(L)		

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MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total / Federal / State / Local		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
54T	Replace Fixed-Route Transit Vehicle #1126	$364,412	(T)		
	Approximately 2015	$291,530	(F)	FTA 5309	
			(S)		
		$72,882	(L)		
55T	Replace Fixed-Route Transit Vehicle #1127	$364,412	(T)		
	Approximately 2015	$291,530	(F)	FTA 5309	
			(S)		
		$72,882	(L)		
56T	Replace Fixed-Route Transit Vehicle #1128	$364,412	(T)		
	Approximately 2015	$291,530	(F)	FTA 5309	
			(S)		
		$72,882	(L)		
57T	Replace Fixed-Route Transit Vehicle #1139	$364,412	(T)		
	Approximately 2015	$291,530	(F)	FTA 5309	
			(S)		
		$72,882	(L)		
58T	Replace Fixed-Route Transit Vehicle #1140	$364,412	(T)		
	Approximately 2015	$291,530	(F)	FTA 5309	
			(S)		
		$72,882	(L)		
59T	Replace Fixed-Route Transit Vehicle #1141	$364,412	(T)		
	Approximately 2015	$291,530	(F)	FTA 5309	
			(S)		
		$72,882	(L)		
60T	Shelters and Passenger Facilities Improvements	$215,000	(T)		
		$172,000	(F)	FTA 5309	
			(S)		
		$43,000	(L)		

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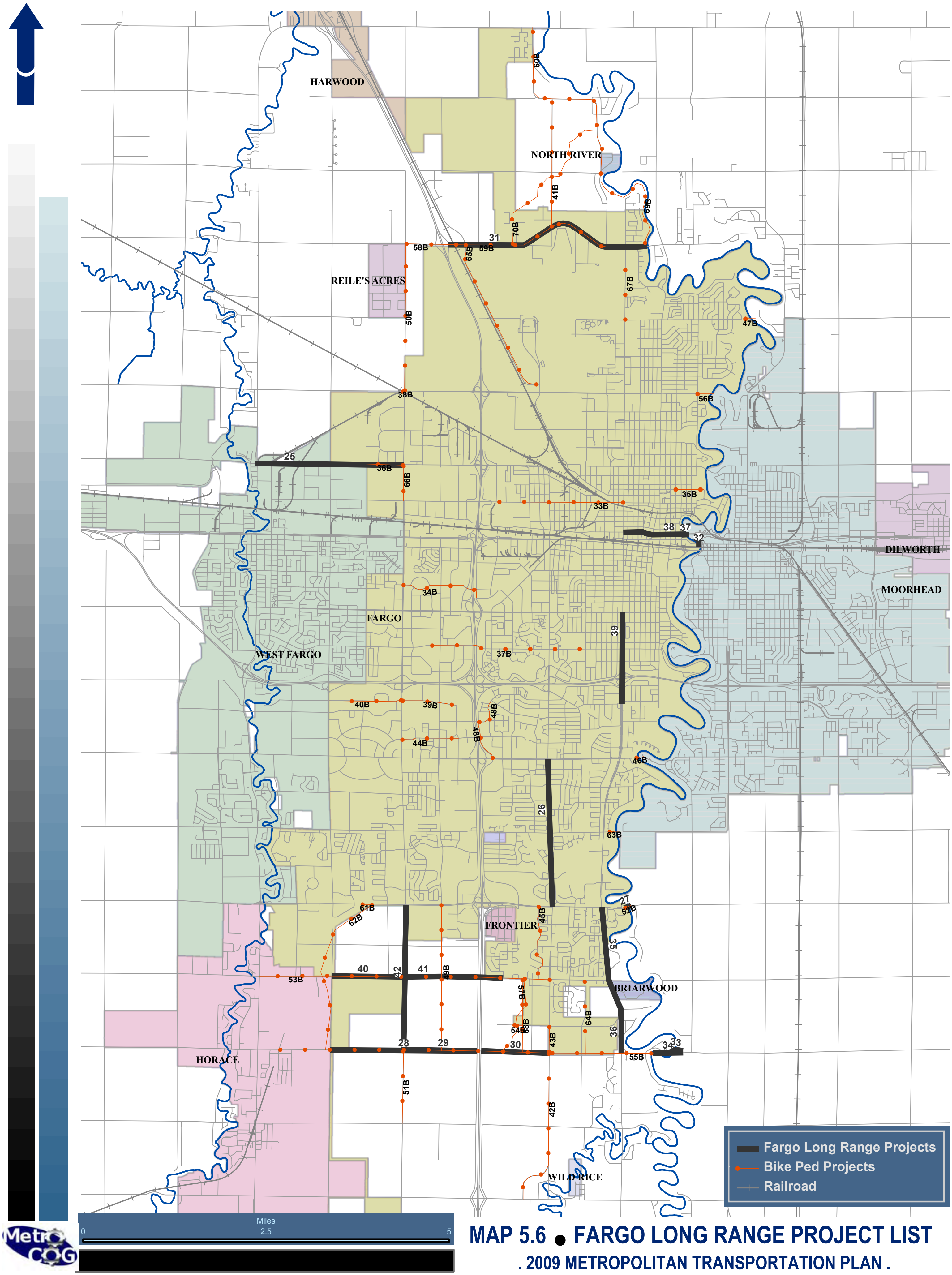
MID-RANGE PROJECT LIST 2015 THROUGH 2020

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Total Estimate Cost of Mid-Range Transit Projects	$4,604,369
Total Estimated Revenue for Mid-Range Transit Projects	$4,606,000
Total Revenue Remaining	$1,631



MAP 5.6 • FARGO LONG RANGE PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
STREETS AND HIGHWAYS					
25	12th Avenue NW (9th St E to 45th St NW) Reconstruct as a three lane urban section with turn lanes and appropriate on- or off-road bicycle facility. Preserve ROW for five-lane facility. This project will be jointly funded with City of West Fargo (West Fargo project #9)	$4,000,000 $3,200,000 $800,000	(T) (F) (S) (L)	Total project costs are estimated to be $8 million. Half of those are shown here; the other half are shown in West Fargo's project list.	Improves safety by removing steep ditches and improves drainage
26	25th Street (32nd Ave S to 52nd Ave S) Rehabilitate roadway surface	$31,600,000 $25,280,000 $6,320,000	(T) (F) (S) (L)		System preservation
27	52nd Avenue South Bridge Over Red River Reconstruct and widen the bridge to 4 lanes. Raise bridge and approaches above 100 year flood level. (Project costs to be shared with Clay County -- Clay County Project #20)	$13,820,000 $11,056,000 $2,764,000	(T) (F) (S) (L)	Total project costs are estimated to be $27.65 million. Half of those are shown here as Fargo costs.	Addresses future congestion and improves connectivity
28	76th Avenue South (38th St to Horace City Limits) Pave as a two lane minor arterial	$13,000,000 $10,400,000 $2,600,000	(T) (F) (S) (L)		Provides connectivity in a growth area
29	76th Avenue South (45th St to 38th St) Construct as a five-lane minor arterial	$10,500,000 $8,400,000 $2,100,000	(T) (F) (S) (L)		Provides connectivity in a growth area
30	76th Avenue South (36th Street to 25th St) Construct as a five-lane minor arterial	$10,500,000 $8,400,000 $2,100,000	(T) (F) (S) (L)		Provides connectivity in a growth area
31	County Road 20 (Red River to I-29) Corridor improvements including a four-lane facility and necessary turn lanes.	$47,400,000 $37,920,000 $9,480,000	(T) (F) (S) (L)		Addresses future congestion and improves safety in a growth area

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
32	NP Avenue Bridge (Red River) Reconstruct bridge (Costs to be shared with City of Moorhead -- Moorhead Project #32)	$16,500,000	(T)	Total project cost is estimated to be $33 million. Half is shown here as Fargo costs.	Replaces a bridge with limited life-expectancy
		$13,200,000	(F)		
			(S)		
		$3,300,000	(L)		
33	South Bridge Red River Crossing Preserve and, where applicable, acquire adequate right-of-way for a bridge corridor in the vicinity of 70th and 76th Ave S prior to additional development in the area of either corridor	$6,550,000	(T)		Improves connectivity and helps manage congestion on other arterials
		$5,240,000	(F)		
			(S)		
		$1,310,000	(L)		
34	South Side Red River Bridge and Connection to I-94 Participate with Cass and Clay Counties in the construction of a four lane Red River Bridge and connecting roadway between the Red River and I-29, and an interchange with I-29. (Clay County Illustrative Project #L1; and Cass County Project #21)	$22,125,000	(T)	Total cost of bridge project is $44.25 M, with cost share to be negotiated between Fargo and Clay County. Total interchange costs are reflected in NDDOT project list.	Improves connectivity and helps manage congestion on other arterials
		$17,700,000	(F)		
			(S)		
		$4,425,000	(L)		
35	University Drive (52nd Ave S to 64th Ave S) Construct as a five-lane minor arterial	$11,850,000	(T)		System preservation
		$9,480,000	(F)		
			(S)		
		$2,370,000	(L)		
36	University Drive (64th Ave S to 76th Ave S) Reconstruct	$13,000,000	(T)		System preservation
		$10,400,000	(F)		
			(S)		
		$2,600,000	(L)		
37	1st Avenue North (bridge over Red River) Aesthetic and pedestrian improvements as per the Downtown Framework plan. Project costs shared with Moorhead. (Moorhead Project #24)	$325,000	(T)	Project costs to be shared with City of Moorhead. Total project costs estimated to be $650,000	Addresses future congestion in a growth area
		$260,000	(F)		
			(S)		
		$65,000	(L)		
38	NP & 1st Ave N (Red River to University Dr) Project definition pending completion of corridor study	$38,000,000	(T)	Since the project is yet to be defined, a general cost estimate was used as a reasonable place-holder	
		$30,400,000	(F)		
			(S)		
		$7,600,000	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
39	University Drive (13th Ave S to 25th Ave S) Project definition pending completion of corridor study	$38,000,000	(T)	Since the project is yet to be defined, a general cost estimate was used as a reasonable place-holder	
		$30,400,000	(F)		
			(S)		
		$7,600,000	(L)		
40	64th Avenue South (Veterans Blvd to 45th St) Reconstruct as a four-lane urban section	$13,100,000	(T)		Provides connectivity in a growth area
		$10,480,000	(F)		
			(S)		
		$2,620,000	(L)		
41	64th Avenue South (45th St to Maple Valley Dr) Reconstruct as a six-lane divided minor arterial, including a grade separated overpass at I-29 (Cost of grade separation to be shared with NDDOT -- NDDOT Project #33)	$19,000,000	(T)		Provides connectivity in a growth area
		$15,200,000	(F)		
			(S)		
		$3,800,000	(L)		
42	45th Street (52nd Ave S to 76th Ave S) Construct as a five lane urban minor arterial with appropriate on or off road bicycle facility and ADA compliant sidewalks.	$26,335,000	(T)		Provides connectivity to a growth area
		$21,068,000	(F)		
			(S)		
		$5,267,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
33B	7th Avenue North (University Dr to 35th St N) Construct most appropriate on-road or off-road bicycle facility	$92,000	(T)		Improves bike route connectivity
		$73,600	(F)		
			(S)		
		$18,400	(L)		
34B	9th Avenue South (45th St to Interstate Blvd) Construct most appropriate on-road or off-road bicycle facility	$1,300,000	(T)		Improves bike route connectivity
		$1,040,000	(F)		
			(S)		
		$260,000	(L)		
35B	9th Avenue North (3rd St N to Mickelson Field) Construct most appropriate on-road or off-road bicycle facility.	$526,000	(T)		Improves bike route connectivity
		$420,800	(F)		
			(S)		
		$105,200	(L)		

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PROJECT AREA

	Description	Financial Feasibility — Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
36B	12th Avenue North (45th St NW to 17th St E) Construct most appropriate on-road or off-road bicycle facility. Project will be completed as part of a larger roadway reconstruction effort.	$0	(T)		Improves bike route connectivity
		$0	(F)		
			(S)		
		$0	(L)		
37B	17th Avenue South (16th St to 35th St) Construct most appropriate on-road or off-road bicycle facility	$3,000,000	(T)		Improves bike route connectivity
		$2,400,000	(F)		
			(S)		
		$600,000	(L)		
38B	19th Avenue North and Railroad Grade Separation Construct a shared use path.	$0	(T)		Improves bike route connectivity
		$0	(F)		
			(S)		
		$0	(L)		
39B	23rd Avenue SW (40th St and 45th St) Construct most appropriate on-road or off-road bicycle facility.	$650,000	(T)		Improves bike route connectivity
		$520,000	(F)	STP/TE	
			(S)		
		$130,000	(L)		
40B	23rd Avenue South (51st St S to Veterans Blvd) Construct most appropriate on-road or off-road bicycle facility	$1,300,000	(T)		Improves bike route connectivity
		$1,040,000	(F)		
			(S)		
		$260,000	(L)		
41B	25th Street (40th Ave N [CR 20] to CR 31) Construct most appropriate on-road or off-road bicycle facility.	$0	(T)		Improves bike route connectivity
		$0	(F)		
			(S)		
		$0	(L)		
42B	25th Street (76th Ave S to CR 56) Construct most appropriate on-road or off-road bicycle facility	$0	(T)		Improves bike route connectivity
		$0	(F)		
			(S)		
		$0	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
43B	25th Street (73rd Ave S to 76th Ave S) Construct appropriate on- or off-road bicycle facility	$0	(T)		Improves bike route connectivity
		$0	(F)		
			(S)		
		$0	(L)		
44B	28th Ave S (45th St to 39th St) Construct appropriate on- or off-road bicycle facility	$1,185,000	(T)		Improves bike route connectivity
		$948,000	(F)		
			(S)		
		$237,000	(L)		
45B	30th St (52nd Ave S to 64th Ave S) Construct appropriate on- or off-road bicycle facility	$1,300,000	(T)		Improves bike route connectivity
		$1,040,000	(F)		
			(S)		
		$260,000	(L)		
46B	32nd Avenue South at Red River Construct a bike-ped bridge connecting Lemke Park to River Oaks Park in Moorhead, as per the 2008 Greenway Study	$1,300,000	(T)	Costs to be shared with Moorhead. Total estimated project costs are $2.6 million.	Improves bike route connectivity
		$1,040,000	(F)		
			(S)		
		$260,000	(L)		
47B	32nd Avenue North (at Red River) Construct bicycle/pedestrian bridges over the river at 32nd Ave N in Fargo and Moorhead's MB Johnson Park. Also includes a connecting river trail to El Zagel.	$2,421,000	(T)		Improves bike route connectivity
		$1,936,800	(F)		
			(S)		
		$484,200	(L)		
48B	36th Street, 28th Ave S, and Wheatland Drive Construct appropriate on- or off-road bicycle facility along 36th Street South from 32nd Ave S to 28th Ave S, then along 28th Ave S from 36th St to Wheatland Dr, then along Wheatland Dr from 28th Ave S to Woodbury Park	$1,300,000	(T)		Improves bike route connectivity
		$1,040,000	(F)		
			(S)		
		$260,000	(L)		
49B	42nd Street South (52nd Ave S to 76th Ave S) Construct most appropriate on-road or off-road bicycle facility	$0	(T)		Improves bike route connectivity
		$0	(F)		
			(S)		
		$0	(L)		

Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
50B	45th Street (19th Ave N to CR 20)	$2,630,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$2,104,000	(F)		
			(S)		
		$526,000	(L)		
51B	45th Street (76th Ave S to 88th Ave S)	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$0	(F)		
			(S)		
		$0	(L)		
52B	52nd Avenue South and CR 74 Red River Bridge	$2,500,000	(T)		Improves bike route connectivity
	Construct a shared use path.	$2,000,000	(F)		
			(S)		
		$500,000	(L)		
53B	64th Avenue South (25th St to County Road 17)	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility	$0	(F)		
			(S)		
		$0	(L)		
54B	70th Avenue South (at Cook's Coulee)	$2,100,000	(T)		Improves bike route connectivity
	Construct a grade separate bike-ped crossing of 70th Ave S adjacent to Cook's Coulee	$1,680,000	(F)		
			(S)		
		$420,000	(L)		
55B	76th Avenue South (Red River to CR 17)	$0	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$0	(F)		
			(S)		
		$0	(L)		
56B	Bridge on Red River near 19th Ave N	$2,500,000	(T)		Improves bike route connectivity
	Construct a bicycle-pedestrian bridge in the vicinity of 19th Ave N in Fargo and 28th Ave N in Moorhead. Project includes adding most appropriate on-road or off-road bicycle facility connecting bikeway from Elm Street to Red River.	$2,000,000	(F)		
			(S)		
		$500,000	(L)		

Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
57B	Cook's Coulee (64th Ave S to 76th Ave S)	$1,300,000	(T)		Improves bike route connectivity
	Construct shared-use path	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
58B	CR 20 (45th St to CR 81)	$4,345,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$3,476,000	(F)		
			(S)		
		$869,000	(L)		
59B	CR 20 (CR 81 to University Dr)	$3,100,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility. (Correlates to Cass County Project #5B)	$2,480,000	(F)		
			(S)		
		$620,000	(L)		
60B	CR 31 (Highland Park to CR 22)	$2,900,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility	$2,320,000	(F)		
			(S)		
		$580,000	(L)		
61B	Drain #27 (South of 52nd Ave S)	$2,100,000	(T)		Improves bike route connectivity
	Construct a grade-separated bike-ped crossing of Drain #27 south of 52nd Ave S	$1,680,000	(F)		
			(S)		
		$420,000	(L)		
62B	Drain #27 (52nd Ave S to 76th Ave S)	$2,600,000	(T)		Improves bike route connectivity
	Construct a shared-use path adjacent to Drain #27	$2,080,000	(F)		
			(S)		
		$520,000	(L)		
63B	New Trollwood Site (40th Ave S at Red River)	$2,600,000	(T)	Costs to be shared with Moorhead. Total estimated project costs are $2.6 million.	Improves bike route connectivity
	Construct a bike-ped bridge over the Red River connecting to the Trollwood Performing Arts development. Project costs shared with City of Moorhead -- Moorhead Project #41B	$2,080,000	(F)		
			(S)		
		$520,000	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
64B	Milwaukee Trail (64th Ave S to 76th Ave S)	$1,300,000	(T)		Improves bike route connectivity
	Construct shared-use path	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
65B	Old Highway 81 (19th Ave N to Pepsi Soccer Fields)	$1,300,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility connecting bikeway to Pepsi Soccer Fields.	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
66B	Shared Use Path at 45th St N and 12th Ave N	$1,850,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility along 12th Ave N from I-29 to 45th N and along 45th St N from 12th Ave N to 7th Ave N.	$1,480,000	(F)		
			(S)		
		$370,000	(L)		
67B	University Drive (32nd Ave N to CR 20)	$1,300,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
68B	30th Street (64th Ave S to 76th Ave S)	$1,300,000	(T)		Improves bike route connectivity in growth area
	Construct most appropriate on-road or off-road bicycle facility.	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
69B	CR 20 (CR 31 to 52nd Ave N)	$650,000	(T)		Implements Greenway Plan recommendation
	Construct a shared use path along the greenway north of CR 20.	$520,000	(F)		
			(S)		
		$130,000	(L)		
70B	32nd Street (CR 20 to CR 31)	$3,000,000	(T)		Improves bike route connectivity
	Construct a shared use path along drainage drainage ditch.	$2,400,000	(F)		
			(S)		
		$600,000	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
71B	Mid-Town Bridge	$1,000,000	(T)	Costs to be shared with Moorhead. Total estimated project costs are $2 million.	Preserves existing bicycle network and improves its operation
	Construct a bike bridge to replace the existing mid-town floating bridge. Project costs to be shared with Moorhead -- Moorhead Project #44B	$800,000	(F)		
			(S)		
		$200,000	(L)		

Total Estimate Cost of Short-Range Projects	$390,354,000
Total Estimated Revenue for Short-Range	$408,980,000
Total Revenue Remaining	$18,626,000

TRANSIT

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
61T	Refurbish GTC	$3,940,000	(T)		
	Perform major rehabilitation of GTC to extend useful life of the facility	$3,270,200	(F)	FTA 5307 & 5309	
			(S)		
		$669,800	(L)		
62T	Refurbish West Area Hub in 2024 and add South Side	$2,100,000	(T)		
	Approximately 2021, 2026, and 2031	$1,743,000	(F)	FTA 5307 & 5309	
			(S)		
		$357,000	(L)		
63T	GTC and other Large Facility Improvements	$468,000	(T)		
	In approximately 2023 and 2028	$388,440	(F)	FTA 5309	
			(S)		
		$79,560	(L)		
64T	Replace Senior Ride Vehicle #1160	$266,348	(T)		
	In approximately 2021, 2026, and 2031	$221,069	(F)	FTA 5309	
			(S)		
		$45,279	(L)		
65T	Replace Senior Ride Vehicle #1161	$266,348	(T)		
	In approximately 2021, 2026, and 2031	$221,069	(F)	FTA 5309	
			(S)		
		$45,279	(L)		

Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost: Total / Federal / State / Local	(T) / (F) / (S) / (L)	Explanation of Cost Breakdown	
66T	Replace Senior Ride Vehicle #1163	$299,606	(T)		
	In approximately 2024, 2029, and 2034	$248,673	(F)	FTA 5309	
			(S)		
		$50,933	(L)		
67T	Replace Senior Ride Vehicle #1165	$299,606	(T)		
	In approximately 2024, 2029, and 2034	$248,673	(F)	FTA 5309	
			(S)		
		$50,933	(L)		
68T	Replace Senior Ride Vehicle #1166	$266,348	(T)		
	In approximately 2021, 2026, and 2031	$221,069	(F)	FTA 5309	
			(S)		
		$45,279	(L)		
69T	Replace Senior Ride Vehicle #1155	$266,348	(T)		
	In approximately 2021, 2026, and 2031	$221,069	(F)	FTA 5309	
			(S)		
		$45,279	(L)		
70T	Replace Senior Ride Vehicle #1156	$266,348	(T)		
	In approximately 2021, 2026, and 2031	$221,069	(F)	FTA 5309	
			(S)		
		$45,279	(L)		
71T	Replace Senior Ride Vehicle #1158	$266,348	(T)		
	In approximately 2021, 2026, and 2031	$221,069	(F)	FTA 5309	
			(S)		
		$45,279	(L)		
72T	Replace Senior Ride Vehicle #1159	$380,865	(T)		
	In approximately 2020, 2025, 2030, and 2035	$316,118	(F)	FTA 5309	
			(S)		
		$64,747	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
73T	Replace Paratransit Vehicle #1152	$466,054	(T)		
	In approximately 2024, 2029, and 2034	$386,825	(F)	FTA 5309	
			(S)		
		$79,229	(L)		
74T	Replace Paratransit Vehicle #1153	$466,054	(T)		
	In approximately 2024, 2029, and 2034	$386,825	(F)	FTA 5309	
			(S)		
		$79,229	(L)		
75T	Replace Paratransit Vehicle #1170	$414,319	(T)		
	In approximately 2021, 2026, and 2031	$343,885	(F)	FTA 5309	
			(S)		
		$70,434	(L)		
76T	Replace Paratransit Vehicle #1171	$414,319	(T)		
	In approximately 2021, 2026, and 2031	$343,885	(F)	FTA 5309	
			(S)		
		$70,434	(L)		
77T	Replace Paratransit Vehicle #1172	$414,319	(T)		
	In approximately 2021, 2026, and 2031	$343,885	(F)	FTA 5309	
			(S)		
		$70,434	(L)		
78T	Replace Paratransit Vehicle #1178	$448,127	(T)		
	In approximately 2023, 2028, and 2033	$371,945	(F)	FTA 5309	
			(S)		
		$76,182	(L)		
79T	Replace Paratransit Vehicle #1179	$448,127	(T)		
	In approximately 2023, 2028, and 2033	$371,945	(F)	FTA 5309	
			(S)		
		$76,182	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
80T	Replace Paratransit Vehicle #1180	$448,127	(T)		
	In approximately 2023, 2028, and 2033	$371,945	(F)	FTA 5309	
			(S)		
		$76,182	(L)		
81T	Replace Paratransit Vehicle #1181	$448,127	(T)		
	In approximately 2023, 2028, and 2033	$371,945	(F)	FTA 5309	
			(S)		
		$76,182	(L)		
82T	Replace Paratransit Vehicle #1182	$448,127	(T)		
	In approximately 2023, 2028, and 2033	$371,945	(F)	FTA 5309	
			(S)		
		$76,182	(L)		
83T	Replace Paratransit Vehicle Purchased in 2016	$398,385	(T)		
	In approximately 2021, 2026, and 2031	$330,660	(F)	FTA 5309	
			(S)		
		$67,725	(L)		
84T	Replace Paratransit Vehicle Purchased in 2018	$448,127	(T)		
	In approximately 2023, 2028, and 2033	$371,945	(F)	FTA 5309	
			(S)		
		$76,182	(L)		
85T	Replace Paratransit Vehicle Purchased in 2019	$466,054	(T)		
	In approximately 2023, 2028, and 2033	$386,825	(F)	FTA 5309	
			(S)		
		$79,229	(L)		
86T	Purchase New Paratransit Vehicle -- 2023	$121,217	(T)		
	Purchase new paratransit vehicle in approximately 2023 for service expansion	$96,974	(F)	FTA 5309	
			(S)		
		$24,243	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Estimated Cost:		Financial Feasibility: Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
87T	Purchase New Paratransit Vehicle -- 2025	$131,109	(T)		
	Purchase new paratransit vehicle in approximately 2025 for service expansion	$104,887	(F)	FTA 5309	
			(S)		
		$26,222	(L)		
88T	Purchase New Paratransit Vehicle -- 2029	$153,379	(T)		
	Purchase new paratransit vehicle in approximately 2029 for service expansion	$122,703	(F)	FTA 5309	
			(S)		
		$30,676	(L)		
89T	Purchase New Paratransit Vehicle -- 2031	$165,894	(T)		
	Purchase new paratransit vehicle in approximately 2031 for service expansion	$132,715	(F)	FTA 5309	
			(S)		
		$33,179	(L)		
90T	Purchase New Paratransit Vehicle -- 2035	$194,073	(T)		
	Purchase new paratransit vehicle in approximately 2035 for service expansion	$155,258	(F)	FTA 5309	
			(S)		
		$38,815	(L)		
91T	Replace Fixed-Route Transit Vehicle #1126	$539,419	(T)		
	In approximately 2025	$431,535	(F)	FTA 5309	
			(S)		
		$107,884	(L)		
92T	Replace Fixed-Route Transit Vehicle #1127	$539,419	(T)		
	In approximately 2025	$431,535	(F)	FTA 5309	
			(S)		
		$107,884	(L)		
93T	Replace Fixed-Route Transit Vehicle #1128	$539,419	(T)		
	In approximately 2025	$431,535	(F)	FTA 5309	
			(S)		
		$107,884	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility Estimated Cost: Total Federal State Local	 (T) (F) (S) (L)	Explanation of Cost Breakdown	Notes
94T	Replace Fixed-Route Transit Vehicle #1139	$583,435	(T)		
	In approximately 2027	$466,748	(F)	FTA 5309	
			(S)		
		$116,687	(L)		
95T	Replace Fixed-Route Transit Vehicle #1140	$583,435	(T)		
	In approximately 2027	$466,748	(F)	FTA 5309	
			(S)		
		$116,687	(L)		
96T	Replace Fixed-Route Transit Vehicle #1141	$583,435	(T)		
	In approximately 2027	$466,748	(F)	FTA 5309	
			(S)		
		$116,687	(L)		
97T	Replace Fixed-Route Transit Vehicle #1142	$583,435	(T)		
	In approximately 2027	$466,748	(F)	FTA 5309	
			(S)		
		$116,687	(L)		
98T	Replace Fixed-Route Transit Vehicle #1173	$682,537	(T)		
	In approximately 2031	$546,030	(F)	FTA 5309	
			(S)		
		$136,507	(L)		
99T	Replace Fixed-Route Transit Vehicle #1174	$682,537	(T)		
	In approximately 2031	$546,030	(F)	FTA 5309	
			(S)		
		$136,507	(L)		
100T	Replace Fixed-Route Transit Vehicle #1175	$682,537	(T)		
	In approximately 2031	$546,030	(F)	FTA 5309	
			(S)		
		$136,507	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
101T	Replace Fixed-Route Transit Vehicle #1176	$682,537	(T)		
	In approximately 2031	$546,030	(F)	FTA 5309	
			(S)		
		$136,507	(L)		
102T	Replace Fixed-Route Transit Vehicle #1184	$738,232	(T)		
	In approximately 2033	$590,586	(F)	FTA 5309	
			(S)		
		$147,646	(L)		
103T	Replace Fixed-Route Transit Vehicle #1185	$738,232	(T)		
	In approximately 2033	$590,586	(F)	FTA 5309	
			(S)		
		$147,646	(L)		
104T	Replace Fixed-Route Transit Vehicle #1186	$738,232	(T)		
	In approximately 2033	$590,586	(F)	FTA 5309	
			(S)		
		$147,646	(L)		
105T	Replace Fixed-Route Transit Vehicle #1187	$738,232	(T)		
	In approximately 2033	$590,586	(F)	FTA 5309	
			(S)		
		$147,646	(L)		
106T	Replace Fixed-Route Transit Vehicle #1188	$738,232	(T)		
	In approximately 2033	$590,586	(F)	FTA 5309	
			(S)		
		$147,646	(L)		
107T	Replace 3 Fixed-Route Transit Vehicle Purchased in 2010	$1,438,600	(T)		
	In approximately 2022	$1,150,880	(F)	FTA 5309	
			(S)		
		$287,720	(L)		

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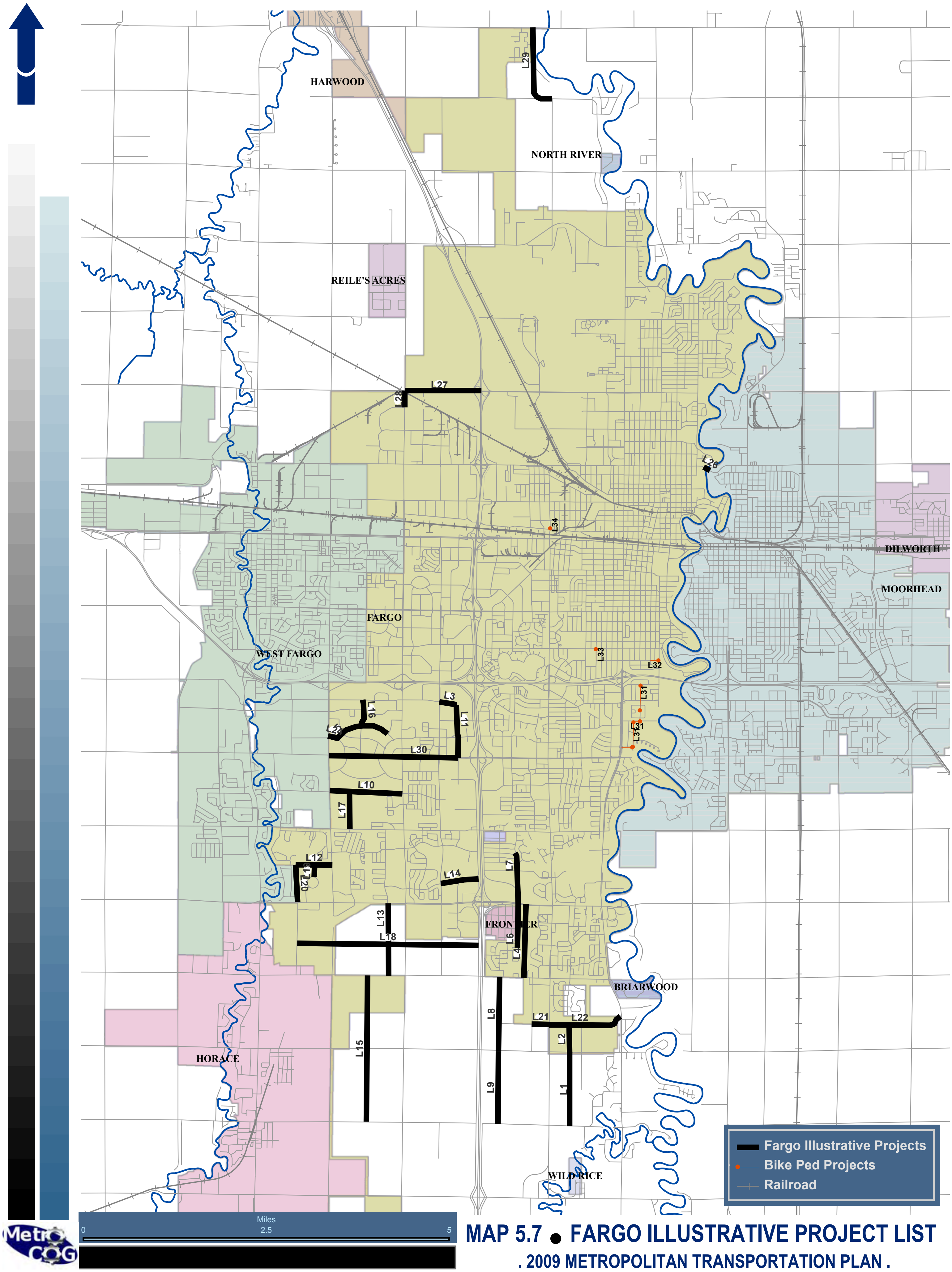
LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
108T	Purchase New Fixed-Route Transit Vehicle -- 2024	$518,672	(T)		
	Purchase new transit vehicle for service expansion	$414,938	(F)	FTA 5309	
			(S)		
		$103,734	(L)		
109T	Purchase New Fixed-Route Transit Vehicle -- 2029	$631,043	(T)		
	Purchase new transit vehicle for service expansion	$504,834	(F)	FTA 5309	
			(S)		
		$126,209	(L)		
110T	Purchase New Fixed-Route Transit Vehicle -- 2034	$767,761	(T)		
	Purchase new transit vehicle for service expansion	$614,209	(F)	FTA 5309	
			(S)		
		$153,552	(L)		
111T	Shelters and Passenger Facilitily Improvements	$1,000,000	(T)		
	Purchase new transit vehicle for service expansion	$800,000	(F)	FTA 5309	
			(S)		
		$200,000	(L)		

Total Estimate Cost of Long-Range Transit Projects	$30,309,484
Total Estimated Revenue for Long-Range Transit Projects	$30,324,000
Total Revenue Remaining	$14,516



MAP 5.7 • FARGO ILLUSTRATIVE PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost	
	Total	(T)	Breakdown	
	Federal	(F)		
	State	(S)		
	Local	(L)		

STREETS AND HIGHWAYS

The projects below represent significant investment and changes to the local transportation network. However, the City of Fargo does not typically use federal transportation funding assistance for the construction of Collector roadways. Instead, Collectors are usually built using property assessments. All cost estimates are provided in 2009 dollars.

L1	21st Street South (76th Ave S to 88th Ave S)	$2,250,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,800,000	(F)		
			(S)		
		$450,000	(L)		
L2	21st Street South (64th Ave S to 76th Ave S)	$2,250,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,800,000	(F)		
			(S)		
		$450,000	(L)		
L3	23rd Avenue South (42nd St to 39th St)	$675,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$540,000	(F)		
			(S)		
		$135,000	(L)		
L4	28th Street South (52nd Ave S to 76th Ave S)	$4,500,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$3,600,000	(F)		
			(S)		
		$900,000	(L)		
L5	28th Avenue South (47th St to Seter Pkwy)	$1,800,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,440,000	(F)		
			(S)		
		$360,000	(L)		
L6	32nd Street SW (52nd Ave S to 58th Ave S)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
L7	32nd Street SW (44th Ave to 52nd Ave)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		
L8	34th Street (64th Ave S to 76th Ave S)	$2,250,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,800,000	(F)		
			(S)		
		$450,000	(L)		
L9	34th Street (76th Ave S to 88th Ave S)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		
L10	36th Avenue South (45th St to Veterans Blvd)	$2,250,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,800,000	(F)		
			(S)		
		$450,000	(L)		
L11	39th Street South (23rd Ave S to 32nd Ave S)	$1,800,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,440,000	(F)		
			(S)		
		$360,000	(L)		
L12	46th Avenue South (Veterans Blvd to 63rd St S)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		
L13	47th Street South (52nd Ave S to 64th Ave S)	$2,250,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,800,000	(F)		
			(S)		
		$450,000	(L)		

Fargo Potential Future Improvement Projects

26-Oct-09

ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
L14	49th Avenue South (42nd St to 38th St)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		
L15	51st Street (64th Ave S to 88th Ave S)	$3,375,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$2,700,000	(F)		
			(S)		
		$675,000	(L)		
L16	51st Street SW (23rd Ave S to 28th Ave S)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		
L17	55th Street South (36th Ave S to 40th Ave S)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		
L18	58th Avenue South (38th St to 63rd St)	$5,625,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$4,500,000	(F)		
			(S)		
		$1,125,000	(L)		
L19	60th Street South (46th Ave S to Rocking Horse Circle)	$675,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$540,000	(F)		
			(S)		
		$135,000	(L)		
L20	63rd Street South (46th Ave S to 52nd Ave S)	$1,125,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$900,000	(F)		
			(S)		
		$225,000	(L)		

Fargo Potential Future Improvement Projects

26-Oct-09

ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
L21	70th Avenue South (34th St to 25th St)	$2,025,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,620,000	(F)		
			(S)		
		$405,000	(L)		
L22	70th Avenue South (25th St to University)	$2,250,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$1,800,000	(F)		
			(S)		
		$450,000	(L)		
L23	82nd Avenue South (University Dr to 34th St)	$4,275,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$3,420,000	(F)		
			(S)		
		$855,000	(L)		
L24	Seter Parkway (28th Ave S to Veteran Blvd)	$450,000	(T)		Illustrative -- Fargo does not spend Federal $$ to build collectors
	Construct as a three-lane collector	$360,000	(F)		
			(S)		
		$90,000	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

L25	Metropolitan Rail Consolidation Project	$15,000,000	(T)	Total project cost is $50 M. Costs shared among all jurisdictions.	Illustrative. Funding has not been identified
	Construct features and improvements associated with the Metropolitan Rail Consolidation Project, as illustrated in planning study	$12,000,000	(F)		
			(S)		
		$300,000	(L)		
L26	12th Avenue North (bridge over Red River)	$5,000,000	(T)	Total project cost is $10 M. Costs shared with City of Moorhead.	Illustrative. Funding has not been identified
	Reconstruct bridge	$4,000,000	(F)		
			(S)		
		$1,000,000	(L)		

Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost Breakdown	
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
L27	19th Ave (45th St to I-29)	$21,231,000	(T)		Improves safety by removing steep ditches and improves drainage
	Reconstruct 19th Ave as a 4 lane urban section between I-29 and 45th St. New intersection of 19th Ave and 45th St with grade separated by rail crossing 850 north of existing intersection, after the removal of the existing alignment of 19th Avenue.	$16,984,800	(F)		
			(S)		
		$4,246,200	(L)		
L28	45th Street (16th Ave N to 19th Ave N)	$7,812,500	(T)		Provides improved conenctivity and safety
	Reconstruct to 19th Ave N as a 5 lane urban section with turn lanes with a grade separation at the BN track.	$6,250,000	(F)		
			(S)		
		$1,562,500	(L)		
L29	CR 31 (25th St to 76th Ave N)	$8,125,000	(T)		Improves arterial access to growth area
	Reconstruct as five lane urban minor arterial	$6,500,000	(F)		
			(S)		
		$1,625,000	(L)		
L30	32nd Avenue South (Veterans Blvd to 32nd St)	$39,000,000	(T)		Addresses future congestion in a growth area
	Reconstruct as six lane urban section with adjacent shared-use path. Project includes widening of bridge structure over I-29. (Project costs to be partly shared with NDDOT)	$31,200,000	(F)		
			(S)		
		$7,800,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L31	North River Road, 26th Ave S, and 11st St	$687,500	(T)		Improves bike route connectivity
	Construct appropriate on- or off-road bicycle facility along North River Road from 21st Ave S to 26th Ave S, then along 26th Ave S from North River Road to 11th St, then along 11th St from 26th Ave S to 30th Ave S, then along 30th Ave S from 11th St to University Dr	$550,000	(F)		
			(L)		
		$137,500			
L32	18th Avenue South (5th St S to 7th St S)	$125,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$100,000	(F)		
			(L)		
		$25,000			
L33	16th Street South (17th Ave S to 18th Ave S)	$125,000	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$100,000	(F)		
			(L)		
		$25,000			

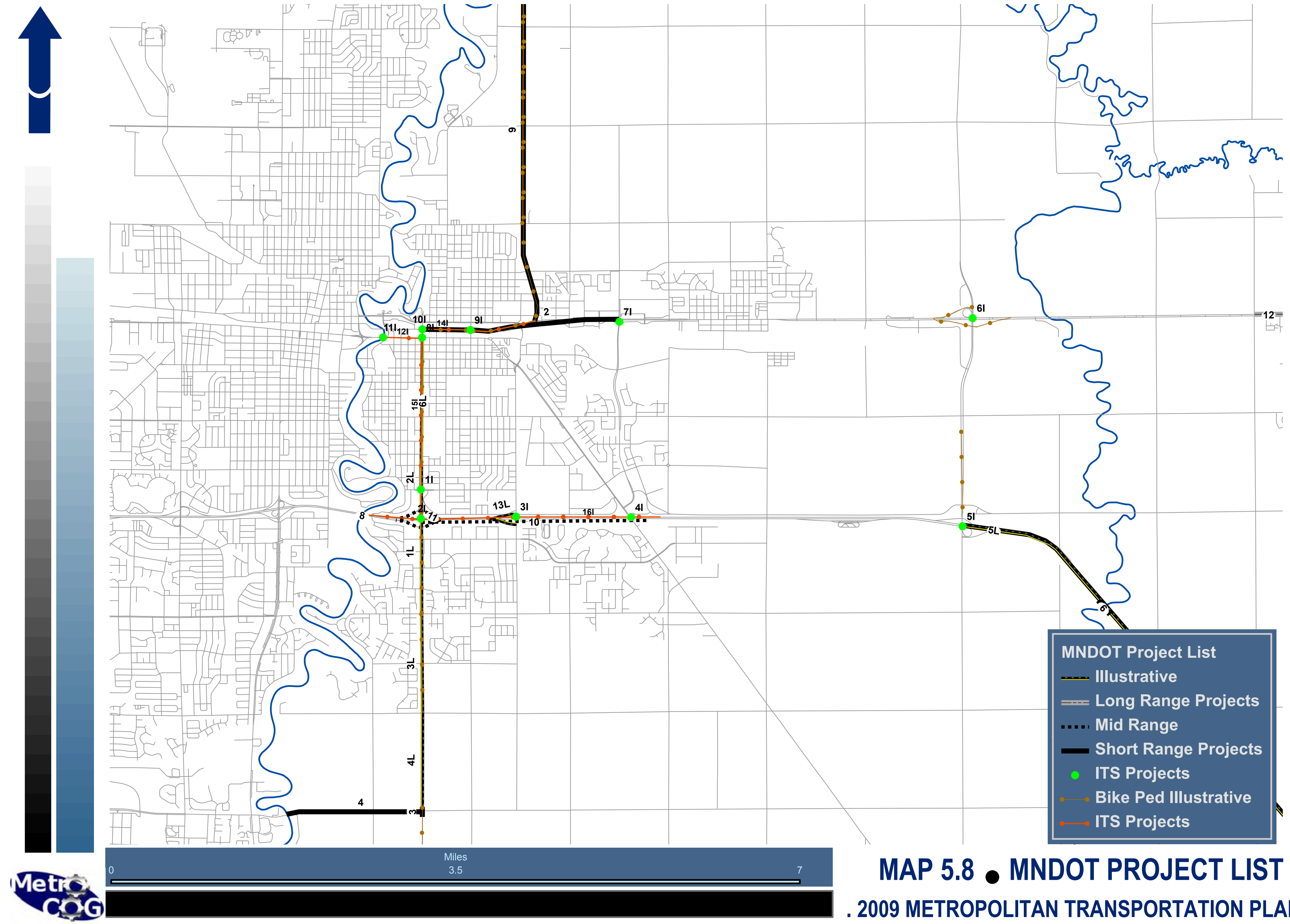
Fargo Potential Future Improvement Projects

26-Oct-09

ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost	
		Total	(T)	Breakdown	
		Federal	(F)		
		State	(S)		
		Local	(L)		
L34	25th Street (1st Ave N to 3rd Ave N)	$4,800	(T)		Improves bike route connectivity
	Construct most appropriate on-road or off-road bicycle facility.	$3,840	(F)		
			(L)		
		$960			



MAP 5.8 • MNDOT PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

MN DOT Potential Future Improvement Projects

1-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total / Federal / State / Local		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1	I-94 (S.P. 1480-142)	$7,780,600	(T)		System Preservation
	Unbonded overlay from TH 336 to Downer (WB).	$6,822,500	(F)	IM	
		$958,100	(S)		
			(L)		
2	TH 10 (S.P. 1401-137)	$4,358,500	(T)		System Preservation
	Milling and bituminous surfacing of TH 10 EB and WB from TH 75 to East limits of Dilworth.	$3,486,000	(F)		
		$871,700	(S)		
			(L)		
3	TH 75 (S.P. 1406-61)	$1,645,562	(T)		This intersection has one of the highest crash rates in District 4. This project will reduce the frequency and severity of crashes at this location
	Roundabout at Junction TH 75 and Clay CR 12 south of Moorhead.	$1,316,462	(F)	STP	
		$29,100	(S)		
		$300,000	(L)		
4	CSAH 12 (S.P. 14-612-017)	$475,000	(T)		System Preservation
	CLAY CO RD 12 - MILL AND BIT SURFACING (TIED TO 1406-61)		(F)		
			(S)		
		$475,000	(L)		
5	CR 80 (12th Ave South) and MN 336	$2,500,000	(T)	Cost split between Federal, State, and Local to be determined at a later date.	Corridor Preservation in a high growth area
	Preserve ROW and an interchange footprint for a future interchange at CR 80 (12th Ave South) and MN 336 through local platting negotiation process. (Planning process completed; ROW preservation ongoing)		(F)		
			(S)		
			(L)		
6	I-94 Buffalo River Bridge	$5,115,200	(T)		System Preservation
	Redeck and paint bridges 14803 and 14804	$4,603,680	(F)	Bridges	
		$511,520	(S)		
			(L)		
7	TH 10 (Red River Bridge to TH 75)	$1,400,000	(T)		System Preservation
	TH 75 & TH 10 Pedestrian and Signal Improvements, TH 10 Bituminous Surfacing between Red River Bridge and West Jct of TH 75		(F)		
		$1,400,000	(S)		
			(L)		

MN DOT Potential Future Improvement Projects

1-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility – Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
8	I-94 Bridge (Red River)	$800,613	(T)		Improves Network Connectivity and Safety
	Current Bridge Condition is reported as Functionally Obsolete because of a clearance issue on Rivershore Drive. This project will re-grade and lower Rivershore Drive to improve clearance.		(F)		
		$500,000	(S)		
		$300,613	(L)		
9	TH 75	$4,000,000	(T)	Cost split between Federal, State, and Local to be determined at a later date.	System Preservation
	Overlay from E Jct. TH 10 to North County Line.		(F)		
			(S)		
			(L)		

Total Estimate Cost of Short-Range Projects	$28,075,475
Total Estimated Revenue for Short-Range	$38,840,000
Total Revenue Remaining	$10,764,525

MN DOT Potential Future Improvement Projects

16-Nov-09

MID-RANGE PROJECT LIST 2016 TO 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
10	I-94 and TH 75 Interchange Revisions	$18,850,000	(T)	Cost split between Federal, State, and Local to be determined at a later date.	Improves safety and arterial operations by eliminating a left-hand turn onto NW ramp; improves traffic flow on the NW ramp
	Reconstruct portions of the interchange as per the 2007 planning document		(F)		
			(S)		
			(L)		

ITS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1I	8th Street (24th Ave S)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
2I	I-94 (8th Street Interchange)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
3I	I-94 (20th Street Interchange)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
4I	I-94 (SE Main Ave Interchange)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
5I	I-94 (TH 336 Interchange)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		

MN DOT Potential Future Improvement Projects

16-Nov-09

MID-RANGE PROJECT LIST 2016 TO 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
6I	TH 10 (MN 336 Interchange)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
7I	TH 10 (34th Street Intersection)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
8I	TH 10 (TH 75/8th Street)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
9I	TH 10 (14th Street Intersection)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
10I	TH 10 (8th Street)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
11I	Main Ave Bridge (Red River)	$15,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy CCTV	$12,000	(F)		
		$3,000	(S)		
			(L)		
12I	Main Ave (Red River to 8th St/TH 75)	$12,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy Enhanced Traffic Detection	$9,600	(F)		
		$2,400	(S)		
			(L)		

MN DOT Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 TO 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
13I	TH 10 (Main Ave to Center Ave)	$12,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy Enhanced Traffic Detection	$9,600	(F)		
		$2,400	(S)		
			(L)		
14I	TH 10 (8th Street to TH 75)	$12,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy Enhanced Traffic Detection	$9,600	(F)		
		$2,400	(S)		
			(L)		
15I	TH 75 (Main Ave to I-94)	$12,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy Enhanced Traffic Detection	$9,600	(F)		
		$2,400	(S)		
			(L)		
16I	I-94 (Red River to 34th Street Interchange)	$12,000	(T)		Improves real-time traffic operations monitoring capabilities
	Deploy Enhanced Traffic Detection	$9,600	(F)		
		$2,400	(S)		
			(L)		
17I	Various Locations	$355,000	(T)		Helps create seamless traffic flows across jurisidctional boundaries
	Participate in Regional Integration of Traffic Signal Systems	$284,000	(F)		
		$71,000	(S)		
			(L)		
18I	Various Locations	$33,300	(T)		Provides a means to manage traffic operations in real-time
	Participate in Regional Traveler Information Management System	$26,640	(F)		
		$6,660	(S)		
			(L)		
19I	Various Locations	$185,000	(T)		Provides a means to manage traffic operations in real-time
	Participate in Regional CCTV Management System	$148,000	(F)		
		$37,000	(S)		
			(L)		

MN DOT Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 TO 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
20I	Traffic Operations Center	$21,350	(T)		Provides a means to manage traffic operations in real-time
	Participate in the Development of a Regional Traffic Operations Center	$17,080	(F)		
		$4,270	(S)		
			(L)		
21I	Various Locations	$35,500	(T)		Provides a means to manage traffic operations in real-time
	Participate in the ITS Network Infrastrucutre Deployment	$28,400	(F)		
		$7,100	(S)		
			(L)		

Total Estimate Cost of Mid-Range Projects	$19,705,150
Total Estimated Revenue for Mid-Range	$23,010,000
Total Revenue Remaining	$3,304,850

MN DOT Potential Future Improvement Projects

16-Nov-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost Breakdown	
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

STREETS AND HIGHWAYS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
11	I-94 and 20th Street Interchange Revisions Reconstruct portions of the interchange as per the 2007 planning document	$33,500,000	(T)	Cost split between Federal, State, and Local to be determined at a later date.	Allows full-movement at this interchange
			(F)		
			(S)		
			(L)		
12	TH 10 Glyndon Access Management Project Reconstruct Highway 10 (EB & WB) and Improve access mangagment through the City of Glyndon	$4,200,000	(T)	Cost split between Federal, State, and Local to be determined at a later date.	Improves Access Management and Safety on an interregional corridor
			(F)		
			(S)		
			(L)		

Total Estimate Cost of Long-Range Projects	$37,700,000
Total Estimated Revenue for Long-Range	$39,040,000
Total Revenue Remaining	$1,340,000

MN DOT Potential Future Improvement Projects

2-Dec-09

ILLUSTRATIVE PROJECT LIST

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future. Cost estimates are provided in 2009 dollars.

STREETS AND HIGHWAYS

1L	TH 75 Improvements 24th Ave S to 40th Ave S Reconstruct roadway as per the 2007 TH 75 & 20th Street Corridor Studies planning document	$7,990,000 	(T) (F) (S) (L)	Cost split between Federal, State, and Local to be determined at a later date.	Improves corridor operations in a high growth area
2L	TH 75 Improvements 20th Ave S to 24th Ave S Reconstruct roadway as per the 2007 TH 75 & 20th Street Corridor Studies planning document	$4,080,000	(T) (F) (S) (L)	Cost split between Federal, State, and Local to be determined at a later date.	Improves corridor operations near interstate interchange
3L	TH 75 Improvements 40th Ave S to 50th Ave S Reconstruct roadway as per the 2007 TH 75 & 20th Street Corridor Studies planning document	$12,290,000	(T) (F) (S) (L)	Cost split between Federal, State, and Local to be determined at a later date.	Improves corridor operations in a high growth area
4L	TH 75 Improvements 50th Ave S to 60th Ave S Reconstruct roadway as per the 2007 TH 75 & 20th Street Corridor Studies planning document	$6,200,000	(T) (F) (S) (L)	Cost split between Federal, State, and Local to be determined at a later date.	Improves corridor operations in a high growth area
5L	I-94 Reconstruct EB lanes from TH 336 to Downer.	$20,000,000	(T) (F) (S) (L)	Cost split between Federal, State, and Local to be determined at a later date.	System Preservation
6L	TH 75 (20th Ave S to Main Avenue) Project planning study to be completed in 2010.	?	(T) (F) (S) (L)	Planning level cost estimate to be determined as part of 2010 planning study	Improves corridor and operations and safety -- including bicycle and pedestrian safety -- in an area adjacent to a college and near a state university

MN DOT Potential Future Improvement Projects

2-Dec-09

ILLUSTRATIVE PROJECT LIST

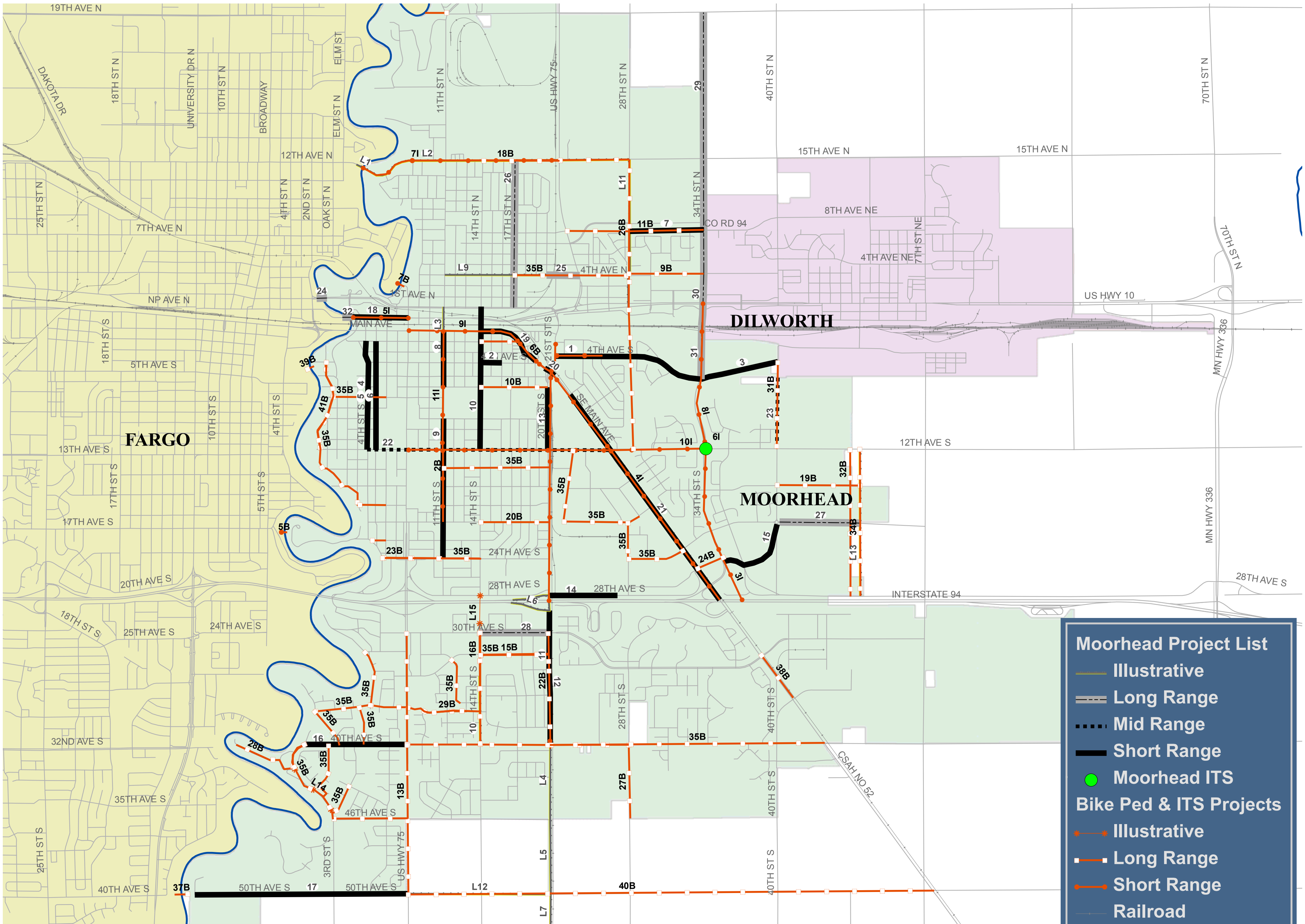
PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future. Cost estimates are provided in 2009 dollars.

BICYCLES AND PEDESTRIANS

7L	TH 75 (40th Ave S to CR 74) Construct an appropriate on- or off-road bicycle facility	$1,250,000	(T) (F) (S) (L)	Cost split between Federal, State, and Local to be determined at a later date.	
8L	TH 75 (15th Ave N to CSAH 26) Stripe and sign a designated bicycle lane (bikable shoulder)	$40,000	(T) (F) (S) (L)	Cost split between Federal, State, and Local to be determined at a later date.	



MAP 5.9 ● MOORHEAD PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Moorhead Potential Future Improvement Projects

26-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility Estimated Cost:		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

STREETS AND HIGHWAYS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1	4th Avenue South (21st St to 34th St)	$738,000	(T)		System preservation
	Rehabilitate pavement for this urban collector, with appropriate accommodations being made for bicycles and pedestrians	$590,400	(F)		
			(S)		
		$147,600	(L)		
2	4th Avenue South (14th St to 16th St)	$62,500	(T)		System preservation
	Pavement restoration of 4th Avenue South between 14th St to 16th St.	$50,000	(F)		
			(S)		
		$12,500	(L)		
3	4th Avenue South (CR 81 to 34th St)	$1,350,000	(T)		Improving connectivity in a growth area
	Construct a three lane urban section with separated bike and pedestrian facilities.	$1,080,000	(F)		
			(S)		
		$270,000	(L)		
4	4th Street (2nd Ave S to 12th Ave S)	$5,000,000	(T)		System preservation
	Reconstruct roadway with appropriate accommodations being made for bicycles and pedestrians	$4,000,000	(F)		
			(S)		
		$1,000,000	(L)		
5	4th Street (6th Ave S to 9th Ave S)	$93,750	(T)		System preservation
	Pavement restoration of 4th Street from 6th Ave S to 9th Ave S.	$75,000	(F)		
			(S)		
		$18,750	(L)		
6	5th Street (2nd Ave to 12th Ave S)	$5,000,000	(T)		System preservation
	Reconstruct roadway with appropriate accommodations being made for bicycles and pedestrians	$4,000,000	(F)		
			(S)		
		$1,000,000	(L)		
7	8th Avenue North (28th St to 34th St)	$2,100,000	(T)		Improving connectivity in a growth area
	Build roadway as a three-lane urban collector, with appropriate accommodations for bicycles and pedestrians.	$1,680,000	(F)		
			(S)		
		$420,000	(L)		

Moorhead Potential Future Improvement Projects

26-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility — Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
8	11th Street (Main Ave to 6th Ave S)	$3,160,000	(T)		System preservation
	Reconstruct roadway as an urban arterial, with appropriate accommodations for bicycles and pedestrians	$2,528,000	(F)		
			(S)		
		$632,000	(L)		
9	11th Street (9th Ave to 24th Ave S)	$6,327,000	(T)		System preservation
	Reconstruct roadway as an urban arterial, with appropriate accommodations for bicycles and pedestrians.	$5,061,600	(F)		
			(S)		
		$1,265,400	(L)		
10	14th Street (1st Ave N to 12th Ave S)	$5,700,000	(T)		System preservation
	Reconstruct roadway as an urban arterial, with appropriate accommodations for bicycles and pedestrians	$4,560,000	(F)		
			(S)		
		$1,140,000	(L)		
11	20th Street (34th Ave S to I-94 south ramps)	$3,375,000	(T)		System preservation
	Rebuild as a four-lane urban arterial	$2,700,000	(F)		
			(S)		
		$675,000	(L)		
12	20th Street South (34th Ave S to 40th Ave S)	$2,110,000	(T)		Improving connectivity in a growth area
	Construct a three lane urban roadway with a separated bikeway, with ROW preservation for a future five lane facility.	$1,688,000	(F)		
			(S)		
		$422,000	(L)		
13	20th Street South (6th Ave S to 12th Ave S)	$1,875,000	(T)		System preservation
	Reconstruct as a three-lane urban arterial	$1,500,000	(F)		
			(S)		
		$375,000	(L)		
14	28th Avenue South (20th St to 26th St)	$1,875,000	(T)		Improving connectivity in a growth area
	Construct 28th Ave S from 20th St S to 26th St S in Moorhead.	$1,500,000	(F)		
			(S)		
		$375,000	(L)		

Moorhead Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

Estimated Cost: Total (T), Federal (F), State (S), Local (L)

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
15	40th Street (24th Ave S to 34th Street)	$2,100,000	(T)		Improving connectivity in a growth area
	Construct this roadway as a three-lane urban collector with appropriate accommodations for bicycles and pedestrians	$1,680,000	(F)		
			(S)		
		$420,000	(L)		
16	40th Avenue South (TH 75 to River Haven Road)	$4,325,000	(T)		System preservation
	Reconstruct as an urban three-lane collector, with apporpriate accommodations being made for bicycles and pedestrians	$3,460,000	(F)		
			(S)		
		$865,000	(L)		
17	50th Avenue South (from TH 75 to 1.38 miles west)	$2,600,000	(T)		Improving connectivity and aesthetics to a high traffic generator
	Grade and reconstruct eastbound lanes of 50th Ave S Parkway in Moorhead	$2,080,000	(F)		
			(S)		
		$520,000	(L)		
18	Center Avenue (Red River Bridge to TH 75/8th St)	$14,000,000	(T)		Safety improvements and bridge rehabilitation
	Make appropriate changes to roadway, as per the 2007 Downtown Framework Plan, which may include additional bicycle and pedestrian accommodations, on street parking, and/or other changes to make the corridor more pedestrian friendly.	$11,200,000	(F)		
			(S)		
		$2,800,000	(L)		
19	Main Ave (14th St to 19th St)	$468,750	(T)		System preservation
	Pavement restoration/rehabilitation of Main Avenue. Project may include the addition of an appropriate on- or off-road bicycle facility.	$375,000	(F)		
			(S)		
		$93,750	(L)		
20	SE Main/ 20th & 21st Street	$32,000,000	(T)		Improving connectivity and safety at a busy intersection
	Construct remaining elements of Moorhead's SE Main Ave, 20th and 21st Street grade separations of the BNSF and Ottertail Valley Railroads, including appropriate on- or off-road bicycle facility.	$25,600,000	(F)	Eng and Env. Assement activities funded in 2003 ($1.875 M).	
			(S)		
		$6,400,000	(L)		
21	SE Main (Oakway to I-94)	$1,200,000	(T)		System preservation
	Pavement restoration/rehabilitation	$960,000	(F)		
			(S)		
		$240,000	(L)		

Moorhead Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
BICYCLES AND PEDESTRIANS					
1B	4th Avenue South (21st St to 24th St) Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0 $0 $0	(T) (F) (S) (L)	Project costs are accounted for in roadway project costs.	Improving bike route connectivity
2B	11th Street (12th Ave S to 20th Ave S) Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0 $0 $0	(T) (F) (S) (L)	Project costs are accounted for in roadway project costs.	Improving bike route connectivity
3B	12th Avenue South (8th St to 11th St) Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0 $0 $0	(T) (F) (S) (L)	Project costs are accounted for in roadway project costs.	Improving bike route connectivity
4B	21st Street South (Main Ave SE to 2nd Ave S) Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0 $0 $0	(T) (F) (S) (L)	Project costs are accounted for in roadway project costs.	Improving bike route connectivity
5B	Lindenwood/Gooseberry Bridge Construct a bike-ped bridge over Red River. Project costs to be shared with Fargo -- Fargo Project #15B	$500,000 $400,000 $100,000	(T) (F) (S) (L)	Costs to be shared with City of Fargo. Total estimated project cost is $1million.	Improving bike route connectivity -- system preservation
6B	Main Avenue (2nd Ave S to 20th St) Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project -- Project #24 above	$0 $0 $0	(T) (F) (S) (L)	Project costs are accounted for in roadway project costs.	Improving bike route connectivity
7B	Oak Grove/ Memorial Bridge Construct a bike-ped bridge over Red River. Project costs to be shared with Fargo -- Fargo Project #16B	$500,000 $400,000 $100,000	(T) (F) (S) (L)	Costs to be shared with City of Fargo. Total estimated project cost is $1million.	Improving bike route connectivity -- system preservation

Moorhead Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
8B	Pedestrian Underpass at 40th Ave S and 20th St S	$625,000	(T)		Improving bike and pedestrian route connectivity
	Construct an underpass.	$500,000	(F)		
			(S)		
		$125,000	(L)		

INTELLIGENT TRANSPORTATION SYSTEMS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1I	Flood Warning Sensors	$11,300	(T)		Improving management and operations of roadways
	Establish flood warning sensors at 20th/21st Street underpasses.	$9,040	(F)		
			(S)		
		$2,260	(L)		
2I	20th St (I-94 to SE Main)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
3I	34th St (12th Ave S to I-94)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
4I	SE Main Ave (12th Ave S to I-94)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
5I	Center Ave (8th St to Red River)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
6I	34th St (12th Ave S Intersection)	$11,300	(T)		Improving management and operations of roadways
	Deploy CCTV	$9,040	(F)		
			(S)		
		$2,260	(L)		

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
7I	15th Ave N (Red River to TH 75)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
8I	34th St (TH 10 to 12th Ave S)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
9I	Main Ave (8th St to 12th Ave S)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
10I	12th Ave S (8th St to 34th St)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
11I	11th St (Main Ave to 12th Ave S)	$9,000	(T)		Improving management and operations of roadways
	Deploy Enhanced Traffic Detection	$7,200	(F)		
			(S)		
		$1,800	(L)		
12I	Various Locations	$250,000	(T)		Improving management and operations of roadways
	Participate in Regional Integration of Traffic Signal Systems	$200,000	(F)		
			(S)		
		$50,000	(L)		
13I	Various Locations	$23,400	(T)		Improving management and operations of roadways
	Participate in Regional Traveler Information Management System	$18,720	(F)		
			(S)		
		$4,680	(L)		

Moorhead Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost Breakdown	
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
14I	Various Locations	$130,000	(T)		Improving management and operations of roadways
	Participate in Regional CCTV Management System	$104,000	(F)		
			(S)		
		$26,000	(L)		
15I	Traffic Operations Center	$15,000	(T)		Improving management and operations of roadways
	Participate in the Development of a Regional Traffic Operations Center	$12,000	(F)		
			(S)		
		$3,000	(L)		
16I	Various Locations	$25,000	(T)		Improving management and operations of roadways
	Participate in the ITS Network Infrastrucutre Deployment	$20,000	(F)		
			(S)		
		$5,000	(L)		

Total Estimate Cost of Short-Range Projects	$97,632,000
Total Estimated Revenue for Short-Range	$97,720,000
Total Revenue Remaining	$88,000

TRANSIT

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1T	Metro Mobility Manager	$228,000	(T)		
	Funded in conjunciton with Fargo Transit (2010-2013)	$182,400	(F)	FTA 5317	
			(S)		
		$45,600	(L)		
2T	Shelters and Passenger Facility Improvements	$100,000	(T)		
		$80,000	(F)		
			(S)		
		$20,000	(L)		
3T	Participate in Transit ITS Application Deployment	$30,400	(T)		
		$24,320	(F)		
			(S)		
		$6,080	(L)		

Moorhead Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility Estimated Cost: Total Federal State Local	 (T) (F) (S) (L)	 Explanation of Cost Breakdown	Notes
4T	Accessible Pedestrian Signal	$200,000	(T)		
	New Freedom Funds for the installation of an accessible pedestrian signal at the intersection of 7th Ave S and TH 75 (8th St) in Moorhead	$160,000	(F)	FTA 5317	
			(S)		
		$40,000	(L)		
5T	Summer Mid-Day Service	$31,440	(T)		
	Funding to improve summer fixed-route operations to half-hour service on some routes rather than hourly service	$25,152	(F)	FTA 5316	
			(S)		
		$6,288	(L)		
6T	General Public Demand Response	$235,000	(T)		
	Providing temporary demand response service to growing areas of the city until such time as fixed-route service can be extended into those areas.	$188,000	(F)	FTA 5316	
			(S)		
		$47,000	(L)		
7T	Replace Paratransit Vehicle #1150	$57,107	(T)		
	Replace Unit #1150 in approximately 2011	$45,686	(F)	FTA 5307	
			(S)		
		$11,421	(L)		
8T	Replace Paratransit Vehicle #1191	$57,000	(T)		
	Replace Unit #1191 in approximately 2011	$45,600	(F)		
			(S)		
		$11,400	(L)		
9T	Replace Paratransit Vehicle #1177	$62,000	(T)		
	Replace Unit #1177 in approximately 2013	$49,600	(F)		
			(S)		
		$12,400	(L)		
10T	Metro Senior Ride -- Replace Expansion Van	$61,500	(T)		
	Replace expansion mini van purchased in 2009 (approximately 2013).	$49,200	(F)		
			(S)		
		$12,300	(L)		

Moorhead Potential Future Improvement Projects

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SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
11T	Metro Senior Ride -- Replace Van	$125,000	(T)		
	Replace passenger mini-van in approximately 2010 and again in 2013	$100,000	(F)		
			(S)		
		$25,000	(L)		
12T	Preventive Maintenance	$240,000	(T)		
	Preventive maintenance to extend life of vehicles. $60,000 per year 2010-2013.	$192,000	(F)		
			(S)		
		$48,000	(L)		
13T	Bus Related Equipment	$50,000	(T)		
		$40,000	(F)		
			(S)		
		$10,000	(L)		

Total Estimate Cost of Short-Range Transit Projects	$1,477,447
Total Estimated Revenue for Short-Range Transit Projects	$1,482,000
Total Revenue Remaining for Transit	$4,553

Moorhead Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

STREETS AND HIGHWAYS

22	12th Avenue South (4th St to SE Main Ave)	$12,800,000	(T)		System preservation
	Reconstruct as an urban arterial, with appropriate accommodations being made for bicycle and pedestrians	$10,240,000	(F)		
			(S)		
		$2,560,000	(L)		
23	40th Street South (12th Ave S to Dilworth City Limits)	$3,500,000	(T)		Improving connectivity in a growth area
	Construct three-lane roadway with turn lanes between 12th Ave S and Dilworth City Limits, with ROW preservation for future five-lane facility.	$2,800,000	(F)		
			(S)		
		$700,000	(L)		

Total Estimate Cost of Mid-Range Projects	$16,300,000
Total Estimated Revenue for Mid-Range	$18,070,000
Total Revenue Remaining	$1,770,000

TRANSIT

14T	Bus related Facility Improvements	$500,000	(T)		
	In approximately 2015	$400,000	(F)		
			(S)		
		$100,000	(L)		
15T	Shelters and Passenger Facility Improvements	$200,000	(T)		
		$160,000	(F)		
			(S)		
		$40,000	(L)		
16T	Replace Paratransit Vehicle #1191	$70,000	(T)		
	Replace Unit #1191 in approximately 2016	$56,000	(F)		
			(S)		
		$14,000	(L)		
17T	Replace Paratransit Vehicle #1177	$75,000	(T)		
	Replace Unit #1177 in approximately 2018	$60,000	(F)		
			(S)		
		$15,000	(L)		

Moorhead Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
18T	Replace Paratransit Vehicle #1150	$70,000	(T)		
	Replace Unit #1150 in approximately 2016	$56,000	(F)		
			(S)		
		$14,000	(L)		
19T	Purchase New Paratransit Vehicle	$67,000	(T)		
	Purchase new Paratransit vehicle to expand service in approximately 2015.	$53,600	(F)		
			(S)		
		$13,400	(L)		
20T	Replace Fixed-Route Transit Vehicle #370	$260,000	(T)		
	Replace Unit #370 in approximately 2015	$208,000	(F)		
			(S)		
		$52,000	(L)		
21T	Replace Fixed-Route Transit Vehicle #371	$260,000	(T)		
	Replace Unit #371 in approximately 2015	$208,000	(F)		
			(S)		
		$52,000	(L)		
22T	Replace Fixed-Route Transit Vehicle #380	$260,000	(T)		
	Replace Unit #380 in approximately 2015	$208,000	(F)		
			(S)		
		$52,000	(L)		
23T	Replace Fixed-Route Transit Vehicle #381	$260,000	(T)		
	Replace Unit #381 in approximately 2015	$208,000	(F)		
			(S)		
		$52,000	(L)		
24T	Replace Fixed-Route Transit Vehicle #382	$260,000	(T)		
	Replace Unit #382 in approximately 2015	$208,000	(F)		
			(S)		
		$52,000	(L)		

Moorhead Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Estimated Cost:		Financial Feasibility: Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
25T	Replace Fixed-Route Transit Vehicle #590	$280,000	(T)		
	Replace Unit #590 in approximately 2017	$224,000	(F)		
			(S)		
		$56,000	(L)		
26T	Replace Fixed-Route Transit Vehicle #591	$280,000	(T)		
	Replace Unit #591 in approximately 2017	$224,000	(F)		
			(S)		
		$56,000	(L)		
27T	Replace Fixed-Route Transit Vehicle #592	$280,000	(T)		
	Replace Unit #592 in approximately 2017	$224,000	(F)		
			(S)		
		$56,000	(L)		
28T	Replace Fixed-Route Transit Vehicle #593	$280,000	(T)		
	Replace Unit #593 in approximately 2017	$224,000	(F)		
			(S)		
		$56,000	(L)		
29T	Purchase New Fixed-Route Transit Vehicle	$305,000	(T)		
	Purchase new fixed-route transit vehicle for service expansion in approximately 2019.	$244,000	(F)		
			(S)		
		$61,000	(L)		
30T	Metro Senior Ride -- Replace Expansion Van	$150,000	(T)		
	Replace passenger mini van in 2016 and 2019.	$120,000	(F)		
			(S)		
		$30,000	(L)		
31T	Metro Senior Ride -- Replace Van	$150,000	(T)		
	Replace passenger mini van in 2016 and 2019.	$120,000	(F)		
			(S)		
		$30,000	(L)		

Moorhead Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost Breakdown	
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
32T	Bus Related Equipment	$100,000	(T)		
		$80,000	(F)		
			(S)		
		$20,000	(L)		

Total Estimate Cost of Short-Range Transit Projects	$4,107,000
Total Estimated Revenue for Short-Range Transit Projects	$4,954,000
Total Revenue Remaining for Transit	$847,000

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
STREETS AND HIGHWAYS					
24	1st Avenue North Bridge (Red River) Aesthetic and pedestrian improvements to bridge as per the Downtown Framework Plan. Project costs shared with Fargo. (Fargo Project #37)	$325,000 $260,000 $65,000	(T) (F) (S) (L)	Project costs to be shared with City of Fargo. Total project costs estimated to be $650,000	Improving pedestrian connection and aesthetics
25	4th Avenue North (20th Street to TH 75) Construct a new ubran section between 20th Street and TH 75.	$1,777,000 $1,421,600 $355,400	(T) (F) (S) (L)		System preservation
26	17th Street (1st Ave N to 15th Ave N) Reconstruct roadway as a parkway. Appropriate accommodations for bicycle and pedestrians will be part of the project	$7,900,000 $6,320,000 $1,580,000	(T) (F) (S) (L)		Aesthetic and safety improvments
27	24th Avenue South (40th St to 46th St) Construct as a three-lane urban collector	$3,100,000 $2,480,000 $620,000	(T) (F) (S) (L)		Improving connectivity in a growth area
28	30th Avenue South (14th St to 20th St) Rehabilitate and/or reconstruct.	$3,950,000 $3,160,000 $790,000	(T) (F) (S) (L)		System preservation
29	34th Street (4th Ave N to 28th Ave N) Mill and overlay pavement.	$1,777,000 $1,421,600 $355,400	(T) (F) (S) (L)		System preservation
30	34th Street (4th Ave N to north end of BNSF overpass structure south of Main Avenue) Reconstruct roadway and consolidate accesses. Project will include appropriate accommodations for bicycles and pedestrians, as well as addressing intersection crash rates at 34th Street and TH 10.	$4,750,000 $3,800,000 $950,000	(T) (F) (S) (L)		System preservation

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

#	Description	Estimated Cost: Total (T) / Federal (F) / State (S) / Local (L)		Explanation of Cost Breakdown	Notes
31	34th Street (4th Ave S to south end of BNSF overpass structure)	$3,160,000	(T)		System preservation
	Reconstruct roadway as a four-lane urban arterial with turn lanes and appropriate accommodations being made for bicycles and pedestrians	$2,528,000	(F)		
			(S)		
		$632,000	(L)		
32	Center Avenue Bridge (Red River)	$16,500,000	(T)	Total project cost is estimated to be $33 million. Half is shown here as Moorhead costs.	Replaces a bridge with limited life-expectancy
	Reconstruct bridge (Costs to be shared with City of Fargo -- Fargo Project #32)	$13,200,000	(F)		
			(S)		
		$3,300,000	(L)		

BICYCLES AND PEDESTRIANS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
9B	4th Avenue North (28th St to 34th St)	$790,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$632,000	(F)		
			(S)		
		$158,000	(L)		
10B	6th Avenue South (14th St to 20th St)	$650,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$520,000	(F)		
			(S)		
		$130,000	(L)		
11B	8th Avenue North (TH 75 to 34th St)	$1,300,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
12B	8th Street South (30th Ave S to 40th Ave S)	$1,475,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$1,180,000	(F)		
			(S)		
		$295,000	(L)		
13B	8th Street South (40th Ave S to 46th Ave S)	$790,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$632,000	(F)		
			(S)		
		$158,000	(L)		

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
14B	8th Street South (46th Ave S to 50th Ave S)	$658,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$526,400	(F)		
			(S)		
		$131,600	(L)		
15B	9th Street from Belsly Boulevard (14th St to 20th St)	$1,300,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
17B	14th Street South (30th Ave S to 40th Ave S)	$0	(T)	Costs are accounted for in roadway reconstruction project.	Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0	(F)		
			(S)		
		$0	(L)		
19B	15th Avenue North (TH 75 to 28th St N)	$0	(T)	Costs are accounted for in roadway reconstruction project.	Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0	(F)		
			(S)		
		$0	(L)		
20B	15th Avenue North (14th St to TH 75)	$790,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$632,000	(F)		
			(S)		
		$158,000	(L)		
21B	20th Avenue South (46th St to Main St S)	$1,400,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$1,120,000	(F)		
			(S)		
		$280,000	(L)		
22B	20th Avenue South (14th St S to 20th St S)	$658,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$526,400	(F)		
			(S)		
		$131,600	(L)		

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Estimated Cost: Total (T) / Federal (F) / State (S) / Local (L)		Explanation of Cost Breakdown	Notes
24B	20th Street South (30th Ave S to 34th Ave S)	$395,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$316,000	(F)		
			(S)		
		$79,000	(L)		
25B	20th Street South (34th Ave S to 40th Ave S)	$660,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$528,000	(F)		
			(S)		
		$132,000	(L)		
27B	24th Avenue South (River Shore Dr to 14th St S)	$921,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$736,800	(F)		
			(S)		
		$184,200	(L)		
28B	26th Avenue South (34th St to Main Ave)	$263,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$210,400	(F)		
			(S)		
		$52,600	(L)		
29B	28th Avenue N (11th St N to Red River)	$263,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$210,400	(F)		
			(S)		
		$52,600	(L)		
30B	28th Street (12th Ave S to 15th Ave N)	$0	(T)	Costs are accounted for in roadway reconstruction project.	Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0	(F)		
			(S)		
		$0	(L)		
31B	28th Street South (40th Ave S to 46th Ave S)	$660,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$528,000	(F)		
			(S)		
		$132,000	(L)		

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
32B	Riverhaven Rd Red River Bridge	$1,300,000	(T)	Project costs to be shared with City of Fargo. Total estimated project costs are $2.6 million.	Improving bike route connectivity
	Construct a bike-ped bridge connecting Lemke Park to River Oaks Park in Moorhead, as per the 2008 Greenway Study	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
33B	37th Avenue South (9th St to 12th St)	$395,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$316,000	(F)		
			(S)		
		$79,000	(L)		
34B	40th Avenue South (20th St to 28th St)	$790,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$632,000	(F)		
			(S)		
		$158,000	(L)		
35B	40th Street South (4th Ave S to 12th Ave S)	$658,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$526,400	(F)		
			(S)		
		$131,600	(L)		
36B	45th Street (12th Ave S to CSAH 14)	$1,300,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
37B	46th Avenue South (Riverhaven Rd to 8th St)	$658,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$526,400	(F)		
			(S)		
		$131,600	(L)		
38B	46th Street (12th Ave S to 28th Ave S)	$0	(T)	Costs are accounted for in roadway reconstruction project.	Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility. To be completed as part of a larger roadway reconstruction project.	$0	(F)		
			(S)		
		$0	(L)		

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
39B	Add Signage to Designate Route as Shared Roadway >4th Avenue N from 17th St to 28th St >2nd Avenue S from 14th St to Main Ave >7th Avenue S from Elm St to 6th St >Elm Street/River Drive from Woodlawn Park to 18th Ave >14th Avenue S from 11th St to 20th St >18th Avenue S from Elm St to 6th St >22nd Avenue S from Rivershore Drive to 6th St >24th Avenue S from Rivershore Drive to 14th St >37th Avenue S from Rivershore Drive to 8th St >Rivershore Drive from 32nd Ave S to 37th Ave S >Rivershore Drive from 37th Ave S to 40th Ave S >4th Street from 37th Ave S to 40th Ave S >2nd Street from 40th Ave S to Rivershore Drive >Rivershore Drive from 2nd St to Riverhaven Road >Riverhaven Road from 40th Ave S to 46th Ave >3rd Street from 45th Ave S to Riverhaven Road >40th Avenue S from 8th St to CSAH 52 >37th Avenue S from 12th St to 14th St >12th Street from Belsly Boulevard to 37th Ave S >41st Street from CSAH 52 to 40th Ave S >23rd Street from 12th Ave S to 20th Ave S >20th Avenue S from 23rd St to 28th St >28th Street from 20th Ave S to 24th Ave S >24th Avenue S from 28th St to SE Main >Elm Street from the Red River to CSAH 93 >14th Street from 30th Ave S to 40th Ave S >Belsly Boulevard from 14th St to 20th St	$271,000 $216,800 $54,200	(T) (F) (S) (L)		Improving bike route wayfinding and visibility
40B	Belsly Boulevard (14th St to 20th St) Construct approriate on- or off-road bicycle facility	$658,000 $526,400 $131,600	(T) (F) (S) (L)		Improving bike route connectivity
41B	Bike/Ped Bridge over Red River at 50th Ave S Construct a bike-ped bridge over Red River connecting the Trollwood Performing Arts Center to Fargo. Project costs to be shared with Fargo -- Fargo Project #62B.	$1,300,000 $1,040,000 $260,000	(T) (F) (S) (L)	Project costs to be shared with City of Fargo. Total estimated project costs are $2.6 million.	Improving bike route connectivity
43B	Main Avenue SE (Village Green Blvd to 40th St S) Construct approriate on- or off-road bicycle facility	$263,000 $210,400 $52,600	(T) (F) (S) (L)		Improving bike route connectivity

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
44B	Mid-Town Bridge	$1,000,000	(T)	Project costs to be shared with City of Fargo. Total estimated project costs are $2 million.	Improving bike route connectivity
	Construct a bike bridge to replace the existing mid-town floating bridge. Project costs to be shared with Fargo -- Fargo Project #70B	$800,000	(F)		
			(S)		
		$200,000	(L)		
45B	Red River Bikeway (10th Ave N to 15th Ave N)	$790,000	(T)		Improving bike route connectivity
	Construct shared-sue path along Red River.	$632,000	(F)		
			(S)		
		$158,000	(L)		
46B	Red River Bikeway (4th Ave S to 13th Ave S)	$1,000,000	(T)		Improving bike route connectivity
	Construct shared-sue path along Red River.	$800,000	(F)		
			(S)		
		$200,000	(L)		
47B	Red River Trail (Riverhaven Road to 46th Ave S)	$922,000	(T)		Improving bike route connectivity
	Construct a shared use trail through River Oaks Park.	$737,600	(F)		
			(S)		
		$184,400	(L)		
48B	Riverhaven Road (46th Ave S to CR 74)	$2,000,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$1,600,000	(F)		
			(S)		
		$400,000	(L)		

Total Estimate Cost of Long-Range Projects	$69,517,000
Total Estimated Revenue for Long-Range	$69,810,000
Total Revenue Remaining	$293,000

TRANSIT

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
33T	Bus related Facility Improvements	$3,000,000	(T)		
	In approximately 2020, 2023, and 2027	$2,400,000	(F)		
			(S)		
		$600,000	(L)		

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
34T	Shelters and Passenger Facility Improvements	$500,000	(T)		
		$400,000	(F)		
			(S)		
		$100,000	(L)		
35T	Replace Paratransit Vehicle #1191	$392,000	(T)		
	Replace Unit #1191 in approximately 2021, 2026, and 2031	$313,600	(F)		
			(S)		
		$78,400	(L)		
36T	Replace Paratransit Vehicle #1177	$425,000	(T)		
	Replace Unit #1177 in approximately 2023, 2028, and 2033	$340,000	(F)		
			(S)		
		$85,000	(L)		
37T	Replace Paratransit Vehicle #1150	$392,000	(T)		
	Replace Unit #1150 in approximately 2021, 2026, and 2031	$313,600	(F)		
			(S)		
		$78,400	(L)		
38T	Replace New Paratransit Vehicle	$560,000	(T)		
	Replace vehicle purchased in 2015 in approximately 2020, 2025, 2030, and 2035	$448,000	(F)		
			(S)		
		$112,000	(L)		
39T	Purchase New Paratransit Vehicle	$387,000	(T)		
	Purchase new Paratransit vehicle to expand service in approximately 2021. Replace vehicle in approximately 2026 and 2031	$309,600	(F)		
			(S)		
		$77,400	(L)		
40T	Purchase New Paratransit Vehicle	$285,000	(T)		
	Purchase new Paratransit vehicle to expand service in approximately 2026. Replace vehicle in approximately 2031	$228,000	(F)		
			(S)		
		$57,000	(L)		

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
41T	Purchase New Paratransit Vehicle	$156,000	(T)		
	Purchase new Paratransit vehicle to expand service in approximately 2031.	$124,800	(F)		
			(S)		
		$31,200	(L)		
42T	Replace Fixed-Route Transit Vehicle #370	$415,000	(T)		
	Replace Unit #370 in approximately 2027	$332,000	(F)		
			(S)		
		$83,000	(L)		
43T	Replace Fixed-Route Transit Vehicle #371	$415,000	(T)		
	Replace Unit #371 in approximately 2027	$332,000	(F)		
			(S)		
		$83,000	(L)		
44T	Replace Fixed-Route Transit Vehicle #380	$415,000	(T)		
	Replace Unit #380 in approximately 2027	$332,000	(F)		
			(S)		
		$83,000	(L)		
45T	Replace Fixed-Route Transit Vehicle #381	$415,000	(T)		
	Replace Unit #381 in approximately 2027	$332,000	(F)		
			(S)		
		$83,000	(L)		
46T	Replace Fixed-Route Transit Vehicle #382	$415,000	(T)		
	Replace Unit #382 in approximately 2027	$332,000	(F)		
			(S)		
		$83,000	(L)		
47T	Replace Fixed-Route Transit Vehicle #590	$450,000	(T)		
	Replace Unit #590 in approximately 2029	$360,000	(F)		
			(S)		
		$90,000	(L)		

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
48T	Replace Fixed-Route Transit Vehicle #591	$450,000	(T)		
	Replace Unit #591 in approximately 2029	$360,000	(F)		
			(S)		
		$90,000	(L)		
49T	Replace Fixed-Route Transit Vehicle #592	$450,000	(T)		
	Replace Unit #592 in approximately 2029	$360,000	(F)		
			(S)		
		$90,000	(L)		
50T	Replace Fixed-Route Transit Vehicle #593	$450,000	(T)		
	Replace Unit #593 in approximately 2029	$360,000	(F)		
			(S)		
		$90,000	(L)		
51T	Replace Fixed-Route Transit Vehicle #1010	$341,000	(T)		
	Replace Unit #1010 in approximately 2022	$272,800	(F)		
			(S)		
		$68,200	(L)		
52T	Replace New Fixed-Route Transit Vehicle	$485,000	(T)		
	Replace new fixed-route vehicle purchased in 2019 in approximately 2031	$388,000	(F)		
			(S)		
		$97,000	(L)		
53T	Purchase New Fixed-Route Transit Vehicle	$415,000	(T)		
	Purchase new fixed-route transit vehicle for service expansion in approximately 2027.	$332,000	(F)		
			(S)		
		$83,000	(L)		
54T	Purchase New Fixed-Route Transit Vehicle	$568,000	(T)		
	Purchase new fixed-route transit vehicle for service expansion in approximately 2035.	$454,400	(F)		
			(S)		
		$113,600	(L)		

Moorhead Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
55T	Metro Senior Ride -- Replace Expansion Van	$550,000	(T)		
	Replace passenger mini van in 2022, 2025, 2028, 2031, and 2034	$440,000	(F)		
			(S)		
		$110,000	(L)		
56T	Metro Senior Ride -- Replace Van	$550,000	(T)		
	Replace passenger mini van in 2022, 2025, 2028, 2031, and 2034	$440,000	(F)		
			(S)		
		$110,000	(L)		
57T	Bus Related Equipment	$200,000	(T)		
		$160,000	(F)		
			(S)		
		$40,000	(L)		

Total Estimate Cost of Short-Range Transit	$13,081,000
Total Estimated Revenue for Short-Range Transit Projects	$13,490,000
Total Revenue Remaining for Transit	$409,000

Moorhead Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

ILLUSTRATIVE

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L1	15th Avenue North (bridge over Red River)	$5,000,000	(T)	Total project costs are $10,000,000, and will be shared with City of Fargo	Improving network security and capacity
	Reconstruct bridge, raising above 100 year flood plain.	$4,000,000	(F)		
			(S)		
		$1,000,000	(L)		
L2	15th Avenue North (Red River Bridge to 28th Street)	$11,250,000	(T)		System preservatin
	Rebuild as a three-lane urban arterial with adjacent shared-use path.	$9,000,000	(F)		
			(S)		
		$2,250,000	(L)		
L3	11th Street Grade Separation	$37,000,000	(T)		Improving network connectivity, operations, and safety
	Construct grade separated underpass of railroad tracks in the downtown area, as per the 2007 study	$29,600,000	(F)		
			(S)		
		$7,400,000	(L)		
L4	20th Street South (40th Ave S to 46th Ave S)	$1,875,000	(T)		Improving connectivity in a growth area
	Construct a three lane urban roadway with a separated bikeway, with ROW preservation for a future five lane facility.	$1,500,000	(F)		
			(S)		
		$375,000	(L)		
L5	20th Street (46th Ave S to 50th Ave S)	$2,540,000	(T)		Improving connectivity in a growth area
	Rebuild as a two-lane urban arterial as per the 2008 planning study, including appropriate on- or off-road bicycle facility.	$2,032,000	(F)		
			(S)		
		$508,000	(L)		
L6	20th Street (I-94 interchange)	$18,286,000	(T)		Improving traffic circulation
	Reconstruct and expand the interchange to a full-movement interchange as per the 2008 planning study	$14,628,800	(F)		
			(S)		
		$3,657,200	(L)		
L7	20th Street (50th Ave S to 60th Ave S)	$5,100,000	(T)		Improving connectivity in a growth area
	Construct as a two-lane urban arterial as per the 2008 planning study, including appropriate on- or off-road bicycle facility.	$4,080,000	(F)		
			(S)		
		$1,020,000	(L)		

Moorhead Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

ILLUSTRATIVE

L8	20th Avenue South (CR 81 to CR 78)	$687,500	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$550,000	(F)		
			(S)		
		$137,500	(L)		
L9	4th Avenue North (11th St to 20th St)	$2,625,000	(T)		System preservatin
	Reconstruct roadway as an urban collector. Appropriate accommodations for bicycles and pedestrians will be part of the project.	$2,100,000	(F)		
			(S)		
		$525,000	(L)		
L10	14th Street (34th Ave S to 40th Ave S)	$1,875,000	(T)		System preservatin
	Reconstruct as an urban three-lane collector, with apporpriate accommodations being made for bicycles and pedestrians	$1,500,000	(F)		
			(S)		
		$375,000	(L)		
L11	28th Street North (TH 10 to 15th Ave N)	$3,750,000	(T)		System preservatin
	Reconstruct roadway as a three-lane urban collector. Appropriate accommodations for bicycles and pedestrians will be part of the project.	$3,000,000	(F)		
			(S)		
		$750,000	(L)		
L12	50th Avenue South (TH 75 to 20th Street)	$2,500,000	(T)		System preservatin
	Rebuild as a two-lane urban arterial.	$2,000,000	(F)		
			(S)		
		$500,000	(L)		
L13	46th Street South (12th Ave S to 28th Ave S)	$2,250,000	(T)		Improving connectivity in a growth area
	Construct a three lane urban roadway, including appropriate on- or off-road bicycle facility.	$1,800,000	(F)		
			(S)		
		$450,000	(L)		
L14	CR 75 (TH 75 to CSAH 52)	$3,187,500	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility	$2,550,000	(F)		
			(S)		
		$637,500	(L)		

Moorhead Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

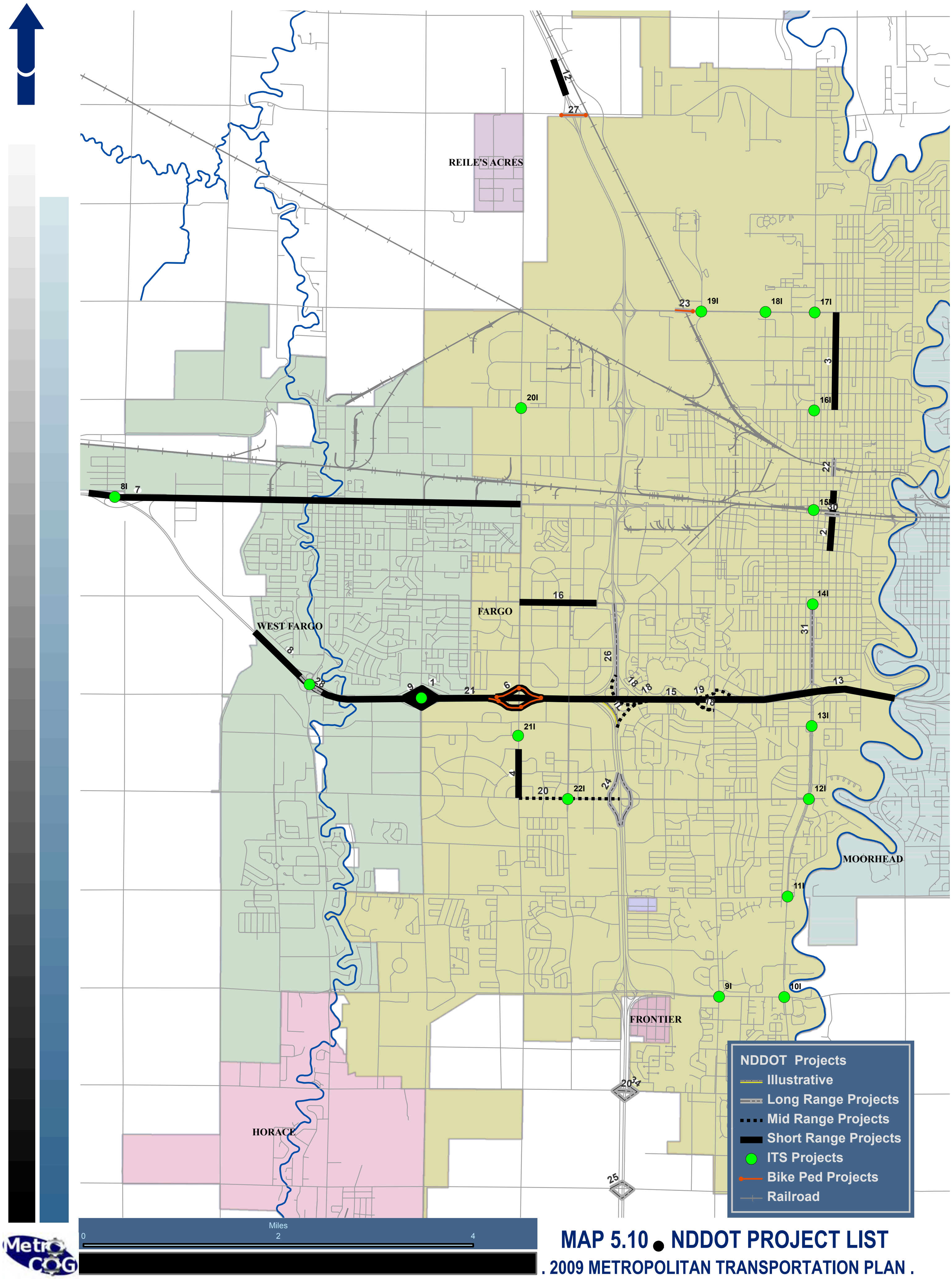
PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

ILLUSTRATIVE

L15	14th Street South (28th Ave S to 30th Ave S)	$1,750,000	(T)		Improving bike route connectivity
	Construct approriate on- or off-road bicycle facility; cost includes the construction of a grade separated crossing of I-94	$1,400,000	(F)		
			(S)		
		$350,000	(L)		



MAP 5.10 • NDDOT PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

ND DOT Future Improvement Projects

6-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

#	Description	Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1	Veterans Blvd & I-94 Interchange	$4,326,000	(T)		Improving connectivity to the interstate highway
	Ramp revisions EB & WB for City of West Fargo (AC payback for 2009 construction)	$3,460,800	(F)	STP	
		$432,600	(S)		
		$432,600	(L)	West Fargo	
2	10th Street North (8th Ave S to 2nd Ave N)	$3,374,592	(T)		Pavement restoration and pedestrian improvements
	Rehabilitate 10th St from 8th Ave S to 2nd Ave N underpass to repair pavement, retaining walls, sidewalks, and lighting.	$2,699,674	(F)	STP/R	
		$337,459	(S)		
		$337,459	(L)	Fargo	
3	10th Street North (12th Ave N to 17th Ave N)	$4,000,000	(T)		Pavement restoration
	Reconstruct 10th St N in Fargo from 12th Ave N to 17th Ave N.	$2,240,000	(F)	STP/R	
		$280,000	(S)		
		$1,480,000	(L)	Fargo	
4	45th Street (26th Ave S to 32nd Ave S)	$9,375,000	(T)		Adding capacity in a high growth area
	Reconstruct	$7,500,000	(F)		
			(S)		
		$1,875,000	(L)	Fargo	
5	I-94 (Drain #21 to 45th St)	$3,244,000	(T)		Improves safety
	Install high mast lighting fixtures from Drain #21 to 45th Street	$2,919,600	(F)	INT	
		$324,400	(S)		
			(L)		
6	I-94 & 45th Street Interchange	$8,396,000	(T)		Adding capacity at an interchange already experiencing congestion
	Reconstruction and widening of I-94 interchange. Project includes pedestrian sidewalk/ multi use path and the addition of auxiliary lanes to I-94 from 45th St ramps to I-29 interchange.	$6,656,000	(F)	STP/IM	
		$740,000	(S)		
		$1,000,000	(L)	Fargo	
7	Main Avenue (I-94 to 45th St)	$16,250,000	(T)		Adding capacity and reconfiguring roadway to improve safety
	Main Avenue construction project. Project includes pedestrian sidewalk/multi use path.	$13,000,000	(F)	STP/R	
		$1,625,000	(S)		
		$1,625,000	(L)	West Fargo	

ND DOT Future Improvement Projects

6-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
8	Main Avenue (I-94 to 45th St)	$5,626,000	(T)		Adding capacity and reconfiguring roadway to improve safety
	ROW for the reconstruction of Main Ave from I-94 interchange to 45th St in West Faro. Project includes pedestrian sidewalk/ multi use path. Ancillary to Project #7.	$4,500,800	(F)	STP/R	
		$562,600	(S)		
		$562,600	(L)	West Fargo	
9	Main Avenue (I-94 to 45th Street)	$3,750,000	(T)		Adding capacity and reconfiguring roadway to improve safety
	ROW for the reconstruction of Main Avenue Project (I-94 to 45th Street) in West Fargo. Project includes pedestrian sidewalk/ multi use path. Ancillary to Project #7.	$3,000,000	(F)	STP/R	
		$375,000	(S)		
		$375,000	(L)	West Fargo	
10	Main Avenue (5th St E to 45th St)	$3,750,000	(T)		Adding capacity and reconfiguring roadway to improve safety
	ROW for Main Ave reconstruction from 5th St to 45th St in West Fargo	$3,000,000	(F)	STP/R	
		$375,000	(S)		
		$375,000	(L)	West Fargo	
11	12th Avenue North	$160,000	(T)		Improving aesthetics
	Landscaping along 12th Ave N	$125,000	(F)	TE	
			(S)		
		$35,000	(L)	Fargo	
12	I-29 (North Fargo Interchange to Sheyenne River)	$8,944,000	(T)		Pavement restoration
	Reconstruct SB lanes	$8,049,600	(F)		
		$894,400	(S)		
		$0	(L)		
13	I-94 (1 mile west of 45th St to near 42nd St)	$56,000	(T)		Pavement restoration
	Concrete pavement repair	$50,400	(F)	IM	
		$5,600	(S)		
		$0	(L)		

ND DOT Future Improvement Projects

6-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

No.	Description	Estimated Cost: Total (T) / Federal (F) / State (S) / Local (L)		Explanation of Cost Breakdown	Notes
14	I-94 (25th St interchange to Red River)	$156,000	(T)		Pavement restoration
	Concrete pavement repair	$140,400	(F)	IM	
		$15,600	(S)		
		$0	(L)		
15	I-94 (0.5 miles east of I-29 to Red River)	$223,000	(T)		Pavement restoration
	Concrete pavement repair	$200,700	(F)	IM	
		$22,300	(S)		
		$0	(L)		
16	13th Ave S from 45th Street to 38th St	$14,500,000	(T)		Improving roadway operations, safety, and drainage; also improving pedestrian safety
	Reconstruct as a 6-lane concrete section, with multi-use path on south side, sidewalk on the north side, and landscaping in boulevards. Provide dual left-turn lanes from 13th Ave S onto 43rd 1/2 St. Include median refuge islands to improve pedestrian safety. Increase street inlet and storm sewer system capacity to help reduce street flooding problems.	$11,600,000	(F)		
		$1,450,000	(S)		
		$1,450,000	(L)	Fargo	

ITS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1I	Various Locations	$250,000	(T)		Improving roadway operational efficiency
	Participate in Regional Integration of Traffic Signal Systems	$200,000	(F)		
		$50,000	(S)		
			(L)		
2I	Various Locations	$23,400	(T)		Improving roadway operational efficiency
	Participate in Regional Traveler Information Management System	$18,720	(F)		
		$4,680	(S)		
			(L)		
3I	Various Locations	$130,000	(T)		Improving roadway operational efficiency
	Participate in Regional CCTV Management System	$104,000	(F)		
		$26,000	(S)		
			(L)		

ND DOT Future Improvement Projects

6-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility – Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
4I	Traffic Operations Center	$15,000	(T)		Improving roadway operational efficiency
	Participate in the Development of a Regional Traffic Operations Center	$12,000	(F)		
		$3,000	(S)		
			(L)		
5I	Various Locations	$25,000	(T)		Improving roadway operational efficiency
	Participate in the ITS Network Infrastrucutre Deployment	$20,000	(F)		
		$5,000	(S)		
			(L)		
6I	I-94 (Veterans Blvd Interchange)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
7I	I-94 (Sheyenne Street Interchange)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
8I	I-94 (Main Ave Interchange)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
9I	52nd Ave (25th Street Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
10I	52nd Ave (University Dr Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		

ND DOT Future Improvement Projects

6-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
11I	University Drive (40th Ave S Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
12I	University Drive (32 Ave S Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
13I	University Drive (25th Ave S Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
14I	University Drive (13th Ave S Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
15I	University Drive (Main Ave Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
16I	University Drive (12th Ave N Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
17I	University Drive (19th Ave N Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		

ND DOT Future Improvement Projects

6-Oct-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

Description | Financial Feasibility | Notes

Estimated Cost: Total (T), Federal (F), State (S), Local (L) | Explanation of Cost Breakdown

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
18I	19th Ave N (18th St Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
19I	19th Ave N (Dakota Drive Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
20I	45th St (12th Ave N Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
21I	45th St (Amber Valley Parkway Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		
22I	32nd Ave S (42nd St Intersection)	$10,000	(T)		Improving roadway operational efficiency
	Deploy CCTV	$8,000	(F)		
		$2,000	(S)		
			(L)		

Total Estimate Cost of Short-Range Projects	$86,743,992
Total Estimated Revenue for Short-Range	$123,140,000
Total Revenue Remaining	$36,396,008

ND NOT Potential Future Improvement Projects

6-Oct-09

MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
STREETS AND HIGHWAYS					
17	Main Avenue Rehabilitate Main Ave pavement and enhance as a Complete Street; add pedestrian enhancements and update lighting	$4,000,000	(T)		Pavement restoration; bike/ped improvements. 11th St to 14th St completed as part of University Dr project 2007.
		$3,200,000	(F)		
		$400,000	(S)		
		$400,000	(L)		
18	I-29 & I-94 Tri-level fly-over Add second through lane and integrate with merge and weave areas for I-94 EB on-ramp, I -29 EB through lanes, and 25th St EB off-ramp	$35,500,000	(T)		Adding capacity to a corridor already experiencing congestion issues
		$28,400,000	(F)		
		$3,550,000	(S)		
		$3,550,000	(L)	Fargo	
19	25th Street / I-94 Interchange Make improvements per 2008 study, including widening the overpass structure, a new on-ramp in south-east quadrant, and shifting the ramps in the south-west quadrant to allow for better tangent and better alignment to the 25th Street intersection. Shallow I-beams for the structure are necessary to maintain minimum clearance under the structure.	$11,500,000	(T)		Adjusting ramp configuration to improve arterial roadway operations
		$9,200,000	(F)		
		$1,150,000	(S)		
		$1,150,000	(L)	Fargo	
20	32nd Ave S (I-29 to 45th St) Widen roadway to 6-lane facility. Project will include landscaping in boulevards, relocation of power lines on north side of corridor, sidewalk on north side, and a multi-use path on south side of corridor. Purchase of some Right-of-Way will be necessary	$26,700,000	(T)		Adding capacity to a corridor in a high-growth area
		$21,360,000	(F)		
		$2,670,000	(S)		
		$2,670,000	(L)	Fargo	
21	I-94 (Veterans Blvd to 45th St Interchanges) Widen corridor to 6-lane facility.	$7,800,000	(T)		Addiing capacity to a corridor in a high-growth area
		$7,020,000	(F)		
		$780,000	(S)		
			(L)		

Total Estimate Cost of Mid-Range Projects	$85,500,000
Total Estimated Revenue for Mid-Range	$124,850,000
Total Revenue Remaining	$39,350,000

ND DOT Potential Future Improvement Projects

6-Oct-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

STREETS AND HIGHWAYS

22	10th Street (4th Ave N to 7th Ave N)	$15,800,000	(T)		Improving bike/ped connection and roadway geometrics
	Between 4th Ave N and 7th Ave N, reconstruct underpass to an improved urban section, and improve adjacent shared-use path to meet current AASHTO standards.	$12,640,000	(F)		
			(S)		
		$3,160,000	(L)	Fargo	
23	19th Avenue N and Railroad underpass	$44,730,000	(T)		
	Reconstruct underpass and add a shared use path.	$35,784,000	(F)		
		$4,473,000	(S)		
		$4,473,000	(L)		
24	32nd Ave S Interchange at I-29	$42,000,000	(T)		Reconfiguring ramps to improve roadway operations
	Bridge is listed as Funcitonally Obsolete in most recent survey; interchange upgrades were recommended as part of 32nd Ave S corridor study, including loop ramp in NW quadrant of interchange	$33,600,000	(F)		
		$4,200,000	(S)		
		$4,200,000	(L)	Fargo	
25	76th Avenue South at I-29	$42,000,000	(T)		Improving roadway connectivity over and to interstate highway
	Construct interchange with overpass and ramps	$33,600,000	(F)		
		$4,200,000	(S)		
		$4,200,000	(L)		
26	I-29 (I-94 to 13th Ave S)	$0	(T)		Specific improvements will be identified (and costs will then be estimated) as part of the 2009 Interstate Operations Study
	Congestion mitigation project per the 2008 Interstate Operations Study	$0	(F)		
		$0	(S)		
			(L)		
27	I-29 and County Road 20 Interchange	$20,000,000	(T)		Improving roadway geometrics
	Reconstruct overpass and add a shared use path.	$16,000,000	(F)		
		$4,000,000	(S)		
			(L)		

ND DOT Potential Future Improvement Projects

6-Oct-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
28	I-94 Overpass of Sheyenne St Bridge is listed as Funcitonally Obsolete in most recent survey; interchange bridge structure changes are possible to improve traffic flow on Sheyenne Street	$42,000,000	(T)		Improving interchange geometrics and improving bridge structure to allow for a wider urban arterial underneath
		$33,600,000	(F)		
		$4,200,000	(S)		
		$4,200,000	(L)	West Fargo	
29	I-94 from I-29 to University Drive Congestion mitigation project per the 2008 Interstate Operations Study	$0	(T)		Specific improvements will be identified (and costs will then be estimated) as part of the 2009 Interstate Operations Study
		$0	(F)		
		$0	(S)		
			(L)		
30	Main Avenue (US 10) Overpass of 10th Street in Fargo Bridge is listed as Functionally Obsolete in most recent survey. Project would include improving the urban roadway section and the adjacent sidewalks to current AASHTO standards.	$41,500,000	(T)		Improving roadway geometrics and improving bike/ped connection
		$33,200,000	(F)		
		$4,150,000	(S)		
		$4,150,000	(L)	Fargo	
31	South University Drive (13th Ave S to I-94 North Ramps) Make improvements per 2009 corridor study	$21,000,000	(T)		Improving roadway operations and adding capacity as needed
		$16,800,000	(F)		
		$2,100,000	(S)		
		$2,100,000	(L)	Fargo	
32	Regional Network Security/Operations Improvements Improve Regionally Significant Transportation Infrastructure to ensure it functionality during times of manmade or natural disasters.	$50,000,000	(T)		Improving security of regional roadway network
		$40,000,000	(F)		
		$5,000,000	(S)		
		$5,000,000	(L)		
33	64th Ave S Grade Separation Construct a 4-lane (200 feet of right-of-way) overpass of I-29. Continue to preserve right-of-way for future interchange at this location. (Correlates to Fargo Project #41)	$20,000,000	(T)		Improving roadway connectivity over interstate highway
		$16,000,000	(F)		
		$2,000,000	(S)		
		$2,000,000	(L)	Fargo	

ND DOT Potential Future Improvement Projects

6-Oct-09

LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost Breakdown	
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
34	64th Ave S Interchange at I-29	$9,000,000	(T)		Improving roadway connectivity to interstate highway
	Add ramps to complete the 64th Ave S interchange	$7,200,000	(F)		
		$900,000	(S)		
		$900,000	(L)	Fargo	

Total Estimate Cost of Long-Range Projects	$348,030,000
Total Estimated Revenue for Long-Range	$493,730,000
Total Revenue Remaining	$145,700,000

ND DOT Potential Future Improvement Projects

6-Oct-09

ILLUSTRATIVE PROJECT LIST

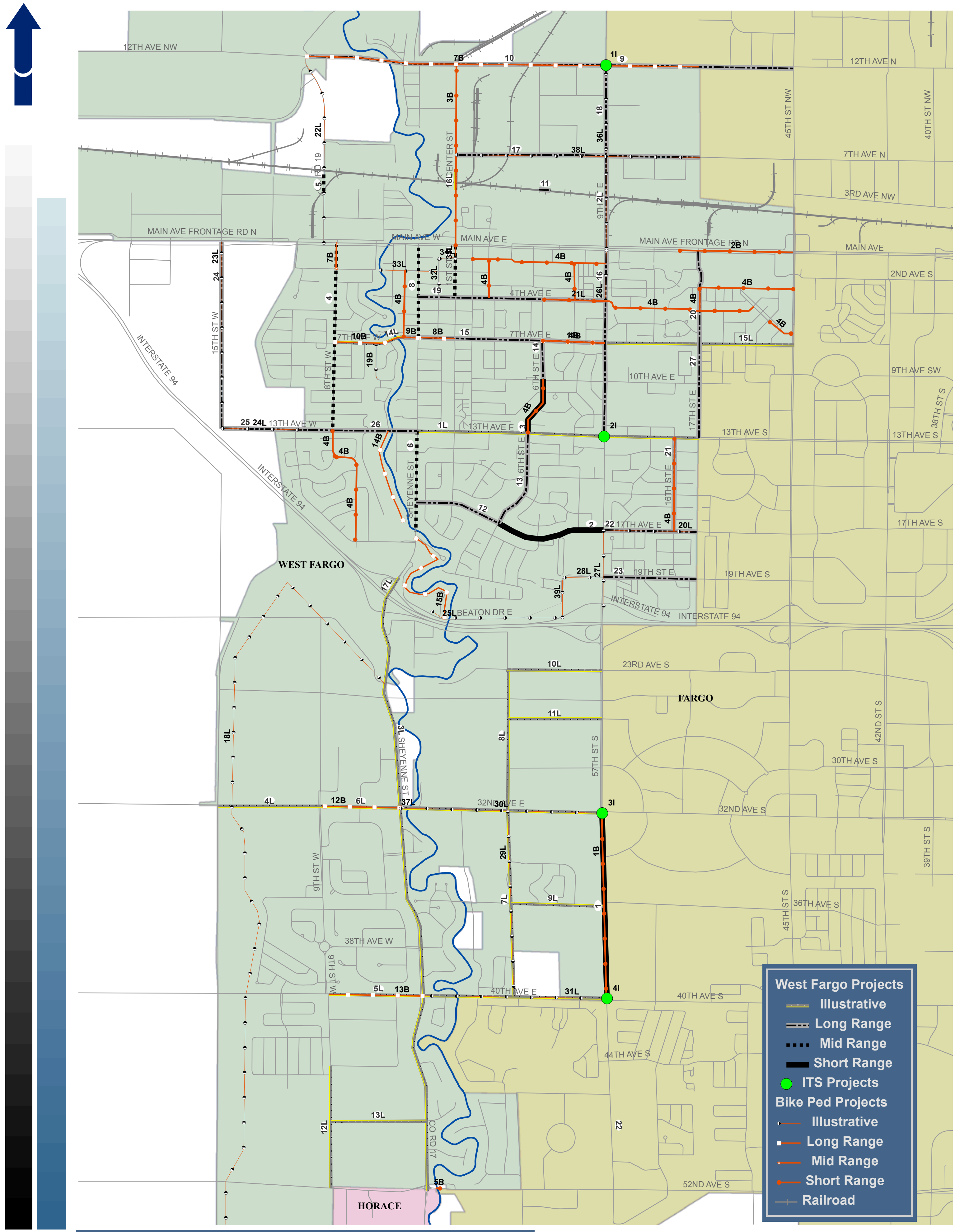
PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost Breakdown	
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

ILLUSTRATIVE

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

1L	I-29 and I-94 Interchange	$25,000,000	(T)	Cost estimate is in 2009 dollars	
	Construct tri-level fly-over ramp for northbound I-29 to westbound I-94 traffic.	$22,500,000	(F)		
		$2,500,000	(S)		
			(L)		



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MAP 5.11 ● WEST FARGO PROJECT LIST

. 2009 METROPOLITAN TRANSPORTATION PLAN .

West Fargo Potential Future Improvement Projects

2-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

STREETS AND HIGHWAYS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1	7th Avenue East (9th St E to 45th St W)	$4,525,000	(T)		System preservation
	Rebuild as an urban 3-lane collector	$3,620,000	(F)		
			(S)		
		$905,000	(L)		
2	17th Avenue South (6th St E to 9th St E)	$625,000	(T)		Improving roadway operations
	Add turning lanes at key intersections to facilitate traffic flow	$500,000	(F)		
			(S)		
		$125,000	(L)		
3	6th Street East (13th Ave S to 10th Ave S)	$1,265,000	(T)		System preservation
	Reconstruct from 13th Ave to 10th Ave.	$1,012,000	(F)		
			(S)		
		$253,000	(L)		

BICYCLES AND PEDESTRIANS

No.	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1B	Veterans Blvd (32nd Ave E to 40th Ave E)	$0	(T)	Project will be completed as part of a larger roadway reconstruction project, so costs are reflected in the roadway project.	Improving bike route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$0	(F)		
			(S)		
		$0	(L)		
2B	Main Avenue (16th St to 45th St)	$421,000	(T)	Project will be completed as part of a larger roadway reconstruction project, so costs are reflected in the roadway project.	Improving bike route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$336,800	(F)		
			(S)		
		$84,200	(L)		
3B	Center Street (Main Ave to 12th Ave N)	$700,000	(T)		Improving bike route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$560,000	(F)		
			(S)		
		$140,000	(L)		

West Fargo Potential Future Improvement Projects

2-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Estimated Cost: Total (T) / Federal (F) / State (S) / Local (L)		Explanation of Cost Breakdown	Notes
4B	Add signage to designate route as shared roadway	$50,000	(T)		Improving bike network visibility and usability
	>8th Street West from 13th Ave W to Elmwood Dr. >7th Street West from Elmwood Dr. to Sheyenne St >Elmwood Drive from 8th St W to 7th St W >16th Street East from 13th Ave E to 17th Ave E >7th Avenue West from 8th St W to 2nd St W >7th Avenue East from 6th St E to 9th St E >Morrison Street from 7th St E to 2nd Ave W >2nd Avenue West from Morrison St to 2nd St W >2nd Street West from 4th Ave W to 1st Ave W >1st Avenue from 2nd St W to 9th St E >3rd Street East from 1st Ave E to 4th Ave E >7th Street East from 1st Ave E to 4th Ave E >4th Avenue East from 6th St E to Meadow Ridge Parkway >2nd Avenue East from 17th St E to 45th St >17th Street East from 2nd Ave E to 4th Ave E >Meadow Ridge Parkway from 22nd St E to 45th St >6th Street E from 10th Ave E to 13th Ave E	$40,000	(F)		
			(S)		
		$10,000	(L)		
5B	Sheyenne River Bridge at 52nd Ave S	$250,000	(T)		Improving bike route connectivity and access
	Construct a bicyle-pedestrian crossing of the Sheyenne River, either as part of a roadway bridge or as a stand-alone structure	$200,000	(F)		
			(S)		
		$50,000	(L)		

INTELLIGENT TRANSPORTATION SYSTEMS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
1I	9th Street East (12th Ave N)	$1,000	(T)		Improving roadway network operations
	Deploy CCTV	$800	(F)		
			(S)		
		$200	(L)		
2I	9th Street East (13th Ave S)	$10,000	(T)		Improving roadway network operations
	Deploy CCTV	$8,000	(F)		
			(S)		
		$2,000	(L)		
3I	Veterans Boulevard (32nd Ave S)	$10,000	(T)		Improving roadway network operations
	Deploy CCTV	$8,000	(F)		
			(S)		
		$2,000	(L)		

West Fargo Potential Future Improvement Projects

2-Dec-09

SHORT-RANGE PROJECT LIST 2010 THROUGH 2015

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		
4I	Veterans Boulevard (40th Ave S)	$10,000	(T)		Improving roadway network operations
	Deploy CCTV	$8,000	(F)		
			(S)		
		$2,000	(L)		
5I	Various Locations	$250,000	(T)		Improving roadway network operations
	Participate in Regional Integration of Traffic Signal Systems	$200,000	(F)		
			(S)		
		$50,000	(L)		
6I	Various Locations	$23,400	(T)		Improving roadway network operations
	Participate in Regional Traveler Information Management System	$18,720	(F)		
			(S)		
		$4,680	(L)		
7I	Various Locations	$130,000	(T)		Improving roadway network operations
	Participate in Regional CCTV Management System	$104,000	(F)		
			(S)		
		$26,000	(L)		
8I	Traffic Operations Center	$15,000	(T)		Improving roadway network operations
	Participate in the Development of a Regional Traffic Operations Center	$12,000	(F)		
			(S)		
		$3,000	(L)		
9I	Various Locations	$25,000	(T)		Improving roadway network operations
	Participate in the ITS Network Infrastrucutre Deployment	$20,000	(F)		
			(S)		
		$5,000	(L)		

Total Estimate Cost of Short-Range Projects	$8,310,400
Total Estimated Revenue for Short-Range	$8,330,000
Total Revenue Remaining	$19,600

West Fargo Potential Future Improvement Projects

10-Sep-09

MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost	
	Total	(T)	Breakdown	
	Federal	(F)		
	State	(S)		
	Local	(L)		

STREETS AND HIGHWAYS

4	8th Street W (Main Ave to 13th Ave W)	$4,000,000	(T)		System preservation
	Reconstruct two-lane roadway with appropriate on- or off-road bicycle facility between Main Avenue and 2nd Ave W.	$3,200,000	(F)		
			(S)		
		$800,000	(L)		
5	CR 19 (Stockman's Road) at Drain 21	$570,000	(T)	Costs to be shared with Cass County. Total project cost is estimated at $2,850,000. Local portion only is shown here.	Rehabilitating a bridge that is structurally deficient
	Bridge Replacement at Drain 21, replace with box culvert.	$0	(F)		
			(S)		
		$570,000	(L)		
6	Sheyenne Street (13th Ave to the Sheyenne River)	$3,560,000	(T)		Adding capacity and improving roadway operations in an area with existing congestion
	Widen Sheyenne St to four lanes with turn lanes between 13th Ave and the Sheyenne River (existing city limits). Interim project may be restriping existing roadway to three lanes.	$2,848,000	(F)		
			(S)		
		$712,000	(L)		
7	Center Street (Main Ave to 4th Ave S)	$150,000	(T)		System preservation
	Pavement rehabilitation	$120,000	(F)		
			(S)		
		$30,000	(L)		
8	Sheyenne Street (13th Ave S to Main Avenue	$470,000	(T)		System preservation
	Pavement rehabilitation	$376,000	(F)		
			(S)		
		$94,000	(L)		

BICYCLES AND PEDESTRIANS

6B	8th Street West (Main Avenue to 2nd Ave West)	$0	(T)	To be completed as part of larger roadway reconstruction project, so costs are shown here as $0	Improving roadway network operations
	Construct most appropriate on- or off-road bicycle facility.		(F)		
			(S)		
			(L)		

West Fargo Potential Future Improvement Projects

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MID-RANGE PROJECT LIST 2016 THROUGH 2020

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

Total Estimate Cost of Mid-Range Projects	$8,750,000
Total Estimated Revenue for Mid-Range	$9,340,000
Total Revenue Remaining	$590,000

West Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

#	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes

STREETS AND HIGHWAYS

#	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
9	12th Ave NW (9th St to Fargo City Limits)	$4,000,000	(T)	Total project costs are estimated to be $8 million. Half of those are shown here; the other half are shown in Fargo's project list.	Safety and capacity improvements in a growing area
	Reconstruct as an urban five-lane section, with a 10' shared-use path on north side and 5' sidewalk on south side. Some project costs shared with City of Fargo -- Fargo Project #25.	$3,200,000	(F)		
			(S)		
		$800,000	(L)		
10	12th Avenue NW (9th St to CR 19)	$13,400,000	(T)		Safety and capacity improvements in a growing area
	Reconstruct as an urban three-lane section with a 10' shared-use path on north side and 5' sidewalk on south side; preserve right-of-way for a five-lane roadway section. Realign CR 17 and/or Armour Street to form a four-legged intersection at 12th Ave NW. Linked to Cass County Project #16.	$10,720,000	(F)		
			(S)		
		$2,680,000	(L)		
11	DMI	$263,000	(T)		Improving roadway operations and safety by removing the need to move very long, very heavy wind towers
	Support Private at-grade crossing of BNSF railroad tracks connecting DMI Industries properties	$210,400	(F)		
			(S)		
		$52,600	(L)		
12	17th Avenue South (6th St E to Sheyenne St)	$337,000	(T)		System preservation
	Pavement rehabilitation	$269,600	(F)		
			(S)		
		$67,400	(L)		
13	6th Street East (13th Ave S to 17th Ave S)	$337,000	(T)		System preservation
	Pavement rehabilitation	$269,600	(F)		
			(S)		
		$67,400	(L)		
14	6th Street East (10th Ave S to 7th Ave S)	$150,000	(T)		System preservation
	Pavement rehabilitation	$120,000	(F)		
			(S)		
		$30,000	(L)		
15	7th Avenue South (9th St E to Sheyenne St)	$990,000	(T)		System preservation
	Pavement rehabilitation	$792,000	(F)		
			(S)		
		$198,000	(L)		

West Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
16	9th Street East (13th Ave S to Main Ave)	$990,000	(T)		System preservation
	Pavement rehabilitation. Project may include an appropriate on- or off-road bicycle facility	$792,000	(F)		
			(S)		
		$198,000	(L)		
17	7th Avenue North (Center St to Fargo City Limits)	$1,285,000	(T)		System preservation
	Pavement rehabilitation. Project may include an appropriate on- or off-road bicycle facility	$1,028,000	(F)		
			(S)		
		$257,000	(L)		
18	9th Street East (Main Avenue to 12th Ave N)	$990,000	(T)		System preservation
	Pavement rehabilitation. Project may include an appropriate on- or off-road bicycle facility	$792,000	(F)		
			(S)		
		$198,000	(L)		
19	4th Avenue South (Sheyenne to 9th St E)	$675,000	(T)		System preservation
	Pavement rehabilitation	$540,000	(F)		
			(S)		
		$135,000	(L)		
20	17th Street East (Main Ave to 7th Ave S)	$505,000	(T)		System preservation
	Pavement rehabilitation	$404,000	(F)		
			(S)		
		$101,000	(L)		
21	16th Street East (13th Ave S to 17th Ave S)	$337,000	(T)		System preservation
	Pavement rehabilitation	$269,600	(F)		
			(S)		
		$67,400	(L)		
22	17th Avenue South (9th St E to Fargo City Limits)	$505,000	(T)		System preservation
	Pavement rehabilitation. Project may include an appropriate on- or off-road bicycle facility	$404,000	(F)		
			(S)		
		$101,000	(L)		

West Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
23	19th Avenue South (9th St E to Fargo City Limits)	$505,000	(T)		System preservation
	Pavement rehabilitation	$404,000	(F)		
			(S)		
		$101,000	(L)		
24	15th Street West (Main Ave to 13th Ave S)	$675,000	(T)		System preservation
	Pavement rehabilitation. Project may include an appropriate on- or off-road bicycle facility	$540,000	(F)		
			(S)		
		$135,000	(L)		
25	13th Avenue South (15th St W to 8th St W)	$611,000	(T)		System preservation
	Pavement rehabilitation. Project may include an appropriate on- or off-road bicycle facility	$488,800	(F)		
			(S)		
		$122,200	(L)		
26	13th Avenue South (8th St W to Sheyenne St)	$505,000	(T)		System preservation
	Pavement rehabilitation	$404,000	(F)		
			(S)		
		$101,000	(L)		
27	17th Street East (7th Ave S to 13th Ave S)	$505,000	(T)		System preservation
	Pavement rehabilitation	$404,000	(F)		
			(S)		
		$101,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Cost		Explanation of Cost Breakdown	Notes
7B	12th Avenue North (CR 19 to 17th St E)	$0	(T)	Project to be completed as part of larger roadway project, so costs are reflected in roadway project.	Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$0	(F)		
			(S)		
		$0	(L)		
8B	7th Avenue (Sheyenne St N to Center St)	$0	(T)	Project to be completed as part of larger roadway project, so costs are reflected in roadway project.	Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$0	(F)		
			(S)		
		$0	(L)		

West Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T), Federal (F), State (S), Local (L)		Explanation of Cost Breakdown	Notes
9B	7th Avenue E (Sukut to Sheyenne River) Construct most appropriate on- or off-road bicycle facility.	$0	(T)	Project to be completed as part of larger roadway project, so costs are reflected in roadway project.	Improving bicycle route connectivity and access
		$0	(F)		
			(S)		
		$0	(L)		
10B	7th Avenue W (8th St W to Bikeway near Morrison St) Construct most appropriate on- or off-road bicycle facility.	$0	(T)	Project to be completed as part of larger roadway project, so costs are reflected in roadway project.	Improving bicycle route connectivity and access
		$0	(F)		
			(S)		
		$0	(L)		
11B	7th Avenue East (6th St E to 9th St E) Construct most appropriate on- or off-road bicycle facility.	$0	(T)	Project to be completed as part of larger roadway project, so costs are reflected in roadway project.	Improving bicycle route connectivity and access
		$0	(F)		
			(S)		
		$0	(L)		
12B	32nd Avenue South (Sheyenne St to 9th St W) Construct most appropriate on- or off-road bicycle facility.	$0	(T)	Project to be completed as part of larger roadway project, so costs are reflected in roadway project.	Improving bicycle route connectivity and access
		$0	(F)		
			(S)		
		$0	(L)		
13B	40th Avenue South (Sheyenne Street to 9th St W) Construct most appropriate on- or off-road bicycle facility.	$0	(T)	Project to be completed as part of larger roadway project, so costs are reflected in roadway project.	Improving bicycle route connectivity and access
		$0	(F)		
			(S)		
		$0	(L)		
14B	Along Sheyenne River South Elmwood Park to Sheyenne St, construct a shared use path.	$790,000	(T)		Improving bicycle route connectivity and access
		$632,000	(F)		
			(S)		
		$158,000	(L)		

West Fargo Potential Future Improvement Projects

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LONG-RANGE PROJECT LIST 2021 THROUGH 2035

PROJECT AREA

	Description	Financial Feasibility			Notes
		Estimated Cost:		Explanation of Cost	
		Total	(T)	Breakdown	
		Federal	(F)		
		State	(S)		
		Local	(L)		
15B	Along Sheyenne River	$1,185,000	(T)		Improving bicycle route connectivity and access
	Sheyenne St to I-94, construct a shared use path.	$948,000	(F)		
			(S)		
		$237,000	(L)		

Total Estimate Cost of Long-Range Projects	$29,540,000
Total Estimated Revenue for Long-Range	$36,960,000
Total Revenue Remaining	$7,420,000

West Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

ILLUSTRATIVE

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L1	13th Avenue (Sheyenne St to 17th St E) Reconstruct as six lane urban section from 17th St to 9th St E with Class I bikeway, and preserve ROW for a future six lane urban section from 9th St E to Sheyenne St linking to Fargo's Long Range Project.	$37,000,000 $29,600,000 $7,400,000	(T) (F) (S) (L)		Adding capacity on a heavily used corridor
L2	9th Street East at BNSF K-O Railway Construct grade seperation at railroad crossing north of Main Avenue	$23,175,000 $18,540,000 $4,635,000	(T) (F) (S) (L)		Improving safety and operations
L3	Sheyenne Street (I-94 to 52nd Ave S) Corridor improvements per ther 2002 Corridor Study with Class I bikeway.	$75,850,000 $60,680,000 $15,170,000	(T) (F) (S) (L)		Adding capacity on a heavily used corridor in a high growth area
L4	32nd Avenue South (14th St W to 9th St W) Reconstruct as a two lane rural section with a 10' shared use path on the north side	$1,800,000 $1,440,000 $360,000	(T) (F) (S) (L)		System preservation
L5	32nd Avenue South (9th St W to Veterans Blvd) Reconstruct as an urban four-lane section with center left-turn bays and a 10' shared use path on north side.	$20,000,000 $16,000,000 $4,000,000	(T) (F) (S) (L)		Adding capacity on a heavily used corridor in a high growth area
L6	40th Avenue South (9th Street W to Veterans Blvd) Reconstruct as an urban median-divided four-lane section with center left-turn bays and a 10' shared use path on north side. Some project costs to be shared with Fargo	$15,800,000 $12,640,000 $3,160,000	(T) (F) (S) (L)		Adding capacity on a heavily used corridor in a high growth area

West Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

L7	4th Street E (32nd Ave E to 40th Ave E)	$5,267,000	(T)		Improving functional class network in a high growth area
	Construct as a two lane urban collector with an appropriate on- or off-road bicycle facility	$4,213,600	(F)		
			(S)		
		$1,053,400	(L)		
L8	4th Street E (32nd Ave E to 23rd Ave S)	$4,210,000	(T)		Improving functional class network in a high growth area
	Construt as a two lane urban collector	$3,368,000	(F)		
			(S)		
		$842,000	(L)		
L9	36th Avenue South (Veterans Blvd to 4th St E)	$3,700,000	(T)		Improving functional class network in a high growth area
	Construt as a two lane urban collector	$2,960,000	(F)		
			(S)		
		$740,000	(L)		
L10	23rd Avenue South (Veterans Blvd to 4th St)	$2,630,000	(T)		Improving functional class network in a high growth area
	Construt as a two lane urban collector	$2,104,000	(F)		
			(S)		
		$526,000	(L)		
L11	28th Avenue South (Veterans Blvd to 4th St)	$2,630,000	(T)		Improving functional class network in a high growth area
	Construt as a two lane urban collector	$2,104,000	(F)		
			(S)		
		$526,000	(L)		
L12	9th Street West (45th Ave S to 52nd Ave S)	$3,700,000	(T)		Improving functional class network in a high growth area
	Construt as a two lane urban collector	$2,960,000	(F)		
			(S)		
		$740,000	(L)		

West Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L13	48th Avenue South (Sheyenne St to 9th St W)	$2,630,000	(T)		Improving functional class network in a high growth area
	Construt as a two lane urban collector	$2,104,000	(F)		
			(S)		
		$526,000	(L)		
L14	7th Avenue West (Sheyenne St to 8th St W)	$2,600,000	(T)		System preservation
	Widen section from Sheyenne St to 8th St West, including left turn bays and parking.	$2,080,000	(F)		
			(S)		
		$520,000	(L)		
L16	Center Street Railroad Underpass	$8,600,000	(T)		Rehabilitating a structurally deficient bridge structure
	Reconstruct the Center St underpass.	$6,880,000	(F)		
			(S)		
		$1,720,000	(L)		
L17	Sheyenne Street at I-94 Interchange	$4,500,000	(T)	Costs to be shared with NDDOT. Total est project costs are $45,000,000.	Improving geometrics to allow for additional roadway capacity
	Participate in reconstruction of Interchange to create more space underneath bridge structure for added capacity on Sheyenne Street	$0	(F)		
			(S)		
		$4,500,000	(L)		

BICYCLES AND PEDESTRIANS

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L18	Sheyenne Diversion (South City Limits to Sheyenne St)	$7,000,000	(T)		Improving bicycle route connectivity and access
	Construct a shared use path.	$5,600,000	(F)		
			(S)		
		$1,400,000	(L)		
L19	Elm Street to Shared Use Path in Elmwood Park N	$131,000	(T)		Improving bicycle route connectivity and access
	Construct shared-use path	$104,800	(F)		
			(S)		
		$26,200	(L)		

West Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

	Description	Estimated Cost		Explanation of Cost Breakdown	Notes
L20	17th Ave East (9th St E to East City Limits)	$658,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$526,400	(F)		
			(S)		
		$131,600	(L)		
L21	4th Ave East (6th St E to 9th St E)	$526,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$420,800	(F)		
			(S)		
		$105,200	(L)		
L22	CR 19 (Main Ave to 12th Ave NW)	$1,450,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$1,160,000	(F)		
			(S)		
		$290,000	(L)		
L23	15th Street W (Main Ave to 13th Ave W)	$1,300,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
L24	13th Avenue W (15th St W to 10th St W)	$526,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$420,800	(F)		
			(S)		
		$105,200	(L)		
L25	Greenway along I-94 (Sheyenne St to 8th St E)	$1,050,000	(T)		Improving bicycle route connectivity and access
	Construct a Class I bikeway (shared use path).	$840,000	(F)		
			(S)		
		$210,000	(L)		

West Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost: Total (T) Federal (F) State (S) Local (L)		Explanation of Cost Breakdown	Notes

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

L26	9th Street E (4th Ave E to Main Ave)	$395,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$316,000	(F)		
			(S)		
		$79,000	(L)		
L27	9th Street and I-94 to 17th Avenue E	$658,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$526,400	(F)		
			(S)		
		$131,600	(L)		
L28	19th Avenue East (8th St E to 9th Street E)	$263,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$210,400	(F)		
			(S)		
		$52,600	(L)		
L29	4th Street East (32nd Ave S to 40th Ave S)	$1,300,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
L30	32nd Avenue South (9th St E to CR 17)	$1,300,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
L31	40th Avenue South (CR 17 to Veterans Blvd)	$1,300,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$1,040,000	(F)		
			(S)		
		$260,000	(L)		

West Fargo Potential Future Improvement Projects

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ILLUSTRATIVE PROJECT LIST

PROJECT AREA

	Description	Financial Feasibility: Estimated Cost		Explanation of Cost Breakdown	Notes
		Total	(T)		
		Federal	(F)		
		State	(S)		
		Local	(L)		

Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

L32	Sukut Street (1st Ave W to 4th Ave E)	$395,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$316,000	(F)		
			(S)		
		$79,000	(L)		
L33	2nd Avenue West (Sheyenne River to Sukut St)	$395,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$316,000	(F)		
			(S)		
		$79,000	(L)		
L34	1st Avenue West (Sukut St to Center St)	$131,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$104,800	(F)		
			(S)		
		$26,200	(L)		
L35	Center Street (1st Ave W to Main Ave)	$131,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$104,800	(F)		
			(S)		
		$26,200	(L)		
L36	9th Street East (Main Ave o 12th Ave NE)	$1,300,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$1,040,000	(F)		
			(S)		
		$260,000	(L)		
L37	32nd Avenue South (at Sheyenne River)	$395,000	(T)		Improving bicycle route connectivity and access
	Construct a bicyle-pedestrian crossing of the Sheyenne River, either as part of a roadway bridge or as a stand-alone structure	$316,000	(F)		
			(S)		
		$79,000	(L)		

West Fargo Potential Future Improvement Projects

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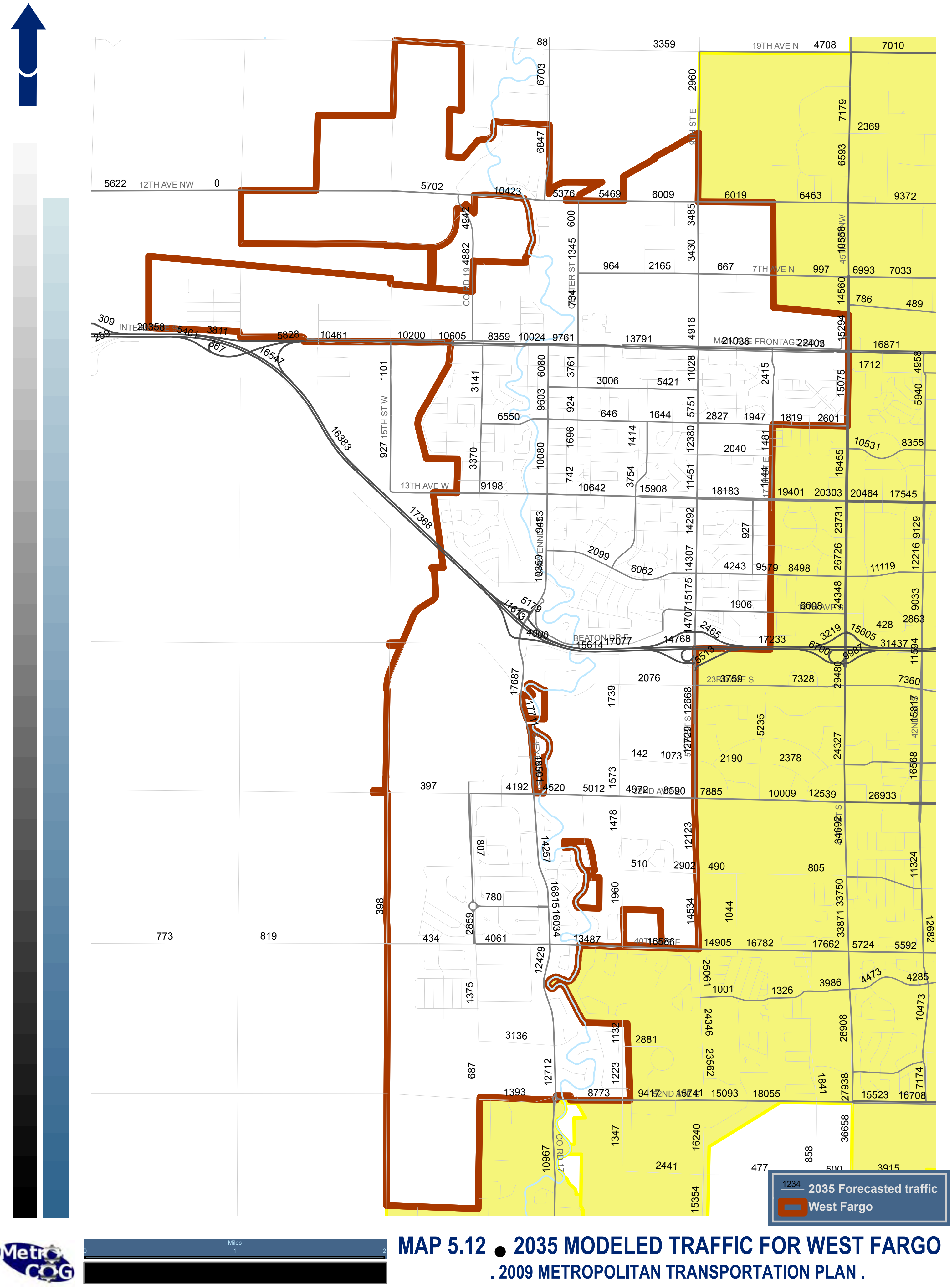
ILLUSTRATIVE PROJECT LIST

PROJECT AREA

Description	Financial Feasibility			Notes
	Estimated Cost:		Explanation of Cost Breakdown	
	Total	(T)		
	Federal	(F)		
	State	(S)		
	Local	(L)		

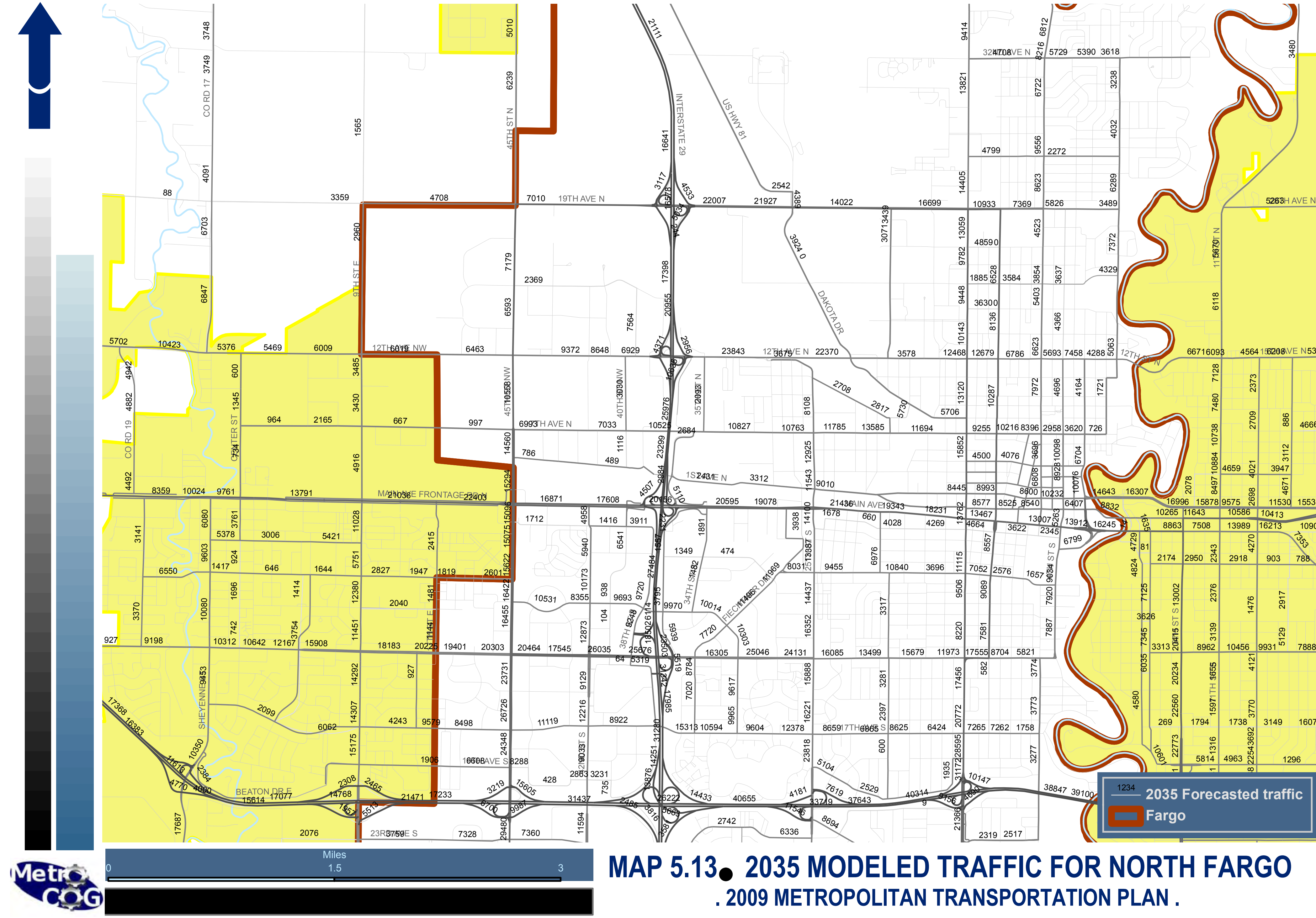
Funding for the projects below has not been identified. However, the project may be completed if funding can be identified in the future.

L38	7th Avenue North (Fargo City Limits to Center St)	$1,711,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$1,368,800	(F)		
			(S)		
		$342,200	(L)		
L39	4th Avenue East (9th St E to L.E. Berger Elementary School)	$395,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$316,000	(F)		
			(S)		
		$79,000	(L)		
L40	8th Street East (I-94 to 19th Ave E)	$395,000	(T)		Improving bicycle route connectivity and access
	Construct most appropriate on- or off-road bicycle facility.	$316,000	(F)		
			(S)		
		$79,000	(L)		



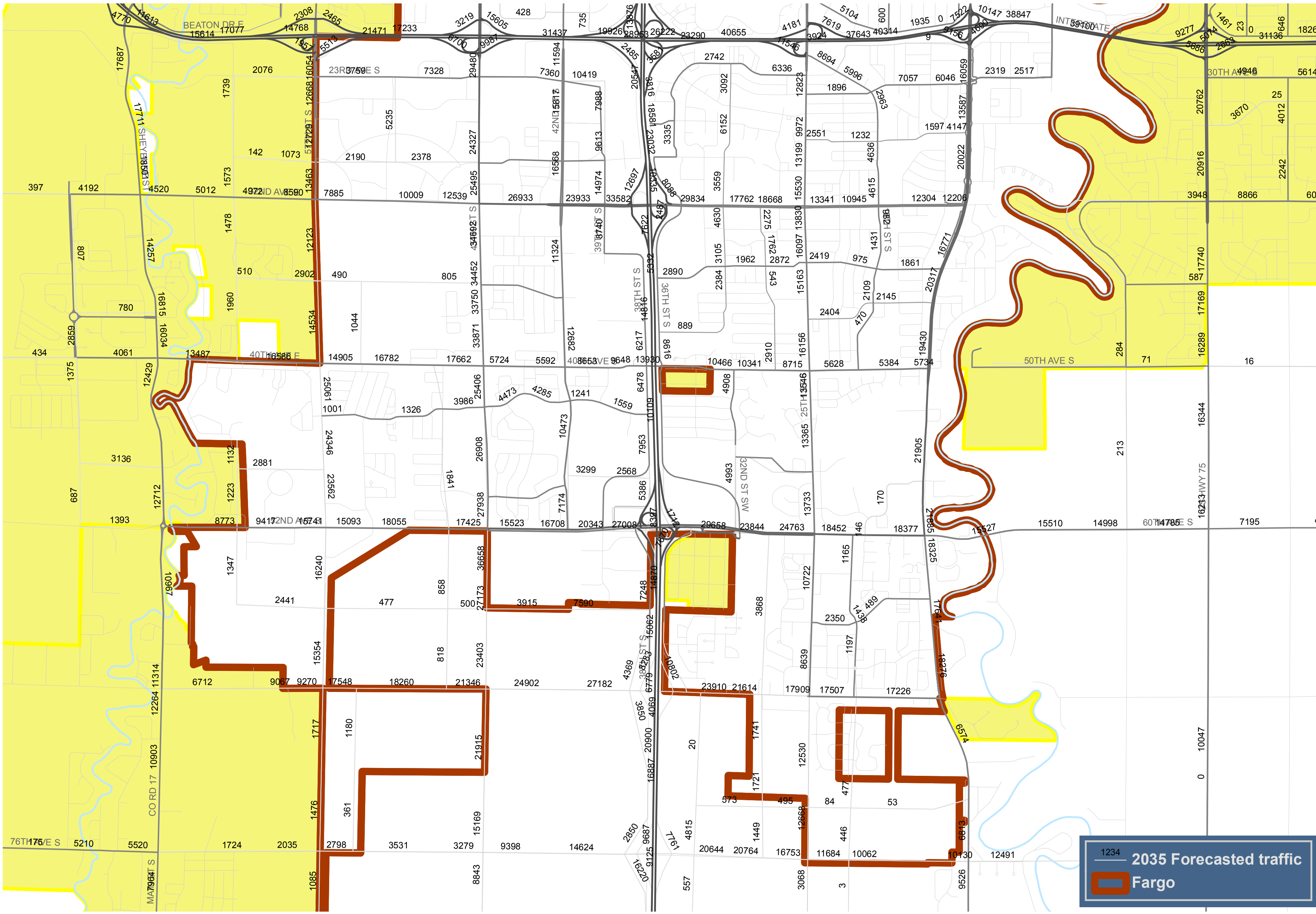
MAP 5.12 • 2035 MODELED TRAFFIC FOR WEST FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



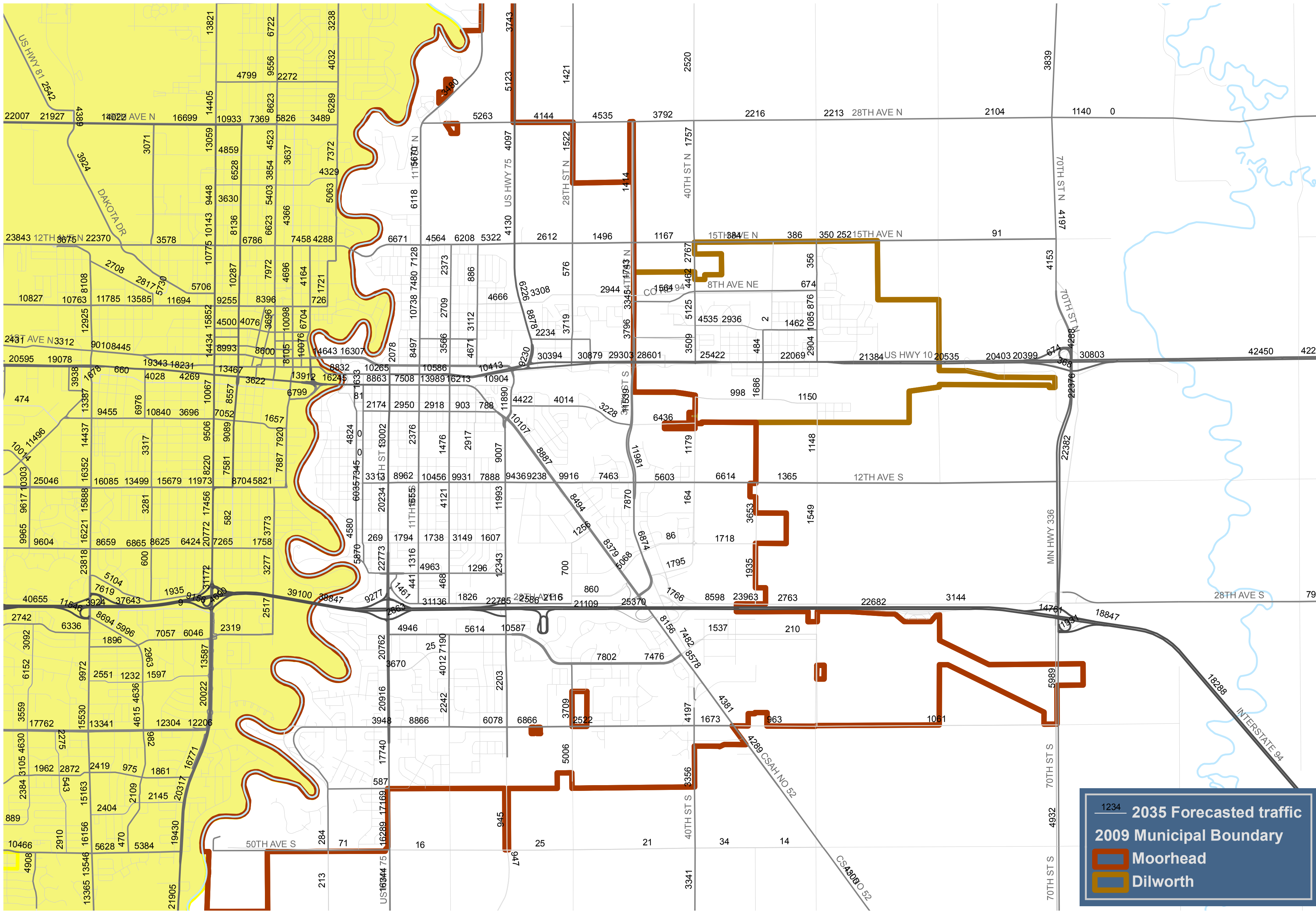
MAP 5.13 ● 2035 MODELED TRAFFIC FOR NORTH FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 5.14 • 2035 MODELED TRAFFIC FOR SOUTH FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 5.15 ● 2035 MODELED TRAFFIC FOR MOORHEAD AND DILWORTH

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Chapter 6: An Alternative Future

It is important to note that forecasts are not predictions of what the future will be. Rather, they are assessments of possible futures, both good and bad, to help increase the understanding of important issues and potential trade-offs. There is almost always more than one way to achieve certain community goals. Through the development of multiple strategic planning scenarios, a community can make more informed choices about its future and how to achieve those goals.

Good scenarios generally,

- Question basic assumptions
- Create holistic, integrated images of how the future might evolve
- Force fresh considerations to the surface
- Reframe existing decisions by providing a new context
- Identify contingent decisions
- Anticipate future threats and opportunities

While not a specific requirement or recommendation in the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) scenario planning is encouraged by the Federal Highway Administration and by other agencies as an appropriate and valuable planning tool. Metro COG held a regional scenario planning workshop in 2007 in order to explore the concept of scenario planning, educate local staff about the concept, and to achieve local consensus as to its value and applicability to the F-M area. At the end of the workshop participants did feel that scenario planning was a worthwhile practice that Metro COG should pursue.

The development of scenarios is often accomplished through extensive public involvement. However, in this case, Metro COG staff, under the guidance of the TTC and Policy Board, developed two scenarios within the MTP.

Scenario A can be thought of as a trend or status quo scenario. It assumes that the region will largely continue growing in the future much as it has in the past. It is Scenario A that was used in the development of this planning document up to this point, including the project lists you see in Chapter 5. In other words, there is an inherent assumption in this planning document that current development trends will hold indefinitely into the future, and thus will result in the needs and projects identified in Chapters 1 through 5.

Scenario B attempts to make the maximum use of existing resources and to minimize costs to the jurisdictions. It also attempts to better reflect the early public input received in the development of this LRTP. The primary emphasis of the public input focused on non-auto oriented transportation options. In the summer of 2008, when gas prices neared $4 per gallon, it appears that a large segment of the public began to explore opportunities to conserve gasoline, including transit, bicycle commuting, walking, ride-sharing and other initiatives. Even though gas prices have since fallen, some of the sentiment developed in the summer of 2008 may remain. Scenario B attempts to reflect an urban form where these non-auto oriented initiatives are easier to implement and more broadly applied.

A technical memo detailing the key assumptions of this scenario, analysis, and the outcomes is provided in this chapter. While not prescriptive, the analysis does indicate that Scenario B does offer some substantial cost savings to the public. Metro COG encourages its member jurisdictions to review their local ordinances and policies and identify any barriers that would prevent development from occurring as illustrated in Scenario B.

Maps 6.1 through 6.4 show the forecasted 2035 ADT for area roadways if this alternative growth scenario (Scenario B) were to become reality.

SRF No. 6728

MEMORANDUM

TO: Brian Gibson, Fargo-Moorhead Metro COG

FROM: Cindy Gray, AICP

DATE: December 9, 2009

SUBJECT: ALTERNATIVE DEVELOPMENT SCENARIO FOR FARGO-MOORHEAD METROPOLITAN AREA

The purpose of this memo is to summarize the methodology used to create an alternate 2035 development scenario for the Fargo-Moorhead metropolitan area and to present information that compares various aspects of the two scenarios. This analysis was conducted in conjunction with the 2009 update of the Metropolitan Long Range Transportation Plan (MTP) which is being carried out by Metro COG.

What is Alternative A?

For the purpose of this analysis, Alternative A is the name given to the geographic assignment of future jobs and households by the cities of West Fargo, Fargo, Moorhead, and Dilworth. This scenario is largely based on the existing comprehensive plans of these cities. These future jobs and households represent the projected growth of each community by the year 2035. The predominant trend of the growth patterns represented by Alternative A is a continuation of physical expansion beyond the boundaries of existing urban development, as the job and household assignments result in a large geographic expansion for each community. Much of this growth is anticipated to occur in areas that are currently agricultural land, and therefore not currently provided with urban infrastructure (streets, water, sanitary sewer, storm sewer).

What is Alternative B?

Alternative B is a development scenario in which the geographic assignment of job and household growth of the cities of West Fargo, Fargo, Moorhead and Dilworth is reallocated. The purpose of the reallocation is to limit the amount of physical expansion into areas that currently have neither urban infrastructure nor urban services, and to place that corresponding growth into areas that either already have infrastructure and services, or where services are imminent as a result of approved development plans.

Alternative B represents a departure from current growth patterns in that it places a significant emphasis on redevelopment within existing neighborhoods and increased density and mixed land uses within areas that are currently undeveloped but are surrounded by city infrastructure.

It should be noted that the implementation of growth patterns represented by Alternative B would require a significant change to city regulations and policies such as zoning and financing of urban infrastructure.

Why compare Alternates A and B as part of updating the MTP?

The primary reason for comparing two development scenarios as part of the MTP is an anticipated shortage of funding to accommodate all of the transportation needs of the metropolitan area in the future. Land use planning and transportation literature from all over the United States suggests that the infrastructure costs associated with new development can be minimized by increasing development density and by providing mixed land uses.[1] [2] [3] [4] Mixed land uses help to reduce the number of trips and trip lengths, which in turn helps to reduce traffic volumes and capacity needs on regional roadway facilities. There are obviously thresholds of development intensity where this savings may no longer be experienced, but generally speaking, a somewhat higher development density provides for more private property investment with the same amount of public infrastructure investment.

When one reviews the volume to capacity ratios of the metropolitan area street system, it becomes noticeable that there are many miles of streets that are used at far less than their capacity. By examining modest amounts of infill development and redevelopment, we can examine the extent to which the reserve capacity of these roadways (and associated water, sewer, and storm sewer) can be utilized to serve new jobs and households as opposed to building infrastructure for urban growth into a larger and larger geographical area. We can also determine the number of lane miles of new arterial roadways that are not needed to provide access to new development areas. The purpose of comparing two development scenarios as part of the MTP is to gain an understanding of the costs of outward geographic growth as opposed to infill development and redevelopment using existing infrastructure.

Furthermore, transportation funding programs are placing more and more emphasis on creating an urban environment that accommodates and facilitates walking, riding bicycle, and using transit. These forms of transportation become more feasible with compact development patterns and mixed land uses. By examining a development scenario that has the potential to better accommodate these alternative forms of transportation, the metro area will be better prepared for

[1] Burchell, Robert W., et al. *Sprawl Costs*, (Island Press, Washington, D.C., 2005)
[2] Daniels, Tom. When City and County Collide, Managing Growth in the Metropolitan Fringe (Island Press, Washington D.C., 1999), pp. 148-149.
[3] Nicole Hostettler, AICP, "Reversing Sprawl and Reducing Carbon Emissions by Retrofitting Suburban Tract Development," Practicing Planner, Vol. 6, No. 3, 2008, The American Planning Association, American Institute of Certified Planners <http://www.planning.org/practicingplanner/2008/fall/feature01.htm>.
[4] "Principles of Smart Growth," Strengthen and Direct Development Towards Existing Communities, <http://www.smartgrowth.org/about/principles/>.

future programs that place less emphasis on automobile traffic and more emphasis on bike, pedestrian and transit facilities.

What are the growth differences between Alternatives A and B?

The differences between Alternatives A and B are shown in Attachment 1. The traffic analysis zones (TAZs) colored in green are outlying areas with little to no public infrastructure where urban development was projected as part of the initial (Alternative A) 2035 allocation of jobs and households. All future development is removed from these TAZs in the Alternative B scenario. Development was reallocated to the TAZs colored in blue. The extent to which jobs and households were added to these TAZs was a factor of the size of the TAZ, the existing land uses, the existing number of households, and the presence of underutilized properties, vacant land or parking lots that could be redeveloped. It was assumed that established residential neighborhoods could, over the next 25 years, absorb a small amount of redevelopment, increasing the number of households in these TAZs by five to 10 percent. Small numbers of jobs were added to TAZs that are exclusively residential to represent a small amount of commercial development and a higher future propensity for telecommuting. The amount of land which remains undeveloped in Alternative B as compared to Alternative A is shown below in Table 1.

Table 1

Alternative B 2035 Development Scenario
Fargo-Moorhead Metropolitan Transportation Plan

City/County	Land from which future development was removed	
	Square Miles	**Acres**
West Fargo	1.76	1,128
Fargo	6.07	3,885
Moorhead	3.25	2,082
Dilworth	1.28	819
Cass County (Horace Area)	1.97	1,265
Total	**14.33**	**9,179**

Aside from the changes shown in Figure 1 and Table 1, the job and household assignments remained the same for each community. For example, all jobs and households removed from outlying TAZs for a given city were replaced within that same jurisdiction, so the total projected household and job projections for each city are unchanged.

What are the financial differences associated with Alternative A and Alternative B?

Infrastructure Expansion

A significant component of the cost of outward growth is the infrastructure needed to accommodate development. Infrastructure costs can vary significantly with different styles of development. The estimated costs used for the purpose of this analysis were developed by SRF using information gathered from the Cities of Fargo and Moorhead GIS data. SRF selected nine areas of development that represent a variety of primarily residential areas. Some neighborhoods have exclusively single family development, while others contain a mixture of housing styles and densities as well as some commercial sites. Within those areas, we calculated the number of linear feet of water, sanitary sewer, storm sewer, street lights, local streets, and collector streets. An average number of linear feet per acre was calculated for each development area, after which, all nine development areas were averaged. Significant expenditures, such as lift stations were accounted for.

Based on recent bid tab examples, costs were calculated for all applicable infrastructure elements, resulting in an estimated average infrastructure cost per acre of $47,810.

Based on the acreage taken out of development, as shown above in Table 1 and Figure 1, it is possible to calculate the approximate cost savings or delayed costs associated with eliminating or delaying outward fringe area growth. Table 2 shows the acreage and associated cost savings that could be experienced. The costs shown in Table 2 do not reflect the savings associated with arterial roadway extensions, which will be shown separately.

Table 2

Estimated Infrastructure Cost Savings for Reallocated Development Areas*
(Excluding Arterial Roadways)
Fargo-Moorhead Metropolitan Transportation Plan

City/County	Size (Acres)	Estimated Infrastructure Cost
West Fargo	1,128	$53,930,000
Fargo	3,885	$185,750,000
Moorhead	2,082	$99,540,000
Dilworth	819	$39,160,000
Cass County (Horace Area)	1,265	$60,480,000
Total	**9,179**	**$438,860,000**

*Includes water, sanitary sewer, storm sewer, street lights, and local/collector streets. Excludes arterial roadways (see Table 3).

Arterial Roadway Extensions

Metro COG and SRF staff reviewed the transportation improvement lists for each jurisdiction to identify arterial roadway improvements that would most likely not be needed under an Alternative B development scenario. For example, 64th Avenue S from Veteran's Boulevard to 45th Street may not need to be improved or widened if the surrounding TAZs remain undeveloped. The 76th Avenue/I-29 interchange project may be limited to right-of-way preservation between now and 2035 if development does not occur in outlying areas that currently do not have infrastructure.

A list of projects that could be delayed is provided in Attachment 2. The estimated total cost of projects that could be saved or delayed beyond 2035 under the Alternative B development scenario is approximately $300 million. Cost savings for each jurisdiction, MnDOT, and NDDOT are shown in Table 3.

Table 3

Estimated Arterial Roadway Cost Savings Due to Reallocated Development Areas, Using 2009 Dollars
Fargo-Moorhead Metropolitan Transportation Plan

City/County/DOT	Project Costs Saved/Delayed
Dilworth, MN	$11,500,000
Moorhead, MN	$8,830,000
Clay County, MN	$31,500,000
Mn/DOT	$20,000,000
Total for Minnesota Partners	**$71,830,000**
Fargo	$144,365,000
West Fargo	$13,170,000
Cass County	$21,000,000
NDDOT	$50,000,000
Total for North Dakota Partners	**$228,535,000**
Total for MN and ND	**$300,365,000**

Cost of Roadway Operations and Maintenance

The estimated savings in roadway operation and maintenance costs associated with Alternative B are based on information provided by the City of Moorhead Engineering Department. The costs reflect routine operations and maintenance, including seal coat. More extensive maintenance and rehabilitation, such as mill and overlay, are not included. The average cost per mile of roadway is $12,800.

At full build-out of Alternative A, the estimated mileage of local, collector, and arterial roadways that would be constructed totals approximately 233 miles. Under the Alternative B scenario, it is assumed that these 233 miles of streets would not be constructed, and therefore would not need to be maintained and kept in good operating conditions. At a cost of $12,800 per mile for operation and maintenance costs, the cost savings experienced under the Alternative B development scenario is approximately $2.8 million dollars in operations and maintenance costs per year (at full build-out of Alternative A). Cost savings for each jurisdiction break out as follows, in Table 4. Cost savings reflected for Cass County reflect land that is currently in the City of Horace.

Table 4

Annual Roadway Operations and Maintenance Costs Saved Under Alternative B, Using 2009 Dollars
Fargo-Moorhead Metropolitan Transportation Plan

City/County	Miles	Cost
Moorhead	55	$705,000
Dilworth	23	$295,000
Clay County	2	$25,000
Total for MN Partners	80	$1,025,000
Fargo	94	$1,025,000
West Fargo	29	$370,000
Cass County	30	$385,000
Total for ND Partners	153	$1,780,000
Total for MN and MD	233	$2,805,000

Obviously, full development warranting 233 miles of roadways would not happen immediately. It would take several years for the fringe growth areas to develop to a level considered full build-out. Table 5 demonstrates the level to which the annual operation and maintenance costs would increase as the mileage of fringe area roadways increases. In 2020, initial development of the fringe growth area is assumed to result in construction of 20 percent (47 miles) of the ultimate street mileage estimated for the area. Each year, from 2020 to 2035, an additional five percent of the build-out roadway mileage is added, until 2035, when the build-out total of approximately 233 miles is reached.

The annual per mile cost figure of $12,800 per mile can be used to estimate operations and maintenance costs over a 15-year period from 2020 to 2035, assuming that a portion of the fringe growth areas would begin to develop in 2020. Table 5 shows the cumulative annual maintenance costs from 2020 to 2035, assuming this increasingly higher mileage of roads per year as described above.

Table 5

Cumulative Costs for Roadway Operations and Maintenance
i.e. Cost Savings under Alternative B, Using 2009 Dollars

Year	% Developed	Miles	O & M Cost
2020	20	47	$596,480
2021	25	58	$745,600
2022	30	70	$894,720
2023	35	82	$1,043,840
2024	40	93	$1,192,960
2025	45	105	$1,342,080
2026	50	117	$1,491,200
2027	60	140	$1,789,440
2028	65	151	$1,938,560
2029	70	163	$2,087,680
2030	75	175	$2,236,800
2031	80	186	$2,385,920
2032	85	198	$2,535,040
2033	90	210	$2,684,160
2034	95	221	$2,833,280
2035	100	233	$2,982,400
Total, 2020-2035			**$28,780,160**

Based on these assumptions, the Alternative B development scenario could result in an estimated cost savings of nearly $29 million for roadway operations and maintenance throughout the metropolitan area from 2020 through 2035.

Police Service

The Police Chiefs from Fargo, Moorhead, and West Fargo provided insights and information associated with additional costs they would anticipate as a result of the geographical expansion associated with Alternative A. The costs for Fargo and Moorhead are presented below.

Moorhead Police Department

Geographic expansion represented by Alternative A results in the need for a fifth police beat to ensure acceptable response times to these areas. Table 6 shows the financial implications of adding a fifth police beat.

Table 6

Moorhead Police Department, Estimated Costs of Adding Fifth Police Beat i.e. Cost Savings under Alternative B, Using 2009 Dollars

Estimated First Year Costs for a 5th Beat, in 2009 Dollars	
1 Patrol Car	$65,000
4 Officers (Avg $64,658 for salary plus benefits)	$258,632 per year
Uniforms and Equipment ($5,200 per officer)	$20,800
Administrative Support ($5,000/officer/year)	$20,000 per year
Fuel	$14,600
Total First Year Costs:	**$379,032**

Annual Costs after First Year in 2009 Dollars	
Patrol Car ($13,000 set aside per year, per car)	$13,000
4 Officers	$258,632
Uniforms and Equipment (annual replacement)	$2,000
Administrative Support	$20,000
Fuel	$14,600
Total Per Year Costs in 2009 Dollars:	**$308,232**

Assuming 5th Beat Needed in 2020, Total Costs from 2020 to 2035 in 2009 Dollars	
First Year	$379,032
Following 15 Years ($308,232 x 15)	$4,623,480
Cumulative Total, 2020-2035:	**$5,002,512**

Geographic expansion represented by Alternative A results in the need for a satellite station and two new police beats to ensure acceptable response times in the fringe growth areas of Fargo. Table 7 shows the financial implications of adding these facilities and services.

Table 7

Fargo Police Department, Estimated Costs of Growth Related Facilities and Services i.e. Cost Savings under Alternative B, Using 2009 Dollars

Satellite Station	$6,000,000
Estimated First Year Costs for Two New Beats, in 2009 Dollars	
12 Officers, avg $75,000 per year (salary, benefits, equipment, training):	$900,000
4 Patrol Cars:	$260,000
2 Administrative Support Staff (one per beat):	$50,000
2 Supervisors (one per beat), avg $90,000 per year (salary, benefits, training):	$180,000
Fuel for Four Patrol Cars	$58,400
Total First Year Costs:	**$1,448,400**
Subsequent 15 Years (2021-2035), in 2009 Dollars	
12 Officers, avg $75,000 per year (salary, benefits, equipment, training):	$13,500,000
4 Patrol Cars, replaced every three years (5 replacement cycles):	$1,560,000
2 Administrative Support Staff (one per beat):	$750,000
2 Supervisors (one per beat), avg $90,000 per year (salary, benefits, training):	$2,700,000
Fuel for Four Patrol Cars	$876,000
Total Cost for Subsequent 15 Years:	**$19,386,000**
Assuming Satellite Station and Two Beats Needed in 2020, Total Costs from 2020 to 2035, in 2009 Dollars:	
Satellite Station:	$6,000,000
First Year:	$1,448,400
Subsequent 15 Years:	$19,386,000
Cumulative Total, 2020-2035:	**$26,834,400**

West Fargo and Dilworth Police Departments

The Alternative A growth areas for West Fargo and Dilworth are not anticipated to result in the need for additional satellite stations. West Fargo's new fire station south of I-94 already allows space for a police officer to take breaks and carry out a limited amount of office functions while on duty in that area. Aside from that, the geographic area of West Fargo and Dilworth would still be manageable with a single station. Nevertheless, over the next 25 years, it is likely that some additional costs would be incurred to serve these geographically expanding communities. Using cost data provided by Fargo and Moorhead, departmental needs were assumed for each community, starting in 2020. These needs, and their estimated costs, are presented in Table 8.

Table 8

West Fargo and Dilworth Police Departments
Estimated Costs of Growth Related Facilities and Services
i.e. Cost Savings under Alternative B, Using 2009 Dollars

Estimated First Year Costs, in 2009 Dollars	
1 Patrol Car	$65,000
2 Officers (Avg $64,658 for salary plus benefits)	$129,316 per year
Uniforms and Equipment ($5,200 per officer)	$10,400
Administrative Support ($5,000/officer/year)	$10,000 per year
Fuel	$7,000
Total First Year Costs:	**$221,716**

Annual Costs after First Year in 2009 Dollars	
Patrol Car ($13,000 set aside per year, per car)	$13,000
2 Officers	$129,316 per year
Uniforms and Equipment (annual replacement)	$1,000
Administrative Support	$10,000
Fuel	$7,000
Total Per Year Costs in 2009 Dollars:	**$160,316**

Total Costs from 2020 to 2035 in 2009 Dollars	
First Year	$221,716
Following 15 Years ($160,316x 15)	$2,404,740
Cumulative Total, 2020-2035:	**$2,626,456**

Combined City Police Costs for Serving Fringe Growth Areas

The estimated combined costs of Fargo, Moorhead, West Fargo, and Dilworth to serve the Alternative A fringe growth areas with police services are shown in Table 9.

Table 9

Combined Growth Related City Police Costs for Metropolitan Area, by Jurisdiction, 2020-2035, Using 2009 Dollars
Fargo-Moorhead Metropolitan Transportation Plan

City	Estimated Costs, 2020-2035
Fargo	$26,834,400
Moorhead	$5,002,512
West Fargo	$2,626,456
Dilworth	$2,626,456
Total	**$37,089,824**

Based on input from police department leadership in Fargo and Moorhead, these additional police services would not be needed under an Alternative B development scenario. This is largely due to the fact that the Fargo-Moorhead metropolitan area tends to have low call volumes on a per capita basis. The needs generated by Alternative A are the result of increased geographic size and the need to provide acceptable response times.

Fire Service

The Fire Chiefs from Fargo and West Fargo provided insights and information associated with costs they would anticipate as a result of Alternative A. The costs for Fargo are presented below.

Fargo Fire Department

The Fargo Fire Chief reviewed the difference between the Alternative A and B development scenarios. He stated that fringe area development of that nature would likely trigger the need for an additional satellite fire station at some future point, although the exact boundaries of development that would trigger such a need have not been determined at this time. The factor that determines when a satellite station is required is response time. Therefore, the need is dependent upon the timing and geographic location of fringe area growth. When a station is needed to serve the fringe growth represented in Alternative A, the costs shown in Table 10 would be experienced. If development were to follow a pattern represented by Alternative B, existing and planned stations could serve those areas, and the need for another satellite station could be delayed.

Table 10

Fargo Fire Department, Estimated Costs of Growth Related Facilities and Services
i.e. Cost Savings under Alternative B, Using 2009 Dollars

New Station:	$3,000,000
Truck:	$500,000
Annual Operating Cost (includes 12 full time staff)	$800,000
Total First Year Costs for New Station:	**$4,300,000**
Assuming Need for New Station in 2030,	
Total Operating Costs 2031-2035 in 2009 Dollars @ $800,000/year:	**$4,000,000**
Cumulative Fargo Total (2030-2035):	**$8,300,000**

Moorhead Fire Department

If Moorhead provides a future satellite station to serve the area south of I-94, including the Alternative A development south of 50th Avenue S and east of Hwy 75, it is anticipated that many of the costs would be similar to those of Fargo, with the exception of staffing, since Moorhead's fire department has a combination of full time and volunteer staff. Estimates for a building, equipping, and staffing a satellite station are shown below in Table 11:

Table 11

Moorhead Fire Department, Estimated Costs of Growth Related Facilities and Services
i.e. Cost Savings under Alternative B, Using 2009 Dollars

New Station:	$3,000,000
Truck:	$500,000
Annual Operating Cost (includes 4 full time staff plus volunteer time and equipment)	$400,000
Total First Year Costs for New Station:	**$3,900,000**
Assuming Need for New Station in 2030,	
Total Operating Costs 2031-2035 in 2009 Dollars @ $400,000/year:	**$2,000,000**
Cumulative Moorhead Total (2030-2035):	**$5,900,000**

West Fargo and Dilworth Fire Departments

Additional costs to serve an Alternative A development scenario for the West Fargo and Dilworth fire departments would be more likely to consist of the need for additional volunteers and equipment. West Fargo already completed construction of a satellite station south of I-94. Their fire chief feels this station will be adequate to serve any additional development shown in the Alternative A scenario. The increased geographical area is not anticipated to cause response time issues that would trigger the need for an additional station.

Dilworth's geographic area is currently small enough that the additional physical growth of an Alternative A development scenario is not likely to result in the need for a satellite station, as response times would not be problematic. Beyond 2035, continued growth south of the railroad tracks may result in the need for a satellite station, particularly if the community is not successful in their efforts to fund the construction of a railroad grade separation.

What are the travel behavior characteristics associated with Alternatives A and B?

Directing development toward areas that are already served by infrastructure has the potential to increase both density and mixed use, as represented by Alternative B. This development pattern allows for shorter vehicle trips and increases pedestrian, bicycle, and transit trips by providing opportunities to work and shop closer to home. The anticipated or expected benefits to the transportation network are 1) fewer vehicular trips (i.e. lower trip generation rates), 2) shorter average trip lengths, and 3) shorter average travel time, resulting in less congestion on arterial and collector roadways and decreased need to add capacity to the roadway network. In an effort to determine if these expected results would hold true for the Fargo-Moorhead traffic projection model, the Alternative B development scenario was applied to the 2035 model. The same roadway network was used, with the exception of the fringe area roadways that would not be needed if development does not take place in these areas.

Vehicle Miles Traveled and Vehicle Hours Traveled

The traffic projection model output for the Fargo-Moorhead metropolitan area was used to compare development Alternatives A and B. Two types of model output that can be compared for each scenario include vehicle miles traveled (VMT) and vehicle hours traveled (VHT). When comparing the model output for VMT and VHT, it is important to recognize that both development scenarios use the same model inputs for average trip length and average travel time. This information was taken from the 2000 census and was based on census data gathered from households throughout the metropolitan area. Therefore, even though Alternative B replicates a more dense development pattern with a higher level of mixed use, and is likely to result in shorter average trip lengths with a lower average travel time, the traffic projection model is still programmed to achieve the same average trip length and average travel time provided by the 2000 census data. Furthermore, typical of many traffic projection models for communities the size of the FM area, the model does not allow for a mode split. Therefore, every trip generated by the jobs and households in the metro area is counted as a vehicular trip in the model. Development patterns that result in more pedestrian, bicycle, and transit friendly environments are not recognized by the model.

Having said all of this, what value can be taken from comparing the model outputs of VMT and VHT for Alternatives A and B? We believe there is still a considerable amount of value in making this comparison for the following reason: the model is replicating a "worse case" scenario in its projections for Alternative B. In other words, the model is taking a more intense development scenario in areas of existing infrastructure and distributing it onto a roadway network that has the same capacity as the network for Alternative A. Furthermore, the model does not reflect the shorter travel time and shorter trip potential of Alternative B; instead, it continues to create trips that achieve the same average trip length and travel time as programmed into the model from the 2000 census. Therefore, the resulting model output could be considered a "worse case" test of the existing and programmed roadway network to handle a more intense infill development pattern versus a more sparse and sprawling outward growth pattern. Table 12 shows the difference in VMT and VHT between Alternatives A and B.

Table 12

2035 Model Results, VMT and VHT for Alternatives A and B

Scenario	VMT	VHT
Alternative A	3,770,398	289,185
Alternative B	3,665,987	291,976

As shown, the model output shows VMT dropping slightly under the Alternative B scenario. This is likely the result of a reduced geographic area of development. Given the constraints of the model with respect to average travel time and average trip lengths, it is understandable that the VMT output did not change significantly.

The fact that the Alternative B VHT is less than one percent higher than Alternative A's VHT indicates that the more compact development form of Alternative B creates no more congestion than that experienced by Alternative A. In other words, the roadway network accommodates more density and mixed use without breaking down into congestion and delay. If the FM traffic projection model had the ability to split trips into different modes of travel, the higher density and higher level of mixed use would likely show increased levels of walking, bicycling, and transit use, resulting in lower VMT and VHT.

Applying a reduced average trip length and average travel time within the model would result in different model results, most likely showing a reduced VMT and VHT. However, in the absence of real data, such model inputs would be hypothetical.

What differences are exhibited in the utilization of the roadway network between Alternative A and B?

The same model constraints discussed above become apparent when comparing the 2035 ADT projections and volume to capacity ratios (v/c) for Alternatives A and B. Since the model does not have a mode split to account for pedestrian, bicycle, and transit trips, the higher density of development and greater mix of jobs and households in Alternative B did not have the reduction in overall trips that would have been expected with a mode split function. Furthermore, it does not appear that the model increases the level of trips within a TAZ or between adjacent TAZs, which would have the result of reducing average trip length and average travel time. Nevertheless, it is possible to see that an Alternative B development scenario has the benefits of:

1) using reserve capacity on underutilized roadways,

2) not dramatically increasing volumes on roadways that currently exceed capacity (through careful placement of additional development density and mixed use), and

3) significantly reducing ADT projections on fringe area roadways demonstrating that they are either no longer needed under an Alternative B development scenario, or major capacity improvements are no longer needed.

Projected ADT volumes increase under the Alternative B scenario on most roadways where infrastructure is either already in place or scheduled to be constructed. This is due to the reallocation of additional jobs and households into TAZs located in these areas. Despite the increased traffic volumes, v/c ratios do not appear to be significantly affected between Alternatives A and B. In many cases, roadways that have a v/c below 0.7 in Alternative A are better utilized in Alternative B, where redevelopment and infill development is taking advantage of reserve capacity in the roadway system. For example, the projected 2035 ADT for the Main Avenue bridge over the Red River is approximately 13,900 under Alternative A and approximately 19,300 under Alternative B. In both cases, the v/c ratio is under 0.7. Another example is 19th Avenue N west of University Drive, which has a projected ADT of approximately 16,700 under Alternative A, and 20,300 under Alternative B. Again, the v/c for this segment of roadway remains under 0.7 in both scenarios. This same characteristic occurs on many modeled roadways throughout the metropolitan area.

Similarly, other roadways that fall into higher v/c ratios are affected by somewhat higher 2035 ADT volumes, but are not pushed into a v/c ratio that would indicate a capacity problem. For example, 12th Avenue N between 25th Street and I-29 has a higher volume under Alternative B, but continues to have a v/c ratio between 0.7 and 0.85, which is considered very functional and acceptable. The I-94 bridge over the Red River has a projected ADT of nearly 78,000 under Alternative A, and a projected ADT of just over 80,000 under Alternative B. In both scenarios, the v/c ratio is between 0.7 and 0.85.

Perhaps the most notable difference in ADT projections is demonstrated on the fringe area roadways. For example, Veteran's Boulevard south of 52nd Avenue S has a projected 2035 ADT of over 16,000 under Alternative A, but only 2,600 under Alternative B. In Moorhead and Dilworth, 12th Avenue S east of 34th Street has a 2035 ADT volume of approximately 5,600, but only 130 with Alternative B. These types of volume reductions are the basis for the significant cost savings in the arterial roadway system as discussed previously.

Summary

The potential cost savings of not expanding roadway and utility infrastructure into fringe growth areas is significant as shown below in Table 13, Summary of Alternative B Cost Savings. These costs could have important implications for the metropolitan area's future ability to fund reconstruction and rehabilitation of existing infrastructure. Maintenance, rehabilitation, and reconstruction of existing facilities are needed regardless of funds applied to projects that allow for fringe area expansion. While lower use levels may help delay the need for rehabilitation and reconstruction, these expenses are inevitable due to the effects of any level of use combined with exposure to the natural environment. The majority (90%) of the estimated future costs shown below can be attributed to roadway and utility infrastructure expansion.

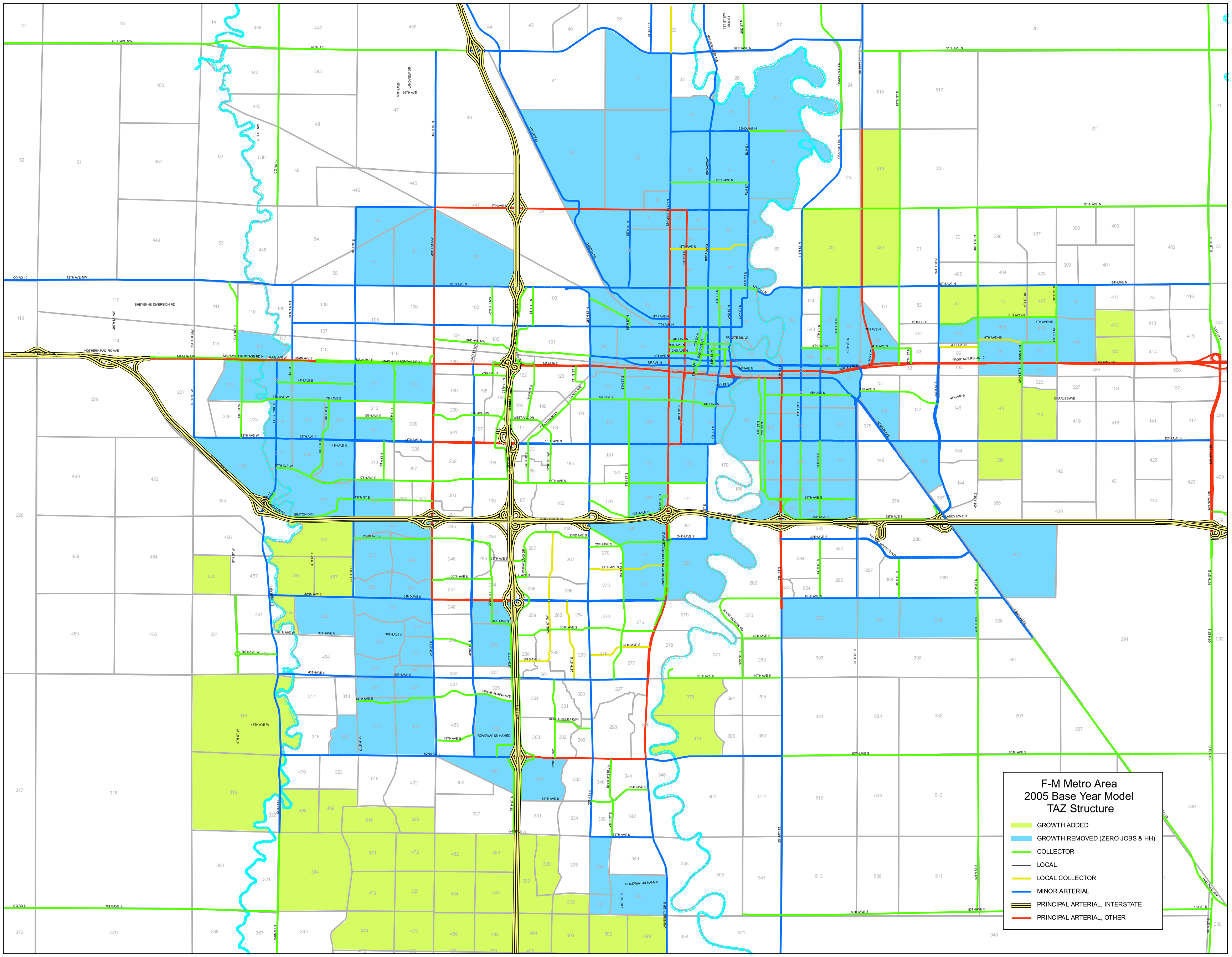
Table 13

Summary of Alternative B Cost Savings

Factor for Comparison	Source of Information	Alternative A	Alternative B
Travel Behavior Characteristics			
2035 Vehicle Miles Traveled	Traffic Projection Model	3,770,398	3,665,987
2035 Vehicle Hours Traveled		289,185	291,976
Estimated Financial Characteristics			
Reduced Cost of Roadway Improvements (Arterials Roadways)	Project Cost Estimates		$300,365,000
Reduced Cost of Operations and Maintenance (2020-2035)	Estimate of Operations/Maintenance Costs, City of Moorhead		$28,780,000
Reduced Cost of Infrastructure Improvements	Fringe Growth Cost Estimates		$438,860,000
Reduced Cost of Police and Fire Service	Cost Estimates for Expanded Service Areas		$51,290,000
Total			**$819,295,000**

While the model is not equipped to provide a complete picture of how an Alternative B development scenario would affect mode choice, average trip length, and average travel time, it does provide a snapshot of how the system would function if a higher level of development intensity were placed strategically in areas where there is currently reserve roadway capacity. Even without the effect of pedestrian, bicycle, and transit trips, and with the model attempting to achieve the average trip length and travel time established by the 2000 census data, the roadway system handles the traffic with very few capacity problems. Capacity issues that are projected in the Alternative B scenario are also, for the most part, also projected in the Alternative A scenario.

Graphics Support/6728 Metro Trns Plan/Attachment 1.indd



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Alternative B – TAZ Figure

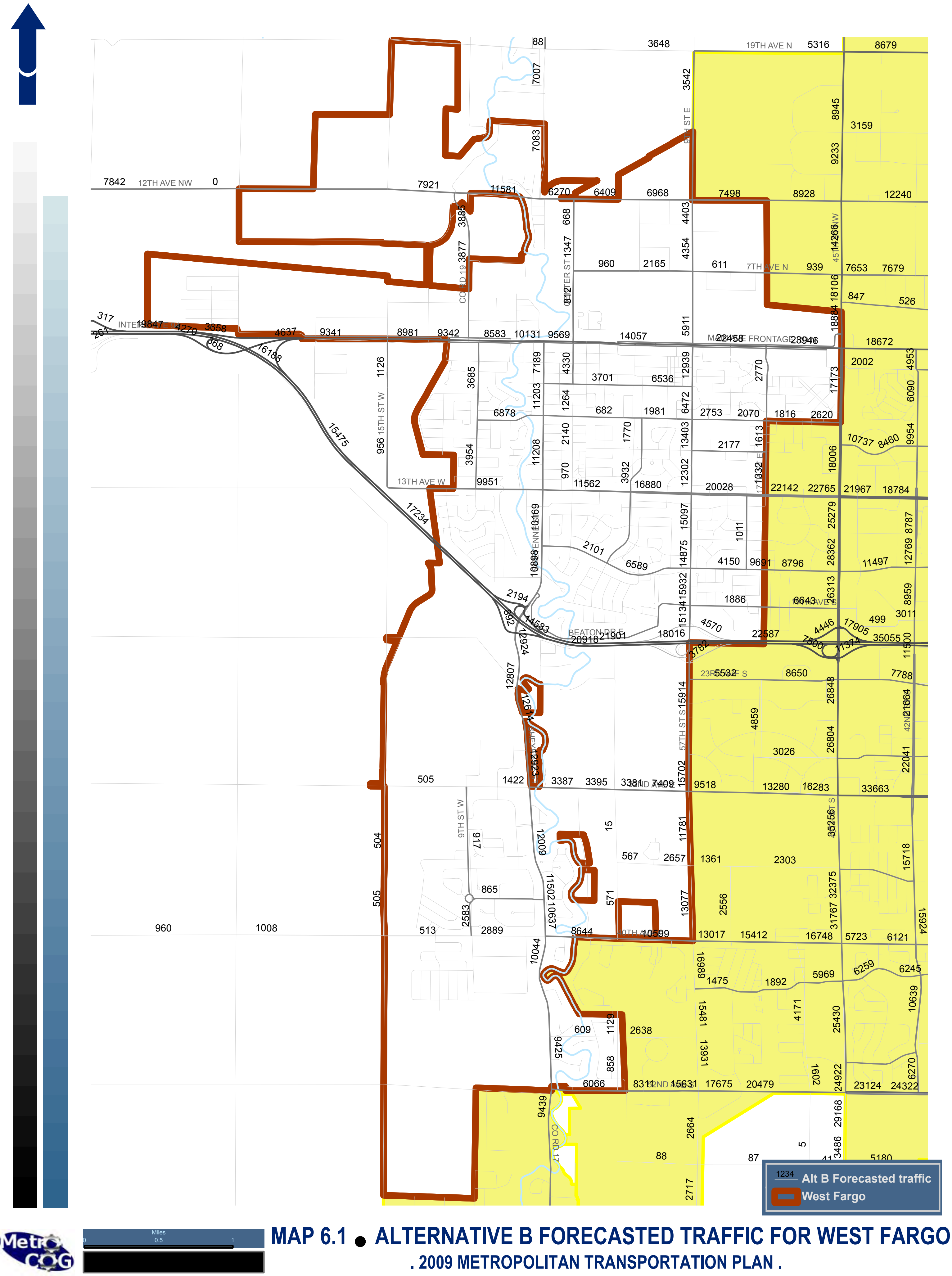
Fargo-Moorhead Metropolitan Long Range Transportation Plan
Fargo - Moorhead Metropolitan Council of Governments

Attachment 1

Attachment 2
Arterial Roadway Projects No Longer Needed under Alternative B Development Scenario

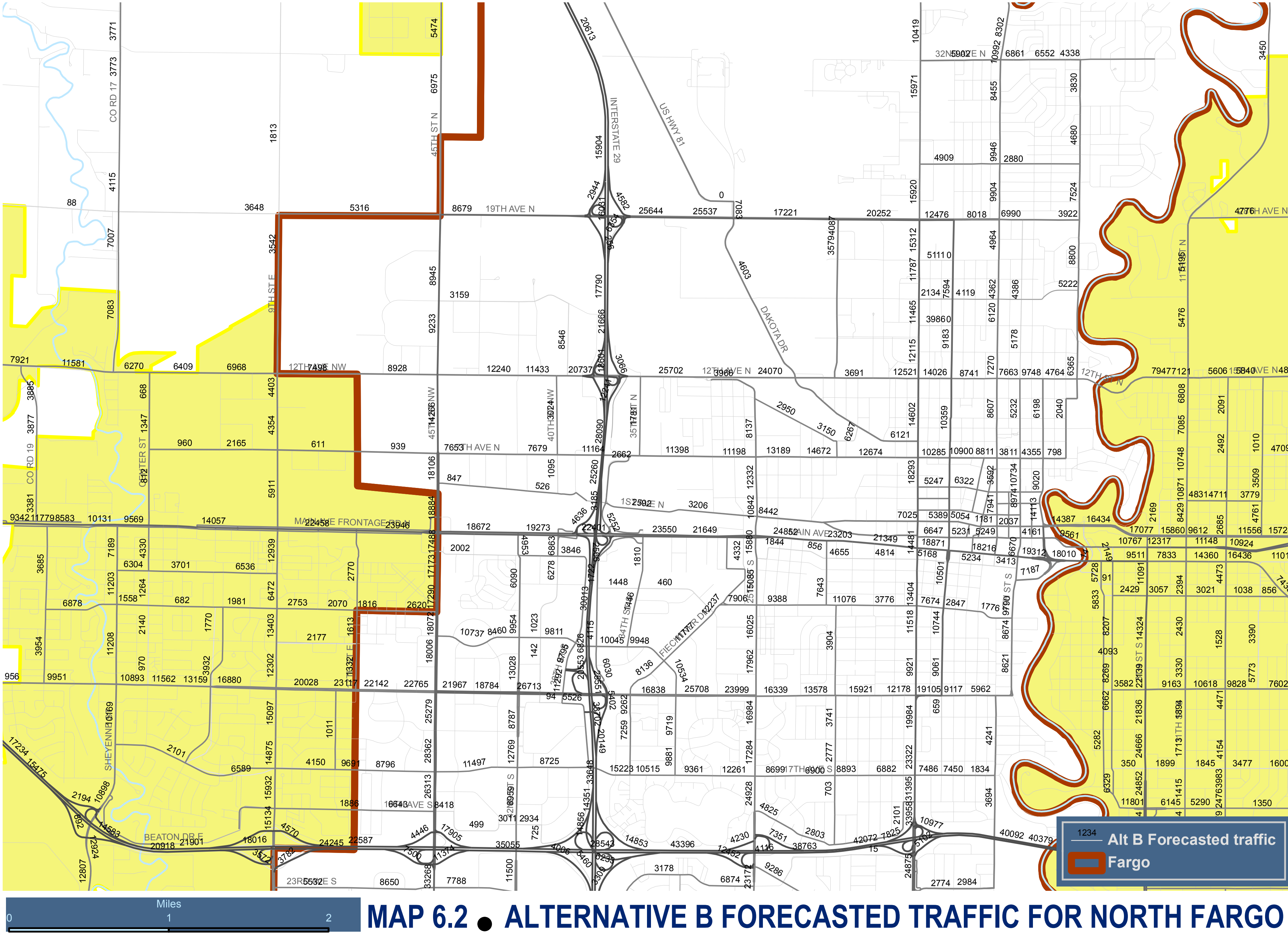
NDDOT		
Long Range	76th Avenue South at I-29	$21,000,000
	64th Ave S Grade Separation	$20,000,000
	64th Ave S Interchange at I-29	$9,000,000
	NDDOT Long Range Total	**$50,000,000**
MOORHEAD		
Long Range	20th Street (50th Ave S to 60th Ave S)	$5,079,961
	24th Ave S (40th St to 46th St)	$1,500,000
	46th Street South (12th Ave S [CSAH 16] to CR 77)	$2,250,000
	MOORHEAD Long Range Total	**$8,829,961**
MNDOT		
Illustrative	12th Ave S and MN 336	$20,000,000
	MNDOT Illustrative Total	**$20,000,000**
DILWORTH		
Illustrative	Dilworth Grade Separation	$10,000,000
	15th Avenue North	$1,500,000
	DILWORTH Illustrative Total	**$11,500,000**
CASS COUNTY		
Long Range	76th Avenue South (at I-29)	$21,000,000
	CASS COUNTY Long Range Total	**$21,000,000**
CLAY COUNTY		
Illustrative	South Side Red River Bridge	$11,500,000
	12th Avenue South & MN 336 Interchange	$20,000,000
	CLAY COUNTY Illustrative Total	**$31,500,000**
WEST FARGO		
Illustrative	4th Street E (32nd Ave E to 23rd Ave S)	$4,210,000
	23rd Avenue South (Veterans Blvd to 4th St)	$2,630,000
	28th Avenue South (Veterans Blvd to 4th St)	$2,630,000
	9th Street West (45th St S to 52nd Ave S)	$3,700,000
	WEST FARGO Illustrative Total	**$13,170,000**

FARGO		
Mid Range	64th Avenue South (Maple Valley Dr to 25th St)	$4,270,000
	64th Avenue South (25th St to University Dr)	$4,270,000
	40th Avenue South (Veterans Blvd to Drain #27)	$4,500,000
	FARGO Mid Range Total	**$13,040,000**
Long Range	76th Avenue South (38th St to Horace City Limits)	$13,000,000
	76th Avenue South (45th St to 38th St)	$10,500,000
	76th Avenue South (36th St to 25th St)	$10,500,000
	South Side Red River Bridge and Connection to I-29	$22,125,000
	University Drive (52nd Ave S to 64th Ave S)	$11,850,000
	University Drive (64th Ave S to 76th Ave S)	$13,000,000
	64th Avenue South (Veterans Blvd to 45th St)	$13,100,000
	64th Avenue South (45th St to Maple Valley Dr)	$19,000,000
	FARGO Long Range Total	**$113,075,000**
Illustrative	21st Street South (76th Ave S to 88th Ave S)	$2,250,000
	28th Street South (52nd Ave S to 76th Ave S)	$4,500,000
	34th Street (64th Ave S to 76th Ave S)	$2,250,000
	34th Street (76th Ave S to 88th Ave S)	$1,125,000
	CR 31 (25th St to 76th Ave N)	$8,125,000
	FARGO Illustrative Total	**$18,250,000**
	FARGO Total	**$144,365,000**
	Grand Total	**$300,364,961**
	Total for Minnesota Jurisdictions and MnDOT	$71,829,961
	Total for ND Jurisdictioins and NDDOT	$228,535,000
	Total for MN and ND	$300,364,961



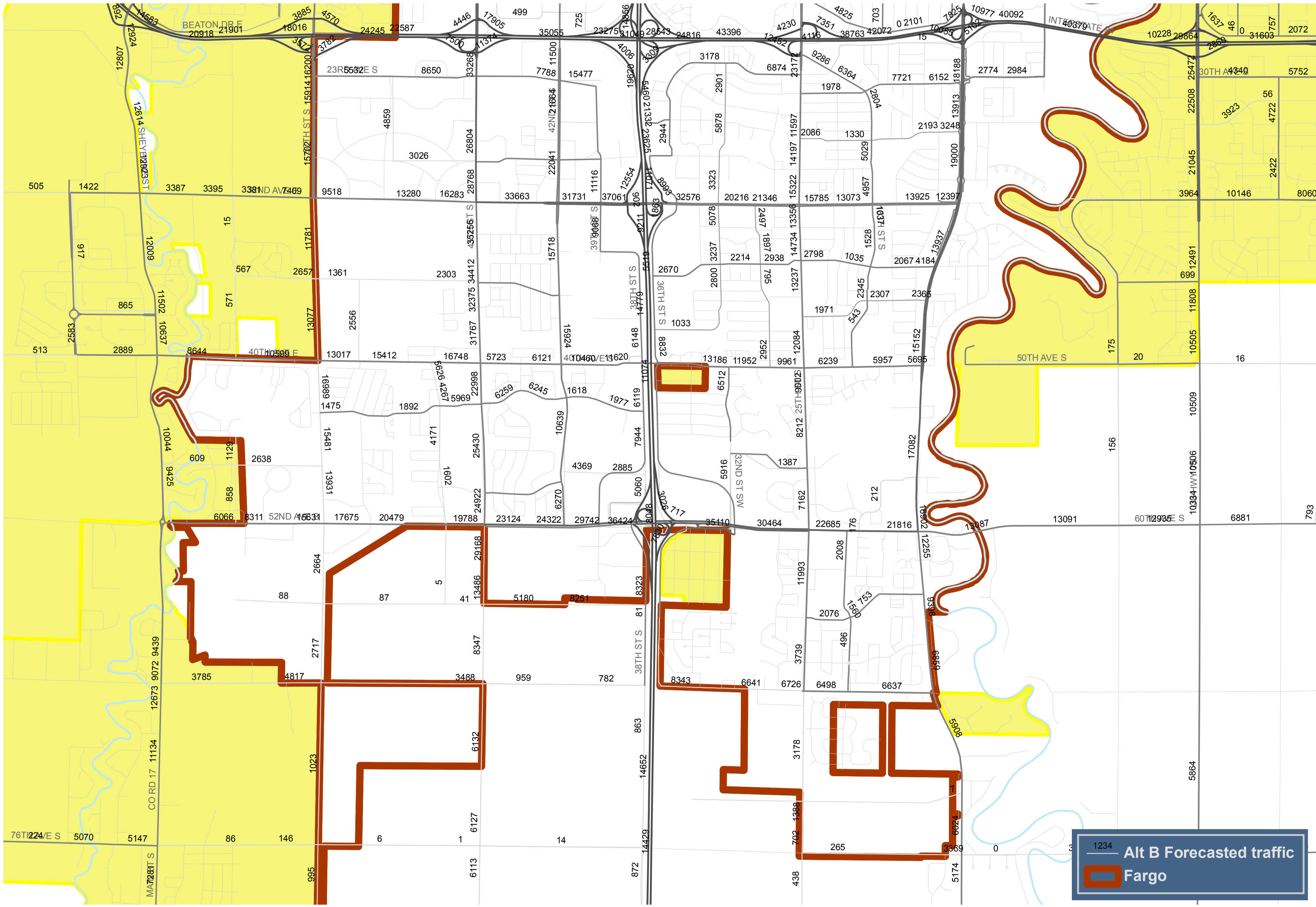
MAP 6.1 • ALTERNATIVE B FORECASTED TRAFFIC FOR WEST FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



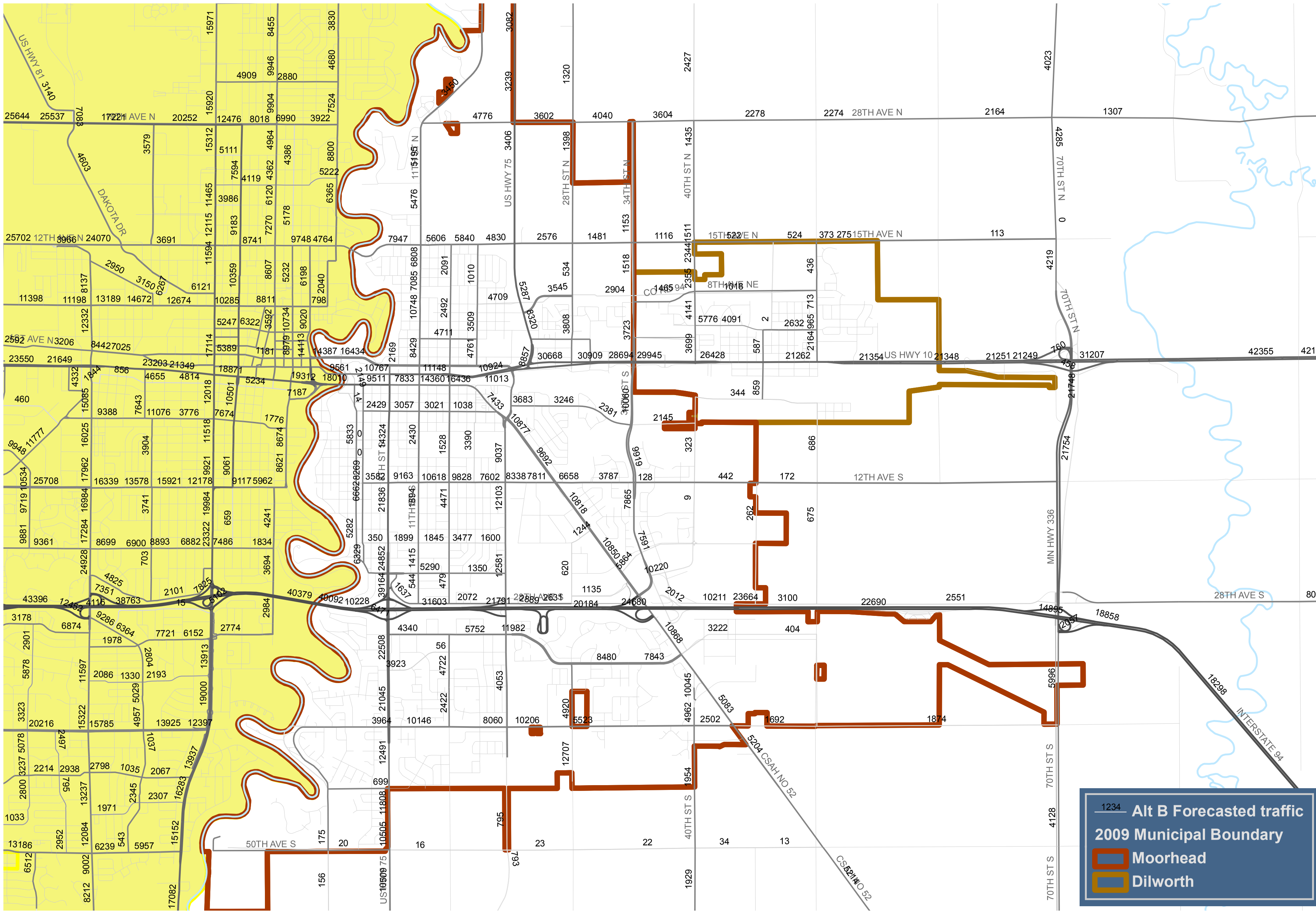
MAP 6.2 • ALTERNATIVE B FORECASTED TRAFFIC FOR NORTH FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 6.3 • ALTERNATIVE B FORECASTED TRAFFIC FOR SOUTH FARGO

. 2009 METROPOLITAN TRANSPORTATION PLAN .



MAP 6.4 • ALTERNATIVE B FORECASTED TRAFFIC FOR MOORHEAD AND DILWORTH

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Chapter 7: Protecting the Environment

This chapter provides an inventory of the agricultural and natural resources within the F-M metropolitan planning area in order to assess, preliminarily, the potential environmental impact of the projects listed in Chapter 5. Such assessment is required by the National Environmental Policy Act (NEPA) of 1969 to ensure that information on the environmental impacts of any federal, or federally funded action is available to public officials and citizens before decisions are made and before actions are taken.

Transportation projects that involve impacts to agricultural, natural, recreational, and cultural resources are subject to a number of Federal statutes and regulations, including:

- National Environmental Policy Act of 1969
- Farmland Protection Policy Act of 1981 (7 U.S.C. 4201; 7 CFR 658)
- Endangered Species Act of 1973
- Department of Transportation Act of 1966, Section 4(f), which pertains to the preservation of all publically-owned public parks, waterfowl and wildlife refuges, and all historic areas (49 U.S.C. 303; 23 U.S.C. 138)
- National Historic Preservation Act (NHPA) of 1966, Section 106, which protects cultural resources that are on or eligible for the National Register of Historic Places (NRHP)
- Archaeological Resources Protection Act of 1979, which applies to archaeological resources on tribal lands and non-tribal lands under Federal jurisdiction
- Surface Transportation and Uniform Relocation Assistance Act of 1987, section 123(f), which created a fund for the preservation or mitigation of historic bridges (23 U.S.C. 144 (o)).
- Land and Water Conservation Fund Act of 1965, Section 6(f), which applies to recreational resources (16 U.S.C. 4601-4 to -11)
- Clean Water Act of 1972 (33 U.S.C. 1344)
- Mitigation of Environmental Impacts to Privately Owned Wetlands (23 CFR 777)
- Preservation of the Nation's Wetlands, DOT Order 5660.1A.
- The Water Bank Act of 1970 (16 U.S.C 1301)
- Resource and Conservation Recovery Act of 1976
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980

The NEPA Process

The NEPA process consists of an evaluation of the environmental effects of a federal undertaking, including its alternatives. There are three levels of analysis depending on whether or not an undertaking could significantly affect the environment. These levels include:

- Categorical Exclusion;
- Environmental Assessment/Finding of No Significant Impact (EA/FONSI);
- Environmental Impact Statement (EIS)

At the first level, a project may be categorically excluded from a detailed environmental analysis if it meets certain criteria which a Federal agency has previously determined as having no significant environmental impact. A number of agencies have developed lists of actions which are normally categorically excluded from environmental evaluation under their NEPA regulations.

At the second level of analysis, an agency prepares a written environmental assessment (EA) to determine whether or not a project would significantly affect the environment. If the answer is no, the agency issues a finding of no significant impact (FONSI), which may address measures that the agency will take to reduce or mitigate potentially significant impacts. If the EA determines that the environmental consequences of a proposed project may be significant, an EIS is prepared. An EIS is a more detailed evaluation of the proposed action and alternatives. If an agency anticipates that an undertaking may significantly impact the environment, or if a project is environmentally controversial, the agency may choose to prepare an EIS without first preparing an EA.

Agencies are required to study and obtain comments on the potential effects of their proposed actions through the environmental documentation process. Environmental analyses are based on the need to:

- Describe existing conditions
- Describe anticipated changes to existing conditions resulting from a project
- Predict and discuss beneficial and adverse impacts due to the changes
- Estimate the significant impacts
- Ensure that no group of people is disproportionately adversely impacted as a result of the changes without adequate mitigation
- Evaluate and implement measures to minimize harm or enhance benefits
- Consider alternatives to the proposed action
- Solicit input from and reflect the concerns of all affected stakeholders in choosing a preferred alternative

The detail necessary to respond to these issues depends on the scope and complexity of a proposed action. Actions that meet the criteria for a Programmatic Environmental Report, such as highway or bridge projects that require little or no land acquisition (e.g., resurfacing or rehabilitation), need not prepare an environmental document. However, if through the environmental process a proposed action is found to have one or more adverse impacts, then the mitigation of impacts must be considered.

Avoiding, Minimizing, and Mitigating Environmental Impacts

The NEPA process includes an ordered approach to mitigation and involves understanding the affected environment and assessing transportation effects throughout project development. Effective mitigation starts at the beginning of the NEPA process and continues through as an integral part of the alternatives development and analysis process. The Council on Environmental Quality (CEQ) defines mitigation in order of process sequencing as:

1. Avoiding the impact altogether
2. Minimizing impacts by limiting the degree or magnitude of the action and it implementation
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
5. Compensating for the impact by replacing or providing substitute resources or environments

This Long-Range Transportation Plan considers the protection of agricultural, natural, and cultural resources by:

- Providing an inventory of the resources considered under the NEPA process for use during the environmental consultation process
- Considering local, state, and federal plans in the development of land use projections
- Setting specific regional environmental goals and objectives for development (see Chapter 3)
- Developing and evaluating an alternative growth scenario (Scenario B) that would significantly reduce the amount of land consumed by future growth
- Reiterating the need to implement the 2008 Red River Greenway Study, including a river setback policy
- Involving resource agencies at key times during the plan development process (i.e., permit approval process)

In preparation for the development of this document, and in compliance with federal highway authorization requirements, Metro COG staff developed a list of local and state environmental agencies in 2008. These environmental stakeholders, some of which were government agencies and some of which were non-profit or other non-governmental organizations, were approached by Metro COG to serve as the Environmental Review Group (ERG). It is the intention of Metro COG that the ERG be consulted on a regular, on-going basis to provide feedback on plans and projects, but also to coordinate planning activities and to inform the planning process in terms of potential environmental impacts and mitigation opportunities.

Relative to the preparation of this plan, the ERG met twice. At the first meeting (see Appendix A for more information), the group was asked to identify any environmental issues of which Metro COG should be made aware of during the planning process and to provide any environmental plans that they may have so efforts could be made to ensure that the LRTP did not conflict with any existing environmental plans. At the second meeting, the draft LRTP (including the Chapter 5 project lists) was presented and the group was solicited for comments and feedback.

Going forward, the ERG will convene at least annually to review the candidate projects lists for the Transportation Improvement Program prior to that list being submitted to the state DOTs, as well as providing other relevant environmental information and consultation. As the projects in Chapter 5 are further developed for possible funding, the ERG will help ensure good environmental stewardship and sustainable development.

Current active participation on the ERG includes:

- Riverkeepers
- Audubon North Dakota
- The Minnesota Department of Natural Resources
- The International Water Institute
- Clay County Soil and Water Conservation District

It must be pointed out that the composition of the ERG is likely to change as the purpose, goals, and need for the group are further refined and the group becomes regularly active. Metro COG's list of potential ERG members is currently at 20 agencies and organizations and it is hoped that all of them will eventually choose to participate in the ERG.

Agricultural Resources

Agricultural resources are protected by the Farmland Protection Policy Act of 1981, by local agricultural preservation plans, and by local zoning regulations. The purpose of the Act is to "minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland." The Act is enforced by the Natural Resources Conservation Service (NRCS) – a department of the United States Department of Agriculture. If a federally funded project has the potential to convert important farmland to non-farm use, the NRCS must assess the level of impact proposed. The NRCS uses a land evaluation and site assessment system to establish a farmland conversion impact rating score on proposed sites of federally funded and assisted projects. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable limit.

Data Inventory

The NRCS maintains a database of soil conditions for the United States. This data includes a soil attribute describing the soil by its value as prime farmland: "all areas are prime farmland," "farmland of statewide importance," or "prime farmland if drained." Of the roughly 368,000 acres in the metropolitan planning area, about 20% of the soils have conditions conducive for prime farmland.

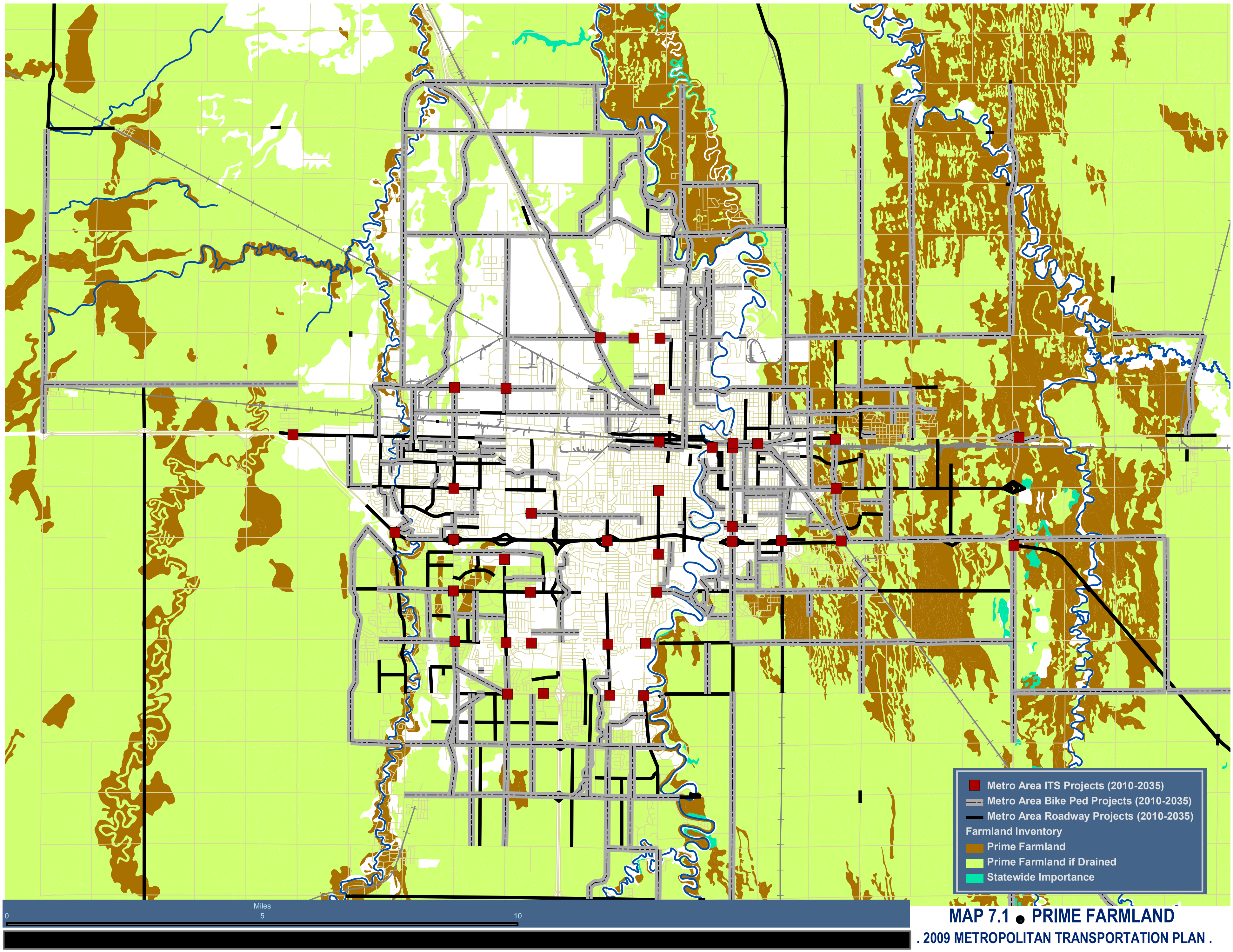
Prime farmland is defined by the U.S. Department of Agriculture as farmland that has the *best* combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. Farmland of statewide importance is land other than prime farmland which has a *good* combination of physical and chemical characteristics for the production of these crops.

Mitigation Options

The Red River Valley contains some of the best, most productive farmland in the nation. As the population of the F-M area grows over time, encroachment of the urban area on prime agricultural land will continue unless constantly prohibited or regulated by local government. Mitigation options that have been used in the past, and which could be used again, include:

- The acquisition and transfer of ownership of agricultural land to an agricultural conservation entity for permanent protection of the land
- The acquisition and transfer of agricultural conservation easements to an agricultural conservation entity for permanent protection of the land
- Transfer of development rights (TDR), purchase of development rights (PDR)

In addition to these options, the cities and counties within the Metro COG planning area should make a concerted effort to grow more compactly as illustrated in the Alternative Growth Scenario in Chapter 6. Avoiding the consumption of prime agricultural land for urban growth also avoids the need to mitigate or compensate for removing the land from agricultural production.



MAP 7.1 ● PRIME FARMLAND

. 2009 METROPOLITAN TRANSPORTATION PLAN .

Natural and Recreational Resources

The use of parks, recreation areas, wildlife, and waterfowl refuges for a transportation purpose is subject to Section 4(f) of 49 U.S.C. 303 and 23 U.S.C. 138, and possibly Section 6(f) of 16 U.S.C. 2509.

The intent of Section 4(f) is to protect parkland and other included land from use by transportation agencies. Transportation agencies using federal funds are prohibited from using such lands unless 1) no feasible or prudent alternative to the use is available and 2) the project includes all possible planning to minimize harm to the protected resource.

The intent of Section 6(f) is to protect land for outdoor recreational purposes. The Land and Water Conservation Fund Act (LAWCON) of 1965 stipulates that any land planned, developed, or improved with LAWCON funds cannot be converted to a use other than an outdoor recreational use unless replacement land of at least equal fair market value and reasonably equivalent usefulness is provided. Anytime a transportation project will cause such a conversion, regardless of funding source, replacement land must be provided.

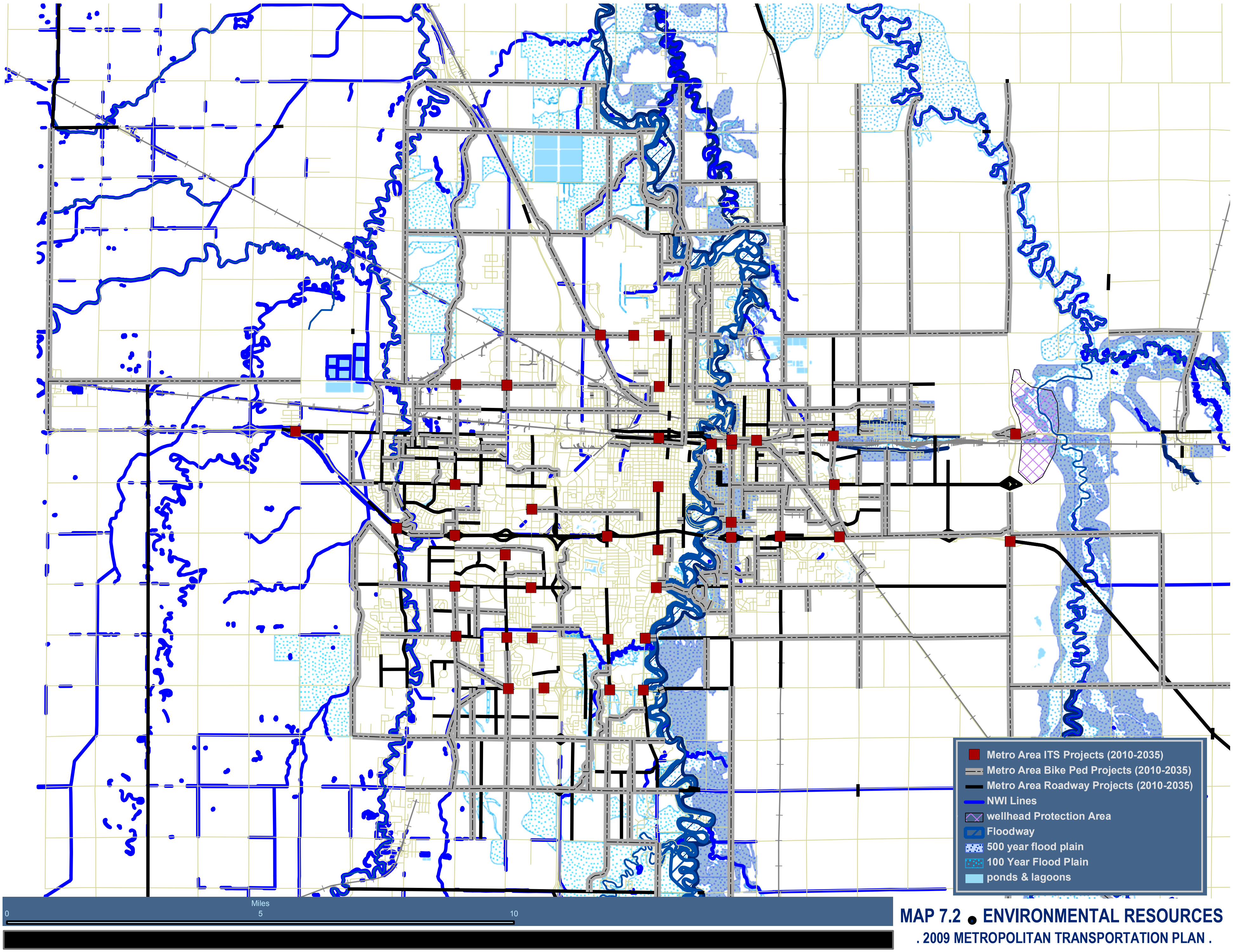
The map on page 7.7 includes parks and recreation areas that may or may not be covered under Section 4(f) or 6(f). The map also includes wetlands, wetland protection areas, as well as floodways and floodplains.

Data Inventory

Metro COG, in consultation with public environmental agencies and its own Environmental Review Group comprised of local environmental experts and agency representatives, developed the data sets and information reflected on the map shown on the next page. The goal was to develop and organize a comprehensive database of regional environmental information for use in a planning-level NEPA review of transportation projects. The maps displays the projects listed in Chapter 5 in relation to the environmental resources and so provides a preliminary indication of which projects may require some level of mitigation activity.

Information on threatened and endangered plant and wildlife species was solicited from the appropriate agencies, but location-specific (i.e., map-able) information was difficult to find. The abundance of prime farmland within the Metro COG planning area appears to have limited the amount of natural habitat available for specific species. The Minnesota Department of Natural Resources (MNDNR) reports that 89% of the current land use within the Red River Prairie subsection of the state is used for row crops, another 5% is used for pasture, and 1% is developed[1]. That leaves only 5% of the land for wetlands, open space, forest, and water. Less than 1% of the former prairie remains, and is often too small to be fully functional. However, agency representatives caution that there is always the possibility that a threatened or endangered species could turn up almost anywhere. In the same report, the MNDNR points out that "scattered remnant tracts of native prairie and riparian woodlands…are home to a surprising variety of wildlife."

[1] Minnesota Department of Natural Resources, 2006. *Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife*, Comprehensive Wildlife Conservation Strategy. Division of Ecological Services, Minnesota Department of Natural Resources



MAP 7.2 ● ENVIRONMENTAL RESOURCES

. 2009 METROPOLITAN TRANSPORTATION PLAN .

There are no State or National Wildlife Refuges, State or National Parks, State Trails, State or National Forests, Wildlife Management Areas, or State Natural Areas within the Metro COG planning area.

The Red River is a designated Minnesota Water Trail for canoeing and kayaking.

The Minnesota State Department of Natural Resources maintains a database of Species in Greatest Conservation Need (SGCN) which provides an inventory of all Federal and State-listed birds, fish, mammals, herptiles (amphibians and reptiles), insects, mollusks, and spiders. The inventory includes species determined to be of special concern and natural communities of high quality. Special concern species are those species about which some problem of abundance or distribution is suspected, but not yet proven. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.

The following tables list endangered, threatened, and special concern species from the Red River Prairie subsection of the State of Minnesota.

Table 58. Fish

Common Name	**State Status**
Lake Sturgeon	Special Concern

Table 59. Spiders

Common Name	**State Status**
A Jumping Spider *(Metaphidippus arizonensis)*	Special Concern

Table 60. Birds

Common Name	**State Status**
Baird’s Sparrow	Endangered
Henslow’s Sparrow	Endangered
Nelson’s Sharp-tailed Sparrow	Special Concern
Sprague’s Pipit	Endangered
Short-eared Owl	Special Concern
Chestnut-collared Longspur	Endangered
Yellow Rail	Special Concern
Trumpeter Swan	Threatened
Bald Eagle	Special Concern
Loggerhead Shrike	Threatened
Marbled Godwit	Special Concern
Wilson’s Phalarope	Threatened
Burrowing Owl	Endangered
Forster’s Tern	Special Concern
Greater Prairie Chicken	Special Concern

Table 61. Herptiles

Common Name	**State Status**
Common Snapping Turtle	Special Concern
Western Hognose Snake	Special Concern

Table 62. Mammals

Common Name	State Status
Prairie Vole	Special Concern
Least Weasel	Special Concern
Plains Pocket Mouse	Special Concern
Eastern Spotted Skunk	Threatened
Northern Pocket Gopher	Special Concern

Table 63. Mollusks

Common Name	State Status
Creek Heelsplitter	Special Concern
Fluted Shell	Special Concern
Black Sandshell	Special Concern

Table 64. Insects

Common Name	State Status
Argos Skipper	Special Concern
Red-tailed Prairie Leafhopper	Special Concern
A Tiger Beetle *(Cicindela fulgida westbournei)*	Threatened
Assiniboia Skipper	Endangered
Dakota Skipper	Threatened
Pawnee Skipper	Special Concern
Powesheik Skipper	Special Concern
Uhler's Arctic	Endangered
Regal Fritillary	Special Concern

Mitigation

The ultimate goal of mitigation is to restore, create, enhance, and/or preserve natural resources for the purpose of compensating for unavoidable resource impacts.

Project specific mitigation is usually selected based on the impact-site location. Typically mitigation activities do not address landscape or watershed perspectives, and are generally small in scale. The mitigation can be on-site, off-site, in-kind (of similar resource or ecological function), out-of-kind, or any combination thereof. However, the traditional preference has been for on-site and in-kind compensation.

Multiple-project mitigation involves using a single, typically large, off-site mitigation project to serve as compensation for impacts resulting from multiple projects. Off-site mitigation allows for the consolidation of a number of small projects that would normally result in scattered mitigation into a larger mitigation project that has a greater chance of ecological success.

One type of multiple-project mitigation is mitigation banking. Mitigation banks are wetland and aquatic habitats established by the "bank" sponsor in advance of project actions. This method is used when compensation at the development site cannot be wholly achieved or would not be as environmentally beneficial.

Conservation banks are parcels of land containing natural resources that are conserved and managed for specified listed species and used to offset impacts occurring elsewhere to the same resources on non-bank managed lands. These banks are established for long-term protections of a specified species that is impacted on a project site.

Eco-based mitigation agreements merge the attributes of existing mitigation options to derive the greatest environmental benefit and achieve the goals of connectivity, conservation, predictability, and transparency. Instead of looking at wetland and species mitigation, for example, as separate activities, eco-based mitigation agreements would consider the resource functions of an entire ecosystem.

The U.S. Environmental Protection Agency (EPA) encourages that everything possible be done to avoid and minimize impacting aquatic resources. In cases where unavoidable impacts are expected to occur, the EPA recommends searching for compensatory mitigation that could be tied to improvement of water quality of impacted resources or similar resources in the same watershed.

In 2008 Metro COG completed a Red River Greenway Study, the primary focus of the study was to identify opportunities to develop a contiguous system of shared-use paths along the Red River corridor. Ancillary to that focus, the plan also addresses flood mitigation and wildlife habitat preservation. Delineation and preservation of the Red River Greenway will help prevent flood damage to homes and structures, preserve trees adjacent to the river which provide bird habitat, improve river bank stabilization, and improve water quality in the Red River by preserving adequate riparian buffers. The plan also recognizes the potential for year-round recreational opportunities afforded by a Red River Greenway, as well as educational, cultural, and historical aspects of the river.

One potential eco-based mitigation measure for future transportation projects would be a multiple-project mitigation bank that seeks to preserve and enhance the Red River Greenway. However, given the relative scarcity of natural areas that can be impacted by projects such a bank may be under-utilized.

Here, again, the potential to develop the urban area more compactly (as illustrated in Chapter 6) may provide the best solution to mitigation, as long as urban growth is adequately protected, either structurally or non-structurally, from flooding.

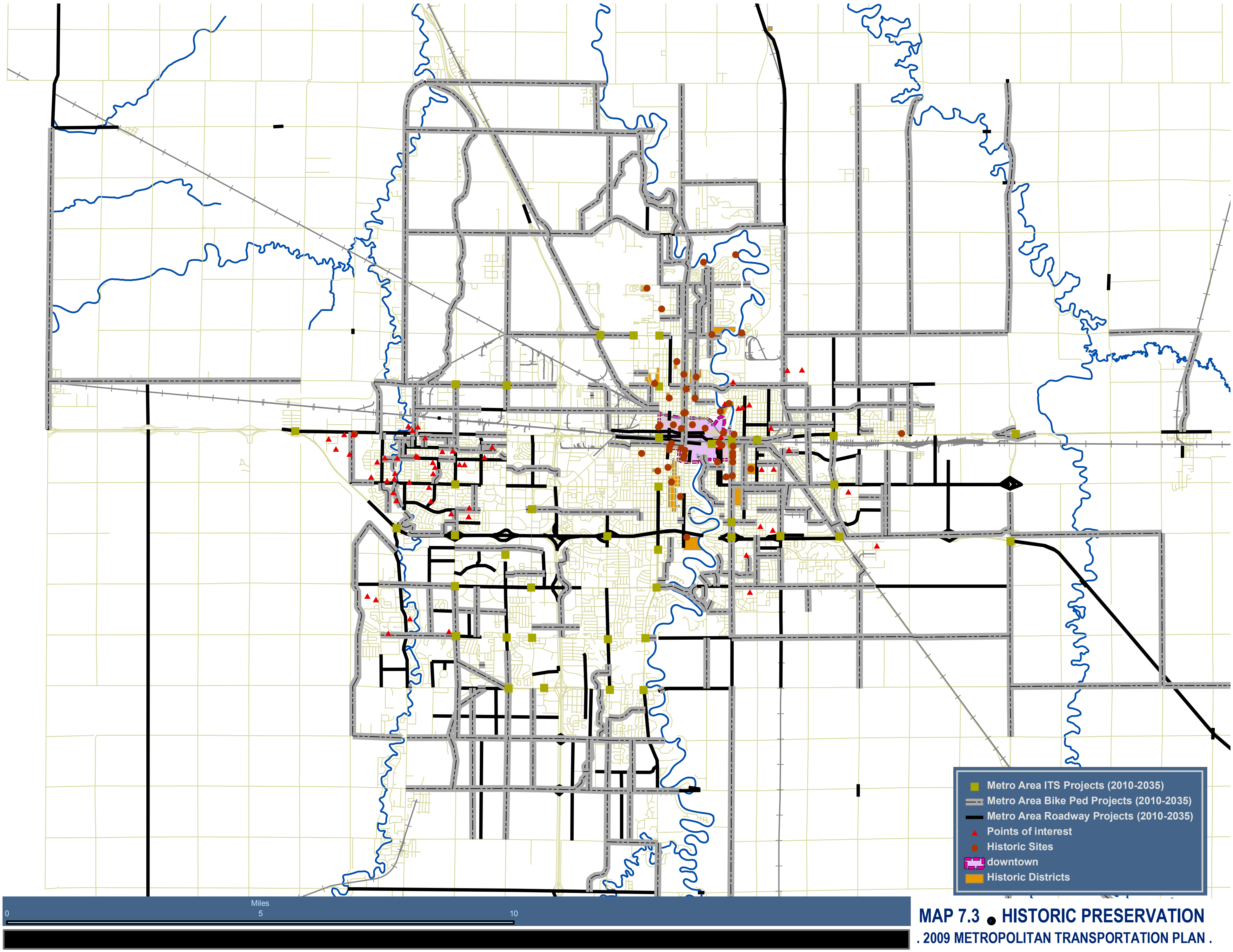
Cultural Resources

Cultural resources refer to historic, archaeological, and tribal resources. The Federal government has enacted a number of laws to protect these resources from transportation agencies using Federal funds:

- The National Historic Preservation Act (NHPA), Section 106 protects cultural resources that are on or eligible for the National Register of Historic Places

- The Archaeological Resources Protection Act protects archaeological resources on tribal land and non-tribal lands under federal jurisdiction

- The Department of Transportation Act of 1966, Section 4(f) protects all historic areas as well as all publically-owned parks and wildlife refuges



MAP 7.3 ● HISTORIC PRESERVATION

. 2009 METROPOLITAN TRANSPORTATION PLAN .

- The Surface Transportation and Uniform Relocation Assistance Act of 1987, Section 123(f), created a fund for the preservation or mitigation of historic bridges

The map on the page 7.12 (next page) was developed in consultation with representatives of local agencies and elected/appointed governmental bodies responsible for the preservation of historic places. It displays known local historic property or places within the Metro COG planning area. Transportation project corridors as identified in Chapter 5 are also highlighted in order to provide a preliminary indication of potential mitigation needs.

Mitigation Options

Mitigation for historic preservation takes place through the NHPA Section 106 process. This process involves:

1. Determining if Section 106 applies:
    a. Is the Federal action an undertaking under 36 CFR Part 800?
2. Determining the area of potential effects and identifying and evaluation resources:
    a. Is there a potential for historic properties to exist in areas affected by the undertaking?
    b. If properties do exist, are they eligible or potentially eligible for the National Register?
3. Determining how historic properties will be affected
4. Resolving adverse effects through avoidance, minimization, or mitigation

Typically, the Section 106 process is completed concurrently with the NEPA process. Because NEPA is the decision-making process, the Advisory Council on Historic Preservation (ACHP) feels integrating the Section 106 process into NEPA provides historic preservation its best chance to avoid or minimize adverse effects. Integration would result in historic properties being considered early in the process and becoming part of project alternative identification and selection.

The current practice of on-site, project-by-project mitigation results in the loss of archaeological sites, historic structures and buildings, traditional cultural properties and sacred sites. The ACHP has proposed considering applying similar mitigation strategies to historic preservation as those used for environmental mitigation:

- Off-site mitigation
    - Look at the value of the site in relation to other sites
    - Trade off adverse impacts on one site for mitigation of another
- Mitigation banking for archaeological sites

Potential Impacts

Table 65 provides a list projects with inventoried resources to help illustrate the possibility of resource impacts. This list was developed by reviewing the maps on the preceding pages and reviewing the project descriptions in those instances where there appeared to be potential conflict. This list is only preliminary. The nature of the data used and the project scoping may require additional research and field survey to adequately determine if the resource is present and if the project will impact it.

In addition, Metro COG will meet annually with the Environmental Review Group during the development of the TIP to review projects for which federal dollars are being requested and to consult with them regarding potential environmental impacts (and associated mitigation) of the candidate projects prior to their programming in the TIP. The consultation will involve the identification of issues that project sponsors will need to consider prior to the beginning of the NEPA process. A report on this consultation meeting will be made as part of the TIP process.

Table 65. Projects Preliminarily Identified to Have Possible NEPA Impacts

Jurisdiction	Project #	Project Description	Potential Impact
Cass	4B	Construct shared-use path from I-94 to Mapleton Community Center	Prime Farmland
Cass	6B	Construct bike-ped bridge over Sheyenne River at 52nd Ave South connecting to multi-use paths on either side	Floodway
Cass	7B	Construct shared-use path connecting City of Horace to the Sheyenne Diversion shared-use path	Prime Farmland
Cass	11B	Construct shared-use path along Drain #45 from 12th Ave N to 76th Ave N	Floodplain
Cass	14B	Construct shared-use path from Horace to West Fargo along Sheyenne Diversion	Floodplain
Cass	17B	Construct shared-use path along Red River from CR 20 to CR 22	Floodplain
Cass	L1 and L2	Raise roadways near Lake Sure Estates	Floodplain
Clay	21	Rebuild Red River Bridge at CSAH 12 (60th Ave S)	Floodplain & Prime Farmland
Clay	22	Rebuild CSAH 12 from Red River to TH 75	Floodplain & Prime Farmland
Clay	25	Construct 12th Ave S (CSAH 16) fro 40th to 46th Street	Prime Farmland
Clay	L1	Construct Red River Bridge in vicinity of Fargo's 70th or 76th Ave S	Prime Farmland
Clay	L2	Construct 12th Ave S & MN 336 Interchange	Prime Farmland & Wellhead Protection Area
Dilworth	1	Construct 7th St NE from TH 10 to 15th Ave N	Prime Farmland
Dilworth	2 & 3	Construct 8th Ave N from 34th St to 7th St NE	Prime Farmland
Dilworth	L1	Construct Grade Separation of BNSF at 55th St	Prime Farmland & Drainage
Dilworth	L3	Construct 1st St NE from 7th Ave N to 15th Ave N	Prime Farmland
Fargo	2	Widen 4th St from 2nd Ave S to 6th Ave S	Historic Structures
Fargo	8	Construct 25th St N from CR 20 to CR 31	Floodplain
Fargo	13B	Construct Cook Coulee shared-use path	Floodplain
Fargo	15B & 16B	Construct bike-ped bridges over Red River	Floodway
Fargo	27	Reconstruct 52nd Ave S bridge over Red River	Floodway
Fargo	29	Construct 76th Ave S from 38th St to 45th St	Floodplain
Fargo	30	Construct 76th Ave S from 36th St to 25th St	Floodplain
Fargo	31	Widen CR 20 from Red River to I-29	Floodplain
Fargo	32	Reconstruct NP Ave Bridge at Red River	Floodway
Fargo	34	Construct Red River Bridge at 70th Ave S or 76th Ave S	Floodway
Fargo	35	Widen University Drive from 52nd Ave S to 64th Ave S	Prime Farmland
Fargo	38	Reconstruct NP and 1st Ave N	Historic Structures
Fargo	42	Construct 45th St from 52nd Ave S to 76th Ave S	Prime Farmland
Fargo	L24	Construct Seter Parkway from 28th Ave S to Veterans Blvd	Prime Farmland
Fargo	L26	Reconstruct 12th Ave N bridge over Red River	Floodway
Fargo	L30	Widen 32nd Ave S from Veterans Blvd to 32nd St	Prime Farmland

Table 65. <<Continued>>

Jurisdiction	Project #	Project Description	Potential Impact
MnDOT	9	Construct auxiliary lanes on I-94 at interchange with 34th St	Prime Farmland
MnDOT	11	Glyndon Access Management Project on TH 10	Prime Farmland
Moorhead	3	Construct 4th Ave S from CR 81 to 34th St	Prime Farmland
Moorhead	7	Construct 8th Ave N from 28th St to 34th St	Prime Farmland
Moorhead	23	Construct 40th St S from 12th Ave S to Dilworth	Prime Farmland
Moorhead	27	Construct 24th Ave S from 40th St to 46th St	Prime Farmland
Moorhead	32	Reconstruct Center Ave Bridge at Red River	Floodway
Moorhead	L1	Reconstruct 15th Ave N bridge at Red River	Floodway
Moorhead	L4, L5 & L7	Construct 20th St from 40th Ave S to 60th Ave S	Prime Farmland
NDDOT	2	Rehabilitate 10th St from 8th Ave S to 2nd Ave N	Historic Structures
NDDOT	7	Reconstruct Main Ave from I-94 to 45th St	Floodway
West Fargo	L3	Make improvements to Sheyenne St Corridor from I-94 to 52nd Ave S	Prime Farmland
West Fargo	L5	Widen 32nd Ave S from 9th St W to Veterans Blvd	Prime Farmland
West Fargo	L9	Construct 36th Ave S from Veterans Blvd to 4th St E	Prime Farmland
West Fargo	L10	Construct 23rd Ave S from Veterans Blvd to 4th St	Prime Farmland

Chapter 8: Plan Maintenance and Monitoring

An important element of every transportation plan is an accurate assessment of its final recommendations as compared to the established performance goals and issues identified in the planning process. This section outlines those monitoring activities that will be completed in order to accurately and continuously assess the effectiveness of this plan and any potential need to alter the plan in response to the changing conditions of the transportation network.

Metro COG staff will take the lead on ensuring the activities are completed or addressed in coordination with jurisdictional staff and other partners. The following activities have been identified for completion:

Roadways

- Assessment of 8th Street (U.S. 75) in Moorhead from 20th Avenue South to Main Avenue. Of particular interest will be the frequency of bicycle and pedestrian crashes along the corridor, especially in the area adjacent to Concordia College. Also of interest, given the limited right-of-way, will be M & O and TDM strategies to improve traffic flow without adding additional capacity.

- Update the Urban Area Boundary in 2011 or 2012 given the data provided by the 2010 Census. The functional classification system should be reviewed at the same time.

- Gather region-wide traffic counts in 2010 for model calibration

- Intersection safety study for Moorhead to include

    - 8th St and Main Ave
    - 14th St and 6th Ave S
    - 14th St and 9th Ave S
    - SE Main and 12th Ave S
    - 34th St and Main Ave

- Intersection safety study for Dilworth to include

    - CSAH 9 and Main Avenue

- Achieve regional consensus on RSTI corridors and document needs for those corridors (follow-up to Security Plan)

- Extraterritorial roadway planning and identification of future potential RSTI corridors.

- Work with local jurisdictions to achieve consensus regarding possible future south bridge corridor(s).

- Identify potential future interstate-grade highway corridors

- Fargo 7th Ave N Corridor Study from Broadway to 25th Street

- Use Congestion Management Toolbox for planning studies and give explicit consideration to strategies contained therein

- Complete Interstate Operations Study, including recommendations to protect system operations, and amend all recommendations into the Long-Range Transportation Plan

- Continue to pursue goals of 2007 Freight Assessment; explore potential of a regional freight shippers coalition; build relationships with area shippers

- Encourage appropriate street widths, including the possibility of "road diets" for sections that appear to be over-built

- Work with cities of Fargo and Moorhead to achieve consensus regarding tolls on the 12th/15th Ave N bridge after 2018

- Identify needs and transportation solutions for workforce members in exurban communities

- Continue to work towards a regional TOC

- Develop a performance measures data program to collect, analyze, and report information

- Explore interest in forming Transportation Management Associations, as appropriate

- Complete a technical evaluation of the 64th Ave S/I-29 interchange and the 76th Ave S/I-29 interchange that will inform the City of Fargo and NDDOT regarding the future need for either or both

ITS/Roadway Management & Operations

- Develop regional signal timing manual to provide uniformity in signal operations

- Implement recommendations of Fargo-Moorhead Metropolitan Traffic Operations Plan

- Monitor peak hour travel times on key corridors

- Annually work with ATAC to produce a joint report on the state of system operations in the metro area.

- Participate in Emergency Services Management group

- Study ways to mitigate the impacts of train traffic on arterial road networks

<u>TIP/STIP Program</u>

- Develop project prioritization methodology and establish consensus

- Annually engage member jurisdictions on the identification of regional transportation priorities

Regional Travel Demand Model

- Complete a Household Origin-Destination survey
- Support development of freight components within the regional travel demand model
- Develop mode split in model

Transit Program

- Work with transit to identify opportunities to provide express bus service, late night “Owl service,” and/or more frequent service to specific areas as warranted by demand
- Organize annual meeting of MAT with regions largest employers to discuss transportation needs
- Continue to meet annually with institutions of higher education to coordinate services, exchange information, and consult regarding needs and opportunities
- Work with Transit to extend U-Pass or bulk purchase programs to large employers
- Continue working for a regional transit system regardless of jurisdictional boundaries
- Study fare structure and evaluate feasibility of reducing fares or establishing a fare free zone
- Identify potential locations for “deluxe” shelters and identify options for improving shelter quality
- Work to achieve local consensus regarding possible need for a light-rail corridor planning study

Bike/Ped Program

- Develop a Complete Streets policy primer for use by local jurisdictions
- Work with local jurisdictions to coordinate and implement Complete Streets policies as needed
- Support public education campaigns regarding bicycle safety and automobile-bicycle interaction on streets
- Identify important bike network gaps and recommend projects to close them
- Complete an extraterritorial bikeway plan

- Achieve consensus regarding regional pavement standards for on-road bicycle facilities

- Develop a local program to identify and address pavement quality issues (both on-road and shared-use path)

- Continue to identify appropriate locations for bike-ped bridges that cross rivers, interstate, railroads, and other barriers

- Continue to implement recommendations of 2008 Red River Greenway Study

- Develop regional consensus regarding the installation of pedestrian countdown timers at signalized intersections

- Continue to support the efforts of local jurisdictions to improve signage on bicycle routes

- Identify funding for bicycle education campaign(s)

- Encourage the establishment and advertisement of a "one-stop" phone number for the reporting of bicycle route maintenance issues

General

- Work to establish a better connection between transportation plans and plat reviews

Appendix A

Public Participation

Keep Me Informed

Keep Me Informed

I wish to be informed of upcoming Transportation Plan input events and opportunities

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Metropolitan Council of Governments

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School District Focus Group

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INTERESTED IN SRTS

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Focus Group Public Input
Bike-Ped Issues
6-17-08

- Safety
    - Bike education and etiquette needed both for bikers and drivers
- Bike network needs to be more connective
    - East-west connections are poor; not many to choose from
    - North-south connections are ok, but changing
        - Some good bike routes were closed when rail crossings were closed for the quiet zone
- Maintenance could be better
    - Often there is gravel on shoulders and in the outside “bike-able” curb-lane area of roads.
    - Maintenance should be year-round
        - Brush off bike trails
        - Make sure bike-route roadways are plowed all the way to the curb
    - There are many sections of sidewalk that are in poor shape; need to be replaced
- Walk signs at intersections sometimes do not stay lit long enough for elderly to get across
- There is a general ignorance of the rules and responsibilities for cyclists. The “culture” is not there – especially true for kids.
    - Planners, engineers, cyclists, and motorists all play a role – need to be more informed about those rules and responsibilities
- Not enough signage (directional/wayfinding)
    - This is a barrier for new cyclists. Too often they ride a bike path to a dead end with no idea how to get to their ultimate destination
    - Sign or identify bicycle lanes so that they are not used as parking lanes
- The power structure
    - How do we become bike friendly?
    - Do facilities have to come first, or the people?
    - Need to get lots of people involved → also related to the “culture” issue
    - Need dedicated funding for facilities and maintenance
- Policy changes
    - Follow design guidelines from AASHTO and Mn/DOT
        - Build bike paths only in green corridors outside of roadway right-of-way; build on-road facilities everywhere else.
- Different voices/different needs
    - Sometimes the bicycling community does not speak with one voice, so it gets confusing to decision-makers (e.g., are bike paths good or bad?)
    - Bottom line – anyone should be able to ride a bike to anywhere they want.
        - This may mean providing multiple facility types – bike paths and on-road – for each network segment. People will pick the facility on which they are most comfortable.

- ADA curb cuts – need more
    - The textured, dome type ramps can be a problem for wheelchairs
- Minimum sidewalk width should be 5 feet
- The countdown type of ped signals are well appreciated
- Intersections should have an all-stop phase for cars with “walk” signs lit so that pedestrians have a competitive advantage
- Store fronts should be built behind the sidewalk near the curb
    - Parking should be in back, behind the store
- More bike-ped bridges are needed with connecting pathways
    - Not just at river, but over interstate and railroads too.
- Remember to connect the FM area with other communities
    - Rails-to-trails

Focus Group Public Input
Commercial and Business Interests
6-20-08

- We need to re-think transportation funding
  - Pay as you go → more toll roads
- Build it right the first time instead of going back every five years to re-do it
- The region's connections to the rest of the country will be important for our future economic development and competitiveness
  - The region's economic competitiveness will suffer as transportation infrastructure deteriorates
- Trains will become more important because they are cheaper over long distances
  - They are not good for just-in-time freight
    - Businesses may have to get use to warehousing parts and supplies again or monitoring production processes more closely so that orders are placed with enough lead time
- Congestion mitigation is taking the funding priority, but roads that are falling apart that do not have congestion are not getting fixed
  - What should the vision be for non-metro areas? They may not have congestion, but they still have needs.
- Traffic flow could be improved
  - Better signal coordination would help
  - Better access control would help
    - Commissioners need to say "no" to variance requests
  - Dedicate certain interchanges for truck stops and truck off-ramps. All of the truck traffic on every interchange slows things down
  - Improve signage
- Signing future arterials at urban fringe is good – keep it up
- Increasing densities with mixed-uses through incentives is good as long as the infrastructure can support it
- Transit needs to become a real option
  - More frequency; shorter headways
  - Serve manufacturers and New Americans
  - Improve transit safety and/or transit safety image
- Consider building park-and-ride lots in out areas with bicycle parking
  - Bike racks on buses are often full; they are gaining a reputation as being "unreliable" so people may stop using them
- Improve bike route connections to high traffic areas
  - Include bike parking and storage
- Balance all modes of transportation; be less "car-centric"
- Delivery trucks downtown are becoming an issue
  - Perhaps create a "truck time" during non-peak hours for deliveries
- Rail consolidation is still desirable
- Run buses on a grid system; not the downtown pulse

Focus Group Public Input
Elder Care & Limited Mobility Issues
6-19-08

- Power Chairs and Scooters do not fit on buses
- There is not enough paratransit
  - Smaller vans might be nice for people who can still walk, but cannot walk far.
- Far south routes do not have direct access to downtown
  - Downtown access is important for medical appointments and treatment
  - Riders can transfer to/from a downtown bus, but asking patients to sit and wait an hour for a bus following radiation treatment or other medical procedures may not be realistic.
  - It takes considerable time, for example, to get from Sheyenne Crossing to MeritCare's downtown campus
  - Some appointments are scheduled very early in the morning and they are impossible to reach by bus because the buses don't run early enough
  - Is it possible to have park & ride lots for hospital trips?
- Expanding transit services to new areas of town is important
- Need better coordination of services
  - Fixed-route, Handiwheels, Paratransit, Senior Commission Ride Service, Anytime Transportation, etc. all should work seamlessly together
  - Can all work from one master schedule?
- Make better land-use decisions
  - If you are going to build an assisted living facility or senior center, put it near a bus line
- Paratransit charges higher rate to nursing homes versus private residents
  - This may be based on a misunderstanding of how the nursing homes are charging residents
  - Many use paratransit for medical trips, but some want to use it for leisure trips – going to baseball game or to a concert
    - Priority needs to be given to medical trips
- Senior companions are often willing to give rides, but cannot because of liability issues
- For the future, the region will have to have more transportation services for elderly and limited mobility populations
  - How do we keep the costs down to eliminate that barrier?
  - Will there be/will we need more private providers for a fee?
  - Public transportation may not be able to provide every trip
    - Social events should not be a priority, but seniors are more active now than ever
  - Make better use of what we have
- Urban sprawl makes these issues worse
  - Higher densities will help
- Can there be a senior circulator on a fixed route?

    - What about a campus-to-campus bus for medical facilities
        - E.g, Southpoint to MeritCare South Campus to MeritCare Downtown
- We may be "going back to the future" with more front door services like groceries, milk, medical house calls
    - It's just a matter of having a large enough market to make it work economically
- Education of some seniors who are still mobile and still drive may be necessary.
    - Keep things simple, familiar, and not complicated
        - Some streets and interchanges are complicated
    - Road testing elderly drivers more frequently may be necessary
    - Keep down the number of one-way streets
    - Medical facilities should be encouraged to not schedule appointments for elderly out-of-town drivers for peak hours
        - Can they provide driving directions to the patient in the appointment letter?
        - Can there be a MeritCare park and ride at the edge of town so that older rural drivers would not need to drive in town?
        - There is little coordination between medical facilities and transit
    - Keep speed limits down and keep them consistent
        - Can all streets have the same speed limit no matter which city?
    - Downtown is inaccessible to seniors who do not know their way around
    - Driving and looking at signs is difficult
        - Sign only when necessary
        - Signs could be bigger and easier to read from farther away
        - Use street numbers; not names (e.g., 1st Street, 2nd Street, 3rd Street versus Oak Street, Maple Street, etc.) It is more intuitive and closer to what older drivers are accustomed to.
        - Traffic moves too fast
- The MAT system is too complicated for seniors to learn
    - More routes and routes that run later would help
- The ADA curb cuts are a nice idea, but designed wrong
    - The foot rests of wheelchairs hit the street; wheelchairs have to go down backwards
    - Longer, more gradual curb cuts would be better
    - When built, test them by trying to navigate them in a wheelchair

Focus Group Public Input
Environmental Issues
6-19-08

- The Minnesota Department of Natural Resources is beginning to pull back because of energy costs
  - Employees need special permission now to leave the city in which they are employed
  - If we want to consult with the DNR more in our planning process, it may have to be more teleconferencing and non-travel based information sharing
- The river should provide a sense of place and pride. It should be viewed as an amenity.
  - People should feel safe there
- The DOT has a publication on identifying wildlife corridors and providing underpasses for wildlife.
- Are recreational uses being considered when we build transportation corridors?
  - For example, some culvert types are dangerous for recreational users.
- F-M is a big birding region
  - We should look at bird migration corridors and how they relate geographically with proposed wind farm locations → talk to power companies
- Transportation planning should compliment natural-resources-economic-development planning
- Look at sustainability issues and non-sustainability of continued sprawl
- Environmentally speaking, higher densities are better than low densities
  - People will accept higher densities if we can give them access to high-quality green space.
    - Examples of quality green space include downtown Fergus Falls, Lindenwood Park, Island Park
- Possibly begin planning for future light rail
- Make a policy recommendation that development codes be changed to include a habitat/environment point system that is tied to mitigation fees, etc.

Focus Group Public Input
Freight
6-16-08

- The lack of an intermodal rail facility is hurting the ND economy
  - The FM communities and surrounding area need intermodal access to get businesses to locate here
  - The existing Dilworth intermodal facility is not used to maximum utility.
    - The steamship lines and railroads ship containers to Minneapolis in order to improve through-put process at west coast dock facilities. But this means that local companies have to pay to bring containers back to Fargo-Moorhead.
    - The steamship lines contract directly with railroad companies and currently have more business than they can handle. F-M just doesn't have the critical mass of freight demand that would lure greater cooperation from the railroads or steamship lines. Besides, they may not have the capacity to handle more business.
    - Up and coming middle class in India and China are drawing more and more capacity and business from the steamship companies.
  - Rail is slow – not a "just-in-time" mode, but trucking is becoming more expensive because of fuel costs.
    - Plus, trucking is easier. Dealing with railroads can be difficult
- Roads are not a huge freight issue in F-M.
  - But it is important to stay on top of pavement conditions.
  - Truck routes are not always properly labeled.
    - On-street parking should not be allowed on truck routes – difficult to make corners
  - With downtown revitalization, more businesses are requiring freight deliveries – including FedEx and UPS deliveries.
    - This trend may lead to larger vehicles making more stops, which will be a challenge
  - With more mixed-use development, pedestrians and freight trucks start to mix, which may be a safety issue
    - Mixture of residential, commercial, and light industrial is good, but do not choke off businesses – they need freight routes
    - Renaissance has encouraged a lot of speculation; time will tell if those developments are economically sustainable over the long-term. Downtown revitalization only last until the taxes kick in.
  - Bike lanes are better than bike paths because drivers are more aware of the bikes.
    - Dedicated bike routes between high generators like NDSU and downtown will help keep bikes off of truck routes
  - Poles for overhead power lines often seem to interfere with adequate turn radiuses.

    - The downtown one-ways allow for truck parking to unload without tying up traffic.
- Independent truckers are going out of business
    - Trucking companies are not well positioned to pick up the slack
- 9-11 has put some constraints on air-truck through-put
    - Aircraft size and type limits the volume of freight carried into F-M area.
        - Fuel prices and the volume of passengers limits the aircraft types that the airlines send to F-M, which limits freight capacity
        - Post-9-11 restrictions have caused some carriers to walk away from carrying some commodities
            - Fireworks
            - Mail
- Some pretty large companies may not understand logistics or the complexities of freight shipments because they contract with third-party freight brokers to take care of it.
- For F-M, the primary outbound freight commodity is food; the primary inbound commodity is parts and supplies for manufacturers.
- Energy costs are changing the business environment.
- F-M has more outbound freight than inbound – imbalance that makes it a challenging business environment.
    - Currently a 30-40% difference between inbound and outbound
    - No one wants to dead-head back to F-M. The trucking companies that <u>have</u> to come here because they are based here get taken advantage of.
    - Again, a function of not having a "critical mass" of population and businesses demanding goods from elsewhere
- Businesses site themselves based on a balancing of costs between land and transportation. F-M has an advantage in cheap land, but higher energy costs are offsetting that advantage.
    - If higher energy costs remain over the long-term, businesses may begin to move closer to larger population centers like Minneapolis and Chicago to minimize total costs.
        - More competition among freight haulers means lower prices and lower transportation costs both because of competition and less distance to travel.
- Overall, participants stated that they saw little need for a local freight committee. The issues they deal with are much larger than just F-M where freight movement is pretty easy.
- The current ratio of trucking equipment to goods demand is 1.2:1, meaning excess equipment. Good for consumers, but bad for truckers.
    - As equipment availability falls, prices for truckers will go up (good for truckers), but those costs get passed on to consumers (bad for consumers). If costs go up too much, prices will rise to the point that demand begins to fall. It's all a delicate balance.

Focus Group Public Input
Higher Education Interests
6-19-08

- Transit needs to grow to the next level
    - More shelters are needed
        - Heated
        - Better maintenance
            - Cleaned more frequently
            - More timely and better snow shoveling
    - Buses need to meet schedule more reliably
        - Provide real-time information so that riders know where the bus is at
            - More technology
            - GPS on buses
            - Website tracking; cell phone tracking
    - Buses need to run more frequently on existing routes
        - When headways are less than 20 minutes, schedules become unnecessary; Riders know a bus is coming soon
    - Targeted transit marketing/ads to students
    - Late night bus service
        - Has to be treated differently than regular bus service
            - Use it as a security/safety tool; not just a people mover
            - Driver training is different
            - Security forces (not campus police) help
            - Make buses a "safe place"
    - Wheelchair accessibility on regular MAT routes needs to improve
        - Transportation system must be accessible to all
        - More curb cuts are needed
- Land-use changes
    - Higher densities with mixed uses
- Right now, parking on campuses is plentiful
    - As campuses grow, parking spaces will go away
        - Students and staff need real alternatives to driving
        - Attitudes have to change
            - "I want to park right next to my building"
- Bikes
    - No clear routes to campuses
    - Poor signage
    - Bike network is just not welcoming
- Balance all modes of transportation
    - Complete streets
    - Bigger bike racks are needed for buses; too often full
- A downtown taxi stand

    - Taxi's subject to availability
        - Not enough at 2 am, but don't have enough business the rest of the night to justify paying staff
        - Suggested partnership/collaboration between schools and taxi companies
            - Perhaps schools could subsidize to make more available during peak late night times
- Colleges are moving away from traditional 8 – 5 institutions; classing in evenings and on weekends are becoming more common
- Begin planning for future light rail

Focus Group Public Input
Low Income & New Americans Issues
6-23-08

- Need Sunday and holiday bus service
    - Bus-dependent people sometimes cannot get to work or have trouble getting hired because they cannot get to work on Sundays and/or holidays
    - If not a fixed route bus, perhaps at least a shuttle service to the industrial park that runs only at shift change times, and collects/drops riders at a central point
- Preference would be to improve service on existing lines over adding new routes to other areas of the city
    - Exceptions would be for high-traffic areas like the Industrial Park, Main Avenue in West Fargo (DMI), the McCara Industrial Park in Moorhead. These places offer good paying jobs, but it is difficult for prospective workers to get there because they are not served by transit.
        - Providing reliable service may incent businesses to adjust their shifts to better match bus service
        - If bus service is not realistic, perhaps organized carpooling/ridesharing → TMA
        - Handiwheels provides trips to the Industrial Park but at $8/day, which is a barrier for some, but Handiwheels is still losing money on the trips. Handiwheels needs more referrals to make it more cost effective, but some have stopped referring clients to Handiwheels because it costs so much or because they thought Handiwheels had stopped service to the Industrial Park
- Need bus service to Dilworth
- Would like to see buses run on a grid system rather than pulse to/from the GTC.
    - Would need more and better shelters with the grid system
    - Would like to see bus pullouts
        - Would help keep the traffic moving
- Good sidewalks in both residential neighborhoods and commercial areas are needed
    - Some areas lack sidewalks, or have sidewalks in poor condition
    - Every transit trip is also a pedestrian trip – have to walk to and from the bus stop
- Start planning for light/commuter rail
- It is difficult for seniors to understand bus routes and schedules
    - May be a short-term barrier; once they ride the bus a few times they may get use to it, but it is an initial barrier
    - Running buses on a grid system is more intuitive and with shorter headways, a schedule becomes unnecessary
- Some people need to make a trip to daycare before and after work, which is difficult to do on fixed-route transit

- Some New Americans see public transportation as not being “self reliant”, which is a barrier.
    - Transit is often a temporary solution for New Americans, as they all seem to want their own automobile – self-reliance, independence, which is why they moved to this country.
- Transit suffers from an “Image” problem
    - It’s for “those” people; not us
    - Make it more economical and convenient for middle class to use it → get more “suits” on the bus
    - Environmental issues may be one way to encourage middle-class use of transit
    - Subsidized bus passes as employment perk or incentive may help
    - A negative bus riding experience can feed on itself
- Run smaller buses in the off-peak, which can become Industrial Park shuttles during the peak hour when you run mid-sized buses
- Make public transportation as simple and dignified as possible
- Bicycle network needs better connectivity and better signage
    - More on-road bike lanes
- A springtime ad campaign to “Watch out for cyclists” may improve safety
    - Education is needed for both cyclists and drivers regarding rules of the road and how to co-exist.
- Rural transit is important for those who work full-time but still can’t afford to live in Fargo-Moorhead area
- Affordable density and mixed use will help with transportation issues
    - Walk to the corner grocery store
    - May run against our “natural” mid-western instincts where people expect big lots and low densities

Focus Group Public Input
School Districts
6-20-08

- Peak hour demand from so many parents trying to drive student to school is a safety issue
  - How do we encourage other modes of transportation?
    - Higher densities around Bennett Elementary seems to result in fewer drivers than it does at Kennedy, which is surrounded by lower density residential
- The new high school at 70th Ave and 25th St will need an overpass of I-29 to move students back and forth across interstate
- Can we explore using MAT as school transit – jointly operated?
  - Can MAT do counts of school aged kids who ride now?
  - Identify key transportation corridors
    - For example, 25th Street serves the new high school, possibly a new elementary school, Shanley, Bennett, Centennial, possibly Discorvery
    - 42nd St may be another important corridor to serve schools
  - Extend bus service out to new school sites
  - Schedule complexity and circuitous routes may be barriers, but possibly only temporarily until people get use to them
    - Once kids do it a few times, they do not seem to have trouble
  - More and better shelters are needed
    - There is nothing to block the wind in new southside neighborhoods
  - Can there be a loop route using 25th St and 42nd St?
    - To help get kids across in the interstate
  - After school activities are a challenge
    - Have to run buses for some kids, especially for those from lower-income families
    - Can MAT help fill this gap?
    - For Carl Ben and Ben Franklin, can MAT be schedule to contribute to after-school needs?
  - For middle schools there is a bigger catchment area and kids are older, so parents may be more willing to let them ride the bus
- Schools want to encourage walking and biking
  - Obesity
  - Safety
- The Fargo School District will be providing transportation to anyone who want it next year
  - No longer needs-based service and no charge
  - There is a distance requirement, so kids within a certain distance of school would be expected to get there on their own
- Catholic School System provides shuttles that pick up at churches, so kids have to get to the churches on their own

Focus Group Public Input
Security Interests
6-24-08

- "Transportation Security" is not about assuming the transportation system is a target, but more about making sure the transportation system functions in a disaster.
    - There may need to be system redundancy for critical elements
        - Fiberoptics
        - A TOCC or emergency command center would become a critical element
            - Some infrastructure redundancy for joint dispatch already exists in old dispatch centers – could be used if needed
    - Variable message signs
    - Cameras
    - Arterials near railroads are important as any haz-mat spill would close them
- Contingency plans are helpful
    - Who is responsible for what?
    - Identify critical areas and elements
    - Identify alternate routes
        - Can pre-sign emergency detours
            - "Follow emergency road 2A" can be put up on variable message signs, with small static signs pre-placed along ER 2A so that law enforcement does not have to get tied up in traffic control, detours, etc.
    - Do plan, draft it, test it through table-top exercises, then modify plan
- A centralized information gathering center is important
    - The joint dispatch center is not currently staffed to handle emergencies
    - Jurisdictions may not be willing to pay for a Command Center that is staffed 24/7
        - Is a portable events management system possible?
            - A virtual, scalable TOCC
- A radio station can be helpful
    - "Tune to 86.1 for emergency information…" on variable message signs along the roadway
- A review system is in place for street names so hopefully naming conventions become better, clearer, more intuitive
- Common traffic calming devices may not be effective, and become another expense

Focus Group Public Input
Transit Interests
6-25-08

- Cities don't listen to needs of riders
- Transit suffers from an image problem
  - Image won't change until more people ride the bus, but more people won't ride until image changes → catch-22 of low ridership
- There is some concern that north Fargo and south Fargo compete for resources and some see it as unfair
- There needs to be less headway; more frequency
- Some riders need to make a trip to daycare before going to work
  - How do we serve them?
- There needs to be more east-west routes that cross state line and can pick up and drop off in either state
- Routes are not complicated once you know them, but they may be an initial barrier for getting new riders on the bus
- Running buses on a grid system will create more transfers
  - At least one member suggested that there needs to be more transfer points with more buses interconnecting at them
- Language is a barrier for New Americans
  - Print schedules in other languages
- West Fargo needs better coverage, especially Main Avenue employment centers
- Perhaps MAT can provide mentors for the "Get your can on the bus" event to teach people how to ride
- Using smaller buses would mean needing more buses, and more buses means more staff, but MAT has enough problems staying fully staffed now
  - Also, smaller buses do not "kneel" and they don't last as long as mid-sized buses
- We are aging, but also staying more active later in life → demand for transit services likely to increase in the future
- Technologies like GPS and tracking buses via cell phone are possible, but some technologies are cost prohibitive
- Money is an issue – there is not enough of it
- Rural riders struggle to reach urban area for work and services
- Carts and baby strollers blocking aisles is a safety concern
- Schedules need to be achievable for drivers
  - They will stay on-time more often
- More and better shelters are needed
  - Better and more frequent maintenance is needed
    - More timely and better snow shoveling
    - General cleanliness needs to improve
- Residents need Sunday and late night service
  - Buses need to run longer on Saturdays

    - Transit on Sundays is needed for work trips and church
        - 8 until 4 on Sunday may not be enough
- Buses should run to the industrial park

www.fmmtp.org Public Input Survey

1. How has the rise in gasoline prices changed your travel behavior over the past year?

2. If gasoline prices remain at current levels or continue to rise in the future, how will it affect your travel behavior? (Check all that apply)
    a. Will buy a more fuel efficient vehicle
    b. Will move closer to where I work/attend school
    c. Will ride the bus to work/school more often
    d. Will walk to work/school more often
    e. Will ride bicycle to work/school more often
    f. Will carpool with other employees/students
    g. Will drive less by scheduling and consolidating trips
    h. My behavior will not change
    i. Other

3. If you were the Mayor of your city, what would be your top priorities for the city's transportation dollars? (Choose 4)
    a. Improve roadway pavement conditions
    b. Build more roadway capacity (e.g., adding more lanes) to improve traffic flow
    c. Build more roadway bridges over the Red River
    d. Build more roadway underpasses under the railroad lines
    e. Invest in technology (e.g., changeable message signs, traffic sensors, real time traffic conditions website, etc.) to keep motorists informed of traffic conditions and improve traffic flow
    f. Provide incentives to promote ride-sharing, telecommuting, and flex-time scheduling to decrease traffic
    g. Try to reduce crashes through roadway safety improvements, education campaigns, etc.
    h. Make buses run more often
    i. Add more bus routes to serve more areas of the city
    j. Make bus routes more intuitive and easier to understand
    k. Build more bikeways and bike bridges to improve bikeway system continuity
    l. Add signs to the bikeways so riders know where to go
    m. Retro-fit roadway infrastructure to make it easier and safer for older drivers to travel (e.g., more easily readable signs, wider lane stripes, etc.)
    n. Build an intermodal freight yard
    o. Create a special transportation fund for projects that enhance the region's economic competitiveness (e.g., for paving a road to a new business, fixing a freight bottleneck, etc.)
    p. Other

4. If you were Mayor of your city, what transportation policies or practices would you put into place? (Choose 4)
    a. Emphasize preservation of the existing transportation infrastructure over building new facilities
    b. Emphasize more/better environmental protection in transportation projects
    c. Emphasize the need for a transportation system that is accessible by citizens with limited mobility
    d. Find more sources of local funding for transportation
    e. Adjust residential and commercial densities to better utilize existing roadway capacities
    f. Hold simulated disaster/evacuation exercises
    g. Require sidewalks on both sides of new roadways
    h. Require bike paths adjacent to new roadways
    i. Require bicycle lanes or shoulders on new roadways
    j. Require more mixed-use development so that people can live closer to where they work and shop
    k. Require developers to put parking lots behind commercial buildings so that the storefronts can be closer to the sidewalk and roadway.
    l. Require developers, planners, and engineers to build a street network in more of a grid pattern rather than curvilinear streets with a lot of cul-de-sacs
    m. Require developers, planners, and engineers to build a street network that balances the needs of all forms of transportation
    n. Require roadways to be numbered (e.g., 1st Street, 2nd Street, 3rd Street,…) or named in alphabetical order (e.g., Ash Street, Birch Street, Cedar Street, Dogwood Street,…) to make it easier to find addresses
    o. Require traffic calming in all school zones
    p. Other

5. In your opinion, should the F-M region begin planning for a light-rail transportation system?
    a. Yes
    b. No

6. What issues seriously affect your travel?

7. Is there anything else you want us to know?

Open ended questions survey input

Comment	# of times repeated
Buses quit running too early -- should run later	4
Gas prices are a transportation barrier	3
Buses should start eariler so people who work early can ride the bus	3
Train delays are a transportation barrier	2
There are not enough sidewalks	2
Make is safer for people walking and riding bikes	2
Buses are too slow -- take too much time	2
Better bike path connenctivity would encourage more bicycling	2
Lack of Sunday bus service is a barrier	2
Wind, snow, and, ice are a transportation barrier	
We need hydrogen powered buses like Iceland	
We need a comprehensive metro-wide plan for trails	
We need a comprehensive metro-wide plan for light rail	
We need a comprehensive metro-wide growth plan that discourages sprawl and encourages improvements of the urban core and first ring neighborhoods	
We need a better public transportation culture	
Traveling between West Fargo and Moorhead via transit is not easy or timely.	
Traffic signaling is very poor at 8th St and I-94 in Moorhead	
Traffic light delays caused by the Moorhead quiet zone is causing the waste of fuel	
Traffic congestion on the south end of town (e.g., 32nd Ave & I-29; 45th St south of 13th Ave) is a transportation barrier	
There should be more transit route connections instead of needing to go downtown to change buses	
There should be better transit access to industrial parks	
There needs to be turning lanes on 17th Ave S in front of South High School (in Fargo). Congestion there is terrible during school arrival and dismissal times and for school events.	
There is not enough development on the north side to reduce the need for excessive travle for basic needs	
There is no sidewalk on 32nd Ave N between 10th Street and University	
There is no bus service west of Kmart after 6:30 pm	
There is no bus service on major holidays	
There is no bus service for events at Civic Center or Fargo Dome -- no way to get home	
There are too many one-ways	
There are a lot of streets that need signals for bicycle and ped safety (20th St & 24th Ave South in Moorhead; 20th St and 30th Ave S in Moorhead)	
The way people drive in Fargo is a travel barrier	
The sidewalk in front of the Fryin' Pan Plaza on Main Ave in Fargo is deadly	
The bottleneck on I-29 south ramp to I-94 is a transportation barrier	

The #11 bus driver takes long breaks and makes passengers wait a long time when they are tired from working all day. He is last to leave the terminal
Technology is okay, but costly
Stoplights on Main Ave in Moorhead need a timing adjustment
South Kmart needs a larger shelter
Some buses are too cold in summer time with a/c
Signal detection is not sensitive to bicycles
Shelters are poorly maintained -- dirty, smelly, sticky
Road construction and related delays are a travel barrier
Road conditions is a transportation barrier
Rail consolidation plan should be implemented
Poorly shoveled winter sidewalks is a transportation barrier
Please allow more time for routes during winter months when weather is bad so people can get to work on time.
Plan for light rail
Plan construction better. There are currently no routes on my way to town without construction (e.g., I-29 & 52nd Ave S; Sheyenne at 52nd Ave S; 42nd Ave)
People that ignore stop signs/signals is affecting ease of travel
Paper bus schedule in shelters does the job
Paint lines on streets in spring, not just before snow falls
NP and 1st Ave N should remain one-way pair
No bus route on Main Avenue is a transportation issue
Need more handicapped accessibility on sidewalks
Motorists need to be educated as to rights of bicyclists on our streets
More traffic on 25th St South is bad for home owners
More bike routes, please
Minimize sprawl
MAT needs better, more interactive on-line route maps and wayfinding
Limited night service means it takes a long time to reach your destination
Lack of bus routes on 25th St is a transportation barrier
Lack of bridges across the river definitely impacts my decisions as to whether I choose to ride my bike on a given day
Lack of bike lanes is a travel barrier
Keep paratransit affordable
It would be nice to have a method of informing the public of route changes that result from construction detours, and drivers need to be consistent in observing the route change
Intersection of 5th Ave S and University needs better turning instructions for eastbound vehicles -- intersection is confusing
I love to walk and bike in my neighborhood
Getting across University Drive at 14th Ave N is a safety issue
Fargo transit office seems to care only about NDSU
Fargo transit office ignores fixes route needs
Extend MAT bus route to Horizon Middle School (in Moorhead)
Existing bus routes do not cover residential areas well.
Entrance to 19th Ave N from Burger King and Subway drive-thrus needs to be looked at from safety and congestion stand points
Downtown lacks good accessibility from interstate
Do not cover the windows on buses with advertising

Disabled do not have convenient access to transportation at comparable cost
Crossing the south leg of the 2nd St and Main Ave intersection as a ped or cyclist is a safety concern. I would ride my bicycle to school more often but am afraid of that crossing.
Consider fines for drivers who harass cyclists
Cars blocking sidewalks, cars blocking crosswalks at intersections, drivers making right turns regardless of what color the traffic light is are transportation/safety issues
Buses stink
Buses need to run on time all the time, even in the winter.
Buses are wrecking residential streets
Buses are not reliable -- slow response time when buses break down or when drivers do not show up
Bus routes are a transportation barrier
Bus route destinations are very limited
Bus passes should be renewable on-line
Bus interiors are not efficiently designed -- much wasted space
Bus drivers turn over too often -- they should get more hours and better benefits

Bus drivers leave doors open when it is cold outside, making it cold on the bus
Build taller; surround community with parks as barrier
Blocked off streets are a travel barrier
Bicyclists need to be educated that laws apply to them too when they ride on streets
Add bike lanes to streets
A high speed train to the Twin Cities would keep our young people here if the commute was 1-2 hours
7th Ave N should have interstate access
7th Ave N from 45th Street to the east needs a finished shoulder on which to ride a bicycle
There needs to be a bus shelter outside the public health clinic on 4th St in Fargo
Have a sliding fee scale for all persons wishing to ride the bus
Conduct surveys of all people riding the bus

If there is a newsletter, have it available for bus riders to pick up on the bus
Have bus passes or "gift cards" that can be recharged, which may include identification of medical or special needs
Have bus information available in several different languages
Place bus schedules in grocery stores and clinics
There should be a bus stop at Microsoft rather than a block away

Final MTP Public Survey Tally

56 Submissions; 49 Accepted Responses

"If gasoline prices remain at current levels or continue to rise in the future, how will it affect your travel behavior?

59.18%	Will drive less by scheduling and consolidating trips
42.86%	Will buy a more fuel efficient vehicle
36.73%	Will ride bicycle to work/school more often
22.45%	Will ride the bus to work/school more often
20.41%	Will walk to work/school more often
8.16%	Will carpool with other employees/students
8.16%	My behavior will not change
6.12%	Other
4.08%	Will move closer to where I work/attend school

"If you were Mayor of your city, what would be your top priorities for the city's transportation dollars"

69.39%	Add more buses to serve more areas of the city
46.94%	Make buses run more often
44.90%	Build more bikeways and bike bridges to improve bikeway system continuity
36.73%	Improve roadway pavement conditions
32.65%	Make bus routes more intuitive and easier to understand
32.65%	Provide incentives to promote ride-sharing, telecommuting, and flex-time scheduling to decrease traffic
22.45%	Build more roadway underpasses under railroad lines
20.41%	Invest in technology to keep motorists informed of traffic conditions and improve traffic flow
14.29%	Build more roadway capacity to improve traffic flow
14.29%	Add signs to the bikeways so riders know where to go
12.24%	Build more roadway bridges over the Red River
8.16%	Create a special transportation fund for projects that enhance the region's economic competitiveness
6.12%	Other
6.12%	Try to reduce crashes through safety improvements, education campaigns, etc.
4.08%	Retro-fit roadway infrastructure to make it easier and safer for older drivers to travel
2.04%	Build an intermodal frieght yard

"If you were Mayor of your city, what transportation policies or practices would you put into place?"

44.90%	Require bicycle lanes or shoulders on new roadways
44.90%	Require sidewalks on both sides of new roadways
38.78%	Require developers, planners, and engineers to build a street network that balances the needs of all forms of transportation
36.73%	Require bike paths adjacent to new roadways
36.73%	Require more mixed-use development so that people can live closer to where they work and shop
28.57%	Emphasize preservation of the existing transportation infrastructure over building new facilities
26.53%	Emphasize the need for a transportation system that is accessible by citizens with limited mobility
26.53%	Adjust residential and commercial densities to better utilize existing roadway capacities
26.53%	Require developers, planner, and engineers to build a street network in more of a grid pattern rather than curvilinear street with a lot of cul-de-sacs
26.53%	Require roadways to be numbered or named in alphabetical order to make it easier to find addresses
20.44%	Emphasize more/better environmental protection in transportation projects
12.24%	Require developers to put parking lots behind commercial building so that the storefronts can be closer to the sidewalk and roadway
12.24%	Require traffic calming in all school zones
6.12%	Other
4.08%	Find more sources of local funding for transportation
2.04%	Hold simulated disaster/evacuation exercises

"In your opinion, should the F-M region begin planning for a light-rail transportation system?"

48.98%	Yes
44.90%	No

News Release

Contact: Brian Gibson, 701.232.3242
Email:gibson@fmmetrocog.org

July 10, 2008 – For Immediate Release

Metro COG Seeks Input on Transportation Needs

Fargo, ND – The Fargo-Moorhead Council of Governments (MetroCOG) is set to conduct a web based survey starting July 11th and running through July 31st. The survey is being conducted to gather public input concerning transportation needs, issues, and priorities in the metropolitan area. The input will be used to help guide the preparation of the Metropolitan Transportation Plan, which will outline the next 25 years worth of transportation improvements for the metropolitan area. Projects not listed in the Plan are not eligible for federal funding. According to MetroCOG Executive Director Bob Bright, "Transportation has many challenges now including high fuel prices and inadequate revenues to maintain our aging infrastructure. This is an opportunity for the community to impact planning for roadways, transit, and other transportation needs." The survey can be accessed by going to the MetroCOG website: http://www.fmmtp.org.

The public is also encouraged to provide input as part of this year's Downtown Street Fair. Through the cooperation of the Downtown Community Partnership, Metro COG will be conducting a public input open house as part of this regional event. The public is invited to stop in at 218 Broadway between the hours of 10 am and 7 pm July 17th and 18th to ask questions of Metro COG staff and provide their thoughts on the regions most pressing transportation needs.

Individuals with questions or comments are asked to contact MetroCOG directly at 701.232.3242.

MTP Public Input

MTP Public Input Open House

Thursday, July 17 from 10 am until 7 pm
218 Broadway, Fargo, ND 58102

Name	Telephone Number / E-mail Address
BRAD GRABER	Tel: 701-235-3493 Email:
Rachel Dill	Tel: 701-200-8088 Email:
HEATHER MCINTYRE	Tel: (701) 219-9719 Email: hmcintyre@innovishealth.com
Jesse Miller	Tel: — Email: miller.Jesse22@yahoo.com
Stacie Loegering	Tel: Email: tcsaturn@yahoo.com
Jerry Erbstoesser	Tel: 235 4956 Email: Jonesyouan9aol.com
Jon Harrison	Tel: 293-6130 Email:
Ron Parson	Tel: 218-864-0099 Email:
Alex Pratt	Tel: 701-540-2103 Email:
Katie Nolan	Tel: 701-261-2194 Email:
[illegible]	Tel: — Email:
Cheryl Stubbe	Tel: 866-8929 Email:
Jill Gannon	Tel: 701-238-4063 Email:

MTP Public Input

MTP Public Input Open House

Thursday, July 17 from 10 am until 7 pm
218 Broadway, Fargo, ND 58102

Name	Telephone Number / E-mail Address
Nick & Laurie Goodroad Funfar	Tel: 701-729-5783 Email: nick@abcseamless.com
Jon Moe	Tel: 701-866-7846 Email: jonheidi@gomoorhead.com
Kevin Warkentien	Tel: 612-991-4892 Email: kevinwarkentein@hotmail.com
Richard E. Blair	Tel: (701) 232-7110 Email:
Kelly Economon	Tel: Email: kelly.economon@gmail.com
Aisha Ahmad	Tel: Email: captainbluefish@hotmail.com
Luke Seger	Tel: Email:
Jed Pahan	Tel: Email:
Lindsay D[illegible]	Tel: ? Email:
Dan Koch	Tel: Email:
Tom + Jean Picard	Tel: 701-293-9429 Email: tompfamily.com
James Field	Tel: (701) 298-6849 Email:
Michael Lochow	Tel: (701) 271-4775 Email: teeitup75@hotmail.com

MTP Public Input

MTP Public Input Open House

Thursday, July 17 from 10 am until 7 pm
218 Broadway, Fargo, ND 58102

Name	Telephone Number / E-mail Address
LARRY	Tel: Email:
Gene Hendricks	Tel: Email:
The Arc of Cass County	Tel: Email:
" Jani Heinze R Arc	Tel: Email: A arcbuddies @yahoo.co
" " " "	Tel: Email:
" " " "	Tel: Email:
" " "	Tel: Email:
" " "	Tel: Email:
" " "	Tel: Email:
	Tel: Email:
The Arc of Cass Cou	Tel: Email:
TODD Novak JLG	Tel: ~~[illegible]~~ 701-364-0237 Email: tnovak@jlgarchitects.com
Don Jedeiss	Tel: Email:

MTP Public Input

MTP Public Input Open House

Thursday, July 17 from 10 am until 7 pm
218 Broadway, Fargo, ND 58102

Name	Telephone Number / E-mail Address
Katie Flock	Tel: 701-799-8655 Email:
Patte Kratky	Tel: 233-8382 Email:
Frank L Kratky	Tel: 233-8382 Email:
Barb Halverson	Tel: 701-237-6910 Email:
Ray Ellingson	Tel: 701-293-0139 Email:
Rudolph Kamm	Tel: 701-364-9426 Email:
	Tel: Email:
	Tel: Email:
	Tel: Email:
	Tel: Email:
	Tel: Email:
	Tel: Email:
	Tel: Email:

Transportation Issues

Transportation Issues

What transportation issues do you face? What are the region's greatest transportation needs? Please take a moment to share your thoughts with us, and don't forget to participate in our on-line survey at **www.fmmtp.org**.

Thank you!!

We need to learn how to recycle car pollution.

Optional Name: Joel Miller E-mail Address: millerjoel420@yahoo.com

You can drop this form in the comment box, mail it to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Transportation Issues

Transportation Issues

What transportation issues do you face? What are the region's greatest transportation needs? Please take a moment to share your thoughts with us, and don't forget to participate in our on-line survey at **www.fmmtp.org**.
Thank you!!

4 WAY STOPS ON 18th AVE S
BETWEEN 5th ST & University

Optional Name: RANDY MEYER E-mail Address:

You can drop this form in the comment box, mail it to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Transportation Issues

Transportation Issues

What transportation issues do you face? What are the region's greatest transportation needs? Please take a moment to share your thoughts with us, and don't forget to participate in our on-line survey at **www.fmmtp.org**.
Thank you!!

Please a bus down Main
& one to Sheyanne St.

Optional Name: Karen & Gene Dumont 701-298-0015 E-mail Address:

You can drop this form in the comment box, mail it to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Transportation Issues

Transportation Issues

What transportation issues do you face? What are the region's greatest transportation needs? Please take a moment to share your thoughts with us, and don't forget to participate in our <u>on-line survey</u> at **www.fmmtp.org**.

Thank you!!

I think TRANSIT Rydes should stay - RUNNING ON SUNDAYS

Optional Name:_______________ E-mail Address:_______________

You can drop this form in the comment box, mail it to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Transportation Issues

Transportation Issues

What transportation issues do you face? What are the region's greatest transportation needs? Please take a moment to share your thoughts with us, and don't forget to participate in our <u>on-line survey</u> at **www.fmmtp.org**.

Thank you!!

Think: Fgo shd have
Sunday & maybe holiday
bus svc.

Optional Name: Bev Woitzel E-mail Address: ______

You can drop this form in the comment box, mail it to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Transportation Issues

What transportation issues do you face? What are the region's greatest transportation needs? Please take a moment to share your thoughts with us, and don't forget to participate in our on-line survey at **www.fmmtp.org**.
Thank you!!

Many street storm drains (the openings between metal) are wide enough for bike tires to fall into when biking and are parallel to street — allowing this to happen + be dangerous for bike travel. This should be changed so they are perpendicular to travel flow. Can this be changed to be safer?

Optional Name: Tom Picard E-mail Address: tompfamily.com

You can drop this form in the comment box, mail it to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Transportation Issues

Transportation Issues

What transportation issues do you face? What are the region's greatest transportation needs? Please take a moment to share your thoughts with us, and don't forget to participate in our on-line survey at **www.fmmtp.org**.
Thank you!!

Purposed Moorhead / rail connection to Dilworth yard is fine,
But retain existing wye to Fargo

Optional Name: Richard E. Blair ~~E-mail~~ Address: 603 11TH ST. N. FARGO, ND 58102-4325

You can drop this form in the comment box, mail it to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Transportation Issues

Transportation Issues

Metro COG needs to know what transportation issues you face both personally and professionally. From trying to get to work on time to shipping freight across town, we need to know about the limitations of the Fargo-Moorhead transportation network. Please take a moment to share your thoughts with us:

On possible remodeling of roads, narrowing traffic lanes and adding a bicycle shoulder. I would really like to see bike lanes on shoulders of roads.

Optional Name: Austin Fay Address: 1136 Broadway N. 58102

Return this card to Brian Gibson, Transportation Planner, One North Second Street, Suite #232, Fargo, ND 58102 or e-mail your feedback to Gibson@fmmetrocog.org

Public Input Summary
Sorted by the number of individuals indicating agreement with the identified need

- We need a better bicycling culture (11)
- We need more education and etiquette training for both bicyclists and drivers (10)
- We need a more connective bicycle route network (9)
- We need more walk-able cities (9)
- We need more complete streets (7)
- We need better signage on the bicycle network (6)
- We need to encourage walking and biking to area schools (6)
- Transit needs a better image (6)
- We need better maintenance of the bicycle network (5)
- We need more walk-able roadway intersections (5)
- We need affordable density coupled with mixed-uses (5)
- We need to connect land-use choices with transportation choices (5)
- We need more bus shelters (5)
- Buses should run on a grid rather than pulsing at the GTC (5)
- We need to conserve transportation dollars by building roadways right the first time instead of re-building every 5 years (4)
- We need better weekend bus service (4)
- We need bus service to Dilworth (4)
- We need bus pullouts so that traffic can keep moving while the bus picks up/drops off (4)
- We need more and better bicycle route connections with surrounding communities (3)
- We need transit to serve high-traffic areas like the Fargo Industrial Park, DMI in West Fargo, and the McCara Industrial Park in Moorhead (3)
- We need development codes that include a habitat/environment point system that is tied to mitigation fees (3)
- We need to begin planning for future light-rail lines (3)
- We need rural transit for those who work full-time in Fargo-Moorhead, but cannot afford to live here (3)
- We need to explore the possibility of MAT providing services to the school districts (3)
- We need a bicycle advocacy group (2)
- We need to accommodate our Senior drivers (2)
- We need bus shelters that are better maintained (2)
- We need to provide public transportation for people who have to make a trip to daycare before and after work. (2)
- We will need more public transportation services as society grows older (2)
- We need better coordination of public transportation services (2)
- We need bigger bike racks on buses (1)
- We need to accommodate trucks in commercial areas (1)
- We need transportation planning that compliments natural-resources-based economic development planning (1)
- We need to re-think transportation funding (1)
- We need better transportation security (1)
- We need to improve service on existing routes (1)
- We need to expand fixed-route transit to serve new areas of the Cities (1)
- We need more para-transit services (1)
- We need to make public transportation as simple and dignified as possible (1)
- We need regional freight transportation connections with the rest of the country that help preserve our economic competitiveness (0)
- We need to improve traffic flow (0)
- We need better wheelchair accessibility on fixed-route buses (0)
- We need a Senior Circulator on a fixed route (0)
- We need better transit accessibility to medical facilities (0)
- We need more investment in Transit technology (0)
- We need more and better transit marketing (0)

Summary of Spoken Public Comments at the July 2008 Open House for the LRTP Issue Identification

- We need bike lanes on major streets
- You should not have to own a car to live and work in this city
- We need hydrogen powered transit vehicles like they have in Iceland
- Bus routes are not just difficult for seniors to understand. I have missed my bus several times because I did not correctly understand the schedule
- Signals on Main Avenue in Moorhead need timing adjustment
- I prefer to see bicyclists on the sidewalks; not the streets, especially children
- Go back to the grid street system
- Fargo Assembly and Radisson Hotel need Sunday transit service for workers. Buses should run later in evening for ESL students at Woodrow Wilson High School
- At 5^{th} Ave S and University Drive in Fargo, the eastbound through lane looks like a left-turn bay. There have been many near accidents there.
- Moorhead signal timing and coordination needs to be improved
- Bike bridges need automatic lifts so they can go up and down more quickly and be used more often
- Build taller; surround community with parks
- We need a better public transit culture

Brian Gibson

From: Bob Bright [bright@fmmetrocog.org]
Sent: Thursday, January 29, 2009 1:47 PM
To: gibson@fmmetrocog.org
Cc: 'Wade Kline '
Subject: public comments

I took a public comment on transportation from a Mr. Paul Anderson in Moorhead. Mr. Anderson's comments were:

E/W traffic along 1st Ave. lights need to be better synchronized.

E/W traffic along US 10 lights need to be better synchronized thru Dilworth.

Mr. Anderson expressed frustration at the "stop and go" nature of traffic from light to light.

Bob Bright
Executive Director
Fargo-Moorhead Metro COG
(701) 232-3242 x32

Visit our web site at www.fmmetrocog.org

Fargo-Moorhead Metropolitan Council of Governments
701.232.3242 • FAX 701.232.5043 • Case Plaza Suite 232 • One 2nd Street North • Fargo, North Dakota 58102-4807

TO: Environmental Consultation And Mitigation Committee
FROM: Kajari Laskar, Transportation Analyst
DATE: August 19, 2009
RE: Review 2035 Metropolitan Long Range Transportation Plan (LRTP)

The Environmental Consultation and Mitigation Committee Members are invited to review the elements of the Draft 2035 Metropolitan Long-Range Transportation Plan (LRTP) and provide their inputs and comments at the Second Committee Meeting on August 26th, 2009 at 10:00 am at the Metro COG Conference Room. The Committee is requested to address any type of environmental impacts the programmed projects or studies might have to the metro area and the region as a whole. The main objective of this process is to strengthen the link between transportation planning and National Environmental Policy Act (NEPA) by:

i. Eliminating or minimizing conflicts with other agencies' plans that impact the regions transportation plan.

ii. Assuring that decision makers take into account potential environmental impacts when adopting the transportation plan or plan update and that consideration is given to how such impacts might be mitigated

The draft document is available electronically for their review at www.fmmtp.org, and is also available in hard-copy form at the City Halls in West Fargo, Fargo, Moorhead, Dilworth, Glyndon, Harwood, Horace, and the Metro COG office at One North Second Street, Suite #232, Fargo.

The LRTP is a 30 Year planning document that identifies local transportation needs, analyzes those needs, develops local transportation goals and objectives, identifies projects or programs to address the needs, and prioritizes their implementation or construction. If a project is not identified in the LRTP, it is not eligible for Federal transportation funding assistance. All comments and inputs on the Draft LRTP will be used to determine the local acceptability of the recommendations of the plan.

Pending this input process, the LRTP will be presented to the planning commissions and governing bodies of Metro COG's member jurisdictions for their review and approval. Once approved locally, the LRTP will be sent to the states of North Dakota and Minnesota and the Federal Highway Administration as our local blueprint for future transportation investments.

Comments may also be faxed to 701-232-5043 or e-mailed to metrocog@fmmetrocog.org. Please contact Brian Gibson, Transportation Planner, at 701-232-3242 (Ext. 33) if additional information is required.

Thank you.

FARGO-MOORHEAD

METROPOLITAN COUNCIL OF GOVERNMENTS

701-232-3242 ⁂ Case Plaza, Suite 232 ⁂ One North 2nd Street ⁂ Fargo, North Dakota 58102-4807

Environmental Review Group Meeting
To Review the DRAFT 2035 Metropolitan Long Range Transportation Plan (LRTP)
Wednesday, August 26, 2009 – 10:00 a.m.
Metro COG Conference Room

SIGN-IN-SHEET

	NAME	ADDRESS / REPRESENTING
1	Bob Backman	River Keepers
2	Chuck Fritz	International Water Institute
3	Lynn Foss	Clay SWCD
4	Kajari Laskar	Metro COG
5		
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FARGO-MOORHEAD
METROPOLITAN COUNCIL OF GOVERNMENTS

701-232-3242 • Case Plaza, Suite 232 • One North 2nd Street • Fargo, North Dakota 58102-4807

Brown Bag Luncheon to review the MTP
FM Metropolitan Council of Governments
Wednesday, August 5, 2009 – 12 noon
FM Metro COG Office Conference Room

SIGN-IN-SHEET

	NAME	ADDRESS / REPRESENTING
1	Keely Hyland	Clay Co Public Health
2	Gina Nolte	"
3	Dianne Mondry	Earl Pomeroy
4	Kilki Poehls	Chamber of Commerce of FM
5	Dave Anderson	Downtown Community Partnership
6	Everett Kalbrand	Lutheran Social Services of ND
7	GRANT WEYLAND	CLAY COUNTY COM.
8	Wayne Bradley	Bradley Bus. Advisors
9	[illegible]	Fargo Commission
10	Dave Piepkorn	Fargo City Com
11	[illegible]	
12	Wayne Ingersoll	Cl. Count. Com.
13	Rory Beil	Dakota Medical Foundation
14	Julie Nash	Dilworth
15	Jan U Stewart	Fgo Plan.
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Metro COG Seeks Comments on Transportation Plan

Submitted by **Brian Gibson,** F-M Metropolitan Council of Governments

Roadways are the lifeblood of an urban area, allowing consumers to reach retail stores, workers to reach their jobs, and materials to reach manufacturing plants for assembly.

Roadways are also expensive investments. The typical arterial costs about $2 million per lane mile. Let me say that another way: one mile of an average five-lane arterial costs the public about $10 million. Right now, there are about 186 miles of arterial roadways in and around the Fargo Moorhead urban area, representing a total investment of over $1 billion dollars.

Given these uncertain economic times, good planning has become an even more important tool for the wise investment of limited public dollars. The ability to expand transportation capacity to meet demand may be severely limited, leading to a need to manage demand as well as capacity.

Other trends and issues influencing the future of transportation include:
1. The aging of America
2. The rise of the "creative class" and the decline of resource-dependent job growth
3. The growth of "just-in-time" freight
4. The Green Economy
5. Transportation security
6. Public health
7. The growth of exurban communities

All must be considered as we work to establish a vision for the future of transportation in the Fargo Moorhead metropolitan area.

Uncertainty around the future of transportation funding will have a big impact on transportation planning and project evaluation. There appears to be little desire to raise taxes and borrowing is unsustainable in the long-term. Therefore, the ability to use what we already have more efficiently will be the primary focus of transportation project development.

Sensors that monitor traffic flow, coordinating traffic signal timing, and providing real-time travel information to the public are just some of the ways technology can be used to increase the efficient use of transit and roadways. Promoting and incentivizing compact development and mixed land-uses in the urban core can also result in the more efficient use of existing transportation infrastructure while saving money by foregoing the cost of expensive extensions of transportation and utility infrastructure to new areas.

Businesses have options to play an active role in transportation management through organized car-pooling programs, transit incentives to employees, and changing shift start times to avoid periods of peak travel, just to name a few.

The Long-Range Transportation Plan (LRTP) is a federally mandated planning document that:
☐ Identifies local transportation planning issues and needs,
☐ Analyzes those needs,
☐ Develops local transportation goals and objectives,
☐ Identifies projects or programs to address the needs, and
☐ Prioritizes their implementation or construction.

If a project is not identified in the LRTP, it is not eligible for Federal transportation funding assistance. As such, the LRTP represents hundreds of millions of dollars of potential public investment in local transportation infrastructure. Moreover, it provides an overall vision for how all elements and modes of transportation could work together to relieve congestion, function more efficiently, and potentially spur economic development.

F-M Metropolitan Council of Governments (Metro COG) will hold a public input open house at the new downtown Fargo Public Library, on August 25 from 9 a.m. to 7 p.m. The public is invited to stop by at any time during the open house to review elements of the Draft 2009 Metropolitan LRTP and provide input.

The draft document is available electronically for public review prior to the open house at www.fmmtp.org, and is available in hard-copy at the City Halls in West Fargo, Fargo, Moorhead, Dilworth, Glyndon, Harwood, and Horace, and at the Metro COG office at One North Second Street, Suite #232, Fargo.

Public comments on the Draft LRTP are used to determine the local acceptability of the recommendations of the plan. Since public tax dollars are used to fund transportation, the public is encouraged to review the plan and provide their input.

Once the public has commented on the Draft LRTP, and appropriate adjustments are made to the plan based on those comments, the LRTP will be presented to the planning commissions and governing bodies of Metro COG's member jurisdictions for their review and approval. Once approved locally, the LRTP will be sent to the states of North Dakota and Minnesota and the Federal Highway Administration as our local blueprint for future transportation investments.

No Comments »

No comments yet.

THE COG CONNECTION

The Fargo-Moorhead Metropolitan Council of Governments

Volume 7, Issue 3 Third Quarter 2009

INSIDE THIS ISSUE

COG CALENDAR

Unless otherwise noted all meetings are held in the Metro COG conference room in the Case Plaza at One North Second Street in Fargo

Transportation Technical Committee Meeting

Second Thursday of every Month at 10:00 am

Metro COG Policy Board Meeting

Third Thursday of every Month at 4:00 pm

2035 Metropolitan Transportation Plan

PUBLIC INPUT MEETING

Metro COG will be holding a public input meeting at the **Fargo Public Library, on August 25th from 9 am until 7 pm**. The public is invited to stop by at any time during the open house to review elements of the Draft 2035 Metropolitan Long-Range Transportation Plan (LRTP) and provide input. The draft document is available electronically for public review prior to the open house at www.fmmtp.org, and is also available in hard-copy form by visiting the City Halls in West Fargo, Fargo, Moorhead, Dilworth, Glyndon, Harwood, and Horace, or by visiting the Metro COG office at One North Second Street, Suite #232, Fargo.

The Draft LRTP has been in development for more than a year. Last summer, Metro COG held a series of focus group meetings to collect early input on issues and opportunities. They also set up an information kiosk in a storefront on Broadway during the 2008 Fargo Streetfair, and invited the public to participate in an on-line survey of issues. Since then, Metro COG staff has been developing the LRTP, many elements of which are discussed in this issue of the Metro COG newsletter.

The LRTP is a 30 Year planning document that identifies local transportation needs, analyzes those needs, develops local transportation goals and objectives, identifies projects or programs to address the needs, and prioritizes their implementation or construction. If a project is not identified in the LRTP, it is not eligible for Federal transportation funding assistance. As such, the LRTP represents hundreds of millions of dollars of potential public investment in local transportation infrastructure. Moreover, it provides an overall vision for how all elements and modes of transportation could work together to relieve congestion, function more efficiently, and potentially spur economic development.

Public comments on the Draft LRTP are used to determine the local acceptability of the recommendations of the plan. The public is always encouraged to review the plan and provide their input.

Pending public input, the LRTP will be presented to the planning commissions and governing bodies of Metro COG's member jurisdictions for their review and approval. Once approved locally, the LRTP will be sent to the states of North Dakota and Minnesota and the Federal Highway Administration as our local blueprint for future transportation investments.

Throughout the remainder of this newsletter, specific elements and recommendations of the Draft LRTP will be discussed. It is Metro COG's hope that this issue of The COG Connection helps to educate the public about local transportation issues and needs and provides a preview of the Draft LRTP recommendations. It is also your invitation to attend the public input open house and provide your comments on this important document.

Public Meeting Notice

Public Involvement Opportunity
For the Draft 2009-2012
Metropolitan Transportation Improvement Program

Notice is hereby given that the Fargo-Moorhead Metropolitan Council of Governments (Metro COG) will hold a public meeting on Thursday, May 8, 2008 at 9:00 a.m. The meeting will be held at the COG Conference Room, One North 2nd Street, #232, Fargo, North Dakota.

The purpose of this meeting is to provide an opportunity for the public to review the Draft 2009-2012 Transportation Improvement Program (TIP). The TIP coordinates and schedules transportation and transit projects (i.e., highway, street, bikeway, pedestrian, transit, safety, enhancements and other transportation related improvements) in the metropolitan area over the next four years, thereby making these projects eligible for federal assistance.

The public comments received will be communicated to appropriate local governing bodies for consideration prior to their adoption of the 2009-2012 TIP. Copies of the Draft TIP can be reviewed at the COG Office, the Planning offices of Fargo, Moorhead, West Fargo and Dilworth and online at the Metro COG website www.fmmetrocog.org starting April 29, 2008, and will be presented at the public meeting.

The public is invited to attend the public meeting on Thursday, May 8, 2008 at 9:00 a.m; or submit written comments to Metro COG no later than 5:00 p.m., May 15, 2008 at Case Plaza, Suite 232, One North Second Street, Fargo, ND 58102 (e-mail: metrocog@fmmetrocog.org). Contact Kajari Laskar, Transportation Analyst, at 701.232.3242 (Ext. 35) if additional information is required.

For those needing special accommodations or to request auxiliary aid, please contact Ms. Joan Geyer, Metro COG Executive Secretary, by May 7, 2008

000189612r1

FARGO-MOORHEAD

METROPOLITAN COUNCIL OF GOVERNMENTS

701-232-3242 • Case Plaza, Suite 232 • One North 2nd Street • Fargo, North Dakota 58102-4807

Public Open House
To Review the DRAFT 2035 Metropolitan Long Range Transportation Plan (LRTP)
Tuesday, August 25, 2009 – 9:00 a.m. – 7:00 p.m.
Fargo Public Library – Downtown Fargo

SIGN-IN-SHEET

	NAME	ADDRESS / REPRESENTING
1	BRIAN GIBSON	METRO COG
2	Wayne Ingersoll	Moorhead Planning Comm.
3	Nicole Crutchfield	City of Fargo - Planning
4	Jim Payne	North Fargo
5	Tim Solberg	Cass County
6	R. Bergseth	Bergseth Bros. Co., Inc.
7	STEPHEN ANDERSON	MYSELF
8	McKenzie Haverkamp	~~3830/South~~ 3830 River DR S Fargo/Self
9	ERIN BERTEL	3830 RIVER Drive S, FARGO / Self
10	David Johnson	1739 3rd st N Fgo / self
11	LINDA ONSTAd	2550 SOUTH 15 ST #17 FGO – ME!
12	Cindy Gray	3619 Par St N. Fargo ND 58102
13	Mark Payne	4510 16th Ave S Fargo 58103
14	Barb Halverson	1544 E Gateway Cir Fgo 58103
15		
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Metro COG

Public Open House Comment Form

Please comment on the DRAFT 2035 Metropolitan Long-Range Transportation Plan (LRTP). What projects or ideas do you like? Which do you dislike? Please take a moment to share your thoughts with us.

To further review the document visit www.fmmtp.org . Thank you!

Hi My name is Mckenzie Haverkamp, I live at 3830 River Drive South, Fargo ND 58104 by University Drive. I was wondering how I might gain safe passage to walk and bike to school at Discovery Middle school. My concern is crossing Univercity Drive at 40th Ave. South. There is a greater than 5 foot elevation difference between the street and the side walk from where I would be visable to oncoming trafic. Thank you for helping me for becoming part of the solution.

Name (optional) Mckenzie Haverkamp e-mail address: ebertel@cableone.net

You may drop this form in the comment box at the open-house, or you may mail it to Brian Gibson, Transportation Planner, FM Metro COG, One 2nd St. N, Fargo, ND 58102, or you may e-mail comments and feedback to Gibson@fmmetrocog.org.

Metro COG

Public Open House Comment Form

Please comment on the DRAFT 2035 Metropolitan Long-Range Transportation Plan (LRTP). What projects or ideas do you like? Which do you dislike? Please take a moment to share your thoughts with us.

To further review the document visit www.fmmtp.org . Thank you!

- Some traffic signals, such as the off-ramp from SB I-29 to 13th Ave/38th St. could use some clarification. At this particular intersection, you can't tell what the EB drivers (from Holiday Inn) are going to do, and it ~~feels~~ is awkward to turn left from the ramp. Needs arrows as opposed to green ball.
- Elm Street really does need improvements for bicyclists.
- We can't build our way out of traffic congestion. We need to examine our development patterns.
- Don't skimp on bike/ped facilities.
- Put more ~~burden~~ of the responsibility for infrastructure costs on the developers (up front, vs. special assessments).

Name (optional) ______________________ e-mail address: ______________________

- Make IMPACT FEES Legal in ND and use to fund road improvements.

You may drop this form in the comment box at the open-house, or you may mail it to Brian Gibson, Transportation Planner, FM Metro COG, One 2nd St. N, Fargo, ND 58102, or you may e-mail comments and feedback to Gibson@fmmetrocog.org.

RECORD OF MEETING

COMMITTEE:
PROJECT NAME: 2009 LRTP

DATE August 25, 2009 **LOCATION** Fargo Public Library Meeting Room

ROUTE/COPY TO

PURPOSE OF MEETING Solicit and Collect Public Comments on Draft 2009 Long-Range Transportation Plan

ATTENDEES

Wayne Ingersoll
Nicole Crutchfield
Jim Puppe
Tim Solberg
R. Bergseth
Stephen Anderson
McKenzie Haverkamp
Erin Bertel
David Johnson
Linda Onstad
Cindy Gray
Barb Halverson
Mark Puppe

FROM
Brian Gibson

BRIEF SUMMARY OF MEETING

The following is a summary of comments from the public heard at the draft 2009 Long-Range Transportation Plan public input meeting and a response to the comments:

- We need a metro-wide policy statement on Complete Streets with a sample of what a policy might look like
  - *The Metropolitan Bicycle and Pedestrian Committee will take up this issue late in 2009. It may issue a stand-alone policy statement, or a regional Complete Streets policy statement may be developed as part of the 2010 Metropolitan Bicycle and Pedestrian Plan*
- The only way to make transit more attractive and competitive with other mode choices is to make people pay for parking. The colleges make their employees pay for parking, as does the Federal Building. Why not everyone else?
  - *While it may be true that forcing people to pay for parking may increase the attractiveness of transit as a mode of travel for commuters, the LRTP does not address fees for parking directly. However, the LRTP does advocate for increased densities and mixed-uses in the urban core, which may create natural market incentives for parking fees.*
- Senior ride vans should be replaced every 3 years, not every 5 years
  - *Given the fiscal constraint requirement of the LRTP, it does not appear to be possible for Fargo MAT to afford replacing Senior ride vans every 3 years, but it is fiscally possible to replace them every 5.*
- Speeding on the interstate is impacting available capacity. Drivers are avoiding inside lanes because too many drivers want to go too fast in those lanes, so those who obey the speed laws crowd the outside lane.
  - *While Metro COG is aware that utilization of the outside lanes of the interstates is low, it does not have any data that suggests it is the result of some drivers speeding in those lanes. If true, law enforcement officials are best positioned to address the issue.*
- School-aged children want to and need to be able to cross University Drive in the vicinity of 40th Avenue South, but there is too much traffic on University Drive and there is too much of an elevation difference between the roadway and the sidewalk to allow them to cross safely.
  - *The intersection of University Drive and 40th Ave South is currently being reconstructed. When completed, the intersection will include several pedestrian safety features, including traffic signals with*

ACTION NEEDED

RESPONSIBILITY

BRIEF SUMMARY OF MEETING

pedestrian signals and countdown timers, a pedestrian refuge island, and the adjacent sidewalks will be raised to the roadway elevation. However, every parent must evaluate the abilities of their children to safely cross a busy roadway. The presence of safety features does not replace a person's ability to evaluate a situation and make an appropriate decision.

- This meeting was under publicized
  - *The meeting was advertised in the Fargo Forum at least 10 days prior to the meeting date, as required by the Metro COG Public Participation Plan. In addition, a press release was issued two weeks prior to the meeting and a news article was published in the Fargo Forum regarding the upcoming meeting. Metro COG staff also wrote an article advertising the meeting for the F-M Chamber of Commerce blog. Metro COG devoted it's third quarter newsletter entirely to information regarding the draft 2009 LRTP and advertised the public input meeting. The meeting itself was covered by two local television news departments, which aired reports on their newscasts noting that the public could submit comments and feedback until September 7, 2009.*
- Metro COG should begin planning for regional light rail or a monorail system
  - *Given the immense scope and cost of a regional light rail system, Metro COG staff feels that more preliminary planning work needs to be done in cooperation with it's member jurisdictions before it can recommend such an undertaking. Metro COG staff intends to complete this preliminary planning work prior to the next update of the LRTP in 2014.*
- Transit service hours need to be extended
  - *Strategy 3-e-ii of the LRTP Goals and Objectives does recommend that MAT explore extending evening service hours for fixed-route buses.*
- Fix the potholes
  - *The LRTP places particular emphasis, in several locations, on system preservation and the importance of maintaining good pavement quality.*
- People are suffering from signage and sensory overload, making all signs less effective and making it more difficult to get around
  - *Metro COG does not have any data that either confirms or refutes this observation, but language will be inserted into the draft LRTP recommending that design engineers be mindful of the possibility of sensory overload when selecting signage.*
- Some traffic signals, such as the off-ramp from southbound I-29 to 13th Ave/28th St, could use some clarification. You can't tell what the eastbound drivers are going to do, and it feels awkward to turn left from the ramp. Needs arrows as opposed to green ball.
  - *A project for this particular intersection has not been identified in the LRTP. The comment was passed along to the Fargo engineering department*
- Elm Street really does need improvements for bicyclists
  - *The Fargo Short-Range Project #14B does provide for on-road bicycle facilities from 15th Avenue North to Edgewood Golfcourse Road*
- We can't build our way out of traffic congestion. We need to examine our development patterns.
  - *The Alternative B scenario within the LRTP does examine existing land-use development patterns, and offers suggestions for a new pattern for development*
- Don't skimp on bike/ped facilities
  - *The LRTP points out, in several locations, the need to move people versus moving automobiles. It recommends highly connective and contiguous bicycle and pedestrian facilities as two possible ways to do that. Bicycle and pedestrian infrastructure is a significant part of the Goals & Objectives of the plan, as well as the identified project lists.*
- Put more of the responsibility for infrastructure costs on the developers (up front versus special assessments)
  - *The LRTP makes no specific recommendation regarding how the jurisdictions fund their transportation infrastructure. The revenue projections used in the fiscal constraint criteria assume future funding levels that are similar to past funding levels. It is up to each individual jurisdiction to decide how best to fund transportation improvements given their particular circumstances.*
- Make impact fees legal in North Dakota and use to fund road improvements
  - *Metro COG is prohibited from lobbying the state legislature regarding state statutes, however this comment was passed to the NDDOT for their information.*

Appendix B

Air Quality Letters

Attachment Ai

May 11, 2009

Wade E. Kline, AICP
Community Development Planner
Metropolitan Council of Governments
Case Plaza, Suite 232
One North 2nd Street
Fargo, ND 58102

Dear Mr. Kline:

The North Department of Health, Division of Air Quality, monitored for sulfur dioxide, nitrogen dioxide, ozone, carbon monoxide, and coarse (<10 microns) and fine (<2.5 microns) particulate matter in the Fargo metropolitan area during 2008.

Fine particulate matter (<2.5 microns) are sampled for 24-hour averages using manually operated samplers, from midnight to midnight, every third day. Coarse and fine particulate matter are monitored continuously using automated analyzers for 1-hour averages. The sulfur dioxide, nitrogen dioxide, carbon monoxide, and ozone are monitored continuously. Neither the State nor federal standards for these parameters were exceeded in the Fargo area during 2008. Attached are the ambient air quality data summaries for the parameters monitored in the Fargo area.

Sincerely,

Justin Mayer

JDM:saj
Enc:

Attachment Ai

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : TRACE LEVEL SULFUR DIOXIDE (ppb)

				M A X I M A									
		SAMPLING	NUM	1 - HOUR		3 - HOUR		24 - HOUR		ARITH	1HR	24HR	%
LOCATION	YEAR	PERIOD	OBS	1ST	2ND	1ST	2ND	1ST	2ND	MEAN	#>273	#>99	>MDV
Fargo NW	2008		8433	4.9	4.9	3.0	3.0	1.0	1.0	0.3			

* The air quality standards are:
STATE Standards -
1) 273 ppb maximum 1-hour average concentration.
2) 99 ppb maximum 24-hour average concentration.
3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -
1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
3) 30 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Trace Level SO2 5-Minute Averages (ppb)

			5 - M I N U T E M A X I M A			
LOCATION	YEAR	NUM OBS	1ST	2ND	3RD	# HOURS >600
Fargo NW	2008	8444	12.6	11.6	8.8	

* No Standard is currently in effect:

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : NITROGEN DIOXIDE (ppb)

			M A X I M A		
		NUM	1 - HOUR		ARITH
LOCATION	YEAR	OBS	1ST	2ND	MEAN
Fargo NW	2008	8272	53	49	5.5

*The air quality standards are:

STATE - 53 ppb maximum annual arithmetic mean.
FEDERAL - 53 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : **CARBON MONOXIDE** (PPB)

			M A X I M A					
		NUM	1 - HOUR		8 - HOUR		1HR	8HR
LOCATION	YEAR	OBS	1ST	2ND	1ST	2ND	#>35000	#>9000
Fargo NW	2008	8441	6490.0	1712.0	1200.0	700.0		

* The STATE and FEDERAL air quality standards are:
1) The maximum allowable 1-hour concentration is 35000 ppb not to be exceeded more than once per year.
2) The maximum allowable 8-hour concentration is 9000 ppb not to be exceeded more than once per year.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Ozone (ppb)

			M A X I M A							
		NUM	1 - HOUR		8 - HOUR				1HR	8HR
LOCATION	YEAR	OBS	1ST	2ND	1ST	2ND	3RD	4TH	#>120	#>75
Fargo NW	2008	8662	173	64	58	56	56	55	1	

* The air quality standards for ozone are:
STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL Standards -
1) 120 ppb maximum 1-hour concentration with no more than one expected exceedance per year.
2) Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 75 ppb.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable PM_{fine} Particulates (µg/m^3) **(FRM Sampler)**

			M A X I M A					
		NUM				ARITH		
LOCATION	YEAR	OBS	1ST	2ND	3RD	MEAN	#>35	AM>15
Fargo NW	2008	115	34.6	23.8	23.5	8.33		

* The ambient air quality standards are:
FEDERAL Standards -
1) 24-hour: 3-year average of 98th percentiles not to exceed 35 µg/m^3.
2) Annual: 3-year average not to exceed 15 µg/m^3.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM_{fine} (µg/m^3)

			MAXIMA								
		NUM	1 - HOUR		24 - HOUR					24HR	
LOCATION	YEAR	OBS	1ST	2ND	1ST	2ND	3RD	4TH	MEAN	#>35	AM>15
Fargo NW	2008	8487	479.2	406.8	17.9	16.6	14.5	13.9	4.5		

* The ambient air quality standards are:
FEDERAL Standards -
1) 24-hour: 3-year average of 98th percentiles not to exceed 35 µg/m^3.
2) Annual: 3-year average not to exceed 15 µg/m^3.

COMPARISON OF AIR QUALITY DATA WITH
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS *

POLLUTANT : Inhalable Continuous PM_{10} (µg/m^3)

			MAXIMA								
		NUM	1 - HOUR		24 - HOUR					24HR	
LOCATION	YEAR	OBS	1ST	2ND	1ST	2ND	3RD	4TH	MEAN	#>150	AM>50
Fargo NW	2008	8714	397.0	320.0	64	37	35	35	11.8		

* The STATE and FEDERAL air quality standards are:
1) 150 µg/m^3 maximum averaged over a 24-hour period with no more than one expected exceedance per year.
2) 50 µg/m^3 expected annual arithmetic mean.

Appendix C

Model Data and Specifics

430 IACC Building – Fargo, ND 58105
Tel 701-231-8058 – Fax 701-231-1945
www.ugpti.org – www.atacenter.org

F-M COG 2005 Model Construction & Calibration Technical Document

Final Report

June 2008

Prepared for:
Fargo-Moorhead Council of Governments

Prepared by:
Advanced Traffic Analysis Center
Upper Great Plains Transportation Institute
North Dakota State University
Fargo, North Dakota

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1.0 Introduction

The calibration of travel demand models is important for accurately modeling current and future travel patterns in a metropolitan area. This technical document provides a detailed description of the process and methodology used in developing the Fargo-Moorhead Council of Governments' (FM-COG) transportation planning model. In addition, it documents the methodology and assumptions underlying each major step within the model.

In order to make sound decisions on future investments for transportation improvements, it is important to quantify the impacts of these improvements on the system and its users. Such estimates are usually derived from the process of travel demand analysis. Traditional travel demand modeling utilizes the Urban Transportation Modeling Systems (UTMS) procedures. The inputs for UTMS involve specifying the characteristics of the activities generating vehicle traffic on the transportation system, while the output represent the estimated vehicle traffic flows on the system generated by those activities.

The UTMS consists of four major stages that are related to the user's trip decision-making process: 1) Trip Generation, 2) Trip Distribution, 3) Modal Split, and 4) Trip Assignment. Therefore, this approach is also referred to as the four-step model. As we progress in the model steps, the influence of activity characteristics decreases, while that of trip characteristics increases. The first two steps are related to the nature of the land-use patterns, while the last two steps are dependent on the attributes of the modeled transportation network.

Several initial steps must be carried out to model the study area and build the transportation network before a four-step model is implemented. These involve representing the transportation network as a set of links and nodes. These links and nodes are then assigned different properties such as speeds, control and capacity which are used to model traffic attributes on the network. The study area included in the model is divided into traffic analysis zones (TAZ). These zones are used to organize trip related data, where the area included within a zone has similar social and economic attributes.

The process of constructing and calibrating the F-M COG's travel demand model consists of six steps. Each step will have a dedicated chapter in this report, which includes the following:

- Data preparation is required to build the transportation network from geographic information systems (GIS) format and properly assign the different parameters to the links. A description of data preparation can be found in Chapter 2.

- Trip generation uses socio-economic data to predict the number of trips produced by and attracted to each zone within the study area. There is an assumption that these trips are made by individuals participating in different activities. Trip generation uses static equations based upon persons per household, jobs, and occupancy rates to generate appropriate number of trips produced by or attracted to each TAZ. Further description of trip generation process is provided in Chapter 3.

- Trip distribution is used to connect trip ends and establish the trips flow from production zones to attraction zones. The output from this step is a matrix representing the production and attractions between TAZs, called the origin-destination (O-D) matrix. The trip distribution process description is provided in Chapter 4.

- Mode split divides trips between the various transportation modes available for users. Mode split distributes the trips based on the percentage of trips using different modes, vehicles, transit bus, or trains. Discussion of mode split is provided in chapter 5.

- Traffic assignment is usually the last step in UTMS. In this step, the predicted traffic flows are assigned to the modeled network links. Further discussion is provided in chapter 6.

- Calibration is performed to adjust model parameters to reproduce base year volumes reported in the field. Description of the calibration process is discussed in Chapter 7.

2.0 Data Preparation

The regional travel model for the Fargo-Moorhead (F-M) area consists of 543 TAZs and a network of 1,710 nodes which are connected by 2,412 links (Figure 2.1). The modeled area includes four jurisdictions: the cities of Fargo and West Fargo (North Dakota), as well as Moorhead and Dilworth (Minnesota).

The data used in the model have been either provided by F-M COG or produced by ATAC as a result of literature reviews or primary data collection. The data are compatible with the existing GIS data system used by the F-M COG. The model has been developed to run in the TP+ modeling system produced by Citilabs and has been completely developed within Citilabs' CUBE software product. CUBE provides an effective method for organizing the script and is used to view and edit the input and output files.

The data preparation step is required to convert the input data into a form that is compatible with TP+, thus preserving the basic structure of the model while evaluating different scenarios. All of the network variables are assigned generic names that are used for the remaining modeling process steps.

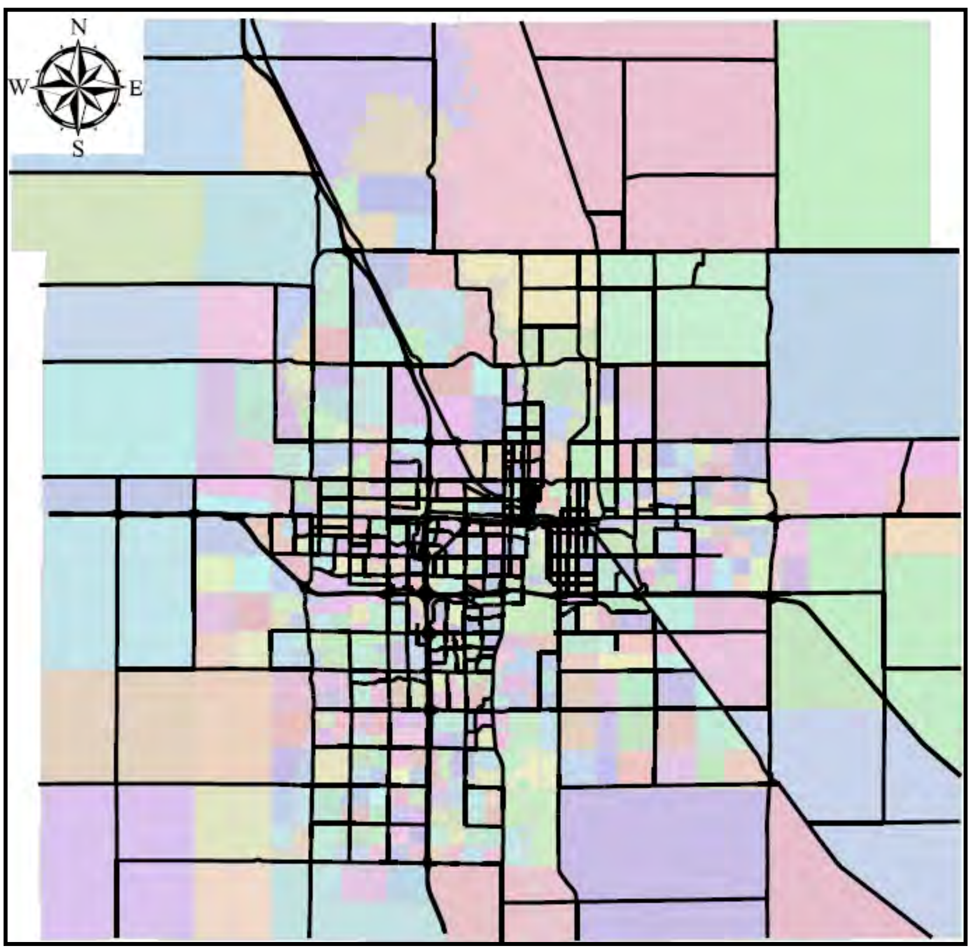

Figure 2.1. The modeled Fargo-Moorhead Transportation Network and TAZs

2.1 Capacity Calculation

The Highway Capacity Manual (HCM) procedures are usually used in travel demand modeling to analyze signalized intersections, determine capacity, and measure delay. Using the HCM procedures should produce more accurate results; however, this method has several drawbacks when used for travel demand modeling applications. The HCM procedures depend on the traffic volume and turning percentages for intersection analysis, which are dynamic, making it difficult for the model to converge on a solution.

The most common practice for capacity calculations by planning organizations, including North Dakota metropolitan planning organizations (MPOs), is to develop capacity tables. These tables report the capacity per lane based on the facility type and area where the facility is located. The drawback from this approach is that the capacities are static and not affected by lane configuration changes in the network. Many models use average values that do not represent the traffic in the area or account for traffic signal management strategies.

ATAC utilizes an approach that represents a mix of the two methods. HCM capacity equations were used for rural and interstate highways (*1*). The capacity for interstate highways was based on the number of lanes and speeds along each section. The capacity for rural roads was determined based only on the number of lanes in each section of the highway. For urban streets a different technique was used based on information from National Cooperative Highway Research Program (NCHRP) report 365 (*2*). Based on the functional class, number of lanes, and intersection configuration in urban areas, each street by functional class was applied a default capacity. If the roadway had more than one lane, left turn lanes, or right turn lanes, the capacity was increased by an appropriate amount as shown in Table 2.1.

Table 2.1. Modeled Capacities for Urban and Rural Roads

	Capacities (Vehicle/Hour/lane)					
	Functional Class	**One Lane**	**Multi Lane (Per Lane)**	**Each Additional lane**	**Each Right Turn Lane**	**Each left Turn Lane**
Rural	Interstate	-	1,800	-	-	-
	Non-Interstate	1,500	1,700	-	-	-
Urban	Interstate	-	1,700	-	-	-
	Major Arterial/ Oneway	1,000	-	800	300	75
	Minor Arterial	675	-	600	200	75
	Collectors/ locals	450	-	400	100	75

2.2 Node Delay Calculation

Delay at controlled intersections influences route selection for motorists. ATAC developed an estimate of control delay based on controlled intersection analyses. An average control delay was assigned to signalized and stop sign controlled intersections based on the roadway functional classification.

The delays were minimal for traffic signals along major arterials or one-way streets when compared to signal delays on minor arterials and side streets. This is to be expected because signals are typically coordinated along a street with high functional classification. The initial intersection control delays according to corresponding roadway functional classification are shown in Table 2.2. These delays were adjusted during calibration to replicate the trip making behavior in the modeled regions.

Table 2.2. Initial Modeled Node Delays

	Node Delay (sec/veh)	
Functional Classification	**Traffic Signal**	**Stop Sign**
Interstate	-	-
Major Arterial	8	10
Minor Arterial	8	10
One-Way	8	10
Collector	30	10
Local	30	10

3.0 Trip Generation

After the data preparation step is performed, the next step within the transportation model is trip generation. Trip generation utilizes socio-economic data to predict the number of trips produced by and attracted to each traffic analysis zone (TAZ) within the modeled area. There is an assumption that these trips are made by individuals to participate in different activities. Trip production is associated with residential areas and different attributes of households, whereas trip attraction is related to non-residential area characteristics. Production is estimated using factors, such as the number of households in that area, household sizes, income and automobile ownership rates, along with other variables that might affect the general trend of trip productions. Attraction is estimated using variables, such as employment levels and floor space.

To establish the relationship between trip generation rates and socio-economic data of each zone, trip generation models use historical data to estimate the number of trips generated. The Institute of Transportation Engineers (ITE) Trip Generation Manual, provides the type of data used, trip rates, and other related statistical data. This step takes the zonal and external trip data as input and produces an array of production and attraction values. The values within the array are the number of person trips produced within and attracted to each internal TAZ or to TAZs located outside the planning model (external).

3.1 Production for Internal Zones

The number of trips produced in the modeled area is based on the number of dwelling units in the metro area. The dwelling units were categorized into single family and multifamily residences based on the 2000 census data in addition to building permit data for the years 2000 to 2005. These categories were used to determine the number of home based work (HBW), home based other (HBO), and non-home based (NHB) production trips.

The number of trip productions was estimated by multiplying the total number of single family or multifamily dwelling units by the appropriate daily vehicle trip rate (Table 3.1). The trips were separated into HBW, HBO, and NHB production trips by multiplying the total vehicle-trips with the percentage of trips by purpose to replicate the trip making behavior in the metro area, the vehicle trip rates were adjusted during the calibration process.

Table 3.1. Vehicle Trip Generation Rates (Based on NCHRP, Report 365, Table3)

		Percentage of Trips by Purpose		
Dwelling Category	**Daily Vehicle Trip Rate**	**HBW**	**HBO**	**NHB**
Single Family	9.55	0.20	0.57	0.23
Multifamily	6.47	0.20	0.57	0.23

3.2 Attractions for Internal Zones

For trip attractions purposes, all the TAZs within the metro area were classified as being within a central business district Area (CBD) or a non central business district area (NCBD). Table 3.2 summarizes the rates and equations used to determine HBW, HBO, and NHB trip attractions for CBD and NCBD zones.

Table 3.2. Trip Attraction Rates (Based on NCHRP, Report 365, Table 8)

Trip Purpose	CBD Zones	NCBD Zones
HBW	1.45 x TE	1.45 x TE
HBO	2.0 RE + 1.7 SE + 0.5 OE + 0.9 HH	9.0 RE + 1.7 SE + 0.5 OE + 0.9 HH
NHB	1.4 RE + 1.2 SE + 0.5 OE + 0.5 HH	4.1 RE + 1.2 SE + 0.5 OE + 0.5 HH

Where:
TE = Total Employment
RE = Retail Employment
SE = Service Employment
OE = Other Employment
HH =Households

3.3 University Trip Productions and Attractions

To account for the different trip making behavior of university trips, North Dakota State University (NDSU), Concordia College, and Minnesota State University Moorhead (MSUM) were treated as special trip generators. In addition to the daily HBW, HBO, and NHB trips, a category of home-based university trips was implemented. To estimate the number of trips produced by and attracted to college campuses, the trip generation component used equations that were developed by ATAC. Using NDSU as a model, primary data were gathered to determine the number of trips made to and from campus and areas directly affected by the trips generated at NDSU. Based on the results from that analysis, it was concluded that the number of college trips could be predicted based on variables that can be forecasted by the F-M COG. Each educational institution was then evaluated on individual bases to determine trip productions for each of the zones affected by that school (Table 3.3).

Table 3.3. University Trip Estimation Variables

Purpose	Rate	Population Category	Predicted 2005 Enrollment Concordia College	MSUM	NDSU
HBW Productions	0.16	On-Campus Students	1,794	1,559	2,876
HBO Productions	0.37	On-Campus Students	1,794	1,559	2,876
NHB Productions	0.17	Total Students	2,608	7,491	11,723
HBS Productions	0.12	On-Campus Students	1,794	1,559	2,876
HBW Attractions	0.30	Total Students	2,608	7,491	11,723
HBO Attractions	0.44	Total Students	2,608	7,491	11,723
NHB Attractions	0.17	Total Students	2,608	7,491	11,723
HBS Attractions	0.72	Off-Campus Students	814	5,932	8,847

To estimate the college trips productions and attractions, the appropriate rate was multiplied by the predicted 2005 school enrollment data. Based on data obtained previously through interviews and parking data that was provided by the administration at each institution, a summary of college trips by purpose is provided in Table 3.4.

Table 3.4. University Trips Generated by Purpose

	Concordia College	MSUM	NDSU
HBW Productions	287	249	460
HBO Productions	664	577	1,064
NHB Productions	443	1,273	1,993
HBS-University Productions	215	187	345
HBW Attractions	782	2,247	3,517
HBO Attractions	1,148	3,296	5,158
NHB Attractions	443	1,273	1,993
HBS-University Attractions	586	4,271	6,370

3.4 High School and Grade School Productions and Attractions

Using information provided previously by the school district and a survey of parents throughout the area, ATAC developed trip generation rates that were used to independently calculate the home based-school (HBS) attraction trips. To determine the relative attractiveness of area schools, the initial value of attractions per zone was set to the number of students enrolled in the school zone. The population was divided into two different age groups to distinguish between high school and grade school aged students. This was done because of the different trip characteristics of the students who may possess a driver license. The trip productions were initially calculated as one production for each person in the population age bracket. During subsequent runs the productions were adjusted using equations that ATAC developed. Table 3.5 shows the total value of home based school attractions and production trips for grade and high schools in the model.

Table 3.5. Total Attractions and Productions for Grade and High Schools

Trip Purpose	High School	Grade School
HBS Productions	9,025	20,185
HBS Attractions	7,782	16,815

3.5 Airport Trip Generation

The Fargo Hector International Airport is located within TAZ number 42 in the travel demand model. Special consideration was given to this TAZ to accurately capture the trip productions and attractions to that zone in the transportation model. In 2005, there were 549,209 enplanements for Hector International Airport. Initially basic trip generation were used to develop the preliminary HBO and NHB attractions for the airport zone. To estimate the daily attracted trips to the airport, the total enplanements were divided by 365 to obtain the average daily trips.

ATAC utilized the 2000 ITE's Trip Generation reference book to obtain the average person trip ends and then multiplied those values by the average daily trips. The attractions produced by the airport were added together with the trips produced from the household data in this TAZ. This method produced results that accounted for both households living in TAZ number 42 and airport trip generation.

3.6 External Trips

External-external trips are defined as trips with both ends outside the modeled area; those trips are assumed to account for 10% of the interstate traffic. In the travel demand model, the trips made from an external zone to an external zone without stopping within the model are subtracted from the external productions and attractions.

Trips with only one trip end outside the modeled area are defined as either external-internal or internal-external trips. Attractions for external nodes were found by multiplying the average daily traffic with the percentage of trips by purpose at each external node. To calculate the number of productions for the interstate highways, ATAC subtracted the total number of through trips from the ADT and then multiplied it by percentage of trips by purpose.

3.7 Adjustment

Applying the methodology and equations described in the previous sections to the TAZ socio-economic data yields unbalanced production and attraction totals. In the travel demand mode each production must be matched to an attraction to form a trip, the total productions must equal the total attractions for each trip type. In general, the total trip productions are considered a more accurate estimate than the total trip attractions. Hence, it is necessary to adjust the attraction values to match the total number of productions. The total unadjusted numbers of trips produced by TAZs and attracted to those TAZs are reported in Table 3.6.

Table 3.6. Total Unadjusted Productions and Attractions Generated by Purpose

Trip Purpose	Total Trip Productions	Total Trip Attractions
HBW	159,347	124,846
HBO	452,513	266,435
NHB	99,546	99,546
HBS-University	9,824	9,942
HBS-High School	9,027	7,782
HBS- Grade School	20,185	16,815

To perform trip generation adjustment the total number of attractions was divided by the total number of productions for each trip purpose. The factor resulting from this process for each trip purpose was applied to each TAZ's attraction total to find the new adjusted attraction values. As for HBS-University trips, trips were adjusted to match the number of attractions because it is easier to quantify the number of trips arriving at the universities than it is to predict the location from which the students are generating their trips. Table 3.7 summarizes the total adjusted numbers of trips produced by TAZs and attracted to those TAZs.

Table 3.7: Total Adjusted Productions and Attractions Generated by Purpose

Trip Purpose	Total Trip Productions	Total Trip Attractions
HBW	159,347	159,347
HBO	452,513	452,513
NHB	99,546	99,546
HBS-University	9,942	9,942
HBS-High School	9,027	9,027
HBS- Grade School	20,185	20,185

4.0 Trip Distribution

After the trip production and attraction for each zone had been determined in the trip generation step, trip distribution models are used to connect trip ends, that is, to establish the flow of trips from production zones to attraction zones. The output from this step is a matrix representing the production and attractions between TAZs, called the origin-destination (O-D) matrix.

The most commonly used type of trip distribution model is the gravity model. This model is a modified version of Newton's law of gravitation between physical bodies in space (Equation 4.1). In it, the number of trips between zones is assumed to be based on the relative attractiveness of zones, which is measured by travel time or cost. The gravity model assigns trips based on the number of productions, attractions, a friction factor (F), and a scaling factor (K). The friction factor is a value that is inversely proportional to distance, time, or cost which measure the impedance between the zonal pairs. The k factor is a scaling factor that is used during calibration and it limits or increases the volume of traffic that crosses sections of the network. Equation 4.1 below provides the mathematical function of the Gravity Model.

$$T_{IJ} = P_I \frac{K_{IJ} A_J F_{IJ}}{\sum (K_J A_J F_J)} \qquad \text{Equation 4.1}$$

Where:

T_{IJ} = Number of trips assigned between Zones i and j

PI = Number of Productions in Zone I

AJ = Number of Attractions in Zone J

FIJ = Friction Factor

KIJ = Scaling factor used in calibration to influence specific IJ pairs

4.1 Friction Factor Computation

Friction factors are used in the travel demand model to account for the impedance (or resistance to flow), which represents the travel time for all trip purposes except home based school trips. The impendence for HBS was the travel distance, allowing school trips to be assigned to the nearest zone that has a school in it which is similar to how school-districts are divided in the area.

The initial iteration used free flow travel for calculating the impedance. For the second iteration, congested speeds from the first iteration are used for the model run. A standard friction factor lookup table was used. This table makes shorter trips more desirable than longer ones.

5.0 Mode Split

Mode split predicts the mode of travel that is used for TDM trips, and as such divides trips between the various transportation modes available for users. Since the area has a low percentage of public transit use, automobiles are the only mode choice represented in this transportation model.

5.1 Hourly Origin-Destination Calculation

Currently, the number of trips generated by the travel demand model is represented by vehicle trips per day. However, the model needs to assign trips in hourly increments so that the assigned trips will have the same units for the roadway (i.e., vehicles per hour). The daily matrix of trips needs to be converted to an hourly matrix that can be assigned to the roadways. Based on a previous analysis of several hourly counts throughout the city, daily traffic was divided as follows: AM Peak (7:45AM-8:45AM, 7.53%), PM Peak (5:00PM-6:00PM, 8.52%), and all other as Off Peak (6.0%/hr*14hrs. = 84% ADT).

The production attraction matrix is added to the transposed production attraction matrix and then the trips are divided by two. Using this method, it is assumed that half of the trips go from production to attraction and half of the trips are returning from the attraction back to the production. The matrix was then multiplied by the appropriate time of day percentage to obtain three origin destination matrices. Figure 5.1 shows the percentages associated with time of day for the off peak and each peak hour.

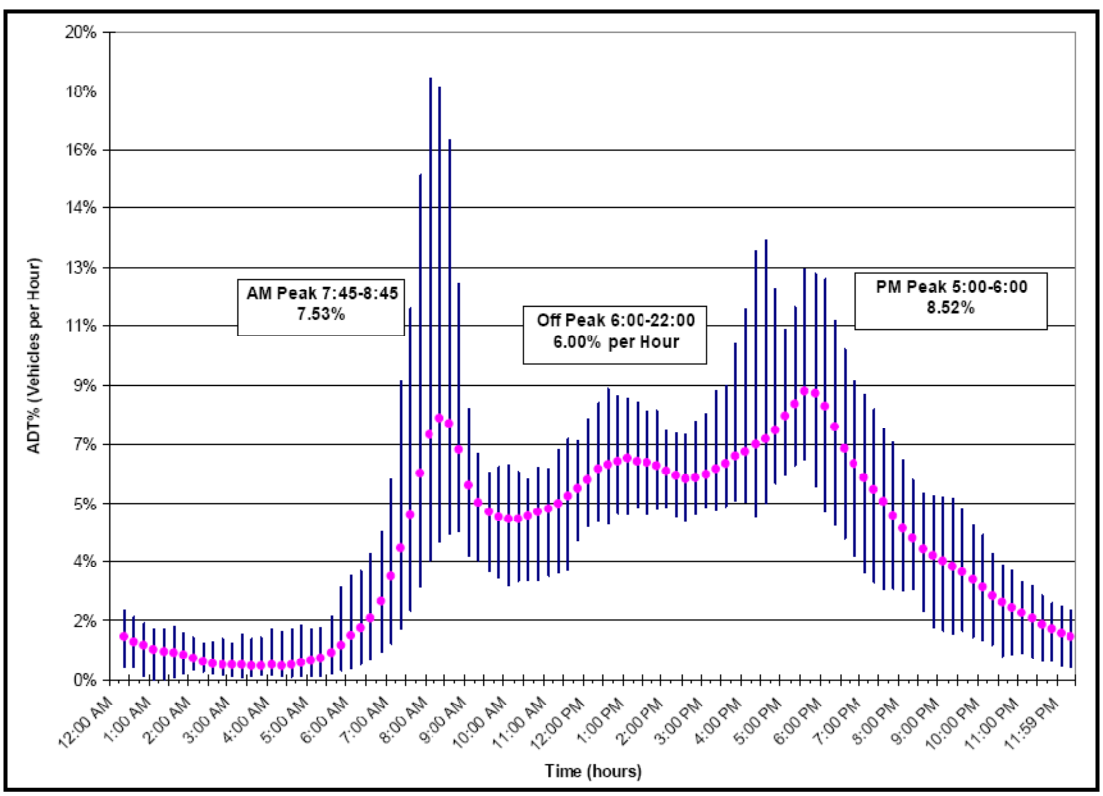

Figure 5.1. Results from the Fargo-Moorhead Traffic Survey

6.0 Traffic Assignment

This is the last step performed in the travel demand model. In this step, the predicted traffic flows are assigned to the modeled network links. Traffic assignment follows the main principles of equilibrium stated by Wardrop in the 1950s: 1) user-equilibrium, and 2) system-equilibrium. In user-equilibrium, users of the system choose the route that would minimize their cost (or travel time) without consideration to the overall average travel time on the system. In system-equilibrium, system users would behave cooperatively in choosing their own route to ensure the most efficient use of the system, thus optimizing the overall average cost of travel on the system. User-equilibrium traffic assignment method is more realistic; hence, it was used for this model. It was implemented using a cost function to evaluate the most desirable path. This method was chosen for the convenience of conducting different studies.

Assignment begins with three separate origin-destination (O-D) matrixes; AM peak, PM peak, and off peak, which contain the volumes that are to be assigned to each O-D pair. User equilibrium in TP+ uses built in functions in order to assign trips to paths from each origin zone. ATAC used a vehicle cost variable which assigned trips to minimize the cost. Travel time was set to the free flow travel time for the first iteration and then changed with iterations depending on congestion. This iterative process continued until there was no available path at which the cost could be reduced.

6.1 Level of Service (LOS) Determination

The level of service criteria is used as a measure of the roadway serviceability on a scale of A to F, with A being a roadway with the most desirable driving conditions and F being a roadway with undesirable conditions. ATAC used the procedures developed within the Highway Capacity Manuel (HCM). This procedure compares free flow speeds (FFS) to modeled travel speeds or densities given the standard speed or density parameters from the HCM. HCM standard speeds or densities are disaggregated according to area type, rural or urban, number of lanes, and functional class, which allows for a more accurate LOS determination.

With the exception of freeways and multilane highways, the LOS for roadways is determined by comparing the FFS with the modeled travel speed. A lower LOS reflects a greater difference between the modeled travel speed and the FFS. Interstate systems and multilane highways used a different methodology for determining the LOS. Modeled densities were compared to the standard density given in the HCM.

It is important to note the analyst cannot assume that a low LOS indicates the roadway is close to or exceeding capacity. A low LOS may be because travel speeds incorporate delay at intersections. Therefore, a short link with a signal or stop sign control may have a lower average travel speed because of the delay imposed by the intersection control.

7.0 Travel Demand Model Calibration

The final stage in the development of the transportation model is the calibration of the travel demand model. The main goal of the calibration process is to make as many of the modeled roadway links as possible meet the designated criteria range. The process of calibration is a tedious process that needs to be conducted in a thorough and exact manner. Figure 7.1 provides an illustration of the calibration procedure followed by ATAC.

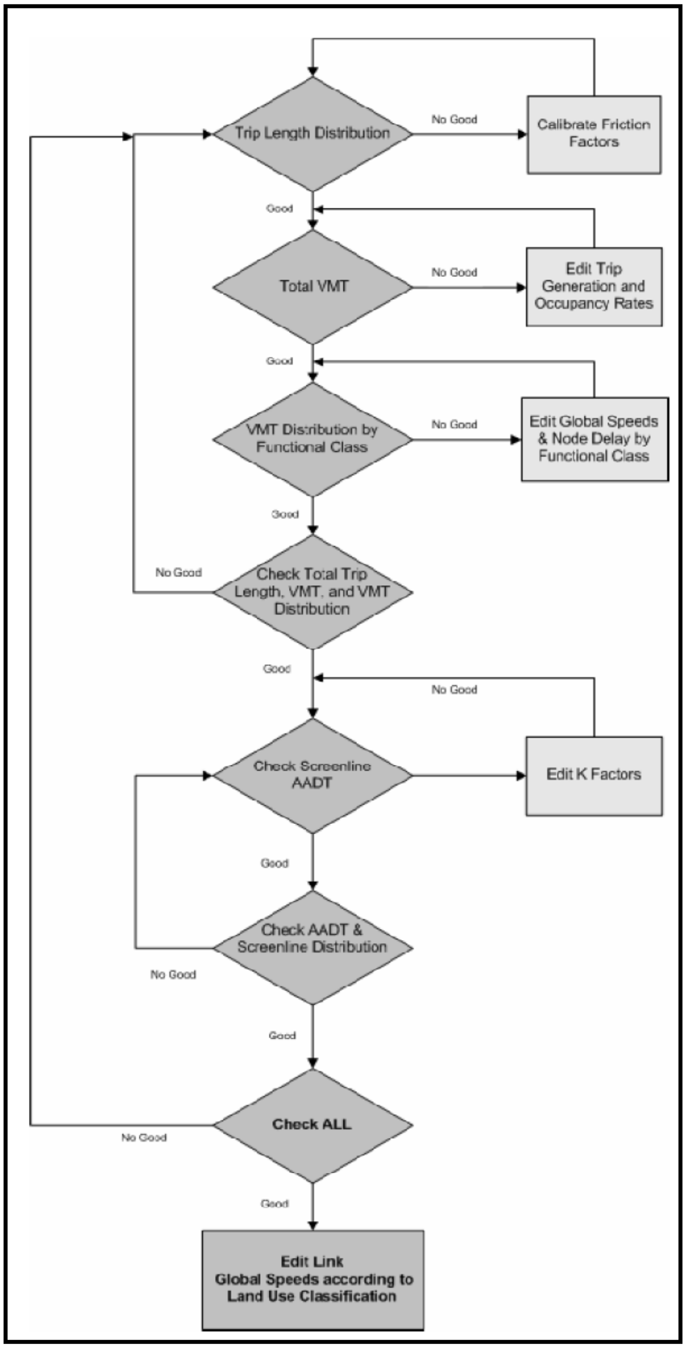

Figure 7.1. Calibration Flow Chart

7.1 Trip Length Distribution

The first task of the calibration process is to check if the modeled vehicles trips are similar in length (minutes) to the length of those trips provided by the 2000 Census for Transportation Planning Package (CTPP) data. It is expected that shorter trips tend to occur more frequently than longer trips do and the transportation model needs to reflect this trend. ATAC compared the modeled HBW, HBO, and NHB trip lengths to the 2000 CTPP data. If the modeled trend did not follow the 2000 CTPP data trend, ATAC adjusted friction factor coefficients until the model resembled, as closely as possible, the 2000 CTPP data. The HBO and NHB trips were modeled as 75.2% and 88.4% of the HBW data, respectively (Figure 7.2). Figure 7.3 illustrates the trip length distribution based on the 2000 census data.

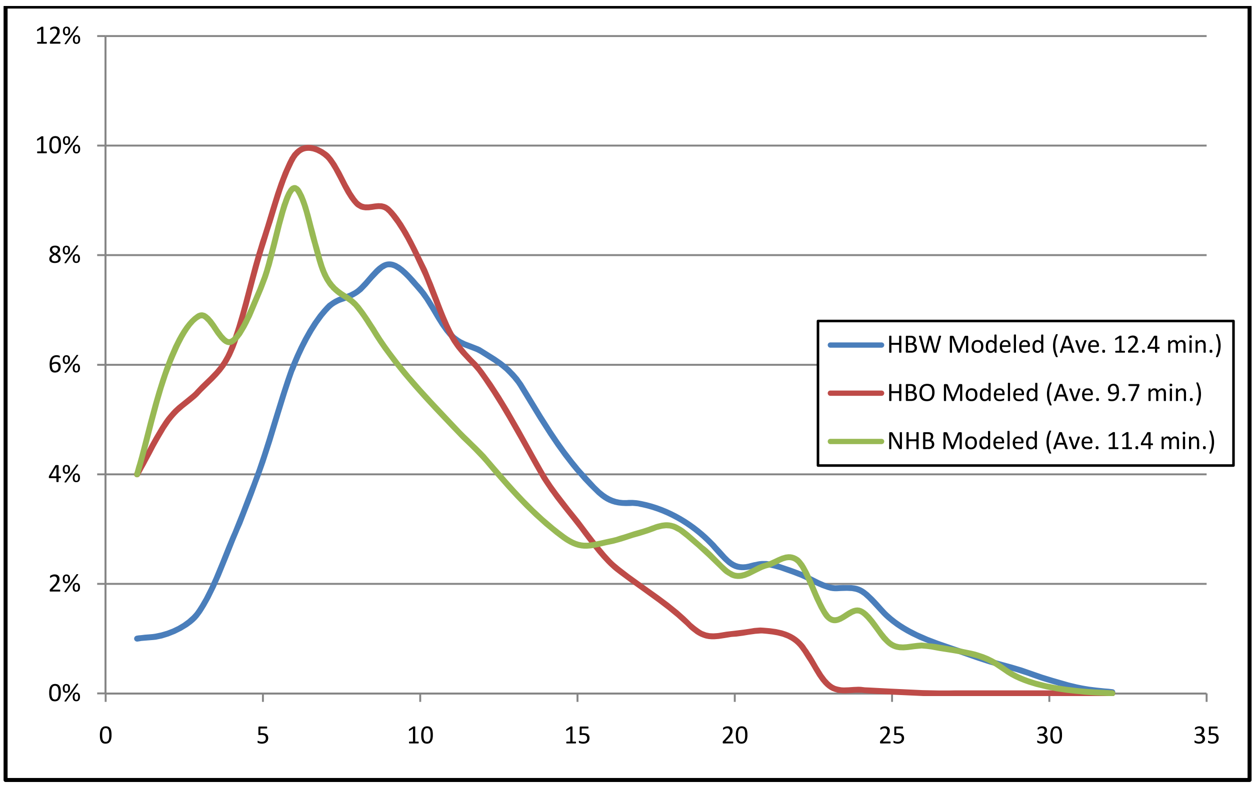

Figure 7.2. Trip Length Distribution by Trip Purpose (Modeled)

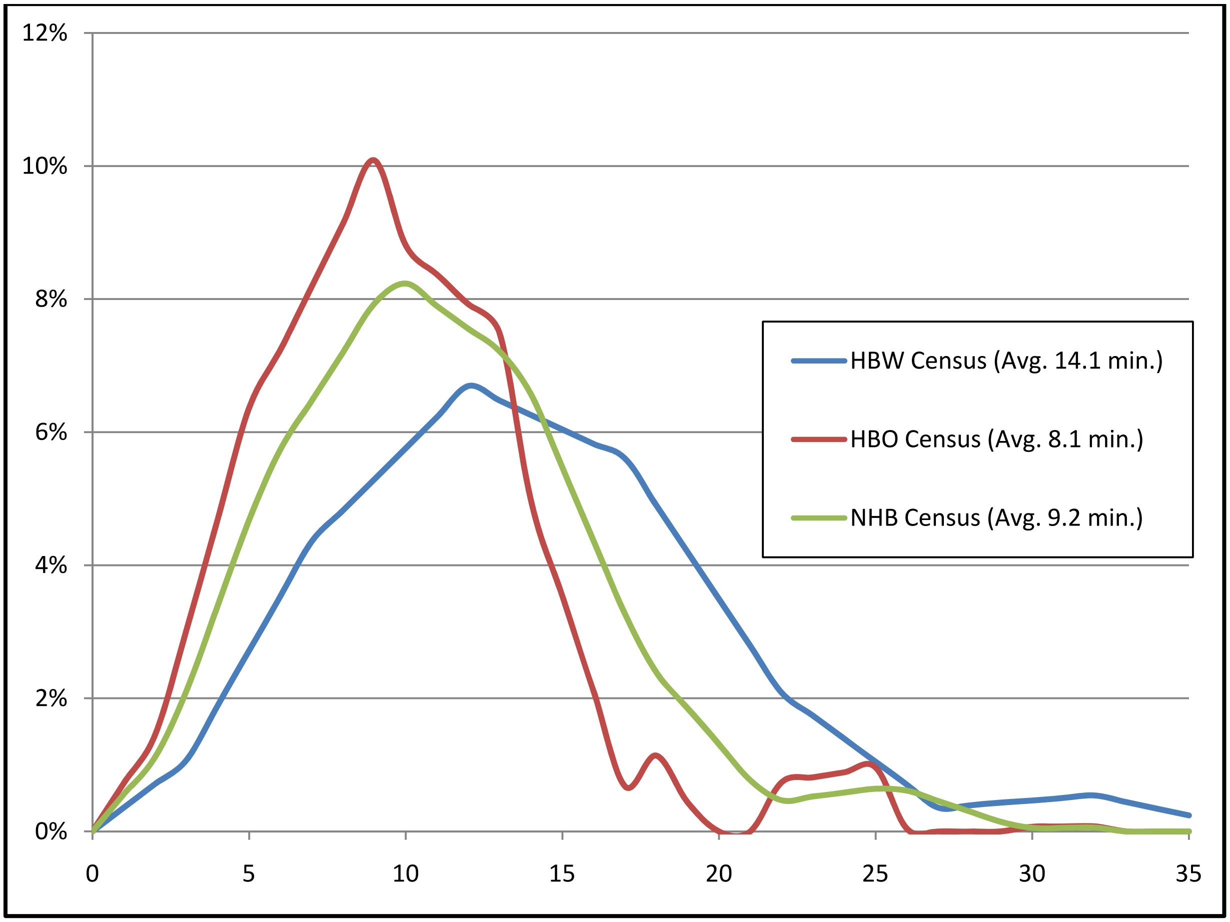

Figure 7.3. Trip Length Distribution by Trip Purpose (Census)

7.2 Total Vehicle Miles Traveled (VMT)

The modeled vehicle miles traveled are a function of trips generated by the model and the length of those trips in miles. To calibrate the VMT values, ATAC first calibrated the total VMT for the entire network. If the modeled VMT value was different from the value reported in the field ATAC adjusted the trip generation and occupancy rates until the model and reported VMT values were similar. Adjusting the trip generation and occupancy rates changes the total number of trips that are generated within the transportation model. This in turn increases or decreases the total number of vehicle miles traveled. Once the total VMT was on target, ATAC checked the VMT distribution according to the functional class. If the functional class distribution was off target, global speeds, according to land use characteristics, and node delays were adjusted. Table 7.1 provides a summary of the final modeled and reported VMT values by jurisdiction within the metro area. The overall adjusted VMT was within 2% of the actual overall reported VMT. This is well within the standard 5% given in the Travel Model Improvement Program's Model Validation and Reasonable Checking Manual (*3*).

Table 7.1. Vehicle Miles Traveled by Jurisdiction

Jurisdiction	VMT Reported	VMT Modeled	Difference in VMT	% Difference in VMT
Fargo	1,845,042	1,823,416	-21,626	-1.17%
Moorhead	482,413	430,514	-51,899	-10.76%
West Fargo	169,523	172,657	3,134	1.85%
Dilworth	41,029	71,825	30,796	75.06%
ND	2,014,565	1,996,073	-18,492	-0.92%
MN	523,442	502,339	-21,203	-4.03%
Metropolitan Area	2,538,007	2,498,412	-39,595	-1.56%

7.3 Screenlines

To check the screenline component of the calibration, ATAC examined the total AADT of the links crossing the screenline. The screelines used for this model include I-29, I-94, the Red River, and the main railroads tracks. If the total modeled traffic volume screenline was above the specified criteria, a lower k factor was assigned to inhibit traffic from crossing the screenline. Similarly, if the screenline had a volume total modeled traffic volume below the designated criteria, a higher k factor would be applied to affected zones. This would make zonal pairs that cross the screenline more attractive. After achieving an accurate screenline distribution, the calibration process was repeated starting with checking the trip length distribution, until all the successive calibration components were completed. Table 7.2 shows the k factors used in the transportation model and how the modeled volumes compared to the AADTs crossing these screenlines.

Table 7.2. Screenline K Factors

Screenline	K Factor	AADT	Modeled ADT	Traffic Volume Difference	Percent Difference (%)
Interstate 29	0.80	96200	91500	-4700	-4.89%
Interstate 94	0.33	135075	136400	1325	0.98%
Red River	0.30	109950	110600	650	0.59%
Railroad	0.40	122875	122800	-75	-0.06%

7.4 Network Wide Adjustments

The final phase of the model calibration process is to check the network's link AADT distribution. ATAC checked how the modeled traffic volume over the network links compared to the AADT obtained from traffic counts in the field. If links in a region were found to have a highly differing volume, global speeds were adjusted based on land use characteristics. Using an appropriate speed adjustment would help links to fit into the specified criteria range. Table 7.3 shows the percentage of links that meet each criterion provided by the Model Validation and Reasonable Checking Manual based on volume range (*3*).

Table 7.3. Model Assignment by Modeled Traffic Volume Range

Volume Range	Above Criteria	Meets Criteria	Below Criteria	Within Criteria	ND Criteria Deviation
AADT>25,000	0	18	1	95%	22%
25,000 to 10,000	6	131	23	82%	25%
10,000 to 5,000	35	134	22	71%	29%
5,000 to 2,500	33	129	15	72%	36%
2,500 to 1,000	46	72	13	56%	47%
AADT<1000	34	27	2	43%	60%
Total	154	511	76	69%	

To determine the overall difference between the modeled and reported traffic volume, ATAC used the Root Mean Square Error (RMSE). The RMSE value is found by averaging the square error for each link and then taking the square root for the averages. Table 7.4 provides the RMSE values classified by the traffic volume ranges.

Table 7.4. RMSE Values by Volume Range

Volume Range	RMSE (%)	Typical Limits (%)
AADT>25,000	14 %	15-20 %
25,000 to 10,000	24 %	25-30 %
10,000 to 5,000	37 %	35-45 %
5,000 to 2,500	55 %	45-100 %
2,500 to 1,000	93 %	45-100 %
AADT<1000	>100 %	>100 %

An important measure of how well the travel demand model is assigning traffic to the transportation links is the correlation between the modeled and reported traffic volumes over the links. The correlation could be quantified by the coefficient of determination R^2. The guidance provided by the Travel Demand Improvement Program as part of the US Department of Transportation (USDOT) suggests that the R^2 value be at least 0.88 for the overall region. For the calibrated F-M COG travel demand model the value of R^2 was 0.89 which satisfies the limits. Figure 7.3 shows the traffic volume correlation for the base model, while Figure 7.4 provides visual representation of how those volumes fit within the criteria.

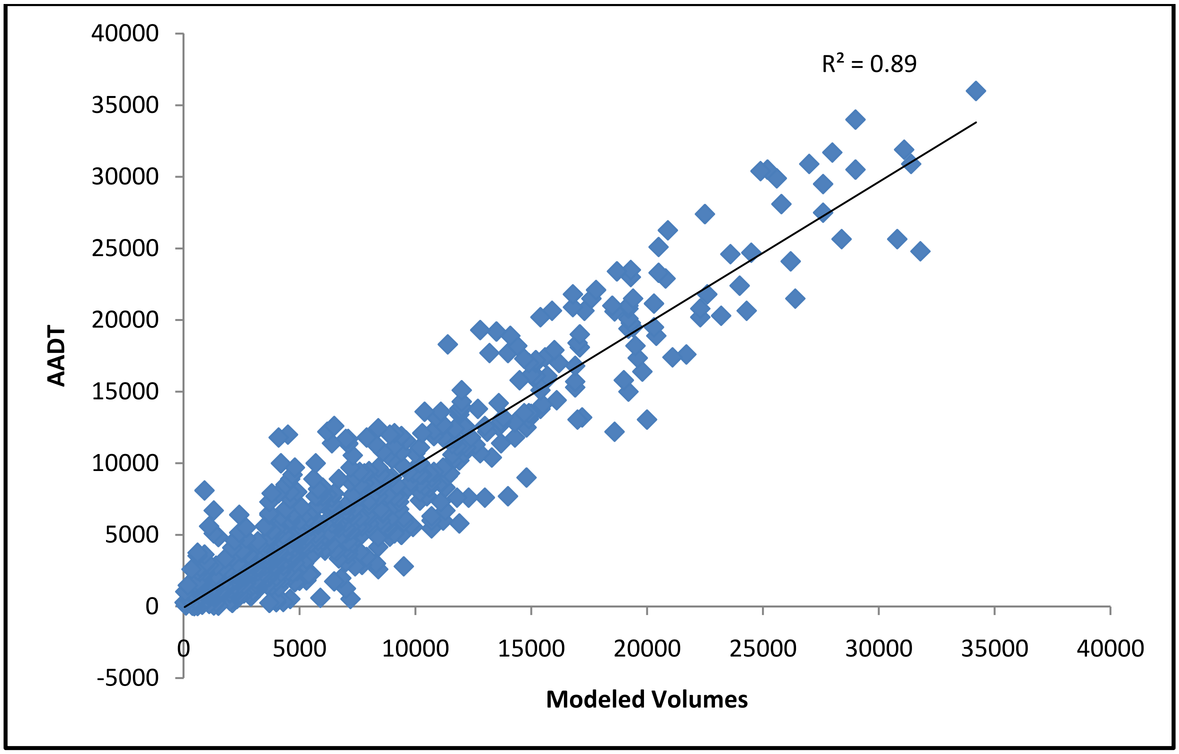

Figure 7.3. Traffic Volume Correlation

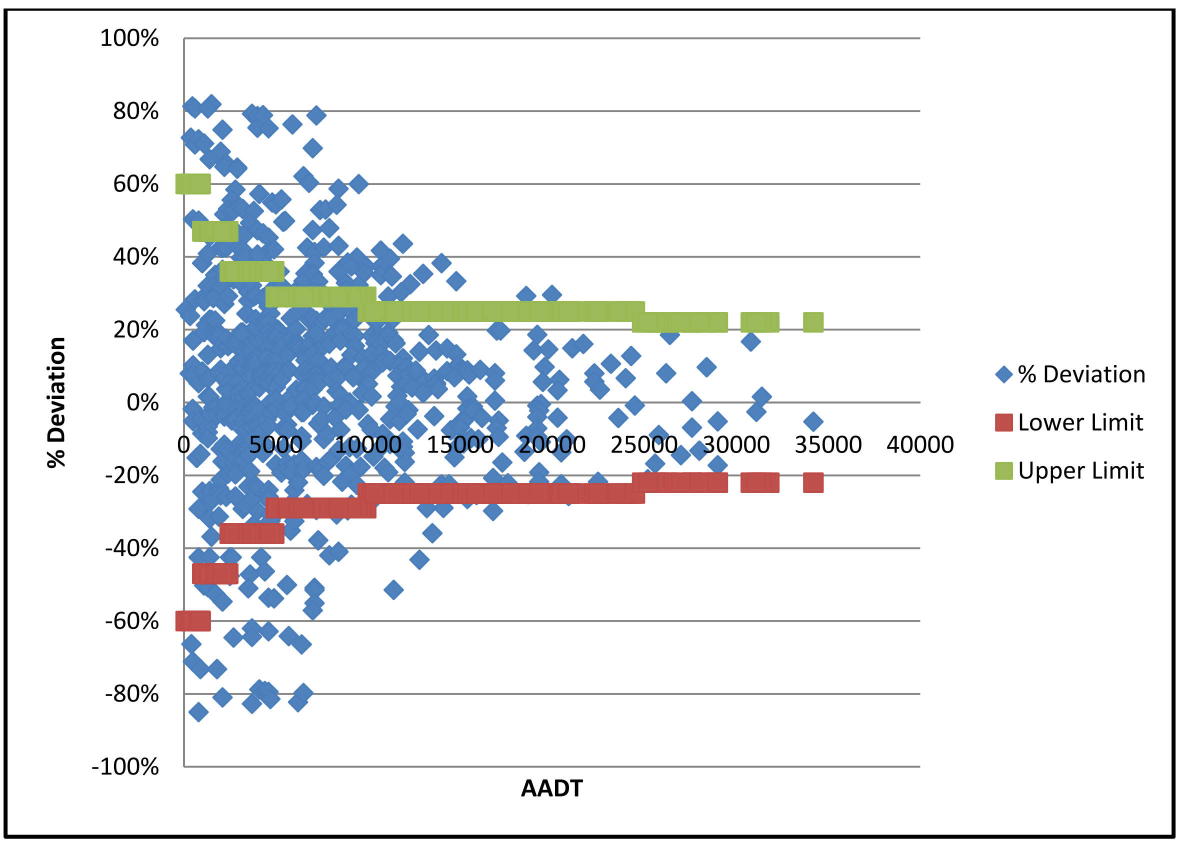

Figure 7.4. Link Distribution by Link Volume

8.0 User Guide

This chapter serves as a guide to users that explains the execution process involved in FM-COGs travel demand model. The following font style will be used for identification of various model files:

• Model input files: **Bold Characters**

• Model output files: <u>*Italicized and Underlined Characters*</u>

8.1 Introduction

F-M COGs travel demand model is completely developed within Citilabs' Cube software and is run using Citilabs' TP+ software. CUBE enables the user to view and edit input and output files. Unlike using only TP+, CUBE also allows users the option to organize the model script. ATAC has organized and labeled each major step within Fargo/Moorhead's travel demand model. This will help a first time user of the model to efficiently understand each process involved.

8.2 Model Description

F-M COGs travel demand model is broken down into three main subgroups, first iteration, final iteration, and final assignment. First iteration uses the input network, TAZ data, job data, and travel time data to direct the following processes:

• Data Preparation

• Trip Generation

• Gravity Model

• Change Production/Attractions to an Origin-Destination Matrix

• First Assignment

During the final iteration, a second gravity model is performed and the final production attraction file is changed to an origin destination matrix. Final assignment portion is described in Section 8.6.

8.3 Network Construction

The base network has been completely constructed using ESRI's ArcGIS software. Each network file has corresponding point shape files that show the interior traffic analysis zones (TAZ), model nodes, and exterior zones. The network and the point shape files are connected to each other based on the A and B fields described in the Table 8.1, which gives the name of a few fields in the network file with a corresponding description.

Table 8.1. ArcGIS Network Field Variables and Description

Field Name	Description
Name	Specifies the roadway name
Oneway_twoway	Specifies if the roadway has one directional traffic or two directional traffic
A	Specifies the link starting node number
B	Specifies the link ending node number
Numlanes/R_Lanes	Specifies the number of lanes contained on each link
A_	Identical to the A node field It. is used to determine the forward direction in CUBE
Enabled	This should be left as the default value "True"
Modeled	Separates the roadway links from the pseudo links according to the following code: 1-Modeled Roadway Link 2-Pseudo Link
Direction/R_Direction	Specifies the direction of vehicle travel according to the following code: 4-Northbound Link 8-Southbound Link 2-Eastbound Link 6-Westbound Link
Control/R_Control	Specifies the intersection control according to the following code: 0-No Control 1-Yield Sign 2-Stop Sign 3-Signal
Func_Class	Link Functional Class according to the following code: 1-Interstate 2-Major Arterial 3-Minor Arterial 4-One-Way 5-Collector 6-Local 7-Pseudo Link
AreaType	Area Classification the facility resides according to the following code: 1-Rural 2- Urban 3- Central Business District (CBD)
City	Region where the link resides according to the following code: 9-West Fargo 12-Moorhead 16-Cass County 17-Fargo 19-Dilworth 27-Clay County
District	State where the link resides according to the following code: 1-North Dakota 2-Minnesota

A network file for the model can easily be generated from an exported base network shape file using TP+ software. The first step in generating the network file is to open the exported shape file in TP+. Next, select “Build Network from Shape” under the “GIS tools” menu. A window will appear asking where the new network file should be placed and the file’s name. Name the file and place it into the input folder and click open. After specifying the name and input location, another window will open and it will ask to specify values for each field. Table 8.2 serves as a guide for providing the important field values. Once the fields are updated, click “build” and the new network file will be generated.

Table 8.2. Build Network from Shape File Option Values

Field Name	Specified Input Value
A-Node Field Name	A
B-Node Field Name	B
Clear All values in the A-Node and B-Node field first	Box should remain unchecked
1-Way/2-Way Options	Check “Use Indicator Field” Use OneWay_Two.
Add Distance Field	Leave Unchecked
Scale	Leave as default value of 1.0
Do Not Add Distance Field	Leave Checked
Node Grouping Limit	Leave as default value of 1.0
Starting New Node Number	Leave as default number
Highest Zone Number	624

8.4 Folder Structure

A folder system has been established to efficiently organize the input, program, and output files. Each application uses input files found only in the “input” folder and any application, program, or script files used are located in the folder titled “programs”. Once the application has been run, any output files may be retrieved in the “output” folder. There are five main input files found in the “input” folder and these files are the only ones that will need to be updated to run future travel demand models. The following section will describe how each file was generated and the names for each of the necessary input files.

Road Network: The base network, called **2005basenet.net,** allows the user to make changes to the network by changing the links and nodes within CUBE. Link attributes such as area type (areatype), number of lanes (numlanes), or functional class (func_class) may be changed for future networks at anytime, if needed. By running the model the speed and capacities will be updated. Also, a turning movement penalty file, *offpeak.pen*, will be created that will allow a more accurate distribution of traffic through the network.

Socio-economic Data: The F-M COGs model area was subdivided into 543 interior traffic analysis zones (TAZ). Socio-economic data for these zones includes number of single family dwellings, multifamily dwellings, retail jobs, service jobs, and other jobs located within each in zone. **Data_2005.dbf** is the input file that contains the necessary information for the trip generation step.

External Traffic Analysis Zone (TAZ) Data: External traffic analysis zones (TAZ) ranging from TAZ 600 to TAZ 624 was established on the exterior of the model. Each of these exterior zones connects to an internal zone and external traffic is input into the network through these links. The amount of traffic generated by each zone is dependent upon the average daily traffic count (ADT) for each roadway. A dbf formatted file named **ExternalPercents.dbf** was created and contains each external TAZ number with a corresponding ADT count. This data is used during the trip generation process to set the correct internal-external (IE) trips and external to external trips.

Program files are the backbone to the model and the "Program" folder files should never be deleted unless the user is certain the files are unnecessary. Output files are described in more detail in Section 8.6.

8.5 Key Fields

The CUBE software enables the user to establish key parameters. These key parameters are unique to each scenario and are used to establish locations for file paths or make it convenient to adjust dynamic parameter values. These parameters may be changed or updated on the main CUBE screen and there is no need to change their value in the model code.

Table 8.3. Key Fields and their Description

Key Field Name	Description
Scen.Name	Current selected scenario name
Network	Path to input network
IOPath	The Path to the Working Directory which contain scenarios, input, and output folders
Socio Data	Path to TAZ data DBF File
External Trips	Path to External Trips DBF File
Percent Through	The Percent of Thru Trips
Forcast Year	Forecast Year
FF Lookup	Path to Friction Factor DBF File
Enplanements	List known enplanements
Time Cost	The vehicle cost variable
NDSU On Campus Enrollment	List known enrollments
NDSU Off Campus Enrollment	List known enrollments
MSUM On Campus Enrollment	List known enrollments
MSUM Off Campus Enrollment	List known enrollments
Concordia On Campus Enrollment	List known enrollments
Concordia Off Campus Enrollment	List known enrollments
Select Link	Enter the TP+ code specifying links, nodes, or zones for the select link analysis see the "HwyLoad Module" in TP+ User Manual

8.6 Final Assignment

ATAC has established five different model options. Each option runs the final assignment module but different output text files or network files are created with each. Having a breakdown of different options allows the user to only run one or more assignments at a time. This CUBE layout will help save valuable time because unnecessary script will not be run. The following section will describe each of the seven options and the output files that are produced in each.

Network File: This option outputs a network file named *Loaded.net*. This network file was created using TP+. Table 8.4 shows output field names along with a short description.

Trip Length Distribution: The trip length distribution option allows the user to view a text file that contains the average trip length dependent upon purpose, HBW, HBO, NHB, or internal-external trips. It also contains a trip length distribution breakdown for each purpose over a 45-minute time frame. The *triplength.txt* file can be found in the output folder.

Screen Line Volumes Screen line distributions are important for the accurate calibration of the travel demand model. F-M COGs model used four screen lines during the calibration process and these include the following:
Red River (*SCR_River.txt*)
Interstate 94 (*SCR_I-94.txt*)
Interstate 29 (*SCR_I-29.txt*)
Railroad (*SCR_Railroad.txt*)

The corresponding output files in parenthesis can be found in the output folder. These five files give the name of the link, modeled volume, and a growth percentage. These files will be helpful to quickly view modeled volumes crossing each screen line.

Vehicle Miles Traveled (VMT): The vehicle miles traveled option outputs a text file named *VMT.txt* to the “output” folder. This file contains information regarding VMT based upon functional class and city. It also contains information on the number of trips per household.

Select Link Analysis: This option allows the user to specify zones, links, or node numbers using the key field entitled “Select Link”. The output network *SelectLink.net* will contain only modeled volumes who utilized the specified link, zone, or node. Select Link Analysis allows the user to visually determine which path vehicles are using to reach the specified destination.

Table 8.4. Output Network Variables

Network Name	Description
Model_ADT	Modeled Link Volume
TT	Total Travel Time for each Link
Func_Class	Link functional class according to the following code: 1-Interstate 2-Major Arterial 3-Minor Arterial 4-One-Way 5-Collector 6-Local 7-Pseudo Link
AreaType	Area Classification where the facility resides according to the following code: 1-Rural 2- Urban 3- Central Business District (CBD)
City	Region where the link resides according to the following code: 9-West Fargo 12-Moorhead 16-Cass County 17-Fargo 19-Dilworth
SPD Peak SPD_OffPeak	Calibrated link speed for peak and off peak hours
TT_Peak TT_OffPeak	Calibrated link travel time for peak and off peak hours
LOS Peak LOS OffPeaK	Link level of service (LOS) for peak and off peak hours
VC_Peak VC_OffPeak	Link volume to capacity ratio (VC) for peak and off peak hours
Den Peak Den Offpeak	Link density for each peak and off peak hours

8.7 Conducting a Model Run

Once the code has been established, the user is ready to run the model. The following is to serve as a guide for developing a new model run:

1. Create a new Folder for the analysis scenario within the “forecast folder”
2. Create input and output folders within the scenario window
3. Update any necessary input files and save them in the input folder
4. Create a new scenario in CUBE
5. Double click the new scenario and edit any new key field values
6. Select the scenario and double click the “forecast” application
7. Set the appropriate execution order for the final assignment
8. Double click the scenario to run the model and click “run”

The model will now run and any output files will be available to view once the run has been completed.

References

1. Transportation Research Board, Highway Capacity Manual 2000, Washington D.C., 2000.

2. National Cooperative Highway Research Program, Report 365, Transportation Research Board, *Travel Estimation Techniques for Urban Planning*, Washington, D.C. 1998.

3. Federal Highway Administration, *Model Validation and Reasonable Checking Manual*, Washington D.C., February 1997.

Appendix D

Examples of Complete Streets Policies

APPENDIX A

Design Standards for Streets, Sidewalks and Bikeways – 6/07/04

Purpose and Intent

The 2025 Transportation Plan established a functional classification system consisting of Major Arterials, Minor Arterials, Major Collectors and Neighborhood Collectors. In developing new design standards, it was determined that local residential and local non-residential streets should also be included. This provides for an integrated street system.

A roadway system must balance the conflicting goals of traffic movement and access to land. Arterials are primarily for the movement of through traffic; collectors provide equal attention to land access and through traffic; and local streets provide access to individual parcels of land at the expense of through traffic. Selecting the proper roadway design for each functional classification is vital to development of a system of roadways which provides the needed connectivity between all areas of the city as well as the capacity to handle future traffic volume.

Design elements encompassing right of way width, pavement width, number of travel lanes, bike lane width, use of curb and gutter, sidewalk and pedway width, parking, driveways, buffer strip width, and utility easements must be appropriately selected to provide the function, character, traffic volume and speed desired.

Major streets serve a development pattern that ranges from low density residential to intensely developed commercial centers and corridors. To meet such varied conditions and address neighborhood livability factors requires an array of design approaches. A "one standard fits all" is not consistent with traffic needs or the wide variety of situations encountered.

In several of the street types, an alternative design will be considered or may be required when conditions specified in the standards are found to exist. This language was drafted specifically to allow a design appropriate for the land use and traffic conditions being created by a proposed development. The alternative design may be requested by the developer or recommended by city staff or the Planning and Zoning Commission. Criteria are included to provide guidance in selecting the proper street design to match the expected conditions. If the alternative design exceeds the standard design for a particular street type, it shall be presumed to satisfy these requirements. In all other cases, the final decision shall rest with the City Council.

Application of Design Standards

The design standards are intended to result in a more predictable and acceptable outcome for street improvements. Due to the wide range of circumstances, however, the standards need to be applied with a certain amount of flexibility. Street construction activity consists of building completely new streets as well as making minor improvements to existing streets. Many existing streets will not be changed at all in the next several years while others will be candidates for additional lanes, intersection reconfiguration, or major reconstruction. Unlike new streets, existing streets have physical constraints to being retrofitted to meet new standards due to a narrow right of way or the proximity of buildings, utilities or mature trees. Additionally, adjacent property owners often voice concern about more traffic, speeding, noise, storm water runoff, and other issues.

To deal with the application issue, two categories of improvements have been developed. Major projects consist of significant improvements to the street system and the design standards are to be interpreted as requirements. In situations where it is not feasible, practical or desirable for a proposed street improvement to meet the required standards, a design exception may be considered and approved by the City Council as part of the public hearing process. Major projects include:

- Construction of a new street
- Major reconstruction of an existing street (e.g. upgrade to city standards)
- Major widening of an existing street (e.g. addition of one or more lanes)

For minor improvements the design standards are regarded as a guideline rather than an absolute requirement. In such cases, if the standards are not attainable a design exception will not be required. Minor projects include:

- Resurfacing or partial reconstruction of the pavement
- Installation of traffic calming devices
- Intersection improvements (e.g. traffic signals, turn lanes, etc.)
- Reconstruction resulting in incidental widening
- Installing bike lanes or sidewalks on existing streets

Major projects typically entail significant citizen input in evaluating location and design alternatives. Meetings are held with interested parties such as property owners and residents followed by public hearings by the City Council. Citizen input on Minor projects varies. Resurfacing usually involves public notice but little citizen involvement whereas traffic calming measures can entail extensive citizen participation in the location and design process.

In regards to private development, the proposed standards would normally only apply to undeveloped land that is being platted for the first time. The standards could, however, apply to a previously developed area under two circumstances:1) the area is being replatted to create a different street and lot layout for redevelopment and the construction of new buildings; and 2) the area is being rezoned to allow more intensive development (e.g. changing from residential to commercial and thus from residential to non-residential streets).

Local Residential Street Design Standards

Residential Streets provide direct access to residential dwellings and other allowed uses. They should be designed for this intended function and exhibit characteristics which contribute to a safe and attractive living environment. This can be achieved by providing a diversity of street types, each serving a specific role. Right of way and pavement widths less than the general standard should provide acceptable levels of access, safety and convenience for all users, including emergency service providers, while enabling enhanced site design and creation of attractive streetscapes. Subdivision layouts should avoid the creation of pass through routes for external traffic while allowing local drivers to move easily to and from higher order streets.

The design standard for a **Residential Street** shall be as follows:

1. Right-of-way: 50 feet wide

2. Pavement: 28 feet wide measured from back of curb

3. Turnarounds: Terminal streets shall have a turnaround at the closed end with an outside right-of-way diameter of 94 feet and a roadway pavement diameter of 76 feet.

4. Drainage: Curb and gutter system.

5. Sidewalks: 5 feet wide on both sides constructed 1 foot inside the right-of-way.

6. Parking: Permitted on both sides of the street.

7. Buffer Strip: 5 feet wide with trees permitted in the right-of-way subject to compliance with city policies and regulations.

8. Utility Easements: 10 feet on both sides adjacent to the right-of-way. The city and public utility providers will not be responsible for the restoration of any landscaping placed within utility easements that is removed or damaged as a result of constructing, repairing or maintaining public utilities.

In place of the typical Residential Street, a request may be submitted at the time of preliminary plat review for approval of one or more of the following alternative streets:

A **Residential Feeder** will be considered or may be required when one or more of the following conditions exist: 1) the intended use and adjacent zoning allows duplex or multi-family dwellings; 2) the expected average daily traffic (ADT) exceeds 500; or 3) the street collects localized traffic within a subdivision and leads to a collector or arterial street. A Residential Feeder shall conform to the following design standards:

1. Right-of-way: 50 feet wide

2. Pavement: 32 feet wide measured from back of curb

3. Sidewalks: 5 feet wide on both sides constructed 1 foot inside the right-of-way.

4. Buffer Strip: 3 feet wide with only ornamental trees permitted.

5. Other Features: Same as a Residential Street

An **Access Street** will be considered when all of the following conditions exist: 1) the intended use and adjacent zoning is single-family detached dwellings; 2) the street is not longer than 750 feet, and 3) the expected average daily traffic (ADT) is less than 250. An Access Street shall conform to the following design standards:

1. Right-of-way: 44 feet wide

2. Pavement: 24 feet wide measured from back of curb

3. Turnarounds: Terminal streets shall have a turnaround at the closed end with an outside right-of-way diameter of 94 feet and a roadway diameter of 76 feet.

4. Sidewalks: Same as a Residential Street, except sidewalks shall not be required on cul-de-sacs less than 250 feet in length.

5. Parking: Permitted on one side only

6. Other Features: Same as a Residential Street

The design standard for **Residential Alleys** shall be as follows:

1. Right of Way: 18 feet wide

2. Pavement: 16 feet wide measured from edge of pavement (no curb and gutter)

3. Travel Lanes: Two-way traffic allowed

4. Maximum Length: 500 feet between connecting streets

5. Parking: Parking in alley prohibited

6. Setbacks: Garages, carports and open parking spaces shall be set back at least 5 feet from the right of way.

7. Utility Lines: Both overhead and underground utility lines may be installed in the right of way.

Local Non-Residential Street Design Standards

A **Non-Residential Street** is a low volume, low speed street which provides access to commercial, industrial, institutional, and other intensive land uses. Generally, only two travel lanes are needed. In some cases, these streets may carry considerable truck traffic, require wider driveways for access to loading docks, and have a need for on-street parking. Direct connections to collector and arterial streets are essential.

The design standard for a **Non-residential Street** shall be as follows:

1. Right-of-way: 66 feet wide

2. Pavement: 36 feet wide measured from back of curb

3. Turnarounds: Terminal streets shall have a turnaround at the closed end with an outside right-of-way diameter of 94 feet and a roadway diameter of 76 feet.

4. Sidewalks: 5 feet wide on both sides constructed 1 foot inside the right-of-way.

5. Parking: Permitted on both sides of the street.

6. Buffer Strip: 9 feet wide with trees permitted in the right-of-way subject to compliance with city policies and regulations.

7. Utility Easements: Same as a standard Residential Street

In place of the typical Non-residential Street, a request may be submitted at the time of preliminary plat review for approval of one or more of the following alternatives:

An **Option A** street will be considered when two or more of the following conditions exist: 1) the intended use and adjacent zoning is commercial, light industrial, office, and/or multi-family residential; 2) the expected average daily traffic (ADT) is less than 4,000; 3) the street is primarily intended to provide access to property and secondarily to serve through traffic; and 4) there is a nearby collector or arterial street to accommodate future traffic from surrounding land.

Option A streets shall conform to the following design standards:

1. Right-of-way: 60 feet wide

2. Pavement: 30 feet wide measured from back of curb

3. Parking: Not permitted on either side.

4. Other features: Same as a typical Non-residential Street

An **Option B** street will be considered when all of the following conditions exist: 1) the intended use and adjacent zoning is office and/or multi-family residential; 2) the street is not longer than 750 feet; 3) the expected average daily traffic is less than 1,000; 4) the street is intended to provide access to property and not serve through traffic; and 5) there is a nearby collector or arterial street to accommodate future traffic from the development of surrounding land.

Option B streets shall conform to the following design standards:

1. Right-of-way: 60 feet wide

2. Pavement: 30 feet wide measured from back of curb

3. Parking: Permitted on one side only

4. Buffer Strip: 9 feet wide with trees permitted as a typical Non-residential Street

5. Other features: Same as a typical Non-residential Street

An **Option C** street will be considered or may be required when two or more of the following conditions exist: 1) the intended use and adjacent zoning is intensive commercial and/or industrial; 2) the expected average daily traffic exceeds 4,000; 3) the street will serve a significant amount of through traffic; 4) the street will connect to two collector or arterial streets; 5) there will be a significant number of left turns to and from abutting driveways; and 6) there will be a significant amount of truck traffic.

Option C streets shall conform to the following design standards:

1. Right-of-way: 66 feet wide

2. Pavement: 38 feet wide measured from back of curb to provide for two 13’ travel

lanes and a 12’ two-way center turn lane.

3. Turnarounds: Terminal streets are not permitted

4. Parking: Not permitted on either side

5. Other Features: Same as a typical Non-residential Street

Neighborhood Collector Street Design Standards

A **Neighborhood Collector** is intended to collect traffic from surrounding residential areas and connect to major streets; serve local, non-residential land uses such as schools, churches, and parks; and promote neighborhood livability. These streets provide two traffic lanes for shared use by vehicles and bicycles at low to moderate driving speeds (30 mph), accommodate an average daily traffic volume of 1,500-3,500 vehicles, and generally, connect to only one arterial or major collector street. They may also provide direct access to property and contain on-street parking. Two types of Neighborhood Collector streets are allowed. Either type may be required or proposed provided a statement of justification is submitted for the subject location.

Option A streets are intended to provide direct access to property and provide some periodic on-street parking for abutting uses. The design standard shall be as follows:

1. Right-of-way: 60 feet wide

2. Pavement: 34 feet wide measured from back of curb

3. Travel Lanes: Two travel lanes each 13.5 feet wide

4. Sidewalks: 5 feet wide on both sides constructed 1 foot inside the right-of-way.

5. Parking: Permitted on one side of the street only. A bulb-out may be built near intersections to create recessed parking, calm traffic and assist pedestrians.

6. Driveways: Permitted on both sides of the street.

7. Buffer Strip: 7 feet wide with trees permitted in the right-of-way subject to compliance with city policies and regulations.

8. Utility Easements: Same as a standard Residential Street

Option B streets are intended to primarily collect neighborhood traffic and not provide direct access to property. The design standard shall be as follows:

1. Right-of-way: 60 feet wide

2. Pavement: 30 feet wide measured from back of curb

3. Travel Lanes: Two shared travel lanes each 15 feet wide

4. Sidewalks: 5 feet wide on both sides constructed 1 foot inside the right-of-way.

5. Parking/Driveways: Not permitted on either side

6. Buffer Strip: 9 feet wide with trees allowed as for Option A streets

7. Other features: Same as Option A streets

Major Collector Street Design Standards

A **Major Collector** is a mid-volume, multi- modal street (average daily traffic of 3,500-8,500 vehicles) which collects traffic from several neighborhoods and moves the traffic to the arterial network. These streets provide access to retail centers, office complexes, institutional uses such as colleges and hospitals, and multi-family residential areas. Major collectors typically have two, undivided travel lanes with a left turn lane at key intersections. A two-way center turn lane or intermittent raised median may be provided to manage access at high traffic locations. Typically, direct access to one and two-family residences is prohibited with consolidated driveways allowed for other uses when controlled as to location. No on-street parking is permitted.

The design standard for a **Major Collector** street shall be as follows:

1. Right-of-way: 66 feet wide

2. Pavement: 36 feet wide measured from back of curb

3. Travel Lanes: Two lanes each 12 feet wide

4. Bike Lanes: Striped bike lane on both sides 6 feet from back of curb

5. Sidewalks: 5 feet wide on both sides constructed 1 foot inside the right-of-way.

6. Parking: Not permitted on either side

7. Driveways: Controlled as to location and width for access management purposes.

8. Buffer Strip: 9 feet wide with trees permitted in the right-of-way located 4 feet from edge of street and sidewalk subject to compliance with city policies and regulations.

9. Utility Easements: Same as a standard Residential Street

In place of the typical Major Collector, a request may be submitted at the time of preliminary plat review for approval of one or more of the following alternative streets:

An **Option A** street will be considered or may be required when the following conditions exist: 1) the intended use and zoning of nearby land is one or two-family residential and/or large open land areas such as parks, churches, and schools; and 2) the street is intended to serve through traffic and not provide direct access to property.

Option A streets shall conform to the following design standards:

1. Right-of-way: 66 feet wide

2. Pavement: 32 feet wide measured from back of curb

3. Travel Lanes: Two shared use travel lanes each 16 feet wide

4. Bike Lanes: No striped bike lanes

5. Sidewalk/Pedway: A 5 foot wide sidewalk on one side and an 8 foot wide pedway on the other side constructed 1 foot inside the right of way.

6. Parking: Not permitted on either side

7. Driveways: Not permitted on either side

8. Buffer Strip: 9-10 feet wide with trees permitted as for a typical Major Collector

9. Other features: Same as a typical Major Collector

An **Option B** street will be considered or may be required when one or more of the following conditions exist: 1) the intended use and/or zoning of adjacent land is retail commercial, office, institutional or multi-family residential; 2) the expected average daily traffic exceeds 6,000; and 3) the street will or is likely to connect to two arterial streets.

Option B streets shall conform to the following design standards:

1. Right-of-way: 76 feet wide

2. Pavement: 44 feet wide measured from back of curb

3. Travel Lanes: Two shared use travel lanes each 16 feet wide plus a center two-way left-turn lane 12 feet wide.

4. Bike Lanes: No striped bike lanes

5. Pedway/Sidewalk: An 8 foot wide Pedway on one side and a 5 foot wide sidewalk on the other side constructed 1 foot inside the right of way.

6. Parking: Not permitted on either side

7. Driveways: Controlled as to location and width for access management purposes.

8. Buffer Strip: 8-9 feet wide with trees permitted as for a typical Major Collector

9. Other features: Same as a typical Major Collector

Minor Arterial Street Design Standards

A **Minor Arterial** is a mid-to-high volume multi-modal street (average daily traffic of 7,500-20,000 vehicles) which moves a large portion of internal city traffic. Minor Arterials usually connect to Major Arterials or Expressways and provide access to such traffic destinations as retail shopping areas, employment centers, and many residential neighborhoods. These streets have a minimum of two, undivided travel lanes but may have up to four travel lanes with a raised median and left turn lane at intersections to manage traffic access. Typically, direct access to property is restricted and no on-street parking is permitted.

Three types of Minor Arterial streets are permitted. Each type may be allowed or required depending upon the surrounding land use pattern, traffic conditions or other circumstances.

An **Option A** street will be considered or may be required when the intended use or zoning of nearby land is predominantly residential or large open land areas such as parks, churches, and schools. Option A streets shall conform to the following design standards:

1. Right of way: 84 feet wide

2. Pavement: Total width is 40 feet measured from edge of shoulder.

3. Travel Lanes: Two lanes, each 12 feet wide.

4. Paved Shoulder: 8 feet on each side for bikes and emergency parking.

5. Drainage: Open channel or swale system without curb and gutter.

6. Sidewalk: 5 feet wide on one side constructed 1 foot inside the right-of-way.

7. Pedway: 8 feet wide on one side constructed 1 foot inside the right of way.

8. Parking: Not permitted on either side.

9. Driveways: Controlled as to location and width for access management purposes.

10. Buffer Strip: 14-15 feet wide on each side. Trees permitted in the right of way when located outside of the drainage channel and 4 feet from edge of sidewalk or Pedway subject to compliance with city policies and regulations.

11. Utility Easements: Same as a standard Residential Street.

An **Option B** street will be considered or may be required when the following conditions exist: 1) the intended use or zoning of nearby land is residential or large open land areas such as parks, churches, and schools; and 2) the average daily traffic volume of the street is projected to exceed 15,000 vehicles in 20 years. Option B streets shall conform to the following design standards:

1. Right of way: 100 feet wide

2. Pavement: Total width is 40 feet measured from edge of shoulder.

3. Travel Lanes: One 12 feet wide lane on each side of a 12 feet center median.

4. Other Features: Same as Option A

An **Option C** street will be considered or may be required when the intended use or zoning of adjacent land is predominantly commercial, industrial, office, or institutional. Option C streets shall conform to the following design standards:

1. Right-of-way: 84 feet wide

2. Pavement: 48 feet wide measured from back of curb

3. Travel Lanes: Two 12 feet wide travel lanes plus a 12 feet wide center, two-way left turn lane.

4. Bike Lanes: Striped 6 feet wide bike lane on each side measured from back of curb

5. Drainage: A curb and gutter system is most common

6. Buffer Strip: 10 feet wide on each side. Trees permitted in the right of way when located 6 feet from edge of street and 4 feet from edge of sidewalk or Pedway subject to compliance with city policies and regulations.

7. Other Features: Same as Option A

Major Arterial Street Design Standards

A **Major Arterial** is a high volume multi-modal street (average daily traffic of 15,000 or more vehicles) which handles the bulk of through traffic within the city. Major Arterials connect to expressways and freeways as well as provide access to major traffic destinations such as regional shopping centers and major universities. These streets usually have at grade intersections which are spaced well apart. It is very common for Major Arterials to have four lanes with a continuous raised median except for a left turn lane at major intersections. Direct access to property is usually prohibited or limited to right-in, right-out and no on-street parking is permitted.

Two types of Major Arterial streets are permitted. Each type may be allowed or required depending upon the surrounding land use, traffic conditions or other circumstances.

An **Option A** will be considered or may be required when vehicle speeds are moderate, right of way is limited, and access is restricted thereby mitigating the need for a median. Option A streets shall conform to the following design standards:

1. Right of way: 106 feet wide

2. Pavement: Total width of 60 feet measured from back of curb or edge of pavement

3. Travel Lanes: Four lanes each 12 feet wide

4. Bike Lanes: Striped 6 feet wide bike lane on each side measured from back of curb

5. Drainage: May be built with curb and gutter or an open swale

6. Sidewalk: 5 feet wide on one side constructed 1 foot inside the right-of-way

7. Pedway: 8 feet wide on one side constructed 1 foot inside the right of way

8. Parking: Not permitted on either side

9. Driveways: Controlled as to location and width for access management purposes.

10. Buffer Strip: 14-17 feet wide on each side. Trees permitted in the right of way located 10 feet from edge of street and 4 feet from edge of sidewalk or Pedway subject to compliance with city policies and regulations.

11. Utility Easements: Same as a standard Residential street.

An **Option B** street will be considered or may be required when the projected average daily traffic volume of the street could reasonably exceed 20,000 vehicles in 20 years and/or the street connects to a freeway or expressway. Option B streets shall conform to the following design standards:

1. Right of way: 110 feet wide

2. Pavement: Total width of 52 feet measured from back of curb or edge of pavement

3. Travel Lanes: One 12 feet wide inner lane and one 14 feet wide outer lane on each side of a 16 feet wide center median which may include a 12' wide left-turn lane at intersections.

4. Bike Lanes: No bike lane on either side

5. Sidewalk: 5 feet wide on one side constructed 1' inside right of way

6. Pedway: 10' wide on one side constructed 1' inside right of way

7. Buffer Strip: 12-13 feet wide on each side. Trees permitted in the right-of-way located 8 feet from edge of street and 4 feet from edge of sidewalk or Pedway subject to compliance with city policies and regulations.

8. Other Features: Same as Option A

Requests for exceptions to the above design standards may be submitted at the time of preliminary plat review and shall be processed as a variance as provided by the Subdivision Regulations.

★ **Roll Call Number**

Agenda Item Number

53

Date September 22, 2008

ADOPTION OF THE "COMPLETE STREETS" POLICY

WHEREAS, the City Council desires to achieve the designation of a "Bicycle Friendly Community" by the League of American Bicyclists for the City of Des Moines; and

WHEREAS, on December 17, 2007, by Roll Call No. 07-2388, the City Council adopted the "Goals to Make Des Moines a Bicycle Friendly Community" and directed the City Manager to work toward implementing such goals; and

WHEREAS, adoption of a "Complete Streets" policy is a component of such "Goals"; and

WHEREAS, on March 10, 2008, by Roll Call No. 08-433, the City Council received a proposed "Complete Streets" policy and referred to the City Manager for review and recommendation and submittal back to the City Council for adoption; and

WHEREAS, the proposed "Complete Streets" policy has been presented and favorably received by the Park and Recreation Board, the Plan and Zoning Commission, and the Traffic Safety Committee, and is recommended for approval by the City Manager.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Des Moines, Iowa, that the "Complete Streets" policy, on file in the City Clerk's Office, is hereby adopted.

BE IT FURTHER RESOLVED that City staff are directed to follow such policy and the City Manager is directed to form a committee to recommend what elements of the "Complete Streets" policy will be included in every street project.

(Council Communication No. 08-)

MOVED by ____________________ to approve.

APPROVED AS TO FORM:

Ann DiDonato

Ann DiDonato, Assistant City Attorney

COUNCIL ACTION	YEAS	NAYS	PASS	ABSENT
COWNIE				
COLEMAN				
HENSLEY				
KIERNAN				
MAHAFFEY				
MEYER				
VLASSIS				
TOTAL				

MOTION CARRIED APPROVED

....

Mayor

CERTIFICATE

I, DIANE RAUH, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

____________________ **City Clerk**

Complete Streets Policy

The term complete street means designing and building the streets so the streets routinely accommodate travel by all modes. To complete a street will expand the capacity to serve everyone who travels, be it by motor vehicle, foot, bicycle, or other means. A complete street may look quite different on different sides of the same city, but both are designed to balance safety and convenience for everyone using the road. Complete streets are essential for access by people who cannot drive. Roads without safe access for non-motorized transportation represent a barrier for people who use wheelchairs, and for older people and children.

The City of Des Moines recognizes this need for complete streets and will accommodate elements that create a complete street where possible. Some of the elements under consideration for inclusion on a complete street can be sidewalks, shared use paths, bike lanes, paved shoulders, street crossings (including over and under crossings), pedestrian signals, signs, street furniture, transit stops and facilities, as well as all connecting pathways shall be designed, constructed, operated, maintained, and accommodated in all transportation projects so that all modes and pedestrians, including children, elderly and people with disabilities, can travel safely and independently.

To this end, the City of Des Moines will:

- Create a committee to consider and recommend what complete streets elements be included with every street project undertaken by the City of Des Moines. Members on this committee could be representatives from the Engineering, Traffic and Transportation, Parks and Recreation, Police, Community Development and other departments.

- Work with the Des Moines Park and Recreation Boards' Trails and Greenways Advisory Committee to identify bicycle, pedestrian, and transit planning and design issues appropriate to the project.

1. Bicycle and pedestrian ways shall be established in new construction and reconstruction of road and bridge projects within the City of Des Moines unless one or more of three conditions are met:

    1.1. Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate all users (bicyclists, motorists, transit vehicles and users, and pedestrians of all ages and abilities) elsewhere within the right of way or within the same transportation corridor.

    1.2. The cost of establishing bikeways and walkways would be excessively disproportionate to the need or probable use or exceed budget costs (ex. resurfacing). Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project. In this case, the project sponsor may propose an alternate design or spend twenty percent of the project cost of the larger project to improve accommodations for all users.

    1.3. Where sparsity of population or other factors indicate an absence of future need. This is defined as streets developed as a cul-de-sac with four or fewer dwellings or if the street has severe topographic or natural resource restraints. Also an indication of absence of need is when the average daily traffic (ADT) is projected to be less than 500 vehicles per day over the life of this project.

2. The design and development of the transportation infrastructure shall improve conditions for transit users, motorists, bicyclists and pedestrians through the subsequent steps:

   2.1. Plan projects for the long-term. Transportation improvements are long-term investments that remain in place for many years. The design and construction of new facilities should anticipate likely future demand for transit, bicycling, and walking facilities and not preclude the provision of future improvements.

   2.2. Address the need for bicyclist and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore the design of intersections and interchanges shall accommodate bicyclist and pedestrians in a manner that is safe, accessible, and convenient.

   2.3. Design facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow design guidelines and standards that are commonly used, such as:

      - AASHTO *Guide for the Development of Bicycle Facilities,*
      - AASHTO's *A policy on Geometric Design of Highways and Streets,*
      - AASHTO's *Guide for the Planning, Design, and Operation of Pedestrian Facilities,*
      - SUDAS: *State Urban Design and Specifications Manual*
      - Federal Highway Administration's *Manual on Uniform Traffic Control Devices for Streets and Highways,*
      - ITE Recommended Practice *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities.*

City of Roanoke Complete Streets Policy

Complete Streets are streets that safely accommodate street users of all ages and abilities such as pedestrians, bicyclists, transit riders, and motorists. Through this policy, the City of Roanoke intends to ensure that all transportation agencies within the City shall routinely plan, fund, design, construct, operate, and maintain their streets according to the Complete Street principles of the City's "Street Design Guidelines" with the goal of creating an attractive connected multimodal network that balances the needs of all users, except where there are demonstrated exceptional circumstances.

By adopting this policy the City of Roanoke:

- Affirms that *Improving Streetscapes* to create great streets, a strategic initiative of the City's Comprehensive Plan Vision 2001-2020, will improve both Roanoke's image and its function by providing a safe and attractive environment for street users of all ages and abilities such as pedestrians, bicyclists, transit riders, and motorists;

- Recognizes that the development of pedestrian and bicycle infrastructure supports Vision 2001-2020's strategic initiative *Investing in Critical Amenities* because it enhances recreational opportunities and well-designed cityscapes, thus promoting active lifestyles;

- Appreciates the positive role that good pedestrian and bicycle facilities play in attracting population growth and sustainable economic development;

- Values the long-term cost savings of developing pedestrian and bicycle infrastructure as they relate to improved public health, improved environmental stewardship, reduced fuel consumption, and the reduced demand for motor vehicle infrastructure.

- Recognizes that Complete Streets may be achieved through single projects or incrementally through a series of smaller improvements or maintenance activities over time, and that all sources of transportation-related funding be drawn upon to implement Complete Streets.

- Intends to maximize the number of transportation options available within the public right-of-way.

Additionally, Roanoke City Council declares it is the City of Roanoke's policy to:

1. Use the Street Design Guidelines to guide the planning, funding, design, construction, operation, and maintenance of new and modified streets in Roanoke while remaining flexible to the unique circumstances of different streets where sound engineering and planning judgment will produce context sensitive designs.

2. Incorporate the Street Design Guidelines' principles into all City plans, manuals, rules, regulations and programs as appropriate.

3. Keep street pavement widths to the minimum necessary.

4. Provide pedestrian accommodation in the form of sidewalks or shared-use pathways on all arterial and collector streets and on local streets in the Downtown, Village Center, Traditional Neighborhood, Suburban Neighborhood, Local Commercial, Regional Commercial, and Industrial character districts.

5. Provide bicycle accommodation along all arterial and collector streets. Bicycle accommodation on local streets should be provided within the travel lanes shared with motor vehicles and no additional markings, signage, or pavement should be provided unless a designated bicycle route requires the use of a local street.

6. Where physical conditions warrant, plant trees whenever a street is newly constructed, reconstructed, or relocated.

7. The Director of Public Works, Director of Parks and Recreation and the Director of Planning, Building and Development will present a written explanation to the City Manager for approval when policies 3-6 above are not reasonable or feasible per the following exceptional circumstances:

    a. Public safety would be compromised
    b. Severe topographic constraints exist
    c. Environmental or social impacts outweigh the need for these accommodations
    d. The purpose and scope of the project does not facilitate provision of such accommodation
    e. The total cost of constructing and/or maintaining the accommodation, including potential right-of-way acquisition, would be excessively disproportionate to the need for the facility
    f. A public consensus determines the accommodation is unwanted

City of Roanoke Complete Streets Policy

In support of this Complete Streets Policy, the City of Roanoke will:

- Update all necessary and appropriate codes, standards and ordinances to ensure that design components for all new or modified streets follow the intent of the Street Design Guidelines.
- Update the process of evaluating requests for new curb and/or pedestrian accommodations.
- Identify all current and potential future sources of funding for street improvements
- Continue inter-departmental project coordination among city departments with an interest in the activities that occur within the public right-of-way in order to better use fiscal resources.
- Train pertinent staff in the engineering, parks and recreation, planning, and transportation departments on the content of the Street Design Guidelines
- Use the following process when planning improvements within the public right-of-way
  a. Identify the street type according to Roanoke's street hierarchy
  b. Identify the current and future character district(s) that pertain to the project
  c. Identify the most appropriate street typical section according to the street type and character district
  d. Identify any general elements that may apply to the work
- Measure the success of this complete streets policy using the following performance measures:
  a. Total miles of on-street bicycle routes defined by streets with clearly marked or signed bicycle accommodation
  b. Linear feet of new pedestrian accommodation
  c. Number of new curb ramps installed along city streets
  d. Number of new street trees planted along city streets
- Update the Street Design Guidelines as needed

CTT
3/3/08

IN THE COUNCIL OF THE CITY OF ROANOKE, VIRGINIA,

The 17th day of March, 2008.

No. 38042-031708.

A RESOLUTION approving a Complete Streets Policy for the City of Roanoke.

WHEREAS, the City's Comprehensive Plan, Vision 2001-2020, identifies "Improving Streetscapes" as a Strategic Initiative and recommends the creation of a street design manual to guide the design of new streets and improvements to existing streets;

WHEREAS, to implement this recommendation, an interdepartmental project team from the Planning, Building and Development Department, the Engineering Division and Transportation Division of the Public Works Department, and the Department of Parks and Recreation collaborated to create a set of Street Design Guidelines;

WHEREAS, the Street Design Guidelines provide practical approaches to applying the general design principles contained in the comprehensive plan to create "Complete Streets;" and

WHEREAS, the Planning Commission adopted the Street Design Guidelines on July 19, 2007, as an internal tool for developing Complete Streets.

THEREFORE, BE IT RESOLVED that City Council hereby adopts the Complete Streets Policy as set forth in the attachment to the City Manager's letter dated March 17, 2008, to Council.

ATTEST:

Sheila N. Hartman
Deputy City Clerk.

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Appendix E

South Red River Bridge and Corridor Right-of-Way Preservation

MEMORANDUM

To: Wade Kline, Executive Director, Fargo-Moorhead Metro COG
Transportation Technical Committee

From: Richard G. Lane, P.E.
Cindy Gray, AICP

Date: July 31, 2009

Subject: Metropolitan Long Range Transportation Plan Update, South Red River Bridge and Corridor Right-of-Way Preservation

This memorandum summarizes recent input from local governments, the Minnesota Department of Transportation (MnDOT), and the North Dakota Department of Transportation (NDDOT) with respect to right-of-way preservation for a future bridge over the Red River, and the manner in which the Long Range Metropolitan Transportation Plan (MPT) should address preservation of a bridge and roadway corridor. During the month of June, 2009, Metro COG and SRF Consulting Group, Inc. met with local government officials from the City of Fargo, Clay County, and Cass County to discuss the past studies and the current status of corridor alignment alternatives. Past studies were summarized in a memorandum which was provided to each involved jurisdiction, MnDOT, and NDDOT (see Appendix).

Each jurisdiction agreed that the findings of the South Side Red River Bridge and Corridor Study (Phases 1-4) are still valid, although there are development activities that are taking place in the vicinity of the two remaining alternatives that will certainly be a factor in selecting a preferred corridor. Furthermore, the Red River flood in the spring of 2009 resulted in a situation in which several properties adjacent to the river are candidates for FEMA buy-outs which has potential consequences relative to the selection of a roadway and bridge corridor.

The local jurisdictions met jointly on July 22, 2009 to further discuss the current status of the 70th and 76th Avenue S corridors and the manner in which the MTP should address corridor preservation for a river crossing.

Summary of Issues

Table 1 provides a brief summary of input provided by the City of Fargo, Cass and Clay Counties, Mn/DOT and NDDOT regarding various issues related to the preservation of a roadway and bridge corridor on either the 70th or 76th Avenue S alignment. Figure 1 shows the location and limits of the two alternates as they are currently understood.

Model Results

The traffic projection model was run under three scenarios to test the sensitivity of the model to having a south side bridge over the Red River. The starting point for each scenario was the 2035 job and household projections on the 2015 Existing Plus Committed Roadway Network, with a grade separation at 64th Avenue S and I-29 and an interchange at 76th Avenue S and I-29. The three scenarios were as follows:

- No bridge connection south of 52nd Avenue S
- 70th Avenue S connection between University Drive and Hwy 75, with an offset of 70th Avenue to the west
- 76th Avenue S connection between University Drive and Hwy 75, resulting in a continuous connection from CR 6 in Cass County to CR 67 in Clay County.

The results of each modeling scenario are shown in Figures 2-4. The most significant results are those that show reduced ADT volumes on portions of University Drive and 52nd Avenue S, particularly the 52nd Avenue S bridge.

Route Advantages and Disadvantages

Generally speaking, Cass County and Clay County expressed that the 76th Avenue S corridor offers the advantage of route continuity with Cass CR 6 west of CR 17, and with Clay CR 67 east of Hwy 75. MnDOT and NDDOT also expressed a desire for regional continuity with the county road system and an interchange at 76th Avenue S and I-29, which would allow for a two-mile spacing of interchanges along I-29 south of 52nd Avenue S. The City of Fargo expressed concern about a 70th Avenue S crossing due to the presence of the development currently taking place along 70th Avenue S west of University Drive.

A plat map of Lakeview Heights Addition to the City of Horace was provided. This subdivision is located along the south side of 76th Avenue east of CR 17. The layout of the subdivision demonstrates sensitivity to the arterial roadway function of 76th Avenue S by providing a 75-foot half section of right-of-way, property access off the local street system, generous rear yard setbacks due to a power line easement, and a limited number of intersections. Nevertheless, the presence of a residential subdivision adjacent to the corridor confirms the importance of identifying a preferred bridge corridor prior to approval of future subdivisions in Fargo, Cass County, or Clay County.

Table 1
Summary of Issues by Local Jurisdictions, NDDOT and MnDOT

Known Issues	Cass County	Clay County	Fargo	NDDOT	MnDOT
Property Ownership and Agricultural Land Severance	No change	No change Potentially less concern over ag land severance on 70th Ave S alignment. County continues to have ½ mile of section line road ROW on CR 67 (76th Ave) alignment west of Hwy 75. Access to one existing residence would need to be changed near the river.	Very few changes other than school district ownership of land south of 70th Ave S.	N/A	N/A
Flood Related Home Buy-outs (past, present, and future)	Potentially all of Forest River and Orchard Glenn Subdivisions and all river lots in Chrisan Estates	No change	Potential buy-out properties in the vicinity of the two corridors have not been annexed.	N/A	N/A
Extraterritorial Area Jurisdiction (i.e. Briarwood on Fargo side)	N/A	N/A	The 70th Ave S corridor is still within Briarwood's previously agreed-upon ETA. The 10-year time frame of that agreement has now expired. It has not been renegotiated.	N/A	N/A
Land Use, Recent and Planned Subdivisions, Zoning Changes, and Development Plans	No change within county City of Horace recently approved Lakeview Heights Addition, a subdivision along south side of 76th Ave S which has 75-foot half-section and limited access. Residential lots back up onto the roadway. Rear yard setbacks will be maximized due to a power line easement south of the road ROW.	Home has now been built east of Hwy 75 on 70th Ave S alignment. Hwy Commercial zoning of land along east side of Hwy 75 south of CR 67 has been granted, and owner has requested additional rezoning to Hwy Commercial. Property is separated from CR 67 by drainage ditch.	New high school being built along south side of 70th Ave S between 25th St and University Dr. Annexation takes the city's southerly boundary to just south of 76th Ave S between University Dr and 25th St S.	N/A	N/A

Known Issues	Cass County	Clay County	Fargo	NDDOT	MnDOT
Desire for Continued South Side Urban Growth	N/A (no desire for additional rural subdivisions in Fargo's ETA)	Moorhead will eventually grow south. Clay County recognizes the increasing demand for traffic across the Red River.	Strong desire for continued south side growth provided flood resiliency measures are implemented.	Recognize continued southerly growth of the metro area.	Recognize continued southerly growth of the metro area.
System-wide Transportation Considerations	76^{th} Ave corridor offers continuity with CR 6 west of CR 17.	76^{th} Ave corridor offers continuity with CR 67 east of Hwy 75.	70^{th} Ave corridor would not offer good continuity west of University Dr. without impacts to school site.	Expressed strong preference for next I-29 interchange to align with crossing of Red River. Expressed preference for two-mile interchange spacing along I-29, with an overpass at 64^{th} Ave S and an interchange at 76^{th} Ave S.	Expressed preference for system continuity offered by 76^{th} Ave alignment with CR 67.
Flood Factors – Could a south side bridge fit in with flood mitigation plans?	Cass County willing to work with Fargo to purchase buy-outs in a manner that does not encumber the property.	Clay County would need to know more about Fargo's south side flood protection project (i.e. oxbow cut-across channels), but generally supportive of increased system continuity.	76^{th} Ave would need to be raised as part of Fargo's south side flood protection plan. Expressed concern over timing and complicating the flood protection issue with the bridge corridor issue.	No comment.	No comment.
2009 Flood – Evacuation, Security, Hazard Mitigation, Emergency Transportation Routes	Transportation link very important given difficulty of emergency rescue efforts and limited access across Wild Rice River to the areas south of 52^{nd} Ave S on University.	Important to consider.	No comments made about this issue.	Stated they would like to see the 76^{th} corridor develop as more of a regional corridor to support a future Red River Bridge crossing.	Expressed viewpoint similar to NDDOT.

Flood Buy-out Opportunities and Constraints

While the opportunity for flood buy-outs does have the potential to remove dwellings that would be affected by the two corridor and bridge alignments, the use of FEMA funds to make those acquisitions would encumber the property in a manner that would not allow for construction of a roadway and bridge or any other public improvement. The use of another funding source would provide greater flexibility, preserving the option to use purchased properties as right-of-way for public projects. It is strongly recommended that the City of Fargo and Cass County develop an agreement in the very near future to allow for the purchase of properties in the vicinity of 70th/76th Avenue S to ensure a future corridor will not be encumbered. If a corridor is chosen in the near future, we recommend that the City of Fargo and/or Cass County seek a first right of refusal for properties along and adjacent to the preferred corridor.

Metropolitan Transportation Plan Approach to Corridor Preservation

The purpose of generating conversations between the local jurisdictions and the two state highway departments was to form consensus about the most appropriate manner in which to include the south bridge corridor in the plan. Right-of-way preservation can be included as one phase of the project, in either the short range or long range. Based on our discussions with city and county officials, it does not seem critical that a specific corridor be identified at this time. Although there is general agreement between local jurisdictions, MnDOT and NDDOT that the 76th Avenue S corridor is optimal due to its broad regional continuity, there are advantages at this time to retaining both corridors as viable alternates until more is known about the nature of flood protection projects.

That being said, corridor preservation is critical prior to the approval of more development in the vicinity of either 70th or 76th Avenue S to prevent large-scale opposition of the type experienced by policy makers when river crossings were considered at 32nd and 40th Avenue S. A window of opportunity will open after permits are issued for either the south side flood protection project or a flood protection project of a more regional nature, and before additional zoning and subdivision approvals are granted to allow for more development in the vicinity of either corridor. At such time, it will be important to select a corridor to ensure its preservation, and to protect future elected officials from large-scale public opposition while attempting to carry out their responsibility to provide for transportation facilities that are vital to the economy and security of the metropolitan area.

The actual construction of a corridor and bridge could be included in the MTP as a long range project, or not included at all with this particular plan. At this time, the most important element of the plan is corridor preservation. Maintaining both the 70th Avenue and 76th Avenue S alternates in the MPT for corridor preservation at this time would allow future land use planning and other potential actions taken by the City of Fargo and Clay County to be evaluated based on these alternates until such time as the local jurisdictions are comfortable choosing a preferred corridor.

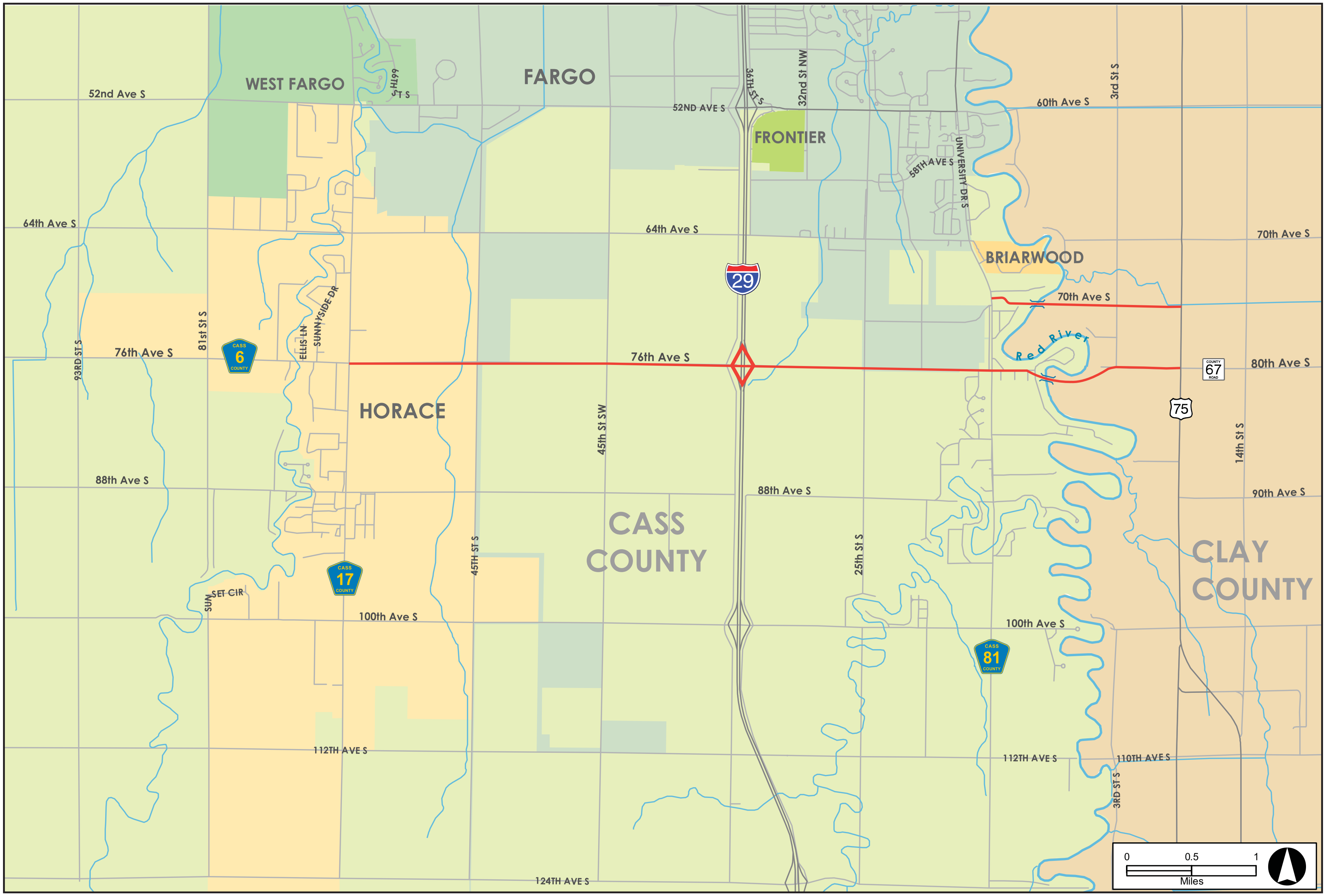
If the construction of a bridge corridor is not included in the long range project list, it will be critical to consider the capacity needs of the 52nd Avenue S bridge prior to 2035, since the projected ADT volume exceeds 22,000 without other river crossing options. The existing 52nd Avenue S bridge may be wide enough to accommodate four lanes, but would need to be widened in some manner to accommodate bicycle and pedestrian facilities. In addition, 52nd Avenue S between University Dr and the bridge needs to be raised to protect this corridor from future flooding.

The recommended action is that the MTP include the following:

> Corridor preservation and acquisition (where applicable) for both the 70th and 76th Avenue S Red River bridge and corridor alternates in both the short term and long term project lists.

The recommended follow-through by Metro COG is the following:

> Continue working with the applicable local governments, MnDOT, and NDDOT to ensure that a preferred corridor is selected at the earliest possible time, after decisions on flood protection have reached a point that allows for related growth decisions to be made, but prior to zoning and subdivision changes that would allow for such growth.



Graphics Support/6728 Metro Trns Plan/Figures

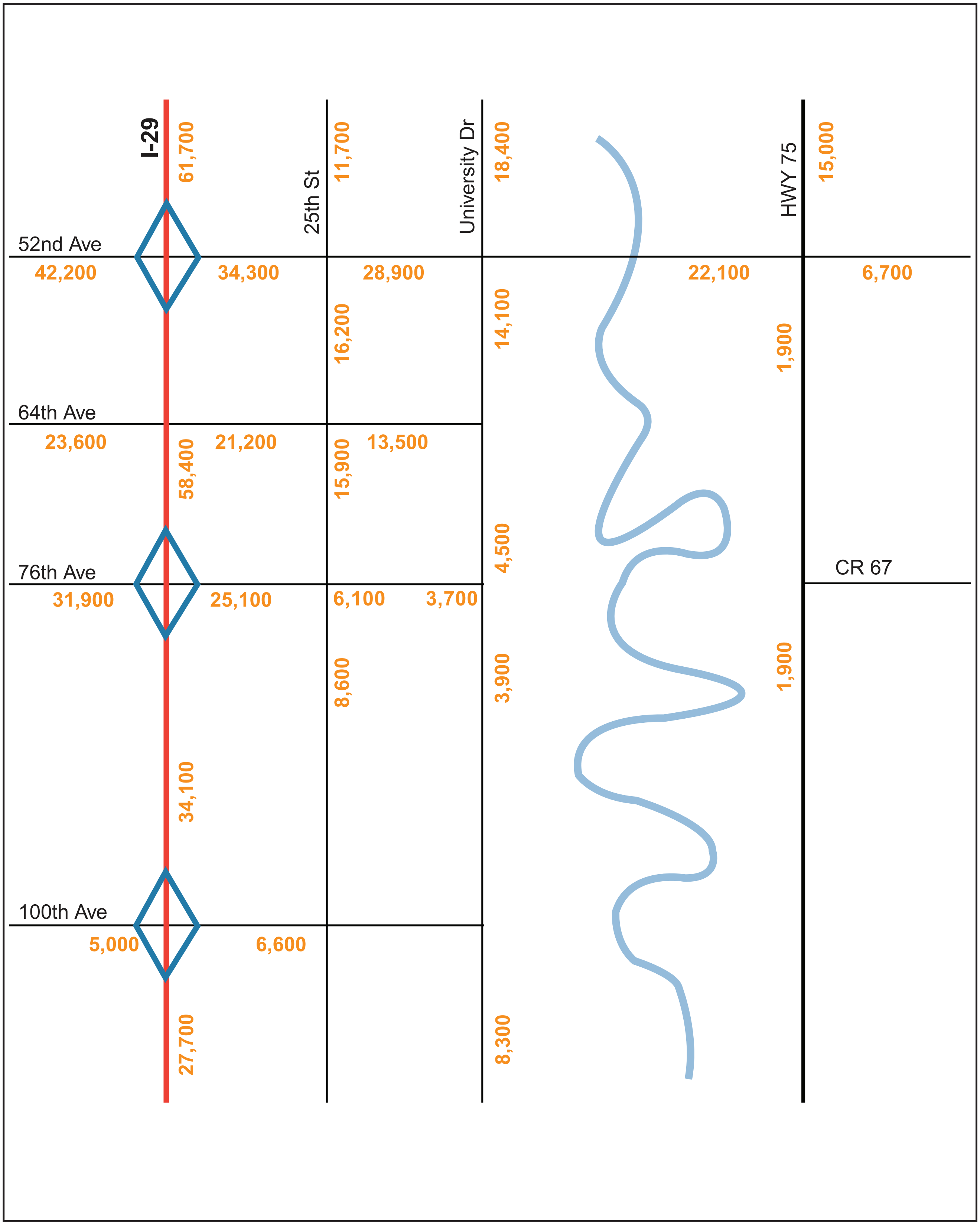
SRF Consulting Group, Inc.

6728
073009

Corridor Preservation Alternates, South Bridge

Fargo-Moorhead Metropolitan Long Range Transportation Plan
Fargo - Moorhead Metropolitan Council of Governments

Figure 1



Graphics Support/6728 Metro Trns Plan/Figures

SRF Consulting Group, Inc.

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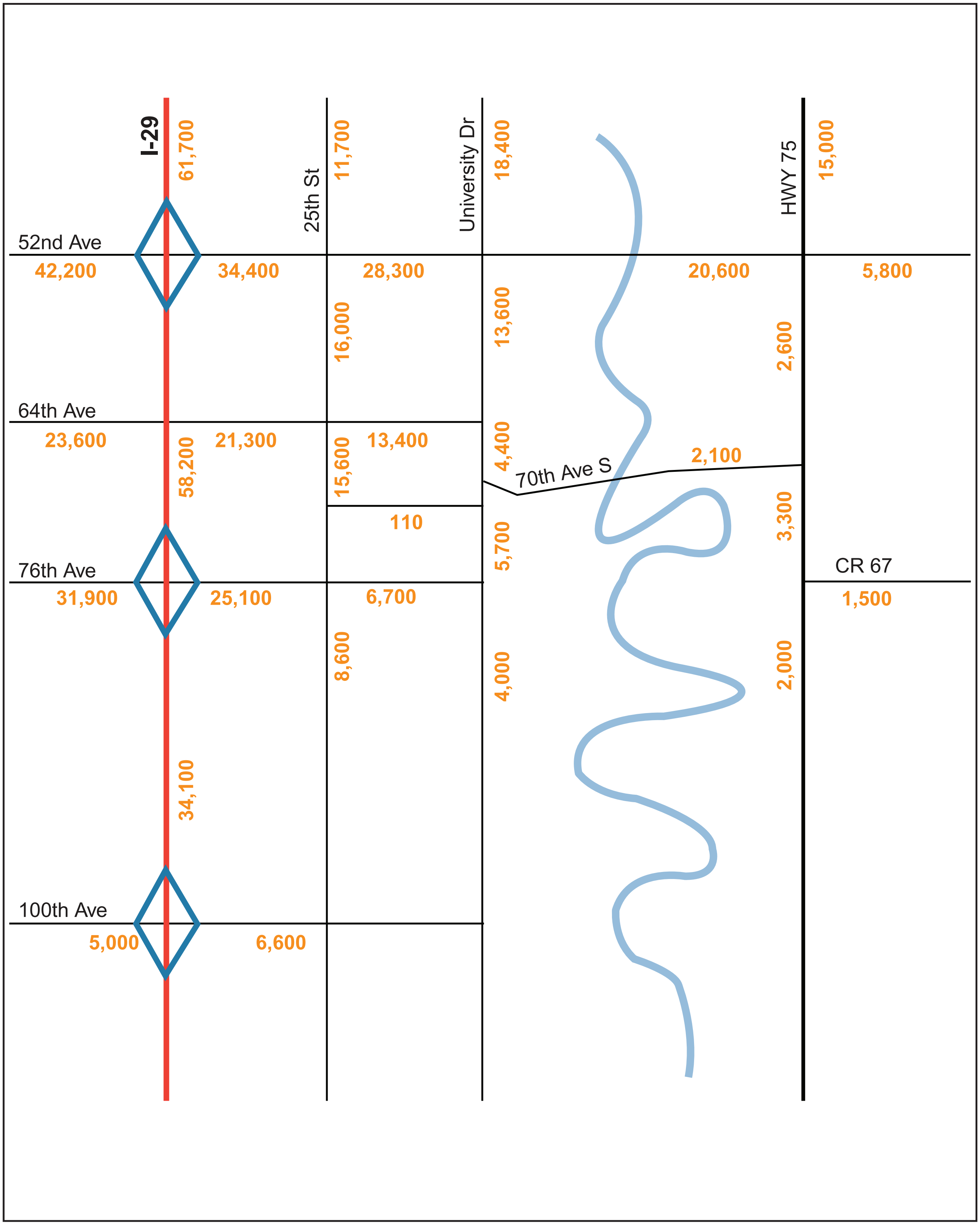
South Bridge ROW Preservation – 2035 ADT Projections with No Bridge

Fargo-Moorhead Metropolitan Long Range Transportation Plan
Fargo - Moorhead Metropolitan Council of Governments

Figure 2



Graphics Support/6728 Metro Trns Plan/Figures

SRF CONSULTING GROUP, INC.

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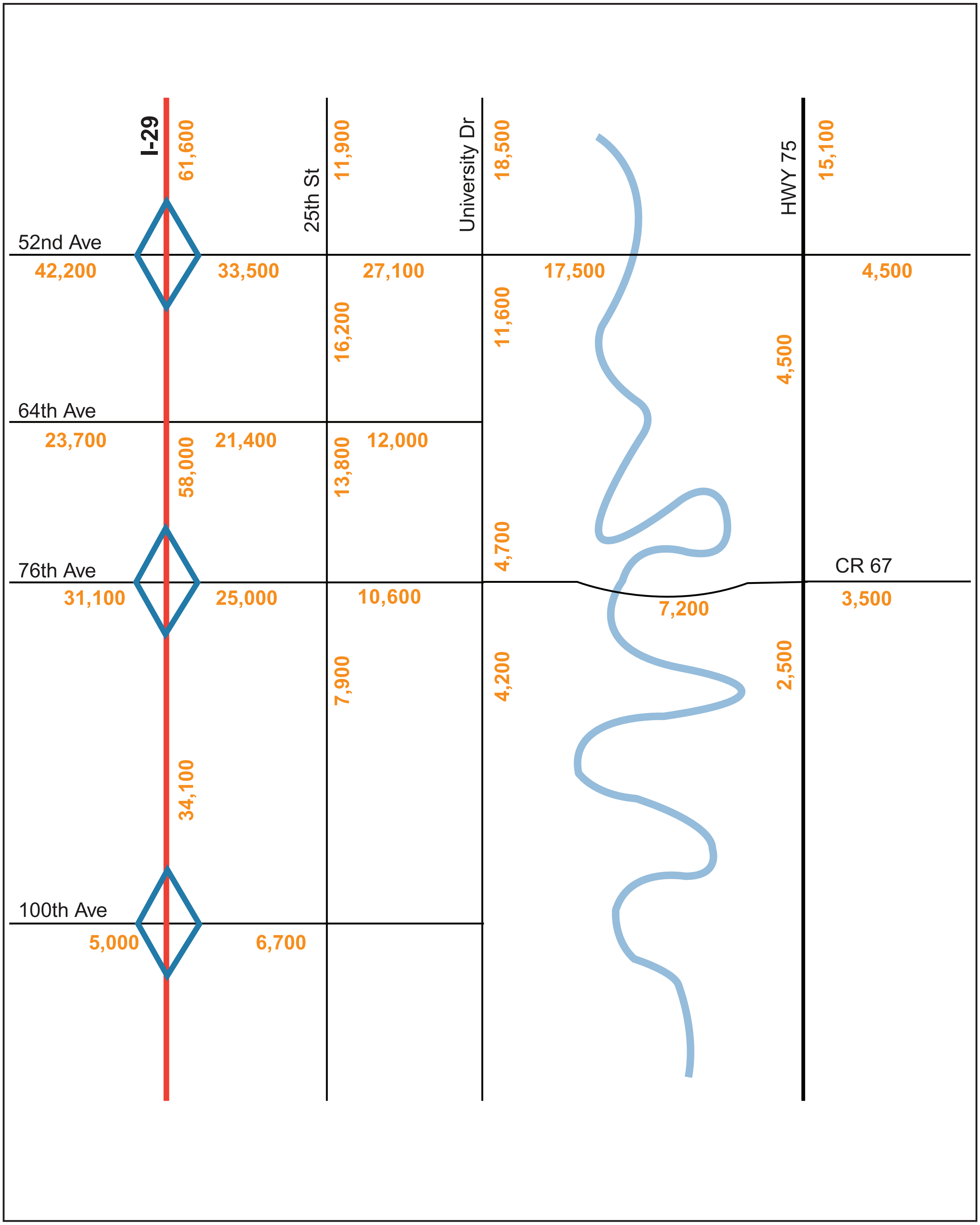
South Bridge ROW Preservation – 2035 ADT Projections with 70th Ave S Bridge

Fargo-Moorhead Metropolitan Long Range Transportation Plan
Fargo - Moorhead Metropolitan Council of Governments

Figure 3



SRF Consulting Group, Inc.

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South Bridge ROW Preservation – 2035 ADT Projections with 76th Ave S Bridge

Fargo-Moorhead Metropolitan Long Range Transportation Plan

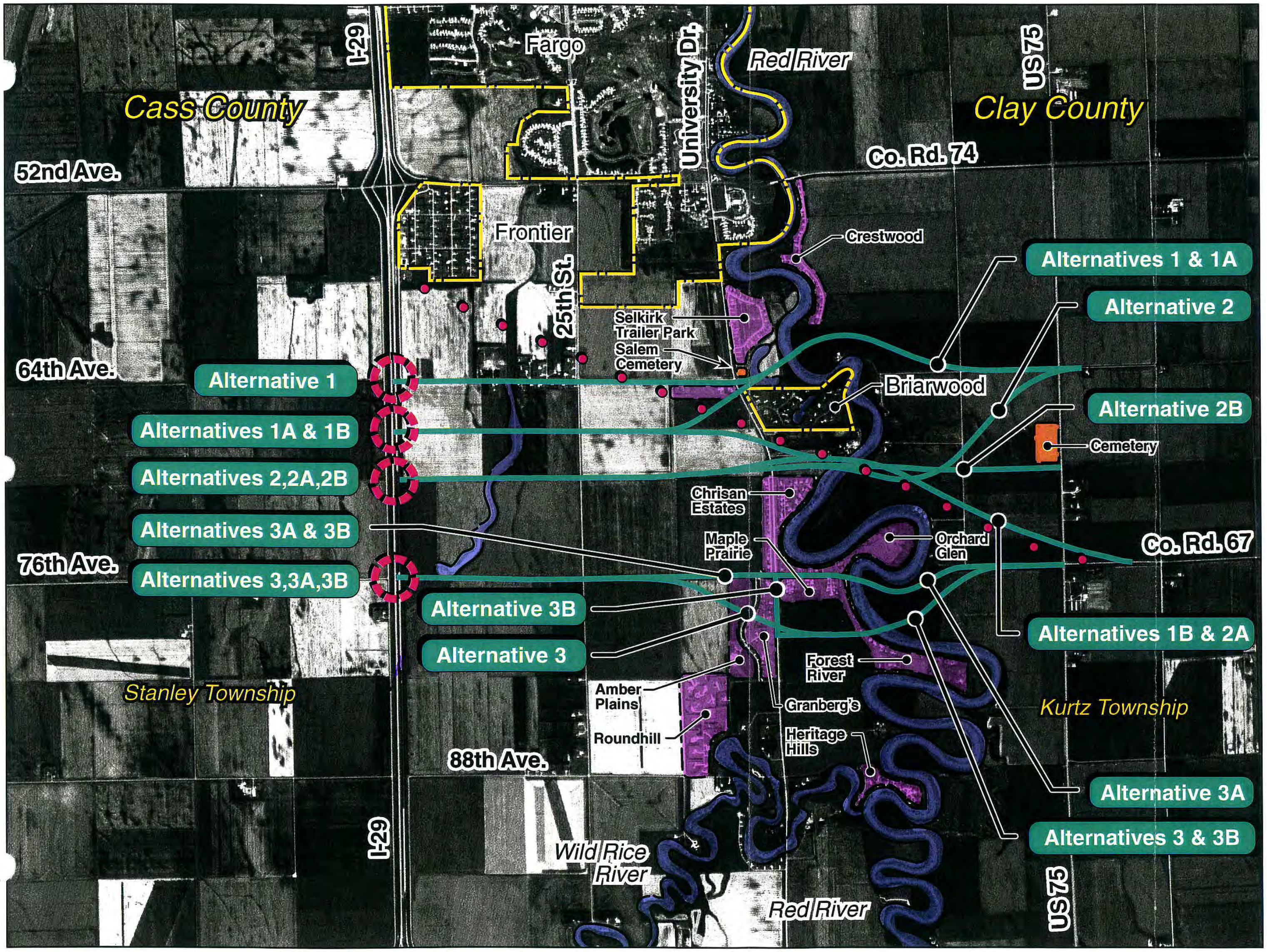
Fargo - Moorhead Metropolitan Council of Governments

Figure 4

South Side Red River Bridge and Corridor Study
A Review of Past Studies

Phase	Date of Completion	Purpose of Report	Recommendations of Report	Decisions
Phase 1 – Red River Bridge Corridor Study	March, 1999	"To identify the preferred corridor for a future Red River crossing in the southern Fargo-Moorhead metropolitan area." "long range planning effort that recognizes that a new river crossing would not be constructed for several years" "define the most feasible corridor at this time and preserve the needed right-of-way in advance of anticipated development"	Alternatives 2B (70th Avenue S) and Alternative 3A (76th Avenue S) were both feasible and addressed the basic project objective of providing a new river bridge and roadway connecting MN Highway 75 with I-29 (see Exhibits A and B). Alternative 3A was identified as the preferred alternative because it best addressed roadway system continuity and interchange spacing issues, land use planning considerations, and minimization of farmland severance. Further analysis was recommended to examine impacts and consider refinements to both Alternatives 2B and 3A.	No decision was made, other than to support further analysis to examine the impacts and consider refinements to both Alternatives 2B and 3A.
Red River Corridor Study, Phase II – Supplemental Report	May, 2001	"To minimize the impacts upon adjacent neighborhoods along the currently preferred Red River Bridge Corridor Alternative, the City of Fargo requested that SEH evaluate a new alignment and Sub-Alternatives to the previously preferred alignment as a supplement to the Red River Bridge Corridor Study final report." The report considered the two alternatives studied in Phase 1 and added the following: • A 70th/76th combination alternative, which placed a bridge crossing at 70th Avenue S and curved the corridor south to the 76th Avenue S. corridor between University Drive and 25th Street S. • 76th Avenue S. Sub-Alternatives A-D, which examined four options for addressing access to Maple Prairie, Orchard Glen, and Forest River.	Preference for 76th Avenue S. Sub Alternative A, which provides a frontage road along the north end of Maple Prairie for the purpose of consolidating the three cul-de-sacs into a single intersection with 76th Avenue S. In addition, this Sub Alternative provides a separate road south of Maple Prairie for the purpose of providing access to Forest River (see Exhibit C). All three alternatives were considered feasible (70th Avenue, 70th/76th Avenue and 76th Avenue Sub Alternative A) The 76th Avenue S. Sub Alternative A was preferred over the other two based upon System Continuity, Route Indirection, and Land Use Planning. The 70th Avenue S Alternative was preferred in the areas of Traffic Operations, Residential Impacts, and Costs (see Exhibit D). NOTE: Sub Alternative D was considered to have a "fatal flaw". It provided a grade separation between 76th Avenue S and Forest River Road, which would cut off access to Orchard Glen during floods. Depending upon 2009 buy-outs, this may no longer be a "fatal flaw".	Two alternatives were identified for further consideration. They included a bridge crossing at 70th Avenue S and 76th Avenue S (Sub Alternative A). While the Technical Committee preferred the 76th Avenue S corridor, there were numerous public comments expressing concern regarding the soil stability of this corridor, particularly east of the river where the oxbow curves back to the south toward the roadway corridor. To address these concerns, it was later determined that a geotechnical analysis should be completed to help guide corridor placement more specifically, which in turn would help policy makers focus on a preferred corridor for preservation.
Preliminary Geotechnical Study, South Side Red River Bridge and Corridor Study (Final Phase 3)	October, 2003	"…to evaluate the two proposed corridors in greater detail to determine if geotechnical (soil stability) or Red River hydraulic factors will impact the bridge crossing alternatives." Scope of work: • Eight soil borings • Geotechnical laboratory tests • Geotechnical stability analysis • Report summarizing results of the above • Preliminary hydraulic evaluation of bridge openings The stated purpose of the geotechnical analysis was "to determine	Conclusions and recommendations: 1. Hydraulic capacity of the Red River channel can be maintained with the proposed bridge abutment setbacks and bridge profile. The 500-year analysis was run using a water surface elevation of 911.57 (70th) and 911.62 (76th) without a bridge (see Exhibit E). 2. The setback recommendations for the 70th Avenue South Alternative have relatively minor impact on the proposed alignment (see Exhibit F). 3. The setback recommendations for the 76th Avenue South	To address the alignment changes suggested by the geotechnical analysis, Phase 4 of the study was recommended.

Phase	Date of Completion	Purpose of Report	Recommendations of Report	Decisions
Preliminary Geotechnical Study, cont.		what setback from the riverbank, if any, is required for the abutments or approach embankments in order to have an adequate factor of safety against sliding into the river.".	Alternative have a significant impact on the proposed alignment. The required alignment adjustments move the corridor to the south, away from the oxbow on the east side of the river, and increase the construction costs and right-of-way acquisition impacts of this alternative (see Exhibit G). Note: Approach Embankment Elevation Assumptions used in Slope Stability Analysis: • 918 – west bank • 917.5 – east bank	
Corridor Alignment and Bridge Alternatives Evaluation, South Side Red River Bridge and Corridor Study (Final Phase 4)	October, 2003	To identify and analyze additional bridge crossing locations and approach alignments to minimize construction cost and impacts. To describe the range of bridge crossing and roadway corridor alternatives in detail. To identify technical merits, disadvantages, and construction costs of the alternatives. Note: Although it is not stated in the study, it appears the Technical Committee felt the need to take a step back and present options that would make a connection between Hwy 75 and University Drive only, rather than I-29. In the end, these "jogged" alternatives were not preferred.	All alternatives technically feasible. "Jogged" alignment alternatives were less desirable for an arterial roadway corridor serving east-west trips, but reduced residential impacts. Each alternative resulted in different pros and cons relating to residential impacts, route continuity, traffic operations, and construction cost (see Exhibit H). Recommended that elected officials of affected jurisdictions weigh the factors and their relative pros and cons in the selection of a preferred alternative. Regardless of the location, the report recommended preservation of a preferred corridor with the goal of improving the coordination of future land planning and development with future transportation improvements.	Public feedback was received at meetings held in September, 2003. The Fargo Planning Commission considered the project and expressed preference for the 70th Avenue S corridor. The Clay County Planning Commission considered the project and expressed preference for the 76th Avenue S corridor. The elected officials did not formally consider the project.



Red River Bridge Corridor Study

Subdivisions

Municipalities

Rivers/ Wetlands

Transmission Line Towers

Proposed Alignments

Proposed Interchange

Figure 2

Full Range of Alternatives

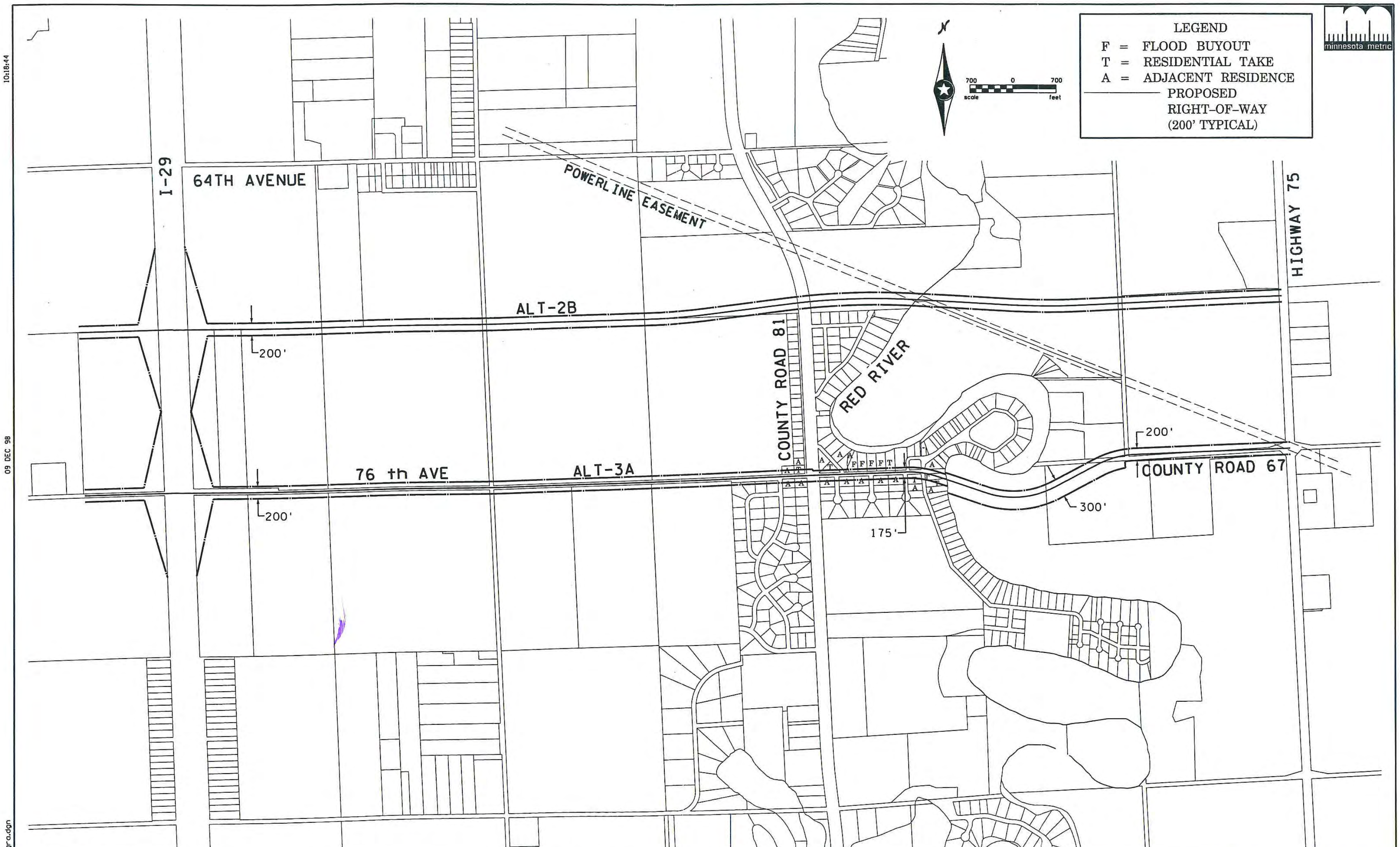
0 500 1000 2000 Feet

North

SEH

November 1998

EXHIBIT A



RED RIVER BRIDGE CORRIDOR STUDY
RIGHT-OF-WAY IMPACTS

EXHIBIT B

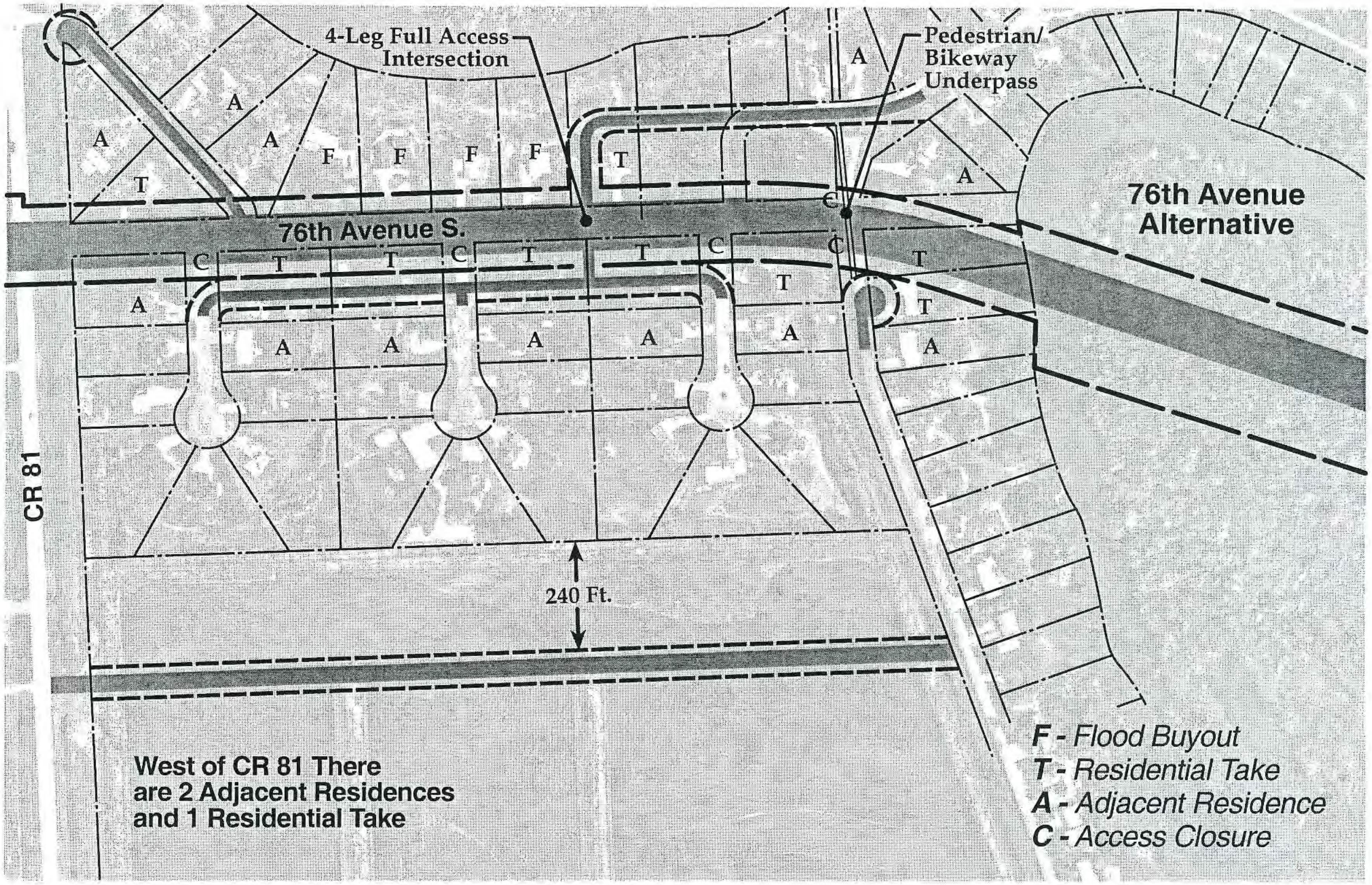


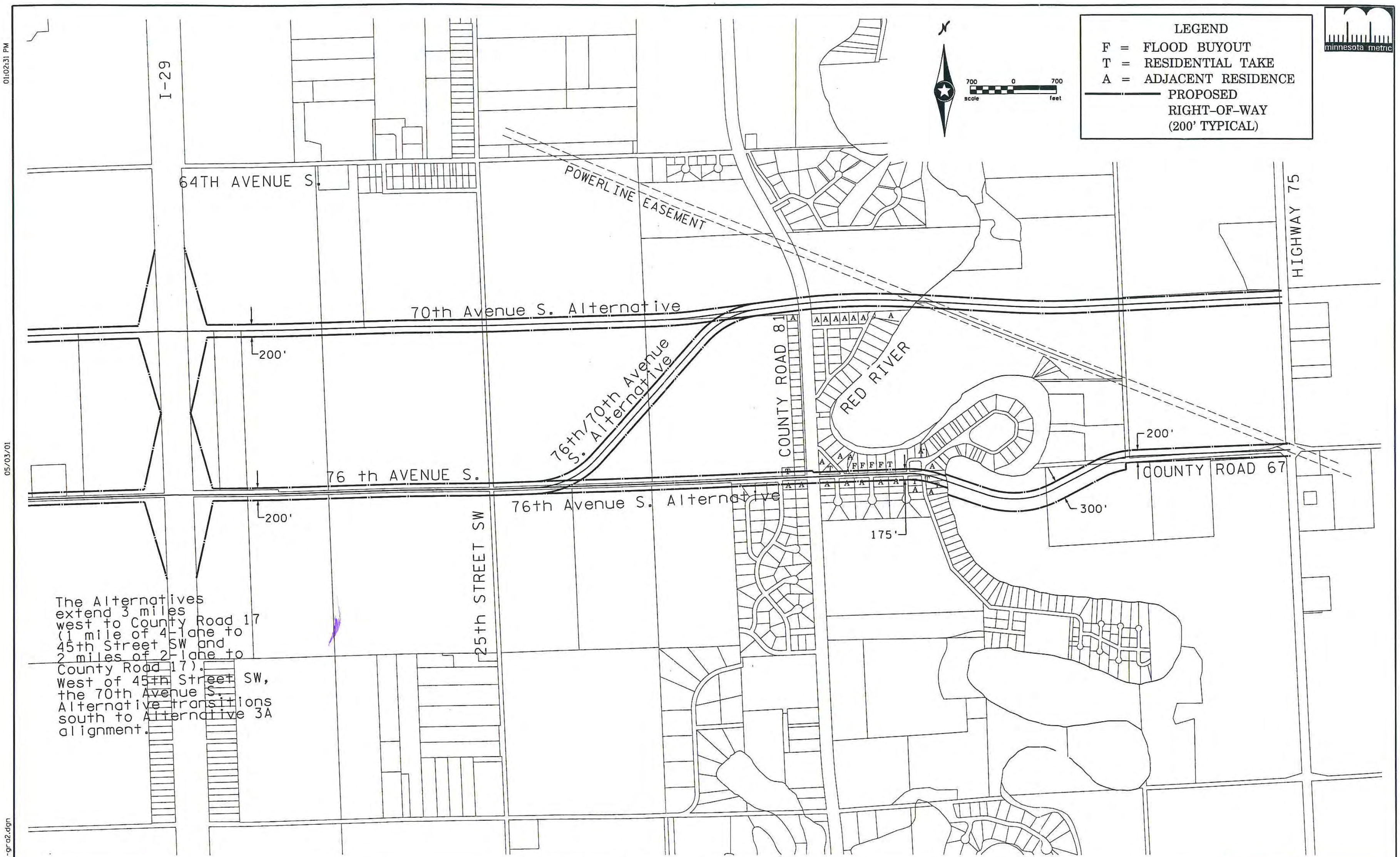
Figure 3

Red River Bridge Corridor Study

Sub Alternative A - Right-of-Way Limits and Impacts Between University Drive and the Red River

SEH

EXHIBIT C



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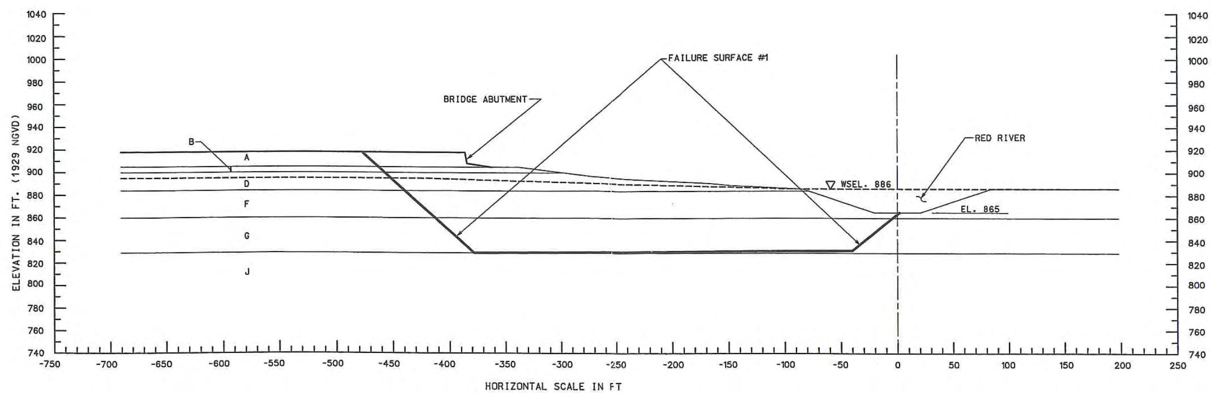
SEH

RED RIVER BRIDGE CORRIDOR STUDY
RIGHT-OF-WAY IMPACTS

EXHIBIT D



TABULATION OF SOIL PARAMETERS

SOIL UNIT	SOIL DESCRIPTION	UNIT WEIGHT (PCF) MOIST	SATURATED	Q-TEST C(PSF)	φ (DEG)	R-TEST C(PSF)	φ (DEG)	S-TEST C(PSF)	φ (DEG)	S-RESIDUAL C(PSF)	φ (DEG)
A	FILL	111	116	1000	10	N.D.	N.D.	500	30	N.D.	N.D.
B	ALLUVIAL/FLUVIAL	123	123	1000 750	0	900.	16	0	30	N.D.	N.D.
D	P.L. SHERACK	111	111	700	0	500	12	0	21	0	11
F	LOWER BRENNA (1)	106	106	800	0	400	8	0	13	0	7
G	LOWER BRENNA (2)	106	106	550	0	600	8	0	20	0	10
J	RED LAKE FALLS *	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

* IT WAS ASSUMED THE SHEAR STRENGTH OF THIS FORMATION WOULD PRECLUDE FAILURE THROUGH THIS UNIT.

N.D. NOT DETERMINED

TABULATION OF FAILURE SURFACE DATA

FACTOR OF SAFETY*	COORDINATES[1] X	Y	FAILURE SURFACE	CASE
1.30	-476.0 -378.2 -40.1 1.6	917.0 829.2 831.4 865.0	1	EOC

* REQUIRED FACTOR OF SAFETY = 1.3

NOTES:

1) ALL COORDINATES ARE BASED ON UTEXAS3 OUTPUT DATA FILES.
2) EOC=END OF CONSTRUCTION
3) STRATIGRAPHY BASED ON BORING ST-1.
4) SOIL PARAMETERS BASED ON LAB TESTING FOR THIS STUDY AND INFORMATION FROM U.S. CORP. OF ENGINEERS GRAND FORKS STUDIES.

EXHIBIT E

SEC1ECNA.DXF

DRAWN BY: AMG
DESIGNER: RBF
CHECKED BY:
DESIGN TEAM

NO.	BY	DATE	REVISIONS

SOUTH SIDE RED RIVER BRIDGE AND CORRIDOR STUDY

SEH
PHONE: (651) 490-2000
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110

FARGO, NORTH DAKOTA & MOORHEAD, MINNESOTA

70th AVE. SO. ALTERNATIVE
WEST ABUTMENT
STABILITY PLATE

FILE NO. FARMO0201.00
DATE 06/05/02

06/06/02
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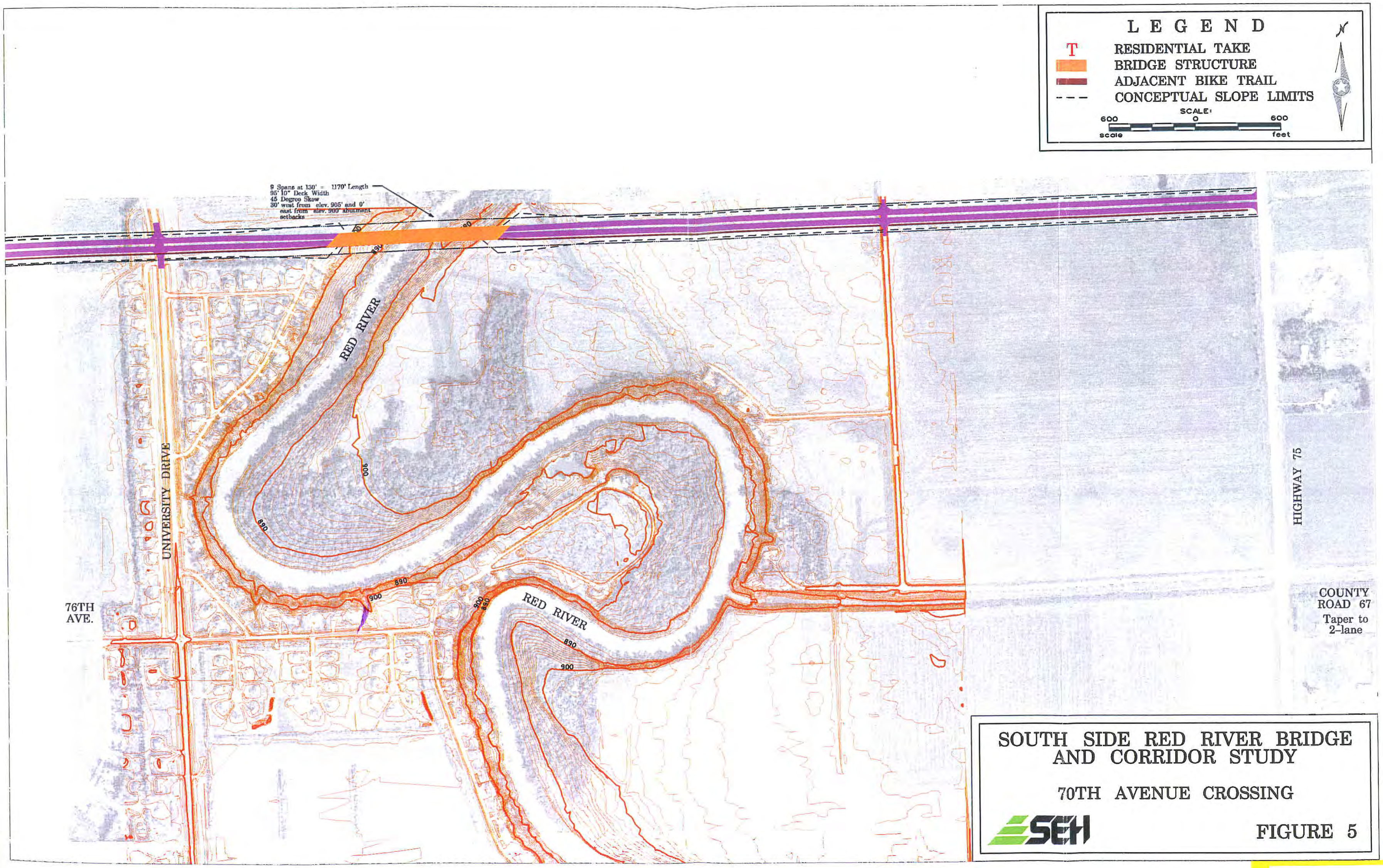
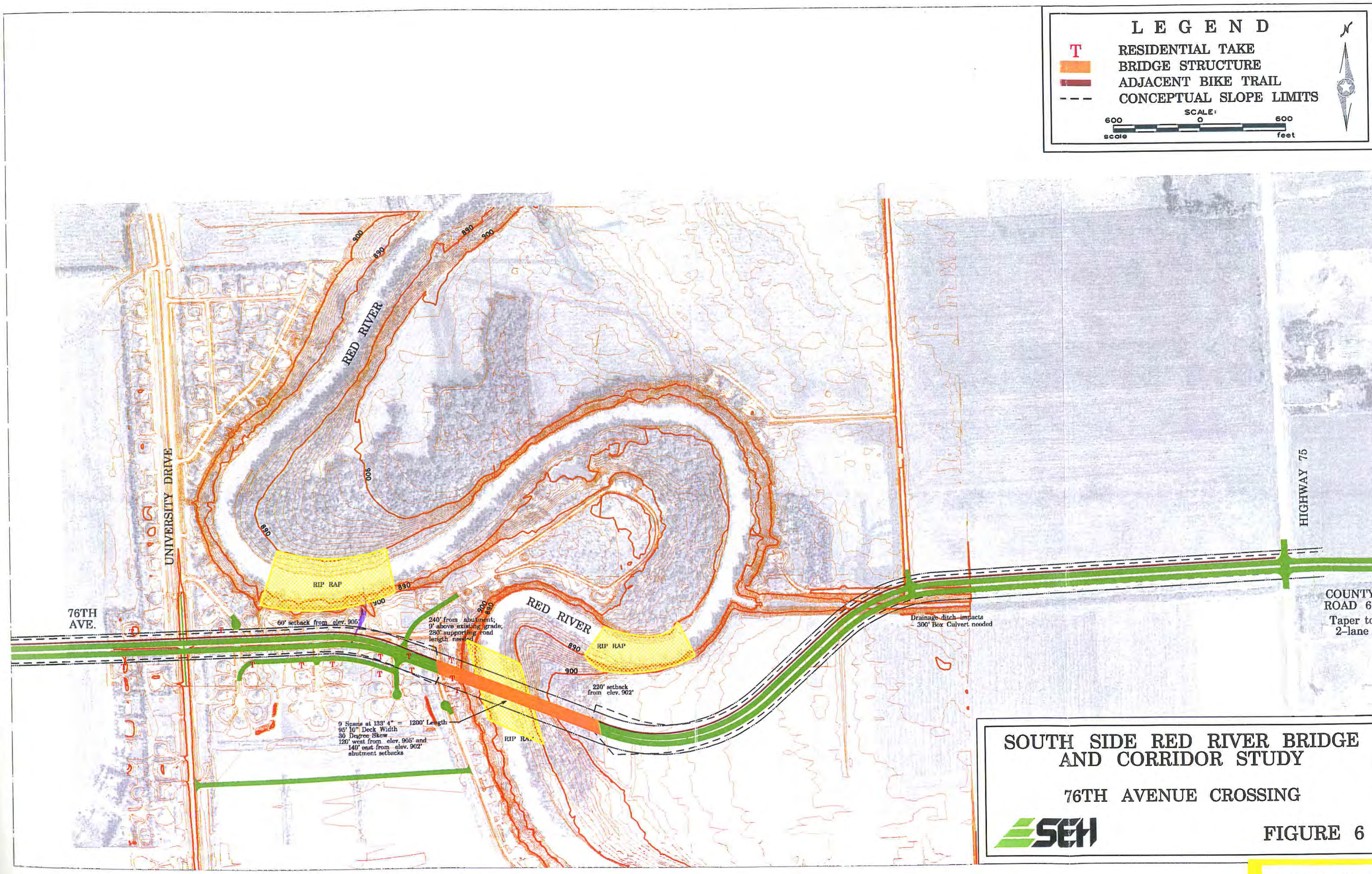

L E G E N D
T RESIDENTIAL TAKE
BRIDGE STRUCTURE
ADJACENT BIKE TRAIL
CONCEPTUAL SLOPE LIMITS
SCALE:
600 0 600
scale feet
9 Spans at 130' = 1170' Length
95' 10" Deck Width
45 Degree Skew
30' west from elev. 905' and 0' east from elev. 900' abutment setbacks
RED RIVER
RED RIVER
UNIVERSITY DRIVE
76TH AVE.
HIGHWAY 75
COUNTY ROAD 67
Taper to 2-lane
890
900
SOUTH SIDE RED RIVER BRIDGE AND CORRIDOR STUDY
70TH AVENUE CROSSING
SEH
FIGURE 5

EXHIBIT F



SOUTH SIDE RED RIVER BRIDGE AND CORRIDOR STUDY

76TH AVENUE CROSSING

SEH

FIGURE 6

EXHIBIT G

South Side Red River Bridge and Corridor Study

TABLE 1

RIVER CROSSING ALTERNATIVE RELATIVE COST MATRIX (approx. 8.75% above 1999 Dollars)
From County Road 17 to MN Highway 75

Prepared By: M. ENGSTROM

COST ITEMS	UNIT	ESTIMATED UNIT PRICE	Bridge Crossing and Roadway Corridor Alternatives: 70th Avenue S.		76th/70th Avenue S.		76th Avenue S.		New "Jogged" 76th Avenue S.		New "Jogged" 76th/70th Ave. S.	
			Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
CONSTRUCTION												
NEW 4-LANE ROADWAY CONSTRUCTION	FOOT	$390.00	22,590	$8,810,100	23,310	$9,090,900	22,860	$8,915,400	23,570	$9,192,300	25,670	$10,011,300
NEW 2-LANE ROADWAY CONSTRUCTION	FOOT	$200.00	11,280	$2,256,000	10,560	$2,112,000	10,560	$2,112,000	10,560	$2,112,000	10,560	$2,112,000
I-29 INTERCHANGE	LUMP SUM	$4,350,000	1	$4,350,000	1	$4,350,000	1	$4,350,000	1	$4,350,000	1	$4,350,000
BORROW	YD3	$6.00	522,778	$3,136,667	529,444	$3,176,667	521,111	$3,126,667	534,259	$3,205,556	573,148	$3,438,889
RIVER BRIDGE	SQ. FOOT	$87.00	112,125	$9,754,875	112,125	$9,754,875	115,000	$10,005,000	100,625	$8,754,375	112,125	$9,754,875
LOCAL STREET CONNECTION	FOOT	$140.00	100	$14,000	100	$14,000	4,390	$614,600	2,600	$364,000	880	$123,200
40 FOOT RADIUS CUL-DE-SACS	EACH	$22,200.00	1	$22,200	1	$22,200	3	$66,600	1	$22,200	0	$0
RIP RAP	EACH	$450,000.00	0	$0	0	$0	3	$1,350,000	1	$450,000	0	$0
300'X10'X10' BOX CULVERTS	EACH	$180,000.00	0	$0	0	$0	2	$360,000	2	$360,000	0	$0
SIGNAL SYSTEM	EACH	$150,000.00	1	$150,000	1	$150,000	1	$150,000	2	$300,000	2	$300,000
RIGHT-OF-WAY												
UNDEVELOPED FARMLAND*	ACRE	$3,000	158	$474,000	134	$402,000	115	$345,000	123	$369,000	123	$369,000
PLATTED*	ACRE	$7,500	0	$0	0	$0	13	$97,500	4	$30,000	2	$15,000
RESIDENTIAL TOTAL TAKES*	EACH	$175,000	0	$0	0	$0	12	$2,100,000	3	$525,000	2	$350,000
* retains 1999 dollars												
RELATIVE COST				$28,967,842		$29,072,642		$33,592,767		$30,034,431		$30,824,264

EXHIBIT H

SRF No. 0086728

RECORD OF MEETING

Metropolitan Transportation Plan
Consider Preservation Alternates for South Bridge and Corridor

July 22, 2009, 2:00 p.m.
Metro COG Conference Room

Members in Attendance:	Representing:
John Everett	Clay County Board of Commissioners
Jim Hinderaker	City of Fargo Planning
Jeremy Gorden	City of Fargo Engineering
Tim Solberg	Cass County Planning
Tim Magnusson	Clay County Planning
Keith Berndt	Cass County Engineering
Bonnie Johnson	Cass County Administator
Vijay Sethe	Clay County Administrator
Jim Gilmour	City of Fargo Planning
Mark Bittner	City of Fargo Engineering
Wade Kline	Fargo-Moorhead Metro COG
Richard Lane	SRF Consulting Group, Inc.
Cindy Gray	SRF Consulting Group, Inc.

Wade Kline welcomed everyone to the meeting and thanked them for attending. He provided background on the process of updating the Metropolitan Transportation Plan (MTP) and explained that from a regional transportation perspective, Metro COG is interested in preservation of a south bridge corridor. The TTC and Policy Board agreed it was an opportune time to revisit the matter of the 70th and 76th Avenue S corridors to determine if the timing is right to select a preferred corridor. From the standpoint of the MTP, selecting a preferred corridor would allow that decision to be reflected in the plan, particularly identifying corridor preservation in the list of short and long range projects. Wade acknowledged that the 2009 flood has resulted in potential buy-outs of properties along and near the river, and while that presents an opportunity, it also presents a situation where certain funding sources are not the best choice for purchasing property if there is a chance those properties may be needed for road or bridge ROW. Wade summarized Metro COG's discussions with NDDOT and MnDOT regarding the preservation of a south bridge corridor, and explained that their preference is 76th Avenue S due to the resulting system continuity with Clay CR 67 and Cass CR 6. He asked the group for their thoughts and their reaction to the information presented in the July 17th memo from SRF.

Keith Berndt stated the County is taking the potential need for the corridor into account when considering buy-outs. Bonnie Johnson stated that the County submitted its application for FEMA buy-outs of 20 properties, and they were aware that they needed to limit that application to those properties that would not interfere with use of either corridor for a future roadway and bridge.

Keith Berndt stated that there are houses currently on the buy-out list in Forest River that would correlate with the "jogged" 76th Avenue alignment, where the corridor is offset from 76th Avenue S between University Drive and the Red River, running south of Maple Prairie. Cindy and Rick confirmed that the jogged alignment was rejected in the last phase of the study in 2003.

John Everett asked about Fargo's south side flood protection project, and if the proposed channelization of the river, with the cut-off ditches through the oxbows, results in a situation where two bridges would be needed on either the 70th or 76th Avenue alternates. He specifically asked if the flood protection plan shows a channel through the oxbow on the Minnesota side, between Forest River Subdivision and Orchard Glenn Subdivision. Mark Bittner stated that the plan does not place an oxbow on the Minnesota side in that location.

It was explained that one channel cuts through the oxbow on the ND side at the south end of Forest River Subdivision, while another channel cuts through the oxbow on the ND side at Orchard Glenn. Neither location interferes with a 70th or 76th Avenue bridge corridor.

Mark Bittner stated that the selection of a bridge corridor (or the lack of consensus) was a political decision a few years ago, and he doesn't know if that's changed.

Vijay Sethe asked if the charge of the contract with SRF to make a specific recommendation? He asked what the next step is.

Wade stated that Metro COG's intent is to have a technical memo that would be an attachment to the MTP, stating the recommendations for corridor preservation, and it isn't vital that one corridor or the other be selected at this time, although Metro COG had hoped that might be the case, but this would be an updated direction in terms of the intent to preserve both corridors. He added that the Metro COG Policy Board was very supportive of examining this issue with respect to the MTP update.

Mark Bittner stated that the process of studying the bridge corridor was a lengthy one, and there was no doubt that from a technical staff perspective the 76th Avenue S corridor was preferred, but it was a political decision that led to a decision to stop the process a few years ago, and he would hate to see the process short circuited now for the sake of choosing one alternate over the other as part of the MTP.

John Everett reminded everyone that there was a conscious decision not to move the decision any farther along than the Planning Commission recommendations in late 2003 or early 2004 because of their inconsistent recommendations. It was considered better to let it be at that point, with the intent to revisit and come to consensus at some point in the future.

Jim Gilmour stated that the City of Fargo's extraterritorial area agreement with Briarwood has expired and would need to be renegotiated.

Jim Gilmour stated that we are talking about corridor preservation of the 76th Avenue corridor from University Drive to I-29. East of University Drive, the 76th Avenue corridor consists more of corridor acquisition. He stated that the City is not preserving the 70th Avenue corridor west of University Dr.

John Everett asked Jim if the political concern of Fargo was the homes that would need to be bought out with the 76th Avenue S alternate.

Jim responded that this was the primary concern of the Planning Commission, because Maple Prairie subdivision was relatively new. He added that at this time, the city hasn't received permits for any south side flood protection, and there are too many unknowns. If the city doesn't get flood control, there may not even be a need for a bridge, as there won't be any more south side development. He said the timing isn't right to identify a preferred alternate.

Cindy Gray stated that the timing may not be right from a flood control perspective, but at some point after flood control decisions are made, and before additional zoning and subdivision approvals are made, a decision on a bridge corridor should be made before a significant amount of development occurs in the vicinity of 70th or 76th Avenues. She stated it was this timing issue, i.e. waiting until development had already occurred along the 32nd and 40th Avenue corridors, that prevented them from being approved as bridge corridors, because policy makers were faced with too much opposition from nearby property owners. There will be a point in time when it will be appropriate to make the decision, when the existing small number of home owners will be affected as opposed to hundreds of home owners.

Bonnie Johnson stated the current timing of deciding on an alternate corridor doesn't allow Fargo to get flood protection approvals made, and the corridor isn't developed or developing.

Rick Lane clarified that what is meant is to find a time that is right, after flood protection decisions are made, and before development is approved.

Cindy Gray confirmed, stating that Horace has already approved a development along the south side of 76th Avenue S. Lakeview Heights Addition to Horace was discussed, since that subdivision already placed residential land use along the 76th Avenue S corridor. However, a 75' half section of ROW was provided, and rear yard setbacks will be deep due to a power line easement along the south side of the roadway. There's no direct residential access to the corridor, and well-spaced street intersections. It was recognized that this kind of development in Fargo or Clay County would result in much higher levels of objection to a bridge corridor.

Wade Kline stated that the technical memorandum that goes to the TTC and Policy Board will reflect that there are still two corridors on the table. They will consist of 70th Avenue S from Hwy 75 to University Drive, and 76th Avenue S from CR 6 to CR 67. He directed the meeting participants to the language on page 4 of the memo, where there is a recommendation that Fargo and Cass County work together to use funding for buy-out properties that does not encumber the property for future use.

Bonnie Johnson, Keith Berndt, and Mark Bittner confirmed that the city and county are working together on identifying lots that should not be purchased with funds that will limit their future use for a roadway and bridge corridor.

Jim Gilmour stated that Clay County should do everything they can to preserve their side of the corridor too.

Mark Bittner stated Fargo is doing everything they can do at this time to preserve the 76th Avenue S corridor. He indicated that a lot is riding on the flood protection decision, and he believes Clay County has an important role to play in that decision as well.

Tim Magnusson stated Clay County has already preserved most of the corridor through CR 67 ROW, which extends for ½ mile west of Hwy 75. Additional width would need to be acquired west of Hwy 75. There are already some limitations at one point between the drainage ditch on the south side of the highway and a large power transmission line on the north side of the ROW. On the 70th Avenue alignment, Tim said a house has been placed along the east side of Hwy 75 directly across from where the 70th Avenue S alignment would intersect with Hwy 75.

Vijay asked about the signage for arterial roadways. He asked if Clay County should do the same as Cass County and place a Future High Volume High Speed Arterial Roadway sign on the CR 67 alignment west of Hwy 75. The signs were discussed, relative to their location in Cass County.

Jim Hinderaker asked for clarification as to whether there is any reason why both corridors can't continue to move forward for preservation in the MTP. Everyone agreed that they should, and that Metro COG will follow up with affected jurisdictions periodically to ensure that the alternative selection is made at the optimal time.

Appendix F
Performance Measures

Performance Measurement Fundamentals

Performance measurement is the use of statistical evidence to determine progress toward specific defined organizational objectives. This includes both evidence of actual fact, such as measurement of pavement surface smoothness, and measurement of customer perception such as would be accomplished through a customer satisfaction survey. In a service industry such as transportation, the performance measurement process starts by defining precisely the services that the organization promises to provide, including the quality or level of service (e.g. timeliness, reliability, etc.) that is to be delivered. The performance measurement process starts by defining the services that the organization promises to provide. There are often good opportunities for collecting feedback from system users in "real time," since the transportation service is often "consumed" at the same time it is "produced." Performance measures provide information to managers about how well that bundle of services is being provided. Performance measures should reflect the satisfaction of the transportation service user, in addition to those concerns of the system owner or operator. (Source: NCHRP Project 8-32(02), Multimodal Transportation: Performance-Based Planning Process, 1998)

The National Performance Review provides a complimentary definition of performance measurement:

> "A process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied) and outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives."

Additional Fundamentals

- Why Have Performance Measurement?
- Key Steps & Critical Practices in Performance-Based Management
- Major Issues in Performance Measures

View Relevant Resources and Publications for more information and resources on performance measurement.

Why Have Performance Measurement?

Performance Measurement Fundamentals

- Set goals and standards
- Detect and correct problems
- Manage, describe, and improve processes
- Document accomplishments

In general, a good measure:

- Is accepted by and meaningful to the customer
- Tells how well goals and objectives are being met
- Is simple, understandable, logical, and repeatable
- Shows a trend
- Is unambiguously defined
- Allows for economical data collection
- Is timely
- Is sensitive

A successful performance measurement system:

- Comprises a balanced set of a limited vital few measures
- Produces timely and useful reports at a reasonable cost
- Displays and makes readily available information that is shared, understood, and used by an organization
- Supports the organization's values and the relationship the organization has with customers, suppliers, and stakeholders

A typical definition of a measure includes

- A specific goal or objective
- Data requirements, such as the population the metric will include, the frequency of measurement, and the data source
- The calculation methodology, including required equations and precise definition of key terms
- Reports in which the data will appear and the graphic presentation that will eventually be used to display the data
- Any other relevant rationale for the measure

A clear data collection plan helps streamline the data collection process:

- Identify how much data need to be collected, the population from which the data will come, and the length of time over which to collect the data.
- Identify the charts and graphs to be used, the charting frequency, the type of comparison to be made, and the calculation methodology.
- Identify the characteristics of the data to be collected attribute data are things that can be counted; variable data are things that can be measured.
- If the performance measure is new, try to identify existing data sources or create new sources. All data sources need to be credible and cost effective.

Source: *Serving the American Public: Best Practices in Performance Measurement*

Key Steps & Critical Practices in Performance-Based Management

Performance Measurement Fundamentals

1. Define Mission and Goals (including Outcome-Related Goals)
   a. Involve key stakeholders in defining missions and goals.
   b. Identify key factors that could significantly affect the achievement of the goals.
   c. Align activities, core processes, and resources to help achieve the goals.
2. Measure Performance
   a. Develop a set of performance measures at each organizational level that demonstrate results, are limited to the vital few indicators for each goal at each organizational level, respond to multiple priorities, link to responsible programs, and are not too costly.
   b. Collect sufficiently complete, accurate, and consistent data to document performance and support decision making at various organizational levels.
   c. Report performance information in a way that is useful.
3. Use Performance Information
   a. Use performance information in systems for managing the agency or program to achieve performance goals.
   b. Communicate performance information to key stakeholders and the public.
   c. Demonstrate effective or improved program performance.
   d. Support resource allocation and other policy decision making.
4. Reinforce Performance-Based Management
   a. Devolve decision making with accountability for results.
   b. Create incentives for improved management and performance.
   c. Build expertise in strategic planning, performance measurement, and use of performance information in decision making.
   d. Integrate performance-based management into the culture and day-to-day activities of the organization.

Source: Adapted from U.S. Government Accountability Office, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, Washington, D.C., 1996, pp. 8-46.

Major Issues in Performance Measurement

Performance Measurement Fundamentals

- Cost of data collection
- Assuring appropriate comparisons to other operations
- Data quality
- Data completeness
- Extrapolating from partial coverage
- Matching measures to their purposes
- Understanding extraneous influences in the data
- Conflicts with other measuring programs - which is "right"
- Timeliness of data for measures
- Use of measures in allocation of funding
- Liability for action (or lack thereof) based on measurement results
- Responsibility for measures for which there may be limited control
- Benchmarking and targets
- External factors
- Good multimodal measures

Goal -- What the region wants to accomplish	Reduce the number and severity of transportation system crashes															
Operational Objectives -- Specific measurable statements relating to the attainment of goals	Improve Intersection Safety						Reduce roadway & lane departure crashes			Improve roadway safety for bicyclists and pedestrians				Recogize that driver behavior is often a significant contributing factor to crashes		
Performance Measures -- Metric used at a regional basis to track system-wide performance, or used at an intersection, roadway, or corridor level to identify specific deficiencies	Intersection Accident Rates for Arterial-Arterial, Arterial-Colletor, and Collector-Collector intersections						Accident Rates for Arterial and Collector Links			Accident Rates for Those Involving Bicycles or Pedestrians				*(Not a performance objective)*		
Strategies -- Approaches to achieve objectives	Identify high crash rate intersections and analyze crash types	Require adequate building setbacks in land use and zoning policies for corner lots to maintain adequate sight distances	Consider all intersection design options, including three-quarter access and roundabouts	Install pedestrian countdown timers	Provide timely winter maintenance such as snow plowing, and ice and slush removal as appropriate	Develop a regional signal timing manual to provide uniformity in signal operations	Consider safety options like rumble strips, rumble stripes, and cable barriers and install as appropriate	Minimize or eliminate skewing of lanes	Comply with good access management standards	Provide and maintain appropriate roadway crossing safety measures	Provide higher safety standards where higher bike or ped crossings exist	Provide appropriate facilities adjacent and parallel to roadways	Support a higher measure of safety for corridors that cross major barriers like rivers, interstate highways, and railroad tracks	Support law enforcement efforts like sobriety check points, seat belt use, and speed enforcement	Support restriction of cell phone use by drivers	Support increased driver education efforts
Projects -- Initiatives identified to carry out strategies	Variable, depending upon crash types		Medians, roundabouts	Ped countdown timers	*(Maintenance Issue)*		Rumble strip, rumble stripe, and cable barrier installations	*(Design Issue)*	Non-traversable medians, access closures	Crosswalks, pedestrian refuge islands	Curb bulbs, speeds zones, Hawk signal systems	Striped bike lanes, signage, shared use paths	Grade separated crossings, jersey barriers, bike-ped only bridges,	*(Policy Issue)*	*(Policy Issue)*	*(Policy Issue)*

<table>
<tr><td>Goal -- What the region wants to accomplish</td><td colspan="12">Be Good Stewards of the Public's Money</td></tr>
<tr><td>Operational Objectives -- Specific measurable statements relating to the attainment of goals</td><td colspan="3">Form public-private partnerships to achieve transportation goals where appropriate</td><td colspan="2">Encourage infill development and redevelopment to minimize costs of new infrastructure and public services</td><td colspan="2">Utilize Good Pavement Management Practices to Extend Pavement Life</td><td colspan="3">Identify and Prioritize Needs Through Good Planning</td><td colspan="2">Optimize Value Throughout the Project Design and Construction Phases</td></tr>
<tr><td>Performance Measures -- Metric used at a regional basis to track system-wide performance, or used at an intersection, roadway, or corridor level to identify specific deficiencies</td><td colspan="3">(Not a system performance objective)</td><td colspan="2">Keep Track of Developments Which Don't Require New Infrastructure; VMT, VHT, Total Lane Miles vs. number of Households</td><td colspan="2">Percent of Miles that Meet Good/Poor Ride Quality (RQI) or Pavement Condition Index (PCI)</td><td colspan="3">(Planning and programming; Not a system performance objective)</td><td colspan="2">(Design and contracting; not a system performance objective)</td></tr>
<tr><td>Strategies -- Approaches to achieve objectives</td><td>Broaden the MAT U-Pass program to the community at large</td><td>Explore public-private partnerships to pay for new transit services, shelters, and operations</td><td>Build and maintain relationships with area businesses to increase the understanding of each party for the other's needs and constraints</td><td>Utilize the Congestion Management Toolbox</td><td>Create and /or revitalize neighborhoods for full and efficient utilization of existing services</td><td>Monitor pavement surface conditions and schedule timely investments</td><td>Schedule preventative maintenance and overlays before surfaces are deteriorated</td><td>Preserve future regional cooridors through right-of-way preservation and/or early purchase of right-of-way</td><td>Develop a needs prioritization matrix that allows multiple projects to be compare to one another based on objective, measureable criteria</td><td>Support and promote exurban land use coordination and encourage regional land use planning</td><td>Use Innovative Contracting practices (e.g., Design-Build, Lane Rental, and Pay for Performance) as appropriate</td><td>Utilize the Value Engineering process to maximize project cost effectiveness</td></tr>
<tr><td>Projects -- Initiatives identified to carry out strategies</td><td>(Transit Operations)</td><td>New buses, shelters</td><td>Variable, depending upon private sector needs</td><td>More ITS, Ops, Transit, Bike, and Ped projects; fewer capacity adding projects</td><td>Fewer projects extending roadways into ET areas</td><td>Fewer reconstruction projects</td><td>More surface maintenance projects</td><td>Earlier (and cheaper) right-of-way purchases</td><td>(Planning & Programming Process)</td><td>Fewer projects extending roadways into ET areas</td><td>(Design-Build Process)</td><td>(Design-Build Process)</td></tr>
</table>

Goal – What the region wants to accomplish	Maintain & Improve the Region's Economic Competitiveness															
Operational Objectives – Specific measurable statements relating to the attainment of goals	Maintain and Improve Efficient Freight Movement					Maintain and Improve Transit Connections to Rural Areas	Rehabilitate/Rebuild Critical Bridges as Appropriate		Develop and Maintain Roadway Connectivity That is Appropriate for the Facility Type and Land-Use Environment			Provide Public Transportation to Large Employers		Help Attract Growth Sector Businesses		
Performance Measures – Metric used at a regional basis to track system-wide performance, or used at an intersection, roadway, or corridor level to identify specific deficiencies	Truck Volumes and/or Classification; ADT (V/C) on freeways and major arterials					Rural Transit Ridership; Up-to-Date List of Transit Services Available to Surrounding Communities	Functional and Structural Bridge Ratings; V/C Ratios; ADT & LOS		VMT; VHT			Number of employees within a specified distance of transit route		Average Commute Time; number of airlines serving F-M region; miles of bicycle routes		
Strategies – Approaches to achieve objectives	Protect operational capacity of interstate highways in the metro area	Build and maintain relationships with area businesses to increase understanding of freight needs	Establish land development code requirements that ensure adequate transportation planning and roadway design for truck stop/truck service developments	Support the growth of regional intermodal freight capacity	Support recommnedations of the 2009 Western Minnesota Freight Study		Prioritize bridges based on ADT, truck traffic, and available alternatives	Continue to monitor bridge conditions and schedule rehab/repair work accordingly	Build arterials and collectors in grid pattern	Identify future potential river, interstate, and railroad bridge crossing locations and preserve right-of-way	Eliminate or minimize cul-de-sacs within developments	Study potential of all kinds of service (e.g., van pooling, organized ride-sharing, etc.)	Explore extended evening service for fixed route buses	Develop and maintain access to competitively-priced, reliable, and business friendly air service	Keep average commute times low	Improve bicycle route network connectivity
Projects – Initiatives identified to carry out strategies	Capacity presrevation projects for Interstates	*(Planning process)*	*(Policy & Design)*	Intermodal freight yard improvements	*(Policy)*	*(Transit Ops)*	*(Planning Process)*	Bridge Reconstruction	*(Policy & Planning)*	Right-of-way preservation	*(Policy & Planning)*				All kinds of projects	Bike route connections

Goal -- What the region wants to accomplish	Manage and Operate Roadways Efficiently							
Operational Objectives - Specific measurable statements relating to the attainment of goals	Enhance Regional Coordination of Traffic Signal Operations on Major Corridors Between Cities	Evolve Toward the Centralized Management of Transportation System Devices and Personnel	Manage Congestion to Improve Traffic Flow and Conserve Energy	Utilize Travel Demand Management Practices as Appropriate	Develop System Operations and Performance Measures for the Region's Trans System	Cooperate Across Jurisdictional Boundaries to Create a Seamless Transportation Network	Support Complete Streets Concept for the Purpose of Optimizing Personal Mobility	Ensure That the Transportation System Will Operate in Times of Manmade or Natural Disasters
Performance Measures – Metric used at a regional basis to track system-wide performance, or used at an intersection, roadway, or corridor level to identify specific deficiencies	Arterial travel time and LOS	*(Performance measured through average commute times, LOS, V/C ratios, VMT, and other PMs already identified)*	Freeway and Arterial LOS; V/C Ratios; VHT & VMT	Peak Hour Freeway and Arterial LOC (V/C); What is the availability of TDM practices	*(Planning and programming; Not a system performance objective)*	*(Planning and programming; Not a system performance objective)*	*(Performance measured through average commute times, LOS, V/C ratios, transit ridership, etc.)*	Have Evac plans been developed? ; Consistency review of local, regional, and state emergency disaster plans; LOS analysis with bridge closures in order of susceptibility by flooding
Strategies – Approaches to achieve objectives								
Projects – Initiatives identified to carry out strategies								

Goal -- What the region wants to accomplish	Provide More, Better, and More Efficient Public Transit Service															
Operational Objectives Specific measurable statements relating to the attainment of goals	MAT should mutually coordinate with local school districts to indentify needs and coordinate services	Implement recommendations of the 2007 Transit Development Plan, and supplemental planning studies	Prioritize transit corridors and provide service that corresponds to the traveling public's schedules and needs					Make transit more accessible								Implement dedicated local transit funding in anticipation of the loss of FTA 5307 operating funds in 2022
Performance Measures Metric used at a regional basis to track system wide performance, or used at an intersection, roadway, or corridor level to identify specific deficiencies	*(Not a system performance objective)*	*(Planning and programming; not a system performance meausure)*	Percent of public satisfaction; transit ridership per capita					Ridership; number of shelters and other transit amenties								(Not a system performance measure)
Strategies – Approaches to achieve objectives	Mutually coordinate with school districts to ensure that transportation is available for Adult Education, ESL, and other educational classes	Continue coordinating with the MAT Board on plan implementation, issue identification, and development of the next Transit Plan	Explore the need for limited-stop service between high-demand destinations and implement as appropriate	Explore the need for increased bus frequency along high-demand corridors and implement as appropriate	Develop service alternatives that improve travel times from north to south and allow for the interconnection of cross-town routes	Continue working toward regional transit service regardless of jurisdictional boundaries	Balance the need for better service on existing routes with route expansion	Consider elminating fares or establishing a fare-free zone in the core urban area by identifying alternative forms of local match	Continue exploring corridor-specific routes and implement as appropriate	Continue U-Pass program and study expanding the concept to the larger community through voucher or bulk purchase policies	Continue to monitor Paratransit usage by agencies and facilities	Provide more shelters overall; examine the possiblity of providing higher quality shelters at high-boarding locations	Improve shelter maintenance and snow clearance around shelters	Manage the image of public transit to attract more choice riders	Balance service for non-choice riders with needs of choice riders and commuters	
Projects – Initiatives identified to carry out strategies																

Goal -- What the region wants to accomplish	Improve Bicycle and Pedestrian Route Connectivity														
Operational Objectives -- Specific measurable statements relating to the attainment of goals	Implement recommendations of the 2006 MBPP	Close gaps in the bicycle and pedestrian networks, especially the principal bikeway network			Improve bike route signage, way finding, and pavement markings				Build "Complete Streets" that balance the need for all modes of transportation and adjacent land uses		Encourage and support education efforts for both bicyclists and motorists regarding how best to deal with one another on area roadways	Establish an evaluation and rehabilitation program for bicycle and pedestrian facilities throughout the metro area			Connect the F-M Metro area by bike route with surrounding communities and areas of interest
Performance Measures -- Metric used at a regional basis to track system-wide performance, or used at an intersection, roadway or corridor level to identify specific deficiencies	*(Planning and programming; not a system performance objective)*	Bike Counts; number of bike commute trips; map of critical bike route gaps			Bike counts; number of bike commute trips				*(Planning and programming; if successful, performance would be reflected in LOS, V/C, average commute times, bike counts, etc.)*		Bike-Ped Accident Rates	Ride quality measure for bike routes??? Measure of lateral clearances??			Map of connections
Strategies -- Approaches to achieve objectives	Strive to meet the needs of all bicyclists, including commuters, children, basic adult and recreational riders	Study gaps and recommend best solutions, which may include shared-use paths or on-road bicycle facilities like bike lanes or signed-shared roadways	Build bike-ped bridges over rivers and other barriers where feasible	Improve usability of existing bike-ped bridges by raising them, and installing new lift mechanisms	Provide destination signage at regular intervals on major bike routes	Provide "Metro Trails" trailblazing signage on principal bike routes to establish and identify the regional bikeway network	Provide signage that directs riders to desintations or other bike routes; avoid signage that directs riders to dead-ends or non-continguous segments of the bike network	Establish system of bike route nodes which include facilities like bike racks, bathrooms, map kiosks, water, benches, garbage cans, etc.	Ensure safe transitions/connections between on-road bike routes with multi-use paths	Review and revise jurisdictional codes, ordinances, and regulations to incorporate Complete Street ideas	Identify funding for bike-motorist education effort	Consider neighborhood adoption of bike routes and shared-use paths for maintenance and periodic evaluation	Establish one phone number for the reporting of maintenance issues by the public; post the number on the back side of Metro Trails signs	Roadway segments of the principal bikeway network should be held to a pavement quality standard that recognizes the needs of bicyclists	
Projects -- Initiatives identified to carry out strategies															

Goal – What the region wants to accomplish	Build a Livable Community																
Operational Objectives – Specific measurable statements relating to the attainment of goals	Encourage more mixed-use development and re-develoment using compatible land uses		Encourage more areas of higher densities for all income levels				Reinvest in core neighbhorhoods			Improve the connections between people							
Performance Measures – Metric used at a regional basis to track system-wide performance, or used at an intersection, roadway, or corridor level to identify specific deficiencies	*(Planning and programming; not a system performance objective)*		Households per acre; average population per acre; housing cost ranges within a defined area				Number of new households compared to linear feet of new infrastruture; track increase in housing units and/or jobs per TAZ; track property value changes in core neighborhoods			*(Planning and programming; success meausured in LOS, ADT, bike counts, transit ridership, etc.)*							
Strategies – Approaches to achieve objectives	Plan for neighborhood commerical and retail such that many daily needs of neighborhood residents can be met within the neighborhood	Keep industrial land uses separate from residential land uses	Provide quality green space for every neighborhood because higher densities are more attractive when coupled with quality green space	Require appropriate easements for public access to green space	Provide a variety of housing options and densities within each neighborhood	Use flexible zoning to support mixes uses and higher densities	Promote redevelopment in marginal neighborhoods and underutilized parcels	Where sufficient excess transportation and utility capcity exists, encourage mixed-uses and higher densities	Support and encourage historical integrity and unique neighborhoods	Consult with transit when making land-use decisions; consider transit oriented development	Provide sidewalks on both sides of all roadways	Capitalize on opportunities to provide advantages for walking and biking within neighborhoods	Provide ADA compliant sidewalk curb-cuts at new intersections and continue retrofitting older intersections to make them ADA compliant	Encourage and promote public art	Create overlapping systems for pedestrians, transit, cars, and bicycles that provide for ease of movement within and between neighborhoods	Create opportunites for public gatherings	Identify gaps in the existing pedstrian network and schedule improvements to close those gaps
Projects – Initiatives identified to carry out strategies																	

Goal – What the region wants to accomplish	Build a Livable Community																	
Operational Objectives – Specific measurable statements relating to the attainment of goals	Build and maintain neighborhood-scale schools that are easily accessed by walking or biking		Conserve prime agricultural land and environmental resources								Design corridors and transportation infrastructure that is context sensitive							
Performance Measures – Metric used at a regional basis to track system-wide performance, or used at an intersection, roadway, or corridor level to identify specific deficiencies	Map of school locations		*(Planning and programming; not a system performance objective)*								*(Planning and design; not a system performance meausure)*							
Strategies – Approaches to achieve objectives	Encourage school districts to build schools at the center of neighborhoods with enrollment areas bounded by high traffic corridors	Building elementary or middle schools adjacent to arterials should be avoided	Require a minimum 450' setback from the center of rivers	Establish a program of ROW dedication to allow for the development and expansion of river greenway corridors, support flood mitigation, preserve river vegetation, and bank stabilization	Consider energy usage and their long-term costs for citizens in design standards	Encourage native plantings or retention of native species adjacent to drainage ditches, roadways, utility corridors and within green spaces	Use regional stormwater ponds	Support narrower street widths to reduce impermeable surfaces and reduce special assessments for property owners	Limit sprawl and unnecessary construction and maintenance of infrastructure	Protect the rural character of extraterritorial areas until such time as municipal facilities can support urban scale development	Avoid planning residential neighborhoods adjacent to interstate highways and major arterial roadways when possible	Work with developers to provide deep lots and extra buffering when residential land use along arterials is unavoidable	Provide street trees on both sides of neighborhood collector roadways	Support traffic calming for local residential streets as needed	Consider maximum parking limits in the plat review process and encourage shared parking among several adjacent businesses	Encourage landscaping within large parking lots	Use detailed, human-scale design	Establish land development code regulations further limiting the spacing and type of billboards (off-premise advertising) along arterial and collector roadways
Projects – Initiatives identified to carry out strategies																		

1. Reduce the number and Severity of Transportation System Crashes	Measurement Data Type	Is Data Currently Available?	Sources	Notes
a. Improve intersection safety	Accident Reports	Yes	NDDOT & MnDOT Accident Data Base	We have accident data, but is it being used to track accidents for the city or metro area. Crash frequency diagrams?
b. Reduce roadway & lane departure crash rates	Accident Reports	Yes	NDDOT & MnDOT Accident Data Base	
c. Improve roadway safety for bicyclists and pedestrians	Accident Reports	Yes	NDDOT & MnDOT Accident Data Base	
d. Maintain and improve access management	Number of Full Access Points per Mile. Guidelines dependent on the functional class of the corridor and new construction v. reconstruct.	Aerials, GIS, or Site Visits	Surveillance & Monitoring	Current Access Management Guidelines being followed when making recommendations for corridor studies. An access may be determined problematic by reviewing accident data.
e. Recognize that driver behavior is often a significant contributing factor in crashes	Contributing factors cited on accident reports. e.g. distracted or impaired drivers, use of seatbelts in injury and fatality accidents.	Yes	NDDOT & MnDOT Accident Data Base	

2. Be Good Stewards of the Public's Money	Measurement Data Type	Is Data Currently Available?	Source	Notes
a. Form public-private partnerships to achieve transportation goals where appropriate	Keep track of the number and types of public and private partnerships that have occurred or are occurring.	No	This can be added as a question on the Metro COG annual survey.	
b. Emphasize system preservation and efficient operations over building new capacity	Keep track of new developments which don't require new infrastructure (e.g. utilities and major roads)	Yes	City Planning Departments have records of approved developments. Review of the developments could determine which ones do/do not require new infrastructure.	I am not aware that this data is currently being tracked.
	VMT, VHT, and total lane miles	Yes	FM Traffic Model	
	Households v. Lane Mile	Yes	Local government household development data	
c. Utilize good pavement management practices to extend pavement life	Percent of miles that meet good/poor ride quality (RQI)	Yes	Pavement Inventory System - Fargo, Cass County, NDDOT, Moorhead, Mn/DOT	Determines remaining service life of pavement.
d. Identify and prioritize needs through good planning	% of projects built or scheduled as listed	Yes	MTP Consistency Review	Development of performance measures may help determine the priority order of projects based on their needs to help meet the MTP goals.

3. Maintain & Improve the Region's Economic Competitiveness	Measurement Data Type	Is Data Currently Available?	Source	Notes
a. Maintain and improve efficient freight movement	Truck volumes and/or classification of trucks	Yes	Weigh-in-Motion (NDDOT), and/or ATR	
	Congestion	Yes	ADT data determines LOS on freeways and major arterials	
b. Maintain and improve transit connections to rural areas and surrounding communities	Ridership	Yes	Special Transportation Services Directory from the mobility manager at MAT	
	Up to date list of available services to surrounding communities	No	Coordination with services beyone metro with surrounding transit providers would be needed.	
3. Maintain & Improve the Region's Economic Competitiveness (Con't)	**Measurement Data Type**	**Is Data Currently Available?**	**Source**	**Notes**
c. Rehabilitate/rebuild critical bridges as appropriate	Bridge ratings	Yes	Cities contract with Mn/DOT and NDDOT to complete bridge inspections.	Determines remaining service life of structures.
	Volume/Capacity Ratios	Yes	FM Traffic Model	
	ADT and LOS	Yes	Cities and DOTs	

d. Develop and maintain roadway connectivity that is appropriate for the facility type and land-use environment	% Reserve capacity on river crossings, RR crossings, Interstates, barriers, etc.	Yes	Screen line analysis of transportation model	
e. Provide public transportation to industrial areas and large employers.	Is service available in large industrial areas?	Yes	MAT routes	
	Number of employees within a specified distance of transit route	Yes	TAZ job data in FM Traffic Model	
f. Attract growth sector businesses	Average Commute Time	Yes	FM Traffic Model - Average trip length and travel time	

4. Manage and Operate Roadways Efficiently	Measurement Data Type	Is Data Currently Available?	Source	Notes
a. Enhance regional coordination of traffic signal operations on major corridors between cities.	Number of coordinated signals on minor and principal arterials.	Yes	City Engineers	Display by using a map that shows signalized intersection in intercity corridors and indicates coordination v. no coordination. Would also indicate the extent of synchro use on corridors.
	Use Synchro to optimize signal coordination.	No	City Engineers	
b. Evolve toward the centralized management of transportation system devices and personnel	Percent of Metro Traffic Operations Action Plan Implementation	Yes	Metro COG	
c. Prevent and relieve congestion to improve traffic flow and conserve energy	Freeway and Arterial LOS	Yes	FM Traffic Model	
	V/C Ratios	Yes	FM Traffic Model	
	VHT and VMT	Yes	FM Traffic Model	
d. Utilize travel demand management practices as appropriate	Peak Hour Freeway and Arterial LOS (V/C Ratios)	Yes	FM Traffic Model	
	What is the availability of TDM Practices	No	Annual contact survey with 50 largest employers in the FM Area for TDM Practices	
e. Develop system operations and performance measures for the region's transportation system.	Have the measures been developed, yes or no.	In Progress	Metro COG is currently working on developing these measures as an update to the MTP. Annual review of performance measures.	
f. Cooperate across jurisdictional boundaries to create a seamless transportation network				
g. Support the Complete Streets Concept for the purpose of optimizing personal mobility regardless of mode of travel.	Are the corridors being planned and constructed for all modes of transportation with the complete streets concepts - yes or no?	Yes	Start tracking all projects through the planning, environmental documentation and construction phases for all jurisdictions. Source - TTC	
h. Ensure that the transportation system will operate in times of manmade or natural disasters.	Have evac plans been developed?	Yes	All Jurisdictions	
	Consistency review of local, regional, and state emergency disaster plans	Yes	Local, regional and state evacuation plans.	
	LOS analysis with bridge closers in order of susceptibility by flooding.	Yes	FM Traffic Model	

5. Provide More, Better, and More Efficient Public Transit Service	Measurement Data Type	Is Data Currently Available?	Source	Notes
a. MAT should work with local school districts to identify needs and coordinate services.	Have meetings with all applicable school districts been scheduled or held?	No	School districts, MAT, and private school bus companies	
b. Implement recommendations of the 2007 Metropolitan Transit Plan and supplemental studies, analyses, and reports such as the Moorhead Expansion and Alignment Study and the Southwest Metro Transit Study	Keep track of projects to complete and which ones have been completed	Yes	Metropolitan Transit Plan shows lists of projects.	

c. Prioritize transit corridors and provide service that meets the needs and schedules of the traveling public	% of Public Satisfaction	Unsure	Surveys (MAT conducts surveys but am unsure if they cover this in their questionnaire)	
	Ridership per Capita	Yes	MAT	
d. Make transit more accessible	Ridership	Yes	MAT	
	Number of shelters and other transit amenities	Yes	MAT	
e. Identify dedicated local transit funding in anticipation of the loss of FTA 5307 operating funds in 2022	Have funds been identified to replace the 5307 Funds?	Yes	MAT	

6. Improve Bicycle Route Connectivity	Measurement Data Type	Is Data Currently Available?	Source	Notes
a. Implement recommendations of the 2006 Metropolitan Bicycle and Pedestrian Plan	Bike Counts	Yes	Metro COG	
	% of Completed Projects from the Bike/Ped Plan	Yes	Metro COG	
b. Close gaps in the bicycle network, especially the principal bikeway network	Identify a list and map of critical gaps	Not Yet	Metropolitan Bike and Ped Plan will Include this Data in its Update	A map of critical gaps would be compared with a map of closed gaps to demonstrate progress
c. Improve bike route signage, way finding, and pavement markings	Keep a list of projects completed	No	Cities, Counties, Fargo Park District	
d. Build "complete streets" that balance the needs for all modes of transportation and adjacent land uses.	Are the corridors being planned and constructed for all modes of transportation with the complete streets concepts - yes or no?	Not Yet	Corridor studies, plans, environmental documents, and construction plans available from Metro COG, local jurisdictions, and DOTs.	
e. Encourage and support education efforts for both bicyclists and motorists regarding how best to deal with one another on area roadways.	Document Efforts and Money spent on bike/ped/motorist safety. Document the number of people reached.	No	Metro COG, Bike/Ped Committee, Police Departments, and Local Service Clubs.	
f. Establish an evaluation and rehabilitation program for bicycle and pedestrian facilities throughout the metro area.	Have strategies been initiated and/or completed?	No	Metro Bike and Ped Plan, TIP, Local CIPs, STIP, Fargo Park District Projects	
g. Connect the F-M Metro area by bike route with surrounding communities and areas of interest.	Keep track of project list and completed projects - metro wide, regionally and nationally	Yes	Metropolitan Bike and Ped Plan, Extraterritorial Routes, Contact with States	
	Track involvement with Metro area, regional and national trail systems	Yes		

7. Build a Livable Community	Measurement Data Type	Is Data Currently Available?	Source	Notes
a. Encourage more mixed-use development and re-development using compatible land-uses	Review Local Growth Plans, Comprehensive Plans and Land Use Plans to ensure that they promote this type of development.	Yes	Planning Departments	
b. Encourage more areas of higher densities for all income levels	Households per acre	Yes	FM Traffic Model, Local Jurisdictions	
	Average Population Per Acre	Yes	State Data Center, Metro COG, Local Jurisdictions	
	Housing Cost Ranges within a Defined Area	Yes	Assessor's office from each local jurisdiction	
c. Reinvest in core neighborhoods	Number of new households compared to linear feet of new infrastructure	Yes	Traffic Model Data and amount of new infrastructure from jurisdictions	
	Track increase in Housing Units and/or Jobs per TAZ	Yes	FM Traffic Model, Local Jurisdictions	
	Track Property value changes in core neighborhoods	Yes	City/County GIS Database (Assessor's data)	

d. Improve connections between people	Identify which jurisdictions have a comp plan policy that promotes pedestrian connectivity.	Yes	Review of All Jurisdictional comp plans.	
	Review of developers agreements, amenities plans, and new subdivision plats to determine if opportunities for connections were incorporated.	Yes	Local Planners	
e. Build and maintain neighborhood-scale schools that are easily accessed by walking or biking	Keep track of the number of uncontrolled crossings of arterial roadways in safe routes to school plans.	Yes	Safe Routes to School Plans for new schools.	
f. Conserve prime agricultural land and environmental resources	Identify which jurisdictions have a policy which limits sprawl and promotes growth management.	Yes	Comprehensive and Growth Plans	
g. Design corridors and transportation infrastructure that is context sensitive and visually appealing to the maximum extent possible	Identify which jurisdictions have a policy with strategies identified for neighborhood collectors.	Yes	Comprehensive Plans	

Appendix G
Security Memo

INTEGRATING SECURITY INTO THE METRO COG PLANNING PRORGRAM

April 22, 2008

Upper Great Plains Transportation Institute
North Dakota State University
Fargo, North Dakota

Background
The Metro COG is a bi-state MPO with an urbanized area population of 160,000. By 2020 the population of the urbanized areas is projected to grow to almost 200,000. The MPO includes the Cities of Fargo and West Fargo, and Cass County, North Dakota, and the Cities of Dilworth and Moorhead, and Clay County, Minnesota. Seventy-five percent of the urbanized population resides in North Dakota. There is a memorandum of understanding (MOU) between the North Dakota Department of Transportation (NDDOT) and the Minnesota Department of Transportation (MNDOT) which gives primary oversight of the MPO to NDDOT. However, MNDOT does apply a measurable degree of input and guidance to the overall planning activities of Metro COG. The Metro COG has a staff of 7 and an annual planning (UPWP) budget over $1,000,000. Planning dollars spent by Metro COG are based on the urbanized area of both the Minnesota and North Dakota and are blended per the MOU listed above. Metro COG provides a broad range of planning and technical assistance to its member communities beyond the required Transportation Improvement Program (TIP) and Long Range Transportation Plan (LRTP). As will be discussed, Metro COG is currently in the process of trying to establish the security element of its LRTP.

Starting the Process
In 2007 Metro COG contracted with the Upper Great Plains Transportation Institute (UGPTI) to assist in meeting the new security requirement established by SAFETEA-LU. SAFETEA-LU, Title VI – Transportation Planning and Project Delivery, Section 6001 (a) included this language to direct MPOs to specifically address security in their planning activities:

Metropolitan Planning Principles of SAFETEA-LU (SAFETEA-LU, Sec. 450.306)
SAFETEA-LU, Title VI – Transportation Planning and Project Delivery, Section 6001 (a) included this language to direct MPOs to specifically address security in their planning activities:
Scope of the metropolitan transportation planning process--
"(a) The metropolitan transportation planning process shall be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address the following factors:

(1) Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
(2) Increase the safety of the transportation system for motorized and non-motorized users;
(3) Increase the security of the transportation system for motorized and non-motorized users;
(4) Increase accessibility and mobility of people and freight;
(5) 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;
(6) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
(7) Promote efficient system management and operation; and

(8) Emphasize the preservation of the existing transportation system" (Federal Register, 2007)

Furthermore, 23 CFR 450.322(h) provides additional language for the mandate:

The Metropolitan Transportation Plan should include ….. ***"(as appropriate) emergency relief and disaster preparedness plans and strategies and policies that support homeland security (as appropriate) and safeguard the personal security of all motorized and non-motorized users."***

An exhaustive review of existing MPO practices, particularly smaller MPOs, reveals guidance/accepted practices for integrating security into an MPO planning program. Moving forward Metro COG wanted to proactively engage a broad range of regional stakeholders in emergency management.

Developing Key Entity/Stakeholder Dialog

Information was gathered through interviews with key entity/stakeholders in the Fargo-Moorhead metropolitan area. The goal of the interviews was to establish a disaster activities profile focusing on the transportation aspects of disaster situations and to provide feedback as to what role(s) the FM Metro COG should play in disaster planning given the nature of SAFETEA-LU legislation. The responsibilities, interoperability resources, coordination and other transportation security related activities as well as the perceived role of the Metro COG in security planning activities were discussed. Entities interviewed have various levels of involvement depending on the nature and type of disaster. The key entities represented included: Fargo and Moorhead Police Departments, Fargo and Moorhead Fire Departments, Fargo-Moorhead Ambulance, Cass Fargo Emergency Management, Public Works, Metro Area Transit, Fargo Traffic Engineering, Clay County Sheriff's Office, North Dakota Highway Patrol, North Dakota Department of Transportation and District Office and federal organizations. These entities were identified as having a vast range of experience and present front line and executive level perspectives of security in the Fargo-Moorhead metropolitan area.

A review of current local security and related all-hazards activities revealed a complex organizational network (Figure 1). Figure 1 shows a simplified chain of command for typical response to all hazards events.

Figure 1. Response Schematic

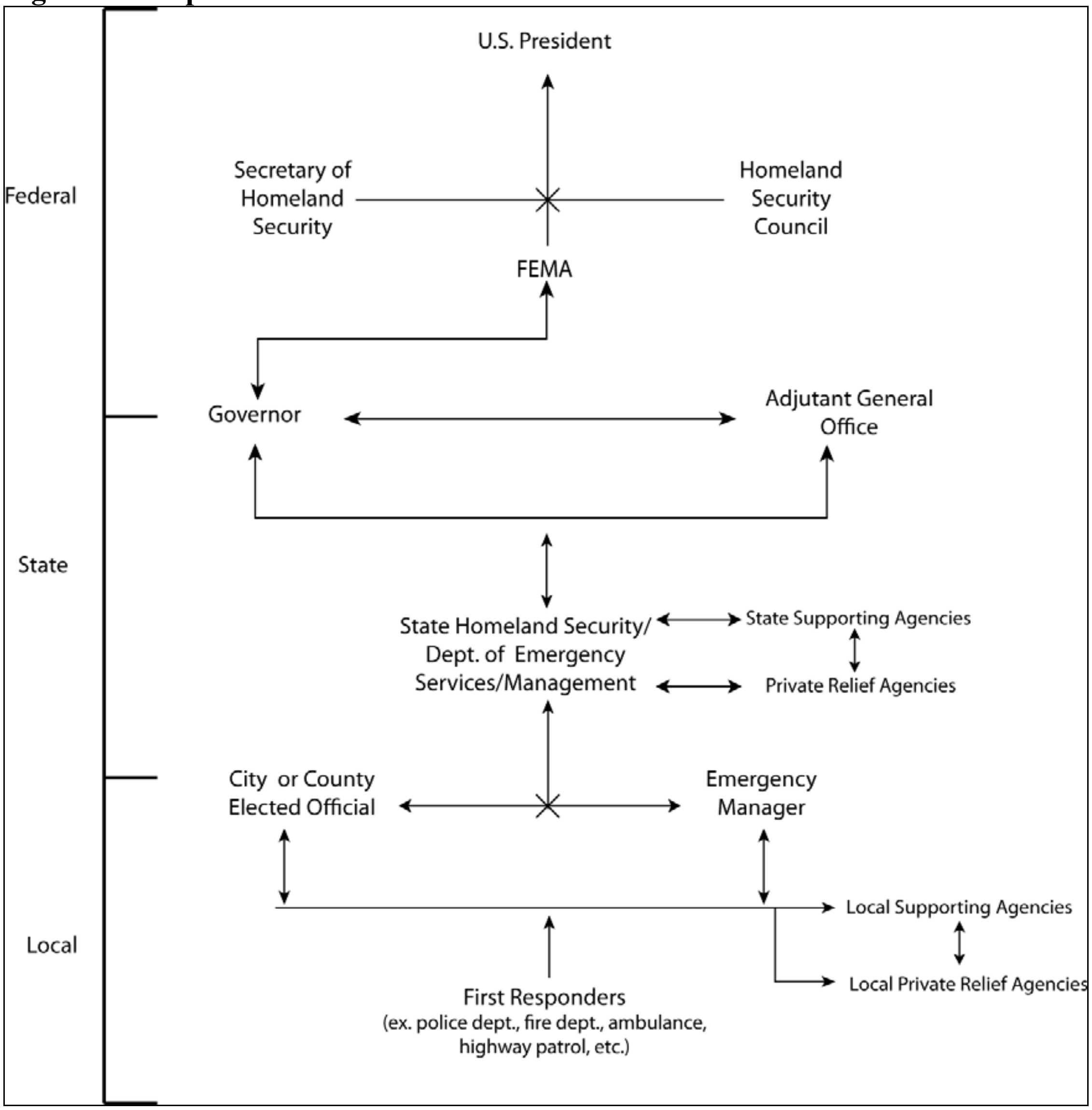


Figure 2 provides a more detailed schematic for one of the cities. The diagram identifies potential all hazards events with their relevant activities and functions at the local level.

Figure 2. City of Fargo Emergency Response Organization

City of Fargo Emergency Response Organization

TYPE OF INCIDENT	Man-Made or Natural Disasters			
	Health Related Communicable Disease	Fire/Explosion Vehicle Accidents Aircraft Accidents Hazardous Materials Structural Collapse	Bomb Threat Terrorism Active Shooter Civil Disorder	Flood Heavy Rains Blizzard Tornado High Winds (straight-line) Drought Power Failure
	Weapons of Mass Destruction			
	Bio-terrorism	Explosion Chemical Structural Collapse	Terrorist Act	
PRIMARY INCIDENT MANAGER Tactics Information Gathering Press Briefing	Public Health Director	Fire Chief	Police Chief	Director of Operations City Engineer Enterprise Director
PRIMARY FUNCTIONS	Health	Fire	Police	Public Works & Engineering
	Health Appraisal Sanitation Health Hazards Advice	Fire Protection Fire Suppression EMS Control Hazardous Materials Search & Rescue	Traffic Control Crowd Control Site Security Evacuation	Damage Assessment Engineering Services Utility Maintenance Barricades Temporary Solutions Contract Administration
	EMS & Medical		Warning	
	Hospital/ Support Morgue		Emergency Warning	
SECONDARY FUNCTIONS		Evacuation Traffic Control Site Security	Search & Rescue Morgue	Traffic Control Evacuation Crowd Control

STRATEGY FORMULATION	Emergency Response Task Force			
	Mayor, City Administrator, Finance Director, City Engineer, Director of Operations, Enterprise Director, Public Health Director, Planning Director, Fire Chief, Police Chief, F-M Ambulance Operations, Red River Regional Dispatch Director			
Coordination & Control	City Administration	Finance	Individuals & Family	Utilities
Public Information Interface/Liaison with non-city agencies Emergency Declaration	Interface/Liaison with city agencies	Financial Records Expense Reports	Coordinate/Liaison with Hospitals & Volunteer groups Organize support for donations management	Water & Sewer utility maintenance Clean-up/Debris removal

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Source: City of Fargo Emergency Operations Plan Adopted by City Commission July 9, 2003.

Understanding these local protocols, along with the state and national frameworks, provides valuable context for moving forward to heighten the attention in Metro COG planning activities.

Survey/Interview Results

Information gathered through individual stakeholder interviews throughout the Fargo-Moorhead metropolitan area provided valuable insight into current multi-jurisdictional planning efforts, critical factors in all hazards planning, suggested security related investments, and the role that Metro COG can play in security and related all-hazards planning.

Feedback/results from the survey indicated several areas in which the Metro COG can begin to integrate security as a separate planning element in the metropolitan planning program. Based on input from the regional stakeholder group, several themes emerged to assist in defining Metro COG's role in security and related all-hazards planning. The following list is a summarization of the individual survey results/feedback from the stakeholder group which represents what role(s) the Metro COG can play in all hazards planning activities:

- Planning and coordinating evacuation routes.
- Signage and public education and info dissemination.
- Act as forum for regional assessment.
- Database of critical transportation routes and traffic flow, infrastructure and sheltering.
- Funding for training and/or exercises.
- Points of distribution planning and recovery strategies/policies.
- Possible support role-define the Metro COG's capabilities (internal capabilities audit).
- Form a critical partners group or take part in existing groups in conjunction with Emergency Services Management. Some feel the Metro COG should sit in on existing as not to create more meetings.
- None.

At the conclusion of the stakeholder interview process, the Metro COG decided to bring the group of entities/stakeholders together to further discuss initiatives and priorities for incorporating the security element into the transportation planning process. A roundtable discussion was formed to further advance the security initiative. Table 1 lists the attendees.

Table 1. Roundtable Attendees

Bob Bright	FM Metro COG
Wade Kline	FM Metro COG
Kevin Gorder	NDDOT-Fargo District
Lori VanBeek	City of Moorhead-Transit
Julie Bommelman	City of Fargo-Transit
Rob Wilson	Fargo Fire Department
Dean Meyer	Fargo Fire Department
Dave Rogness	Cass County Emergency Management
Leon Schlafmann	City of Fargo Emergency Management
James Prochniak	ND Highway Patrol
Bryan Green	Clay County Emergency Management
Matt Siiro	Clay County Sheriff/Emergency Management
Mark A. Johnson	Federal Highway Administration ND-Bismarck
Tara Hanson	Fargo Police Department
Gene Anderson	Fargo Police Department
Ken Krupich	F-M Ambulance Service
Wade Hockert	F-M Ambulance Service
Al Weigel	City of Fargo Public Works

The goal of the roundtable discussion was to bring focus to the potential role(s) for the FM Metro COG in the community's security and emergency activities, as they relate to the metropolitan planning process and its ability to contribute to those activities. In addition, the roundtable was expected to create the needed dialogue for the Metro COG as they seek opportunities to participate as a partner in well-established and ongoing multi-institutional activities related to security and all-hazard events. The roundtable discussion provided an important step in collaborative dialogue on issues related to security.

Stakeholders offered feedback on critical issues related to the transportation system security, how local/regional transportation assets can be enhanced as a component in multiagency/all hazards activities, knowledge most valuable for integrating security into the transportation planning process and what priorities should be addressed by the Metro COG in the five-year transportation plan for the community. Whether or not to draw from the roundtable contingency to form a separate group that addresses transportation planning was also discussed. However, no consensus or conclusion was reached as to the formation of a separate group at the time of the roundtable discussion.

Based on input from the previous individual survey and the regional stakeholder group roundtable, consistent themes emerged to assist in defining the Metro COG's role in security planning.

Integrating Security into Metro COG's Planning Program

In effort to address the Transportation Security Planning requirement put forth in SAFETEA-LU Metro COG has defined how it wishes to integrate security into the metropolitan planning program. Inevitably, Metro COG approaches security from a (transportation) network perspective. However the issue is broader than that. Metro COG will utilize its Unified Planning Work Program (UPWP) and Public Participation Plan (PPP) to enhance its metropolitan planning program to more accurately take into account transportation security issues.

Metro COG proposes the following security definition as related to its metropolitan planning program: *Metro COG's security planning initiative includes the analysis, inventory, assessment, improvement, and system management of regional transportation infrastructure and investments vital to sustain the operational capability of the region during manmade or natural disasters.*

Metro COG has expertise in collecting and analyzing data regarding the region's transportation network. Based on stakeholder input it appears Metro COG collects adequate types and kinds of information. The strategy is putting the data into a security context. Metro COG is an organization that deals almost exclusively with infrastructure. Metro COG will work with regional emergency management and transportation stakeholders to establish a regionally significant transportation infrastructure (RSTI) for the region. The RSTI will include not only surface facilities, but also include components such as the public transit system and airports. Once defined, Metro COG can tailor the information it collects and relate it back to the RSTI in an effort to annually assess how local, state, and Federal agencies are working to address the integrity of the network.

Metro COG will elevate the role of regional emergency management stakeholders with in the metropolitan planning program. In the recent past Metro COG staffed an Incident Management Committee, which has been dormant since 2001. Since 2001, Metro COG has engaged emergency management stakeholders only minimally. Metro COG will use the foundations of the Incident Management Committee to again engage emergency management stakeholders on the front end of its planning efforts, from sub-area transit studies, corridor studies, and long range planning efforts.

Metro COG will make itself available as a venue for coordination among regional stakeholders on issues related to their ongoing planning and coordination efforts related to incident management and emergency response. The update of Metropolitan Transportation Plan (MTP) and development of its *Goals, Objectives*, and *Emerging Issues* give Metro COG an opportunity address the need and or desire for increased coordination and collaboration on the issue of security planning and incident response at the regional level.

The ability to monitor and manage the transportation network is critical to the regions security. In working with regional stakeholders it is clear Intelligent Transportation System (ITS) deployment will be critical to the region's transportation security. The planning, design, and implementation of ITS infrastructure is critical to the overall security of the region's transportation system. The ability to monitor and manage the region's transportation network is critical to its overall security. Metro COG will approach ITS from a security planning (incident management) perspective. Metro COG will engage its transportation stakeholder on ITS deployment not only as an issue of transportation demand management (TDM) and transportation system management (TSM), but as an issue of transportation security.

Recommendations for Metro COG

Strengthen human and institutional capacity

- Metro COG should work proactively with key entities to address transportation security planning in the region, both internal and external to the metropolitan planning program.

- Metro COG should coordinate with existing pre-established emergency management and security related groups. However, the Metro COG should be available and offer itself as a platform for further regional dialog.

- Metro COG should coordinate all hazards training exercises and activities with neighboring jurisdictions, and state and federal agencies based on recommendations and needs from these entities.

Institutionalize project security profile and assessment

- Metro COG should add a Transportation Security Planning element to its 2009 Unified Planning Work Program (UPWP).

- As part of ongoing security planning work, Metro COG needs to better clarify the types of information available for inclusion in its planning program.

- As part of the MTP update establish a protocol to assess security aspects of transportation projects.

Coordinate asset management and planning

- As part of the MTP update develop a Regionally Significant Transportation Infrastructure (RSTI) and establish a protocol for tracking changes and modifications to the RSTI.

- Metro COG should work with key entities to analyze the transportation network for redundancies in moving large numbers of people and offer assistance for interagency coordination of evacuation routes, the identification of collection/shelter points, etc. (E.g. Alternate Route/Evacuation Planning).

- Metro COG should integrate incident management and emergency responders into the deployment ITS infrastructure.

    - Areas of significance may include:
        1. Advanced Traffic Management Systems (e.g. closed circuit television (CCTV) connectivity and expansion, real time traffic counts),
        2. Advanced Traveler Information Systems (e.g. dynamic message signs, flood warning systems)
        3. Emergency Response (e.g. signal preemption)
        4. Traffic Operations Center

Establish sustainability in regional security partnerships

- Metro COG should evaluate its existing Public Participation Plan (PPP) to ensure adequate input is provided for entities involved in Incident Management and Emergency Management.

- Metro COG should evaluate its Public Participation Plan (PPP) to ensure Incident Management and Emergency Management stakeholders are listed as “interested persons” in relation to the development of major modal plans and smaller sub-area and corridor studies.

- Metro COG should encourage consultation with Incident Management and Emergency Management stakeholders as local communities update existing comprehensive plan, growth plans, as well as zoning and subdivision ordinances.

Implementation Plan

Metro COG has developed the following implementation plan and timeline for integration of security into its planning and programming activities. The following actions steps and timeline specifically demonstrate how Metro COG will implement the recommendations which outlined earlier. The following actions are to be considered dynamic, and additional elements will likely be added as initial steps are implemented.

2008

Metro COG engages incident management and emergency management stakeholders in the review and adoption of the Metro Intelligent Transportation System (ITS) Deployment Plan. Metro COG establishes a critical partners group of incident management, emergency management, and transportation stakeholders to participate in a Focus Group for Metropolitan Transportation Plan (MTP) Update. The critical partners group will assist Metro COG in defining the Regional Significant Transportation Infrastructure (RSTI) and assist in adequately integrating transportation security into the MTP.

The critical partners group will be used on at least three occasions beyond the initial MTP Focus Group in 2008 to more clearly define specific security related elements within Metro COG’s 2009/2010 Unified Planning Work Program (UPWP). The outcome will be a clearly defined set of measurable UPWP work elements for Metro COG related to transportation security.

The critical partners group begins to discuss integration of incident and emergency management into ITS Deployment. The critical partners group will set in motion a redefined ITS Deployment Committee.

2009

Metro COG initiates work on major program element, likely an Alternate Route/Evacuation Planning effort as per input from the critical partners groups. Effort will look at both concepts and integrate existing tools and technologies, such as Regional Travel Demand and freeway micro simulation models. Alternative/Evacuation Route Planning looks also at integration of existing ITS infrastructure and possible new infrastructure needed.

Metro COG's works with redefined ITS Deployment Committee on deployment of Metro ITS Deployment Plan. Metro COG facilitates dialogue and actions aimed at increasing collaborate between ITS and incident management stakeholders.