Fargo-Moorhead Metropolitan Council of Governments

2014 Long Range Transportation Plan

APPROVED July 17, 2014





LSA



2014 Update to the Long Range Transportation Plan

Prepared by:

Fargo-Moorhead Metropolitan Council of Governments

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and our Transportation Planning Partners:

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More Information Available:

Please visit <u>www.fmmetrocog.org</u> for more information regarding this report.

Acronyms

Advanced Traffic Analysis Center (ATAC) Americans with Disabilities Act (ADA) Automatic Traffic Recorders (ATRs) Automatic Vehicle Location (AVL) Burlington Northern Santa Fe (BNSF) Canadian Pacific Railroad (CPR) Carbon Dioxide (CO₂) Categorical Exclusions (CEs) Clean Air Act (CAA) Community Transit Association of America (CTAA) Congestion Mitigation/Air Quality Funds (CMAQ) Coordinated Public Transit Human Services Plan (CPTHSP) Council on Environmental Quality (CEQ) Department of Defense (DoD) Department of Homeland Security (DHS) Department of Transportation (DOT) Dynamic Message Signs (DMS) **Emergency Operations Center (EOC)** Environmental Assessment (EA) Environmental Impact Statement (EIS) Environmental Protection Agency (EPA) Existing plus Committed (E+C) Fargo-Moorhead Metropolitan Council of Governments (FMMCOG) Fargo-Moorhead Metropolitan Planning Area (MPA) Federal Aviation Administration (FAA) Federal Emergency Management Agency (FEMA) Federal Functional Classification (FFC) Federal Highway Administration (FHWA) Federal Railroad Administration (FRA) Federal Transit Administration (FTA) Federal Transportation Enhancement Program (TE)

Finding of No Significant Impact (FONSI) Freight Analysis Framework (FAF) Global Positioning System (GPS) Grant Anticipation Revenue Vehicle (GARVEE) Ground Transportation Center (GTC) Highway Bridge Program (HBP) Highway Bridge Replacement and Rehabilitation Program (BR) Highway Safety Improvement Program (HSIP) Highway Trust Fund (HTF) Incident Command System (ICS) Intelligent Transportation Systems (ITS) Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Interstate Maintenance (IM) Level of Service (LOS) Limited English Proficiency (LEP) Long Range Transportation Plan (LRTP) Memorandum of Understanding (MOU) Metro Area Transit of Fargo-Moorhead (MATBUS) Metropolitan Planning Area (MPA) Metropolitan Planning Organization (MPO) Metropolitan Statistical Area (MSA) Metropolitan Transportation Initiative (MTI) Micrograms per Cubic Meter of Air $(\mu g/m3)$ Minnesota Department of Transportation (MnDOT) Moving Ahead for Progress in the 21st Century (MAP-21) National Ambient Air Quality Standards (NAAQS) National Environmental Policy Act (NEPA) National Highway System (NHS) National Incident Management System (NIMS) National Infrastructure Protection Program (NIPP) National Plan of Integrated Airport Systems (NPIAS) National Response Framework (NRF) NHPP Non-Interstate (NHPP-NI) North Dakota Department of Emergency Services (NDDES)

ACRONYMS FROM 2014 LONG RANGE TRANSPORTATION PLAN

North Dakota Department of Transportation (NDDOT) North Dakota State University (NDSU) **Operational Condition Index (OCI)** Operations and Maintenance (O&M) Otter Valley Railroad (OTVR) Pan-Tilt-Zoom (PTZ) Parts Per Billion (PPB) Parts Per Million (PPM) Pavement Condition Index (PCI) Pavement Quality Index (PQI) Public Participation Plan (PPP) Red River Valley & Western Railroad (RRVW) Regional & Community Improvement Priority (RCIP) Regional Concept of Operations (RCTO) Regionally Significant Transportation Infrastructure (RSTI) Rehabilitation and Preservation (R&P) Road Weather Information System (RWIS) Roadway Quality Index (RQI) Safe Routes to School Program (SRTS) Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) State Funds-Other (SFO) State Implementation Plan (SIP) State Infrastructure Banks (SIBs) Strategic Rail Corridor Network (STRACNET) Strategic Highway Network (STRAHNET) Strategic Highway Safety Plan (SHSP) Surface Transportation Funds Attributable to the Urban Area (STP/U) Surface Transportation Program (STP) Surface Transportation Program Regional Funds (STP/R)

Tax Increment Financing (TIF) Traffic Analysis Zones (TAZ) Transit Development Plan (TDP) Transportation Alternatives Program (TAP) Transportation Control Measures (TCMs) Transportation Equity Act for the 21st Century (TEA-21) Transportation Improvement Program (TIP) Transportation Infrastructure Finance and Innovation Act (TIFIA) Transportation Management Area (TMA) Transportation System Management & Operations (TSMO) Transportation System Management (TSM) Transportation Technical Committee (TCC) U.S. Fish and Wildlife Service (USFWS) Union Pacific Railroad (UPRR) Valley Senior Services (VSS) Vehicle Miles Traveled (VMT) Year of Expenditure (YOE)

CHAPTER 1 – INTRODUCTION

Metro 2040 is the Long Range Transportation Plan (LRTP) for the Fargo-Moorhead Council of Governments (Metro COG) Metropolitan Planning Area (MPA). This is a federally required plan that will guide how the region grows and invests transportation dollars over the next 25 years.

The Plan is fiscally constrained based on forecasted available transportation funding and addresses transportation operations and maintenance, rehabilitation, and capital projects. This Plan also prioritizes projects and forecasts when in the 25-year plan horizon (2015-2040) the project would be completed.

This first chapter presents the Fargo-Moorhead Council of Governments and their responsibility for adopting the Plan, a discussion of the Metro 2040 Plan regarding what the Plan includes, and a Plan development section that describes how the Plan was developed.

Subsequent chapters will discuss existing conditions, growth, public involvement, goals, needs, funding, and the fiscal constrained plan.

Metro COG

Metro COG is the Fargo-Moorhead Metropolitan Council of Governments. It is a voluntary association of local governments in the greater Fargo-Moorhead metropolitan area chartered in 1963. Metro COG performs planning and development work, especially to address problems that are regional in scope and cross jurisdictional boundaries. It has been designated by the governors of both North Dakota and Minnesota to function as the Metropolitan Planning Organization (MPO) for the greater Fargo-Moorhead metropolitan area. All urban areas with a population of more than 50,000 have a designated MPO with a mission to provide a fair and impartial setting

CHAPTER CONTENTS

- Metro COG
- Metro 2040
- Federal Requirements
- Plan Adoption
- Plan Development
 Process

for making transportation decisions and administering Federal transportation funds.

The study area for this Plan consists of the the Fargo-Moorhead Metropolitan Planning Area (MPA). The MPA takes into account critical County, State and Federal roadways which serve to move goods and people into, out of, and within the metropolitan area. It accounts for the exurban growth areas, which have an impact on the overall metropolitan planning process.

The most current expansion of the MPA was approved by the Metro COG Policy Board in November of 2012 and by the North Dakota Department of Transportation (NDDOT) and Minnesota and Department of Transportation (MnDOT) in 2013.

The expanded MPA consists of 14 cities located in both Clay County, Minnesota and Cass County, North Dakota. Fargo is the largest of the cities with a 2010 population of 105,549. The Cities of West Fargo, Fargo, Moorhead, and Dilworth comprise the urban area. The urban area is studied more in this Plan than the remainder of the MPA.

Fargo-Moorhead Council of Governments Policy Board and Committees

Policy Board

The Metro COG Policy Board is governing body for Metro COG. It is comprised of 14 voting members who represent the metropolitan area, and establish overall policy direction for all aspects of the area wide planning program. The Policy Board consists of at least three-quarters elected officials, and each jurisdiction's voting power is based on its approximate share of the area's population.

The Policy Board is the collective voice of the MPO and is the final authority in all decisions related to Metro COG. It reviews and approves all of Metro COG's work activities and oversees the day-to-day activities of Metro COG, its Executive Director and staff. The Policy Board provides the forum in which the Metro 2040 is developed and is responsible for its content.

Transportation Technical Committee

The Transportation Technical Committee (TTC) advises the Policy Board on technical matters associated with Metro COG's work activities and mission, and on specific transportation planning issues. The committee is comprised of engineering, planning and transit staff from the local jurisdictions and a representative, one each, from the FHWA, the NDDOT, and the MnDOT. The TTC members work in conjunction with Metro COG staff and consultants to develop the Metro 2040 and forward its recommendations to the Policy Board.

Other Committees

Metropolitan Bicycle and Pedestrian Committee

The Metropolitan Bicycle and Pedestrian Committee (formerly the Metropolitan Trails Committee) meets monthly to discuss the issues and needs facing the walking and bicycling public. The committee is also actively involved in planning and implementing improvements to pedestrian and bicycle facilities that improve safety and the quality of life for the citizens of the metropolitan area. The committee is made up of persons representing the local police departments, schools, park districts, City planning and engineering departments, and bicycle and pedestrian clubs.

Metropolitan Transportation Initiative

The Metropolitan Transportation Initiative (MTI) is a consortium of local municipalities, public and private transportation providers, social and human service agencies in the Fargo-Moorhead metropolitan area. The MTI is responsible for the maintenance and implementation of the Coordinated Public Transit-Human Service Transportation Plan. The Coordinated Plan is the driving document used to establish local priorities for certain FTA grant programs. The MTI reports directly the Metro COG Policy Board.





Source: Metro COG (2014)

The transportation system within the Metro COG MPA connects residents with their individual community, the region, and to areas beyond. A variety of travel choices gives people who have differing transportation needs access to jobs, health care, shopping, educational, and recreational opportunities and the everyday necessities of life. Our transportation assets also provide for movement of freight throughout the region, and connect us to markets around the globe. Clearly, an effective transportation system is vital to economic vitality, business attraction and expansion, trade, tourism, and quality of life. As a MPO, Metro COG is responsible for developing and maintaining a LRTP to guide the development of the transportation system and to assure that transportation needs are being met.

Metro 2040

Metro 2040 is the long-range transportation plan for the Metro COG area. Metro 2040 is designed to help realize Metro COG's adopted outcomes to meet current and future transportation needs and to gauge the success of these efforts with established performance measures. Metro 2040 is designed to guide the development of multimodal transportation systems throughout the Fargo-Moorhead metropolitan area for the next 25 years. It will be used to prioritize the majority of transportation spending throughout this period, and as such, it is vitally important that the plan reflect the choices and desires of the majority of the Fargo-Moorhead metropolitan area's residents, workers, and visitors.

Since transportation has a broad impact on society, long-range transportation planning must take into account concerns, such as impact upon the environment, land use and economic development, in addition to traditional transportation-related issues, such as mobility and safety. In accordance with Federal law, Metro 2040 is updated every five years to accommodate the changing needs of the area and to reflect changes in the socio-economic composition of the area, as well as changes in local transportation policy. The last LRTP for the Fargo-Moorhead metropolitan area was adopted in 2009. While 2040 extends beyond what can be accurately predicted, a long-range plan's value lies in comprehensively assessing the region's current transportation system, and charting a course of action for coming years. It presents an opportunity to step back and take a big-picture look at where we stand, the challenges we face, and how to best address those problems. Metro 2040 creates a vision that assists in guiding future decisions toward the goal of a safe and efficient transportation system to meet the area's current and future needs.

Metro 2040 must also consider all modes of transportation; streets and highways, transit, bicycle and pedestrian, air, rail and water, as well as freight movement within and through the Fargo-Moorhead metropolitan area. The Plan must be maintained current and valid before local jurisdictions can receive Federal funding for transportation improvements within the Fargo-Moorhead metropolitan area.

Metro 2040 must present a reasonable expectation of revenue to fund the improvements identified to meet the transportation needs of the Fargo-Moorhead metropolitan area now and in the future. It must be a fiscally-constrained document. Fiscally-constrained, simply stated, is that the expense of accomplishing the projects identified in the Plan does not exceed what the Fargo-Moorhead metropolitan area can reasonably expect to receive in revenues.

Metro 2040 includes both a short-range and long-range strategies that lead to the development of an integrated multimodal transportation system to facilitate the safe and efficient movement of people and goods and addressing current and future transportation demand. Projects identified in the Metro 2040 are divided into three timeframe bands; short- (2015-2020), mid- (2021-2030), and long-range (2031-2040).

The development of Metro 2040 was conducted with a pro-active public involvement process. Information was provided to the public via newsletters, direct mailings and public meetings and input was received from the public via public workshops held throughout the planning process. Metro COG staff also worked cooperatively with decisionmakers of its member jurisdictions, the FHWA, the Federal Transit Administration (FTA), the State departments of transportation in Minnesota and North Dakota, 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.

Federal Requirements

Metro 2040 is an integral part of the Metro COG's "continuing, cooperative, and comprehensive" planning process as stipulated by Federal law. This process was established by the Federal government with the intent of fostering better management, operation, and development of the surface transportation system. This Plan is also compliant with the national goals set forth in *Moving*

Previous Transportation Legislation

- Intermodal Surface Transportation Efficiency Act (ISTEA) 1991-1997
- Transportation Equity Act for the 21st Century (TEA-21) 1998-2004
- Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) 2005-2012

Ahead for Progress in the 21st Century (MAP-21), the current Federal transportation program. Metro 2040 adheres to all requirements stipulated in the MAP-21.

MAP-21 was signed into law on July 6, 2012 and will expire on September 30, 2014. MAP-21 created a streamlined and performancebased surface transportation program that was built on many of the highway, transit, bicycle, and pedestrian programs established in previous legislation. MAP-21 authorizes the federal surface transportation programs for highways, highway safety, and transit. It provides the rules, regulations, and planning practices and guidance for metropolitan and statewide transportation planning. It also presents eight planning factors that need to be addressed in Metro 2040. The eight planning factors are:

- 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 the accessibility and mobility of people and for 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, people, and freight.
- 7. Promote efficient system management and operation.
- 8. Emphasize the preservation of the existing transportation system.

Elements of Metro 2040 will also adhere to the directives and regulations of the Clean Air Act (CAA) of 1990 (as amended), the Americans with Disabilities Act (ADA) of 1990, Title VI of the Civil Rights Act of 1964, the National Environmental Policy Act (NEPA), the *Code of Federal Regulations Title 23, 450.322 Development and Content of the Metropolitan Transportation Plan,* and local master and comprehensive plans, and local regulations and ordinances.

Plan Adoption

The Metro 2040 plan is adopted by the Metro COG Policy Board and is provided for information purposes to the Governors of Minnesota and North Dakota through each State's Department of Transportation. Once the Plan is approved, projects identified in the plan are 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). The TIP is a short-term, capital improvement program mandated by Federal law and is used to program Federal transportation funds for Federal aid-eligible and regionallysignificant projects. All projects programmed in the TIP must first be identified in Metro 2040. Though it is anticipated that projects identified in the Metro 2040 that are on the short-range project lists will be programmed first, it is likely that some of the projects from the midrange and long-range lists will also be programmed for funding and construction before this Plan is updated again in 2019.

Plan Development Process

The planning process for the development of Metro 2040 consisted of four phases:

1. The first phase, **"Issues and Needs,"** assessed historic growth and development and included an analysis of the region's transportation system. Issues included growth, travel patterns, automobile congestion, transit needs, and bicycling.

- The second phase of the Plan process developed and evaluated "Transportation Alternatives" to determine how well they meet regional goals.
- 3. Based on technical analyses and public comments, the third phase was the development of the **"Preferred Alternative"** and determined methods to implement the Plan in terms of project priorities and costs.
- 4. In the fourth phase, the final plan was submitted to the Metro COG Policy Board for review and **"Plan Approval."**

Each of the first three phases of the planning process included public meetings and website postings. A summary of the timing, format, and key questions addressed at each public meeting is included in Chapter 7, Public Involvement.



CHAPTER 2 – EXISTING TRANSPORTATION

The transportation system in the Fargo-Moorhead metropolitan area is multimodal. Streets and highways, transit and paratransit services, bicycle and pedestrian facilities, airports and rail facilities all provide for the movement of people and goods in the Fargo-Moorhead metropolitan area. How these systems complement one another and interact with each other present the complete transportation system. This system needs to be coordinated and maintained. The existing system is what we have now, and what we need to build on to provide transportation options for all residents and to facilitate freight within, to, from, and through the Fargo-Moorhead metropolitan area.

Street and Highway

A well laid-out and well designated roadway network is essential for safe and efficient surface transportation. Such a network can cut down travel times, reduce accidents on certain facilities, assist in emergency operations, and help in allocating roadway funding. State and local governments operate and maintain 3,245 miles of streets and highways for the Metro COG MPA. This equates to approximately 5.5 miles of roadway for every 1,000 persons (2012) and provides the platform on which more than 54 million miles are driven each year. These facilities also serve as the primary thoroughfares for freight and good movement that supply the regional and national economies.

Federal Functional Classification

The Federal Highway Administration groups roadways into classes according to the character of service they are intended to provide. In order to be eligible for federal transportation funding, a roadway must be identified as part of the functionally classified road network. There are three basic highway classifications: Arterial, Collector and Local. All streets and highways are grouped into one of these classes depending on the character of the traffic and the degree of land access that they allow (Table 2-1). It should be noted that Local Streets are not eligible for federal funding.

TABLE 2-1: GENERAL FEDERALFUNCTIONAL CLASSIFICATIONS

CHAPTER CONTENTS

- Street and Highway
- Access Management & Network Connectivity
- Bridges
 - Transit
 - Bicycle and Pedestrian Network
 - Aviation
 - Rail
 - Intelligent Transportation Systems (ITS) Network
 - Freight

Functional System	Services Provided
Arterial	Provides the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control. Categories under the Arterial system include Principal Arterial-Interstate, Principal Arterial- Freeway/Expressway, Principal Arterial-Other, and Minor Arterial.
Collector	Provides a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials. Categories under the Collector system include Major Collector and Minor Collector.
Local	Consists of all roads not defined as arterials or collectors; primarily provides access to land with little or no through movement.

Source: Federal Highway Administration

The functionality of a street is related to traffic mobility and land access. Higher level facilities, such as freeways and expressways, have lower access which allows for higher speeds and capabilities. Conversely, lower level facilities, such as local streets and minor arterials, allow for greater access, but have reduced mobility due to lower speeds and capacities. The relationship can be seen in Figure 2-1.

FIGURE 2-1: RELATIONSHIP BETWEEN MOBILITY AND ACCESS ON ROADWAYS



Source: Federal Highway Administration

Typically, travelers will use a combination of arterial, collector, and local roads for their trips. Each type of road has a specific purpose or function. Some provide land access to serve each end of the trip. Others provide travel mobility at varying levels, which is needed en route. Figure 2-2 on the following page identifies the Federal Functional Classification (FFC) of roadways in the Metro COG MPA. It should be noted that FHWA has recently updated how roadways are evaluated for FFC designation. Figure 2-2 reflects the Metro COG proposed updated to the FFC.

The total miles of Federally-classified arterials and collectors within the Metro COG MPA are 1,067.2. All but 97.5, those classified as Rural Minor Collector, are directly eligible for federal transportation funds. Rural Minor Collectors may be eligible for federal transportation funds if approved by the respective Department of Transportation in North Dakota and Minnesota, and approved by FHWA. Table 2-2 lists the number of miles for federal functional classification arterials and collectors in the Fargo-Moorhead metropolitan area. Also included are local streets.

TABLE 2-2: FUNCTIONAL CLASSIFICATION MILES

Federal Functional Classification	Lane Miles
Arterials	561.1
Interstate	214.6
Other Principal Arterial	112.4
Minor Arterial	234.1
Collectors	506.1
Urban Collector/Rural Major Collector	408.6
Rural Minor Collector	97.5
Total Arterials & Collectors	1,067.2
Local	2,178
Local	2,178
Total All Roadways	3,245.2

Source: Metro COG (2013)

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FIGURE 2-2: FEDERAL FUNCTIONAL CLASSIFICATION FOR FACILITIES IN THE FARGO-MOORHEAD METROPOLITAN AREA

Source: Metro COG – Proposed Metro COG update to the FFC

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Pavement Condition

Roadway surfaces in the Fargo-Moorhead metropolitan area are mostly comprised of paved surface roadways. Of the paved surface roadways, pavements are either asphalt or concrete. Different jurisdictions have a higher percentage of asphalt or concrete roads from other jurisdictions.

Pavement condition data is typically gathered every several years to gauge the conditions of area roadways. Each jurisdiction gathers their own pavement condition data and many different indices are used to gauge the pavements' conditions. Table 2-3 identifies some of the indices used in the area.

TABLE 2-3: INDICES FOR PAVEMENT CONDITION IN THE FARGO-MOORHEAD AREA

Operational Condition Index (OCI)	OCI has been used by the cities of West Fargo and Moorhead to quantify their pavement's condition. The index ranges from 0 to 100, with 0 describing the poorest and 100 the best condition.
Pavement Condition Index (PCI)	PCI is an index with values from 0 to 100. Zero is the poorest while 100 is the best pavement condition.
Distress Index	Distress Index is used by NDDOT and measures the distress of the roadway. Numbers are assigned to the index where the higher the number the better the pavement condition and the lower the number the poorer the condition. The highest possible value per NDDOT's rating system is 99.
Pavement Quality Index (PQI)	PQI is used by MnDOT to determine the condition of the pavements. Ratings range from 4.5 (best) to 0 (poorest).

Source: Metro COG

These rating systems should not be compared with each other as the different systems use different criteria for which to base the scores. When the indices are normalized by a specific category based on overall rating score; *Excellent, Good, Fair* and *Poor*, we can assess the general pavement condition of roadways in the Fargo-Moorhead metropolitan area. Generally, 74.3% of the miles of roadway in the area rate as *Excellent* (28.7%) or *Good* (45.6%). Those that would be rated *Fair* represent 22.5%. Only 3.2% of the roadways would be rated as *Poor*.

Congestion

Congestion results when traffic demand approaches or exceeds the available capacity of the system. While this is a simple concept, it is not constant. Traffic demands vary significantly depending on the season of the year, the day of the week, and even the time of day. Also, the capacity, often mistaken as constant, can change because of weather, work zones, traffic incidents, or special events.

Congestion can be classified as either recurring or non-recurring. Recurring congestion most often occurs when the volume of traffic on a facility becomes more than that facility can handle. Non-recurring congestion is usually short in duration and is caused by such things as weather, construction, or special events. One way to gauge the level of congestion is grading a facility on its level of service.

Level of Service

Level of Service (LOS) is a letter designation that describes a range of rating conditions on a particular type of facility. The Highway Capacity Manual defines levels of service as "qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers." Just like in school, an A is better than a B and an F is failing. Figure 2-3 shows the range of LOS.



FIGURE 2-3: LEVEL OF SERVICE

Source: FHWA

The LOS measurement of congestion is based on weekday Average Daily Traffic (ADT) which is weighted for the a.m. and p.m. peak hours. Therefore, facilities identified being congested may operate at acceptable conditions during the non-peak periods. Congestion is just one measurement of the transportation system, but an important one in that it effects travel time, fuel consumption and air quality.

Overall, the LOS in the Fargo-Moorhead metropolitan area is pretty good. There are very few areas in which the LOS becomes congested. As identified on Figure 2-4 on the following page, the green areas are LOS A to C which makes up a majority of the street and highway network. There are very few areas that are becoming congested (LOS D), but there are several locations that are currently congested experiencing a LOS of E or F. LOS D is considered an acceptable level of congestion within the Fargo-Moorhead planning area. Congestion exists, but not to the point that the street system will fail.

Access Management & Network Connectivity

Access management aims to preserve traffic flow while providing adequate access to development. It has benefits for the transportation system in terms of safety, capacity, and speed. Access management balances the needs of motorists, pedestrians, and bicyclists using a roadway with the needs of adjacent property owners dependent upon access to the roadway. In an environment with limited funds for transportation projects and competing agendas, good access management significantly improves the health of the entire transportation network.

Poor access management directly affects the livability and economic vitality of commercial corridors, ultimately discouraging potential customers from entering the area. A corridor with poor access management lengthens commute times, lowers fuel efficiency, and increases vehicle emissions. Corridors with poor access management will see increased crashes between motorists, pedestrians, and bicyclists; congestion growth that outpaces traffic growth; spillover cut-through traffic on adjacent residential streets; and reduced property values on adjacent commercial development.

Access management has wide-ranging benefits to a variety of users. Improvements through reduced travel time and delays and greater safety help motorists, bicyclists and pedestrians, as well as those delivering goods and services. Business owners see stabilization in property values and additional customer traffic, and improved corridor aesthetics. Government agencies enjoy a lower cost method to achieve transportation goals, while protecting the jurisdiction's investment in infrastructure that reduces the need for constant construction projects, such as road widening.



FIGURE 2-4: 2010 MODELED AVERAGE DAILY TRAFFIC & LEVEL OF SERVICE

Source: Metro COG

In August of 2000, Metro COG established regional access management guidelines as outlined in Table 2-4.

TABLE 2-4: FARGO-MOORHEAD METRO AREA ACCESS MANAGEMENT GUIDELINES

Facility Type	Desired Spacing between Access Points (feet)	Minimum Spacing between Access Points (feet)
Functionally Classified Roadways in Less Developed Areas	1,320	660
Urban Arterials	660	330
Urban Collectors	300	150

Source: Metro COG (2000)

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. They take a different approach to the matter of intersections and driveways. 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.

Bridges

There are 534 bridges within the Fargo-Moorhead metropolitan area. These bridges can include structures ranging in size from a river bridge spanning the Red River to a culvert under a roadway.

Area bridges are inspected on a regular basis by the respective State Departments of Transportation. Following an inspection, a sufficiency rating is given to each bridge. The sufficiency rating is a means of quantifying a bridge's ability to remain in service. Sufficiency rates are conducted biannually and are used to determine eligibility of a bridge for Federal funding. The rating scale is 0 to 100, with 100 considered an entirely sufficient bridge and 0 an entirely deficient bridge. The formula includes factors for structural condition, bridge geometry, and traffic considerations. Prior to MAP-21, a bridge with a sufficiency rating of 80 or less was eligible for Federal Bridge Rehabilitation funding. A bridge with a sufficiency rating of 50 or less is eligible for Federal Bridge replacement funding. Under MAP-21, Federal Bridge Funds were combined into the Surface Transportation Program (STP). Guidelines for using STP for bridge rehabilitation and replacement are yet to be determined.

As part of the inspection, it is also noted if bridges are found to be functionally obsolete or structurally deficient. Bridges that are functionally obsolete may be in good condition, but do not meet current engineering design standards. Such bridges may be two-lane while the roadway on either side is four-lanes. A bridge identified as structurally deficient if one or more load carrying elements is found to be deficient. The fact that a bridge is classified under the Federal definition of "structurally deficient" does not imply that it is unsafe. A structurally deficient bridge, when left open to traffic, typically requires regular maintenance and repair in service and may eventually require rehabilitation or replacement to address the deficiencies. To remain in service, structurally deficient bridges are often posted with weight limits to restrict the gross weight of vehicles using the bridges to less than the maximum weight allowed by statute.

Figure 2-5 on the following page shows the sufficiency ratings and locations of the bridges in the MPA. Of the 542 bridges in the area, 445 have sufficiency ratings greater than 80, 75 have sufficiency ratings between 80 and 50, and 22 have sufficiency ratings less than 50.

Transit

The Fargo-Moorhead metropolitan area provides numerous public transportation opportunities for its residents and visitors. These public transportation opportunities include fixed-route transit, intercity transit, paratransit, senior transit, rural transit, and private transit services.

Fixed-Route and Paratransit Services

Transit, paratransit, and private provider services are characterized as being either a fixed-route or demand response system. The Community Transit Association of America (CTAA) defines fixed-route service to include any transit service in which vehicles run along an established path at preset times. Demand response service is any non-fixed-route system of transporting individuals that requires advanced scheduling by the customer including services provided by public entities, non-profits, and private providers.

Metro Area Transit Fixed-Route (MATBUS)



Metro Area Transit (MATBUS) operates 21 fixed-routes within the metro area. MATBUS is comprised of two separate, but coordinated municipal transit departments. The City of Fargo operates fourteen fixedroutes within Fargo and West Fargo while the City of

Moorhead operates seven fixed-routes within Moorhead and Dilworth.

Four of Fargo's routes are North Dakota State University (NDSU) circular routes which provide bus routes specifically to NDSU and the surrounding neighborhoods.

MATBUS has seven transfer points in Fargo and Moorhead allowing riders to transfer between the fixed-routes to reach their destinations. The main transfer point is known as the Ground Transportation Center (GTC) which is located in downtown Fargo where thirteen bus routes converge. MATBUS routes, shelters, and transfer points are shown in Figure 2-6 on page 2-10. A three-quarter mile buffer is also shown with the routes. By regulation, MATBUS must provide paratransit services within an area three-quarter of a mile on either side of the route.

Transit Operations

Overall, MATBUS transit ridership increased over the past several years. Figure 2-7 on page 2-11 shows the change in MATBUS ridership since 2006. There was a 63% increase in total MATBUS ridership between 2006 and 2012 with much of the increase seen by the Fargo and NDSU fixed-routes.

Metro Area Transit (MATBUS) Paratransit

Paratransit provides pre-arranged transportation services for individuals who are functionally unable to ride the MATBUS fixed-route system. The lift-equipped service is door-to-door, however, it is a "shared ride service" meaning other passengers stops are accommodated as necessary in route to a destination. MATBUS Paratransit provides service in the Cities of West Fargo, Fargo, Moorhead, and Dilworth with service available seven days a week. MATBUS is required to provide paratransit service to areas that are three-quarter of a mile on either side of an existing transit fixed-route.

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FIGURE 2-5: 2012 BRIDGE SUFFICIENCY RATING MAP

Source: Metro COG

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FIGURE 2-6: 2012 MATBUS ROUTE MAP

Source: Metro COG



FIGURE 2-7: HISTORIC MATBUS RIDERSHIP

Source: MATBUS, Metro COG (2014)

Figure 2-8 shows the change in paratransit, rural transit, and senior transit ridership since 2006. MAT Paratransit and Valley Senior Services ridership remained relatively steady while Handi-Wheels and Transit Alternatives saw a decrease in ridership since 2006.

More detailed information regarding transit operations within the Fargo-Moorhead metropolitan area can be found in the 2012–2016 Transit Development Plan (TDP).

Other Paratransit Providers

Other paratransit providers in the Fargo-Moorhead metropolitan area include Valley Senior Services, Handi-Wheels, and Transit Alternatives. Each provides door-to-door or curb-to-curb



services for the disabled, elderly or other special needs clientele. Services provided by each agency are identified in Table 2-5 on the following page.

FIGURE 2-8: HISTORIC PARA/RURAL/SENIOR TRANSIT RIDERSHIP



Source: MATBUS, Valley Senior Services, Handi-Wheels, Productive Alternatives Inc., Metro COG (2014)

TABLE 2-5: PARATRANSIT OPERATORS IN THE FARGO MOORHEAD AREA

Valley Senior Services (VSS)	Provides shared-ride weekday transportation in West Fargo, Fargo, Moorhead and Dilworth for individuals age 60 and older. VSS also provides weekday transportation to the general public to/from/within, Trail, Steele, Richland, Ransom, rural Cass, and rural Grand Forks Counties.
Handi-Wheels	Provides pre-arranged weekday transportation services for the disabled, elderly, or individuals within the poverty limits.
Transit Alternatives	Provides pre-arranged shared ride service to parts of Otter Tail and Clay Counties, provides a commuter service to/from Detroit Lakes and Fargo, and operates a fixed-route every Sunday for destinations in Moorhead.

Source: Metro COG

Intercity Bus Service

Intercity bus service connects the Fargo-Moorhead metropolitan area to other cities within North Dakota and Minnesota, as well as cities in other states. Unlike local bus service, these providers stop only in designated cities along their route and not at various locations in one city. Jefferson Lines offers daily service to cities throughout 13 U.S. states, including service from Fargo-Moorhead to Sioux Falls, Detroit Lakes, St. Cloud, Minneapolis, Grand Forks, Minot, Williston, and Glendive, MT.

Private Transit

Metro 2040 considers private transit to be transit that is reserved for a select portion of the population at a time, such as taxis, shuttles, company/agency/organization buses, or resident-center buses. Private transit is often owned and operated by a private party. Private transit sometimes runs on set schedules, but most often run on an as-needed or on-call basis.

Transit Development Plan and Coordinated Public Transit Human Services Plan

Metro COG produces two transit-related documents, the TDP and the Coordinated Public Transit Human Services Plan (CPTHSP) which help to guide transit and paratransit activities in the Fargo-Moorhead metropolitan area.

The TDP serves as the strategic guide for public transportation in the Fargo-Moorhead metropolitan area over the next 10 years. Development of the TDP includes a number of activities, including documentation and analysis of the demographic conditions in the MATBUS service area, as well as an evaluation of existing transit services. It also provides analysis of transit systems operating in Fargo-Moorhead metropolitan area and identifies potential future paratransit projects. It includes analysis of immediate and longer term transit services and capital project needs.

The Fargo-Moorhead Public Transit Human Services Plan identifies the transportation needs of individuals with disabilities, older adults and people with low income. It provides strategies for meeting those needs and prioritizing transportation services for funding and implementation.

Copies of both the Transit Development Plan and Coordinated Public Transit Human Services are available from Metro COG.

Bicycle and Pedestrian Network

The Fargo-Moorhead metropolitan area has hundreds of miles of bicycle and pedestrian facilities which include sidewalks, shared use paths, bike lanes, shared lane markings, sign shared roadways, and some wide fourfoot plus shoulders. Each type of facility has certain characteristics and offer varying levels of safety, perceived or otherwise. The key to successful bicycle and pedestrian facilities is connectivity. You need to be able to seamlessly travel on the bicycle/pedestrian network and get to where you need to go. You also have to feel secure and safe when using the facilities. Your experience in riding a bike and your perception of safety is effected by how bicycle and pedestrian facilities are connected. Types of bicycle and pedestrian facilities are identified in Table 2-6. Table 2-7 shows the Mileage of Bicycle Facilities in the Urban Portion of the Metro COG MPO.

TABLE 2-6: TYPES OF BICYCLE AND PEDESTRIAN FACILITIES IN THE FARGO-MOORHEAD AREA

Type of Facility	Description	
Sidewalks	Sidewalks are paved walkways designed to accommodate pedestrians, wheel chairs, and other modes of non-motorized traffic. Bicyclists are allowed to use most sidewalks, but are encouraged to use an adjacent roadway if practical. Sidewalks are typically between 3 and 6 feet in width and usually parallel the adjacent roadway(s).	
Shared Use Paths	Shared use paths are paved paths designed to accommodate pedestrians, bicyclists, wheelchairs, and any other mode of non-motorized traffic. Shared use paths are often installed in parks, along water features or parallel to roadways. The paths are typically between 8 and 12 feet in width.	
Dedicated Bike Lanes	Bike lanes are on-road bicycle facilities delineated by a single or double solid white line and bicycle symbol meaning the lane is for cyclists only. Bike lanes are directional specific, meaning they can only be traveled in the direction specified. Bike lanes vary in width, but should have a minimum width of 4 feet.	

Type of Facility	Description	
Shared Lanes	Shared lanes are marked on roadways with sharrows that designate that a lane of traffic is to be shared by both bicycles and vehicles. Shared lane markings are designated by pavement markings showing the direction that will be traveled by the bicyclist.	
Sign Shared Roadways	Sign shared roadways are roadways designated as bicycle routes. Sign shared roadways do not contain pavement marking, but are designated by signs only.	
Paved Shoulders	Roadway paved shoulders are found on roadways without curb and gutter and are typically found in rural areas. Shoulders provide a pathway for bicyclists to travel that is outside of the vehicular travel-way.	

Source: Metro COG Bicycle Plan

TABLE 2-7: MILEAGE OF BICYCLE FACILITIES IN THE URBANPORTION OF THE METRO COG MPO

Facility	Mileage	
	2008	2011
Bike Lanes	0.4	12.2
Shared Lanes	0	8
Paved Shoulders	13.3	24.9
Signed Shared Roadways	23.3	19.7
Shared Use Path	147.1	179.7
Sidewalk	1,341.6	1,451.2

Source: Metro COG GIS database

A map of the 2011/2012 pedestrian facilities is shown on Figure 2-9 and the 2012 bicycle facilities is shown in Figure 2-10 (on the following pages). The figures also show the locations of bridges and underpasses dedicated for use only by non-motorized traffic.

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FIGURE 2-9: 2011/2012 PEDESTRIAN NETWORK (2011 - SIDEWALKS, 2012 - SHARED USE PATHS)

Source: 2011 Fargo-Moorhead Metropolitan Bicycle and Pedestrian Plan

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FIGURE 2-10: 2012 BICYCLE NETWORK

Source: 2011 Fargo-Moorhead Metropolitan Bicycle and Pedestrian Plan

Types of Bicyclists

It is generally recognized that there are two types of bicyclists: Group A: Advanced Bicyclists and Group B: Basic Bicyclists. There is also a group C: Children, whose needs are similar to the basic bicyclists and thus the two are often classified together as Group B/C.

- **Group A: Advanced** Composed of experienced riders who can operate a bicycle under most traffic conditions. This includes bicycle commuters, bike club riders, and other bicyclists currently following the rules of the road and riding on area streets and roadways with no special accommodations for bicyclists. In most communities, Group A comprises a small segment of the population, but logs in the majority of bicycle miles ridden.
- Group B: Basic Casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles. Some will develop greater skills and progress to the advanced level, but nationally there will always be millions of basic bicyclists who prefer comfortable access to destinations and well-defined separation of bicycles and motor vehicles.
- **Group C: Children** Pre-teen bicyclists who typically ride close to home under close parental supervision.

Group A bicyclists are best served by making every street bicyclefriendly by removing hazards and maintaining smooth pavement surfaces. Group B/C riders are best served by providing designated bicycle facilities in key corridors, such as signed and striped bicycle lanes on selected roadways, and off-road trails following waterways and other linear open space corridors.

TABLE 2-8: RIDER GROUP MATRIX

Rider Group	Preferences	Transportation Improvements
A Advanced Bicyclists Experienced riders who can operate under most traffic conditions.	 Direct access to destinations. Operate at a maximum speed with minimum delays. Sufficient Roadway space or shoulder so that bicyclist and motorists can pass without altering their timeline. 	 Implement traffic calming. Provide wide outside lanes (urban). Provide usable shoulders (rural).
B Basic Bicyclists Casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles.	 Comfortable access to destinations. Direct route, but on low-speed, low volume streets or designated bicycle facilities. Well defined separation of bicycle and motor vehicles or separate bike paths. 	 Traffic calming. Provide network of designated bicycle facilities (lanes, bike paths, bike boulevards). Usable roadway shoulders.
C Children Pre-teen riders whose roadway use is initially monitored by parents.	 Access to schools, recreation facilities, shopping or other residential areas. Residential streets with lower motor vehicle speed limits and volumes. Well defined separation of bicycle and motor vehicles or separate bike paths. 	 Ensure low speeds on neighborhood streets. Traffic calming. Provide network of designated bicycle facilities (lanes, bike paths, bike boulevards). Useable roadway shoulders.

Source: Federal Highway Administration
While sidewalks may be the best choice for the youngest riders, they are not typically considered bicycle facilities in bicycle planning. It is important to recognize that sidewalks are pedestrian spaces, and their presence is not meant to substitute or preclude bicyclist use of streets and roadways. Rider Groups, their preferences and transportation improvements related to those preferences, are identified in Table 2-8.

Ideally, all parts of the region should be accessible to all bicyclists, regardless of skill or comfort level. However, throughout the Fargo-Moorhead metropolitan area, existing development patterns have created places with varying levels of bicycle-friendliness due to the trip distances required to travel between destinations and the automobile orientation of physical infrastructure provided.

Certain place types (downtowns and school sites, for example) serve as community destinations and should be designed to higher standards to accommodate and encourage access by the broad cross-section of the community represented in the B/C bicycling group.

Other places (rural countryside and suburban strip developments) offer intimidating bicycling conditions to all but the most experienced Group A riders.

Connectivity

Completing individual pathway projects does not create a bicycle system that works for either Group A or Group B/C bicyclists. A well connected and safe bicycle and pedestrian system can improve the livability of an area. It increases the transportation choices for citizens and encourages active lifestyles. Discontinuities in routes (missing links) and barriers to travel (major street crossings, railroad crossings, river crossings, etc.) need to be addressed. Metro COG produces the Fargo-Moorhead Metropolitan Bicycle and Pedestrian Plan (2011) that identifies existing facilities and areas in which the bike/pedestrian network could be expanded or improved.

Complete Streets

There has been an increase in bicycling, walking, and running in the Fargo-Moorhead area in recent years. Accommodating motorized and non-motorized users of the area's streets has been challenging, but not impossible. Member units of government have recognized that there is a need to accommodate portions of society and have begun to provide accommodation of these lifestyles as part of a project planning and design. Development of Complete Streets ties directly into the promotion of active lifestyles in the Fargo-Moorhead metropolitan area.

The term Complete Streets means the process of planning designing, building and operating streets so they routinely and safely accommodate all modes of local and regional travel. Metro COG in conjunction with member local units of government, other interested stakeholders and the public at large developed and approved the Fargo-Moorhead Metropolitan Area Complete Streets Policy Statement (2010).

The Complete Streets process will apply to street projects, including construction, reconstruction, and maintenance. Because Complete Streets are context sensitive, a Complete Street in one neighborhood may look very different from a Complete Street in another neighborhood, but both are designed to balance the safety and convenience for everyone using the public right-of-way. Successful achievement of this vision will result in the creation of a complete transportation network for all modes of travel (as opposed to trying to make each street perfect for every traveler), and may result in fewer crashes, lower severity crashes, improved public health, less air, water, and noise pollution, as well as lower overall transportation costs for the public and for their governing bodies. By approving a Complete Streets policy, Metro COG and its member local units of government, as well as the MnDOT and the NDDOT have dedicated themselves to planning, designing, constructing, and/or operating the transportation network to a higher/more inclusive set of planning goals. Exceptions to this standard should be rare. Metro COG encourages its member local units of government to adopt an official Complete Streets exception process that involves enhanced public input and to officially document exceptions when they occur.

Aviation

There are five airports within the Fargo-Moorhead Study Area. All offer general aviation facilities, but only Hector International provides scheduled commercial service. A map of the airport locations is seen in Figure 2-11 on page 2-19 and Table 2-9 shows Airport Inventory.

Airport	Runway	Runway Dimensions (Feet)	Runway Surface / Condition	Maximum Runway Load (Tons)	Control Tower	Runway Edge Lights	REIL*	Total Daily Operations	Public
Casselton Regional	13/31	3,900 x 75	Concrete/Good	Single Wheel: 12.5	No	Medium Intensity	Yes	53	Yes
Hawley Municipal	16/34	3,404 x 75	Asphalt/Good	Single Wheel: 12.3	No	Medium Intensity	No	24	Yes
	18/36	9,001 x 150	Concrete/Good	Dual Double Tandem: AUW-846		High Intensity		214	Yes
Hector International	9/26	6,301 x 100	Concrete/Good	Double Wheel: 100	Yes	Medium Intensity	Yes		
	13/31	3,801 x 75	Concrete/Good	Double Wheel: 35		Medium Intensity			
Moorhead Municipal	12/30	4,300 x 75	Asphalt/Good	Single Wheel: 12.5	No	Medium Intensity	Yes	25	Yes
West Fargo Municipal	18/36	3,300 x 50	Asphalt/Good	Single Wheel: 12.5	No	Medium Intensity	No	35	Yes

TABLE 2-9: AIRPORT INVENTORY

* REIL - Runway End Identifier Lights

Source: Federal Aviation Administration



FIGURE 2-11: AIRPORT LOCATION MAP

Fargo Hector International Airport

Fargo Hector International Airport is a joint civil-military airport located in north Fargo. The airport was established in 1937 and has continued to grow over the years in terms of operations, acreage, and facilities. The airport is owned by the City of Fargo Municipal Airport Authority and contains a control tower, fire and rescue, international customs, security, and is attended around-the-clock. The airport has operations ranging from military to cargo to commercial to private operations. Numerous military divisions are located at the airport such as the US Army reserve, the ND Army National Guard, and the ND Air National Guard.

The airport is currently served by five commercial passenger airline companies which provide direct connections to nine cities. The airport also contains the Fargo Jet Center which provides fueling, maintenance, hanger facilities, and other services for private and charter jets and passengers arriving and departing Hector International Airport. The Jet Center also is a U.S. Port of Entry with on-site customs for internationally-arriving jets.

A report conducted regularly by the Fargo Airport Authority shows the final origins/destinations of domestic passengers flying to/from Hector International Airport. Table 2-10 shows the 15 most popular origins/ destinations for passengers using Hector International Airport.

TABLE 2-10: 2012 HECTOR INTERNATIONAL AIRPORTSDOMESTIC PASSENGER ORIGIN & DESTINATIONS

Rank	Origin / Destination	Passengers Per Day Each Way
1	Phoenix / Mesa	96
2	Las Vegas	79
3	Orlando / Sanford	49
4	Los Angeles	44
5	Chicago	43
6	Denver	40
7	Seattle / Tacoma	22
8	New York / Newark	22
9	Dallas / Fort Worth	22
10	Washington DC	20
11	Minneapolis	17
12	Atlanta	15
13	San Francisco	14
14	Portland, OR	14
15	San Diego	13

Source: Fargo Airport Authority (2012)

Hector International Airport has seen a sizable increase in commercial passenger activity over the past decade. Figure 2-12 on the following page shows that commercial passenger activity has increased from 465,636 enplanements/deplanements in 2000 to 728,799 in 2012, a 57% increase.



FIGURE 2-12: HECTOR INTERNATIONAL AIRPORT PASSENGER ACTIVITY 2000 – 2012

Source: Fargo Airport Authority

On-Time Arrival Performance

The average on-time arrival performance of all airlines between 2004 and 2013 at Hector International Airport (Figure 2-13) is 76.5%. This is slightly less than the national average of 77.8% for all airports in the U.S. for the same timeframe. On-time performance in 2013 for Hector International exceeded the national average of 78.3% with an on-time arrival performance of 80.7%. Air carrier delay (8.45%) and aircraft arriving late (7.1%) are the leading issues causing arrival delays at Hector. Airline on-time statistics and causes for delays are identified in Table 2-11.

FIGURE 2-13: HECTOR INTERNATIONAL AIRPORT ON-TIME PERFORMANCE 2004 – 2013



Source: Research and Innovative Technology Administration (RITA)

TABLE 2-11: AIRLINE ON-TIME STATISTICS AND DELAY CAUSES 2004-2013

	Number of Operations	% of Total Operations	Delayed Minutes	% of Total Delayed Minutes
On Time	38,257	76.50%	N/A	N/A
Air Carrier Delay	4,223	8.45%	212,574	37.85%
Weather Delay	433	0.87%	35,125	6.25%
National Aviation System Delay	2,302	4.60%	88,783	15.81%
Security Delay	8	0.02%	304	0.05%
Aircraft Arriving Late	3,552	7.10%	224,829	40.03%
Cancelled	1,144	2.29%	N/A	N/A
Diverted	89	0.18%	N/A	N/A
Total Operations	50,009	100.00%	561,615	100.00%

Source: Research and Innovative Technology Administration (RITA)

Local Freight Movement by Air

Hector International Airport handles various air freight operations. Figure 2-14 shows air freight activity over the years. It is important to note that the landed weight is not the weight of the freight but rather the weight of the entire plane. The freight weight is not recorded. It can be seen in the figure that air freight landed weight has decreased significantly over the past several years. This is a nationwide trend which is attributed to increased fuel prices and a weak economy.

FIGURE 2-14: HECTOR INTERNATIONAL AIRPORT AIR-FREIGHT ACTIVITY 2003 – 2012



Source: Fargo Airport Authority

Rail

The Fargo-Moorhead MSA is served by four rail lines, the Burlington Northern Santa Fe (BNSF), Canadian Pacific Railroad (CPR), Otter Valley Railroad (OTVR) and the Red River Valley & Western Railroad (RRVW). The Association of American Railroads (AAR) has a classification system that considers both annual revenue and miles of railroad. The AAR classifies railroads as Class I, Regional Railroad and Local Railroad. The BNSF and CPR are classified as a Class I railroad, while the OTVR and RRVW are classified as a Regional Railroads. Although railroads are private corporations, the interaction between rail and other modes of transportation does affect the transportation system. Motorized vehicles and pedestrians, as well as freight movement are affected by being stopped by trains at at-grade crossings. The number of trains per day for each railroad, as well as grade-separated and at-grade crossings for each is identified in Table 2-12.

TABLE 2-12: RAILROADS IN THE FARGO-MOORHEADMETROPOLITAN STATISTICAL AREA

Railroad	Trains Per Day	Miles of Track	At-Grade Crossings	Grade Separations
BNSF	59 - 67	173	634	39
CPRS	3 - 4	0.4	9	1
OTVR	2 - 3	28.2	60	3
RRVW	2 - 3	21.6	161	3

Source: Federal Railroad Administration

Railroad Crossings

There are 404 railroad crossings within the Fargo-Moorhead MPA boundary. Most are at-grade crossings, 95%; at the same level as the street. Some are grade-separated; the street or highway passes over or under the railroad. At-grade crossings can cause temporary congestion on city streets as motor vehicles, pedestrian, and other forms of transportation must wait for a train to clear. Grade-separated facilities do not have this problem as there is no conflict between rail traffic and other traffic. Figure 2-15 on the following page shows the rail lines that serve the Fargo-Moorhead metropolitan area, along with all the atgrade rail crossings (crossings without an overpass or underpass provided for vehicles).



FIGURE 2-15: RAIL NETWORK IN THE FARGO-MOORHEAD AREA

Passenger Rail

Passenger rail service is provided by Amtrak's Empire Builder route which runs from Seattle/Portland to Chicago. Fargo Amtrak yearly ridership information can be found below in Figure 2-16.



FIGURE 2-16: AMTRAK PASSENGER ACTIVITY 2000 - 2012

Source: Amtrak Government Affairs

Intelligent Transportation Systems (ITS) Network

Most transportation professionals agree that we cannot simply build our way out of urban congestion problems. ITS can provide the technology to enable people to make smart travel choices. Advances in communication and computer technology can be used to reduce congestion and improve transportation. ITS deployments can improve the safety, efficiency, dependability, and cost effectiveness of our transportation system.

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 dynamic message sign can be triggered to warn approaching motorists of congestion ahead, and the sign can even suggest alternative routes. Closed circuit, pan-tiltzoom (PTZ) cameras are used to monitor traffic operations, weather, and safety conditions.

ITS is a relatively new aspect of our transportation infrastructure and has been growing in use around the Fargo-Moorhead metropolitan areas over the years. The North Dakota and Minnesota Departments of Transportation and local jurisdictions have invested in ITS technology in the Fargo-Moorhead metropolitan area. Figure 2-17 on the following page shows the ITS deployments in the Fargo-Moorhead metropolitan area.

National and Regional ITS Architectures

The structures of ITS is defined by the National ITS Architecture. The National ITS Architecture provides a common framework for planning, defining and integrating intelligent transportation systems. It defines the functions, physical entities or subsystems where these function reside and the information and data flows that connect these functions and physical subsystems together into an integrated system.



FIGURE 2-17: 2012 ITS NETWORK

Source: Metro COG ITS Architecture

Metro COG, as well as other MPOs, state DOTs, and other cognizant agencies and organizations in the United States use the National Architecture as a guide to creating and maintaining regional ITS Architectures. Metro COG partners with the Advanced Traffic Analysis Center (ATAC) of the Upper Great Plains Transportation Institute at North Dakota State University to maintain the Regional ITS Architecture used in the Fargo-Moorhead metropolitan area.

The Architecture is used to support local and statewide transportation planning. It provides a means by which peer agencies can jointly define their vision for ITS development based on regional goals and objectives. The Regional ITS Architectures can be used to plan for technology application and integration to support more effective planning for operations. By using the ITS Architecture, the steps taken by each project will be on the path to fulfilling the larger objectives set forth in Metro 2040.

Freight

Freight in the Fargo-Moorhead area arrives, departs and is distributed locally via truck, rail, air or other modes. Over \$450 billion in domestic freight in 2011 was moved within, from and to Minnesota; over \$108 million in North Dakota. The value of this freight is expected to more than double by 2040 (\$977 billion in MN, \$278 million in ND). The total domestic tonnage of shipments within, from and to Minnesota in 2011 was over 561,000 tons; 258,000 tons in North Dakota. It is projected that this will increase to over 886,000 tons in Minnesota and over 780,000 tons in North Dakota by 2040.

Most of the domestic freight moved within each state is transported by truck, while shipment of domestic freight from, and to, each state varies. In Minnesota over 86% of domestic freight within the state is transported by truck. This is expected to increase to over 90% by 2040. In North Dakota domestic freight shipments within the state carried by truck account for over 70% of all freight moved. This is anticipated to increase to over 82% by 2040.

In Minnesota, 33% of domestic freight shipped from that state is done by truck and 32% is shipped by rail. This is expected to change by 2040 with over 43% of domestic freight shipments within the state made by truck and 32% by rail. A majority of domestic freight shipments leaving North Dakota are done by rail (41%) and by pipeline (44%). These modes will continue to serve as the largest modes transporting domestic freight from the state. By 2040 it is anticipated that over 56% will be by rail while 21% will be by pipeline.

Shipments of domestic freight into both states are dominated by truck, 49% in Minnesota and 64% in North Dakota. Domestic freight shipped into each state by rail account for 29% in Minnesota and 26% in North Dakota. The mode split by 2040 for domestic freight shipped into Minnesota and North Dakota remain similar to those in 2011. Domestic freight shipments into Minnesota by truck are expected to drop to 42% and increase 38% by rail. Domestic freight shipped by truck and rail into North Dakota in 2012 remain about the same, with the percentage of truck shipments increasing to 67%, while rail shipments decrease to 25%. Table 2-13 on the following pages identifies shipment s of freight within, from and to Minnesota and North Dakota.

TABLE 2-13: SHIPMENTS WITHIN, FROM, AND TO MINNESOTA AND NORTH DAKOTA - PERCENT OF TONNAGE BY MODE:2011 AND 2040

Stata Trada		Mada	Within		From		То	
State	Trade	lviode	2011	2040	2011	2040	2011	2040
		Truck	86.25%	90.60%	32.79%	43.79%	49.26%	41.47%
		Rail	5.86%	4.70%	32.16%	32.28%	29.04%	37.51%
		Water	0.00%	0.00%	7.48%	4.78%	2.43%	4.22%
	Domostia	Air (include truck-air)	0.00%	0.00%	0.02%	0.04%	0.02%	0.03%
	Domestic	Multiple Modes & Mail	2.23%	1.22%	19.09%	13.54%	7.67%	10.56%
		Pipeline	4.83%	2.55%	7.96%	5.06%	11.18%	5.78%
		Other and Unknown	0.83%	0.94%	0.50%	0.50%	0.40%	0.43%
		Total Domestic	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Truck	0.86%	0.99%	2.77%	3.47%	47.15%	56.01%
		Rail	3.72%	3.18%	97.12%	96.29%	36.75%	31.09%
		Air (include truck-air)	0.00%	0.00%	0.00%	0.00%	0.02%	0.03%
MN	Imports	Multiple Modes & Mail	0.00%	0.00%	0.03%	0.06%	4.20%	5.65%
		Pipeline	95.22%	95.63%	0.00%	0.00%	11.65%	6.92%
		Other and Unknown	0.21%	0.20%	0.08%	0.17%	0.23%	0.29%
		Total Imports	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Truck	38.78%	28.59%	25.08%	34.63%	6.97%	10.87%
		Rail	23.43%	20.38%	27.18%	17.96%	89.90%	88.33%
		Water	0.27%	0.43%	33.48%	36.83%	0.00%	0.00%
	- ·	Air (include truck-air)	0.00%	0.00%	0.02%	0.03%	0.09%	0.11%
	Exports	Multiple Modes & Mail	2.91%	2.54%	13.28%	9.73%	2.79%	0.45%
		Pipeline	1.01%	1.45%	0.00%	0.00%	0.00%	0.00%
		Other and Unknown	33.61%	46.61%	0.96%	0.82%	0.25%	0.24%
		Total Exports	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

State Trade		Mada	Within		From		То	
		Mode	2011	2040	2011	2040	2011	2040
		Truck	70.38%	82.13%	13.79%	21.12%	63.87%	67.26%
		Rail	2.03%	1.92%	41.06%	56.36%	26.25%	25.02%
		Air (include truck-air)	0.00%	0.00%	0.00%	0.00%	0.04%	0.07%
	Domestic	Multiple Modes & Mail	0.01%	0.02%	1.56%	1.21%	1.90%	3.44%
		Pipeline	2.35%	2.23%	43.51%	21.25%	7.49%	3.72%
		Other and Unknown	25.23%	13.71%	0.08%	0.06%	0.46%	0.49%
		Total Domestic	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Truck	8.17%	6.65%	36.50%	41.96%	52.05%	69.43%
		Rail	8.03%	7.05%	47.02%	46.77%	4.17%	6.20%
		Air (include truck-air)	0.00%	0.00%	0.00%	0.00%	0.02%	0.04%
ND	Imports	Multiple Modes & Mail	0.00%	0.00%	0.01%	0.01%	0.96%	1.23%
		Pipeline	83.80%	86.30%	16.47%	11.27%	42.27%	22.30%
		Other and Unknown	0.00%	0.00%	0.00%	0.00%	0.53%	0.81%
		Total Imports	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
		Truck	66.89%	70.86%	4.35%	3.47%	41.31%	41.39%
		Rail	30.20%	26.84%	95.27%	96.26%	52.30%	53.05%
		Air (include truck-air)	0.00%	0.00%	0.01%	0.01%	0.03%	0.03%
	Exports	Multiple Modes & Mail	0.00%	0.00%	0.32%	0.23%	0.00%	0.00%
		Pipeline	0.00%	0.00%	0.00%	0.00%	0.09%	0.06%
		Other and Unknown	2.91%	2.30%	0.06%	0.02%	6.28%	5.47%
		Total Exports	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Source: Freight Analysis Framework Version 3.4

Local Freight Movement by Truck

The FHWA maintains a Freight Analysis Framework (FAF) that integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. With data from the 2007 Commodity Flow Survey and additional sources, the FAF provides estimates for tonnage, value, and domestic ton-miles by region of origin and destination, commodity type, and mode for 2007, the most recent year, and forecasts through 2040.

For the Fargo-Moorhead metropolitan area, over 1.6 million kilotons of freight in 2007 were moved by truck on the FAF network. It is projected that over 5.8 million kilotons of freight will be moved by truck through the region by 2040. Figure 2-18 on the following page identifies the tonnage shipped by truck in 2007 on the FAF network through the Fargo-Moorhead metropolitan area. Figure 2-19 on page 2-32 provides similar data for 2040.

Freight Generators

Locally, there are several freight generators in the Fargo-Moorhead area. Figure 2-20 on page 2-33 shows 2010 freight generators and land use related to freight generators. Freight generators are sites that generate or receive regular loads of freight. These can include factories, distributors, or large retailers.



FIGURE 2-18: 2007 FREIGHT NETWORK

Source: Freight Analysis Framework Version 3.4



FIGURE 2-19: 2040 FREIGHT NETWORK

Source: Freight Analysis Framework Version 3.4



FIGURE 2-20: 2010 FREIGHT NETWORK

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When developing transportation projects, project sponsors must assess the potential impacts of those projects. Projects funded with federal funds are required to comply with the requirements of the NEPA of 1969. NEPA establishes a mandate for federal agencies to consider the potential environmental consequences of a proposed project, document the analysis and make this information available to the public for comment prior to implementation.

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 (CE);
- Environmental Assessment/Finding of No Significant Impact (EA/FONSI); and
- 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 EA to determine whether or not a project would significantly affect the environment. If the answer is no, the agency issues a 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

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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;

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- 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; and
- 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; and
- 5. Compensating for the impact by replacing or providing substitute resources or environments.

NEPA and the Planning Process

The transportation planning process identified in Metro 2040 and the environmental analysis required during project development by NEPA should work in tandem, with the results of the transportation planning process informing the NEPA process. This planning-level information, and the accompanying analysis and public involvement, establishes the foundation for subsequent analysis and decision-making during project development.

Metro COG, state and local jurisdictions can achieve significant benefits by incorporating community and environmental values into transportation decisions early in planning and carrying these considerations through project development and delivery. Waiting until the project development stage of transportation decision-making to deal with community and environmental issues can result in significant delays in project completion. Considering community and environmental issues in identifying, defining, and prioritizing projects in the long range transportation planning process can lead to better results. Work from the planning process must, by Federal regulation, be documented in a form that can be appended to the NEPA document or incorporated by reference. Documents may be incorporated by reference if they are readily available so as to not impede agency or public review of the action. Any document incorporated by reference must be "reasonably available for inspection by potentially interested persons within the time allowed for comment." Incorporated materials must be cited in the NEPA document and their contents briefly described, so that the reader understands why the document is cited and knows where to look for further information.

For purposes of transportation planning alone, a planning-level analysis does not need to rise to the level of detail required in the NEPA process. It does, however, need to be accurate and up-to-date, and should adequately support the outcome of Metro 2040, in accordance with FHWA/FTA statutory and regulatory requirements on the content and products of statewide and metropolitan transportation planning processes. To the extent the information incorporated from the transportation planning process, standing alone, does not contain all of the information or analysis required by NEPA, then it will need to be supplemented by other information contained in an EIS or EA that would, in conjunction with the information from the plan, collectively meet the requirements of NEPA.

The NEPA process is different between the MnDOT and NDDOT. Projects identified for each state will follow procedures established by the respective state's DOT for project development and documentation.

Endangered and Threatened Species

The U.S. Fish and Wildlife Service (USFWS) provide three categories to identify species at risk. Endangered is any species which is in danger of extinction throughout all or a significant portion of its range. Threatened is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. A third category, Candidate, is a species under consideration for official listing as endangered or threatened. The USFWS identifies 20 threatened, endangered, and candidate plant and wildlife species in Minnesota. The state of North Dakota has identified nine. Closer to home, the Whooping Crane is designated as an endangered species in Cass County. The Pwoeshiek Skipperling is identified as a candidate species in both Cass and Clay counties. Additionally, the Dakota Skipper and Sprague's Pipit are identified as candidate species in Clay County. The Western Prairie Fringed Orchid in Clay County is designated as a threatened species.

States too may establish endangered and threatened species lists that are at greatest risk of disappearing from the state, even though they may not be on the national endangered or threatened list. North Dakota does not maintain a state endangered or threatened species list. Minnesota identifies a myriad of endangered and threatened species statewide. The Northern Long-Eared Bat is being considered as endangered, while the Canada Lynx is considered a threatened species in Minnesota.

The abundance of prime farmland within the Metro COG planning area appears to have limited the amount of natural habitat available for specific species. It should be noted that there is always the possibility that a threatened or endangered species could turn up almost anywhere.

Historical and Cultural Resources

Cultural resources refer to historic, archaeological, and tribal resources. Such resources may be a building on the National or State Historic Register. It may be the unearthed remains of a primitive society or the fossilized remains of extinct animals like dinosaurs. Whatever the source, such elements of the environment need to be preserved and efforts to build or expand transportation systems need to take into consideration how to deal with such resources if, and when, they are affected.

Parklands, Recreational Areas and Wildlife/ Waterfowl Refuges

Federal regulations state that transportation agencies using federal funds are prohibited from using such lands unless there is no feasible or prudent alternative available. All effort should be made to minimize the harm to the protected resource. Any land planned, developed, or improved using Conservation Fund Act funds cannot be converted to use other that 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.

Air Quality

The Clean Air Act, as amended in 1990, requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants deemed harmful to humans and the environment. The EPA lists seven pollutants as harmful to public health and the environment (Table 3-1 on the following page). The Clean Air Act identifies two types of national ambient air quality standards. Primary standards provide public health protection, including the health of "sensitive" populations such as asthmatics, children and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The EPA has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants and are listed in Table 3-1. Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air (μ g/m³).

Air quality for the Fargo-Moorhead metropolitan area is monitored from a station in northwest Fargo. The Fargo-Moorhead metropolitan area, as well as both the states of North Dakota and Minnesota, is in compliance with all NAAQS. It should be noted that the EPA is reviewing the primary and secondary standards and the status of air quality in the future may be changed due to changes in the acceptable emissions.

Metro 2040 includes various improvements to the transportation system. Each has to be reviewed through the NEPA process to determine its effect on the environment.

Green House Gases and Climate Change

Earths' climate is changing in ways that affect our weather, oceans, snow, ice, ecosystems and society. Natural causes alone cannot explain all of these changes. Human activities are contributing to climate change, primarily by releasing tons of carbon dioxide (CO_2) and other heat trapping gasses into the atmosphere every year. The more greenhouse gases we emit, the larger future climate changes will be. Changes in the climate system affect our heath, environment and economy. Efforts should be taken in our transportation planning efforts to reduce the amount of CO_2 that is released into the air by transportation-related sources.

Pollutar	nt	Primary/ Secondary	Averaging Time	Level	Form
Carbon Mon	oxide	Primary	8-Hour	9 ppm	Not to be exceeded more than once per year
		, initially	1-Hour	35 ppm	
Lead		Primary and Secondary	Rolling 3 Month Average	0.15 μg/m3	Not to be exceeded
Nitrogen Dioxide		Primary	1-Hour	100 ppb	98th percentile, averaged over 3 years
		Primary and Secondary	Annual	53 ppb	Annual Mean
Ozone		Primary and Secondary	8-Hour	0.075 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
		Primary	Annual	12 µg/m³	Annual Mean, averaged over 3 years
Particle Pollution	PM _{2.5}	Secondary	Annual	15 μg/m ³	Annual Mean, averaged over 3 years
	PM ₁₀	Secondary	24-Hour	$150 \ \mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		Primary	1-Hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-Hour	0.5 ppm	Not to be exceeded more than once per year

TABLE 3-1: NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Source: U.S. Environmental Protection Agency

Noise

Noise is defined as unwanted or excessive sound. Noise consists of any sound that may produce physiological or psychological damage or interfere with communications, work, rest, recreation and sleep. Primary noise sources in the Fargo-Moorhead metropolitan area are associated with transportation, including vehicular traffic, airplanes, construction, and railroad traffic.

As with all environmental issues, noise generated by transportation sources may need to be reduced, minimized or mitigated. Actions required to reduce the effect of noise will be identified during the NEPA review process.

Potential Impacts

Figure 3-1 on the following page identifies the various ecological sensitive areas and overlays the proposed transportation improvements. Those improvements that are in close approximation to these areas will be "flagged" for a closer review of their impact on the environment.

Environmental Justice

In 1994, Federal Executive Order 12898 directed every Federal agency to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies, and activities on "minority populations and low-income populations."



The order reads: "Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

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FIGURE 3-1: ENVIRONMENTAL AND PROJECT MAP

The order reinforces Title VI of the Civil Rights Act of 1964, which reads: "No person in the United States shall, on the ground of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any programs or activity receiving federal financial assistance." The executive order requires all government agencies receiving federal funds to address discrimination as well as the consequences of all their decisions or actions that might result in disproportionately high and adverse environmental and health impacts on minority and low-income communities.

In 1997, the United States Department of Transportation (DOT) issued its Order to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order). The DOT Order addresses the requirements of Executive Order 12898 and sets forth DOT's policy to promote the principles of environmental justice in all programs, policies and activities under its jurisdiction. Since the DOT Order was issued, the FHWA and FTA have been working with their state and local transportation partners to make sure that the principles of environmental justice are integrated into every aspect of their mission. The three fundamental environmental justice principles include:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- 2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- 3. To prevent the denial of, reduction of, or significant delay in the receipt of benefits by minority and low-income populations.

Metro COG has identified locations in the Fargo-Moorhead metropolitan area that may have environmental justice implications. These areas are identified on Figure 3-2 on the following page.



FIGURE 3-2: ENVIRONMENTAL JUSTICE AREAS IN THE FARGO-MOORHEAD METROPOLITAN AREA

CHAPTER 4 – SAFETY

Strategic Highway Safety Plans

Under SAFETEA-LU, state Departments of Transportation were required to develop a Strategic Highway Safety Plan (SHSP). Development and maintenance of the SHSP continues in MAP-21. MAP-21 ensures ongoing progress toward achieving safety targets by requiring regular plan updates and defining a clear linkage between behavioral safety programs and the SHSP. The SHSP is a major part of the core Highway Safety Improvement Program (HSIP). It provides a statewidecoordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. Both North Dakota and Minnesota develop and maintain statewide SHSP.

To effectively develop and implement the strategies in the state SHSPs, it is important to understand the link to other safety plans and programs. Statewide transportation plans, metropolitan transportation plans, including Metro 2040, State, and MPO Transportation Improvements Plans, as well as other state and local plans are all critical to the success of an SHSP and vise-versa, as is the developmental process.

Safety efforts guided by Metro 2040 will be a coordinated effort between the MPO, the SHSP, and all involved. Generally speaking, Metro COG, through Metro 2040, will consider in its planning efforts the five "E"s of safety:

- Evaluation (e.g., crash analysis);
- **Engineering** (e.g., highway design, traffic maintenance, operations, planning);

- Enforcement (e.g., state and local law enforcement agencies);
- Education (e.g., driver education, citizen advocacy groups, educators, prevention specialists); and

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- Strategic Highway Safety Plans
- Vehicular Crash Data
- Bicycle and Pedestrian Crash Data
- Summary of Crashes
- **Emergency Response** (e.g., first responders, paramedics, fire and rescue).

Vehicular Crash Data

To assist Metro COG in incorporating safety into the planning process, it collects various data related to safety. Vehicular crash data was obtained for the cities of West Fargo, Fargo, Moorhead, and Dilworth, as well as for the Metro COG MPA. The data was acquired from NDDOT and MnDOT. Both NDDOT and MnDOT record all reported crashes which occurred their respective state. In the Metro COG MPA between 2011 and 2013, there were 14 crashes resulting in 15 fatalities. Similarly, there were 106 crashes that resulted in 106 incapacitating injuries. Figure 4-1 identifies the locations of these crashes.

As a potential safety performance measure, total crashes and fatal and serious injury crashes were normalized to the number of annual vehicle miles traveled (VMT) for jurisdiction in the Metro COG MPA. Figure 4-2 on page 4-3 shows the yearly crashes per 1,000,000 annual vehicle miles traveled. It can be seen that Dilworth consistently had the lowest ratio of crashes while Fargo had the highest. It is encouraging to see there is a decreasing trend of crashes per vehicle miles traveled since 2008.



FIGURE 4-1: LOCATION OF FATAL AND SERIOUS INJURY CRASHES (2011-2013)



FIGURE 4-2: CRASHES PER 1,000,000 VEHICLE MILES TRAVELED

Sources: 2012 Metro Profile, NDDOT, MnDOT

Table 4-1 shows the yearly fatal and serious injury crashes per 100 million vehicle miles traveled.

TABLE 4-1: FATAL & SERIOUS INJURY CRASHES PER 100MILLION VEHICLE MILES TRAVELED

Year	West Fargo	Fargo	Moorhead	Dilworth	Urban Area
2010	2.16	1.14	1.98	0	1.40
2011	1.42	1.66	1.93	0	1.65
2012	3.52	3.45	0.95	0	2.95

Sources: 2012 Metro Profile, NDDOT, MnDOT

Table 4-2 on the following page displays the societal cost associated with all the accidents for each year. This information is displayed in million vehicle miles traveled within each jurisdiction. Crash costs were obtained from the National Safety Council and were developed by assigning a cost for the various types of crashes.

TABLE 4-2: COST OF CRASHES PER MILLION VEHICLE MILES TRAVELED

Year	West Fargo	Fargo	Moorhead	Dilworth	Urban Area
2008	\$28,561	\$30,863	\$24,862	\$23,035	\$29,481
2009	\$22,738	\$30,890	\$25,669	\$12,521	\$28,684
2010	\$22,385	\$33,819	\$30,417	\$15,548	\$31,558
2011	\$21,249	\$31,827	\$29,592	\$13,101	\$29,853
2012	\$21,274	\$31,922	\$15,977	\$15,059	\$27,444

Sources: 2012 Metro Profile, NDDOT, MnDOT, National Safety Council Note: Inflation not factored-in.

Bicycle and Pedestrian Crash Data

Bicycle and pedestrian crash data was also obtained for the cities of West Fargo, Fargo, Moorhead, and Dilworth which was acquired from NDDOT and MnDOT.

Figure 4-4 on the following page shows the crash locations and associated crash severity, which occurred from the beginning of 2008 through the end of 2012. The figure includes both bicycle and pedestrian crashes. It can be seen how there were a higher number of crashes in the cities' core, while there were fewer crashes in the newly developed areas. There were also a high number of crashes at the busier corridors, such as 8th Street in Moorhead or University Drive in Fargo. Many factors can contribute to the location of a given crash, such as sight distance, bicycle and pedestrian activity, population density, roadway designs, traffic volumes, and more. Also, it can be seen that most of the fatal accidents involving a bicyclist or pedestrian occurred on high volume roadways with relatively high speeds with seven of the eight fatalities occurring on roadways with speed limits of 35 mph or greater.

Figure 4-3 shows the number of yearly bicycle and pedestrian crashes that occurred in each jurisdiction. Crashes are shown per 1,000 residents. Fargo had the highest number of crashes, while Moorhead, Dilworth, and West Fargo had noticeably lower crashes. Figure 4-3 shows a slight downward trend in the ratio of crashes.

FIGURE 4-3: BICYCLE AND PEDESTRIAN CRASHES PER 1,000 RESIDENTS



Sources: US Census, NDDOT, MnDOT

Summary of Crashes

In summary, the urban cities experienced the following number of crashes each year. These crashes (Table 4-3 on page 4-5) include both vehicle crashes and bicycle/pedestrian crashes.



FIGURE 4-4: BICYCLE AND PEDESTRIAN CRASH SEVERITY

N.	West Fargo		West Fargo Fargo		Moor	rhead	Dilworth	
Year	All Crashes	Fatal Crashes	All Crashes	Fatal Crashes	All Crashes	Fatal Crashes	All Crashes	Fatal Crashes
2008	323	0	2,482	3	555	0	41	0
2009	342	0	2,547	1	575	0	25	0
2010	333	0	2,556	4	523	2	31	0
2011	329	0	2,332	6	523	1	26	0
2012	314	1	2,385	3	372	0	29	0

TABLE 4-3: VEHICLE & BICYCLE/PEDESTRIAN CRASHES PER YEAR

Sources: NDDOT, MnDOT

CHAPTER 5 – SECURITY

Providing a secure transportation system involves the planning and implementation of programs that protect people, freight, and the transportation infrastructure from both natural and manmade disasters. Nationally, the Federal government has instituted several programs to help secure the transportation assets across the country, as well as guide and coordinate emergency management activities. Locally, emergency management programs at both the state and local levels aim to prevent, prepare for, respond to, and recover from disasters that may compromise the transportation infrastructure and hazard the people who use them.

Metro COG, through Metro 2040, recognizes that security implemented here can potentially affect the transportation infrastructure and looks to these national and local sources to provide protections for the infrastructure and continued service along transportation facilities in times of trouble. It will take a coordinated effort of all involved.

National Scope

In order to prepare the nation to combat the threat of attack, the federal government has set the National Preparedness Goal to "engage Federal, State, Territorial, tribal and local entities, their private and nongovernmental partners, and the public to achieve and sustain risk-based target levels of capacity to prevent, protect against, respond to and recover from major events..."

The Department of Homeland Security (DHS) established the National Infrastructure Protection Program (NIPP). It outlines how government and private sector participants in the critical infrastructure community can work together to manage risk and achieve security and resilience outcomes to provide a clear call to action to leverage partnerships, innovate for risk management, and focus on outcomes. It guides national efforts, drives progress, and engages the broader community

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- National Scope
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- Assets, Systems, and Networks

about the importance of critical infrastructure security and resilience.

The Federal Emergency Management Agency (FEMA) maintains two programs The National Incident Management System (NIMS) and the National Response Framework (NRF). NIMS identifies concepts and

principles that answer how to manage emergencies from preparedness to recovery regardless of their cause, size, location, or complexity. It provides a consistent, nationwide approach and vocabulary for multiple agencies or jurisdictions to work together to build, sustain, and deliver the core capabilities needed to achieve a secure and resilient nation.

The NRF provides the context for how the whole community can work together and how response efforts relate to other parts of More information on these programs can be found through these web links:

- NIPP https://www.dhs.gov/natio nal-infrastructureprotection-plan
- NIMS -
- http://www.fema.gov/nati onal-incidentmanagement-system
- NRF http://www.fema.gov/nati onal-response-framework

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national preparedness. It is one of five documents in a suite of National Planning Frameworks. Each Framework covers one preparedness mission area: Prevention, Protection, Mitigation, Response, or Recovery.

Local Emergency Management

Emergency Management activities in the Cass County portion of the MPA are directed by the Cass County Emergency Management Agency. The agency was established to help coordinate local response to disasters. Emergency Management activities in the Clay County portion of the MPA are directed by the Clay County Emergency Management coordinator located in the Clay County Sheriff's Department.

As the largest City in the state, Fargo has a city-level emergency management office which is responsible for emergency preparedness operations primarily in the City, but also for the City of West Fargo, the largest suburb in the greater Fargo metropolitan area. The City of Fargo Emergency Preparedness Office is the primary organization responsible for implementing plans during emergency situations in the City. The office is responsible for coordinating efforts with County, State, and Federal agencies during those times. The primary responsibility of the Fargo Emergency Preparedness division is to implement emergency response programs and efforts, but the office also provides training for emergency professionals in the area.

Cass County Emergency Operations Plan

The Cass County Emergency Management Agency developed an Emergency Operations Plan (updated 10/2012) to direct activities during a major event. The purpose of the Plan is:

• To define the responsibilities of departments of Cass County Government and appropriate private entities;

- To ensure a coordinated effort using the Incident Command System (ICS) by local, state, and federal government, as well as private response forces, to save lives and to protect property and the environment in the event of an emergency or disaster; and
- To facilitate short-term and long-term recovery activities.

Cass County Emergency Operations Center (EOC)

Cass County maintains a dedicated emergency operations facility at 4630 15th Avenue North in Fargo. The Center may be activated by any department to coordinate emergency response in situations when necessary to coordinate unified activities involving more than one agency. The EOC will be activated for all incidents requiring a significant dedication of resources and extraordinary interagency coordination outside of the realm of normal day-to-day emergency situations responded to by law enforcement, fire, and EMS agencies.

When activated, the EOC houses members of the Emergency Response Task Force, Functional Coordinators, and other deemed necessary based on the incident. Task specific operations centers will be set up as needed to manage emergency activities. Not all disasters will require full activation. In those instances, partial EOC activations will be ordered and only relevant agencies and functional coordinators will be activated.

State and National Emergency Management

The states of North Dakota and Minnesota each have separate emergency management agencies. In North Dakota, the North Dakota Department of Emergency Services (NDDES) is the lead agency. In Minnesota, the Minnesota Department of Public Safety Division of Homeland Security and Emergency Management takes the lead. The FEMA offers disaster assistance and education from the national perspective. All three agencies help the Fargo-Moorhead metropolitan area prevent, prepare for, respond to, and recover from disasters.

Local Assets, Systems, and Networks

National Highway System

The National Highway System (NHS) is comprised of approximately 160,000 miles of roadway important to the Nation's economy, defense, and mobility, including the Interstate Highway System. It was developed by the United States Department of Transportation in cooperation with the Department of Defense (DoD), the States, local officials, and MPOs. The NHS includes:

- **Eisenhower Interstate Highway System** of highways retains a separate identity within the NHS.
- Other Principal Arterials in rural and urban areas provide access between an arterial and a major port, airport, public transportation facility, and/or other intermodal transportation facility.
- Strategic Highway Network (STRAHNET) is a network of highways which are important to the strategic defense policy of the United States and which provide defense access, continuity, and emergency capabilities for defense purposes.
- **Major Strategic Highway Network Connectors** are highways that provide access between major military installations and highways that are part of the STRAHNET.

• Intermodal Connectors are highways that provide access between major intermodal facilities and the other four subsystems making up the NHS.

With the passage of MAP-21, all facilities with a Federal Functional Classification of Principal Arterial were added to the NHS. The NHS in the Fargo-Moorhead area consists of the Interstates 29 and 94, and US-10. I-29 and I-94 are designated STRAHNET facilities. There is one intermodal connector in the area. It consists of a section of 19th Avenue that connects Hector International Airport to I-29. Facilities added per MAP-21 include 45th Street from 19th Avenue north to 32nd Avenue South, 19th Avenue from 45th Street to I-29, 13th Avenue South from 45th Street to I-29, 32nd Street south from 45th Street to I-29, US-75 in Moorhead, and US-81 in Fargo.

Regionally Significant Transportation Infrastructure (RSTI)

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.

As part of the Traffic Operations Incident Management Strategy for the Fargo-Moorhead Metropolitan Area Study (2011), Metro COG and its planning partners developed a Regionally Significant Transportation Infrastructure (RSTI) network. RTSI routes are existing or future arterial roadways that carry large volumes of traffic, including freight. The roadways are generally higher speed facilities that are important to the metropolitan area.

CHAPTER 5 – SECURITY

They may include strategic Red River crossings, Interstates or major U.S. Highways, emergency alternate routes, or reliever routes to the Interstate system. Table 5-1 lists the RSTI Corridor Screening Criteria.

TABLE 5-1: RSTI CORRIDOR SCREENING CRITERIA

Consider Roadways with the following	Avoid Roadways with the following
Interstate, state highway, or truck route designations whenever possible.	Within the 100-year and 500-year floodplain whenever possible.
Existing or future principal arterial or minor arterial Federal Functional Classification whenever possible.	Weight restrictions.
Roadway designs that can handle freeway-type traffic volumes (e.g., adequate number of lanes, lane widths, shoulder widths, geometrics, frequency of secondary access, etc.).	Height restrictions imposed by bridge clearance, power lines, etc.
Access control guidelines to promote higher speeds.	Bridges along the route that create bottlenecks.
East-west routes with a Red River crossing or potential future crossings.	Multiple four-way stops or 90 degree turns.
Bridges along the route with sufficiency ratings above 65 (good or excellent condition).	Many traffic signals, unless the route has a coordinated signal timing plan.
Bridges along the route with non- deficient/adequate statuses.	At-grade railroad crossings.
Pavement condition indices of 70 or above (good or excellent) to handle heavy truck traffic.	Pedestrian areas or dense urban areas.
Presence of ITS infrastructure.	Residential areas or school zones.
Start and end at other RTSI corridors that are contiguous across multiple jurisdictions.	Levels of Service (LOS) D, E, or F

Consider Roadways with the following	Avoid Roadways with the following
Routes on the perimeter of the urban area that act as reliever routes.	Congestion (volume/capacity ratio of 0.85 or higher for Interstate highways or 0.7 or higher for arterial/collectors)
Spacing of two-to-four miles from other RSTI corridors.	
Ability to serve as an emergency detour or evacuation route.	

Rail Networks

Similar to the STRAHNET, some portions of the U.S. railroad systems are designated as strategic routes. The Strategic Rail Corridor Network (STRACNET) is an interconnected and continuous rail line network consisting of over 36,000 miles of track serving over 140 defense installations. In the Fargo-Moorhead metropolitan area, the Burlington Northern-Santa Fe railroad is identified on the STRACNET. Additionally, the BNSF route between Fargo and Grand Forks is a designated STRACNET Connector. The NHS and its subsystems, as well as the STRACNET and proposed RSTI facilities are highlighted in Figure 5-1.

ITS Deployments

A key component of security is Intelligent Transportation Systems (ITS). The ITS component of security entails maintaining the control and monitoring capabilities of the transportation infrastructure in the event of terrorist attacks, natural disasters, and other unforeseen events. ITS projects and investments in the Fargo-Moorhead metropolitan area are identified in this Plan and are an integral part of the NDDOT and MnDOT State ITS architectures, as well as the Metro COG Regional ITS Architecture.


FIGURE 5-1: FACILITIES IMPORTANT TO THE SECURITY IN THE METRO COG MPA

Source: Metro COG

CHAPTER 6 – GROWTH, TRENDS, AND FORECASTS

The only constant in life is change. There are many factors that can affect the transportation needs over the next 25 years. More people mean additional capacity in our transportation system. As the region gets older and more racially diverse, transportation needs change. What types of business and industry take root in the region and where they locate, and what place people call home all affect how the transportation system will look like and how it will serve the traveling public and the movement of freight.

Population

The Fargo-Moorhead metropolitan area is growing with a 2010 Metropolitan Statistical Area (MSA) population of 208,777. The MSA is the combined populations of Cass and Clay counties. The area has a 2010 urban area population of 173,468 (West Fargo, Fargo, Moorhead, and Dilworth). Figure 6-1 on the following page shows the area's change in population since 1870 and shows the future population as projected by Metro COG's 2012 Demographic Forecast Study.

The 2040 population projection represents a 42.8% change from 2010, with West Fargo leading the way with a 75% increase. Conversely, the non-urban portion of Cass County shows a 9.8% decrease. Table 6-1 on page 6-3 provides population forecasts by local geography.

The number of people per square mile is forecasted to increase as well. In 2000 in the MSA, there were 65.54 persons per square mile. In 2010, the number of persons per square miles is forecasted be to 74.02.

Households

Table 6-2 on page 6-3 summarizes dwelling unit growth and household projections within the Fargo-Moorhead MSA based on a "High Growth" scenario adopted by Metro COG. A dwelling unit is defined as any house, apartment, manufactured home, group of rooms, single occupied rooms, or any living quarters.

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- Population
- Households
- Population per Household
- Age
- Diversity
- Employment
- Mode Split
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- Congestion
- Technology

It is projected that the number of households in the Fargo-Moorhead MSA will increase almost 42% between 2010 and 2040. Where this growth in households occurs will impact the transportation needs of the area. Slightly over 90% of the projected household growth is expected in the West Fargo Area. Moorhead, Fargo, and Dilworth will all see growth as well with percent changes in households of 49%, 38% and 34% respectively. Figure 6-2 on page 6-4 identifies areas in the Fargo-Moorhead metropolitan area in which households are predicted to grow.

Population per Household

There is very little change projected for population per household over the next 25 years. Currently, there are 2.42 persons per household in the Fargo-Moorhead MSA. This is projected to increase to only 2.44 persons per household in 2040. Household size will not present a challenge to the transportation system in our area that is experienced in other parts of the country.



FIGURE 6-1: HISTORIC/FUTURE POPULATIONS (MSA & URBAN AREA)

Source: Metro COG Existing Conditions Report

Geography	2010	2015	2020	2025	2030	2035	2040	% Change 2010-2040
Cass County	149,778	162,450	175,760	187,390	198,300	208,390	216,700	44.7%
Fargo	105,549	113,540	122,050	130,370	139,030	147,260	154,170	46.1%
Horace	2,430	2,590	2,690	2,850	2,880	2,920	2,940	21.0%
West Fargo	25,830	30,010	35,020	38,290	41,020	43,450	45,190	75.0%
Balance of Cass	15,969	16,310	16,000	15,880	15,370	14,760	14,400	-9.8%
Clay County	58,999	63,380	67,540	71,510	75,280	78,600	81,370	37.9%
Dilworth	4,024	4,360	4,650	4,890	5,130	5,380	5,600	39.2%
Moorhead	38,065	42,250	45,050	47,820	50,440	52,950	54,990	44.5%
Balance of Clay	16,910	16,770	17,840	18,800	19,710	20,270	20,780	22.9%
MSA	208,777	225,830	243,300	258,900	273,580	286,990	298,070	42.8%

 TABLE 6-1: POPULATION FORECASTS BY GEOGRAPHY

Source: Demographic Forecast Study for the Fargo-Moorhead Metropolitan Area (2012)

TABLE 6-2: HOUSEHOLDS PROJECTIONS FOR THE FARGO-MOORHEAD AREA

Jurisdiction	2000	2010	2020	2030	2040	% Change 2010 - 2040
Fargo	39,268	46,791	52,920	58,600	64,580	38.02%
Moorhead	11,660	14,304	16,910	19,440	21,350	49.26%
West Fargo	5,771	10,348	13,230	17,150	19,730	90.66%
Dilworth	1,160	1,595	1,820	1,950	2,130	33.54%
Horace	300	810	880	950	980	20.99%
Urban Total	58,159	73,848	85,760	98,090	108,770	47.29%
Metro Cass	45,339	57,949	67,030	76,700	85,290	47.18%
Other Cass	5,976	5,950	5,910	5,990	5,920	-0.50%
Cass Total	51,315	63,899	72,940	82,690	91,210	42.74%
Metro Clay	12,820	15,899	18,730	21,390	23,480	47.68%
Other Clay	5,850	6,380	6,390	6,930	7,370	15.52%
Clay Total	18,670	22,279	25,120	28,320	30,850	38.47%
MSA	69,985	86,178	98,060	111,010	122,060	41.64%

Source: McKibben Demographic Research

CHAPTER 6 – GROWTH, TRENDS, AND FORECASTS



FIGURE 6-2: 2040 HOUSEHOLDS MAP

Source: Metro COG Household Forecasts

Age

Focusing on a population's age and sex composition is one of the most basic ways to understand population change over time. In general, the U.S. population continues to grow older with a median age of over 40 years old in many states. At the same time, increases in the number of men at older ages are apparent in many states as well. Understanding a population's age and sex composition yields insights into changing phenomena and highlights future social and economic challenges.

The median age for residents in the Fargo-Moorhead MSA is 31.7 years (Cass - 31.5 years, Clay - 31.6 years). The MSA median age is less than that for North Dakota (37.0 years), Minnesota (37.4 years) or the U.S. (37.2 years). The median MSA age is projected to be 36.1 years by 2040, a 13.9% increase.

Figure 6-3 reveals a stable population with nearly equal male-to-female ratio of 50.1% male and 49.9% female. By 2040, the male-to-female split remains almost unchanged at 50.3% male and 49.7% female.

FIGURE 6-3: AGE DISTRIBUTION OF THE FARGO-MOORHEAD MSA (2010)



Source: Demographic Forecast Study for the Fargo-Moorhead Metropolitan Area (2012)

Like the rest of the nation, the Fargo-Moorhead metropolitan area is aging. In 2010, 39% of the MSA population was under the age of 25 and just over 10% were age 65 or older. In comparison, by 2040 it is projected that 34% of the area's population will be under age 25, and 13.4% will be 65 or older (Figure 6-4).

FIGURE 6-4: PROJECTED AGE DISTRIBUTION OF THE FARGO-MOORHEAD MSA (2040)



Source: Demographic Forecast Study for the Fargo-Moorhead Metropolitan Area (2012)

All in all, the Fargo-Moorhead MSA population is projected to be older by 2040. The percentage of those who are 65 years and older is projected to increase 84% between 2010 and 2040, while those in the age group 0 to 24 is projected to grow by only 25%. Table 6-3 shows the projected percent change in age groups from 2010 to 2040.

TABLE 6-3: PROJECTED PERCENT CHANGE BY AGE GROUP2010 to 2040

Age Group	% Change	Age Group	% Change	Age Group	% Change
Under 5	13.41%	30-34	40.71%	60-64	70.10%
5-9	39.56%	35-39	63.84%	65-69	79.90%
10-14	47.23%	40-44	90.73%	70-74	100.10%
15-19	26.21%	45-49	53.34%	75-79	105.22%
20-24	9.35%	50-54	44.17%	80-84	96.79%
25-29	15.00%	55-59	45.99%	85 & Over	79.96%

Source: Demographic Forecast Study for the Fargo-Moorhead Metropolitan Area (2012)

Diversity

Although minority populations have been increasing in the Fargo-Moorhead area, these populations, and their growth, are significantly less than that identified for the nation as a whole. A similar trend is seen in those of Hispanic origin. Nationally, 22% of those responding to the 2010 U.S. Census stated their race as non-white or of mixed race. In comparison, only 7% of respondents in the MSA identified their race as non-white or of mixed race (Figure 6-5 on the following page).

FIGURE 6-5: PERCENT OF RACE FOR THE FARGO-MOORHEAD MSA (2010)



Source: 2010 Census of the Population (2012)

Similarly, the proportion of those who claim to be of Hispanic Origin is increasing in the MSA, but not at the same level as that nationally (Table 6-4 on the following page).

Minority and Hispanic populations in the MSA are growing at a rate less than each respective state and the U.S. as a whole as well. Cass County minority populations are growing at a rate higher than the MSA and increases in Clay County Hispanic populations are outpacing the MSA.

Employment

In 2012 McKibben Demographics Research established employment trends and projections based on 2010 Census data and other sources, for the Fargo-Moorhead MSA. Overall, employment for the metropolitan area has been projected to grow significantly under the defined 2040 planning horizon of Metro 2040. Employment is expected to increase 36.2% by 2040. The type of business/industry and where they will locate will have an effect on the transportation system. Figure 6-6 on page 6-9 identifies areas in which employment opportunities are predicted to occur.

Table 6-5 on the following page identifies the increase in jobs by cities and the Metro COG Metropolitan Planning Area.

Mode Split

How people travel to work tells a lot about their overall travel habits. Work trips account for 32% of all trips in the area (Metro COG Origin-Destination Survey). Of those, 82% of work trips in the MSA between 2008 and 2012 were made by residents using a private automobile who drive alone. This essentially has not changed since 2000, and continues to be the largest share of the means people get to work. Public transit represents less than 1%, 0.77%, in the ACS data for 2008-2012. Although an increase since 2000, 0.45%, the growth of transit in the MSA is negligible. Use of transit to get to work did show an increase in Fargo, 0.42% in 2000 to 1.05% in 2012. Those who used a bicycle to get to work showed a similar increase in Fargo, 0.59% to 1.09%. Table 6-6 on page 6-10 shows commuting modes of travel for 2000 and Table 6-7 also on page 6-10 shows commuting modes of travel as gathered by the ACS between the years of 2008 and 2012.

	1990	2000	2010	1990	2000	2010	
		Non-White		Hispanic			
United States	16.87%	24.86%	21.64%	6.81%	12.55%	16.35%	
Minnesota	5.60%	10.55%	12.83%	1.23%	2.91%	4.72%	
North Dakota	5.43%	7.63%	9.43%	0.73%	1.21%	2.00%	
MSA	2.79%	5.23%	7.33%	1.23%	1.94%	2.43%	
Cass County	2.36%	4.90%	8.33%	0.68	1.23%	2.01%	
Clay County	3.69%	6.01%	7.31%	2.33%	3.65%	3.48%	

TABLE 6-4: PERCENT OF NON-WHITE AND HISPANIC POPULATIONS

Source: 1990, 2000, and 2010 Censuses of the Population

TABLE 6-5: JOBS FORECAST FOR THE FARGO-MOORHEAD METROPOLITAN PLANNING AREA

Metropolitan Planning Area* (MPA)	2010	2015	2020	2025	2030	2035	2040
Cass County	101,504	105,274	111,769	117,544	124,115	131,641	139,102
Fargo	91,071	93,548	97,975	102,629	108,245	115,085	121,700
West Fargo	9,010	10,251	12,294	13,323	14,268	14,951	15,811
Balance of Cass Urban Area	1,423	1,475	1,501	1,591	1,603	1,606	1,591
Clay County	16,762	18,794	20,166	21,360	22,220	22,604	23,327
Moorhead	14,724	16,599	17,848	18,980	19,790	20,147	20,863
Dilworth	1,203	1,322	1,395	1,452	1,497	1,544	1,571
Balance of Clay Urban Area	836	873	923	928	933	914	894

* Includes only the MPA portion of the MSA and not the entire Cass-Clay County MSA

Source: Demographic Forecast Study for the Fargo-Moorhead Metropolitan Area (2012)

CHAPTER 6 – GROWTH, TRENDS, AND FORECASTS

Legend 100 Employees (2010) ² 100 Employees (2010 - 2020) 95 Z 5Wall Street Ave N 40th Ave N 🔞 Rd 20 57 Ave N 100 Employees (2020 - 2040) (22) St N ಗ z 15th R 32 AVA I 812 ۵ 2 10 ក 28 Ave N 0 (18) z to 110 St N 36th St Se 12th Ave Nw 15 Ave N 120 th St Nw StN 1 Dilworth T 125 T Hwy 10 T Glyndon argo \$36 I (17) West Fargo Moorhead 72 35 Ave T 50 Ave S 41st St Se 40th Ave W 8 1235 70 St 60th Ave S (12) Bellow Babin 71 68 44th St Se 80 Ave S 67 5 0 rth Main Horace 60 St 90 Ave \$ 88th A30 -(10) Ň ty Dr 0 1 46th St Se 100th Ave S oz. 65 75 69

FIGURE 6-6: EMPLOYMENT 2040

Source: Metro COG Employment Forecasts

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Jurisdiction	Drove Alone	Carpooled	Public Transport	Taxicab	Motorcycle	Bicycle	Walked	Other Means	Worked at Home
Minnesota	77.58%	10.41%	3.13%	0.07%	0.05%	0.40%	3.31%	0.46%	4.59%
Clay County	77.38%	10.09%	0.73%	0.03%	0.03%	0.42%	7.22%	0.30%	3.79%
Dilworth	85.39%	8.44%	0.00%	0.00%	0.00%	0.00%	3.62%	0.00%	2.55%
Moorhead	76.19%	9.47%	0.94%	0.04%	0.04%	0.61%	9.78%	0.34%	2.59%
North Dakota	77.71%	10.02%	0.34%	0.06%	0.04%	0.32%	5.04%	0.49%	5.98%
Cass County	83.45%	8.01%	0.34%	0.03%	0.06%	0.49%	3.82%	0.42%	3.39%
Fargo	83.56%	7.66%	0.42%	0.03%	0.08%	0.59%	4.35%	0.44%	2.86%
West Fargo	86.52%	8.13%	0.00%	0.00%	0.00%	0.17%	1.03%	0.44%	3.72%
MSA	81.83%	8.56%	0.45%	0.03%	0.05%	0.47%	4.73%	0.39%	3.50%
United States	75.70%	12.19%	4.57%	0.16%	0.11%	0.38%	2.93%	0.70%	3.26%

TABLE 6-6: COMMUTING MODE OF TRAVEL 2000

Source: United States Census Bureau, SF4

TABLE 6-7: COMMUTING	MODE OF	TRAVEL	(2008 -	2012)
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Jurisdiction	Drove Alone	Carpooled	Public Transport	Taxicab	Motorcycle	Bicycle	Walked	Other Means	Worked at Home
Minnesota	77.81%	9.14%	3.46%	0.06%	0.20%	0.76%	2.85%	0.56%	5.15%
Clay County	79.10%	7.83%	0.51%	0.09%	0.10%	0.61%	6.00%	0.83%	4.94%
Dilworth	75.97%	12.12%	0.04%	0.00%	0.00%	0.00%	3.25%	4.11%	4.50%
Moorhead	79.15%	6.55%	0.72%	0.07%	0.08%	0.86%	7.86%	0.67%	4.03%
North Dakota	78.98%	9.54%	0.50%	0.06%	0.15%	0.58%	3.88%	0.65%	5.66%
Cass County	82.86%	7.51%	0.86%	0.02%	0.27%	0.80%	3.58%	0.64%	3.48%
Fargo	82.28%	7.31%	1.05%	0.01%	0.23%	1.09%	4.44%	0.70%	2.90%
West Fargo	86.38%	7.14%	0.53%	0.08%	0.29%	0.06%	1.21%	0.60%	3.70%
MSA	81.87%	7.59%	0.77%	0.04%	0.22%	0.75%	4.21%	0.69%	3.87%
United States	76.14%	10.03%	4.98%	0.11%	0.23%	0.56%	2.82%	0.85%	4.27%

Source: United States Census Bureau – American Community Survey

Commuting Patterns

According to the ACS, 88.9% of the workers in Cass County work within Cass County. In comparison, only 43.3% of workers in Clay County work in their resident county. Cass County draws 51.3% of workers who live in Clay County. Conversely, only 7.0% of workers in Cass County cross the Red River to work in Clay County. Table 6-8 on the following page identifies the percentage of workers who live in one county and work in another for Cass and Clay counties, as well as contiguous counties.

Live In						Wo	ork In:					
Live in.	Cass	Trail	Steele	Barnes	Ranson	Richland	Clay	Norman	Becker	Otter Tail	Wilkin	Other
Cass	88.90%	0.28%	0.04%	0.30%	0.17%	0.28%	7.03%	0.04%	0.24%	0.12%	0.08%	2.52%
Trail	8.65%	68.97%	1.79%	0.09%	0.00%	0.00%	0.16%	0.40%	0.00%	0.00%	0.00%	19.93%
Steele	4.03%	19.13%	63.08%	3.00%	0.00%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	10.44%
Barnes	5.40%	0.00%	0.34%	0.00%	1.34%	0.25%	0.14%	0.00%	0.00%	0.00%	0.00%	92.53%
Ranson	5.30%	0.00%	0.00%	1.66%	68.06%	0.60%	0.04%	0.00%	0.00%	0.15%	0.00%	24.19%
Richland	12.37%	0.00%	0.08%	0.07%	0.68%	71.92%	0.74%	0.00%	0.02%	0.53%	7.25%	6.34%
Clay	51.34%	0.08%	0.00%	0.10%	0.00%	0.21%	43.25%	0.35%	1.04%	0.72%	0.27%	2.64%
Norman	11.56%	1.97%	0.00%	0.00%	0.00%	0.09%	4.82%	64.59%	1.55%	0.18%	0.15%	15.08%
Becker	6.70%	0.01%	0.00%	0.00%	0.04%	0.08%	2.96%	0.15%	73.88%	4.64%	0.04%	11.51%
Otter Tail	2.23%	0.03%	0.00%	0.02%	0.00%	0.79%	0.96%	0.03%	5.67%	78.87%	0.43%	10.96%
Wilkin	7.73%	0.12%	0.00%	0.15%	0.00%	34.05%	3.45%	0.00%	0.00%	6.89%	44.15%	3.45%

TABLE 6-8: PERCENT OF WORKERS BY RESIDENT AND WORKING COUNTIES 2007-2011

Source: United States Census- American Communities Survey 2007-2012 Residence to Work

Congestion

With the forecast increase in population, households and employment, there will be additional vehicles, trips, and vehicle miles of travel. The location of this new growth, which is located to a large extent in the outlying areas of the Metro COG urban area, will also impact travel patterns and result in additional traffic on the existing roadway network that will increase congestion on some roadway facilities.

Presented in Figure 6-7 on the following page is the forecast 2020 traffic congestion with growth anticipated in 2020. Existing, 2020 and 2040 Forecasted Average Daily Traffic (ADT) is presented in Appendix 6-1. It should be noted that these forecasts were based on the Metro COG regional transportation model which will be discussed in Chapter 9. This 2020 traffic congestion forecasts also assumes that in addition to the existing network, committed transportation improvements that have been committed were added. These committed projects will also be presented in greater detail in Chapter 9.

In review of Figure 6-7, there remains little congestion with the Metro COG region. Even though population and employment is growing, the impact of this growth will be minimized because of the addition of these committed projects.

Presented in Figure 6-8 on page 6-14 is the forecast 2040 congestion assuming the E+C network. As can be seen, by 2040 congestion will occur without any additional improvements then what has already been committed. These areas of congestion logically occur in areas projected to grow, including the area south and west of Fargo and West Fargo, easterly and southern Moorhead and along the interstate system. These areas of congestion are the locations where additional transportation improvements will need to be proposed as part of the development of the 2040 Needs Based Vision Plan that will be presented in Chapter 9.

Technology

Technology is constantly changing. Twenty-five years ago there was no World-Wide-Web. Superman had a phone booth to change in, and computers were just making a presence in the home. In transportation, a folded, paper map was what you had to give instructions on how to get from point "A" to point "B." But as technology changes, so does the need to incorporate it in our daily lives. This includes on how we travel.

Intelligent Transportation Systems (ITS) are becoming more and more apparent in the Fargo-Moorhead area. Today cars can start and park themselves, and they are only a heart-beat away from driving themselves. Buses "talk" to you to let you know when your stop is near and tell you when your next bus will arrive. Dynamic Message Signs (DMS), cell phones, and computers let drivers know in advance what traffic conditions are like and sensors feed information to the these devices to let you know how long it will take to get to where you are going. A significant amount of work and progress in ITS and ITS deployments has been achieved since 2008. Figure 6-9 on page 6-15 identifies the increase in various ITS components in the Fargo-Moorhead metropolitan area.

The deployment of ITS and ITS-related equipment and systems is constantly increased, and will continue to do so in the near and far time horizons. Metro COG will record and document these changes over time. Detailed information regarding ITS within the Fargo-Moorhead metropolitan area can be found in the 2013 ITS Deployment Strategy for the Fargo-Moorhead metropolitan area.



FIGURE 6-7: 2020 CONGESTION WITH THE EXISTING + COMMITTED NETWORK

Source: Metro COG



FIGURE 6-8: 2040 CONGESTION WITH THE EXISTING + COMMITTED NETWORK

Source: Metro COG

CHAPTER 6 – GROWTH, TRENDS, AND FORECASTS



FIGURE 6-9: ITS DEVICES INSTALLED PER YEAR 2008-2012

Source: Metro COG ITS Deployment Strategy for the Fargo-Moorhead Metropolitan Area

CHAPTER 7 – PUBLIC INVOLVEMENT

The outreach effort sought meaningful public input from residents and businesses throughout the region. Activities included workshops where people could discuss future directions and transportation priorities, as well as online surveys and receive updates from the Metro COG website. Events were tailored to key decision phases in the planning process: defining needs and desires, developing and evaluating alternatives, and creating a draft plan.

The overall schedule and how the public involvement provided strategic input for each of the three phases are presented graphically in Figure 7-1 on the following page.

This chapter describes public involvement activities and how the public provided meaningful public input used to develop the Plan.

Public Participation Plan

Metro COG maintains a Public Participation Plan (PPP) which guides the proactive public outreach efforts related to the development and maintenance of Metro 2040. Metro COG is committed to ensuring that all Title VI, Limited English Proficiency (LEP) and other parts of the PPP are, and were, addressed in the development of Metro 2040.

Plan Launch

Public outreach began with raising awareness of Metro 2040 and the opportunity to participate. Key activities included:

- Project Branding and Logo
- Metro COG Project Website Page

- Media Relations
- Community Networking

Updates continued throughout the planning process.

Website



The Metro 2040 website page on the

Metro COG website was launched as a central

source for distributing information about and gathering input for the plan. The website provided background information and up to date project progress. In addition, visitors could sign up for future event notification, take the online surveys, or request information.

Media Relations

Coverage of the Plan's development spanned among the print, radio, and television media. Highlights included press releases, ads for upcoming events, editorials, and letters from the Metro COG Policy Board.

Community Networking

Networking helped spread the word about the Plan throughout the region. Networking involved both letters and emails to the Metro COG e-mail database of individuals and organizations to help publicize the Plan.

CHAPTER CONTENTS

- Plan Launch
- Phase 1 Needs and Desires
- Phase 2 Alternatives Development and Evaluation
- Phase 3 Selection and Refinement of a Preferred Plan
- Conclusion

FIGURE 7-1: PUBLIC INVOLVEMENT SCHEDULE



Phase 1 – Needs and Desires

The major public participation activities to assess needs and desires were:

- Residential and Business Online Surveys
- Metro 2040 Futures Summit

These activities gave the community options for participating in the planning process. By completing online surveys, people could participate conveniently from their home or work place. At the Metro 2040 Futures Summit, people were able to learn others' points of view and explore priorities together.

Futures Summit

On September 10th and 11th of 2013, the Fargo-Moorhead Metropolitan Council of Governments (Metro COG) held three Public Input Meetings on the Metro 2040. These were held at locations in Fargo, Moorhead, and West Fargo. The Public Input Meetings were referred to as sessions of the Futures Summit and were designed to inform and engage the public on anticipated future growth trends and transportation needs for the Fargo-Moorhead metropolitan area.

Direct invitation letters were mailed to the following groups and organizations:

- Elected and Planning Commissions
- Homebuilders Association
- Fargo Park Board
- Moorhead Business Association
- Great Fargo Moorhead Economic Development Corporation
- The Chamber (Fargo-Moorhead-West Fargo Chamber of Commerce)
- Downtown Community Partnership
- FM River Keepers
- Fargo School District
- Moorhead School District
- West Fargo School District
- FM Community Bike Workshop

A newsletter (Figure 7-2) was mailed on August 12, 2013 to individuals and agencies considered important to the implementation of Metro 2040. The newsletter gave information on when and where the sessions of the Futures Summit were held. It also provided information on why the Fargo-Moorhead metropolitan area needs the Metro 2040, demographic growth, and key issues facing the region.

FIGURE 7-2: METRO 2040 NEWSPAPER AD



A notice of the sessions of the Futures Summit was advertised in the Fargo Forum on August 29th, 2013. A copy of the newspaper ad is shown in Figure 7-2.

Presentation

Each of the three sessions of the Futures Summit opened with a half-hour presentation that presented the status of the region's existing transportation system and potential needs resulting from future



growth. This presentation included a snapshot of the transportation improvements which have been completed over the past 20 years, demographic trends, existing and projected congestion, Red River crossings, railroad crossings, and interstate operations. Also presented was the status of roadways and bridge conditions, Metro Area Transit, the pedestrian network, bicycle network, the regions Intelligent Transportation Systems (ITS) and the Freight Network.





Connections Exercise

As part of the Futures Summit, participants were asked to work in groups of five to seven people on a Connections Exercise (Figure 7-4 on the following page). This 1-hour exercise involved group consensus on what major infrastructure



improvements were needed in the Fargo-Moorhead metropolitan area.

CONNECTIONS is a mapping exercise where each table chose from a number of various transportation improvements in the form of game pieces. These pieces included new lanes, lane widening, intersection improvements, new or improved interchanges, new or improved river crossings, and grade separations at railway crossings. Each improvement was assigned a dollar amount according to improvement type or length.

Each table also had a limited budget for North Dakota Federal and State, and local projects, and Minnesota Federal and State, and local projects.



A total of 14 tables participated in the Connections Exercise at the three different Futures Summits. In addition, the Metro 2040 Study Review Committee prepared an

additional four maps, bringing the total to 18 completed Connections Exercise maps. These maps provided 18 different potential solutions for addressing the region's future needs. In some cases, specific improvements were included on many of the maps. The review of the maps also resulted in themes. These improvements and themes were directly used in the development of the Phase 2, Alternatives Development. One important theme that resonated with most if not all the tables was that we need to maintain and rehabilitate as needed our existing transportation system prior to constructing new projects.

A second workshop exercise was the weighting of goals that were used to evaluate projects based on definable performance measures. The resulting weighting of goals is presented in Figure 7-3.

FIGURE 7-3: WEIGHTING OF METRO 2040 GOALS



CHAPTER 7 – PUBLIC INVOLVEMENT



FIGURE 7-4: CONNECTIONS EXERCISE

Phase 2 – Alternatives Development and Evaluation

The second phase of the Metro 2040 was the development and evaluation of alternatives for a needs based plan to address growth, operations, rehabilitation, traffic congestion, transit, and bicycle and pedestrian improvements. This needs based plan is not fiscally constrained. This is a list of high priority projects from which projects are prioritized to determine which projects are the most important and should be included in the Fiscally Constrained Plan.



The phase two public involvement effort continued with outreach techniques developed at the beginning of the project. This included ongoing analysis presented at the monthly Study Review Committee, which was posted on the

Metro COG's website. This phase also included a newsletter and continued outreach with the media.

Roundtable Discussion

The major public outreach at the end of the second phase of the work effort was the "Roundtable," a public meeting venue where participants could review projects, and provide input on their priority. These included both conventional improvements, but also focused on how we should plan additional Red River Crossings and Interstate improvements.

The Roundtable Discussions were held at the following times and locations:

- February 25, 2014, 8:00 to 10:00 - West Fargo City Commission Chambers
- February 25, 2014, 6:00 to 8:00 - Hjemkomst Center
- February 26, 2014, 6:00 to 8:00 - Fargo City Commission Chambers

Metro COG sent out a newsletter to over 1,000 individuals and agencies considered important to the implementation of Metro 2040. The newsletter gave information on when and where the Roundtable Discussions were held. It also provided information on previous public input, major rehabilitation and preservation projects, and the Roadway Vision Plan.

A notice for the sessions of the Roundtable Discussion was advertised in the Forum of Fargo-Moorhead on February 15, 2014. A letter by Metro COG's Policy Board Chair, Frank Gross, was also submitted to the Forum. Several email notifications for the Roundtable Discussion were sent to individuals who had previously signed up as interested persons.

Presentation

Each of the Roundtable Discussions opened with a presentation on the update to the LRTP. The presentation provided a description and explanation of the Needs Based Vision Plan. This plan outlined the operations, maintenance and rehabilitation needs for the future and included a list of capital improvements including new arterial roadways, roadway and Interstate widenings, new ramps and interchanges, railroad grade separations and river crossings. These projects included both federal/state projects and local projects.

As part of the Phase 2 Technical Analysis, each project was evaluated based on the weighted goals from Round 1 of the public outreach and technical performance as to how each project addressed the goals.



The presentation closed with a summary of the available funds from Federal, State, and local jurisdictions for transportation improvements in the Fargo-Moorhead Metropolitan Planning Area.

Roundtable Exercise

Consistent with the Futures Summit Connections in Phase 1, attendees participated in roundtable discussions where each table developed a list of roadway priorities, river crossings, transit, and funding. To generate conversation, participants were asked to review the high, medium, and lower priorities based on technical evaluation and Round 1 Goals Weighting. If they felt that a specific project's priority should be changed, they must trade that priority with another project. At the end of the project review, the groups chose the top three project priorities for NDDOT, ND (local), MnDOT and MN (local).



Because the discussion of needing additional Red River crossing capacity, which might include widenings of existing bridges or new bridges, participants were asked to prioritize their top three bridge widenings or new crossings.

The Roundtable included an exercise regarding transit. Participants were asked whether the proposed expanded transit coverage area was adequate for 2020 and 2040. Participants were also asked whether they believed limited funds that have historically been allocated to roadway projects, could be used for transit capital projects or bicycle and pedestrian projects (Figure 7-5 on the following page).

Phase 3 – Selection and Refinement of a Preferred Plan

Metro 2040 reflects the region's desired future and priorities for transportation investments through the year 2040. This Plan is based on technical analysis and public input on project alternatives and priorities from the first two public outreach phases of the planning effort.



The third round of public meetings was held in May 14, 2014. Unlike the first two rounds of public meetings, which had extensive workshop table exercises, this effort was a presentation of how the Plan was developed and key findings of the Plan. Participants were able to provide their comments on the plan at the meeting or were able to go online, download and review the Plan and provided responses through the Metro COG website.

CHAPTER 7 – PUBLIC INVOLVEMENT



Transit Capital Projects: ____Yes ____No

Bicycle and Pedestrian ____ Yes ____No

FIGURE 7-5: ROUNDTABLE DISCUSSION

within the priority

3. Identify the top three priorities for NdDOT, North Dakota local, MnDOT, and Minnesota local projects.

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Conclusion

The public involvement process for Fargo Moorhead Metro COG 2040 Long Range Transportation Plan focused on providing multiple ways for people to get involved and influence the Plan's development. Regional community members directly affected Plan goals,



alternatives studied, evaluation of those alternatives and the ultimate direction of the plan. Key messages from the public were:

- Be good stewards of the transportation infrastructure continue the region's commitment to maintain what we have and operate the system efficiently;
- Set priorities that address the Plan's goals and objectives; and
- Strengthen the transit system to provide quality transportation.

CHAPTER 8 – GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

MAP-21

The preparation of the Metro COG Metro 2040 requires a local application of the MAP-21, Federal Transportation Bill, signed into law by President Obama on July 6, 2012. The cornerstone of the MAP-21 transportation law is a transformation of the highway program to a performance and outcome-based program to measure the success of the MPO's implementation of their LRTP and TIP.

MAP-21 established seven national performance goals. These 7 national performance goals are as follows:

- 1. **Safety** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- 2. Infrastructure Condition To maintain the highway infrastructure assets in a state of good repair.
- 3. **Congestion Reduction** To achieve a significant reduction in congestion on the National Highway System.
- 4. **System Reliability** To improve the efficiency of the surface transportation system.
- 5. **Freight Movement and Economic Vitality** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

- Environmental Sustainability To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- 7. Reduced Project Delivery

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- MAP-21
- LRTP Project Goals
- LRTP Goals and Objectives
- **Delays** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

MAP-21 has also continued the requirement that the development of Metro 2040 adhere to eight Transportation Planning Factors introduced in the previous Federal Transportation Law, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). These planning factors are listed below.

- 1. **Economic Vitality:** Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- 2. **Safety:** Increase the safety of the transportation system for motorized and non-motorized users.
- 3. **Security:** Increase the security of the transportation system for motorized and non-motorized users.

- 4. **Accessibility:** Increase the accessibility and mobility of people and for freight.
- 5. **Environment:** 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. **Connectivity Across Modes:** Enhance the integration and connectivity of the transportation system, across and between modes, people and freight.
- 7. **System Management and Operation:** Promote efficient system management and operation.
- 8. **System Preservation:** Emphasize the preservation of the existing transportation system.

The matrix shown in Figure 8-1 compare the seven MAP-21 National Performance Goals with the 8 Transportation Planning Factors.

As illustrated in the table, there are some Nationally Performance Goals that compare directly with the Transportation Planning Factors, such as the National Performance Goal "Infrastructure Condition" with the Planning Factor "System Preservation." However, there are some differences such as the National Based Performance Goal "Reduced Project Delivery Delays" does not have a Planning Factor counterpart. Whereas "Reduced Project Delivery Delay" is a National Performance Goal to measure the success of the MPOs implementation of projects, that goal does not directly correlate to the evaluation of a project or group of projects for consideration of being included in Metro 2040 and TIP.

As part of the development of Metro 2040, performance targets were identified for each MAP-21 National Performance Goal. The goals and performance targets are presented in the following Table 8-1 on the following page. Presented in Appendix 8-1 are the Fargo-Moorhead

COG's performance objectives, performance targets, measurements, tracking frequency, the performance measure baseline, and the data collection source.

FIGURE 8-1: MAP-21 PLANNING FACTORS AND NATIONAL BASED GOALS

			Natio	onal Pe	erform	nance (Goals	
		1	2	3	4	5	6	7
Na	MAP-21 Planning Factors and tional Based Performance Goals	Safety	Infrastructure Condition	Congestion Reduction	System Reliability	Freight Movement and Economic Vitality	Environmental Sustainability	Reduced Project Delivery Delays
	1 Economic Vitality							
ors	2 Safety							
ıg Fact	3 Security							
Plannir	4 Accessibility							
tation	5 Environment							
nopor	6 Connectivity Across Modes							
Tra	7 System Management and 7 Operation							
	8 System Preservation							

TABLE 8-1: MAP-21 PERFORMANCE GOALS AND TARGETS

	Reduce the number of fatalities.
Safety Infrastructure Condition Congestion Reduction System Reliability Freight Movement & Economic Vitality	Reduce the cost of crashes.
	95% of pavement fair or better.
Intrastructure Condition	95% of bridges fair or better.
	Maintain % of congested VMT.
Connection Reduction	Maintain or increase the average travel speed.
Congestion Reduction	Increase transit and active transportation mode split.
	Add 5 miles of bicycle facilities per year.
System Reliability	Increase the total number of traveler information signs.
Freight Movement & Economic Vitality	Maintain the percent of congested Vehicle Miles Traveled (VMT) on the primary freight network.
Environmental Sustainability	Maintain the air quality status of attainment.
Reduced Project Delivery Days	Complete 85% of programmed projects within the TIP year.

These Metro COG Performance Goals and Targets are preliminary and were developed to begin defining how Metro COG is performing. The Federal Highway Administration (FHWA) website notes Spring 2015 for States and MPOs to match FHWA language.

Metro 2040 Goals

The prioritization of each project is based on a transparent evaluation process based on seven Metro 2040 project goals, the weighting of each goal, and measureable evaluation criteria. These seven goals address all eight of the MAP-21 Planning Factors as presented in the following Figure 8-2.

FIGURE 8-2: MAP-21 PLANNING FACTORS AND METRO 2040 GOALS

				Metro	o 2040	Goals		
		1	2	3	4	5	6	7
	MAP-21 Planning Factors and FM Metro COG LRTP Goals	Maintain Our Existing Transportation System	Improve the Efficiency, Performance and Connectivity of a Balanced Transportation	Maximize the Cost Effectiveness of Transportation	Promote consistency between land use & transportation plans to enhance mobility &	Provide Safe and Secure Transportation	Support Economic Vitality	Protect the Environment and Conserve Resources
	1 Economic Vitality							
ctors	2 Safety							
ing Fac	3 Security							
Planni	4 Accessibility							
tation	5 Environment							
nspor	6 Connectivity Across Modes							
Trai	7 System Management and 7 Operation							
	8 System Preservation							

Each project included as part of the "Needs Based Plan" was evaluated based on the Metro 2040 goals. Each goal reflects measureable evaluation criteria that permit a standardized way to evaluate and prioritize projects. In addition, the goals developed for Metro 2040 were weighted based on input from the first round of public meetings. The weighted goals of the plan are presented in the following Figure 8-3.

FIGURE 8-3: METRO 2040 GOAL WEIGHTS



Goals, Objectives, and Evaluation Criteria

Each of the seven goals described below includes the weight of the goal developed through the public involvement process, the goal definition, the objectives of the goal, and the measureable evaluation criteria and scoring used to evaluate projects.

The Metro 2040 goals and objectives are presented as follows. Presented in Appendix 8-2 are the evaluation and scoring for each project.

Goal 1: Maintain the Existing Transportation System (Weight 20)

As the transportation system ages, increased funding is required for maintenance. There is often competition between funding for new projects and funding for the maintenance and operation of the existing system. Reductions in maintenance funding today lead to higher costs in the future. Constructing new roads increases future maintenance costs as the new facilities age.

Objectives

 Maintain and repair existing roads, bridges, sidewalks, and/or multi-use trails to good condition. This objective states that the proposed project includes maintenance of an existing road, trail, sidewalk or bridge facilities to a minimum good or better condition. Increase access to additional modes by replacing and retrofitting transportation facilities in the existing system to allow for a wide range of transportation options. This objective recognizes that opportunities for walking, bicycling or taking transit may not be available for some facilities. In order to increase the efficiency of the overall system, non-motorized and transit travel choices should be considered in any retrofit project.

Roadways

- Low (0): The project is currently rated at good or excellent condition with PCI greater than 70 or a Roadway Quality Index (RQI) greater than 3.0.
- **Medium (5):** The project is currently rated at fair condition with a PCI between 40 and 70 or a RQI between 2.0 and 3.0.
- **High (10):** The project is currently rated at poor condition with a PCI less than 40 or a RQI less than 2.0.

Goal 2: Improve the Efficiency, Performance and Connectivity of a Balanced Transportation System (Weight 19)

Efficiency, performance, and connectivity of the transportation system allows users to move from place to place in as direct a route as possible with reduced travel time, distance, and the amount of time spent in congested traffic. Connectivity allows people to make route decisions based on current traffic conditions, road access, or desired stopping points. A transportation system that performs well allows users to choose multiple transportation modes and to move through those modes in an efficient and safe manner.

Objectives

- Minimize travel times and congestion by methods, such as providing increased capacity, direct routes between destinations, use of intelligent transportations systems, and transportation demand management.
- Promote Complete Streets concepts so that streets are planned, designed, and operated to maximize safe access for all users including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities.

Roadways

- (0): The project did not result in delay saved.
- (2): The project resulted in the lower 20% of delay saved when compared to all projects.
- (4): The project resulted in the 20 to 40% of delay saved when compared to all projects.
- (6): The project resulted in the 40 to 60% of delay saved when compared to all projects.
- (8): The project resulted in the 60 to 80% of delay saved when compared to all projects.
- (10): The project resulted in the 80 to 100% of delay saved when compared to all projects.

Goal 3: Maximize the Cost Effectiveness of Transportation (Weight 14)

Local, State and Federal transportation funding is constrained and not sufficient to provide for all of the transportation needs of the region. Projects with high capital construction costs decrease remaining funding for other projects. Conversely, low-cost improvements leave available funds for other improvements. Improvements that provide the greatest delay saved or the greatest number of accidents reduced per dollar of investment maximizes the cost effectiveness of limited transportation revenues.

Objectives

• Plan for a transportation system that is affordable, sustainable, and makes the best use of public financial resources.

Roadway

- (0): The project did not result in delay saved.
- (2): The project resulted in the lower 20% of delay saved per dollar when compared to all projects.
- (4): The project resulted in the 20 to 40% of delay saved per dollar when compared to all projects.
- (6): The project resulted in the 40 to 60% of delay saved per dollar when compared to all projects.
- (8): The project resulted in the 60 to 80% of delay saved per dollar when compared to all projects.
- (10): The project resulted in the 80 to 100% of delay saved per dollar when compared to all projects.

Goal 4: Promote Consistency between Land Use and Transportation Plans to Enhance Mobility and Accessibility (Weight 16)

There is a direct correlation between land use and transportation. The goal of the transportation plan is to demonstrate an integration of the land use plan and transportation plan by supporting transportation improvements that target the region's future land use forecasts.

Objectives

- Provide a transportation network which supports existing and future high trip destination areas including city centers, activity centers, and corridors.
- Develop projects to catalyze centers including infill and redevelopment areas.

Roadway

As part of the development of the Needs Based Vision Plan it was determined that all selected projects were in fact selected to support the regional jurisdiction's planned development plans. Therefore, this goal was not scored as all projects would be scored the same.

Goal 5: Provide Safe and Secure Transportation (Weight 11)

All transportation improvements should be designed to be safe and secure. Visibility, access control, and separation of modes, either through buffers or grade separations, are some of the methods that can be employed to decrease conflicts and increase comfort. These improvements can both decrease the number of crashes and the cost of crashes. They can also reduce the crash rate, which is the number of crashes along a link or at an intersection divided by the number of vehicles traveling along the link or through the intersection.

Security devices at key facilities, such as bus stops and trail head facilities increase the safety and security of users. Educational programs that help travelers understand the particular safety concerns associated with various modes can help all users travel with increased confidence and security.

Access to technology that helps identify clear, safe and rapid routes for first responders are vital for providing emergency services and security to the region. The ability to ensure alternative routes in times of weather emergencies, crashes, and other emergency incidents helps to secure the continued access of responders and regular users.

Objective

- Support transportation programs and design improvements which reduce crashes and improve safety of all modes.
- Facilitate the rapid movement of first responders and support incident management during times of emergency.

Roadway

- (4) The project is defined as a regionally significant corridor.
- (2) Accident costs per mile is in the bottom third of all projects.
- (4) Accident costs per mile are in the middle third of all projects.
- (6) Accident costs per mile are in the top third of all.

Goal 6: Support Economic Vitality (Weight 13)

Support the economic vitality of the Metro COG planning area, especially by enabling global competitiveness, productivity, and efficiency is one of the seven planning factors of the current federal transportation law MAP-21. Economic vitality is very complex and has many facets beyond the transportation system. Economic vitality requires a low cost of doing business, availability and access to technology, an educated and skilled workforce, choice of housing types, high quality schools, reduced municipal and state debt, and other less tangible qualities. A transportation system that provides good access for all modes benefits future development and employment opportunities, which stimulates the regions' economic vitality.

Objectives

 Facilitate the movement of goods and freight to commercial and industrial centers. The ease with which industrial and commercial facilities can receive goods and ship products is important to their economic viability. Transportation facilities that allow direct, convenient access to these centers can decrease the conflicts with other traffic and increase the efficiency of the shipping process. Support new and existing commercial and industrial development by ensuring access by multiple transportation modes. While it is important that freight haulers have access to commercial and industrial facilities, it is equally important that the customers and employees of these facilities have safe and adequate access. Transportation facilities should include multiple modes to allow access by all users, as well as being appropriately sized to allow access by each mode without sacrificing the safety of another.

Roadway

- **(0)**: The project did not result in delay saved on the regional freight network.
- (2): The project resulted in the lower 20% of delay saved on the regional freight network when compared to all projects.
- (4): The project resulted in the 20 to 40% of delay saved on the regional freight network when compared to all projects.
- (6): The project resulted in the 40 to 60% of delay saved on the regional freight network when compared to all projects.
- (8): The project resulted in the 60 to 80% of delay saved on the regional freight network when compared to all projects.
- (10): The project resulted in the 80 to 100% of delay saved on the regional freight network when compared to all projects.

Goal 7: Protect the Environment and Conserve Resources (Weight 7)

The Clean Air Act and MAP-21 requires that the LRTP planning process protect clean air and water, promote healthy lifestyles, and preserve our natural, historic and cultural resources.

Air quality is affected by mobile source emissions resulting from VMT. Air quality impacts can be reduced through strategic roadway investments that reduce VMT or providing alternative transportation modes.

New transportation facilities or expanding existing transportation facilities can negatively impact the environment such as wetlands, historic and cultural resources. These facility improvements can also impact existing neighborhoods, such as roadway widening that may require acquisition of a residential property or result in an improvement that might increase the volume of traffic and travel spend.

Objectives

- Reduce fossil fuel consumption by minimizing travel time and providing access to alternative modes. The use of fossil fuels affects our air quality through increased greenhouse gases, particulate matter, and potential impacts to global warming. The U.S. Environmental Protection Agency defines Clean Air Act thresholds.
- Minimize air pollution by reducing VMT. Mobile source emissions are directly related to VMT. The land use and transportation plan should, therefore, reduce to the extent possible VMT and delay.
- Minimize impact to natural environments by taking opportunities to couple transportation projects with protection and enhancement of environmental resources.
- New or widened transportation facilities should minimize impacts to established neighborhoods. Transportation projects should avoid displacing citizens, disrupting or impacting valuable cultural resources, and dividing neighborhoods. This is particularly true in regards to environmental justice by avoiding impacts in areas of low incomes and minority concentrations. Conversely, these impacts to low income and minority areas can be positive with additional mobility opportunities including walking, bicycling, and transit.

Roadway

- (2): The project does not impact neighborhoods with low income.
- (1): The project does not impact neighborhoods with minority population.
- (1): The project is not located in a 100-year floodplain.
- (2): The project is not located in a 500-year floodplain.
- (2): The project does not impact prime farm lands.
- (2): The project provides high reduction in VMT (Top 1/3 of projects).

CHAPTER 9 – OPERATIONS AND MAINTENANCE, REHABILITATION AND COMMITTED PROJECTS

The 2040 Transportation Needs Based Vision Plan paints a picture of what the Fargo-Moorhead MPA may look like in 2040. The vision encompasses the varied plans of the local jurisdictions within the region and presents the transportation needs of the region through 2040.

The Vision provides a framework for strategic planning. It answers the questions, "What is the transportation system that we need to support regional growth through 2040?" The Vision includes continuation of the maintenance and operations of our existing transportation system, as well as major rehabilitation projects. The Vision Plan also presents the projects the region has already committed to through the Metro COG TIP process through the next three years.

It should be noted that MnDOT is developing a draft Transportation Asset Management Plan. The focus has been on pavements, bridges, drainage structures, overhead sign structures, and high mast tower lighting.

Finally, this Transportation Vision Plan presents a long list of new capital improvement transportation projects to serve future growth. These projects have also been evaluated and prioritized to determine which projects might be funded and when, which will be presented in Chapter 11: Financial Analysis.

The following presents the Transportation Vision Plan Elements.

Operations and Maintenance (O&M)

Throughout the public outreach and meetings with the Study Review

CHAPTER CONTENTS

- Operations and Maintenance (O&M)
- Rehabilitation
- Committed Projects

Committee, the direction has been the same, we need to continue to operate and maintain our transportation system first, and then if any funds remain, consider capital improvement projects.

This O&M requirement is also required per U.S. Federal Code of Regulations 23 CFR 450.322 c(10)(i), which states: "For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways (as defined by 23 USC 101(a)(5)) and public transportation (as defined by Title 49 USC Chapter 53)."

O&M is defined as the routine and regular activities needed to keep the existing transportation system safe and working effectively. It does not include major rehabilitations and reconstruction of bridges and roads.

To determine O&M expenditures, several variables were defined. These variables include:

- Number of base lane miles by jurisdiction;
- Roadway surface types by jurisdiction; and
- Costs associated with surface improvements.

Base lane miles were determined from two sources. The first source was the number of lane miles in Metro COG's 2020 Existing plus Committed (E+C) Network GIS file developed as part of Metro 2040. The second source was analyzing Metro COG's 2013 Centerline GIS file, which held information on the number of local roadway miles and roadway types.

Roadway surface types were determined from Metro COG's 2013 Centerline file and an analysis of county maps, with additional information provided by the City of Fargo Engineering Department. The three main roadway surface types that were analyzed include concrete, asphalt, and gravel. A fourth surface type, composite, is included with asphalt roadways.

General cost estimates (in 2014 dollars) were developed by soliciting input from City, County, and State transportation officials. The following cost estimates and life cycles were developed for use in developing the O&M element of Metro 2040.

Table 9-1 presents the Annual Operating Costs per mile by roadway type. These costs include a 4% annual inflation rate. This table reflects the forecast year annual costs banded by short-, mid-, and long-range.

TABLE 9-1: OPERATIONS AND MAINTENANCE ANNUAL COSTS PER MILE BY ROADWAY TYPE

Roadway Surface Maintenance Type	Short- Range (2015- 2020)	Mid- Range (2021- 2030)	Long- Range (2031- 2040)
Concrete Pavement Repair (NDDOT/MnDOT): \$60,000/mile	\$66,330	\$91,150	\$134,925
Concrete Pavement Repair (Fargo): \$76,400/mile	\$84,460	\$116,065	\$171,800
Concrete Pavement Repair (West Fargo): \$250,000 total	\$276,375	\$379,790	\$562,180
Asphalt Overlay: \$150,000/mile with 4%	\$165,825	\$227,875	\$337,310
Chip Seal: \$13,000/mile	\$14,370	\$19,750	\$29,235
Crack Seal: \$2,000/mile	\$2,210	\$3,040	\$4,495
Gravel Maintenance: \$3,400/mile year	\$3,780	\$5,195	\$7,690

The total operations and maintenance costs for the short-, mid-, and long-range by jurisdiction is presented in Table 9-2 on the following page. For both the mid- and long-range, future estimates for local roadway miles are based on an average 24 lane miles of local roads per square mile in new developments. The analysis of the E+C network was used to estimate how much additional development would occur during the mid- and long-range.

Jurisdiction	Short-Range	Mid-Range	Long-Range	Total Expenses
NDDOT	\$14.4	\$33.0	\$48.8	\$96.2
Cass County	\$12.6	\$29.2	\$43.2	\$85.0
Fargo	\$48.9	\$119.0	\$186.8	\$354.7
West Fargo	\$13.1	\$32.1	\$50.6	\$95.7
Total ND Local	\$74.5	\$180.3	\$280.6	\$535.5
Total ND	\$88.9	\$213.3	\$329.5	\$631.7
MnDOT	\$21.8	\$49.8	\$72.5	\$144.1
Clay County	\$30.0	\$71.1	\$105.2	\$206.2
Moorhead	\$13.3	\$33.4	\$53.9	\$100.6
Dilworth	\$3.4	\$10.1	\$18.4	\$31.8
Total MN Local	\$46.6	\$114.6	\$177.5	\$338.7
Total Mn	\$68.4	\$164.4	\$250.0	\$482.7
Total Metro COG	\$157.3	\$377.6	\$579.5	\$1,114.4

TABLE 9-2: OPERATIONS AND MAINTENANCE COSTS (\$M)

Rehabilitation

Although the maintenance of our transportation facility will extend the systems life, at some point the improvement has simply aged to where the facility must go through a major rehabilitation. In the preparation of the Metro 2040, the age and condition of the roadway network was evaluated to determine which facilities in the regional transportation network would need major rehabilitation.

Figure 9-1 on page 9-5 presents a map of the facilities that would need to be rehabilitated. Table 9-4 (on page 9-6) provides a description of the facility, in which phase the reconstruction would be required (short-, mid-, or long-) and the cost of the rehabilitation project. It should be

noted that these costs are in current year dollars and will need to be inflated for future years.

Committed Projects

The development of the Metro 2040 is an update to the previous Metro COG LRTP. Similar to this update, the previous LRTP defined improvements to accommodate future growth, prioritized those projects, and those within the available funding limits became part of the Fiscally Constrained Plans. Over the past five years since that plan was completed, the high priority projects were added to the Metro COG TIP.

Presented in Figure 9-2 on page 9-7 is a map of all the committed projects for the years 2011 and 2020. Many of these projects from 2011 and 2014 have already been completed or are scheduled for construction this year. These projects are included as they are additions to the travel demand model, which had a 2020 base. The projects from 2015 through 2020, which are also committed, were added to the travel demand model base for analyzing 2020 and 2040 forecast and congestion conditions with these projects. Committed projects include new roads, widening of existing roads, adding center turn lanes, operational changes, and intersection improvements.

A list of all these projects and the years they are scheduled for construction is presented in Appendix 9-1. A summary of these costs by year for the North Dakota committed projects and the Minnesota committed projects are presented in Table 9-3 on following page.

TABLE 9-3: COMMITTED PROJECT COSTS BY YEAR AND STATE (\$M)

Year	North Dakota	Minnesota	Total Metro COG
2015	\$48.7329	\$36.5156	\$85.2485
2016	\$20.0435	\$8.1985	\$28.2420
2017	\$33.5460	\$9.3396	\$42.8856
2018	\$7.0186	\$4.2154	\$11.2339
2019	\$9.0828	\$4.9878	\$14.0706
2020	\$7.1476	\$4.6215	\$11.7691
Total	\$125.5714	\$67.8784	\$193.4498

CHAPTER 9 – OPERATIONS AND MAINTENANCE, REHABILITATION AND COMMITTED PROJECTS



FIGURE 9-1: MAJOR REHABILITATION PROJECTS

Metro 2040: Mobility for the Future 🚸 Approved July 17, 2014

Phase	Project Name	From	То	Jurisdiction	Cost (\$1,000)
	1st Avenue	University Drive	2nd Street	Fargo	\$2,364
	2nd Street North	5th Avenue	1st Avenue	Fargo	\$888
	7th Street East	TH 10	15th Avenue North	Dilworth	\$1,986
6	14th Street South	Center Street	12th Avenue	Moorhead	\$1,596
Mid Short (2021-2030) (2015-2020)	15th Avenue North	Red River	28th Street	Moorhead	\$1,700
5-2	30th Avenue South	14th Street	20th Street	Moorhead	\$932
S 201	TH 10	Parke Avenue	East Glyndon City Limits	MnDOT	\$3,800
3	University Drive South	18th Avenue	I-94 South Ramps	Fargo	\$2,000
	University Drive / I-94	Reconstruct	I-94 North Ramps	NDDOT	\$700
	40th Avenue South	River Haven Road	TH 75	Moorhead	\$2,812
	28th Street North	TH 10	15th Avenue	Moorhead	\$2,008
	CBD Urban Arterials	4th Avenue N. to NP Avenue	2nd St to Roberts Street	Fargo	\$4,000
	Main Avenue	University Drive	25th Street	NDDOT	\$4,060
	4th Street South	Main Avenue	13th Avenue	Fargo	\$1,948
Mid Short Mid (2021-2030) (2021-2030) (2015-2020) (2021-2030) (2015-2020)	7th Avenue North	Elm Street	University Drive	Fargo	\$1,852
	10th Street	1st Avenue	12th Avenue	NDDOT	\$1,796
Ô	University Drive North	32nd Avenue	40th Avenue	Fargo	\$1,994
lid -203	32nd Avenue South	University Drive	32nd Street S	Fargo	\$5,920
∆ 1. D21.	13th Avenue South	47th Street	52nd Street	Fargo	\$1,480
(20	13th Avenue South	52nd Street	Sheyenne Street	West Fargo	\$6,000
	19th Avenue North	I-29 West Ramps	45th Street	Fargo	\$1,842
	Center Avenue	4th Street	8th Street	Moorhead	\$1,256
	11th Street South	Main Avenue	22nd Avenue S	Moorhead	\$2,840
	9th Street East	Main Avenue	12th Avenue North	West Fargo	\$1,936
	1st Avenue East	Center Street	8th Street	West Fargo	\$1,620

TABLE 9-4: METRO COG 2040 MAJOR REHABILITATION AND/OR PRESERVATION PROJECTS

CHAPTER 9 – OPERATIONS AND MAINTENANCE, REHABILITATION AND COMMITTED PROJECTS

Phase	Project Name	From	То	Jurisdiction	Cost (\$1,000)
(1	TH 10	Red River	TH 75 East Junction	MnDOT	\$2,266
ued (0)	TH 75	I-94	TH 10/75 West Junction	MnDOT	\$2,153
1tin 203	19th Avenue North	Dakota Drive	I-29 East Ramps	NDDOT	\$2,480
Cor 21-	14th Street North	Center Street	15th Avenue	Moorhead	\$2,002
Long Mid (Continued) dd 2031-2040) ese	14th Street South	20th Avenue	28th Avenue	Moorhead	\$1,000
	12th Avenue South	4th Street	34th Street	Moorhead	\$4,574
Long Mid (Continued) ad (2021-2030) as	Grade Separation	45th Street	19th Avenue North	Fargo	\$20,000
	1st Avenue North Bridge			Fargo/Moorhead	\$5,000
	NP/Center Avenue Bridge			Fargo/Moorhead	\$20,000
	9th Street North East	Main Avenue	13th Avenue E	West Fargo	\$2,000
	Center Street	Railroad bridge	12th Avenue	West Fargo	\$1,334
	6th Street East	13th Avenue	10th Avenue	West Fargo	\$1,076
L 203:	I-94	Red River	Just East of TH 336	MnDOT	\$7,869
	17th Street North	1st Avenue	15th Avenue	Moorhead	\$2,004
	4th Avenue North	11th S Street	17th Street	Moorhead	\$938
-	4th Avenue North	TH 75	28th Street	Moorhead	\$672
	7th Avenue North	14th Street	TH 75	Moorhead	\$1,200
			-	Total	\$135,897

CHAPTER 9 – OPERATIONS AND MAINTENANCE, REHABILITATION AND COMMITTED PROJECTS



FIGURE 9-2: 2020 EXISTING + COMMITTED ROADWAY NETWORK

Source: Metro COG

Roadway Vision Plan

The Roadway Vision Plan reflects the transportation improvements needed to serve the projected population and employment growth. This Transportation Vision is based on needs as defined by the Metro COG 2040 Travel Demand Model. This Roadway Needs Based Vision Plan is not fiscally-constrained to current available funding. Rather, it is a list of illustrative projects that would be necessary to address the region's needs if funding were available.

The roadway network forms the backbone of the entire multi-modal transportation system in Metro COG planning area. In addition to automobiles, roads accommodate transit and commercial vehicles carrying freight. Streets and Interstates are an important part of the local and national economy and they provide mobility for most ground transportation users.

The development of the Roadway Vision Plan was a multi-step process. It began with defining the needs, those roadways that would be congested in 2020 and 2040 based on future growth, and the Existing plus Committed (E+C) network (see Chapter 6: Growth).

The second step was presenting these needs to the first public meeting, the Futures Summit, where participants identified improvements that they believed might address. In many instances, there was agreement on a number of the projects that would be strong candidates. Extensive travel demand modeling was also conducted to determine which of these projects had the greatest project impact and which had little benefit. The project list was also reviewed by the Metro 2040 Study Review Committee, where some projects were added and others removed.

CHAPTER CONTENTS

- Roadway Vision Plan
- Transit Vision Plan
- Bicycle and Pedestrian Vision Plan
- Transportation System Management and Operations Vision

The Roadway Vision Plan includes the existing network, committed projects defined by the Metro COG TIP plus roadway improvements that came out of the technical analysis and input from the public and the Study Review Committee.

Some of these decisions were quite complex and technical. This was particularly true for the Red River Crossing analysis where additional river crossing capacity would be needed through new bridges or widening of the existing bridges. Extended analysis and discussions also occurred for the interstate improvements.

The resulting Roadway Vision Plan is presented in Figure 10-1 on the following pages. This Plan includes new roads, widened roads, interstate widenings and ramp/interchange improvements, and others. This map also includes a project ID number.



FIGURE 10-1: ROADWAY VISION PLAN

Source: Metro COG

A list of all the Roadway Vision Plan projects is presented in Table 10-1 on the following pages. This list includes the project name, description, limits, project ID number, and costs. It should be noted that these costs are current costs and not future year inflated costs. It should also be noted that the Project ID number corresponds to a number on the map on page 10-2 and does not indicate or present any ranking or prioritization of projects.

Project ID	Project Name	Project Description	Project Description From		Jurisdiction	Cost (\$)
			NDDOT PROJECT	rs		
1	I-94 Sheyenne Street Interchange	Widen underpass from 2 to 6 lanes + Interchange Modification	-	-	Fargo/NDDOT	\$10,000,000
2	I-94 Veterans Blvd Interchange (Phase I)	Add 2nd NB left to WB On-Ramp and Widen WB On-Ramp to 2 lanes	-	-	West Fargo/ Fargo/NDDOT	\$750,000
3	I-94 Veterans Blvd Interchange (Phase II)	Remove NB left turn lanes and replace with NB to WB loop ramp	-	-	West Fargo/ Fargo/NDDOT	\$7,000,000
4	I-94 Westbound	Interstate Widening from 2 to 3 lanes	45th Street S WB Off- Ramp	Veterans Blvd WB Off- Ramp	NDDOT	\$1,980,000
5	I-94 Eastbound	Interstate Widening from 2 to 3 lanes	I-29 SB Off-Ramp	I-29 NB On-Ramp Merge to I-94 EB	NDDOT	\$900,000
6	I-94 Westbound	Widening Underpass from 2 to 3 lanes	I-94 WB to I-29 SB Loop Off-Ramp	I-29 SB to I-94 WB On- Ramp Merge	NDDOT	\$740,000
7	I-29 to I-94 Ramp	I-29 SB to I-94 EB Flyover and Ramp Widening from 1 to 2 lanes	I-29 SB Off-Ramp to I-94 EB	I-94 EB Merge with I-29 NB Off-Ramp	NDDOT	\$5,000,000
8	I-94 Eastbound	Interstate Widening from 3 to 4 lanes	I-29 SB & I-29 NB Off- Ramp Merge	I-94 EB Off-Ramp to 25th Street SB	NDDOT	\$1,800,000
9	I-94 Westbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	25th Street S On-Ramp	I-29 NB On-Ramp	NDDOT	\$1,260,000
11A	I-94 Eastbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	25th Street S On-Ramp	S University Drive Off- Ramp	NDDOT	\$1,240,000

TABLE 10-1: ROADWAY VISION PLAN

Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)
11B	I-94 Eastbound	Widening 25th Street Interchange Underpass from 3 to 4 lanes	25th Street S Off-Ramp	25th Street to I-94 EB On- Ramp	NDDOT	\$300,000
12	I-94 Westbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	S University Drive On- Ramp	25th Street S On-Ramp	NDDOT	\$1,920,000
13	I-94 Eastbound (1/2 ND)	Interstate Widening from 3 to 4 lanes	S University Drive On- Ramp	State Line	NDDOT	\$960,000
14	I-94 Westbound (1/2 ND)	Interstate Widening from 3 to 4 lanes	State Line	S University Drive Off- Ramp	NDDOT	\$940,000
15	I-94 Red River Bridge (1/2 ND)	Bridge Widening from 6 to 8 lanes	-	-	NDDOT	\$10,000,000
16	I-29 Northbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	32nd Avenue S On-Ramp	I-94 Off-Ramp	NDDOT	\$580,000
19	I-29 Southbound	Interstate Widening from 2 to 3 lanes (Auxiliary Lanes	32nd Avenue S Off-Ramp	52nd Avenue S Off-Ramp	NDDOT	\$3,460,000
20	I-29 Northbound	Interstate Widening from 2 to 3 lanes (Auxiliary Lanes	52nd Avenue S On-Ramp	32nd Avenue S On-Ramp	NDDOT	\$4,600,000
21	I-29 /76th Avenue S Interchange	New Interchange	-	-	Fargo/NDDOT	\$25,000,000
49	S University Drive	Widen 4 to 6 lanes	13th Avenue S	18th Avenue S	NDDOT	\$6,000,000
50	S University Drive	Widen 2 to 3 lanes	1Street Avenue S	5th Avenue S	NDDOT	\$750,000
51	10th Street N	Widen 2 to 3 lanes	4th Avenue N	7th Avenue N	NDDOT	\$475,000
52	10th Street S	Widen 2 to 3 lanes	1Street Avenue S	5th Avenue S	NDDOT	\$710,000
				Тс	otal NDDOT Projects	\$86,365,000

Project ID	Project Name	Project Description	From	Jurisdiction	Cost (\$)		
			LOCAL NORTH DAKOTA PRO	DJECTS			
26	Sheyenne Street	Widen 2 to 4 lanes	13th Avenue W	19th Avenue North	West Fargo	\$3,250,000	
27	Sheyenne Street	Widen 2 to 4 lanes	19th Avenue W	32nd Avenue E	West Fargo	\$7,000,000	
28	Sheyenne Street	Reconstruct and Widen 2 to 4 lanes	32nd Avenue E	40th Avenue S	West Fargo	\$5,125,000	
29	Veterans Blvd	Widen 4 to 6 lanes	19th Avenue E	32nd Avenue S	West Fargo/Fargo	\$4,500,000	
31	Sheyenne Street	Widen 2 to 4 lanes	40th Avenue E	52nd Avenue S	West Fargo	\$5,125,000	
32A	Sheyenne Street	Widen 2 to 4 lanes	52nd Avenue S	64th Avenue S	Horace	\$5,000,000	
32B	Sheyenne Street	Widen 2 to 4 lanes	64th Avenue S	76th Avenue S	Horace	\$5,000,000	
33	45th Street S	Widen 6 to 8 lanes	I-94 EB On-Ramp	23rd Avenue S	Fargo	\$660,000	
34	52nd Avenue S	Reconstruction + Widen 2 to 4 lanes	Sheyenne St	42nd Street S	West Fargo/ Fargo/Cass County	\$11,450,000	
35	64th Avenue S	New 4-Lane Arterial	County Road 17	Veterans Blvd Extension	Horace	\$4,800,000	
36A	64th Avenue S	New 4-Lane Arterial	45th Street S	38th Street SW	Fargo	\$5,050,000	
36B	64th Avenue S	New 4-Lane Arterial	45th Street S	Veterans Blvd Extension	Fargo	\$5,050,000	
37	76th Avenue S	New 4-Lane Arterial	County Road 17	Veterans Blvd Extension	Horace/Fargo	\$4,950,000	
38A	76th Avenue S	New 4-Lane Arterial	45th Street S	38th Street SW	Fargo	\$4,925,000	
38B	76th Avenue S	New 4-Lane Arterial	Veterans Blvd Extension	45th Street S	Fargo	\$4,925,000	
39A	Veterans Blvd Extension	New 2-Lane Arterial	52nd Avenue S	64th Avenue S	Fargo	\$3,960,000	
39B	Veterans Blvd Extension	New 2-Lane Arterial	64th Avenue S	76th Avenue S	Fargo	\$3,960,000	
40A	45th Street S Extension	New 4-Lane Arterial	52nd Avenue S	64th Avenue S	Fargo	\$3,980,000	
40B	45th Street S Extension	New 4-Lane Arterial	64th Avenue S	76th Avenue S	Fargo	\$3,980,000	
41A	38th Street Extension	New 4-Lane Arterial	55th Avenue S	64th Avenue S	Fargo	\$4,375,000	
41B	38th Street Extension	New 4-Lane Arterial	64th Avenue S	76th Avenue S	Fargo	\$4,375,000	
43	64th Avenue S Extension and I-29 Overpass	New 4-lane Arterial and Bridge	38th Street SW	36th Street SW	Fargo	\$11,700,000	

Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)				
44	64th Avenue S	New 4-Lane Arterial	36th Street SW	25th Street S	Fargo	\$3,250,000				
45	76th Avenue S Extension	New 4-Lane Arterial	38th Street SW	25th Street S	Fargo	\$5,150,000				
46	76th Avenue S	New 4-Lane Arterial	25th Street S	County Road 81	Fargo	\$4,950,000				
80	52nd Avenue South / 60th Avenue S (ND)	Widen 2 to 4 lanes and Bridge	State Line	S University Drive	Fargo Share Only	\$7,500,000				
83	12th-15th Avenue Toll Bridge (1/2 ND)	Remove Toll (Minor modifications)	-	-	Fargo Share Only	\$50,000				
87	76th/80th Avenue South	Construct New 2-lane Bridge	-	-	Fargo Share Only	\$11,200,000				
89	70th Avenue South Fargo	Construct New 2-lane Bridge (Option to 76th/80th)		Fargo Share Only	\$10,800,000					
Total Local Projects - North Dakota										
				тот	AL NORTH DAKOTA	\$242,405,000				
			MNDOT PROJECTS							
13	I-94 Eastbound (1/2 M)	Interstate Widening from 3 to 4 lanes	State Line	8th Street S Off-Ramp	MnDOT	\$960,000				
14	I-94 Westbound (1/2 M)	Interstate Widening from 3 to 4 lanes	8th Street S On-Ramp	State Line	MnDOT	\$940,000				
15	I-94 Red River Bridge (1/2 M)	Bridge Widening from 6 to 8 lanes	-	-	MnDOT	\$10,000,000				
62	I-94 /20th Street Interchange	Rebuild 20th Street Interchange, Reconstruct 20th Street to 4 lanes widen I-94 Eastbound to 3 Lanes to Rest Area	24th Avenue	30th Avenue	Moorhead/ MnDOT	\$38,300,000				
77	TH 75 /8th Street S	Widen 2 to 4 lanes	46th Avenue S	60th Avenue S	MnDOT	\$6,050,000				
				Total Interstate F	Projects - Minnesota	\$56,250,000				

Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)		
			LOCAL MINNESOTA PROJE	стѕ				
80	52nd Avenue South /60th Avenue S (Minnesota)	Widen 2 to 4 lanes and Bridge	8th Street S	State Line	Clay County Share Only	\$11,250,000		
81	8th Street/11th Street Railroad Grade Separated Crossing	Railroad Underpass	8th Street/11th Street	Main Avenue	Moorhead	\$40,000,000		
82	21st Street Railroad Grade Separated Crossing	Railroad Underpass	21st Street	Main Avenue	Moorhead	\$30,000,000		
83	12th-15th Avenue Toll Bridge (1/2 North Dakota)	Remove Toll (Minor modifications)	-	-	Moorhead Share Only	\$50,000		
84	20th Street Extension	New 2-Lane Arterial	40th Avenue	50th Avenue	Moorhead	\$4,080,000		
85	20th Street Extension	New 2-Lane Arterial	50th Avenue	60th Avenue S	Moorhead	\$3,920,000		
87	76th/80th Avenue South	Construct New 2-lane Bridge	-	-	Clay County Share Only	\$11,200,000		
89	70th Avenue South Fargo	Construct New 2-lane Bridge (Option to 76th/80th)	-	-	Clay County Share Only	\$10,800,000		
90	3rd Street S	New Collector Roadway	50th Avenue S	60th Avenue S	Moorhead	\$1,980,852		
91	8th Avenue N	New Collector Roadway	28th Street N	34th Street N	Moorhead	\$993,454		
92	4th Avenue S	New Collector Roadway	34th Street S	40th Street S	Moorhead	\$1,050,950		
93	40th Street S	New Local Roadway	24th Avenue S	28th Avenue S	Moorhead	\$985,352		
94	46th Street S	New Collector Roadway	12th Avenue S	28th Avenue S	Moorhead	\$2,000,350		
95	28th Street S	Existing Gravel to Paved	Current Ending	50th Avenue S	Moorhead	\$1,133,262		
96	14th Street S	Existing Gravel to Paved	46th Avenue S	50th Avenue S	Moorhead	\$1,298,136		
97	8th Avenue	New road	1,300 feet east of 34th Street	CSAH 9	Dilworth	\$530,542		
98	8th Avenue North	New road	CSAH 9	7th Street East	Dilworth	\$2,004,244		
99	CSAH 16	Existing Gravel to Paved	40th Street S	50th Street S	Clay County Share Only	\$2,014,636		
100	50th Street S	Existing Gravel to Paved	12th Avenue S	28th Avenue S	Moorhead	\$1,993,158		

Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	
101	28th Avenue S	Existing Gravel to Paved	1 mile West of 50th Street S	-	Moorhead	\$1,863,500	
102	40th Street S	Existing Gravel to Paved	4th Avenue S	12th Avenue S	Moorhead	\$940,714	
103	50th Avenue S	Existing Gravel to Paved	TH 75 28th Street S		Clay County Share Only	\$2,987,354	
				Total Local I	Projects - Minnesota	\$133,076,504	
					TOTAL MINNESOTA	\$189,326,504	
TOTAL Metro COG							

FORECASTING TRAFFIC METRO COG TRAVEL DEMAND MODEL

The Roadway Vision Plan was developed through an analysis of system deficiencies, public input and projects submitted by the Study Review Committee. The traffic forecasts are based on the Metro COG Regional Travel Demand Model that was updated for this project. The travel model update included refined algorithms, updated land use and traffic counts, and a complete model calibration and validation process.

The model process, shown graphically to the right, uses estimates of household and employment data and the existing roadway network as input assumptions. Household and employment data is estimated by regions, called Traffic Analysis Zones (TAZ). The model utilizes three basic steps:

- 1. Trip Generation: Based on existing and forecasted 2020 and 2040 socioeconomic data, including the number of dwelling units and jobs, the model estimates trips by trip type, such as work trips, shopping trips, or service trips. By comparing base year trip generation to forecast 2020 and 2040 trip generation, one can see the estimated growth in trip activity.
- 2. Trip Distribution: The trip distribution process examines the relationship between where trips begin and end. As an example, a Home Based Work Trip begins at the residence and ends at the place of work. This process of distributing trips is conducted for each trip type and for each trip generated throughout the modeling area.
- **3. Trip Assignment:** Trip distribution patterns are assigned to various routes between trip origins and destinations. The modeling software recognizes the travel speeds of the roadway network to identify the shortest distance and time paths. The model also recognizes that as the roadways fill up, congestion might occur making alternate routes more attractive.

The Metro COG travel model forecasts daily traffic. The model's accuracy is refined through a sophisticated model calibration process, where estimated existing trips are compared to actual traffic counts. The travel model is useful throughout the transportation planning process. It is used as a tool to identify future deficiencies. All candidate projects were modeled to determine congestion relief, reduced delay, vehicle miles of travel and other modeling parameters. This modeling data was used to determine which projects faired the best and used for prioritization.



Interstate I-94 and I-29 Mainline Interstate Improvements

As previously presented, a regional travel demand model was developed to evaluate future conditions based on project growth. This analysis identified a number of roadway improvements that would become congested by 2020 and 2040 that warranted improvements. Through this process the Metro COG 2040 Vision Plan was developed which includes improvements that would mitigate forecasted impacts.

The evaluation included current conditions, and 2020 and 2040 forecasts with the existing roadway network plus improvements that are funded and scheduled for implementation by 2030. These forecasts identified facilities that will be congesting or congested, including local roadways, interstates and interchanges. Based on those forecasts, improvements were identified to mitigate forecast congestion.

Interstates 94 and 29 are the two major facilities that provide for regional travel within the region. Because of the importance of these facilities, a focused evaluation matrix was developed to illustrate the need and improvements. This matrix is presented in Tables 10-2 for I-94 and 10-3 for I-29 on the following pages.

This evaluation matrix only evaluates mainline lanes and does not evaluate interchange improvements including ramps and over/under crossings. The interstate evaluation matrices identify each interchange and provides data on each mainline link between interchanges and between the on and off ramps. As presented, this analysis was conducted by direction.

For comparative purposes, there are four alternatives for each interstate. These include the 2010 existing condition, the 2020 with committed projects, the 2040 with committed projects and the 2040 forecasts with recommended interstate improvements.

The evaluation data developed for each link includes daily link capacity, average daily traffic, volume/capacity ratio and level of service.

The matrices are color coded to reflect the performance of the interstate link by alternative. Green is uncongested (LOS A to C), Yellow is congesting (LOS D) and red is congested (LOS E and F).

As presented, all interstate links on I-94 and I-29 currently operate uncongested (LOS A-C) and will remain uncongested through the forecast year 2020. It should be noted that these volume and congestion forecasts are based on average daily traffic. Therefore, there may be some areas of the interstate network that may experience a brief duration of congestion during the a.m. or p.m. peak hour.

When forecasting for 2040, there are some links along I-94 and I-29 that will result in congesting or congested conditions. On I-94 these links are generally between the Veterans Boulevard interchange in North Dakota and 8th Street interchange in Minnesota. The areas of congestion along I-29 are between the I-94 interchange and the 52nd Avenue South Interchange. These links will be serving future growth in south Fargo.

		West Bound																						
Legend		-																						
	Uncongested	s	heyenn	e \	/eteran	S	45th		I-29		25th	ι	Jniversit	y Red	River B	ridge T	H 75/8t	:h	20th		34th		TH 3336	5
	Congesting		~		~		~		~		~		~				~		~		~		~	
	Congested		\leftrightarrow		\leftrightarrow		\leftrightarrow		\leftrightarrow		\leftrightarrow		\leftrightarrow		_		\leftrightarrow		\leftrightarrow		\leftrightarrow		\leftrightarrow	
			~		~		~		~		~		~				~		~		~		~	
	Number of Lanes	2	2	2	2	2	2	3	2	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2
ing o	Capacity	34,000	34,000	34,000	34,000	34,000	34,000	51,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000
201 Xist	Average Daily Traffic	7,550	6,800	11,000	10,000	13,590	13,000	22,540	19,000	31,880	30,300	32,400	28,500	32,000	32,000	32,000	17,000	20,000	16,500	13,500	12,750	12,750	8,500	9,250
ú	Volume / Capacity Ratio	0.22	0.20	0.32	0.29	0.40	0.38	0.44	0.56	0.63	0.59	0.64	0.56	0.63	0.63	0.63	0.50	0.59	0.49	0.40	0.38	0.38	0.25	0.27
	Level of Service	А	А	Α	А	А	А	В	А	В	Α	В	A	В	В	В	А	A	Α	Α	А	А	А	A
+ 3	Number of Lanes	2	2	2	2	2	2	3	2	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2
rte o	Capacity	34,000	34,000	34,000	34,000	34,000	34,000	51,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	34,000	34,000	34,000	34,000
isti two	Average Daily Traffic	9,538	8,869	13,486	11,492	21,151	19,482	31,397	24,698	38,609	37,050	39,550	32,989	36,619	36,619	36,619	25,820	24,848	20,568	17,189	15,012	14,971	9,871	10,867
Ne E Z	Volume / Capacity Ratio	0.28	0.26	0.40	0.34	0.62	0.57	0.62	0.73	0.76	0.73	0.78	0.65	0.72	0.72	0.72	0.51	0.49	0.40	0.34	0.44	0.44	0.29	0.32
0	Level of Service	А	А	Α	Α	В	А	В	С	С	С	С	В	С	С	С	Α	Α	В	Α	А	Α	Α	A
	•				•						•		•		•				•			•		
	Number of Lanes	2	2	2	2	2	2	3	2	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2
rted ;	Capacity	34.000	34.000	34.000	34.000	34.000	34.000	51.000	34.000	51.000	51.000	51.000	51.000	51.000	51.000	51.000	51.000	51.000	51.000	51.000	34.000	34.000	34.000	34.000
mit wo	Average Daily Traffic	14.017	14,643	19.811	16,292	29,799	28.043	45,180	35,177	52.040	49,115	51,909	41,779	44,234	44,234	44,234	32,833	33.086	28,285	24,187	20.414	20.253	13,106	14,699
2 Sin	Volume / Canacity Batio	0.41	0.43	0.58	0.48	0.88	0.82	0.89	1.03	1.02	0.96	1.02	0.82	0.87	0.87	0.87	0.64	0.65	0.55	0.47	0.60	0.60	0.39	0.43
<u> </u>	Level of Service	A	A	A	Δ	D	D	D	F	F	F	F	D	D	D	D	B	B	D	C	B	B	A	A
						_	_	_			_		-	_	_	-	-	-	_	-	_	-		<u> </u>
í	Number of Lanes	2	2	2	2	2	2	3	3	4	3	4	3	3	3	3	3	3	3	3	2	2	2	2
cal ent:	Canacity	34 000	34,000	34 000	34 000	34 000	34,000	51 000	51 000	68,000	51,000	68 000	51 000	51 000	51 000	51 000	51 000	51 000	51 000	51 000	34,000	34 000	34 000	34 000
Fis an	Average Daily Traffic	13 300	11 500	21 700	17 900	30,100	28 100	1/ 800	35 300	53,000	19 900	52 200	41 500	44 600	44 600	44 600	32 900	33 700	26 300	26 300	20,200	20,200	13 200	14 700
D40 PI	Volume / Canacity Ratio	0.41	0.43	0.58	0.48	0.88	0.82	0.80	0.69	0.78	0.96	0.77	0.82	0.87	0.87	0.87	0.64	0.65	0.55	0.47	0.60	0.60	0.30	0.43
<u>⊒</u> C ≍	Lovel of Service	0.41	0.43	0.38	0.46	0.00	0.82 D	0.85	0.05 D	0.78	0.90 E	0.77	0.82	0.87	0.87	0.87	0.04 P	0.05	0.55	0.47	0.00	0.00	0.35	0.43
	Level of Service	A	A		A	U	U	U	Б			Ľ	U	U	U		В	Б	U	Ľ	В	В	A	A
	Due is at Number					4			C	0	0	10	12	14	15	14								
	Project Number	2	2	2	2	4	4	2	0	9	9	12	12	14	15	14	2	2	2	2	2	2	2	
ants	Number of Lanes	24.000	2	2	2	5	3	3	3	4	4	4	4	4	4	4	3	3	3	3	2	2	2	2
64 G		34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	51,000	51,000	51,000	51,000	34,000	34,000	34,000	34,000
0 20	Average Daily Traffic	14,017	14,638	19,811	16,296	29,824	28,068	45,204	35,201	52,087	49,157	51,951	41,788	44,239	44,239	44,239	32,838	33,091	28,284	24,187	20,414	20,253	13,106	14,699
Vis npr	2040 Change From No Project	0	-5	0	4	25	25	24	24	47	42	42	9	5	5	5	5	5	-1	0	0	0	0	0
-	Volume / Capacity Ratio	0.41	0.43	0.58	0.48	0.58	0.55	0.89	0.69	0.77	0.72	0.76	0.61	0.65	0.65	0.65	0.64	0.65	0.55	0.47	0.60	0.60	0.39	0.43
	Level of Service	Α	A	A	A	A	A	D	В	С	С	С	В	В	В	В	В	В	D	С	В	В	A	A

TABLE 10-2: I-94 MAINLINE ALTERNATIVES EVALUATION MATRIX

		East Bound																						
Legend																								
	Uncongested	S	heyenn	e \	/eteran	S	45th		I-29		25th	I	Jniversit	y Red	River B	ridge T	H 75/8t	:h	20th		34th		TH 3336	;
	Congesting		\wedge		\wedge		\wedge		\wedge		\wedge		\wedge				\wedge		\wedge		\wedge		\wedge	
	Congested		\leftrightarrow										\leftrightarrow		_				\overleftrightarrow					
	C C		•		•		•		•		•		•				•		•		•		•	
	Number of Lanes	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2
<u>ه</u>	Capacity	34,000	34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000	34,000
2010 isti	Average Daily Traffic	7,550	6,800	11,000	10,000	13,590	22,000	22,540	20,000	31,880	27,600	32,600	29,000	32,000	32,000	32,000	19,000	20,000	16,500	16,500	12,750	12,750	8,500	9,250
Ϋ́Δ	Volume / Capacity Ratio	0.22	0.20	0.32	0.29	0.40	0.43	0.44	0.39	0.63	0.54	0.64	0.57	0.63	0.63	0.63	0.56	0.59	0.49	0.49	0.38	0.38	0.25	0.27
	Level of Service	А	А	А	А	Α	А	А	А	В	А	В	A	В	В	В	А	А	А	А	А	А	А	А
																						-	-	
	Number of Lanes	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	2
ork et e	Capacity	34,000	34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	34,000	51,000	34,000	34,000	34,000	34,000
stir stir	Average Daily Traffic	9,681	8,239	13,058	11,671	16,363	25,412	29,512	25,840	39,702	35,642	41,030	34,776	38,007	38,007	38,007	22,941	24,471	20,512	20,512	14,691	14,823	9,855	10,866
N Con Exi	Volume / Capacity Ratio	0.28	0.24	0.38	0.34	0.48	0.50	0.58	0.51	0.78	0.70	0.80	0.68	0.75	0.75	0.75	0.45	0.48	0.60	0.40	0.43	0.44	0.29	0.32
•	Level of Service	А	А	Α	Α	Α	А	А	А	С	С	D	В	С	С	С	А	А	В	Α	А	Α	А	Α
																						-	-	
+ 0 +	Number of Lanes	2	2	2	2	2	3	3	2	3	3	3	3	3	3	3	3	3	2	3	2	2	2	2
orte 4	Capacity	34,000	34,000	34,000	34,000	34,000	51,000	51,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	34,000	51,000	34,000	34,000	34,000	34,000
stir stir	Average Daily Traffic	15,259	12,202	19,881	17,391	26,430	35,074	44,381	36,392	54,562	49,298	54,166	44,705	48,029	48,029	48,029	30,851	33,219	28,676	28,676	20,014	19,963	13,018	14,699
N Con Exi	Volume / Capacity Ratio	0.45	0.36	0.58	0.51	0.78	0.69	0.87	1.07	1.07	0.97	1.06	0.88	0.94	0.94	0.94	0.60	0.65	0.84	0.56	0.59	0.59	0.38	0.43
•	Level of Service	А	А	А	Α	С	В	D	F	F	E	F	D	E	E	E	В	В	D	А	А	А	А	А
- a s	Number of Lanes	2	2	2	2	2	3	3	3	4	4	4	3	3	3	3	3	3	2	3	2	2	2	2
ine ine	Capacity	34,000	34,000	34,000	34,000	34,000	51,000	51,000	51,000	68000	68,000	68,000	51,000	51,000	51,000	51,000	51,000	51,000	34,000	51,000	34,000	34,000	34,000	34,000
0 Fi stra Plai	Average Daily Traffic	13,900	11,800	22,800	19,100	27,100	22,800	45,700	36,800	56,200	50,000	55,100	34,200	48,400	48,400	48,400	31,700	33,900	27,200	27,200	20,000	20,000	13,000	14,700
204 10 204	Volume / Capacity Ratio	0.45	0.36	0.58	0.51	0.78	0.69	0.87	0.72	0.83	0.74	0.81	0.88	0.94	0.94	0.94	0.60	0.65	0.84	0.56	0.59	0.59	0.38	0.43
0 5	Level of Service	А	А	А	А	С	В	D	С	D	E	D	D	E	E	E	В	В	D	А	А	А	А	Α
	Project Number								5	8	8	11		13	15	13			61					
_ tr	Number of Lanes	2	2	2	2	2	3	3	3	4	4	4	3	4	4	4	3	3	3	3	2	2	2	2
nei nei	Capacity	34,000	34,000	34,000	34,000	34,000	51,000	51,000	51,000	68,000	68,000	68,000	51,000	68,000	68,000	68,000	51,000	51,000	51,000	51,000	34,000	34,000	34,000	34,000
on 204	Average Daily Traffic	15,260	12,203	19,900	17,408	26,449	35,350	44,651	36,410	54,619	49,359	54,225	44,751	48,074	48,074	48,074	30,856	33,224	28,679	28,679	20,014	19,963	13,018	14,699
Visi	2040 Change From No Project	1	1	19	17	19	276	270	18	57	61	59	46	45	45	45	5	5	3	3	0	0	0	0
- 5	Volume / Capacity Ratio	0.45	0.36	0.59	0.51	0.78	0.69	0.88	0.71	0.80	0.73	0.80	0.88	0.71	0.71	0.71	0.61	0.65	0.56	0.56	0.59	0.59	0.38	0.43
	Level of Service	А	А	Α	А	С	В	D	С	D	С	D	D	С	С	С	В	В	Α	А	А	А	А	Α

TABLE 10-2: I-94 MAINLINE ALTERNATIVES EVALUATION MATRIX (CONTINUED)

										N	orth Bo	ound								
Legend		-																		
	Uncongested		CR 20		19th		12th		Main		13th		I-94		32nd		52nd		76th	
	Congesting		~		~		~		~		~		~		^		~		^	
	Congested		\leftrightarrow																	
	Number of Lanes	2	2	2	2	3	3	3	3	3	3	4	4	3	2	2	2	2	2	2
o ^g u	Capacity	34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	51,000	34,000	34,000	34,000	34,000	34,000	34,000
201 tisti	Average Daily Traffic	8,240	8,000	10,870	7,100	14,920	13,000	23,620	22,500	28,000	26,400	30,250	21,000	19,760	8,500	9,620	5,000	6,200	6,200	6,200
ũ ũ	Volume / Capacity Ratio	0.24	0.24	0.32	0.21	0.29	0.25	0.46	0.44	0.55	0.52	0.44	0.31	0.39	0.25	0.28	0.15	0.18	0.18	0.18
	Level of Service	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А
-				-																
+ 73	Number of Lanes	2	2	2	2	3	3	3	3	3	3	4	4	3	2	2	2	2	2	2
o ng brk	Capacity	34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	51,000	34,000	34,000	34,000	34,000	34,000	34,000
202 cisti nmi	Average Daily Traffic	9,385	9,050	12,382	8,330	16,938	15,229	27,678	26,159	33,062	31,420	38,613	29,722	30,290	16,996	19,068	5,760	7,235	7,235	7,235
Ne Co E	Volume / Capacity Ratio	0.28	0.27	0.36	0.25	0.33	0.30	0.54	0.51	0.65	0.62	0.57	0.44	0.59	0.50	0.56	0.17	0.21	0.21	0.21
J	Level of Service	А	А	А	А	А	А	А	А	В	В	А	А	А	А	А	Α	А	А	А
75	Number of Lanes	2	2	2	2	3	3	3	3	3	3	4	4	3	2	2	2	2	2	2
ork ttee	Capacity	34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	51,000	34,000	34,000	34,000	34,000	34,000	34,000
twe	Average Daily Traffic	11,912	11,374	16,159	11,386	22,264	20,991	37,585	33,978	43,592	42,036	53,789	45,463	50,200	32,000	35,258	10,217	12,678	12,678	12,678
Ne Con	Volume / Capacity Ratio	0.35	0.33	0.48	0.33	0.44	0.41	0.74	0.67	0.85	0.82	0.79	0.67	0.98	0.94	1.04	0.30	0.37	0.37	0.37
Ŭ	Level of Service	А	А	А	А	А	А	С	В	D	D	С	В	E	E	F	Α	А	А	А
ст ст 1	Number of Lanes	2	2	2	2	3	3	3	3	3	3	4	4	4	2	2	2	2	2	2
ine r	Capacity	34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	68,000	34,000	34,000	34,000	34,000	34,000	34,000
0 Fi stra Plan ven	Average Daily Traffic	11,900	11,900	16,100	12,100	22,500	21,500	37,600	34,300	43,200	41,800	53,100	44,500	47,300	32,600	36,100	10,100	12,000	12,000	12,000
204	Volume / Capacity Ratio	0.35	0.33	0.48	0.33	0.44	0.41	0.74	0.67	0.85	0.82	0.79	0.67	0.70	0.96	1.06	0.30	0.37	0.37	0.37
- 0 <u>-</u>	Level of Service	А	Α	А	А	А	А	С	В	D	D	С	В	С	E	F	А	А	А	А
	Project Number													16	16	20			21	
ts -	Number of Lanes	2	2	2	2	3	3	3	3	3	3	4	4	4	3	3	2	2	2	2
o Plar	Capacity	34,000	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	68,000	51,000	51,000	34,000	34,000	34,000	34,000
204 on l	Average Daily Traffic	11,912	11,374	16,159	11,386	22,264	20,991	37,594	33,987	43,613	42,058	53,811	45,488	50,263	32,065	36,681	10,217	12,678	12,678	12,678
/isi/	2040 Change From No Project	0	0	0	0	0	0	9	9	21	22	22	25	63	65	1,423	0	0	0	0
<u> </u>	Volume / Capacity Ratio	0.35	0.33	0.48	0.33	0.44	0.41	0.74	0.67	0.86	0.82	0.79	0.67	0.74	0.63	0.72	0.30	0.37	0.37	0.37
	Level of Service	Α	Α	Α	Α	Α	А	С	В	D	D	С	В	С	В	С	Α	А	Α	А

TABLE 10-3: I-29 MAINLINE ALTERNATIVES EVALUATION MATRIX

										S	outh B	ound								
Legend																				→
	Uncongested		CR 20		19th		12th		Main		13th		I-94		32nd		52nd		76th	
	Congesting		\wedge		<u>`</u> .															
	Congested		\bigtriangledown		$\overline{}$															
[Number of Lanes	2	2	2	3	3	3	3	3	3	3	4	4	3	2	2	2	2	2	2
ی ق	Capacity	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	51,000	34,000	34,000	34,000	34,000	34,000	34,000
201 isti	Average Daily Traffic	8,250	8,000	10,870	14,600	14,920	20,000	23,620	22,500	25,000	19,500	30,250	17,500	19,760	11,000	9,620	5,000	6,200	6,200	6,200
Ϋ́ Δ	Volume / Capacity Ratio	0.24	0.24	0.32	0.29	0.29	0.39	0.46	0.44	0.49	0.38	0.44	0.26	0.39	0.32	0.28	0.15	0.18	0.18	0.18
	Level of Service	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А	А
_	Number of Lanes	2	2	2	3	3	3	3	3	3	3	4	4	3	2	2	2	2	2	2
stec	Capacity	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	51,000	34,000	34,000	34,000	34,000	34,000	34,000
stin two	Average Daily Traffic	9,445	8,986	12,298	16,608	17,090	23,882	28,020	28,540	31,738	25,385	38,980	24,365	27,537	18,498	18,577	5,879	7,244	7,244	7,244
Exis Com	Volume / Capacity Ratio	0.28	0.26	0.36	0.33	0.34	0.47	0.55	0.56	0.62	0.50	0.57	0.36	0.54	0.54	0.55	0.17	0.21	0.21	0.21
0	Level of Service	А	А	Α	Α	А	А	А	Α	В	Α	Α	А	Α	Α	Α	Α	Α	Α	А
	•			•		•		•							•	•				
_	Number of Lanes	2	2	2	3	3	3	3	3	3	3	4	4	4	2	2	2	2	2	2
ork g +	Capacity	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	68,000	34,000	34,000	34,000	34,000	34,000	34,000
040 mit mit	Average Daily Traffic	11,848	11,043	15,494	20,498	22,635	31,452	36,650	39,518	43,565	36,064	54,893	40,969	47,615	36,404	39,793	9,414	10,888	10,888	10,888
Exis om Net	Volume / Capacity Ratio	0.35	0.32	0.46	0.40	0.44	0.62	0.72	0.77	0.85	0.71	0.81	0.60	0.70	1.07	1.17	0.28	0.32	0.32	0.32
0	Level of Service	А	А	Α	Α	Α	В	С	С	D	С	D	В	С	F	F	Α	Α	Α	А
	•			•		•		•												
- R - S	Number of Lanes	2	2	2	3	3	3	3	3	3	3	4	4	4	2	2	2	2	2	2
scal ined	Capacity	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	68,000	34,000	34,000	34,000	34,000	34,000	34,000
D Fig trai	Average Daily Traffic	11,900	11,200	15,700	20,800	23,100	21,200	37,200	41,000	45,100	37,200	55,700	423,900	47,300	36,900	38,400	8,600	10,600	10,600	10,600
ons F	Volume / Capacity Ratio	0.35	0.32	0.46	0.40	0.44	0.62	0.72	0.77	0.85	0.71	0.81	0.60	0.70	1.07	1.17	0.28	0.32	0.32	0.32
	Level of Service	А	А	Α	A	A	В	С	С	D	С	D	В	С	F	F	Α	Α	Α	А
			1					1												
	Project Number														19	19			21	
ts	Number of Lanes	2	2	2	3	3	3	3	3	3	3	4	4	4	3	3	2	2	2	2
lan nen	Capacity	34,000	34,000	34,000	51,000	51,000	51,000	51,000	51,000	51,000	51,000	68,000	68,000	68,000	51,000	51,000	34,000	34,000	34,000	34,000
odo ven F	Average Daily Traffic	11,848	11,043	15,494	20,499	22,636	31,455	36,654	39,521	43,571	36,069	54,899	41,003	47,896	36,693	40,170	9,414	10,888	10,888	10,888
2 /isic	2040 Change From No Project	0	0	0	1	1	3	4	3	6	5	6	34	281	289	377	0	0	0	0
	Volume / Capacity Ratio	0.35	0.32	0.46	0.40	0.44	0.62	0.72	0.77	0.85	0.71	0.81	0.60	0.70	0.72	0.79	0.28	0.32	0.32	0.32
	Level of Service	А	А	Α	А	A	В	С	С	D	С	D	В	С	С	С	А	А	А	А

TABLE 10-3: I-29 MAINLINE ALTERNATIVES EVALUATION MATRIX (CONTINUED)

Based on the 2040 forecasts and level of service, mainline interstate improvements were identified for those links which were forecasted to be congested (LOS E and F). Improvements were not recommended for interstate links forecasted just over the threshold between C and D or possibly through traffic flow concerns with an improvement not working with and up or down stream link.

After all interstate mainline link improvements were identified, they were added to the travel demand model and the model was rerun with 2040 growth. As presented in the matrices, the identified improvements will result in uncongested LOS A through C, or possibly just over the threshold of congesting LOS D.

An issue raised by North Dakota Department of Transportation was whether the proposed interstate improvements might attract additional traffic from the local roadway network.

To address this issue, the interstate daily traffic forecasts for the 2040 base condition without improvements were compared to 2040 with improvements. The differences in traffic volumes were virtually non-existent for links at some distance from a mainline improvement and insignificant for links that did have an improvement. These non-existent or insignificant changes without or with improvements indicates that the traffic on the interstate is regional and not a product of inadequate or undersized local roadways. The capacity on these local roadways is adequate, but with slower speeds, signals and traffic control, the longer trips are attracted to the interstates. However, as future local arterials are added in the expanding growth area, they should be designed with corridor preservation and minimal signals to make these new arterials as attractive as possible.

In addition to the travel demand modeling and interstate matrices analysis, conceptual lane improvements were added for each interchange via an aerial drawing. These drawings are presented in Appendix 10-2.

Red River Crossing Alternatives Evaluation

One of the key transportation issues identified by Metro COG and the public are the Red River crossings. As the region grows, either new crossings or widening of existing crossings will be required to accommodate this growth. To address this issue a focused Red River crossings analysis was prepared which 1) evaluates the current, 2020 and 2040 needs and 2) evaluates the benefit of new or widened crossings to address congesting or congested crossings.

Figure 10-2 on the following page presents the existing bridges, existing bridges that will be over capacity by 2040 that might warrant widening and five possible new locations. There are five existing bridges that currently operate at acceptable congestion levels that will continue to operate at acceptable levels in 2040. These are the Red River crossings at County Road 20/22, Broadway, 1 Street Avenue North, NP/Center Avenue and Main Avenue. Although the existing Red River Crossing at 12th/15th currently operates at acceptable congestion levels and will continue to do so in 2040, it does have a toll which impacts travel patterns. As an alternative to improve the overall capacity of the 12th/15th Avenue bridge, two alternatives were considered for this facility. The first was removing the toll and making it free for the public. The second alternative was to remove the toll and reconstruct the bridge and eliminate the possibility of flooding.

FIGURE 10-2: POTENTIAL RED RIVER CROSSING ALTERNATIVES



There are two existing Red River bridge crossings that, although they currently operate without congestion, the forecast growth for 2040 would result in congestion. These are the I-94 and 52nd/60th Avenue South bridges.

The five potential new Red River bridge crossings have long been discussed as possible new bridge crossing locations. These include 13th/12th Avenue South, 32nd/40th Avenue South, 64th/70th Avenue South, 70th Avenue South in Fargo, and 76th/80th Avenue South.

The Red River crossings evaluation was based on current, 2020 and 2040 performance of the existing crossings. Performance measures included forecast daily traffic demand, bridge capacity, volume, capacity ratio and level of service. Based on this analysis, it was determined that the current bridges crossing the Red River are currently adequate and provide uncongested conditions. These existing bridges will continue to provide uncongested performance through 2020. However, by the 2040 horizon year, the I-94 and 52nd/60th Avenue South bridges will either be congesting or congested.

The performance evaluation was based on Fargo-Moorhead Metro COG Travel Demand Analysis. The performance measure results are presented in Table 10-4 on the following page, the Red River Crossing Technical Analysis. This matrix is comprehensive and provides the performance of each existing bridge for current, 2020 and 2040 conditions. This matrix also provides the performance results from a bridge widening or a new bridge for the bridge itself, plus the performance change on all other bridges.

Legend	Ва	se Conditio	ons	River Crossing Alternatives											
Uncongested Uncongested Congesting	2010	2020	2040	12th-15th Avenue North	13th / 12th Avenue South	I-94 Both Directions	32nd Ave / 40th Ave South	52nd / 60th Avenue South	64th/70th Avenue South	70th Avenue South Fargo	76th/80th Avenue South				

TADLE $\mathbf{I}\mathbf{V}^{-}\mathbf{T}$, NED NIVEN TECHNICAL ANALISIS	TABLE	10-4:	Red	RIVER	TECHNICAL	ANALYSIS
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	ADT	3,550	4,012	6,180	6,075	6,188	6,284	6,189	6,284	6,192	6,166	6,177
County Road	Change				-105	8	104	9	104	12	-14	-3
20 / 22	V/C	0.25	0.28	0.43	0.43	0.43	0.44	0.43	0.44	0.43	0.43	0.43
4011 / 4511	ADT	1,160	2,190	2,240	3,092	2,282	1,513	2,289	1,513	2,330	2,323	2,346
12th / 15th Avenue North	Change				<u>852</u>	42	-727	49	-727	90	83	106
Avenue North	V/C	0.08	0.15	0.16	0.22	0.16	0.11	0.16	0.11	0.16	0.16	0.16
1	ADT	12,290	14,860	18,600	18,196	18,145	18,618	18,459	18,618	18,742	18,831	18,762
ISt Avenue North	Change				-404	-455	18	-141	18	142	231	162
Avenue North	V/C	0.42	0.51	0.64	0.63	0.63	0.64	0.64	0.64	0.65	0.65	0.65
	ADT	4,100	3,145	4,010	3,937	3,845	3,989	4,114	3,989	4,119	3,997	4,077
Avenue	Change				-73	-165	-21	104	-21	109	-13	67
Avenue	V/C	0.16	0.12	0.16	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16
Main	ADT	22,360	22,560	25,800	25,620	22,515	26,068	25,568	26,070	25,659	25,652	25,605
	Change				-180	-3,285	268	-232	270	-141	-148	-195
Avenue	V/C	0.56	0.56	0.65	0.64	0.57	0.66	0.64	0.66	0.65	0.65	0.64
13th / 12th	ADT					<u>6,389</u>						
Avenue South	V/C					0.47						
1-94	ADT	64,000	74,620	92,260	92,380	89,929	92,565	88,500	92,563	92,143	92,066	92,022
Both Directions	Change				120	-2,331	<u>305</u>	-3,760	303	-117	-194	-238
	v/c	0.63	0.74	0.91	0.91	0.89	0.80	0.87	0.91	0.90	0.90	0.90
32nd / 40th	ADT							<u>5,938</u>				
Avenue South	V/C							0.33				
	ADT	3,990	7,250	13,900	13,953	13,973	13,968	13,064	13,968	9,395	10,520	11,434
52nd / 60th Avenue South	Change				53	73	68	-836	<u>68</u>	-4,505	-3,380	-2,466
Avenue south	V/C	0.18	0.40	0.93	0.93	0.93	0.93	0.87	0.49	0.63	0.70	0.76
64th / 70th	ADT									5,588		
Avenue South	V/C									0.32		
70th Avenue	ADT										4,836	
South Fargo	V/C										0.54	
76th / 80th	ADT											3,651
Avenue South	V/C											0.27

The performance evaluation matrix includes the seven existing bridges that cross the Red River and the five new potential crossings. The bridge locations for existing and potential new bridges are presented in the left column of the performance evaluation matrix. The alternatives evaluated for each bridge crossing are defined in the top row of the matrix. The base alternative assumes current, 2020 and 2040 forecasts without any widening of existing bridges or new bridges.

The River Crossing Alternatives are presented in the right eight columns and include the removal of the toll and the potential reconstruction of the 12th/15th Avenue North Bridge, widening of the I-94 and 52nd/60th Avenue South bridges and five new bridge alternatives at 13th/12th Avenue South, 32nd/40th Avenue South, 64th/70th Avenue South, 70th Avenue South in Fargo and 76th/80th Avenue South.

These alternatives and locations were based on 2040 forecasts, historic discussions regarding new bridges, and public input through the Connections workshop.

For each bridge alterative and location, performance measures are presented which include Average Daily Traffic, Volume/Capacity Ratio and Level of Service. For the bridge widening and new bridge alternatives, the performance measures also include the change in 2040 forecast traffic compared to the 2040 no project base alternative. In essence, if a bridge was widened or a new bridge constructed, how would that improvement impact other bridges.

The matrix is color coded to reflect the performance of the bridge by alternative. Green is uncongested (LOS A to C), Yellow is congesting (LOS D) and red is congested (LOS E and F). The grey boxes are river crossings where the bridge does not exist in that alternative.

Based on this evaluation, all bridges currently provide uncongested levels of service and will continue uncongested through 2020. This information is presented in the first two columns of the Red River Crossing Alternatives Evaluation Matrix. However, based on 2040 forecasts presented in the third column, two bridges will result in congesting or congested conditions. These are I-94 (both eastbound and westbound), and 52nd/60th Avenue South. These long term 2040 bridge impacts reflect the regional importance of I-94 for travel between North Dakota and Minnesota. The bridge impact is also forecasted on the 52nd/60th Avenue South Bridge which is the only bridge south of I-94 and serves the high growth areas to the south.

A positive finding is that the bridges to the north of I-94 will all continue to perform with excellent levels of service through 2040 and beyond. These bridges adequately serve existing traffic and will only experience minor increases in traffic, because the areas they serve are relatively built out and these areas are not forecasted for any significant growth.

A total of eight Red River crossing alternatives were evaluated. These alternatives included the removal of the toll on the 12th/15th Avenue North bridge, with possible reconstruction of the bridge to be above the flood line and two bridge widenings; I-94 eastbound and westbound and the 52nd/60th bridges both were forecasted to be congesting or congested by 2040. In addition, five new bridge crossings were evaluated. The 13th/12th Avenue South is located north of I-94 and 32nd/40th Avenue South is located south of I-94. The final three new bridges are 64th/70th Avenue South, 70th Avenue South in Fargo and at 76th/80th Avenue South, which are all south of the 52nd/60th Avenue South bridge.

Based on the Red River Crossing alternatives evaluation, it was determined that no new river crossing or widening of an existing bridge will result in uncongested 2040 forecasts on I-94 except for the widening of the I-94 Red River Bridge from three to four lanes, both eastbound and westbound. Whereas some alternative bridge widening or new bridges might attract some traffic from I-94, this shift will not result in uncongested conditions on I-94. It was also determined that by widening the I-94 Red River Bridge, the improvement would mitigate congestion on the bridge but it will not attract increased traffic from other crossings. The forecast volume on I-94 is virtually the same without or with improvements, further confirming that I-94 is a regionally significant bridge.

The 13th/12th Avenue South bridge which is located north of I-94 will draw some traffic from I-94 and Main Avenue. This redirected traffic to a new bridge will not result in significantly reduced congestion on I-94. Furthermore, the Main Avenue bridge has significant remaining capacity and will operate at uncongested level of service, with or without a new 13th/12th Avenue South bridge. Whereas a 13th/12th Avenue South bridge would provide intervening opportunities for trip activity north of I-94, it does not address the regional problem.

The 32nd/40th Avenue South is located between the congested I-94 and 52nd/60th South Avenue bridges. Similar to the 13th/12th Avenue South bridge, some traffic will divert from I-94, but not a sufficient reduction that would result in an uncongested I-94. Although the 32nd/40th Avenue south will attract less than 1,000 vehicles per day from the 52nd/60th Avenue South bridge, that reduction on the 52nd/60th Avenue South bridge will result in a slight improvement from congested (LOS E) to congesting (LOS D). This is because the trip reduction will result in daily volumes below the LOS D and E threshold, not a significant reduction in traffic.

The remaining three new bridges analyzed include a new bridge at 64th/70th Avenue South, 70th Avenue South and 76th/80th Avenue South. By constructing any one of these three new bridges, a sufficient number of forecast daily trips will divert from the 52nd/60th Avenue South bridge to the new bridge, which will reduce the volumes at 52nd/60th Avenue South to uncongested levels.

It should be noted that the amount of traffic forecasted on a new bridge is reduced the further south the new bridge is located. In essence the 52nd/60th bridge provides for the greatest connections between the growth area in south Fargo and Moorhead, and the three new bridges are located to the southerly end of the growth area and are, therefore, less attractive. One or more of these new bridges may be warranted beyond 2040 and corridor preservation of these facilities should be considered.

In addition to the technical data presented in Table 10-4, a second Red River Crossing Evaluation Matrix was prepared which examined additional characteristics and is presented in Table 10-5 on the following page. The additional evaluation included:

- **Costs:** The estimated cost for the bridge improvement, widening or new construction.
- **Daily Trips per \$1 million of Costs:** This measure provides a bridge cost effectiveness comparison.
- Bridge Utilization: An estimate of high to low as to how many trips might use the facility if provided compared to other bridge alternatives.
- **Cost Effectiveness:** This measure provides a bridge cost effectiveness comparison based on a normalized score of bridge utilization per \$1 million of costs.
- Effects on Adjacent Neighborhoods and Local Streets: It should be noted that some of the bridge alternatives might not negatively impact residential neighborhoods on either side of the river, whereas some crossings would be considered a negative impact a local neighborhood.
- Available Right-of-Way: A measurement as to whether from a planning level, there appears adequate right-of-way to accommodate a new bridge crossing or existing bridge widening.

			2040 ADT					Evaluation	n Criteria				
River Crossing Alternative	Improvement	Cost	& LOS with Bridge Improve- ment	Daily Trips Per \$1M	Bridge Utilization	Cost	Cost Effectiveness	Effects on Adjacent Neighborhoods & Local Streets	Available Right of Way	Compliments the Functional Street Hierarchy	Potential Environmental Impacts (Flood Plain, EJ, Farmland)	Score	Recommendations
12th / 15th Avenue North	Remove Toll & Keep Existing 2 Lane Bridge	\$100,000	3,092	30,920	0	+	++	-	+	0	0	3	Short Term Improvement
13th / 12th Avenue South	Construct New 2 Lane Bridge	\$22,000,000	6,389 A	290	+	-	0	-	-	-	0	-3	No
1-94	Widen from 6 to 8 lanes	\$40,000,000	92,615 C/D	2,315	++		+	+	+	+	0	4	Illustrative
32nd / 40th Avenue South	Construct New 2 Lane Bridge	\$23,160,000	5,938 A	256	+	-	0	-	-	0	-	-3	No
52nd / 60th Avenue South	Widen Bridge from 2 to 4 Lanes	\$18,750,000	13,900 A	741	+	-	+	+	0	+	-	2	Mid Term Improvement
64th / 70th Avenue South	Construct New 2 Lane Bridge	\$23,200,000	5,588 A	241	+	-	0	0	0	0	-	-1	No
70th Avenue South Fargo	Construct New 2 Lane Bridge	\$21,600,000	4,836 A	224	0	-	0	0	0	-	-	-3	Alternatve to 70th Ave.
76th / 80th Avenue South	Construct New 2 Lane Bridge	\$22,400,000	3,651 A	163	0	-	0	0	-	+	0	-1	Illustrative

TABLE 10-5: RED RIVER CROSSING ALTERNATIVES EVALUATION MATRIX

Legend

++ Very Positive (+2)

+ Positive (+1)

O Neutral (0)

- Negative (-1)

-- Very Negative (-2)

- **Complements the Functional Street Hierarchy:** Some of the bridge alternatives might align well with existing or future arterial streets whereas others would be required to travel on local residential streets.
- **Potential Environmental Impacts:** This measurement considered impacts into the Red River flood plain and the amount of vehicle miles of travel that would be reduced with the introduction of the a new crossing.

Red River Crossing Recommendations

The selection of a preferred set of Red River Crossings was based on public input at the second set of public meetings and input from the Metro 2040 Steering Committee. The following are the findings from these inputs and the Red River Crossing recommendations.

- **12th/15th:** This existing bridge currently has a toll and the toll is scheduled to be removed in the near future. This will increase the attractiveness of the bridge, but the low demand for this facility did not warrant the high cost of replacement that would only improve the crossing during potential flooding conditions.
- **NP/Center:** The NP/Center bridge will be over 100 years old by 2040 and, therefore, a candidate for replacement.
- I-94: The I-94 bridge crossing is forecasted to have congested conditions by 2040. There are no alternatives that would mitigate this impact. Therefore, the widening of the I-94 is an important element of the Transportation Vision Plan.
- **52nd/60th Avenue South:** The 52nd/60th Avenue South bridge is forecasted to experience a 250% increase in daily traffic by 2040, which will result in congested conditions. Alternatives to mitigate impacts include widening the existing bridge from 2 to

4 lanes or adding a new bridge at 64th/70th, 70th Avenue South Fargo, or 76th/80th.

- 76th/80th Avenue South (Alternate 70th Avenue South Fargo): The distance between 52nd/60th and 76th/80th is approximately two miles. This is also the direction growth is occurring and adding a new bridge crossing at this location would increase connectivity and improve safety and security. Although the 76th/80th Avenue is the preferred location, potential right of way and environmental issues might be determined with future detailed study. Therefore, the consensus was to retain the 70th Avenue South Fargo crossing as an alternative.
- 13th/12th Avenue South, 32nd/40th Avenue South and 64th/70th Avenue South: These three bridges have all been part of the discussion regarding future bridge crossings. However, based on the analysis, these three bridges are not recommended to be part of the Transportation Vision Plan as they were found to have high impacts and costs with little regional travel benefit.

Post 2040 Corridor Preservation

Metro 2040 is the Long Range Transportation Plan for the Metro COG region. By Federal law, this Plan must define the transportation needs for the region for at least 20 years. Metro COG meets that requirement, but also extends the time horizon to 25 years, hence 2040. Although this 2040 horizon might seem distant, the reality is that having a transportation vision for 2050, 2060, or beyond provides guidance for local jurisdiction in their future planning to preserve corridors for major transportation improvements.

Twenty years ago, 52nd/60th Avenue South was the southerly buildout boundary within the region. Currently, this 52nd/60th Avenue South corridor is experiencing significant growth and development pressure. The new long-term 2040 southerly edge of regional development is now the 76th/80th Avenue South corridor. However, in 10 years, 20 years, or 30 years, regional growth will extend even further to the south, to 100th/124th Avenue South.

The pressure for external growth will continue to occur in all directions, not just to the south. Network corridor preservation to support the eventual long-term growth is good planning and provides the opportunity to describe a longer term vision of the transportation system than the Metro 2040 forecasts and plan.

Corridor preservation is a tool to preserve these future routes for potential major roadway facilities to serve regional travel and provide alternatives to the existing Interstate and arterial network. Corridor preservation would include providing adequate rights-of-way and managing future access through the development and review process.

In 2011, Metro COG prepared a Traffic Operations Incident Management Study. The major corridors designated in this study provide a framework for future regional connections and a beltway type network that would serve the region in the future. These recommended corridors for preservation are presented in Figure 10-3 on the following page.

Transit Vision Plan

As presented in Chapter 2, Existing Transportation, Metro Area Transit (MATBUS) provides fixed route and paratransit service within the metro area. MATBUS is comprised of two separate, but coordinated municipal transit departments. The City of Fargo operates fixed-routes within Fargo and West Fargo while the City of Moorhead operates fixed-routes within Moorhead and Dilworth. Four of Fargo's routes are NDSU circular routes which provide bus routes specifically to NDSU and the surrounding neighborhoods.

As the region increases in population, and the population ages, transit will become more important in the future. A minimum vision for MATBUS is to provide for a growth in transit service hours and service miles equal to or greater than population growth.

This growth in transit service hours and service miles could be through expanded coverage, increased transit frequency or extended service hours.

Expanded Transit Coverage

Transit requires higher density development to be successful. As the Metro COG area grows, existing development areas may increase in density with infill development and undeveloped areas within the region will grow, creating trip density to support transit. Presented in Figure 10-4 on page 10-23 is a map that illustrates potential transit coverage increases for 2020 and 2040, based on targeted higher trip density areas. It should be noted that these coverage areas and potential transit corridors are conceptual and will require route evaluation as part of the Transit Development Plan process, which evaluates transit in the near term. A summary of the current MATBUS Transit Development Plan is presented in Appendix 10-1.



FIGURE 10-3: RECOMMENDED CORRIDORS FOR PRESERVATION

Source: Metro COG



FIGURE 10-4: POTENTIAL TRANSIT COVERAGE INCREASES FOR 2020 AND 2040

Source: Metro COG

Increased Transit Frequency

The frequency of transit service (the time between buses) is often referred to as headway. The headway for most of the MATBUS current transit service in the Metro COG region is one-half hour, which is very good for a medium size metropolitan area. There are some routes which serve NDSU that have 15-minute or as short as 8 minutes. As the region grows and transit ridership increases, the frequency of service could also increase. With 15-minute headways, increased choice riders will occur, which is a person who is not dependent on transit, but chooses to take transit over driving a car.

Extended Service Hours

MATBUS provides for very good service hours for a medium size region with service from around 6:00 a.m. to 11:00 p.m. Not all routes have evening service or the evening frequency of this service is reduced.

Transit Support Facilities

Transit support facilities are important at transfer stations and high demand stop locations. These amenities include bus pads, benches, and shelters. As the MATBUS transit service grows and new routes are added, they will need to be supported with these basic amenities. Maintaining these transit stops, including snow removal, will be important for a successful transit system.

Bus maintenance facilities will also experience increased demands with additional service and transit ridership. The current bus maintenance facility will reach capacity and accommodations will be required.

Capital Improvements

Transit service requires a bus fleet and spares. If transit service is to be expanded over time to increase frequency and add coverage area, this fleet needs to expand. In order to be competitive, the buses need to be replaced when approximately 12 years old. With an aged fleet, there are several drawbacks that impact customer satisfaction. Vehicle reliability is not as good as a more modern fleet, leading to an increased number of road failures and service disruptions. Customers are not given the advantage of new technology, such as improvements in seating, accessibility, and comfort when older equipment is kept in service beyond its useful life.

Associated with a larger fleet is the requirement for servicing these buses. The current MATBUS facility will exceed its current capacity and will require the construction of a new transit maintenance facility.

Transit Costs

The forecasted operations and capital costs for Fargo and Moorhead transit for short- (2015-2020), mid- (2021-2030), and long- (2031-2040) term is presented in Table 10-6 on the following page.

TABLE 10-6: TRANSIT VISION PLAN OPERATIONS AND CAPITAL COSTS (\$MILLION)

		Farg	30	_	Γ	Moorhea	nd
	Operation Capital Fixed (Bus) Capital Paratransit Total		Total	Operation	Capital Bus And Paratransit	Total	
Short-Term	36.2	7.5	1.5	45.3	17.2	7.0	24.2
Mid-Term	66.4	12.1	2.8	81.3	37.0	7.7	44.7
Long-Term	73.4	13.4	3.1	89.8	49.5	13.4	62.9
Grand Total	176.0	33.0	7.4	216.4	103.7	28.1	131.8

Bicycle and Pedestrian Vision Plan

In 2011, Metro COG completed a bicycle and pedestrian plan for the area, the *Fargo-Moorhead Metropolitan Bicycle and Pedestrian Plan*. The Plan provides existing conditions information, identification of issues, goal, objectives, and recommendations and is updated every 5 years in advance of the Metro COG long-range transportation plan.

The Plan provides recommendations to mitigate local bicycle and pedestrian gaps and barriers identified in the Plan. Local bicycle and pedestrian network gaps are gaps within the system that would make good connections to existing and future planned facilities. Local bicycle and pedestrian barriers are barriers, such as rivers or interstates that make crossing impossible. With gaps and barriers in a network, bicyclists and pedestrians are less likely to use the facilities and have the potential to take routes that may pose safety hazards. The Plan also recommends a trans-metropolitan area bikeway network and a college connection bicycle route. Both would provide seamless bike routes within the bi-state metropolitan area. The transmetropolitan area bikeway network is intended to provide efficient movement of bicycles across all or most of the metropolitan area. The college connector bicycle route is a bicycle route that would connect North Dakota State University with both Minnesota State University-Moorhead and Concordia College in Moorhead.

Major Barriers

Regionally-significant gaps are gaps which prevent a bicyclist or pedestrian from reaching a major trip generator or group of trip generators. Dedicated bicycle and pedestrian crossings of major barriers such as the Red River, railroads and the Interstate system are very limited yet have the potential to produce a high level of connectivity in the Fargo-Moorhead metropolitan area. These gaps often require the construction of an expensive bridge and are difficult to fund. However, this increased connectivity could act as a major encouragement to those who would like to travel by bicycle or foot more often, but cannot due to a major barrier.

The Fargo-Moorhead Metropolitan Bicycle and Pedestrian Plan (2011) identifies four major regional crossing gaps in the Metro COG region:

- 1. Red River from 40th Avenue South (Fargo) to Bluestem Center for the Arts;
- I-94 at 14th Street South (28th Avenue South to 30th Avenue South (Moorhead);
- 3. I-29 at 28th Avenue South (Fargo); and
- 4. Red River at 13th Avenue South (Fargo) to 12th Avenue South (Moorhead).
Local Network Gaps

Local bicycle and pedestrian network gaps are gaps within the system that would make good connections to existing and future planned facilities. These gaps were identified in the Fargo-Moorhead Metropolitan Bicycle and Pedestrian Plan as well. Areas where existing or programmed facilities were not connected or encounters a barrier were designated as a network gap. Figure 10-5 on the following page identifies these gaps, as well as the major regional gaps in the Fargo-Moorhead metropolitan area.

Additional information regarding bicycle and pedestrian data within the Fargo-Moorhead metropolitan area can be found in the 2011 Fargo-Moorhead Bicycle and Pedestrian Plan. The Plan is available through Metro COG.

Figure 10-5 on the following page also shows the bicycle and pedestrian gaps as identified in the Plan, as well as the proposed transmetropolitan area bikeway network and college connection bicycle route.

Transportation System Management and Operations Vision

Metro COG ITS Deployment Strategy for the Fargo-Moorhead Metropolitan Area

Metro COG maintains an *ITS Deployment Strategy for the Fargo-Moorhead Metropolitan Area*. The Plan incorporates a series of planning studies and processes that have been completed since 2008 when the ITS Deployment Strategy was last updated. It includes an existing conditions report summarizing the existing ITS deployments and strategies, as well as identifying future ITS needs.

The objective of the ITS Deployment Strategy is to focus specifically on consolidating and updating recommended actions and strategies, expanding upon previous ITS Plans and developing a Regional Concept of Traffic Operations (RCTO).

The ITS Deployment Strategy for the Fargo-Moorhead metropolitan area provides Metro COG and its stakeholders with a blueprint for a well thought-out, cohesive deployment strategy for ITS initiatives, including documentation of all necessary agreements to achieve the desired level of system interoperability.

Table 10-7 on page 10-28 lists the operations objectives, physical improvements, relationships and procedures and resources identified in the Plan.

Additional information on future ITS needs may be found in the Plan.



FIGURE 10-5: FARGO-MOORHEAD AREA BICYCLE NETWORK - GAPS, BARRIERS, TRANS-METROPOLITAN AREA BIKEWAY NETWORK AND COLLEGE CONNECTION BICYCLE ROUTE

Source: Metro COG

		TABLE 10-7:	O PERATIONS	OBJECTIVES,	PHYSICAL	IMPROVEMENTS,	RELATIONSHIPS	AND	RESOURCES
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RCTO Focus Area	Operations Objectives	Physical Improvements	Relationships and Procedures	Resource Arrangements
Traffic Signal Operations	Implement locally-based, but connected TOC operations and then evolve towards centralized control of transportation system devices. Enhance the coordination among agencies responsible for transportation system operations. Increase the levels of coordination of traffic signal system operations in the Fargo-Moorhead metropolitan area to make crossing jurisdictional boundaries for the traveling public invisible across the region.	Phase I Local - Connected Operations facilities. Phase II Centralized Traffic Operations Center facility. Central Traffic Signal Management Software package. Communications connections (i.e., fiber-optic cable linkages) between existing traffic control centers and field devices.	Regional Memorandum of Understanding (MOU) between MnDOT, NDDOT, Fargo, Moorhead, and West Fargo regarding Traffic Operations for the Fargo-Moorhead metropolitan area. Individual legal arrangements between the City of Fargo, West Fargo, Moorhead, MnDOT and NDDOT regarding signal interconnects and coordination in the region.	Agencies participating in a centralized TOC will determine resource arrangements. Additional staff required for Fargo-Moorhead signal operations: 0.95 traffic engineers, 2.15 traffic technicians. Obtain additional PTOE and IMSA certifications.
System Management & Performance	Adoption and Implementation of a Regional Performance Monitoring Program. Report upon the systems operations through annual reporting and public dissemination and discussion of operational data.	Communications connections (i.e., fiber-optic cable linkages) between existing traffic control centers and field devices.	Develop regionally unique and consensus based performance measures that allows system operators to observe and analyze regional traffic patterns to understand how the system is performing. Develop a coordinated regional program for collecting pertinent data regarding traffic operations in the region. Regional coordination for use of existing DMS in region.	Funding for technical assistance services to support implementation of the 2009 Traffic Operations Action Plan and future updates. Enhance training and expertise of traffic operations staff (certification, training process). Establishment of roundtable meetings and peer learning opportunities for regional stakeholders to learn from other communities.

CHAPTER 10 – TRANSPORTATION VISION PLAN

RCTO Focus Area	Operations Objectives	Physical Improvements	Relationships and Procedures	Resource Arrangements
Incident/Event Management	Implement Traffic Management Strategies that preserve the operational capacity of the region's transportation system.	Central Traffic Operations Center Deployment of the following ITS Devices: Dynamic Message Signs (DMS), Flooding /Pavement Condition Monitors, Vehicle Detection, At-Grade Train Detection, and CCTV Surveillance Cameras.	Establish a Traffic Incident Management Program to ensure consistency in emergency response.	Short-term ITS recommendations are estimated to cost approximately \$3,680,000 based on March 2011 Metro COG Traffic Operations Incident Management Study.
Transit Operations	Improve transit service reliability and on-time performance. Increase transit system capacity to meet increased ridership.	Designated bus stop signs and shelters. Automated Vehicle Locator (AVL) Kiosks. Additional transit vehicles for Fargo and Moorhead transit service.	Master Operating Agreement that consolidates smaller joint powers agreements between Cities of Fargo and Moorhead.	Capital Improvements are estimated to cost approximately \$5,654,680 based on all recommended improvements. Additional funds will need to be procured to support service expansion.

Source: Metro COG ITS Deployment Strategy for the Fargo-Moorhead Metropolitan Area

CHAPTER 11 – FINANCIAL ANALYSIS

The analysis of financial resources is an important element of Metro 2040. The purpose of this section is to provide an overview of transportation funds that will be available for the Fargo-Moorhead metropolitan area over the time horizon of the Plan, 2015 to 2040. It also explains the key elements of the financial plan, the data collected, and the assumptions made about future revenue and expenditures. The forecasts of future transportation revenue and costs are presented and summarized, including the discussion of both costs for new construction and operations and maintenance. Once these estimates are in place, Metro COG and its planning partners can determine which improvements submitted for inclusion in Metro 2040 are financially feasible. Sufficient funds are not typically available to meet all transportation needs. Therefore, this portion of Metro 2040 serves as an implementation tool for policy and decision-makers.

The development of this plan is guided by federal laws and regulations contained in 23 U.S.C. 134(g)(2)(B) and 49 U.S.C. 5303(f)(B) which state that the metropolitan long-range transportation plan must include "a financial plan that demonstrates how the long-range transportation plan can be implemented, indicates resources from public and private sources that are reasonably expected to be made available to carry out the plan, and recommends any additional financing strategies for needed projects and programs." Additionally, 23 CFR 450.322(f) requires that the financial plan include recommendations on any additional financing strategies to fund projects and programs included in the Metropolitan Transportation Plan.

For non-attainment and maintenance areas for air quality, the financial plan will need to address the specific financial strategies required to ensure the implementation of transportation control measures in the applicable State Implementation Plan (SIP). As stated in Chapter 3, the Fargo-Moorhead metropolitan area is currently in attainment for all EPA air quality standards. As such, no actions are required of this financial plan to ensure the implementation of control measures in an applicable SIP for air quality.

CHAPTER CONTENTS

- Transportation Funds
- Funding Assumptions
- Time Bands
- Funding Estimates
- Potential Funding Sources
- Air Quality Considerations

Although FHWA and FTA set the rules for what a financial plan should be, it takes cooperation and coordination between and among Metro COG and our planning partners. Revenue and Expenditure data, as well as data on Operation & Maintenance, Preservation and Rehabilitation, and committed projects were developed with the assistance of all of the member cities and counties, transit providers, Minnesota and North Dakota DOTs, FTA, FHWA, and LSA Associates, Inc. All data presented in this chapter was made available for public review and comment.

Transportation Funds

Funding for the Fargo-Moorhead metropolitan area comes from a variety of sources and programs. These can essentially be categorized at three different levels; Federal, State, and Local.

Many transportation projects are funded by a combination of federal, state and local funding. Most federal-aid projects, those projects that receive federal transportation funds, require some form of local match.

The amount of required match is dependent on the federal funding source.

Federal Funds	This includes transportation funding originating from the United States Government, including funds from the Highway Trust Fund (HTF) and by other transportation sources designated by Congress. These funds are most commonly administered through the State DOTs and Metro COG.
State Funds	These funds include transportation funds originating from the states of North Dakota and Minnesota, and are most commonly administered in each state by their respective Departments of Transportation.
Local Funds	These funds are designated for transportation projects by counties, cities, local jurisdictions, as well as any specific local districts or units of government.

Federal Funds

Federal funding for transportation in the Fargo-Moorhead metropolitan area consists primarily of distributions from the Federal Highway Trust Fund (HTF). The federal government imposes an 18.4 cent tax per gallon of gasoline and a 24.4 cent per gallon tax on diesel fuel to support the HTF. The Federal government also levies taxes on special fuels, neat alcohol, compressed natural gas, gasohol, tires, truck and trailer sales, and heavy vehicle use. Revenues from these federal taxes are deposited into the HTF for distribution by FHWA and FTA. These funds are allocated to the states per provisions in MAP-21.

Federal funds are available only for reimbursement of expenditures on approved projects. To receive federal funds, the project sponsor generally must pay 10% to 20% of the project construction costs (does

not include design or administrative costs). Federal-Aid projects require a minimum of 20% local funding ("80/20" federal-local split), with the exception of safety (HSIP) and Interstate Maintenance (IM) programs, which only require 10% local funding ("90/10" federal-local split) as shown on Figure 11-1. This does not include funding for routine operations and maintenance. Table 11-1 on the following page identifies federal funding sources identified for the Fargo-Moorhead metropolitan area.

Legacy Federal Funds

Some federal funds identified in MOVE 2040 are unprogrammed funds from previous federal legislation (SAFETEA-LU). Bridge (HBF), FTA 5316, FTA 5317, and Transportation Enhancement (TE) programs were eliminated or merged into other programs. Funding from these categories will be obligated until they reach a zero balance.

FIGURE 11-1: PERCENT OF FEDERAL FUNDS IDENTIFIED BY FEDERAL FUNDING CATEGORY 2015-2040



TABLE 11-1: FEDERAL FUNDING SOURCES IDENTIFIED FOR USE IN METRO 2040

Bridge	These funds include Highway Bridge Program (HBP) in North Dakota which are remaining legacy funds from SAFETEA-LU and the NHS Bridge Program in Minnesota. Funding is used to rehabilitate or replace bridges in the area.
Bus and Bus Facilities (FTA 5339)	These funds provide capital to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities. These funds are competitive and transit providers in the Fargo-Moorhead metropolitan area must compete with other regions to obtain.
Congestion Mitigation/Air Quality Funds (CMAQ)	CMAQ funds are provided to assist urbanized areas in meeting the National Ambient Air Quality Standards (NAAQS). The Fargo-Moorhead metropolitan area is in attainment for all NAAQS standards and this funding is considered discretionary for both NDDOT and MnDOT.
Highway Safety Improvement Program (HSIP)	These funds are provided for improvement to roads with the purpose of reducing traffic fatalities and injuries. Some of these funds are designated for use in rural areas.
Intelligent Transportation Systems (ITS)	These funds support the integration and interoperability of ITS in metropolitan and rural areas and are provided through competitive solicitation.
Interstate Maintenance (IM)	These funds are provided to NDDOT and MnDOT to address maintenance issues of Interstate Highways. These funds cannot be used to add capacity to the Interstates.
Metropolitan Planning Program (PL) and FTA Section 5303 funds	These funds are made available to Metro COG as a Consolidated Planning Grant from both NDDOT and MnDOT. The CPG funds are dedicated to support transportation planning for all modes of transportation including the preparation of this LRTP.
National Highway System (NHS)	These funds are provided to NDDOT and MnDOT to improve highways on the designated federal National Highway System (NHS), which includes the Interstate Highways, most US highways, other State highways, and those facilities identified with a federal functional classification of Principal Arterial. This category includes Interstate NHS Pavement, NHS Non Interstate, and other NHS funds administered through NDDOT and MnDOT.
Non-NHS	Includes non-NHS bridges and non-NHS pavement funds.
Operating and Planning (FTA 5307)	These funds support urban transit systems like Fargo and Moorhead Transit. These funds are allocated to urban areas based on population, population density and evaluations of the transit system.
Special Needs (FTA 5310)	These funds support transit services that are focused on serving elderly persons and people with disabilities. These funds are allocated based on the concentration of elderly persons and people with disabilities in the Fargo-Moorhead metropolitan area to other urban areas nationally.
Surface Transportation Funds (STP)	These funds are used to fund road and bridge projects, transit capital improvements, planning activities, and can also be used for projects eligible under the Transportation Alternatives Program. In order to be eligible for STP funds, road and bridge projects must be on the federal- aid system. This category includes STP-Rural, STP-Rural Bridge, STP-Statewide, STP-Urban, STP-Regional, and other STP funds administered through NDDOT and MnDOT.
Transportation Alternative Program (TAP)	These funds are a part of the STP program for projects such as, bicycle/pedestrian trails, safe routes to school programs, and historic preservation of transportation assets.

Other Federal Transportation Funding

There are other common sources of Federal transportation funds that may support projects in the Fargo-Moorhead metropolitan area that do not come from the HTF. Funding for airport improvements are directed by the Federal Aviation Administration (FAA). The Airport and Airways Trust Fund provides funding for aviation activities. Airports in the Fargo-Moorhead metropolitan area may apply for grants sponsored by these funds.

The Federal Railroad Administration (FRA) provides funding for improvements to railroads and railroad crossings. Funding from both the FAA and FRA are grant-based and is subject to nation-wide completion. Metro 2040 does not include these funding sources as part of the fiscal analysis. FAA and FRA grants may be used to fund air and rail projects in the Fargo-Moorhead metropolitan area and will be constrained based on the funding level of the grant.

State Funding

The State of Minnesota receives 28.6 cents for every gallon of gasoline and diesel fuel sold within its borders. Similarly, the State of North Dakota receives 23 cents per gallon for both fuel types. This revenue is, by formula, split between the State and local governments. This funding, in addition to other such revenue (licensing fees, tire taxes, and related revenue sources) makes up the bulk of the State share of revenue anticipated in the Fargo-Moorhead metropolitan area. These funds are used to fully fund individual transportation improvements or may be used as local match for Federal funds. Additional funds may be provided from each State's general fund at the discretion of the State Legislature and Governor.

Local Funding

Local funding comes from various sources of taxing and bonding abilities afforded to each jurisdiction. These can include property and sales taxes, special tax levies, special assessments for transportation, general funds, bonds, or other sources unique to local jurisdictions. These funds finance local transportation improvements, as well as providing local match for Federal transportation funds.

Funding Assumptions

To develop revenue projections for Metro 2040, Metro COG and its planning partners developed various assumptions to project future revenue over the life of the Plan. Assumptions made to generate estimated federal revenue streams by funding category, as well as revenue originating from the states and local jurisdictions are included in Appendix 11-1.

Time Bands

The 25 years covered by Metro 2040 is separated into three groups, or time bands: Short-Term, Mid-Term, and Long-Term. The Short-Term includes years 2015 through 2020. For this time period, revenues were largely estimated based on funding that has already been identified in the most current approved Transportation Improvement Program (TIP).

The Mid-Term includes the years 2021 through 2030. 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.

Years 2031 through 2040 and its projected revenues were also based on the TIP trend, historical data, and input from the local jurisdictions.

Metro COG worked with District 4 throughout the LRTP development. Historical data, MnSHIP guidance, and the MnDOT 2014-2017 STIP was used to derive financial forecasts for Metro 2040. These time bands were chosen in cooperation with both MnDOT and NDDOT early in the LRTP process. Metro COG's estimates were very conservative, and in the no major projects (beyond O&M) already programmed or in MnSHIP are constrained by Metro 2040.

Year of Expenditure

MAP-21 continued the Federal policy first introduced in TEA-21 to adjust the cost of projects in future years to account for inflation. Year of Expenditure (YOE) dollars represent the anticipated cost of a project in the year it will be accomplished based on a 4% annual inflation rate to account for material cost increases, which was developed cooperatively by the State DOT, MPOs, and transit agencies.

Funding Estimates

Anticipated Revenue

Revenue pays for necessary investments in surface transportation facilities, including new construction and ongoing operations and maintenance costs. It is also used to finance larger-scale capital investment projects. The revenue element is an estimate of how much money will be available to spend on new transportation projects in the Fargo-Moorhead metropolitan area between 2015 and 2040. Table 11-2 (on the following page) and Figure 11-2 identify the anticipated Federal, State and Local revenue by jurisdiction.

FIGURE 11-2: FORECASTED AVAILABLE TRANSPORTATION REVENUE BY METRO 2040 TIME BAND IN YOE DOLLARS



Source: Metro COG (2013)

Between 2015 and 2040, Metro COG forecasts that approximately \$2.6 Billion (YOE dollars) in transportation revenue will be available to fund Operations and Maintenance, new projects and expanded capacity.

TABLE 11-2: FORECASTED ANTICIPATED FEDERAL, STATE AND LOCAL REVENUE FOR THE FARGO-MOORHEADMETROPOLITAN AREA IN YEAR OF EXPENDITURE DOLLARS

							Tota	l Anticipat	ed Reven	ue (x \$1M)						
	Short-Range					Mid-Range					Long-Range					
Jurisdiction	Fede	eral			Total	Fede	eral			Total	Federal				Total	Grand
	Non STP-U	STP-U	State	Local	Short- Range	Non STP-U	STP-U	State	Local	Mid- Range	Non STP-U	STP-U	State	Local	Long- Range	Total
Total ND	\$84.8788		\$100.6847	\$115.8739	\$334.2128	\$151.2183		\$213.0693	\$256.5904	\$675.8748	\$173.3101		\$286.3473	\$367.5516	\$891.0350	\$1,901.1226
NDDOT	\$51.2437	Ī	\$12.1494	\$0.0000	\$63.3931	\$85.7273		\$25.7107	\$0.0000	\$111.4380	\$99.4901	Ī	\$34.5530	\$0.0000	\$134.0430	\$308.8741
Cass Co.	\$9.8006	\$22 7755	\$45.1782	\$28.2140	\$83.1928	\$18.4115	\$54.9968	\$95.6062	\$64.6188	\$178.6364	\$21.3673	¢62 8260	\$128.4867	\$95.6516	\$245.5056	\$507.3348
Fargo	\$2.7189	<i>332.7733</i>	\$31.9798	\$63.9817	\$98.6804	\$5.1077		\$67.6758	\$146.5377	\$219.3212	\$5.9277	303.8200	\$90.9506	\$216.9117	\$313.7900	\$631.7916
West Fargo	\$1.5428		\$7.1728	\$5.5807	\$14.2963	\$2.8983		\$15.1791	\$12.7816	\$30.8590	\$3.3636		\$20.3995	\$18.9198	\$42.6829	\$87.8383
Fargo Transit	\$19.5728		\$4.2045	\$18.0974	\$41.8747	\$39.0735		\$8.8975	\$32.6523	\$80.6233	\$43.1615		\$11.9575	\$36.0684	\$91.1874	\$213.6855
Total Mn	\$29.7174		\$53.7913	\$81.1237	\$168.4578	\$58.0739		\$102.8554	\$183.7201	\$351.8358	\$63.4308		\$126.4024	\$263.1211	\$461.2944	\$981.5880
MnDOT	\$21.7965		\$19.3211	\$0.0000	\$41.1176	\$42.7798		\$34.9232	\$0.0000	\$77.7030	\$52.4728		\$42.4436	\$0.0000	\$94.9164	\$213.7370
Clay Co.	\$1.8400	62 07E1	\$16.7559	\$16.9008	\$35.4967	\$3.4566	67 10CA	\$31.4777	\$38.7081	\$73.6423	\$4.0115	69 2401	\$36.5311	\$57.2974	\$97.8401	\$206.9791
Moorhead	\$0.6070	<i>33.</i> 0234	\$11.3262	\$50.2348	\$62.1680	\$1.1403	\$7.1004	\$23.9685	\$115.0531	\$140.1619	\$1.3234	30.3401	\$32.2117	\$170.3066	\$203.8417	\$406.1716
Dilworth	\$0.1265		\$0.0000	\$0.1863	\$0.3127	\$0.2376		\$0.0000	\$0.4266	\$0.6641	\$0.2756		\$0.0000	\$0.6314	\$0.9070	\$1.8839
Moorhead Transit	\$5.3475		\$6.3880	\$13.8019	\$25.5373	\$10.4596	6	\$12.4860	\$29.5324	\$52.4780	\$5.3475		\$15.2160	\$34.8856	\$55.4491	\$133.4644
Grand Total	\$114.5962	\$36.6009	\$154.4759	\$196.9976	\$502.6706	\$209.2922	\$62.1832	\$315.9247	\$440.3105	\$1,027.7106	\$236.7409	\$72.1662	\$412.7497	\$630.6727	\$1,352.3294	\$2,882.7106

Source: Metro COG (2013)

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In order to allow comparison between the time bands, Figure 11-3 provides the breakdown in funding per year for each time band. Anticipated revenue per year over the course of the Plan is primarily due to inflation and not due to any new anticipated grants or programs.

FIGURE 11-3: FORECASTED AVAILABLE TRANSPORTATION REVENUE AVERAGE DOLLARS PER YEAR



Source: Metro COG

Figure 11-4 shows the breakdown between anticipated Federal, State, and Local revenue for the entire time horizon of the Plan (2015-2040). Revenue forecasts in Metro 2040 show an increasing emphasis on local funding for transportation improvements in the Fargo-Moorhead metropolitan area.

FIGURE 11-4: FORECASTED AVAILABLE TRANSPORTATION REVENUE BY SOURCE 2015-2040



Source: Metro COG (2013)

Federal Revenue

Federal funding represents 21% of the anticipated revenue for transportation projects in the Fargo-Moorhead metropolitan area. It is divided between 12 major categories. Most Federal funding attributable to the area comes from the STP. Anticipated funding from the NHS and IM programs also provide needed revenue for improvements, as shown in Figure 11-5 on the following page.

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FIGURE 11-5: PROJECTED ANTICIPATED FEDERAL HIGHWAY FUNDING SOURCE BY TIME BAND

FIGURE 11-6: FORECASTED ANTICIPATED FEDERAL TRANSIT FUNDS BY TIME BAND



Source: Metro COG (2013)

Projected anticipated revenue for transit is either Capital or Operating. There are specific Federal funding categories for each. Figure 11-6 identified projected anticipated Section 5307, 5310 and 5339 Federal funds.

Federal Funding Beyond MAP-21

MAP-21 is the Federal funding source for all Federal transportation funds attributable to the Fargo-Moorhead metropolitan area, as well as the United States as a whole. MAP -21 expires September 31, 2014, but it is assumed that Federal transportation funds will be made available by extending MAP-21, by reauthorization or continuing Congressional resolution, until a new Transportation Bill can be established. Any major changes in the availability and quantity of Federal transportation dollars will be incorporated into the long-range transportation planning efforts as directed by FHWA and FTA.

Transportation Management Area

Federal legislation requires that urbanized areas with populations over 200,000 be designated as a Transportation Management Area (TMA). An area designated as a TMA incurs additional Federal requirements, but also enjoys certain benefits as well. One benefit is that a TMA receives a direct sub-allocation of Federal STP funds. The STP sub-allocation (STP-TMA) is based on the population within the urbanized area boundary. These funds may be obligated for projects outside the defined urban area boundary, but within the MPO Metropolitan Planning Area (MPA).

Although the Metro COG area is not designated as a TMA, it will most likely achieve the population threshold to become one within the time horizon of this Plan. The influx of a dedicated Federal funding source may impact the fiscal constraint aspect of Metro 2040. While STP-Urban funds will be withdrawn, STP from the direct sub-allocation (STP-TMA) will become available. Depending on the amount of STP-TMA received, projects currently programmed on the fiscally-constrained list may need to be moved to the Illustrative list of projects or projects on the Illustrative list may become eligible for funding. New projects, if additional STP-TMA funding becomes available, may be introduced to take advantage of the additional geographic coverage allowed for with these funds.

Metro 2040 will be updated on a 5-year cycle. The issue of becoming a TMA, and the funding repercussions related to that designation, will be considered in the next update.

Expenditures

Before new projects can be programmed, the expenditures to maintain the existing system and committed projects need to be assessed. O&M, costs attributable to the 2015, 2016, and 2017 elements of the 2015 TIP and Major Rehabilitation and Preservation (R&P) expenditures must first be calculated and subtracted from the forecasted anticipated revenue. This total is what we can reasonably expect to be available for new projects in the Fargo-Moorhead metropolitan area. Information on these expenditures is included in Chapter 9. Table 11-4 on the following page provides a summary of these expenditures and projected anticipated transit expenditures are identified in Table 11-5 on page 11-12. Similar to revenue, expenditures are inflated to the year of expenditure to provide a more realistic cost estimate and are expressed in YOE dollars.

Potential Funding Sources

One of the mandates of 23 CFR 450.322(f) is to identify potential funding sources or funding strategies that may be used to fund transportation projects in the Fargo-Moorhead metropolitan area. Such funds may be used to advance projects from the Illustrative list to the eligible for funding list. The opportunity to use new financing strategies can work effectively in some locations and not in others. Ultimately, the local community must determine and develop the transportation assets that they are willing to support.

A number of funding and financing strategies are listed in Table 11-3 to provide the communities within the Fargo-Moorhead metropolitan area with a range of tools to consider as they plan for their future transportation needs. An outline of each financing strategy is included in Appendix 11-2.

TABLE 11-3: POTENTIAL FINANCIAL STRATEGIESOPPORTUNITIES

Potential Financial Strategies								
Bond Issues	Impact Fees/Assessments							
Tax Increment Financing (TIF)	Design/Build Strategies							
	State Infrastructure Banks (SIBs)							
Special Districts	Transportation Investment Generating Economic Recover Discretionary Grant							
Tolls	Public-Private Partnerships							
Shadow Tolling	Grant Anticipation Revenue Vehicle (GARVEE) Bonds							
Toll Credits	Transportation Infrastructure Finance and Innovation Act (TIFIA)							

Source: Metro COG

In many cases, it may be necessary to package several of these tools to generate the necessary resources to support critical transportation projects. The regulations and policies governing many of these programs are subject to change, and care should be taken to review the current transportation requirements of both the funding agencies, as well as specific programs. The list contained in Table 11-4 on the following page is not a definitive list as other potential funding sources exist, but offers a sampling of those that are available. None of the identified strategies are specifically endorsed for implementation as part of Metro 2040. They are provided as a "toolbox" of ideas to be explored further by the region.

TABLE 11-4: PROJECTED ANTICIPATED FEDERAL, STATE AND LOCAL STREET AND HIGHWAY EXPENDITURES IN YEAR OFEXPENDITURE DOLLARS

	Total Anticipated Highway Expenditures (x \$1M)											
Jurisdiction	Short-Range					Mid-Range			Long-Range			
	O&M	TIP	R&P	Tot-Short	O&M	TIP	R&P	Tot-Mid	O&M	TIP	R&P	Tot-Long
Total North Dakota	\$88.9248	\$151.4996	\$15.7660	\$256.1904	\$213.2780	\$0.0000	\$26.9027	\$240.1807	\$329.4672	\$0.0000	\$39.8628	\$369.3300
NDDOT	\$14.4030	\$49.0559	\$0.0000	\$63.4589	\$32.9849	\$0.0000	\$1.8678	\$34.8527	\$48.8253	\$0.0000	\$0.0000	\$48.8253
Cass County	\$12.5884	\$71.5457	\$0.0000	\$84.1342	\$29.1943	\$0.0000	\$0.0000	\$29.1943	\$43.2124	\$0.0000	\$0.0000	\$43.2124
Fargo	\$48.8533	\$16.4760	\$15.7660	\$81.0953	\$119.0403	\$0.0000	\$21.3366	\$140.3770	\$186.8425	\$0.0000	\$35.1000	\$221.9425
West Fargo	\$13.0801	\$14.4220	\$0.0000	\$27.5021	\$32.0585	\$0.0000	\$3.6982	\$35.7567	\$50.5869	\$0.0000	\$4.7628	\$55.3497
Fargo Transit	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000
Total Minnesota	\$68.3769	\$43.7140	\$6.3940	\$118.4849	\$164.3627	\$0.0000	\$25.1913	\$189.5540	\$250.0090	\$0.0000	\$27.1973	\$277.2063
MnDOT	\$21.7508	\$19.6110	\$0.0000	\$41.3618	\$49.8025	\$0.0000	\$11.0431	\$60.8456	\$72.5024	\$0.0000	\$8.4982	\$81.0006
Clay County	\$29.9571	\$3.7250	\$0.0000	\$33.6821	\$71.0772	\$0.0000	\$0.0000	\$71.0772	\$105.2073	\$0.0000	\$0.0000	\$105.2073
Moorhead	\$13.3010	\$14.8150	\$4.4080	\$32.5240	\$33.4108	\$0.0000	\$14.1482	\$47.5589	\$53.8974	\$0.0000	\$18.6991	\$72.5965
Dilworth	\$3.3681	\$5.5630	\$1.9860	\$10.9171	\$10.0723	\$0.0000	\$0.0000	\$10.0723	\$18.4020	\$0.0000	\$0.0000	\$18.4020
Moorhead Transit	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000
Grant Total	\$157.3017	\$195.2136	\$22.1600	\$374.6753	\$377.6407	\$0.0000	\$52.0940	\$429.7347	\$579.4762	\$0.0000	\$67.0601	\$646.5363

Source: Metro COG (2013)

	Total Anticipated Transit Expenditures (x\$1M)										
Jurisdiction		Short-Range		Mid-Range			Long-Range				
	Operating	Capital	Total	Operating	Capital	Total	Operating	Capital	Total		
Total North Dakota	\$36.2184	\$9.0380	\$45.2564	\$66.4108	\$14.9126	\$81.3235	\$73.3589	\$16.4728	\$89.8317		
NDDOT	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
Cass County	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
Fargo	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
West Fargo	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
Fargo Transit	\$36.2184	\$9.0380	\$45.2564	\$66.4108	\$14.9126	\$81.3235	\$73.3589	\$16.4728	\$89.8317		
Total Minnesota	17.2039	6.9604	24.1643	37.0069	7.7379	44.7448	49.5129	13.4246	62.9374		
MnDOT	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
Clay County	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
Moorhead	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
Dilworth	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000		
Moorhead Transit	\$17.2039	\$6.9604	\$24.1643	\$37.0069	\$7.7379	\$44.7448	\$49.5129	\$13.4246	\$62.9374		
Grand Total	\$53.4223	\$15.9984	\$69.4207	\$103.4177	\$22.6505	\$126.0683	\$122.8718	\$29.8974	\$152.7691		

TABLE 11-5: PROJECTED ANTICIPATED FEDERAL, STATE AND LOCAL TRANSIT EXPENDITURES INYEAR OF EXPENDITURE DOLLARS

Source: Metro COG (2013)

Federal Funding Available for New Projects

Federal-aid, non-locally funded projects must be fiscally constrained. In short, Metro COG cannot program federal-aid projects whose total cost is more than the anticipated revenue that can reasonably be expected for such projects. Each time band must be constrained. Table 11-6 identifies those Federal funding sources that will be constrained, as well as the amount of funding available for new projects over the life of Metro 2040. All funds are in YOE dollars.

TABLE 11-6: CONSTRAINED FEDERAL FUNDING FOR NEW PROJECTS IN METRO 2040

Funding Type	Short-Term (2018-2020)	Mid-Term (2021-2030)	Long-Term (2031-2040)	Total
NDDOT Regional Funds (STP/R)	\$9,082,175	\$33,378,195	\$38,736,758	\$81,197,128
NDDOT Projects (IM)	\$5,680,900	\$15,778,814	\$10,064,856	\$31,524,570
North Dakota Local Projects (STP/U)	\$14,964,580	\$54,996,812	\$63,826,046	\$133,787,439
MnDOT Projects (NHPP-NI, RCIP, SFO, PS)	\$7,456,258	\$22,806,564	\$23,496,585	\$53,759,407
Minnesota Local Projects (STP/U)	\$1,955,415	\$7,186,409	\$8,340,120	\$17,481,944

Source: Metro COG

Surface Transportation Funds attributable to the urban area (STP/U) funds are available to fund transportation projects in the urban area of the Metro COG MPA. A reasonable assumption of the amount of STP/U funds that will be available is based on the average amount of STP/U funding received in the region over the last five years. Each State DOT provides STP/U to its portion of the Fargo-Moorhead metropolitan area.

Projects programmed with Surface Transportation Program Regional Funds (STP/R) and Interstate Maintenance (IM) Funds are constrained by time band as well. The amount of funds available in this category equal the total IM funds available to the region minus the O&M costs associated with the Concrete Pavement Repair identified in the O&M section.

Available funding for projects in the Minnesota portion of the Fargo-Moorhead metropolitan area are based on federal funds from federal funds identified under the NHPP Non-Interstate (NHPP-NI) and Project Support (PS) categories, as well as funding from the State Regional & Community Improvement Priority (RCIP) and State Funds-Other (SFO) programs. The combined funds from these sources are the basis for fiscal constraint for MnDOT projects in the Fargo-Moorhead metropolitan area.

It should be noted that funds identified in the short-term band are for 2018-2020 only. Projects identified as existing and committed are constrained based on funds identified for those projects in the 2015-2018 TIP.

Local Funding Available for New Projects

In addition to Federal funds, there are local resources that can be used for the local match for projects receiving Federal funds or local projects. Funding available for new projects is based on total revenues expected minus operation and maintenance costs minus those costs for projects committed in the 2015-2018 Transportation Improvement Program.

Table 11-7 provides information on local funds available to meet identified transportation needs in the Fargo-Moorhead metropolitan area. Funds available are generated by subtracting O&M costs from anticipated local revenue. Funds needed as local match for Federal transportation funds are also subtracted. Although the City of Fargo shows a running deficit, it is assumed that the City will either increase the revenue with new assessments, sales taxes, or other revenuegenerating mechanisms identified earlier.

TABLE 11-7: LOCAL FUNDS AVAILABLE FOR FUTURETRANSPORTATION PROJECTS

	City of Fargo										
Time Band	Anticipated Local Revenue	Federal Fund Match	O&M	Funds Available							
Short-Term	\$77.3066	\$2.9035	\$48.8533	\$25.5498							
Mid-Term	\$174.7360	\$6.5243	\$119.0403	\$49.1714							
Long-Term	\$254.8078	\$5.0112	\$186.8425	\$62.9541							

		City of We	st Fargo		
Time Band	Anticipated Local Revenue	Federal Fund Match	O&M	Funds Available	
Short-Term	\$12.7535	\$1.7371	\$13.3010	-\$2.2846	
Mid-Term	\$27.9607	\$3.8500	\$32.0585	-\$7.9478	
Long-Term	\$39.3193	\$2.4436	\$50.5869	-\$13.7112	

		City of Moorhead									
Time Band	Anticipated Local Revenue	Federal Fund Match	O&M	Funds Available							
Short-Term	\$61.5609	\$1.0125	\$13.3010	\$47.2475							
Mid-Term	\$139.0216	\$3.6270	\$33.4108	\$101.9838							
Long-Term	\$202.5183	\$1.8691	\$53.8974	\$146.7519							

Source: Metro COG

Overview

The following chapter brings together the Operations and Maintenance, Rehabilitation and Committed Project lists presented in Chapter 9, Transportation Vision Plan from Chapter 10, with the realities of the limited transportation funding presented in Chapter 11, to develop the Metro 2040 Long Range Transportation Plan Fiscally Constrained Plan.

Although this Fiscal Constrained Plan is constrained to available revenue and year of expenditure costs, this Fiscal Constrained Plan has flexibility in that projects are prioritized and grouped by banding short-, mid-, and long-term horizon years, and Metro COG has the opportunity to reprioritize the project list within the band.

This Chapter begins with a summary of the Fiscally Constrained Plan process, a prioritization of roadway projects, the allocation of available funds, and then a summary of what projects are included in the Fiscally Constrained Plan.

Fiscally Constrained Plan Process

The process for developing the Fiscally Constrained Plan is presented graphically in Figure 12-1. The process begins with identifying total projected revenues as presented in Chapter 10. Before any of these revenues can be used for new projects, Operations and Maintenance Costs, Major Rehabilitation and Preservation Costs, and previously committed projects as defined by the Metro COG Transportation Improvement Plan (TIP) must be subtracted from the forecast revenues. These committed programs and projects are presented in Chapter 9.

CHAPTER CONTENTS

- Overview
- Fiscally Constrained Plan Process
- Prioritization of Projects
- Fiscal Constrained Roadway Plan Assumptions and Principals
- Fiscal Constrained Roadway Plan

FIGURE 12-1: FISCALLY CONSTRAINED PLAN PROCESS



The fiscal constrained process includes inflation factors and the development of a year of expenditure revenue and cost estimates. The Fiscal Constrained Plan forecast revenues and expenses are banded by year. For the short-term the band is between 2015 and 2020, the midterm is between 2021-2020, and the long-term band is between 2031-2040.

The formula federal and state funds that could be used for new capital projects are presented in Chapter 11 and in Table 12-1 below. Funds for capital projects are defined for NDDOT, MnDOT, and North Dakota and Minnesota local jurisdictions based on funding sources. Funds available for new capital projects for local projects are based STP-U forecasts. It should be noted that these funds can also be used for rehabilitation projects. They also require a local 20% match.

Table 12-1 also presents these funds based on short-, mid-, and long-term bands in year of expenditure dollars.

TABLE 12-1: REMAINING FUNDS FOR NEW CAPITAL PROJECTS

Funding Type	Short-Term (2018-2020)	Mid-Term (2021-2030)	Long-Term (2031-2040)	Total
NDDOT Regional Funds (STP/R)	\$9,082,175	\$33,378,195	\$38,736,758	\$81,197,128
NDDOT Projects (IM)	\$5,680,900	\$15,778,814	\$10,064,856	\$31,524,570
North Dakota Local Projects (STP/U)	\$14,964,580	\$54,996,812	\$63,826,046	\$133,787,439
MnDOT Projects (NHPP-NI, RCIP, SFO, PS)	\$7,456,258	\$22,806,564	\$23,496,585	\$53,759,407
Minnesota Local Projects (STP/U)	\$1,955,415	\$7,186,409	\$8,340,120	\$17,481,944

Source: Metro COG

Prioritization of Projects

To determine which projects would be selected given limited funds and in what time period the project would be proposed, all projects were prioritized. This process took three steps, project evaluation, public input and agency/Study Review Committee review.

Project Evaluation

Each of the proposed projects presented in the Transportation Roadway Vision Plan were evaluated based on the Metro 2040 project goals and evaluation criteria presented in Chapter 8. Each criterion was transparent and based on measureable comparisons, such as level of service, cost effectiveness, delay saved, environmental impacts, etc. A composite score was calculated for each project based on the goal score times the goal weight which was developed as part of the public involvement process.

Presented in Appendix 12-1, is the resulting prioritized list of projects, the project's individual performance score for each goal, and the project's cumulative total based on the public's weighting of each goal.

Public Involvement

The second step of the process was seeking public input through the second round of public meetings. At these meetings, the technical information was presented and in a Round Table format (see Chapter 7) participants were asked if they agreed with the high, medium, and low prioritization for each project. In general, there was strong support for the overall prioritization of projects; however, there were some projects that were suggested to move up in the process and conversely some down.

Agency and Study Review Committee

A series of meetings were held with each of the various agencies to discuss their projects and project prioritization. These meetings provided the opportunity for each jurisdiction to provide input regarding the technical analysis and the public input. Through this agency review, some projects moved up and others down. There were a number of different reasons in support of the prioritization changes. In some cases, they were technical reasons, such as Project A must precede Project B. In other cases, both Project A and B are needed to serve future demand.

Because there are limited Federal STP/U funds, Metro COG used existing and historic CIP revenue to project local revenue based on local sales tax, state aid to cities/counties, local assessments, and bonding to allow for a larger constrained list of purely locally funded transportation projects.

Fiscal Constrained Roadway Plan Assumptions and Principals

The development of the Fiscal Constrained Plan included various assumptions, principles, and input from various agencies. These are presented as follows to provide additional understanding of the proposed Fiscal Constrained Plan.

Principles for Fiscally Constrained Plan

Metro COG worked closely with local and State partners on the development of the Fiscal Constraint element of the Metro 2040 LRTP. The Metro 2040 LRTP Fiscal Constrain element was built upon cooperative revenue estimates developed through the planning process. Further, the Fiscal Constrain element assumes that all O&M

needs are covered first. Secondly, the Fiscal Constraint element also assumes a robust program of major rehabilitation and preservation projects throughout the Fargo-Moorhead metropolitan area.

Considerations for Local Investments in Metro 2040

The Fiscal Constrain element for Metro 2040 constrains agreed to revenue streams for the Surface Transportation Program (STP) for the urban and regional roadway system and Interstate Maintenance (IM and NHPP) funds for Interstate related improvements. Further, the Fiscal Constraint element of Metro 2040 constrains local investments (Sales Tax, Assessments, Bonds, etc.) from existing municipal and county Capital Improvement Programs (CIPs) over the life the Plan. All locally funded improvements shown in the Fiscal Constraint element of Metro 2040 are constrained by reasonably anticipated local revenues. There is a long standing trend locally in funding major transportation investment with purely local funds. Metro 2040 uses this assumption for the years 2015-2040 to constrain several major roadway investments beyond the availability of Federal revenues.

Considerations for North Dakota Department of Transportation

Metro COG worked cooperatively on Metro 2040 with its local partners to ensure that the improvements identified for the two Interstate systems are not standalone projects to help facilitate the traffic demands in the metropolitan area.

The fiscally constrained improvements to the Interstate system are based on additional needs that have been exhausted on the local urban and regional system. The local urban and regional roadway system has been or is being proposed as being built up within current fiscal constraints to handle future demand outside the Interstate system, but even with these improvements, the two Interstate highways will see a decline in operational capacity and future expansion of the system may be needed.

To respect the long standing cooperative efforts between Metro COG and NDDOT, substantial investments are made in the long-term needs of the NDDOT Urban system with both STP/U and local funds. Metro 2040 will make substantial investment in the Urban and Regional roadway system to balance future demand between the State and local system. An example being the widening of Veterans Boulevard from 19th to 52nd Avenue; reconstruction and widening of 52nd Avenue from Sheyenne Street to 45th Street, including the widening of the 52nd Avenue Red River Bridge, reconstruction and widening of Sheyenne Street from 13th Avenue to 52nd Avenue; and the buildup of 9 plus miles of critical new arterial capacity south of 52nd Avenue.

Metro 2040 takes a constrained and conservative approach to new investments on major state routes, such as Interstate 94 and Interstate 29. A range of critical investments are constrained, however, several larger longer terms needs are left as illustrative in Metro 2040. While moderate operational improvements to I-94 and I-29 are constrained in Metro 2040, a number of large investments are left as Illustrative: 76th Avenue Interchange, I-94 Red River Bridge widening, and a number of widening's on both I-94 and I-29.

Considerations for Minnesota Department of Transportation

So as to support its cooperative relationship with MnDOT, Metro 2040 will strictly follow the guidance of the Minnesota Strategic Highway Investment Plan (MnSHIP). MnSHIP is MnDOT's current highway investment strategy. In following MnSHIP, no new investments are constrained in Metro 2040 for major Trunk Highways or Interstate 94. As such, Metro 2040 is unable to constrain critical investments on TH 75 south of 46th Avenue. This lack of investment will compromise the development of a major north-south arterial connection, which works in tandem with similar investments made on Sheyenne Street and 52nd Avenue to build out an internal perimeter arterial system for moving traffic around the metropolitan area. Metro 2040 is not able to constrain any investment in a future grade separation in downtown Moorhead, which would be built to support operations on both TH 10 and TH 75. The reconstruction of the 20th Street Interchange in Moorhead to meet projected regional growth and mobility trends, will also remain unconstrained in Metro 2040. Similar to NDDOT, MnDOT's share of the replacement and potential widening for the I-94 Red River Bridge is also left Illustrative.

Metro 2040 will be used to work with MnDOT when they initiate their next MnSHIP update to demonstrate quantitative local needs on the State TH system.

Fiscal Constrained Roadway Plan

The Fiscal Constrained Roadway Plan is presented in Table 12-2 starting on page 12-6. This Fiscal Constrained Plan is comprehensive and includes both projects that would be partially funded through federal and state revenue forecasts, as well as projects that would be funded through local funds. The following describes the table.

Jurisdictions

There are five project categories based on jurisdictions. There are two project categories for the North Dakota Department of Transportation. These include NDDOT Regional projects that are eligible for STP/R funds and NDDOT Projects that would be eligible for Interstate Maintenance dollars. The third category is for Minnesota Department of Transportation projects. The fourth and fifth jurisdictional categories

are for local North Dakota jurisdictions including Fargo and West Fargo, and for local Minnesota jurisdictions, the City of Moorhead.

Transportation Improvement Program Projects

The project priorities list for each jurisdiction begins with those projects that are currently included in the Metro COG Transportation Improvement Program (TIP). These projects have committed funding, and are scheduled for improvement by 2018. Because these projects have committed funding, these funds were not included in the funding forecasts presented in Table 12-1.

Preservation and Rehabilitation (PR)

As part of the LRTP analysis process, projects that were forecasted to require preservation and rehabilitation improvements through 2040 were identified. The costs for these projects were previously accounted for as part of the Preservation and Rehabilitation analysis (Chapter 9) and do not require funding identified in Table 12-1.

Fiscal Constrained Roadway Capital Projects

The prioritized projects that can be funded with available forecast revenues are presented in Table 12-2. For each project, the current capital costs, Year of Expenditure (YOE) capital costs, the 20% local funding, and the 80% of the project cost eligible for Federal and State funding are presented. The YOE capital costs by time band was based on a very conservative 4% per year. As presented in the table, the forecast YOE costs are subtracted from the remaining revenues. The Plan is fiscally constrained when the available revenues are depleted.

Locally Funded Projects

Based on input from the local jurisdictions of Fargo, West Fargo and Moorhead, local available revenues will be used for improving some facilities without federal or state funding. In conducting a future 2040 level of service assessment with the proposed fiscal constrained projects, these local projects were included in the Plan. As presented in the table, the current costs and the future year of expenditure costs are presented. For these costs, all were assumed to be local.

Illustrative Projects

Remaining projects that do not have available funding are defined as Illustrative projects, which are part of the Needs Based Vision Plan. In most situations, they were lower priority projects. There are some higher priority projects that were identified as Illustrative because these projects have a very high cost that exceeds available funding.

TABLE 12-2: FISCAL CONSTRAINED	ROADWAY PROJECTS
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NDDOT Regional (STP/R)												
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$)Local/ StateFederal/State STP-UAvailable/ Remaining FunFuture YearStateSTP-URemaining Fun					
		Short-	Term (2015-20	20)			Transportation Improvement Program (TIP)					
TIP - STP/R	ND-18	PCC pavement & Aggregate Base	in Ca	selton	NDDOT	\$354,000						
TIP - STP/R	Main Avenue	Reconstruct	University Drive	Red River Bridge	NDDOT	\$9,651,000		Transportati	on Improvement Br	aram		
TIP - STP/R	ND-18	PCC pavement & Aggregate Base	Langer Ave (Casselton)	4th Ave (Casselton)	NDDOT	\$1,996,000		Transportati	on improvement Pro	ogram		
TIP - STP/R	Main Avenue	Reconstruct	Morrison Street	I-94	NDDOT	\$15,000,000						
1		Mid-T	erm (2021-203	0)			Mid-	Term Revenu	ues - YOE	\$33,378,000		
PR	Main Ave	Major Rehabilitation	University Dr	25th St	NDDOT	\$4,060,000	\$6,544,720	\$1,308,944	\$5,235,776	\$28,142,224		
PR	10th St	Major Rehabilitation	1st Ave	12th Ave	NDDOT	\$1,796,000	\$2,895,152	\$579,030	\$2,316,122	\$25,826,102		
PR	19th Ave North	Major Rehabilitation	Dakota Dr	I-29 East Ramps	NDDOT	\$2,480,000	\$3,997,760	\$799,552	\$3,198,208	\$22,627,894		
49	S University Dr	Widen 4 to 6 lanes	13th Ave S	18th Ave S	Fargo	\$6,000,000	\$9,672,000	\$1,934,400	\$7,737,600	\$14,890,294		
		Long-1	erm (2031-204	10)			Long	-Term Reven	ues - YOE	\$38,736,800		
50	S University Dr	Widen 2 to 3 lanes	1st Ave S	5th Ave S	NDDOT	\$750,000	\$1,788,000	\$357,600	\$1,430,400	\$37,306,400		
51	10th St N	Widen 2 to 3 lanes	4th Ave N	7th Ave N	NDDOT	\$475,000	\$1,132,400	\$226,480	\$905,920	\$36,400,480		
52	10th St S	Widen 2 to 3 lanes	1st Ave S	5th Ave S	NDDOT	\$710,000	\$1,692,640	\$338,528	\$1,354,112	\$35,046,368		

	NDDOT Projects (Interstate Maintenance)											
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds		
		Short-Te	erm (2015-2020)		_		Short-1	Ferm Revenu	es - YOE	\$5,680,000		
TIP - NBP	I-29	Deck Overlay	One mile so	uth of I-94	NDDOT	\$774,000						
TIP - IM	I-29 (SB)	Concrete Pavement Repair	Wild Rice River	Main Avenue	NDDOT	\$4,052,000						
TIP - IM	I-29 (NB)	Concrete Pavement Repair	Wild Rice River	Main Avenue	NDDOT	\$1,558,000						
TIP - IM	I-29 (SB)	PCC pavement	Argusville	Hunter	NDDOT	\$21,798,000						
TIP - IM	I-29 (NB)	Concrete pavement repair	Christine	Wild Rice River	NDDOT	\$1,512,000	_					
TIP - IM	I-29 (SB)	Concrete pavement repair	Christine	Wild Rice River	NDDOT	\$7,696,000	Tr	ansportation li	mprovement Prog	ram		
TIP - IM	University Drive	Reconstruct, included interstate ramps	18th Ave South	I-94 south ramp	NDDOT	\$2,676,636						
TIP - IM	I-94 (EB)	Drainage Improvements	0.5 miles east of I-29	East of Red River	NDDOT	\$253,000						
TIP - HBP	I-94	Structural Painting	I-94 Red Riv	er Bridges	NDDOT	\$52,000						
1	I-94 Sheyenne St Interchange	Widen underpass from 2 to 4 lanes + Interchange Modification	-	-	Fargo/ NDDOT	\$10,000,000	\$12,407,985	\$2,481,597	\$9,926,388	(\$4,246,388)		
		Mid-Te	rm (2021-2030)				Mid-T	erm Revenue	es - YOE	\$15,779,000		
7	I-29 to I-94 Ramp	I-29 SB to I-94 EB Flyover and Ramp Widening from 1 to 2 lanes	I-29 SB Off- Ramp to I-94 EB	I-94 EB Merge with I-29 NB Off- Ramp	NDDOT	\$5,000,000	\$8,060,000	\$1,612,000	\$6,448,000	\$5,084,612		
8	I-94 Eastbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	I-29 SB & I-29 NB Off-Ramp Merge	I-94 EB Off- Ramp to 25th St SB	NDDOT	\$1,800,000	\$2,901,600	\$580,320	\$2,321,280	\$2,763,332		
11a	I-94 Eastbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	25th St S On- Ramp	S University Dr Off-Ramp	NDDOT	\$1,240,000	\$1,998,880	\$399,776	\$1,599,104	\$1,164,228		
2	I-94 Veterans Blvd Interchange (Phase I)	Add 2nd NB left to WB On-Ramp & Widen WB On-Ramp to 2 lanes	-	-	West Fargo/ Fargo/ NDDOT	\$750,000	\$1,209,000	\$241,800	\$967,200	\$197,028		

NDDOT Projects (Interstate Maintenance)											
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds	
		Long-Te	erm (2031-2040)				Long	\$10,060,000			
11b	I-94 Eastbound	Widening 25th Street Interchange Underpass from 3 to 4 lanes	25th St S Off-Ramp	25th St. to I-94 EB On-Ramp	NDDOT	\$300,000	\$715,200	\$143,040	\$572,160	\$9,684,867.67	
16	I-29 Northbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	32nd Ave S On-Ramp	I-94 Off-Ramp	NDDOT	\$580,000	\$1,382,720	\$276,544	\$1,106,176	\$8,578,691.67	
9	I-94 Westbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	25th St S On-Ramp	I-29 NB On-Ramp	NDDOT	\$1,260,000	\$3,003,840	\$600,768	\$2,403,072	\$6,175,620	
12	I-94 Westbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	S University Dr On-Ramp	25th St S On-Ramp	NDDOT	\$1,920,000	\$4,577,280	\$915,456	\$3,661,824	\$2,513,796	
6	l-94 Westbound	Widening Underpass from 2 to 3 lanes	I-94 WB to I-29 SB Loop Off Ramp	I-29 SB to I-94 WB On-Ramp Merge	NDDOT	\$740,000	\$1,764,160	\$352,832	\$1,411,328	\$1,102,468	
	•		lustrative								
21	I-29 / 76th Ave S Interchange	New Interchange	-	-	Fargo / NDDOT	\$25,000,000					
15	I-94 Red River Bridge (1/2 ND)	Bridge Widening from 6 to 8 lanes	-	-	NDDOT	\$10,000,000					
14	I-94 Westbound (1/2 ND)	Interstate Widening from 3 to 4 lanes	State Line	S University Dr Off-Ramp	NDDOT	\$940,000					
13	I-94 Eastbound (1/2 ND)	Interstate Widening from 3 to 4 lanes	S University Dr On-Ramp	State Line	NDDOT	\$960,000	Projects idea	Illustr	ative Projects	estion between	
20	I-29 Northbound	Interstate Widening from 2 to 3 lanes (Auxiliary Lanes)	52nd Ave S On- Ramp	32nd Ave S On-Ramp	NDDOT	\$4,600,000	2031 and 2040 without available revenues.				
19	I-29 Southbound	Interstate Widening from 2 to 3 lanes (Auxiliary Lanes)	32nd Ave S Off-Ramp	52nd Ave S Off-Ramp	NDDOT	\$3,460,000					
4	I-94 Westbound	Interstate Widening from 2 to 3 lanes	45th St S WB Off-Ramp	Veterans Blvd WB Off-Ramp	NDDOT	\$1,980,000					

	NDDOT Projects (Interstate Maintenance)											
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds		
5	I-94 Eastbound	Interstate Widening from 2 to 3 lanes	I-29 SB Off- Ramp	I-29 NB On- Ramp Merge to I- 94 EB	NDDOT	\$900,000						
3	I-94 Veterans Blvd Interchange (Phase II)	Remove NB left turn lanes and replace with NB to WB loop ramp	-	-	West Fargo/ Fargo/ NDDOT	\$7,000,000						

	North Dakota Local Projects											
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds		
		Short-Term (2	015-2020)				STP-U Sh	ort-Term Rev	enues - YOE	\$14,965,000		
TIP STP/U	25th Street	AC Payback	25th Str	eet S.	Fargo	\$2,000,000						
TIP STP/U	32nd Ave South	Reconstruct	32nd Street	42nd Street	Fargo	\$8,236,000						
TIP STP/U	Transit Capital	Replace 3 fixed-route vehicles (1126,1127 & 1128)	N/A	N/A	Fargo Transit	\$1,860,000		Transportatio	n Improvement Pro	gram		
TIP STP/U	12th Avenue North	Reconstruct	CR-19	45th Street	West Fargo	\$11,454,000						
TIP STP/U	Various	Emergency Vehicle Preemption	at 13 loca city-w	ations ide	West Fargo	\$238,000						
TIP STP/U	Sheyenne Street	Permanent traffic signals	at 40th Ave Ave E	and 32nd ast	West Fargo	\$845,000						
27	Sheyenne St	Widen 2 to 4 lanes	19th Ave W	32nd Ave E	West Fargo	\$7,000,000	\$8,685,590	\$1,737,118	\$6,948,472	\$8,016,528		
43	64th Ave S Extension and I-29 Overpass	New 4 lane arterial and bridge	38th St SW	36th St SW	Fargo	\$11,700,000	\$14,517,343	\$2,903,469	\$11,613,874	(\$3,597,346)		
41a	38th St Extension	New 4 lane arterial	55th Ave S	64th Ave S	Fargo	\$4,375,000	\$5,428,494	\$5,428,494	-			
40a	45th St S Extension	New 4 lane arterial	52nd Ave S	64th Ave S	Fargo	\$3,980,000	\$4,938,378	\$4,938,378	-			
44	64th Ave S	New 4 lane arterial	33rd St SW	25th St S	Fargo	\$3,250,000	\$4,032,595	\$4,032,595	-			
36a	64th Ave S	New 4 lane arterial	45th St S	38th St SW	Fargo	\$5,050,000	\$6,266,033	\$6,266,033	-			
83	12th-15th Ave Toll Bridge (1/2 ND)	Remove Toll (Minor modifications)	-	-	Fargo Share Only	\$50,000	\$62,040	\$62,040	-			
PR	1st Ave	Major Rehabilitation	University Dr	2nd St	Fargo	\$2,364,000	\$2,933,248	\$2,933,248	-			
PR	2nd St North	Major Rehabilitation	5th Ave	1st Ave	Fargo	\$888,000	\$1,101,829	\$1,101,829	-			

	North Dakota Local Projects												
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds			
		Mid-Te	erm (2021-20)30)			STP	-U Mid-Term	I - YOE	\$54,996,800			
28	Sheyenne St	Reconstruct and Widen 2 to 4 lanes	32nd Ave E	40th Ave S	West Fargo	\$5,125,000	\$8,261,500	\$1,652,300	\$6,609,200	\$44,790,254			
34	52nd Ave S	Reconstruction + Widen 2 to 4 lanes	Sheyenne St	45th St S	West Fargo/ Fargo/ Cass County	\$11,450,000	\$18,457,400	\$3,691,480	\$14,765,920	\$30,024,334			
PR	32nd Ave South	Major Rehabilitation	University Dr	32nd St S	Fargo	\$5,920,000	\$9,543,040	\$1,908,608	\$7,634,432	\$22,389,902			
PR	13th Ave South	Major Rehabilitation	52nd St	Sheyenne Street	Fargo/West Fargo	\$6,000,000	\$9,672,000	\$1,934,400	\$7,737,600	\$14,652,302			
80	52nd Ave South / 60th Ave S (North Dakota)	Widen 2 to 4 lanes and bridge	State Line	S University Dr	Fargo Share Only	\$7,500,000	\$12,090,000	\$2,418,000	\$9,672,000	\$4,980,302			
	Transit Capital					\$3,861,897	\$6,225,377	\$1,245,075	\$4,980,302	\$0			
29	Veterans Blvd	Widen 4 to 6 lanes	19th Ave E	32nd Ave S	West Fargo/ Fargo	\$4,500,000	\$7,254,000	\$7,254,000					
31	Sheyenne St	Widen 2 to 4 lanes	40th Ave E	52nd Ave S	West Fargo	\$5,125,000	\$8,261,500	\$8,261,500					
26	Sheyenne St	Widen 2 to 4 lanes	13th Ave W	19th Ave North	West Fargo	\$3,250,000	\$5,239,000	\$5,239,000					
41b	38th St Extension	New 4 lane arterial	64th Ave S	76th Ave S	Fargo	\$4,375,000	\$7,052,500	\$7,052,500					
40b	45th St S Extension	New 4 lane arterial	64th Ave S	76th Ave S	Fargo	\$3,980,000	\$6,415,760	\$6,415,760	Local Capital	Improvement			
45	76th Ave S Extension	New 4 lane arterial	38th St SW	25th St S	Fargo	\$5,150,000	\$8,301,800	\$8,301,800	Rev	enues			
46	76th Ave S	New 4 lane arterial	25th St S	County Road 81	Fargo	\$4,950,000	\$7,979,400	\$7,979,400					
39a	Veterans Blvd Extension	New 2 lane arterial	52nd Ave S	64th Ave S	Fargo	\$3,960,000	\$6,383,520	\$6,383,520					
36b	64th Ave S	New 4 lane arterial	45th St S	Veterans Blvd Extension	Fargo	\$5,050,000	\$8,140,600	\$8,140,600					

North Dakota Local Projects												
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds		
PR	CBD Urban Arterials	Major Rehabilitation	4th Ave N. to NP Ave	2nd St to Roberts St	Fargo	\$4,000,000	\$6,448,000	\$6,448,000				
PR	4th Street South	Major Rehabilitation	Main Ave	13th Ave	Fargo	\$1,948,000	\$3,140,176	\$3,140,176				
PR	7th Ave North	Major Rehabilitation	Elm St	University Dr	Fargo	\$1,852,000	\$2,985,424	\$2,985,424				
PR	University Dr North	Major Rehabilitation	32nd Ave	40th Ave	Fargo	\$1,994,000	\$3,214,328	\$3,214,328	Local Pro Rehabilitat	eservation / tion Revenues		
PR	19th Ave North	Major Rehabilitation	I-29 West Ramps	45th St	Fargo	\$1,842,000	\$2,969,304	\$2,969,304				
PR	9th St East	Major Rehabilitation	Main Ave	12th Ave North	West Fargo	\$1,936,000	\$3,120,832	\$3,120,832				
PR	1st Ave East	Major Rehabilitation	Center St	8th St	West Fargo	\$1,620,000	\$2,611,440	\$2,611,440				
		Lon	g-Term (2031-2	2040)			STP	-U Long-Tern	n - YOE	\$63,826,000		
38a	76th Ave S	New 4 lane arterial	45th St S	38th St SW	Fargo	\$4,925,000	\$11,741,200	\$2,348,240	\$9,392,960	\$54,433,040		
33	45th St S	Widen 6 to 8 lanes	I-94 EB On- Ramp	23rd Ave S	Fargo	\$660,000	\$1,573,440	\$314,688	\$1,258,752	\$53,174,288		
39b	Veterans Blvd Extension	New 2 lane arterial	64th Ave S	76th Ave S	Fargo	\$3,960,000	\$9,440,640	\$1,888,128	\$7,552,512	\$45,621,776		
38b	76th Ave S	New 4 lane arterial	45th St S	Veterans Blvd Extension	Fargo	\$4,925,000	\$11,741,200	\$2,348,240	\$9,392,960	\$36,228,816		
PR	9th St North East	Major Rehabilitation	Main Ave	13th Ave E	West Fargo	\$2,000,000	\$4,768,000	\$953,600	\$3,814,400	\$32,414,416		
PR	Center Street	Major Rehabilitation	Railroad bridge	12th Ave	West Fargo	\$1,334,000	\$3,180,256	\$636,051	\$2,544,205	\$29,870,211		
PR	6th St East	Major Rehabilitation	13th Ave	10th Ave	West Fargo	\$1,076,000	\$2,565,184	\$513,037	\$2,052,147	\$27,818,064		
PR	1st Ave North Bridge	Major Rehabilitation	-	-	Fargo Share Only	\$2,500,000	\$5,960,000	\$1,192,000	\$4,768,000	\$23,050,064		
	Transit Capital					\$9,668,651	\$28,812,580	\$5,762,516	\$23,050,064	\$0		

	North Dakota Local Projects												
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds			
32a	Sheyenne St	Widen 2 to 4 lanes	52nd Ave S	76th Ave S	Horace/Cass	\$5,000,000							
32b	Sheyenne St	Widen 2 to 4 lanes	64th Ave S	76th Ave S	Horace/Cass	\$5,000,000							
35	64th Ave S	New 4 lane arterial	County Road 17	Veterans Blvd Extension	Horace	\$4,800,000							
37	76th Ave S	New 4 lane arterial	County Road 17	Veterans Blvd Extension	Horace/Fargo	\$4,950,000	Droi	Illu aata idaat	strative Projects	mitigata			
PR	Grade Separation	Major Rehabilitation	45th St	19th Ave North	Fargo	\$20,000,000	conge	stion betw	veen 2031 and 20	40 without			
PR	NP/Center Ave Bridge	Major Rehabilitation	-	-	Fargo Share Only	\$10,000,000		ava	mable revenues.				
87	76th/80th Avenue South	Construct New 2 Lane Bridge	-	-	Fargo Share Only	\$11,200,000							
89	70th Avenue South Fargo	Construct New 2 Lane Bridge (Option to 76th/80th)	-	-	Fargo Share Only	\$10,800,000							

	MnDOT Projects											
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds		
		Short-Term	(2015-2020)									
TIP - HPB	I-94	Structural Painting	I-94 Red R 9066	iver Bridges & 9067	MnDOT	\$357,000						
TIM - NHS	US-10	AC Payback	North JCT of US-10	N. Clay Co. Line	MnDOT	\$2,200,000	Transportation Improvement Program					
TIP - NHS	US-75/I-94	Reconstruct interchange + auxiliary lanes 20th St to US 75	US-75	and I-94	MnDOT	\$12,049,000						
TIP - NHS	US-75/I-95	AC Payback	US-75	and I-95	MnDOT	\$4,990,000						
TIP - STP	MN 34	Pavement Rehab	JCT TH-9	Dunvilla	MnDOT	\$7,105,100						
		Mid-Term (2	2021-2030)				Mid-Term Revenues - YOE \$7,456,000					
PR	TH 10	Major Rehabilitation	Red river	TH 75 East Junction	MnDOT	\$2,265,600	\$2,811,153	\$562,231	\$2,248,923	\$5,190,400		
PR	TH 75	Major Rehabilitation	I-94	TH 10/75 West Junction	MnDOT	\$2,152,800	\$2,671,191	\$534,238	\$2,136,953	\$3,037,600		
77	SR-75 / 8th St S	Widen 2 to 4 lanes	46th Ave S	60th Ave S	MnDOT	\$6,050,000						
81	8th St/11th St Railroad Grade Separated Crossing	Engineering, Environmental, ROW	8th St/11th St	Main Ave	MnDOT/ Moorhead	\$6,305,716						
PR	I-94	Major Rehabilitation	Red River	Just East of TH336	MnDOT	\$5,200,000	Illustrative Projects Projects identified as needed to mitigate congestion between 2021 and 2030 without available revenues.					
14	I-94 Westbound (1/2 M)	Interstate Widening from 3 to 4 lanes	8th St S On-Ramp	State Line	MnDOT	\$940,000						
15	I-94 Red River Bridge (1/2 M)	Bridge Widening from 6 to 8 lanes	-	-	MnDOT	\$10,000,000						
13	I-94 Eastbound (1/2 M)	Interstate Widening from 3 to 4 lanes	State Line	8th St S Off-Ramp	MnDOT	\$960,000						

MnDOT Projects											
Project ID	Project Name Project Description		From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds	
		Long-Term (2031-2		-							
62	I-94 / 20th St Interchange	Rebuild 20th St. Interchange, Reconstruct 20th St. to 4 lanes widen I-94 Eastbound to 3 Lanes to Rest Area	24th Ave	30th Ave	Moorhead/ MnDOT	\$38,300,000	Illustrative Projects Projects identified as needed to mitigate congestion between 2021 and 2030 without available revenues.				
PR	TH 10	Major Rehabilitation	TH 336	Dilworth W Limits	MnDOT	\$9,500,000					

	Local Minnesota Projects												
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds			
		Short	Short-Term Revenues - YOE \$1,955,										
84	20th St Extension	New 2 lane arterial	43rd Ave	50th Ave	Moorhead	\$4,080,000	\$5,062,458	\$1,012,492	\$4,049,966	(\$2,094,966)			
83	12th-15th Ave Toll Bridge (1/2 MN)	Remove Toll (Minor modifications)	-	-	Moorhead Share Only	\$50,000	\$62,040	\$62,040					
93	40th Street S	New local roadway	24th Avenue S	28th Avenue S	Moorhead	\$985,352	\$1,222,623	\$1,222,623	Local Capital I	mprovement			
91	8th Avenue N	New collector roadway	28th Street N	34th Street N	Moorhead	\$993,454	\$1,232,676	\$1,232,676	Reve	lues			
81A	8th St/11th St RR Grade Crossing	Preliminary Engineering	8th St/ 11th St	Main Ave	Moorhead	\$2,000,000	\$2,481,600	\$2,481,600	1				
81B	8th St/11th St Railroad Grade Separated Crossing	Railroad underpass	8th St/11th St	Main Ave	MnDOT/ Moorhead	\$40,000,000	Illustrative Projects						
PR	7th St E	Reconstruction	TH 10	15th Ave N	Dilworth	\$2,000,000	Projects identified as needed to mitigate congestion			stion between			
97	8th Ave N	New collector roadway	CSAH 9	1300' E of 34th Street	Dilworth	\$530,542	2015 and 2020 without available revenues.						

Local Minnesota Projects												
Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds		
Mid-Term (2021-2030)								Mid-Term Revenues - YOE				
80	52nd Ave South / 60th Ave S (Minnesota)	Widen 2 to 4 lanes and bridge	8th St S	State Line	Clay County Share Only	\$11,250,000	\$18,135,000	\$3,627,000	\$14,508,000	(\$5,366,600)		
82	21st St Railroad Grade Separated Crossing	Railroad underpass	21st St	Main Ave	Moorhead	\$30,000,000	Project ident	III ified as needed	istrative Project between 2021 and 2030 without available revenues.			
PR	Center Ave	Major Rehabilitation	4th St	8th St	Moorhead	\$1,256,000	\$2,024,672	\$2,024,672				
92	4th Avenue S	New collector roadway	34th Street S	40th Street S	Moorhead	\$1,050,950	\$1,694,131	\$1,694,131				
102	40th Street S	Existing Gravel to Paved	4th Avenue S	12th Avenue S	Moorhead	\$940,714	\$1,516,431	\$1,516,431				
94	46th Street S	New collector roadway	12th Avenue S	28th Avenue S	Moorhead	\$2,000,350	\$3,224,564	\$3,224,564				
95	28th Street S	Existing Gravel to Paved	current ending	50th Avenue S	Moorhead	\$1,133,262	\$1,826,818	\$1,826,818				
99	CSAH 16	Existing Gravel to Paved	40th Street S	50th Street S	Clay County Share Only	\$2,014,636	\$3,247,593	\$3,247,593				
100	50th Street S	Existing Gravel to Paved	12th Avenue S	28th Avenue S	Moorhead	\$1,993,158	\$3,212,971	\$3,212,971	Local Re	venues		
101	28th Avenue S	Existing Gravel to Paved	1 mile west of 50th Street S	-	Moorhead	\$1,863,500	\$3,003,962	\$3,003,962				
PR	11th St South	Major Rehabilitation	Main Ave	22nd Ave S	Moorhead	\$2,840,000	\$4,578,080	\$4,578,080				
PR	30th Ave South	Major Rehabilitation	14th St	20th St	Moorhead	\$932,000	\$1,502,384	\$1,502,384				
PR	14th St North	Major Rehabilitation	1st Ave	15th Ave	Moorhead	\$2,002,000	\$3,227,224	\$3,227,224				
PR	28th St North	Major Rehabilitation	TH 10	15th Ave	Moorhead	\$2,008,000	\$3,236,896	\$3,236,896				
PR	14th St South	Major Rehabilitation	20th Ave	28th Ave	Moorhead	\$1,000,000	\$1,612,000	\$1,612,000				

Project ID	Project Name	Project Description	From	То	Jurisdiction	Total Cost (\$) Current Year	Total Cost (\$) Future Year	Local/ State	Federal/State STP-U	Available/ Remaining Funds		
PR	12th Ave South	Major Rehabilitation	4th St	34th St	Moorhead	\$4,574,000	\$7,373,288	\$7,373,288				
90	3rd Street S	New collector roadway	50th Avenue S	60th Avenue S	Moorhead	\$1,980,852	\$3,193,133	\$3,193,133				
		Loi	ng-Term (2031-	-2040)			Lon	g-Term Rever	nues - YOE	\$8,340,000		
85	20th St Extension	New 2 lane arterial	50th Ave	60th Ave S	Moorhead	\$3,920,000	\$9,345,280	\$1,869,056	\$7,476,224	\$863,776		
103	50th Avenue S	Existing Gravel to Paved	TH 75	28th Street S	Clay County Share Only	\$2,987,354	\$7,121,852	\$7,121,852				
PR	17th St North	Major Rehabilitation	1st Ave	15th Ave	Moorhead	\$2,004,000	\$4,777,536	\$4,777,536	Local Revenues			
PR	4th Ave North	Major Rehabilitation	11th St	17th St	Moorhead	\$938,000	\$2,236,192	\$2,236,192				
PR	4th Ave North	Major Rehabilitation	TH 75	28th St	Moorhead	\$672,000	\$1,602,048	\$1,602,048				
PR	7th Ave North	Major Rehabilitation	14th St	TH 75	Moorhead	\$1,200,000	\$2,860,800	\$2,860,800				
PR	1st Ave North Bridge	Major Rehabilitation	-	-	Moorhead	\$2,500,000	\$5,960,000	\$5,960,000				
PR	NP/Center Ave Bridge	Major Rehabilitation	-	-	Moorhead	\$10,000,000	\$23,840,000	\$23,840,000				
96	14th Street S	Existing Gravel to Paved	46th Avenue S	50th Avenue S	Moorhead	\$1,298,136	\$3,094,756	\$3,094,756				
87	76th/80th Avenue South (1/2 MM)	Construct New 2 Lane Bridge	-	-	Clay County Share Only	\$11,200,000	\$26,700,800	\$26,700,800				
89	70th Avenue (1/2 MN) South Fargo	Construct New 2 Lane Bridge (Option to 76th/80th)	-	-	Clay County Share Only	\$10,800,000	\$25,747,200	\$25,747,200				
Illustrative												
98 8th Ave North New road CSAH 9 7th St East Dilworth \$2,004,244							Illustrative Project					
								2040 without available revenues.				

Fiscal Constrained Roadway Plan Map

The Fiscal Constrained Roadway Plan Map is presented in Figure 12-2 on the following page. This map color codes each project based on whether it is a short-term project through 2020, a mid-term project between 2021 and 2030, a long-term project between 2031 and 2040, or an Illustrative project that is based on the needs based analysis, but without available funds.

Fiscal Constrained Plan Performance

After the fiscal constrained projects were defined, the travel demand model was updated to include the selected projects, and a Level of Service map was prepared. This map is presented in Figure 12-3 on page 12-20 for the 2020 forecasts with short-term fiscal constrained projects and Figure 12-4 on page 12-21 for 2040 forecasts. Similar to the traffic volumes and congestion maps presented in Chapter 6, Figure 12-3 and 12-4 presents the forecast daily traffic via bandwidths, where the thicker the line, the higher the forecast traffic volumes, and color coded where green is uncongested Level of Service A through C, yellow, which is congesting or Level of Service D, or red, which is congested or Level of Service E and F.

In review of Figure 12-3, the region will experience excellent levels of service with the existing roadway network, plus the committed Transportation Improvement Program projects and the addition of the Short-Term Fiscal Constrained Plan.

The 2040 congestion with the fiscal constrained projects is significantly less than the 2040 impacts with only the E+C network, although there will be some roadways that will experience congestion.

Most all local roadways will experience uncongested conditions in 2040 because local jurisdictions are providing significant levels of funds for new local facilities that are included in the Fiscal Constrained Plan.

The Fiscal Constrained Plan proposed improvements on I-94 are also forecasted to operate in 2040 with acceptable levels of congestion, except for some minor segments along I-94 where additional funds were not available. The greatest congestion impacts to the interstate system are forecasted along I-29. This is because of the high growth forecasted for development in the south-west areas of the region. Whereas the Vision Plan identified improvements along I-29 that would mitigate this congestion, there were not sufficient remaining funds to also include these improvements along I-29.
CHAPTER 12 – FISCAL CONSTRAINED TRANSPORTATION PLAN



FIGURE 12-2: FISCAL CONSTRAINED PLAN

Source: Metro COG



FIGURE 12-3: 2020 CONGESTION WITH SHORT-TERM FISCAL CONSTRAINED TRANSPORTATION IMPROVEMENTS

Source: Metro COG



FIGURE 12-4: 2040 CONGESTION WITH FISCAL CONSTRAINED PLAN IMPROVEMENTS

Source: Metro COG

APPENDICES

Appendix A: Resolutions

- Appendix 6-1: Average Daily Traffic (ADT) Volume Maps
- Appendix 8-1: MAP-21 National Performance Goals and Metro 2040 Targets and Performance Measures
- Appendix 8-2: Goals, Objectives, and Project Evaluation Criteria
- Appendix 9-1: METRO 2040 Operations and Maintenance Plan
- Appendix 9-2: Committed 2020 Roadway Improvements
- Appendix 10-1: Transit Development Plan
- Appendix 10-2: Interstate Interchange Improvements
- Appendix 11-1: Revenue and Expenses
- Appendix 11-2: Supplemental Funding Sources
- Appendix 12-1: Roadway Project Evaluations

APPENDIX A: RESOLUTIONS



Rich Mattern, Mayor

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, Metro COG has undertaken the task of updating its Metropolitan Transportation Plan, documents planning process, and which transportation projects' eligibility for future federal funding; vital element of this 2040, which is a Metro

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

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 Whereas, public and private organizations representing numerous transportation interests, as well Plan;

Whereas, Metro 2040, which covers the time horizon of 2014 to 2040 was prepared using an extensive intermodal planning process; Whereas, Metro 2040 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 West Fargo does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan, Metro 2040, 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 19 day of 1144

City Auditor Jim Brownlee, Attest

2014 By:

Vice President of the Board of City Commissioners Duane Hanson,

800 4th Avenue East • West Fargo, ND 58078 • 701-433-5300 • Fax 701-433-5319

RESOLUTION 2014-0609-C

Resolution to Accept the Metro 2040 Plan

WHEREAS, the 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

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

WHEREAS, Metro COG has undertaken the task of updating its Metropolitan Transportation Plan, Metro 2040, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding; and WHEREAS,

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, Metro 2040, which covers the time horizon of 2014 to 2040 was prepared using an extensive intermodal planning process; and WHEREAS, Metro 2040 provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area.

Minnesota that the City of Moorhead does hereby accept the Fargo-Moorhead Area Long Range Transportation Plan, Metro 2040, and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of NOW, THEREFORE BE IT RESOLVED, by the City Council of the City of Moorhead, the metropolitan transportation system.

PASSED: June 09, 2014 by the City Council of the City of Moorhead.

ATTEST:

APPROVED BY:

Jul Par William DEL RAE WILLIAMS, Mayor

Munue Freuns MICHELLE FRENCH, City Clerk

Resolution 2014-0609-C

Faros

Mayor Dennis R. Walaker 200 3rd Street North Fargo, North Dakota 58102 Phone (701) 241-1310 Fax (701) 476-4136

RESOLUTION

Whereas, the City Commission 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;

vital element of this planning process, and which documents Whereas, Metro COG has undertaken the task of updating its Metropolitan Transportation Plan, transportation projects' eligibility for future federal funding; Metro 2040, which is a

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

involved in this Plan's preparation, in full compliance with Metro COG's Public Participation Whereas, public and private organizations representing numerous transportation interests, as well as groups and individuals from socially disadvantaged groups were invited, encouraged, and Plan; Whereas, Metro 2040, which covers the time horizon of 2014 to 2040 was prepared using an extensive intermodal planning process;

that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead Whereas, Metro 2040 provides a comprehensive, coordinated program of projects and strategies area;

metropolitan transportation goals and objectives, which will complement overall development of Long Range Transportation Plan, Metro 2040, and agrees to use it as a tool to implement Now, Therefore Be It Resolved, that City of Fargo does hereby adopt the Fargo Moorhead Area the metropolitan transportation system.;

Approved and adopted this

Attest

City Auditor

Steve Spague

By:

Mayor Demis R. Walaker

2014

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

Metropolitan Transportation Plan, Metro 2040, which is a vital element of this planning process, and which its of updating documents transportation projects' eligibility for future federal funding; COG has undertaken the task Whereas, Metro

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 guided by was transportation planning process metropolitan federal transportation officials; the Whereas,

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, Metro 2040, which covers the time horizon of 2014 to 2040 was prepared using an extensive intermodal planning process;

Whereas, Metro 2040 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 Dilworth City Council does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan, Metro 2040, 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 9th day of June, 2014.

City Administrator L. Peyton Mastera By: Mayor Chad Olson By:

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1st District - WAYNE INGERSOLL, Moorhead 2nd District - FRANK GROSS, Dilworth 3rd District - JON EVERT, Comstock 4th District - KEVIN CAMPBELL, Moorhead 5th District - GRANT WEYLAND, Moorhead

office Telephone: (218) 299-5002 Fax: (218) 299-5002 Fax: (218) 299-5195



RESOLUTION 2014-29

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;

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

Whereas, Metro COG has undertaken the task of updating its Metropolitan Transportation Plan, Metro 2040, 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; 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,

Whereas, Metro 2040, which covers the time horizon of 2014 to 2040, was prepared using an extensive intermodal planning process; Whereas, Metro 2040 provides a comprehensive, coordinated program of projects and strategies that will improve the urban and extraterritorial transportation system of the Fargo-Moorhead area;

implement metropolitan transportation goals and objectives, which will complement overall development Now, Therefore Be It Resolved, that the Clay County Board of Commissioners does hereby adopt the Fargo Moorhead Area Long Range Transportation Plan, Metro 2040, and agrees to use it as a tool to of the metropolitan transportation system.

Approved and adopted this 20th day of May, 2014.

County Board Chair Campbell Clay County Courthouse 807 11th Street North P.O. Box 280 Kevin L. By:

Moorhead, Minnesota 56561-0280

An Equal Opportunity Employer

Attest:

County Administrator Brian C. Berg

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Board of County Commissioners

Chad M. Peterson Fargo, North Dakota Vern Bennett Fargo, North Dakota Ken Pawluk Fargo, North Dakota Darrell W. Vanyo West Fargo, North Dakota Mary Scherling Stanley Township, North Dakota

Heather Worden Commission Assistant 211 Ninth Street South Box 2806 Fargo, North Dakota 58108

701-241-5609 Fax 701-241-5728 www.casscountynd.gov

RESOLUTION #2014-7

FARGO MOORHEAD AREA LONG-RANGE TRANSPORATION PLAN METRO 2040

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

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

Whereas, Metro COG has undertaken the task of updating its Metropolitan Transportation Plan, Metro 2040, which is a vital element of this planning process, and which documents transportation projects' eligibility for future federal funding;

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

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

Whereas, Metro 2040, which covers the time horizon of 2014 to 2040, was prepared using an extensive intermodal planning process;

of urban and extraterritorial coordinated program , Metro 2040 provides a comprehensive, and strategies that will improve the u transportation system of the Fargo-Moorhead area; Whereas, projects

and agrees to use it as a tool to implement metropolitan transportation goals and objectives, which will complement overall development of the metropolitan Now, Therefore Be It Resolved that the Cass County Commission does hereby adopt the Fargo Moorhead Area Long-Range Transportation Plan, Metro 2040, transportation system.

Approved and adopted this 2^{nd} day of June, 2014.

Attest:

1.1 Cass County Auditor Michael Montplaisir

Ken Pawluk, Chairman Cass County Commission



MAP TILE KEY















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2020 FORECAST DAILY VOLUMES ON E+C NETWORK – TILE 1



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2020 FORECAST DAILY VOLUMES ON E+C NETWORK - TILE 3





2020 FORECAST DAILY VOLUMES ON E+C NETWORK – TILE 4

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2020 FORECAST DAILY VOLUMES ON E+C NETWORK – TILE 5



2020 FORECAST DAILY VOLUMES ON E+C NETWORK – TILE 6

2020 FORECAST DAILY VOLUMES ON E+C NETWORK - TILE 7





2020 FORECAST DAILY VOLUMES ON E+C NETWORK – TILE 8

2020 FORECAST DAILY VOLUMES ON E+C NETWORK – TILE 9



Functional Classification ŝ - Interstate - Principal Arterial - Minor Arterial <u>..</u> Collector 13 0.1 ---- Local - Ramps 0.25 0.5 3.2 X.X: Adjusted Daily Volumes $\mathcal{A}_{\mathbf{N}}$ in thousands 40th Ave Nw 1.2 1.2 0.8 1.4 3.2 Co Rd 20 2.7 2.7 4.1 17 0.2 4.1 Z ಸ 45th 0. Co Rd 17 N 1.6 0.2 4 ٣-Ö 6.7 0.1 19th Ave N 4 3.4 4.6 9.7 3.3 6.9 ю Z 7.6 ц С 7.1 2.5 1 0.5 2.5 36th St Se 3.4 12th Ave Nw 3.6 6.6 8.1 9.2 9.9 10 6 12.7 Q 38th St Nw ŝ S 3.6 3.2 ^N NN 2.5 3.9 5.5 Center 9.1 3.1 St N က 4

2040 FORECAST DAILY VOLUMES ON FISCALLY CONSTRAINED NETWORK - TILE 1

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2040 FORECAST DAILY VOLUMES ON FISCALLY CONSTRAINED NETWORK - TILE 2

2040 FORECAST DAILY VOLUMES ON FISCALLY CONSTRAINED NETWORK - TILE 3




Functional Classification 1.5 9.4 3.7 2 2 ŝ ω ÷. 2 - Interstate ö \sim 3.3 41 **~** 3.9 7 Ave N 5 N 5.5 9.1 9.7 യ 4 17.5 14.1 14 4 Principal Arterial ∞ 2 1.6 3.4 St N 3 6.4 цQ, \sim — Minor Arterial 4.2 7 1.1 2.3 1.8 0.1 33.1 Collector 3.1 LO. 2.8 13.5 10.6 1st Ave N თ 14,2 19.6 15.4 ຫຼັ 2.7 15.5 16.6 26.1 37 36.6 13.2 12.9 21.4 : 1 Ave N ---- Local 25 23.2 25.4 % 1.1 1.3 12 9 12.6 - Ramps N 4 ဖမ်းဖ σ S. -3 3 1.9 2.6 ω Miles 4.9 2.6 4.3 2 8 7.5 6.1 8.6 en i Ω σ, 1.7 3.1 2.2 1 6.9 0.25 0.5 9.1 6 N 3.3 20. 4 3.9 X.X: Adjusted Daily Volumes 19 4 2 2.2 20. 4 0.4 2.7 S in thousands 19. 4.7 0 1.8 R 10 Ave 15.2 20 2 S 5 0.6 ~ σ 20.A 3 14 ₫1 19.1 18. 26 25.2 24.1 20.3 🕺 13.2 8.5 8.9 8.7 8.9 12.8 9 5.5 9 0 10.8 25.2 ò 2 2.00 24.8 6.3 2.5 N σ 5.3 \sim 6.6 StS 2 S ယ္ထ ~ 10 4 2.5 4.2 5 N (O ė * 2.8 2.3 5 က 7.7 7.5 7.6 8 15.6 33 20 16.7 5 5 6.2 10 11.2 4.4 7.6 6.2 2.4 ŝ N 3 3.8 0.4 0 27. 4 8.6 3.2 3.4 3.5 3.8 2 30. N 3 36.7 44.6 48.4 o 18 45 7 34.5 46.3 32 9.3 2.8 3.6 20.1 30.1 28.1 52.2 77 2 26.3 27.2 22.4 53 2.6 18.6 50 20.2 55 27 33 9 55. 317 20 5.8 œ 11.9 22.8 20.6 5.2 \dot{m} 4.3 0.7 9.8 8.1 5 7.8 8.4 8 0.9 2.6 2.7 11.3 Ą 3.0 4 4 Village Green Blvd S H S NO 4 47.1 e 2 4.6 5 4.7 <u>5</u> o di 33.3 ~ 5 42 8th 3.8 2.7 1.5 N 4 27 က် S 9 40th Ave S 4. 21.2 22. 0.7 28 24.6 26.5 29 37.3 0 3.6 4.8 3.3 1.9 0.9 ر 2 16.6 15 S З 5.2 -4 0 19.1 σ Ņ N 9 2.1 3.8 2.6 . . 35 Ave 5 2.4 N 2 2.8 16.8 46 Ave er Si 9 \mathfrak{S} 1.7 σ 38 07 œ. 0 1.5 5 9 -5 2.3 3 റ് -25 Ř 2.1 13.9 2.4 1.9 0.5 0.5 0.5 0.1 0.1 2.1 8.8 9.2 3.9 4.B 40th Ave F ST 12 33 3.1 4 2 5 5 2 8 12 ø 1.7 ŝ ÷ ი. ი ģ ŝ 0 7 2 က် ÷ ม่ က ŋ. ъ 3 3.7 11.5 റ്റ ŧ S 4 60th Ave S



2040 FORECAST DAILY VOLUMES ON FISCALLY CONSTRAINED NETWORK - TILE 6





Functional Classification - Interstate - Principal Arterial 6 .0 - Minor Arterial Collector 1.5 0.6 - Local (12) — Ramps ି. ଦ tiles 0.25 0.5 X.X: Adjusted Daily Volumes in thousands N 0.6 Holloway Ale 71 94 68 3.9 2.1 0.1 0.1 60 St S 1.3 0.2 ∇ 90 Ave S 0.7 1.4 (10) .0 69

MAP-21 established National Performance Measures to measure the success of how the transportation improvements identified in the LRTP process are actually performing. Although MAP-21 established these National Performance Measures, guidance on objectives, performance targets and evaluation measures has not yet been defined. However, these National Performance Measures are a requirement of the LRTP. To address this requirement, Metro COG has developed a set of objectives, performance targets and measurements to track the success of the Metro 2040 LRTP.

MAP-21 National Performance Based Goals

The cornerstone of the MAP-21 transportation law is a transformation of the highway program to a performance and outcome-based program. MAP-21 established seven national performance goals for Federal highway programs. The overarching goals will be the hierarchy for which the performance objectives are based upon. The seven national performance goals are as follows:

- 1. **Safety** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- 2. Infrastructure Condition To maintain the highway infrastructure asset system in a state of good repair.
- 3. **Congestion Reduction** To achieve a significant reduction in congestion on the National Highway System.
- 4. **System Reliability** To improve the efficiency of the surface transportation system.

- Freight Movement and Economic Vitality To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- 6. **Environmental Sustainability** To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- 7. **Reduced Project Delivery Delays** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Performance Objectives

The Performance Objectives that were developed by Metro COG for measuring the success of the implementation of the LRTP are broadly defined, value-based statements which describe the end state that the plan seeks to achieve. Each of the objectives defined fall under one of the MAP-21 National Performance Goals. The objectives create a bridge between the broad performance goal statement and specific performance targets. If performance targets are being achieved then we are meeting both our performance based goals and objectives.

Performance Targets

Performance Targets provide a specific, desired outcome under the umbrella of the National Performance Goals and Objectives. A performance target can then be tracked through the performance measurement of the transportation system. The FHWA guidebook provides five characteristics of good planning for the development of performance targets, which form the acronym "SMART":

- Specific Provides a clear desired outcome.
- Measurable The target can be assessed quantitatively, allowing for tracking progress toward achievement.
- Agreed The target has a consensus based support of planners, government officials, system operators and other stakeholders.
- Realistic The objective can be feasibly accomplished considering existing or future constraints such as funding, scheduling, or the impacts of other existing or planned projects.
- Timely The target has a specific timeframe by which it will be achieved and/or measured again.

Some of the challenges with initiating the development of "SMART" performance targets include the following:

 Identifying the current or baseline performance of the transportation system. If performance goals, objectives and targets are being initiated it is likely that they have not been tracked in the past. Therefore, the baseline performance of the specific goals and objectives will need to be determined as part of the update of this plan.

- Determining if a performance target is realistic. Since some of the performance measurements have not been tracked in the past, it is difficult to set a specific performance target that is realistic. For example, during the initial phases of the performance based transportation system development, it may be difficult to specifically identify a realistic percentage or number of crashes to reduce on the system. However, a target that identifies wanting to reduce crash rates or reduce the total number of fatal resultant crashes on our roadways would still be measurable.
- Determining a plan for data collection to track a performance measurement that is currently not being collected. For example, collecting regular travel time runs on major roadways would provide an excellent performance measurement for Congestion Reduction and or System Reliability. However, travel times are not regularly being collected at this time and manual travel time runs are extremely labor intensive.
- Eventually, the U.S. Secretary of Transportation in consultation with States, MPOs and other stakeholders will establish performance measures and standards for 13 highway performance areas and 2 transit performance areas. The development of these performance measures will likely not be determined until near the end of the development of the LRTP. Therefore, this plan will need to be initially developed without a final rule of future performance targets that will be passed down from the USDOT and the States. The LRTP will likely need to be updated to include performance targets set by Federal and State agencies once they have been finalized. Figure 8-1.1 graphically illustrates how the dates set for MAP-21 performance measure development.

FIGURE 8-1.1: TIMELINE FOR MAP-21 PERFORMANCE MEASURE DEVELOPMENT

MAP-21 National Performance Goal Development	Approximate Dates for Completion	
MAP-21 Enacted	October 2012	
• Federal PM Rule-Making Deadline to Set PM's	 April 1, 2014 Spring 2015 	
• States and MPOs to Match FHWA Language		

Purpose of a Performance Based Transportation System

The intent of developing a performance based transportation system is to utilize the performance goals, objectives and targets as guidance when prioritizing projects for completion and evaluating the impact of a project after it is completed. As funds to invest in our transportation system stabilize or decrease, it is important to develop a method to ensure we are making sound investments in our transportation system with the funds that are available. Metro COG intends to utilize the performance based goals, objectives and targets to develop an evaluation method which will prioritize projects based on how they help to achieve the desired performance targets. In turn, the prioritized projects will assist with the development of a fiscally constrained list of short- and long-range projects in the Long Range Transportation Plan and in the development of future Transportation Improvement Programs (TIPs). As we continue to track the same performance measurements over time, we can then determine how the projects being completed are affecting our performance targets. Figure 8-1.2 below graphically depicts how a performance based transportation system is a cyclical process, which assists us with continually selecting and programming projects for construction and then later evaluating their effectiveness to help us meet the desired targets for our transportation system as set by the Federal, State, and Local government agencies.

FIGURE 8-1.2: CYCLICAL PROCESS OF A PERFORMANCE BASED TRANSPORTATION SYSTEM



The following tables represent the performance based goals, objectives, performance targets, and performance measurements as developed for the Fargo-Moorhead metropolitan area. The performance based objectives and targets were developed for the needs of the Metropolitan Area, but also include what the states believed to be potential future targets. The potential future target is currently the best guess/estimate of the performance targets that will comply with a future Federal rule and state set targets. Each performance target identifies a method of data collection and a baseline of the current or past performance of the transportation system.

Tying the Performance Based Goals, Objectives and Measurements into a Project Selection Process

Once the 16 Performance Targets identified in this plan have been reviewed, commented on and updated; they will serve as the basis for future project selection. The project prioritization process will be set up to score projects in pursuit of the same funds against one another. Each project will receive a score based on the number of performance targets that it will help our transportation system to meet. The public should be surveyed to determine which of the targets are of most importance to the traveling public so that the different targets can be weighted to reflect this determination. For example, if it is determined that reduction in fatal and serious injury resultant crashes is the most important performance measurement to the public it may receive a much higher rating than one of the other measurements. This final ranking will be used to develop project listings within this update of the LRTP and for future TIP/STIP project selections.

MAP 21 National Performance Goal #1 - SAFETY			
Performance Objective: Reduce the number and severity of all modes of transportation system crashes.			
Performance Target 1a: Continue to reduce the total number of fatality resultant crashes for motorized vehicles, bicycles, and pedestrians.	Measurement: Total number of fatality resultant crashes for both motorized and non-motorized vehicles within the four urban cities of the Fargo-Moorhead metropolitan area.		
	Tracking Frequency: Annually as reported in the Metro Profile		
	Performance Baseline: 2012 ND = 4 fatal crashes; 2012 MN = 0 fatal crashes		
	Data Collection Source: Minnesota crash mapping analysis tool and North Dakota crash database.		
	Measurement: Resultant Cost of Crashes per Million Vehicle Miles Traveled		
Performance Target 1b: Continue to reduce the total cost of motorized	Tracking Frequency: Annually as reported in the Metro Profile		
Transportation network per Vehicle Mile Traveled (VMT).	Performance Baseline: 2008 = \$29,481; 2009 = \$28,684; 2010 = \$31,558; 2011 = \$29,853		
	Data Collection Source: Minnesota crash mapping analysis tool, North Dakota crash database, National Safety Council estimated cost for different types of severity crashes, and Vehicle Miles Traveled from states.		
Performance Target 1c: Continue to reduce the total number of non- motorized crashes per capita within the Fargo-Moorhead metropolitan area.	Measurement: Total number of non-motorized vehicle crashes per capita.		
	Tracking Frequency: Annually as reported in the Metro Profile		
	Performance Baseline: 2012 = 0.45 non-motorized crashes per 1,000 capita		
	Data Collection Source: Minnesota crash mapping analysis tool and North Dakota crash database		

MAP 21 National Performance Goal #2 – INFRASTRUCTURE CONDITION			
Performance Objective: Maintain the condition of existing infrastructure such as roadway surface and bridges to an acceptable target as identified for different roadway facilities.			
	Measurement: Pavement Rating for the entire roadway networks pavement condition to excellent, good, fair or poor.		
Performance Target 2a: Maintain 95% of the Metropolitan roadway network should have a pavement rating of fair or better.	Tracking Frequency: Every 5 years with the LRTP update		
	Performance Baseline: West Fargo (2012) = 84%; Fargo (2012) = 97%; Cass (2007) = 100%; Moorhead (2006) = 99%; MnDOT (2012) = 100%; NDDOT (2012) = 94%		
	Data Collection Source: MnDOT, NDDOT, Clay County, Cass County, Cities		
Performance Target 2b: Maintain a bridge condition Sufficiency Rating of 50 or higher on 95% of bridges within the Fargo-Moorhead metropolitan area.	Measurement: Bridge sufficiency rating		
	Tracking Frequency: Bi-annually		
	Performance Baseline: 2008 = 95%; 2012 = 95.5%		
	Data Collection Source: State DOT's		

MAP 21 National Performance Goal #3 – CONGESTION REDUCTION		
Performance Objective: Maintain acceptable travel times to the traveling public within the Fargo Moorhead area by reducing congestion on major roadways, reducing travel times, and increasing multi-modal opportunities.		
Performance Target 3a: Maintain the	Measurement: % of VMT on the modeled network with v/c ratio greater than 0.90.	
percent of congested Vehicle Miles	Tracking Frequency: Every 5 years with update of the TDM.	
TDM network to a LOS D (0.9 v/c	Performance Baseline: 2010 = 2.7%	
ratio) or better.	Data Collection Source: Calibrated Base TDM	
D. f	Measurement: Average travel speed for the entire TDM network.	
maintain or increase the average	Tracking Frequency: Every 5 years with update of the TDM	
travel speed for the entire TDM	Performance Baseline: 2010 = 40 mph	
network.	Data Collection Source: Calibrated Base TDM	
Deuferman Transfer Continue to	Measurement: Total number of annual transit trips/total number of annual motor vehicle trips.	
increase the mode split of total	Tracking Frequency: Every 5 years with update of the TDM	
number of transit trips over the total	Performance Baseline: 2010 = 2,044,932 annual transit trips/240,397,760 annual auto trips = 0.85%	
number of motor vehicle trips.	Data Collection Source: MATBUS and Calibrated Base TDM	
	Measurement: Total number of miles of bicycle facilities (includes shared use paths, bike lanes, sharrows, and wide paved shoulders.	
increase the total mileage of bicycle	Tracking Frequency: Yearly through Metro Profile	
facilities by 5 miles per year for the Fargo-Moorhead metropolitan area.	Performance Baseline: 2012 = 256.1 miles	
	Data Collection Source: Existing Info is updated in GIS files through 2012 and will be added annually based on information collected through Metro Profile.	

MAP 21 National Performance Goal #4 – SYSTEM RELIABILITY			
Performance Objective: Improve reliability of the transportation system through maintenance, reduced construction impact delays, and reduced incident related delays.			
Performance Target 4a: Continue to increase the total number of traveler information signs to inform the traveling public of construction and traffic incidents	Measurement: Total number of traveler information signs (DMS Boards)		
	Tracking Frequency: Annually, updated with the Metro Profile		
	Performance Baseline: 2012 = 7 (NDDOT = 4; MnDOT = 3)		
	Data Collection Source: Metro Profile		
	Measurement: Total number of agencies sharing video with other traffic operators, emergency responders and media outlets.		
Performance Target 4b: Increase the number of agencies video sharing with other traffic operators	Tracking Frequency: Annually, updated with the Metro Profile		
emergency responders and media outlets by 2018.	Performance Baseline: 2013 = 0		
	Data Collection Source: ITS Plan Updates, local jurisdictions reporting for the Metro Profile and through updates at Traffic Operations Working Group meetings.		
Performance Target 4c: Complete the UPWP item to develop an Alternate Routes guidebook.	Measurement: Has the guidebook been completed.		
	Tracking Frequency: With the next update of the TDM		
	Performance Baseline: 2013 = Not yet completed		
	Data Collection Source: Metro COG's work program report		

MAP 21 National Performance Goal #5 – FREIGHT MOVEMENT & ECONOMIC VITALITY

Performance Objective: Maintain and improve efficient freight movement in the Fargo-Moorhead metropolitan area – inclusive of freight transported by trucks, rail, and air.

	Measurement: % of VMT on the modeled primary freight network with v/c ratio greater than 0.90.
Performance Target 5a: Maintain the percent of congested Vehicle Miles Traveled (VMT) as modeled on the primary freight network to a LOS D (0.9 v/c ratio) or better.	Tracking Frequency: Every 5 years with update of the TDM.
	Performance Baseline: 2010 = 0.60%
	Data Collection Source: Calibrated Base TDM

MAP 21 National Performance Goal #6 – ENVIRONMENTAL SUSTAINABILITY			
Performance Objective: Minimize or identify a plan to mitigate negative or adverse environmental impacts of transportation projects within the FM area.			
Performance Target 6a: Maintain the air quality status of attainment within the Fargo-Moorhead metropolitan area.	Measurement: Maintain the attainment air quality status of the Fargo-Moorhead Metropolitan area.		
	Tracking Frequency: Annually with the Dept. of Health letter to update MPO certification.		
	Performance Baseline: 2012 = Non-Attainment Status		
	Data Collection Source: Department of Health		

MAP 21 National Performance Goal #7 – REDUCED PROJECT DELIVERY DAYS			
Performance Objective: Reduce project costs and expedite the movement of people and goods by accelerating project completion.			
Performance Target 7a: 85% of programmed Federal-aid roadway projects within the annual element of the TIP should be completed each year.	Measurement: % of programmed Federal-aid roadway projects listed in the TIP completed annually.		
	Tracking Frequency: Annually, as a consistency review of the annual element of the TIP. Could be tracked as part of the Metro Profile.		
	Performance Baseline: 2012 Minnesota = 5 of 6 projects completed = 83%; 2012 North Dakota = 7 of 7 projects completed = 100%		
	Data Collection Source: Transportation Improvement Program (TIP).		
Performance Target 7b: Increase the number of projects utilizing the Planning and Environmental Linkages by combining the two into one document or process.	Measurement: Number of projects completed within the MPO that utilize linking Planning and NEPA in the same document/process.		
	Tracking Frequency: Annually, updated with the Metro Profile.		
	Performance Baseline: 2013 = 1 Project (12 th Avenue North Cooperative PCR).		
	Data Collection Source: Metro COG's Work Program		

APPENDIX 8-2: GOALS, OBJECTIVES, AND PROJECT EVALUATION CRITERIA

The development of the Vision Plan or Needs based plan identified all necessary projects to address the 2040 growth and needs of the Fargo-Moorhead Metro COG planning area. Because the cost of these improvements exceed the available transportation budget, it was necessary to develop a transparent evaluation process that measures the performance of each of the candidate projects to determine project importance and prioritization.

The following appendix presents each of the Metro COG 2040 LRTP project goals and the performance measures that were used to evaluate each roadway project. To the extent possible, the evaluation was based on measureable criteria, such as cost effectiveness, delay, congestion, crash costs, etc. In other cases mapping techniques were used to determine if a project might be in a sensitive environmental area such as a flood plain. In other instances, the project was evaluated in regards to whether the proposed improvement was consistent with local land use plans.

Goal 1: Maintain the Existing Transportation System (Weight 20)

As the transportation system ages, increased funding is required for maintenance. There is often competition between funding for new projects and funding for the maintenance and operation of the existing system. Reductions in maintenance funding today lead to higher costs in the future. Constructing new roads increases future maintenance costs as the new facilities age.

Objectives

- Maintain and repair existing roads, bridges, sidewalks, and/or multi-use trails to good condition. This objective states that the proposed project includes maintenance of an existing road, trail, sidewalk or bridge facilities to a minimum good or better condition.
- Increase access to additional modes by replacing and retrofitting transportation facilities in the existing system to allow for a wide range of transportation options. This objective recognizes that opportunities for walking, bicycling or taking transit may not be available for some facilities. In order to increase the efficiency of the overall system, non-motorized and transit travel choices should be considered in any retrofit project.

Evaluation Criteria

This goal is related directly to whether the proposed project will improve the condition of a road, bridge or bicycle/pedestrian facility that is currently in poor condition or functionally obsolete. Projects, which are currently rated as poor will receive a high score. Projects which are rated fair will receive a medium score. Projects rated good or excellent will receive a low score.

Roadways

- Low (0): The project is currently rated at good or excellent condition with PCI greater than 70 or an RQI greater than 3.0.
- **Medium (5):** The project is currently rated at fair condition with a PCI between 40 and 70 or a RQI between 2.0 and 3.0.
- **High (10):** The project is currently rated at poor condition with a PCI less than 40 or a RQI less than 2.0.

Transit

- Low (0): The project is not to replace a vehicle.
- Medium (5): The project is to replace a transit vehicle that is nearing the end of its life.
- **High (10):** The project is to replace a transit vehicle that has exceeded its life.

Bicycle / Pedestrian

- Low (0): The project is not to rehabilitate a trail or sidewalk.
- Medium (5): The project is to rehabilitate or improve a trail or sidewalk that is in fair condition.
- **High (10):** The project is to rehabilitate a trail or sidewalk that is in poor condition.

Goal 2: Improve the Efficiency, Performance and Connectivity of a Balanced Transportation System (Weight 19)

Efficiency, performance and connectivity of the transportation system allows users to move from place to place in as direct a route as possible with reduced travel time, distance, and the amount of time spent in congested traffic. Connectivity allows people to make route decisions based on current traffic conditions, road access, or desired stopping points. A transportation system that performs well allows users to choose multiple transportation modes and to move through those modes in an efficient and safe manner.

Objectives

- Minimize travel times and congestion by methods, such as providing increased capacity, direct routes between destinations, use of intelligent transportations systems and transportation demand management.
- Promote Complete Streets concepts so that streets are planned, designed, and operated to maximize safe access for all users including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities.

Evaluation Criteria

Each project was evaluated based on the FM Metro COG travel demand model for both the 2020 and 2040 condition. One of the travel demand model measurements available is the hours of delay saved if the project was implemented. A project will score high if the project provides significant reductions in hours of delay.

Roadways

- (0): The project did not result in delay saved.
- (2): The project resulted in the lower 20% of delay saved when compared to all projects.
- (4): The project resulted in the 20 to 40% of delay saved when compared to all projects.
- (6): The project resulted in the 40 to 60% of delay saved when compared to all projects.
- (8): The project resulted in the 60 to 80% of delay saved when compared to all projects.
- (10): The project resulted in the 80 to 100% of delay saved when compared to all projects.

Transit

- (8): Increase transit service (new routes, frequency, extended hours of operations in locations with high demand (High trip density).
- (4): Increase transit service (new routes, frequency, extended hours of operations in locations with medium demand (Medium trip density).
- (2): Improves intermodal connectivity between transit and other modes (e.g., providing bike racks at bus shelters or on a bus.

Bicycle / Pedestrian

- (4): The project completes a low demand missing link.
- (7): The project completes a middle demand missing link.
- (10): The project completes a high demand missing link.

Goal 3: Maximize the Cost Effectiveness of Transportation (Weight 14)

Local, State and Federal transportation funding is constrained and not sufficient to provide for all of the transportation needs of the region. Projects with high capital construction costs decrease remaining funding for other projects. Conversely, low cost improvements leave available funds for other improvements. Improvements that provide the greatest delay saved or the greatest number of accidents reduced per dollar of investment maximizes the cost effectiveness of limited transportation revenues.

Objectives

• Plan for a transportation system that is affordable, sustainable, and makes the best use of public financial resources.

Evaluation Criteria

The cost effectiveness of the project was calculated based on the total cost of the project divided by the hours of delay saved to determine a delay saved to dollar expended measure. Those projects that resulted in high hours of delay saved per dollar expended received high scores, whereas projects that were calculated at lower hours of delay saved per dollar expended received a low score.

APPENDIX 8-2: GOALS, OBJECTIVES, AND PROJECT EVALUATION CRITERIA

Roadway

- (0): The project did not result in delay saved.
- (2): The project resulted in the lower 20% of delay saved per dollar when compared to all projects.
- (4): The project resulted in the 20 to 40% of delay saved per dollar when compared to all projects.
- (6): The project resulted in the 40 to 60% of delay saved per dollar when compared to all projects.
- (8): The project resulted in the 60 to 80% of delay saved per dollar when compared to all projects.
- (10): The project resulted in the 80 to 100% of delay saved per dollar when compared to all projects.

Transit

- (0): Bottom 1/3 of increased transit ridership divided by cost.
- (5): Middle 1/3 of increased transit ridership divided by cost.
- (10): Top 1/3 of increased transit ridership divided by cost.

Bicycle / Pedestrian

- (0): The project did not result in any system connection or completion of missing link.
- (3): The project resulted in a minor system connection or completion of missing link.
- (7): The project resulted in a moderate system connection or completion of missing link.
- (10): The project resulted in a major system connection or completion of missing link.

Goal 4: Promote Consistency between Land Use and Transportation Plans To Enhance Mobility and Accessibility (Weight 16)

There is a direct correlation between land use and transportation. The goal of the transportation plan is to demonstrate an integration of the land use plan and transportation plan by supporting transportation improvements that target the region's future land use forecasts.

Objectives

- Provide a transportation network which supports existing and planned destination areas including City centers, activity centers, and corridors.
- Develop transportation improvements to catalyze future planned development areas.

Roadway

As part of the development of the Needs Based Vision Plan it was determined that all selected projects were in fact selected to support the regional jurisdiction's planned development plans. Therefore, this goal was not scored as all projects would be scored the same.

Transit

- **(0)**: The project will provide new or increased transit service to low trip density demand areas.
- (5): The project will provide new or increased transit service to medium trip density demand areas.
- (10): The project will provide new or increased transit service to high trip density demand areas.

Bicycle / Pedestrian

- **(0):** The project will provide new bicycle or pedestrian connections to low trip density demand areas.
- (5): The project will provide new bicycle or pedestrian connections to medium trip density demand areas.
- (10): The project will provide new bicycle or pedestrian connections to high trip density demand areas.

Goal 5: Provide Safe and Secure Transportation (Weight 11)

All transportation improvements should be designed to be safe and secure. Visibility, access control, and separation of modes, either through buffers or grade separations, are some of the methods that can be employed to decrease conflicts and increase comfort. These improvements can both decrease the number of crashes and the cost of crashes. They can also reduce the crash rate, which is the number of crashes along a link or at an intersection divided by the number of vehicles traveling along the link or through the intersection. Security devices at key facilities, such as bus stops and trail head facilities increase the safety and security of users. Educational programs that help travelers understand the particular safety concerns associated with various modes can help all users travel with increased confidence and security.

Access to technology that helps identify clear, safe and rapid routes for first responders are vital for providing emergency services and security to the region. The ability to ensure alternative routes in times of weather emergencies, crashes, and other emergency incidents helps to secure the continued access of responders and regular users.

Objective

- Support transportation programs and design improvements which reduce crashes and improve safety. Accidents are often associated with standardized crash costs based on the severity of the crash (property damage, injury or fatality). Reducing the potential crash cost (normalized to a crash cost per mile) is an objective of this goal.
- Facilitate the rapid movement of first responders and support incident management during times of emergency.

Roadway

- (4): Is the project defined as a regionally significant corridor or mitigated an at-grade rail crossing.
- (2): Accident costs per mile is in the bottom third of all projects.
- (4): Accident costs per mile is in the middle third of all projects.
- (6): Accident costs per mile is in the top third of all projects.

Transit

- (5): Does the project improve transit safety?
- (5): Does the project improve transit security?

Bicycle / Pedestrian

- (0): The improvement is for a facility that that is within the lowest 25% pedestrian/bicycle crash costs per mile or intersection.
- (3): The improvement is for a facility that that is within the 25% to 50% pedestrian/bicycle crash costs per mile or intersection.
- (7): The improvement is for a facility that that is within the 50% to 75% pedestrian/bicycle crash costs per mile or intersection.
- (10): The improvement is for a facility that that is within the highest 25% of pedestrian/bicycle crash costs per mile or intersection.

Goal 6: Support Economic Vitality (Weight 13)

Support the economic vitality of the Metro COG planning area, especially by enabling global competitiveness, productivity, and efficiency is one of the seven planning factors of the current federal transportation law MAP-21. Economic vitality is very complex and has many facets beyond the transportation system. Economic vitality requires a low cost of doing business, availability and access to technology, an educated and skilled workforce, choice of housing types, high quality schools, reduced municipal and state debt, and other less tangible qualities. A transportation system that provides good access for all modes benefits future development and employment opportunities, which stimulates the regions' economic vitality.

Objectives

- Facilitate the movement of goods and freight to commercial and industrial centers. The ease with which industrial and commercial facilities can receive goods and ship products is important to their economic viability. Transportation facilities that allow direct, convenient access to these centers along the regions dedicated freight network can decrease the conflicts with other traffic and increase the efficiency of the shipping process.
- Support new and existing commercial and industrial development by ensuring access by multiple transportation modes. While it is important that freight haulers have access to commercial and industrial facilities, it is equally important that the customers and employees of these facilities have safe and adequate access. Transportation facilities should include multiple modes to allow access by all users, as well as being appropriately sized to allow access by each mode without sacrificing the safety of another.

Roadway

- (0): The project did not result in delay saved on the regional freight network.
- (2): The project resulted in the lower 20% of delay saved on the regional freight network when compared to all projects.
- (4): The project resulted in the 20 to 40% of delay saved on the regional freight network when compared to all projects.

Transit

- (5): Does the project increase transit service to low income areas?
- (5): Does the project improve transit service to locations of high commercial and industrial development?

Bicycle / Pedestrian

- (5): Does the project increase bicycle and pedestrian connections to high density residential areas?
- (5): Does the project increase bicycle and pedestrian connections to locations of high commercial and industrial development, the river corridor, or connection to the Heartland Trail?

Goal 7: Protect the Environment and Conserve Resources (Weight 7)

The Clean Air Act and MAP-21 requires that the LRTP planning process protect clean air and water, promote healthy lifestyles, and preserve our natural, historic and cultural resources.

Air quality is affected by mobile source emissions resulting from vehicle miles of travel (VMT). Air quality impacts can be reduced through strategic roadway investments that reduce VMT or providing alternative transportation modes.

New transportation facilities or expanding existing transportation facilities can negatively impact the environment such as wetlands, historic and cultural resources. These facility improvements can also impact existing neighborhoods, such as roadway widening that may require acquisition of a residential property or result in an improvement that might increase the volume of traffic and travel spend.

Objectives

- Reduce fossil fuel consumption by minimizing travel time and providing access to alternative modes. The use of fossil fuels affects our air quality through increased greenhouse gases, particulate matter, and potential impacts to global warming. The US Environmental Protection Agency defines Clean Air Act thresholds.
- Minimize air pollution by reducing VMT. Mobile source emissions are directly related to VMT. The land use and transportation plan should, therefore, reduce to the extent possible VMT and delay.
- Minimize impact to natural environments by taking opportunities to couple transportation projects with protection and enhancement of environmental resources.
- New or widened transportation facilities should minimize impacts to established neighborhoods. Transportation projects should avoid displacing citizens, disrupting or impacting valuable cultural resources, and dividing neighborhoods. This is particularly true in regards to environmental justice by avoiding impacts in areas of low incomes and minority concentrations. Conversely, these impacts to low income and minority areas can be positive with additional mobility opportunities including walking, bicycling, and transit.

Roadway

- (2): The project does not negatively impact neighborhoods with low income.
- (1): The project does not impact neighborhoods with minority population.
- (1): The project is not located in a 100-year flood plain.
- (2): The project is not located in a 500-year flood plain.
- (2): The project does not impact prime farm lands.
- (2): The project provides high reduction in VMT (Top 1/3 of projects).

Transit

- (5): Does the project moderately increase transit service and reduce vehicle travel?
- (10): Does the project significantly increase transit service and reduce vehicle travel?

Bicycle / Pedestrian

- (5): Does the project include landscaping or beautification, which may include street furniture, lighting or public art.
- (5): Does the project provide bicycle and pedestrian connections that will increase active transportation modes and decrease vehicle miles of travel?

APPENDIX 9-1: METRO 2040 – OPERATIONS AND MAINTENANCE PLAN

Introduction

The Fargo-Moorhead Metropolitan Council of Governments (Metro COG) is currently in the process of updating its Long Range Transportation Plan (LRTP). This update, known as Metro 2040, gives a detailed analysis in the ways the FM Metropolitan area plans to invest in the transportation system through the year 2040. Previous federal requirements under SAFETEA-LU, which have been retained under MAP-21, instruct that the LRTP must include both short-range and long-range program strategies and actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods.

A key component of the LRTP includes cost estimates and financial resources for operation, maintenance and capital investments for existing and committed transportation projects. Pursuant to 23 CFR 450 operations and maintenance plans must contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain federal- and state-aid highways and all municipal roadways.

The Metro 2040 – Operations and Maintenance Plan accounts for the expenditures that will be required to maintain the transportation system between 2015 and 2040.

Methodology

In order to determine operations and maintenance (O&M) expenditures, several variables were defined. These variables include:

- Number of base lane miles by jurisdiction;
- Roadway surface types by jurisdiction; and
- Costs associated with surface improvements.

The current O&M element of Metro 2040 is consistent with the roadway networks for the areas covered within Metro COG's current travel demand model. It includes all roadways within the expanded Metropolitan Planning Area (MPA) approved in August 2013.

Base lane miles were determined from two sources. The first source was the number of lane miles in Metro COG's 2020 Existing plus Committed (E+C) Network GIS file developed as part of the LRTP. The second source was analyzing Metro COG's 2013 Centerline GIS file, which held information on the number of local roadway miles and roadway types.

Roadway surface types were determined from Metro COG's 2013 Centerline file and an analysis of county maps, with additional information provided by the City of Fargo Engineering Department. The three main roadway surface types that were analyzed include concrete, asphalt and gravel. A fourth surface type, composite, is included with asphalt roadways.

APPENDIX 9-1: METRO 2040 – OPERATIONS AND MAINTENANCE PLAN

General cost estimates (in 2014 dollars) were developed by soliciting input from city, county and state transportation officials. The following cost estimates and life cycles were developed for use in developing the O&M element of Metro 2040:

- Concrete Pavement Repair (NDDOT/MnDOT): \$60,000 per lane mile; every 10 years
- Concrete Pavement Repair (City of Fargo): \$76,400 per lane mile; every 20 years
- Concrete Pavement Repair (City of West Fargo): \$250,000 total; every year
- Asphalt Overlay: \$150,000 per lane mile; every 20 years
- Chip Seal: \$13,000 per lane mile; every seven years
- Crack Seal: \$2,000 per lane mile; every four years (every two years for City of Dilworth)
- Gravel Maintenance: \$3,400 per mile average; every year

A 4% adjustment was added to each year after 2015 to account for material cost increases and the rate of inflation.

Table 9.1-1 breaks down the average costs for each roadway surface treatment for the short-, mid- and long-range.

TABLE 9.1-1: ROADWAY MAINTENANCE COST Assumptions

Roadway Surface Maintenance Type	Short- Range (2015- 2020)	Mid- Range (2021- 2030)	Long- Range (2031- 2040)
Concrete Pavement Repair (NDDOT/MnDOT): \$60,000/mi w/ 4% increase per year	\$66,330	\$91,150	\$134,925
Concrete Pavement Repair (Fargo): \$76,400/mi w/ 4% increase per year	\$84,460	\$116,065	\$171,800
Concrete Pavement Repair (West Fargo): \$250,000 total w/ 4% increase per year	\$276,375	\$379,790	\$562,180
Asphalt Overlay: \$150,000/mi w/ 4% increase per year	\$165,825	\$227,875	\$337,310
Chip Seal: \$13,000/mi w/ 4% increase per year	\$14,370	\$19,750	\$29,235
Crack Seal: \$2,000/mi w/ 4% increase per year	\$2,210	\$3,040	\$4,495
Gravel Maintenance: \$3,400/mi w/ 4% increase per year	\$3,780	\$5,195	\$7,690

The number of lane miles, roadway surface type and costs associated with surface improvements were all broken down within the various jurisdictions that are responsible for roadways in the FM Metropolitan area. There are eight jurisdictions for which operations and maintenance were determined. These jurisdictions include:

NDDOT	MnDOT	
Cass County	Clay County	
City of Fargo	City of Moorhead	
City of West Fargo	City of Dilworth	

The short-range includes the years 2015 through 2020. The number of roadways for this period comes from Metro COG's 2020 E+C network.

The mid-range includes the ten-year period between 2021 and 2030. The number of roadways for this period are calculated by taking the 2020 E+C network and adding half of all roadway projects identified in the Metro 2040 project list.

The long-range includes the ten-year period between 2031 and 2040. The number of roadways for this period are calculated by taking the 2020 E+C network and adding all roadway projects identified in the Metro 2040 project list.

For both the mid- and long-range, future estimates for local roadway miles are based on an average 24 lane miles of local roads per square mile in new developments. The analysis of the E+C network was used to estimate how much additional development would occur during the mid- and long-range.

Financial Summary by Entity

The following financial summaries provide a general indication of the maintenance needs that can be reasonably expected in the future.

NDDOT

NDDOT is responsible for the maintenance of portions of Interstate 94, Interstate 29, State Highway 18 and State Highway 46. There are a total of 331 lane miles that NDDOT is responsible for, including 283 lane miles of concrete and 48 lane miles of asphalt. The number of lane miles is estimated to remain relatively constant in the mid- and long-range.

In the short-range, it is estimated that 30% of the asphalt lane miles under NDDOT's jurisdiction will receive asphalt overlay, 86% will receive chip seal and 150% will receive crack seal. For both the mid- and longrange, it is estimated that 50% of the asphalt lane miles will receive asphalt overlay, 143% will receive chip seal and 250% will receive crack seal. Sixty percent of concrete lane miles in the short-range and 100% in both the mid- and long range will receive pavement repair.

Table 9.1-2 details the expenditures that will be required of roadways under NDDOT's jurisdiction.

TABLE 9.1-2: NDDOT ROADWAY MAINTENANCE ANALYSIS

	Short-Range (2015-2020)		
Activity	Total Lane Cost per Lane Miles Mile		Cost for Activity
Concrete Pavement Repair	170	\$66,330	\$11,262,835
Asphalt Overlay	14	\$165,825	\$2,387,880
Chip Seal	41	\$14,370	\$593,195
Crack Seal	72	\$2,210	\$159,120
Total Needs		\$14,403,030	
	М	id-Range (2021-203	0)
Activity	Total Lane	Cost per Lane	Cost for
Activity	Miles	Mile	Activity
Concrete Pavement Repair	283	\$91,150	\$25,795,450
Asphalt Overlay	24	24 \$227,875	
Chip Seal	69	\$19,750	\$1,355,640
Crack Seal	120	\$3,040	\$364,800
Total Needs	\$32,984,89		
	Long-Range (2031-2040)		.0)
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	283	\$134,925	\$38,183,775
Asphalt Overlay	24	\$337,310	\$8,095,440
Chip Seal	69	\$29,235	\$2,006,690
Crack Seal	120 \$4,495		\$539,400
Total Needs	\$48,825,305		

Cass County

Cass County is responsible for a total of 223 lane miles, including 180 lane miles of asphalt and 43 lane miles of gravel. For the purpose of this analysis, all gravel roads are considered single lanes. The number of lane miles is estimated to remain relatively constant in the mid- and long-range. Bridge replacements have not been included as part of this operations and maintenance analysis.

In the short-range, it is estimated that 30% of the asphalt lane miles under Cass County's jurisdiction will receive asphalt overlay, 86% will receive chip seal and 150% will receive crack seal. For both the mid- and long-range, it is estimated that 50% of the asphalt lane miles will receive asphalt overlay, 143% will receive chip seal and 250% will receive crack seal. The average cost of gravel maintenance is applied to all gravel roads for each period.

Table 9.1-3 details the expenditures required for roadways under Cass County's jurisdiction.

TABLE 9.1-3: CASS COUNTY ROADWAY MAINTENANCE ANALYSIS

	Short-Range (2015-2020)			
Activity	Total Lane Cost per Lane Miles Mile		Cost for Activity	
Asphalt Overlay	54	\$165,825	\$8,954,550	
Chip Seal	155	\$14,370	\$2,224,475	
Crack Seal	270	\$2,210	\$596,700	
Gravel	43	\$3 780	\$812,700	
Maintenance		<i>40): 00</i>		
Total Needs	\$12,588,425			
	№	1id-Range (2021-2030)	
Δctivity	Total Lane	Cost per Lane	Cost for	
Activity	Miles	Mile	Activity	
Asphalt Overlay	90	\$227,875	\$20,508,750	
Chip Seal	257	\$19,750	\$5,083,650	
Crack Seal	450	\$3,040	\$1,368,000	
Gravel	43	\$5 195	\$2 233 850	
Maintenance	43 \$3,133		<i>\$2,233,030</i>	
Total Needs	\$29,194,250			
	Long-Range (2031-2040))	
Activity	Total Lane	Cost per Lane	Cost for	
Activity	Miles	Mile	Activity	
Asphalt Overlay	90	\$337,310	\$30,357,900	
Chip Seal	257	\$29,235	\$7,525,090	
Crack Seal	450	\$4,495	\$2,022,750	
Gravel	43	\$7 690	\$3 306 700	
Maintenance		<i>ç</i> ,,050	<i>43,300,700</i>	
Total Needs			\$43,212,440	

City of Fargo

The City of Fargo is responsible for a total of 1248 lane miles, including 341 miles of arterials, 154 miles of collectors and 753 miles of local roadways. There are 483 lane miles of concrete and 765 lane miles of asphalt in the City of Fargo. In the mid-and long-range, it is estimated that Fargo will be responsible for 1350 lane miles and 1451 lane miles respectively. Alleyways have not been included as part of this analysis.

In the short-range, 30% of asphalt arterial and collector lane miles under the City of Fargo's jurisdiction will receive asphalt overlay, 86% of all asphalt lane miles will receive chip seal and 150% will receive crack seal. For both the mid- and long-range, it is estimated that 50% of the asphalt arterial and collector lane miles will receive asphalt overlay, 143% or all asphalt lane miles will receive chip seal and 250% will receive crack seal. Thirty percent of concrete lane miles in the shortrange and 50% in the mid- and long range will receive pavement repair.

Table 9.1-4 details the expenditures that will be required of roadways for the City of Fargo.

9.1-4: CITY OF FARGO ROADWAY MAINTENANCE ANALYSIS

	Short-Range (2015-2020)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	145	\$84,460	\$12,238,255
Asphalt Overlay	149	\$165,825	\$24,625,015
Chip Seal	658	\$14,370	\$9,454,025
Crack Seal	1148	\$2,210	\$2,535,975
Total Needs			\$48,853,270
	Mid-Range (2021-2030)		
A ativity	Total Lane	Cost per Lane	Cost for
Activity	Miles	Mile	Activity
Concrete Pavement Repair	261	\$116,065	\$30,321,980
Asphalt Overlay	259	\$227,875	\$59,076,595
Chip Seal	1183	\$19,750	\$23,356,550
Crack Seal	2068	\$3,040	\$6,285,200
Total Needs			\$119,040,325
	Long-Range (2031-2040)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	281	\$171,800	\$48,275,800
Asphalt Overlay	271	\$337,310	\$91,411,010
Chip Seal	1271	\$29,235	\$37,165,580
Crack Seal	2223	\$4,495	\$9,990,140
Total Needs			\$186,842,530

City of West Fargo

The City of West Fargo is responsible for a total of 364 lane miles, including 89 miles of arterials, 38 miles of collectors and 237 miles of local roadways. In the mid-and long-range, it is estimated that West Fargo will be responsible for 404 lane miles and 444 lane miles respectively.

In the short-range, it is estimated that 30% of arterial and collector lane miles under the City of West Fargo's jurisdiction will receive asphalt overlay, 86% of all lane miles will receive chip seal and 150% will receive crack seal. For both the mid- and long-range, it is estimated that 50% of the arterial and collector lane miles will receive asphalt overlay, 143% or all asphalt lane miles will receive chip seal and 250% will receive crack seal. A total for concrete pavement repair is given for the short-, mid-and long-range based on scheduled work within the current Capital Improvement Program (CIP).

Table 9.1-5 details the expenditures that will be required of roadways for the City of West Fargo.

TABLE 9.1-5: CITY OF WEST FARGO ROADWAY MAINTENANCE ANALYSIS

	Short-Range (2015-2020)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	-	-	\$1,658,250
Asphalt Overlay	36	\$165,825	\$6,002,035
Chip Seal	297	\$14,370	\$4,273,465
Crack Seal	519	\$2,210	\$1,146,325
Total Needs	\$13,080,075		\$13,080,075
	Mid-Range (2021-2030)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	-	-	\$3,797,900
Asphalt Overlay	64	\$227,875	\$14,504,245
Chip Seal	549	\$19,750	\$10,839,470
Crack Seal	960	\$3,040	\$2,916,880
Total Needs			\$32,058,495
	Long-Range (2031-2040)		
Activity	Total Lane	Cost per Lane	Cost for
	Miles	Mile	Activity
Concrete Pavement Repair	-	-	\$5,621,800
Asphalt Overlay	67	\$337,310	\$22,591,335
Chip Seal	603	\$29,235	\$17,633,790
Crack Seal	1055	\$4,495	\$4,739,980
Total Needs			\$50,586,905

MnDOT

MnDOT is responsible for the maintenance of portions of Interstate 94 and all Trunk Highways within the MPA. There are a total of 383 lane miles that MnDOT is responsible for, including 129 lane miles of concrete and 254 lane miles of asphalt. The number of lane miles is estimated to remain relatively constant in the mid- and long-range.

In the short-range, it is estimated that 30% of the asphalt lane miles under MnDOT's jurisdiction will receive asphalt overlay, 86% will receive chip seal and 150% will receive crack seal. For both the mid- and longrange, it is estimated that 50% of the asphalt lane miles will receive asphalt overlay, 143% will receive chip seal and 250% will receive crack seal. Sixty percent of concrete lane miles in the short-range and 100% in both the mid- and long range will receive pavement repair.

Table 9.1-6 details the expenditures that will be required of roadways under MnDOT's jurisdiction.

TABLE 9.1-6: MNDOT ROADWAY MAINTENANCE ANALYSIS

	Short-Range (2015-2020)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	77	\$66,330	\$5,133,940
Asphalt Overlay	76	\$165,825	\$12,635,865
Chip Seal	218	\$14,370	\$3,138,985
Crack Seal	381	\$2,210	\$842,010
Total Needs			\$21,750,800
	Mid-Range (2021-2030)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	129	\$91,150	\$11,758,350
Asphalt Overlay	127	\$227,875	\$28,940,125
Chip Seal	363	\$19,750	\$7,173,595
Crack Seal	635	\$3,040	\$1,930,400
Total Needs			\$49,802,470
	Long-Range (2031-2040)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	129	\$134,925	\$16,191,000
Asphalt Overlay	127	\$337,310	\$42,838,370
Chip Seal	363	\$29,235	\$10,618,735
Crack Seal	635	\$4,495	\$2,854,325
Total Needs			\$72,502,430

Clay County

Clay County is responsible for a total of 662 lane miles, including 375 lane miles of asphalt and 287 lane miles of gravel. For the purpose of this analysis, all gravel roads are considered single lanes. The number of lane miles is estimated to remain relatively constant in the mid- and long-range. Bridge replacements have not been included as part of this operations and maintenance analysis.

In the short-range, it is estimated that 30% of the asphalt lane miles under Clay County's jurisdiction will receive asphalt overlay, 86% will receive chip seal and 150% will receive crack seal. For both the mid- and long-range, it is estimated that 50% of the asphalt lane miles will receive asphalt overlay, 143% will receive chip seal and 250% will receive crack seal. The average cost of gravel maintenance is applied to all gravel roads for each period.

Table 9.1-7 details the expenditures that will be required of roadways under Clay County's jurisdiction.

TABLE 9.1-7: CLAY COUNTY ROADWAY MAINTENANCE ANALYSIS

	Short-Range (2015-2020)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Asphalt Overlay	113	\$165,825	\$18,655,315
Chip Seal	321	\$14,370	\$4,634,325
Crack Seal	563	\$2,210	\$1,243,125
Gravel	287	\$3,780	\$5,424,300
Maintenance			
Total Needs	\$29,957,065		\$29,957,065
	Mid-Range (2021-2030)		
Activity	Total Lane	Cost per Lane	Cost for
Activity	Miles	Mile	Activity
Asphalt Overlay	188	\$227,875	\$42,726,565
Chip Seal	536	\$19,750	\$10,590,940
Crack Seal	938	\$3,040	\$2,850,000
Gravel	287	\$5 195	\$14 909 650
Maintenance	207	<i>\$</i> 3,133	<i>\</i>
Total Needs	\$71,077,155		
	Long-Range (2031-2040)		
Activity	Total Lane	Cost per Lane	Cost for
Activity	Miles	Mile	Activity
Asphalt Overlay	188	\$337,310	\$63,245,625
Chip Seal	536	\$29,235	\$15,677,270
Crack Seal	938	\$4,495	\$4,214,065
Gravel	287	\$7 690	\$22 070 300
Maintenance	207	050, ۲	<i>γ22,070,300</i>
Total Needs			\$105,207,260

City of Moorhead

The City of Moorhead is responsible for a total of 429 lane miles, including 83 miles of arterials, 53 miles of collectors and 293 miles of local roadway. There are 33 lane miles of concrete and 396 lane miles of asphalt in the City of Moorhead. In the mid-and long-range, it is estimated that Moorhead will be responsible for 490 lane miles and 550 lane miles respectively. Alleyways and other gravel roads have not been included as part of this analysis.

In the short-range, it is estimated that 30% of arterial and collector lane miles under the City of Moorhead's jurisdiction will receive asphalt overlay, 86% of all lane miles will receive chip seal and 150% will receive crack seal. For both the mid- and long-range, it is estimated that 50% of arterial and collector lane miles will receive asphalt overlay, 143% of all lanes will receive chip seal and 250% will receive crack seal. Thirty percent of concrete lane miles in the short-range and 50% in the mid- and long range will receive pavement repair.

Table 9.1-8 details the expenditures that will be required of roadways for the City of Moorhead.

TABLE 9.1-8: CITY OF MOORHEAD ROADWAY MAINTENANCE ANALYSIS

	Short-Range (2015-2020)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	10	\$84,460	\$836,155
Asphalt Overlay	38	\$165,825	\$6,258,235
Chip Seal	341	\$14,370	\$4,893,845
Crack Seal	594	\$2,210	\$1,312,740
Total Needs			\$13,300,975
	Mid-Range (2021-2030)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	17	\$116,065	\$2,263,270
Asphalt Overlay	66	\$227,875	\$15,018,385
Chip Seal	644	\$19,750	\$12,709,125
Crack Seal	1125	\$3,040	\$3,420,000
Total Needs			\$33,410,780
	Long-Range (2031-2040)		
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Concrete Pavement Repair	17	\$171,800	\$3,865,500
Asphalt Overlay	69	\$337,310	\$23,244,875
Chip Seal	722	\$29,235	\$21,112,055
Crack Seal	1263	\$4,495	\$5,674,940
Total Needs			\$53,897,370
City of Dilworth

The City of Dilworth is responsible for a total of 49 lane miles, including 10 miles of collectors and 39 miles of local roadways, all of which are asphalt. In the mid-and long-range, it is estimated that Dilworth will be responsible for 64 lane miles and 79 lane miles respectively.

In the short-range, it is estimated that 30% of all lane miles under the City of Dilworth's jurisdiction will receive asphalt overlay, 86% will receive chip seal and 300% will receive crack seal. For both the mid- and long-range, it is estimated that 50% of all lane miles will receive asphalt overlay, 143% will receive chip seal and 500% will receive crack seal.

Table 9.1-9 details the expenditures that will be required of roadways under the City of Dilworth's jurisdiction.

TABLE 9.1-9: CITY OF DILWORTH ROADWAY MAINTENANCE ANALYSIS

	S	hort-Range (2015-202	0)
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Asphalt Overlay	15	\$165,825	\$2,437,630
Chip Seal	42	\$14,370	\$605,550
Crack Seal	147	\$2,210	\$324,870
Total Needs		\$3,368,050	
		Mid-Range (2021-2030)
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Asphalt Overlay	32	\$227,875	\$7,292,000
Chip Seal	92	\$19,750	\$1,807,520
Crack Seal	320	\$3,040	\$972,800
Total Needs			\$10,072,320
	L	.ong-Range (2031-204	0)
Activity	Total Lane Miles	Cost per Lane Mile	Cost for Activity
Asphalt Overlay	40	\$337,310	\$13,323,745
Chip Seal	113	\$29,235	\$3,302,680
Crack Seal	395	\$4,495	\$1,775,525
Total Needs			\$18,401,950

APPENDIX 9-1: METRO 2040 – OPERATIONS AND MAINTENANCE PLAN

Comparison of Financial Summaries and Available Funding

Table 9.1-10 compares the total O&M costs with available funding for each jurisdiction in the short-, mid- and long-range.

TABLE 9.1-10: O&M COSTS AND PROJECTED FUNDING (\$ IN MILLIONS)

Costs	Short- Range (2015-2020)	Mid-Range (2021-2030)	Long-Range (2031-2040)	Total
NDDOT	\$14.4	\$33.0	\$48.8	\$96.2
Cass County	\$12.6	\$29.2	\$43.2	\$85.0
City of Fargo	\$48.9	\$119.0	\$186.8	\$354.7
City of West Fargo	\$13.1	\$32.1	\$50.6	\$95.8
MnDOT	\$21.8	\$49.8	\$72.5	\$144.1
Clay County	\$30.0	\$71.1	\$105.2	\$206.3
City of Moorhead	\$13.3	\$33.4	\$53.9	\$100.6
City of Dilworth	\$3.4	\$10.1	\$18.4	\$31.9

Projected Funding	Short- Range (2015-2020)	Mid-Range (2021-2030)	Long-Range (2031-2040)	Total
NDDOT	\$22.1	\$41.6	\$48.2	\$111.9
Cass County	\$71.2	\$155.2	\$216.7	\$443.1
City of Fargo	\$77.3	\$125.1	\$213.1	\$415.5
City of West Fargo	\$12.8	\$28.0	\$39.3	\$80.1
MnDOT	\$21.2	\$46.2	\$45.1	\$112.5
Clay County	\$24.3	\$48.9	\$62.3	\$135.5
City of Moorhead	\$61.6	\$139.0	\$202.5	\$403.1
City of Dilworth	\$0.2	\$0.4	\$0.6	\$1.2

O&M Costs Minus Projected Funding	Short-Range (2015-2020)	Mid-Range (2021-2030)	Long-Range (2031-2040)	Total
NDDOT	\$7.7	\$8.6	(\$0.6)	\$15.7
Cass County	\$58.6	\$126.0	\$173.4	\$358.0
City of Fargo	\$28.5	\$6.0	\$26.2	\$60.7
City of West Fargo	(\$0.3)	(\$4.1)	(\$11.3)	(\$15.7)
MnDOT	(\$0.5)	(\$3.6)	(\$27.4)	(\$31.5)
Clay County	(\$5.6)	(\$22.2)	(\$43.0)	(\$70.8)
City of Moorhead	\$48.3	\$105.6	\$148.6	\$302.5
City of Dilworth	(\$3.2)	(\$9.6)	(\$17.8)	(\$30.6)

APPENDIX 9-2: COMMITTED 2020 ROADWAY IMPROVEMENTS

North Dakota Projects

Year	Jurisdiction	Type/Network Characteristic	Description	Location				
	NDDOT	Link	Reconstruction	Main Avenue from I-94 to Morrison Street				
15	W. Fargo/ Fargo/ Cass County	Link	Convert from 2-lanes to 3-lane section	12th Ave N from CR 19 to 45th Street				
20	W. Fargo/ Fargo/ Cass County	Intersection Control	Add roundabout (from 2-way stop)	12th Ave N and 9th Street E				
	Fargo	Link	Reconstruction	1st Ave N from University Drive to Broadway				
	1							
	West Fargo	Intersection Control	Add Permanent Signals (from temporary signals)	Sheyenne Street @ 40th Ave E and @ 32nd Ave E				
16	Cass County		no planned network char	iges in 2016				
20	Fargo		no planned network char	nges in 2016				
	NDDOT		no planned network char	nges in 2016				
	-	New Construction as a 2-lane with turn lanes on						
	Fargo	LINK	South (Collector)	21st Street				
	Fargo	Link	New Construction from 52nd to 64th Avenue South as a 2-lane roadway	31st Street				
:020	West Fargo	Link	Reconstruct 9th Street E/13th Avenue E Intersection per HSIP Plan - Includes Signal Timing Changes	9th Street East & 13th Avenue E				
2017 - 2	Fargo	Link	New Construction 2-lane roadway (Collector) in Deer Creek n/s from 52nd Avenue South and turns e/w to tie into Sheyenne Street	63rd Street (n/s) and Deer Creek (e/w)				
	Fargo	Link	New Construction as a 3-lane section from Maple Valley Drive to University Drive	64th Avenue South				
	Fargo	Link	New Construction - Extend 51st Street from 23rd to 32nd Avenue South	51st Street (Collector)				
	Fargo	Link	Reduce from 4-lane section to 3-lane	4th Street from 1st Avenue N to 2nd Avenue S				
	Fargo	Link	Reduce from 4-lane section to 3-lane	2nd Street from 1st Avenue N to 7th Avenue N				

APPENDIX 9-2: COMMITTED 2020 ROADWAY IMPROVEMENTS

Year	Jurisdiction	Type/Network Characteristic	Description	Location				
	Forgo	Link	Widen 4 lanes to 6 lanes and New ramp to	32nd Avenue S from 42nd Street S to 36th Street S and New				
	Faigu	LIIIK	facilitate travel from 32nd Avenue S WB to I-29 SB	ramp to facilitate travel from 32nd Avenue S WB to I-29 SB				
	Fargo	Link	Widen to 5 lane section	32nd Avenue S from 45th Street to Veterans Blvd				
	Fargo	Intersection Control	New Signal	40th Avenue S and 36th Street SW				
	Fargo	Intersection Control	New Signal	17th Avenue S and 38th Street S				
	West Fargo	Link	Widen 2 lanes to 4 lanes	32nd Avenue S from Sheyenne Street to Veterans Blvd				
	West Fargo	Intersection Control	New Signal	32nd Avenue W and 9th Street W				
	West Fargo	Intersection Control	New Signal	26th Avenue & Sheyenne Street				
	West Fargo	Link	Add 26th Avenue into network as local roadway	26th Avenue				
	West laigo	LINK	just west of Sheyenne Street	Zoth Avenue				
	NDDOT	Link	Reconstruction	Main Avenue from 2nd Street to University Drive				
	West Fargo/Fargo	Link	Revise to 3-lane section	40th Ave E from 7th Street East to Sheyenne River				
	Cass County Link		Check with County on Improvements	CR 20 from University Drive to I-29				

APPENDIX 9-2: COMMITTED 2020 ROADWAY IMPROVEMENTS

Minnesota Projects

Year	Jurisdiction	Type/Network Characteristic	work Description Location									
	Mrhd/MnDOT	New Turn Lane	Add NB to EB Right Turn Lane	TH 75/8th Street and TH 10/Main Avenue								
	Mrhd/MnDOT	Link	Widen 2 to 4 lanes	TH 75 from 40th Avenue S to south of 44th Avenue S								
	Mrhd/MnDOT	New Turn Lane	Add EB to SB Turn Right Lane	TH 75/8th Street and TH 10/Main Avenue								
15	Moorhead	New Turn Lane	Add SB and NB Left Turn Lanes	11th Street and TH 10/Main Avenue								
20	Clay County	Turn Lanes	Locations TBD - Currently it appears that new turns lanes are not warranted.	CSAH 18 from CSAH 3 to TH 75								
	MnDOT	No planned network changes in 2015										
	Dilworth		No planned network chang	es in 2015								
	MnDOT	New Interchange	Construct divergent diamond interchange	TH 75 and I-94 Interchange								
	Moorhead	Link	Revise to 3-lane section	20th Street S from I-94 to 12th Avenue								
2016	MnDOT	Reconstruct	Revise EB/WB sections from 2-lane to 3-lane (WB lane from TH 75 off-ramp to TH 75 on-ramp to remain 2- lane)	I-94 from west of TH 75 to 34th Street S								
	Dilworth		No planned network chang	es in 2016								
	Clay County		No planned network chang	es in 2016								
•	Moorhead	Link Extension	Construct 20th St as a 3-lane Section	20th Street from 34th Ave S to 41st Ave S								
7-202(Moorhead	Reconstruct	Construct turn lanes and signal at 20th St & 30th Avenue S	20th Street from I-94 to 34th Ave S								
01.	Moorhead	Link	Widen 4 to 6 lanes	8th Street S / TH 75 from 24th Avenue S to 30th Avenue S								
	MnDOT	Reconstruct	Add medians and left turn lanes	TH 10 through Glyndon MN								

APPENDIX 10-1: TRANSIT DEVELOPMENT PLAN

Metro COG is responsible under federal law for maintaining a continuous, comprehensive and coordinated transportation planning process. A component of the process is the maintenance of the Transit Development Plan (TDP) which is intended to identify strategies and recommendations to improve transit service delivery in the FM Metropolitan area. The TDP is developed under a defined five year planning horizon and functions as a sub-element of the LRTP. Development and adoption of the TDP is recommended by the Federal Transit Administration (FTA) for the purposes of establishing a transit agency's vision for public transportation, assessing needs and identifying a framework for program implementation. This is done in cooperation with Metro Area Transit (MATBUS), MnDOT and NDDOT.

The 2012-2016 TDP is a comprehensive summary of data, analysis and recommendations which focus on all aspects of the public transit system (i.e., fixed route, paratransit, senior ride and rural commuter). The TDP considers both short-range and long-range strategies and actions that lead to the development of an integrated multimodal transportation system that efficiently moves people and addresses current and future transportation demand.

Metro Area Transit is currently the function of two separate municipal departments within the City of Fargo and the City of Moorhead. Since 2006, MATBUS has made significant progress and improvements in the delivery of transit services, specific to the coordination efforts between operating between jurisdictions. Currently, there are a total of 21 fixed routes which serve the FM Metropolitan area.

A component of the TDP is the Existing Conditions Report (ECR). The ECR provides a summary of existing conditions and the operating environment (i.e. transit history, operations, agreements, ridership trends and finances) of public transit in the FM Metropolitan area.

According to the ECR, MATBUS provided a total of 2,133,908 rides in 2010. These included all fixed routes, paratransit services, rural commuter services, senior ride services and ADA demand response services.

Student ridership has been a key component to the success of MATBUS and the fixed route system over the last decade. This is due in part to the U-pass program, where each college (NDSU, MSUM, Concordia and M-State) contracts separately with the respective city and provides an annual contribution thereby allowing students to use any MAT fixed route for free by using their student ID as a transit pass.

Metro Area Transit's operating budget is constructed and supported through a variety of federal, state and local funds. Both operating budgets are highly subsidized by state and federal resources with the City of Fargo at 50% (2010) and the City of Moorhead at 77% (2010). Total operating costs in 2010 for the City of Fargo were \$4,634,499, while costs for the City of Moorhead were \$1,735,396.

The City of Fargo and the City of Moorhead have entered into several agreements over the past few decades, both formal and informal, to assist in the operation of various elements MATBUS. Some of these agreements have been specifically drafted to set forth a cost sharing/allocation plan for the distribution of costs related to major transit system expenditures. Significant MATBUS operating agreements include the Metro Transit Garage, MAT Paratransit and the Master Operating Agreement.

An important element of the TDP is the coordinated financial plan for each City, which identifies how preferred alternatives are implemented over the life of the Plan. This describes the ability to fund the continuation and expansion of MATBUS services in the City of Fargo and the City of Moorhead over the next 5 years and includes operating costs, projected revenues, and capital needs.

In the TDP, revenue forecasts, financial assumptions and the five year financial plan are based on the 2010 operating costs and revenues set forth within the ECR. The City of Fargo assumptions indicate revenues to increase by two percent between the base condition (2010) and the TDP planning horizon of 2016. The City of Moorhead assumptions utilize a two percent growth rate for city general funds and farebox revenue; however, federal revenues are shown to increase at two percent only through 2012 and no increase in state funding from the 2010 base condition to 2016. Under the baseline scenario, the City of Moorhead shows an annual surplus in the range of \$60,000 to \$130,000 through 2016 while the City of Fargo shows an annual deficit ranging from \$50,000 to \$110,000.

The TDP outlines three different fixed route alternatives and operational scenarios. These include a five percent reduction scenario, a service restructure scenario and a service expansion scenario.

The five percent reduction scenario assumes a five percent reduction in the number of hours of service by the City of Fargo and the City of Moorhead. Based on ridership and productivity, the TDP determined that impacts from the five percent reduction scenario would be negligible. The cost-constrained service restructure scenario assumes that 2010 funding levels are the depth of resources available to address community and MATBUS service needs. The principal reasons for looking at route modification were to give routes the opportunity to improve system speed, reliability and on-time performance. These issues were identified by both users and non-users, as well as MATBUS staff to be of critical importance. In addressing on-time performance, effort was made to maintain existing coverage to minimize route disruption. The overall number of hours and buses under this scenario is equivalent to 2010 funding levels. Figures 10.1-1 and 10.1-2 show the route specific recommendations for the service restructure scenario for the City of Moorhead and Figure 10.1-3 shows recommendations for the City of Fargo.

The service expansion scenario is based on issue identification/needs assessment, public outreach findings and an examination of the local market for expansion opportunities. This scenario is cost-unconstrained, with non-route specific system-wide recommendation including Sunday service, later evening service and earlier a.m. service. Figures 10.1-4 and 10.1-5 shows the expansion recommendations for MATBUS in the City of Moorhead and Figure 10.1-6 shows recommendations for the City of Fargo.



FIGURE 10.1-1: COST-CONSTRAINED SERVICE RESTRUCTURE FOR THE CITY OF MOORHEAD: DAY ROUTE



FIGURE 10.1-2: COST-CONSTRAINED SERVICE RESTRUCTURE FOR THE CITY OF MOORHEAD: NIGHT ROUTE



FIGURE 10.1-3: COST-CONSTRAINED SERVICE RESTRUCTURE FOR THE CITY OF FARGO





FIGURE 10.1-5: COST-UNCONSTRAINED SERVICE EXPANSION RECOMMENDATIONS FOR THE CITY OF MOORHEAD: NIGHT ROUTE





FIGURE 10.1-6: COST-UNCONSTRAINED SERVICE EXPANSION RECOMMENDATIONS FOR THE CITY OF FARGO

Interstate Interchange Improvements

As part of the 2020 and 2040 forecast year analysis, congested roadways, interstates and interchanges were identified. Chapter 10 presents the analysis for determining what Interstate mainline improvements. In addition, conceptual interchange improvements were developed to support the local arterial and interstate facilities. The following appendix presents conceptual aerial graphics for each interchange that would require improvements for the interchanges on I-94 and I-29.



FIGURE 10.2-1: I-94 & SHEYENNE INTERCHANGE IMPROVEMENTS



FIGURE 10.2-2: I-94 & VETERAN'S BLVD. INTERCHANGE IMPROVEMENTS



FIGURE 10.2-3: I-94 & 45TH ST. INTERCHANGE IMPROVEMENTS



FIGURE 10.2-4: I-94 & I-29 INTERCHANGE IMPROVEMENTS



FIGURE 10.2-5: I-94 & 25TH ST. INTERCHANGE IMPROVEMENTS



FIGURE 10.2-6: I-94 & UNIVERSITY INTERCHANGE IMPROVEMENTS

-S 8th Widen from 4 to 6 Lanes Add 4th Widen from Add 3rd Add 3rd WB WB 2 to 3 WB WB Lane Lanes Lane Lane 94 Add 4th Widen from EB 2 to 3 EB Lane Lanes **Construct Diverging** Diamond Interchange (Committed 2014) Widen from -4 to 6 Lanes

FIGURE 10.2-7: I-94 & TH 75/8TH STREET INTERCHANGE IMPROVEMENTS



FIGURE 10.2-8: I-94 & 20TH ST. INTERCHANGE IMPROVEMENTS



FIGURE 10.2-9: I-29 & I-94 INTERCHANGE IMPROVEMENTS



FIGURE 10.2-10: I-29 & 32ND AVE S. INTERCHANGE IMPROVEMENTS



FIGURE 10.2-11: I-29 & 52ND AVE S INTERCHANGE IMPROVEMENTS

North Dakota DOT

- NHPP Interstate Maintenance (IM) Originally the historical use of these funds within the last 5 years of the TIP within the Metropolitan area was averaged to be around \$10 million/year. Discussion with NDDOT indicated that a more realistic number and need for the IM funds within the Fargo-Moorhead metropolitan area would be approximately \$3.5 million/year.
- NHPP Highway Bridge Program (HBP) Identified the historical use of these funds within the last 5 years of the TIP within the Metropolitan area and averaged them per year.
- NHPP Intelligent Transportation Systems (ITS) Identified the historical use of these funds within the last 5 years of the TIP within the Metropolitan area and averaged them per year.
- NHPP National Highway System (NHS) This funding category is new per MAP-21. This funding category takes the place of what used to be the Surface Transportation Program (STP) Regional Funds. It was estimated by the NDDOT that the 12 Urban Cities with a population over 5,000 will receive approximately \$8 million per year for this funding category. The cities of Fargo and West Fargo make up 35.12% urban cities population according to the 2010 census. It will be assumed that 35.12% of \$8 million will be allocated to the metropolitan area per year for NHPP-NHS Funds.

- Congestion Mitigation/Air Quality (CMAQ) These are funds that each state is to use in areas within their state that have air quality issues. Since, there are no areas within the state of North Dakota with identified air quality issues, they typically get distributed or rolled in to the STP Urban money. These funds are already accounted for in the STP/Urban funds shown under the cities' revenues.
- Highway Safety Improvement Program (HSIP) These funds have recently become distributed based on a statewide competitive grant. NDDOT has an annual budgeted amount of approximately \$8.0 million in HSIP funds to spend on safety projects throughout the state. For the purposes of projecting HSIP dollars to be used for revenue forecasts, we have assumed that the Metropolitan area will receive \$1.0 million dollars in HSIP funds every 5 years to be used on the state's system.
- North Dakota State Funds Identified the historical use of state funds within the last 5 years of the TIP within the Metropolitan area and averaged them per year.
- North Dakota Local Cost Shares We have identified what the cities/counties have paid over the past 5 years on state led projects. However, this is only identified as expenditure and does not account for the local revenues. Therefore, this number is for informational purposes only and will not be projected out into the future.

			Revenue													Expenses						
						Federa	al		State					0 & M	M Committed Projects* from TIP (Fed, State and Local))		
Year 2010 2011		NHPP - IM NHPP - HBP NHPP - HBP NHPP - NHS/STP Regional		NHPP - NHS/STP Regional		STI - GYHN	dish			Off-set for TIP		State Funds	O&M - Non Federal		MI - 44HN	ABH - AHN	NHPP - NHS/STP - Regional	STI - GHAN	HSIP	STP - Rural		
	2010		\$	0.6120			\$	0.1000					\$	3.5344								
	2011												\$	0.2894		_						
ical	2012		\$	1.0820									\$	2.4680		_						
istor	2013		\$	0.7770			\$	0.2880					\$	0.7170		_						
Ξ	2014		\$	0.0470									\$	2.1090								
	Annual Avg.	\$ 3.5000	\$	0.6295	\$	2.8100	\$	0.0776	\$	0.2000			\$	1.8236				3.0000				
	2015	\$ 3.5525	\$	0.6389	\$	2.8522	\$	0.0788	\$	0.2030	\$	5.6100	\$	1.8783			6.590	9 0.7740	17.5000	0.0000	0.0000	0.3540
	2016	\$ 3.6058	\$	0.6485	\$	2.8949	\$	0.0799	\$	0.2060			\$	1.9346			9.208	0.0000	0.0000	0.0000	0.0000	0.0000
erm	2017	\$ 3.6599	\$	0.6583	\$	2.9384	\$	0.0811	\$	0.2091			\$	1.9927			2.930	0 0.0520	9.6510	0.0000	0.0000	1.9960
ort-T	2018	\$ 3.7148	\$	0.6681	\$	2.9824	\$	0.0824	\$	0.2123			\$	2.0524								
shc	2019	\$ 3.7705	\$	0.6782	\$	3.0272	\$	0.0836	\$	0.2155			\$	2.1140								
	2020	\$ 3.8271	\$	0.6883	\$	3.0726	\$	0.0849	\$	0.2187			\$	2.1774								
	Total	\$ 22.1305	\$	3.9803	\$	17.7676	\$	0.4907	\$	1.2646	\$	5.6100	\$	12.1494	\$ -	22.130	5 18.728	9 0.8260	27.1510	0.0000	0.0000	2.3500
	2021	\$ 3.8845	\$	0.6986	\$	3.1187	\$	0.0861	\$	0.2220			\$	2.2428			4					
	2022	\$ 3.9427	\$	0.7091	\$	3.1654	\$	0.0874	\$	0.2253			\$	2.3100			4					
	2023	\$ 4.0019	\$	0.7198	\$	3.2129	\$	0.0887	\$	0.2287			\$	2.3793			4					
	2024	\$ 4.0619	\$	0.7306	\$	3.2611	\$	0.0901	\$	0.2321	L		\$	2.4507								
erm	2025	\$ 4.1228	\$	0.7415	\$	3.3100	\$	0.0914	\$	0.2356	L		\$	2.5242		-						
1-bif	2026	\$ 4.1847	\$	0.7526	\$	3.3597	\$	0.0928	\$	0.2391	L		\$	2.6000								
2	2027	\$ 4.2474	\$	0.7639	\$	3.4101	\$	0.0942	\$	0.2427	L		\$	2.6780								
	2028	\$ 4.3111	\$	0.7754	\$	3.4612	\$	0.0956	\$	0.2464	L		\$	2.7583			-					
	2029	\$ 4.3758	\$	0.7870	\$	3.5132	\$	0.0970	\$	0.2500			\$	2.8411								
	2030	\$ 4.4414	\$	0.7988	\$	3.5658	\$	0.0985	\$	0.2538			\$	2.9263			-	-				
	Total	\$ 41.5743	5	7.4774	5	33.3782	5	0.9218	5	2.3757			5	25.7107	> -	41.574	J 0.000	U 0.0000	0.0000	0.0000	0.0000	0.0000

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

								Reven	ue										Expenses			
						Federa	ıl					State				0 & M	& M Committed Projects* from TIP (Fed, State and Local))	
Year 2031			MI - 99HN		ABP - HBP	NHPP - NHS/5TP Regional		STI - GHNN		HSIP	Off-set for TIP		State Funds		O&M - Non Federal		MI - ddHN	NHPP - HBP	NHPP - NHS/STP - Regional	STI - GHPN	HSIP	STP - Rural
	2031	\$	4.5081	\$	0.8108	\$ 3.6193	\$	0.1000	\$	0.2576		\$	3.0141									
	2032	\$	4.5757	\$	0.8230	\$ 3.6736	\$	0.1014	\$	0.2615		\$	3.1045									
	2033	\$	4.6443	\$	0.8353	\$ 3.7287	\$	0.1030	\$	0.2654		\$	3.1976									
-	2034	\$	4.7140	\$	0.8478	\$ 3.7847	\$	0.1045	\$	0.2694		\$	3.2936									
Tern	2035	Ş	4.7847	Ş	0.8606	\$ 3.8414	Ş	0.1061	Ş	0.2734		\$ •	3.3924									
-guo	2036	Ş	4.8565	Ş	0.8735	\$ 3.8991	Ş	0.1077	Ş	0.2775		Ş	3.4941									
-	2037	ې د	4.9295 E 0022	ې د	0.0000	\$ 3.9575	ې د	0.1095	ې د	0.2817		ې د	2 7060									
	2030	ې د	5.0035	ې د	0.0559	\$ 4.0109	ې د	0.1109	ې د	0.2039	 	ې د	3.8181									
	2040	Ś	5.1545	ŝ	0.9271	\$ 4.1383	Ś	0.1120	Ś	0.2945		Ś	3.9327									
	Total	\$	48.2486	\$	8.6779	\$ 38.7368	\$	1.0697	\$	2.7571		\$	34.5530	\$	-	48.2486	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Grand Total		\$	111.9534	\$	20.1356	\$ 89.8826	\$	2.4822	\$	6.3973	\$ 5.6100	\$	72.4131	\$	-	111.9534	18.7289	0.8260	27.1510	0.0000	0.0000	2.3500

Cass County, ND

- Surface Transportation Program (STP) Rural Cass County's 2014 to 2018 Capital Improvement Plan provided an annual dollar amount for Federal Aid Highway Funding and a table that projects the amount of Federal Aid Bridge Funding that will be received over a 5-year period.
- State Aid (Highway Distribution Tax) Cass County provided a spreadsheet with historic revenue information dating from 2000 to 2012. Five years of data for 2008-2012 were averaged for the annual average State Aid. It should be noted that there were a few years that additional one-time funding was provided under this funding source noted as "Highway Distribution Tax One Time Funding." These additional dollars were not included in the average, but would significantly increase the total if it were included.
- Property Tax Cass County provided a spreadsheet with historic revenue information dating from 2000 to 2012. Five years of data for 2008-2012 were averaged for the annual average Property Tax revenue.
- Other Cass County provided a spreadsheet with historic revenue information dating from 2000 to 2012. Five years of data for 2008-2012 were averaged for the annual average "Other" revenue. It should be determined and noted within the plan, what the "Other" revenue includes.

				Revenue			E	xpenses	
		Fed	eral	State	Loc	0 & M	Comm Projects (Federal, Loc	nitted from TIP , State & cal)	
	Year	STP - Rural Highway	STP - Rural Bridge Highway Tax Dist. Fund		Property Tax	Other		TAP	HSIP
	2010								
2	2011								
oric	2012								
Hist	2013								
-	2014								
	Annual Avg.	\$0.9000	\$0.6500	\$6.7810	\$3.7700	\$0.3200			
	2015	\$0.9135	\$0.6598	\$6.9844	\$3.9208	\$0.3328		\$0.3200	
ε	2016	\$0.9272	\$0.6696	\$7.1940	\$4.0776	\$0.3461			
Ten	2017	\$0.9411	\$0.6797	\$7.4098	\$4.2407	\$0.3600			\$0.0410
,-t	2018	\$0.9552	\$0.6899	\$7.6321	\$4.4104	\$0.3744			
Shc	2019	\$0.9696	\$0.7002	\$7.8610	\$4.5868	\$0.3893			
	2020	\$0.9841	\$0.7107	\$8.0969	\$4.7703	\$0.4049	4-1 - 1	40.0055	40.00
	Total	\$5.6907	\$4.1099	\$45.1782	\$26.0066	\$2.2075	Ş71.1847	\$0.3200	Ş0.0410
	2021	\$0.9989	\$0.7214	\$8.3398	\$4.9611	\$0.4211			
	2022	\$1.0138	\$0.7322	\$8.5900	\$5.1595	\$0.4379			
	2023	\$1.0291	\$0.7432	\$8.8477	\$5.3659	\$0.4555			
E	2024	\$1.0445	\$U.7544	\$9.1131	\$5.5805	\$U.4/3/			
Ten	2025	\$1.0602	\$U.7657	\$9.3865	\$5.8037	\$0.4926			
lid-	2026	\$1.0761	\$U.///2	\$9.6681	\$6.0359	\$0.5123			
Σ	2027	\$1.0922 \$1.1092	\$0.7888	\$9.9581	\$0.2773	\$0.5328			
	2028	\$1.1080 \$1.1252	\$U.8UU0 \$0.9127	\$10.2509	\$0.5284	\$0.5541			
	2029	\$1.1252 \$1.1751	\$0.0127 \$0.9240	\$10.3040	\$7.0611	\$0.5703 \$0.5004			
	Total	\$10.6905	\$7.7209	\$95,6062	\$59.5631	\$5.0557	\$155,1692	\$0.0000	\$0.0000

CASS COUNTY REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

				Revenue		Expenses			
		Fed	eral	State	Loc	al	0 & M	Comn Projects (Federal Loc	nitted from TIP , State & :al)
Year 2031		STP - Rural Highway	STP - Rural Bridge	Highway Tax Dist. Fund	Property Tax	Other		ТАР	HSIP
	2031	\$1.1592	\$0.8372	\$11.2080	\$7.3436	\$0.6233			
	2032	\$1.1766	\$0.8498	\$11.5442	\$7.6373	\$0.6483			
	2033	\$1.1943	\$0.8625	\$11.8905	\$7.9428	\$0.6742			
-	2034	\$1.2122	\$0.8755	\$12.2472	\$8.2605	\$0.7012			
ern	2035	\$1.2304	\$0.8886	\$12.6147	\$8.5910	\$0.7292			
g-T	2036	\$1.2488	\$0.9019	\$12.9931	\$8.9346	\$0.7584			
Lon	2037	\$1.2675	\$0.9154	\$13.3829	\$9.2920	\$0.7887			
	2038	\$1.2866	\$0.9292	\$13.7844	\$9.6637	\$0.8203			
	2039	\$1.3059	\$0.9431	\$14.1979	\$10.0502	\$0.8531			
	2040	\$1.3254	\$0.9573	\$14.6238	\$10.4522	\$0.8872			
	Total	\$12.4068	\$8.9605	\$128.4867	\$88.1679	\$7.4837	\$216.6546	\$0.0000	\$0.0000
Grand Total		\$28.7880	\$20.7913	\$269.2710	\$173.7375	\$14.7469	\$443.0085	\$0.3200	\$0.0410

City of Fargo, ND

- Surface Transportation Program (STP) Urban The City of Fargo's current target sub-allocation for STP Urban dollars is \$3.8 million dollars annually.
- Highway Safety Improvement Program (HSIP) These funds have recently become distributed based on a statewide competitive grant. NDDOT has an annual budgeted amount of approximately \$8.0 million in HSIP funds to spend on safety projects throughout the state. For the purposes of projecting HSIP dollars to be used for revenue forecasts, we have assumed that the metropolitan area will receive \$1.0 million dollars in HSIP funds every 5 years to be used on the City of Fargo's system.
- Transportation Alternatives Program (TAP) Identified the historical use of these funds within the last 5 years of the TIP for the City of Fargo and averaged them per year.
- State Aid (Highway Distribution Tax) Based on the 2012-2016 City of Fargo CIP, the State Highway Distribution Tax revenue for the City of Fargo is \$4.8 million annually. According to City of Fargo staff, the State Highway Distribution Tax revenue is split between street rehab projects (\$2.0 million) and general purpose operations activities (\$2.8 million). For the purposes of the revenue projections only the \$2.0 million in State Aid dedicated to street rehab revenue is assumed available for the financial plan of the LRTP.

- Street Sales Tax The City of Fargo developed a Revenue spreadsheet as part of the development of the 2012-2016 CIP. Five years of data from 2007-2011 were averaged to determine the average annual street sales tax.
- Special Assessments The City of Fargo has a policy for special assessments. The total revenue dollars obtained from special assessments for transportation projects varies annually. However, the City's policy for new construction projects is to assess for 50% of the cost and for reconstruction projects to assess for 25% of the cost. This information can be used when determining the special assessment dollars that may or can be used on new and reconstruction projects for future years.

				Re	venue			Expenses									
		I	Federal		Sta	ate	Local	O & M TIP (Federal, State & L			ts from & Local)						
Year		STP - Urban	HSIP TAP		Highway Tax Dist. Fund for Street Rehab	Highway Tax Dist. Fund for O&M (Not included in Fiscal Constraint)	Street Sales Tax		Locally Funded	STP - Urban	ТАР						
	2010			\$0.2800													
	2011			\$0.2280													
ical	2012			\$0.2820													
tor	2013			\$0.3600													
His	2014																
	Annual																
	Avg.	\$3.8000	\$0.2000	\$0.2300	\$2.0000	\$2.8000	\$9.2750										
	2015	\$3.8570	\$0.2030	\$0.2335	\$2.0600	\$2.8840	\$9.6460		\$3.0000	\$2.0000	\$0.2400						
٦	2016	\$3.9149	\$0.2060	\$0.2370	\$2.1218	\$2.9705	\$10.0318		\$3.0000								
Terr	2017	\$3.9736	\$0.2091	\$0.2405	\$2.1855	\$3.0596	\$10.4331			\$8.2360							
Ľ-	2018	\$4.0332	\$0.2123	\$0.2441	\$2.2510	\$3.1514	\$10.8504										
Shc	2019	\$4.0937	\$0.2155	\$0.2478	\$2.3185	\$3.2460	\$11.2845										
	2020	\$4.1551	\$0.2187	\$0.2515	\$2.3881	\$3.3433	\$11.7358		_								
	Total	\$24.0274	\$1.2646	\$1.4543	\$13.3249	\$18.6549	\$63.9817	\$77.3066	\$6.0000	\$10.2360	\$0.2400						

CITY OF FARGO REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

			Revenue						Expenses			
Year		F	Federal		State		Local	0 & M	Committed Projects from TIP (Federal, State & Local)			
		STP - Urban	AISH	ТАР	Highway Tax Dist. Fund for Street Rehab	Highway Tax Dist. Fund for O&M (Not included in Fiscal Constraint)	Street Sales Tax		Locally Funded	STP - Urban	ТАР	
	2021	\$4.2174	\$0.2220	\$0.2553	\$2.4597	\$3.4436	\$12.2053					
	2022	\$4.2807	\$0.2253	\$0.2591	\$2.5335	\$3.5470	\$12.6935					
ļ	2023	\$4.3449	\$0.2287	\$0.2630	\$2.6095	\$3.6534	\$13.2012					
_	2024	\$4.4101	\$0.2321	\$0.2669	\$2.6878	\$3.7630	\$13.7293			_		
ern	2025	\$4.4762	\$0.2356	\$0.2709	\$2.7685	\$3.8759	\$14.2784]			
Г-р	2026	\$4.5433	\$0.2391	\$0.2750	\$2.8515	\$3.9921	\$14.8496		I			
Ī	2027	\$4.6115	\$0.2427	\$0.2791	\$2.9371	\$4.1119	\$15.4436		I			
ļ	2028	\$4.6807	\$0.2464	\$0.2833	\$3.0252	\$4.2353	\$16.0613		I			
	2029	\$4.7509	\$0.2500	\$0.2876	\$3.1159	\$4.3623	\$16.7038		I			
ļ	2030	\$4.8221	\$0.2538	\$0.2919	\$3.2094	\$4.4932	\$17.3719		I			
	Total	\$45.1378	\$2.3757	\$2.7320	\$28.1983	\$39.4776	\$146.5377	\$125.0726	\$0.0000	\$0.0000	\$0.0000	
ļ	2031	\$4.8945	\$0.2576	\$0.2962	\$3.3057	\$4.6280	\$18.0668		<u> </u>]			
ļ	2032	\$4.9679	\$0.2615	\$0.3007	\$3.4049	\$4.7668	\$18.7894		I			
ļ	2033	\$5.0424	\$0.2654	\$0.3052	\$3.5070	\$4.9098	\$19.5410		I			
c .	2034	\$5.1180	\$0.2694	\$0.3098	\$3.6122	\$5.0571	\$20.3227		I		<u> </u>	
ern	2035	\$5.1948	\$0.2734	\$0.3144	\$3.7206	\$5.2088	\$21.1356		I			
lg-1	2036	\$5.2727	\$0.2775	\$0.3191	\$3.8322	\$5.3651	\$21.9810		I			
Lon	2037	\$5.3518	\$0.2817	\$0.3239	\$3.9472	\$5.5260	\$22.8602					
-	2038	\$5.4321	\$0.2859	\$0.3288	\$4.0656	\$5.6918	\$23.7746				1	
ļ	2039	\$5.5136	\$0.2902	\$0.3337	\$4.1876	\$5.8626	\$24.7256		I			
ļ	2040	\$5.5963	\$0.2945	\$0.3387	\$4.3132	\$6.0385	\$25.7147					
	Total	\$52.3842	\$2.7571	\$3.1706	\$37.8961	\$53.0545	\$216.9117	\$213.0524	\$0.0000	\$0.0000	\$0.0000	
Grand Total		\$121.5494	\$6.3973	\$7.3569	\$79.4193	\$111.1870	\$427.4311	\$415.4317	\$6.0000	\$10.2360	\$0.2400	

City of West Fargo, ND

- Surface Transportation Program (STP) Urban The City of West Fargo's current target sub-allocation for STP Urban dollars is \$0.83 million dollars annually.
- Highway Safety Improvement Program (HSIP) These funds have recently become distributed based on a statewide competitive grant. NDDOT has an annual budgeted amount of approximately \$8.0 million in HSIP funds to spend on safety projects throughout the state. For the purposes of projecting HSIP dollars to be used for revenue forecasts, we have assumed that the Metropolitan area will receive \$1.0 million dollars in HSIP funds every 5 years to be used on the City of West Fargo's system.
- Transportation Alternatives Program (TAP) For the purposes of projecting TAP dollars to be used for revenue forecasts, we have assumed that the City of West Fargo will receive one TAP project for \$220,000 every 5 years.
- State Aid (Highway Distribution Tax) Based on the historical average of actual funds received from 2008-2012, the City of West Fargo has received an average of \$1,076,600/year in State Highway Distribution Tax Funds.
- **General Funds** The annual dollar amount projected in the 2013-2016 TIP was used for the base 2014 general fund amount for the City of West Fargo. This number was originally taken from West Fargo CIP data.

 Special Assessments – The City of West Fargo has a policy for special assessments. The total revenue dollars obtained from special assessments for transportation projects varies annually. The City typically special assesses the local match for federal aid projects and special assesses new construction and major reconstruction projects that need to be paid for with local funds. This information can be used when determining the special assessment dollars that may or can be used on new and reconstruction projects for future years.
				Rev	enue				Expe	nses	
			Federal		State	Loo	cal	0 & M	Committe (Feder	ed Projects al, State &	from TIP Local)
Y	ear	STP - Urban	HSIP	TAP	Highway Tax Dist. Fund	General Funds	Sales Tax		Locally Funded	STP - Urban	HSIP
	2010										
_	2011										
ical	2012										
stor	2013										
Ξ	2014										
	Annual Avg.	\$0.8300	\$0.2000	\$0.0440	\$1.0766	\$0.4340	\$0.3750				
	2015	\$0.8425	\$0.2030	\$0.0447	\$1.1089	\$0.4514	\$0.3900			\$11.4540	
~	2016	\$0.8551	\$0.2060	\$0.0453	\$1.1422	\$0.4694	\$0.4056			\$1.0830	
ern	2017	\$0.8679	\$0.2091	\$0.0460	\$1.1764	\$0.4882	\$0.4218				\$1.8850
ц-Т	2018	\$0.8809	\$0.2123	\$0.0467	\$1.2117	\$0.5077	\$0.4387				
Sho	2019	\$0.8941	\$0.2155	\$0.0474	\$1.2481	\$0.5280	\$0.4562				
•,	2020	\$0.9076	\$0.2187	\$0.0481	\$1.2855	\$0.5491	\$0.4745				
	Total	\$5.2481	\$1.2646	\$0.2782	\$7.1728	\$2.9939	\$2.5869	\$12.7535	\$0.0000	\$12.5370	\$1.8850

CITY OF WEST FARGO REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

				Rev	venue				Expe	nses	
			Federal		State	Loc	cal	0 & M	Committe (Feder	ed Projects al, State &	from TIP Local)
Y	'ear	STP - Urban	HSIP	ТАР	Highway Tax Dist. Fund	General Funds	Sales Tax		Locally Funded	STP - Urban	HSIP
	2021	\$0.9212	\$0.2220	\$0.0488	\$1.3241	\$0.5711	\$0.4935				
	2022	\$0.9350	\$0.2253	\$0.0496	\$1.3638	\$0.5940	\$0.5132				
	2023	\$0.9490	\$0.2287	\$0.0503	\$1.4047	\$0.6177	\$0.5337				
-	2024	\$0.9632	\$0.2321	\$0.0511	\$1.4469	\$0.6424	\$0.5551				
ern	2025	\$0.9777	\$0.2356	\$0.0518	\$1.4903	\$0.6681	\$0.5773				
d-T	2026	\$0.9924	\$0.2391	\$0.0526	\$1.5350	\$0.6948	\$0.6004				
Ϊ	2027	\$1.0072	\$0.2427	\$0.0534	\$1.5810	\$0.7226	\$0.6244				
	2028	\$1.0224	\$0.2464	\$0.0542	\$1.6285	\$0.7515	\$0.6494				
	2029	\$1.0377	\$0.2500	\$0.0550	\$1.6773	\$0.7816	\$0.6754				
	2030	\$1.0533	\$0.2538	\$0.0558	\$1.7276	\$0.8129	\$0.7024				
	Total	\$9.8590	\$2.3757	\$0.5226	\$15.1791	\$6.8569	\$5.9247	\$27.9607	\$0.0000	\$0.0000	\$0.0000
	2031	\$1.0691	\$0.2576	\$0.0567	\$1.7795	\$0.8454	\$0.7305				
	2032	\$1.0851	\$0.2615	\$0.0575	\$1.8328	\$0.8792	\$0.7597				
	2033	\$1.1014	\$0.2654	\$0.0584	\$1.8878	\$0.9144	\$0.7901				
٦	2034	\$1.1179	\$0.2694	\$0.0593	\$1.9445	\$0.9509	\$0.8217				
Ter	2035	\$1.1347	\$0.2734	\$0.0602	\$2.0028	\$0.9890	\$0.8545				
լ-ցլ	2036	\$1.1517	\$0.2775	\$0.0611	\$2.0629	\$1.0285	\$0.8887				
Lor	2037	\$1.1690	\$0.2817	\$0.0620	\$2.1248	\$1.0697	\$0.9243				
	2038	\$1.1865	\$0.2859	\$0.0629	\$2.1885	\$1.1125	\$0.9612				
	2039	\$1.2043	\$0.2902	\$0.0638	\$2.2542	\$1.1570	\$0.9997				
	2040	\$1.2223	\$0.2945	\$0.0648	\$2.3218	\$1.2033	\$1.0397				
	Total	\$11.4418	\$2.7571	\$0.6066	\$20.399 5	\$10.1498	\$8.7700	\$39.3193	\$0.0000	\$0.0000	Ş0.0000
Gran	d Total	\$26.5489	\$6.3973	\$1.4074	\$42.7514	\$20.0005	\$17.2816	\$80.0335	\$0.0000	\$12.5370	\$1.8850

Fargo Transit

- **FTA 5307** Based on the Transit Development Plan (TDP) projections for FTA 5307 and FTA 5316, which under MAP-21 now falls under FTA 5307. These forecasts were combined and grown with a 3% annual inflation factor.
- **FTA 5310** Based on previous FTA 5317 allocations, which under MAP-21 now fall under FTA 5310. It is also in line with their current year 5310 applications.
- **FTA 5339** Statewide allocation is \$1.6 million/year. We assumed that Fargo Transit would receive one \$800,000 bus every four years, which equates to \$200,000/year.
- **State-Aid** Based on the 2013 State-aid revenue with a 3% inflation factor as used in the TDP.
- West Fargo and NDSU System Contributions Based on Transit Development Plan (TDP) projections. The system contributions in the TDP are based on the usage and service levels of West Fargo and NDSU. The forecasts were grown with a 3% annual inflation factor.
- General Fund Based on TDP projections. The General Fund comes from property taxes. The projections are developed based on historical funds used to match federal aid and shortages in other funding sources. The forecasts were grown with a 3% annual inflation factor.

• Farebox Revenue/Misc. – These revenues are based on projections included in the Fargo Transit TDP. The projections are developed based on historical revenues, future ridership projected growth, and anticipated fare increases. The forecasts were grown with a 3% annual inflation factor.

							Reven	ue								Ехр	enses		
			Fede	eral			State				Local			Ор	erating 8	& Capital (Federal, St	ate & Loca	al)
	Year	FTA 5307	FTA 5310	FTA 5339	STP-U	State-Aid			West Fargo & NDSU System Contributions	General Fund	Local/Misc./Farebox Revenue	General fund for Capital		FTA 5307	FTA 5310	sтр/U	Operation	Capital Fixed (Bus)	Capital Paratransit
	2010	\$1.8600							\$0.4220	\$0.6590	\$0.3700								
le le	2011	\$1.9000							\$0.4310	\$0.6720	\$0.3780								
ric	2012	\$1.9400							\$0.4390	\$0.6850	\$0.3850							\$1.1600	
isto	2013	\$1.9800				\$0.5580			\$0.4480	\$0.6990	\$0.3930							\$1.1716	
Т	2014	\$2.0200				\$0.5636			\$0.4570	\$0.7130	\$0.4010							\$1.1833	
	Annual Avg.		\$0.2000	\$0.2000															
	2015	\$2.2000	\$0.2000	\$0.6500		\$0.6500			\$0.7500	\$1.0000	\$0.9000	\$0.3000					\$5.6000	\$0.6500	\$0.2500
5	2016	\$2.4000	\$0.2020	\$0.6500		\$0.6695			\$0.7575	\$1.0000	\$0.9090	\$0.3030					\$5.8500	\$0.6500	\$0.2525
err	2017	\$2.4240	\$0.2040	\$0.6500	\$1.5000	\$0.6896			\$0.7651	\$1.0100	\$0.9181	\$0.3060					\$6.1000	\$2.4000	\$0.2550
÷	2018	\$2.4482	\$0.2061	\$0.6500		\$0.7103			\$0.7727	\$1.0201	\$0.9273	\$0.3091					\$6.1610	\$0.6000	\$0.2576
Sho	2019	\$2.4727	\$0.2081	\$0.6500	\$2.0000	\$0.7316			\$0.7805	\$1.0303	\$0.9365	\$0.3122					\$6.2226	\$2.6000	\$0.2602
	2020	\$2.4974	\$0.2102	\$0.6500		\$0.7535			\$0.7883	\$1.0406	\$0.9459	\$0.3153					\$6.2848	\$0.6000	\$0.2628
	Total	\$14.4424	\$1.2304	\$3.9000	\$3.5000	\$4.2045	\$0.0000	\$0.0000	\$4.6140	\$6.1010	\$5.5368	\$1.8456	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$36.2184	\$7.5000	\$1.5380

FARGO TRANSIT REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

							Reven	ue								Exp	enses		
			Fede	eral			State				Local			Ор	erating 8	& Capital	Federal, St	ate & Loca	al)
	Year	FTA 5307	FTA 5310	FTA 5339	STP-U	State-Aid			West Fargo & NDSU System Contributions	General Fund	Local/Misc./Farebox Revenue	General fund for Capital		FTA 5307	FTA 5310	STP/U	Operation	Capital Fixed (Bus)	Capital Paratransit
	2021	\$2.5224	\$0.2123	\$1.0000		\$0.7761			\$0.7961	\$1.0510	\$0.9554	\$0.3185					\$6.3477	\$1.1600	\$0.2654
	2022	\$2.5476	\$0.2144	\$1.0100		\$0.7994			\$0.8041	\$1.0615	\$0.9649	\$0.3216					\$6.4112	\$1.1716	\$0.2680
	2023	\$2.5731	\$0.2166	\$1.0201		\$0.8234			\$0.8121	\$1.0721	\$0.9746	\$0.3249					\$6.4753	\$1.1833	\$0.2707
	2024	\$2.5989	\$0.2187	\$1.0303		\$0.8481			\$0.8203	\$1.0829	\$0.9843	\$0.3281					\$6.5400	\$1.1951	\$0.2734
m	2025	\$2.6248	\$0.2209	\$1.0406		\$0.8735			\$0.8285	\$1.0937	\$0.9942	\$0.3314					\$6.6054	\$1.2071	\$0.2762
l-Te	2026	\$2.6511	\$0.2231	\$1.0510		\$0.8998			\$0.8368	\$1.1046	\$1.0041	\$0.3347					\$6.6715	\$1.2192	\$0.2789
Mic	2027	\$2.6776	\$0.2254	\$1.0615		\$0.9267			\$0.8451	\$1.1157	\$1.0141	\$0.3380					\$6.7382	\$1.2314	\$0.2817
	2028	\$2.7044	\$0.2276	\$1.0721		\$0.9545			\$0.8536	\$1.1268	\$1.0243	\$0.3414					\$6.8056	\$1.2437	\$0.2845
	2029	\$2.7314	\$0.2299	\$1.0829	-	\$0.9832			\$0.8621	\$1.1381	\$1.0345	\$0.3448					\$6.8736	\$1.2561	\$0.2874
	2030	\$2.7587	\$0.2322	\$1.0937		\$1.0127			\$0.8707	\$1.1495	\$1.0449	\$0.3483					\$6.9424	\$1.2687	\$0.2902
	Total	\$26.3901	\$2.2212	\$10.4622	\$0.0000	\$8.8975	\$0.0000	\$0.0000	\$8.3294	\$10.9959	\$9.9953	\$3.3318	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$66.4108	\$12.1362	\$2.7765
	2031	\$2.7863	\$0.2345	\$1.1046		\$1.0431			\$0.8794	\$1.1610	\$1.0553	\$0.3518					\$7.0118	\$1.2814	\$0.2931
	2032	\$2.8142	\$0.2369	\$1.1157		\$1.0744			\$0.8882	\$1.1726	\$1.0659	\$0.3553					\$7.0819	\$1.2942	\$0.2961
	2033	\$2.8423	\$0.2392	\$1.1268		\$1.1066			\$0.8971	\$1.1843	\$1.0765	\$0.3588					\$7.1527	\$1.3071	\$0.2990
_	2034	\$2.8708	\$0.2416	\$1.1381		\$1.1398			\$0.9061	\$1.1961	\$1.0873	\$0.3624					\$7.2243	\$1.3202	\$0.3020
erm	2035	\$2.8995	\$0.2440	\$1.1495		\$1.1740			\$0.9151	\$1.2081	\$1.0982	\$0.3661					\$7.2965	\$1.3334	\$0.3050
g-T	2036	\$2.9285	\$0.2465	\$1.1610		\$1.2092			\$0.9243	\$1.2202	\$1.1092	\$0.3697					\$7.3695	\$1.3467	\$0.3081
Lon	2037	\$2.9577	\$0.2489	\$1.1726		\$1.2455			\$0.9335	\$1.2324	\$1.1202	\$0.3734					\$7.4432	\$1.3602	\$0.3112
_	2038	\$2.9873	\$0.2514	\$1.1843		\$1.2828			\$0.9429	\$1.2447	\$1.1314	\$0.3771					\$7.5176	\$1.3738	\$0.3143
	2039	\$3.0172	\$0.2539	\$1.1961		\$1.3213			\$0.9523	\$1.2572	\$1.1428	\$0.3809					\$7.5928	\$1.3875	\$0.3174
	2040	\$3.0474	\$0.2565	\$1.2081		\$1.3610			\$0.9618	\$1.2697	\$1.1542	\$0.3847					\$7.6687	\$1.4014	\$0.3206
	Total	\$29.1511	\$2.4536	\$11.5568	\$0.0000	\$11.9575	\$0.000	\$0.0000	\$9.2008	\$12.1463	\$11. <mark>041</mark> 0	\$3.6803	\$0.000	\$0.000	\$0.0000	\$0.0000	\$73.358 <u>9</u>	\$13.4059	\$3.0669
Gr	and Total	\$69.9837	\$5.9051	\$25.9190	\$3.5000	\$25.0595	\$0.0000	\$0.0000	\$22.1442	\$29.2432	\$26.5731	\$8.8577	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$175.9881	\$33.0420	\$7.3814

Minnesota Department of Transportation

- NHPP Interstate NHS Pavement (IM) MnDOT approved subtarget for ATP 4 of \$2.6 million/ year. MnDOT has estimated that they will complete two pavement rehabs in the Fargo-Moorhead metropolitan area between 2015-2040. This would estimate to be \$400,000/year.
- NHPP NHS Bridge Program (HBP) MnDOT approved subtarget for ATP 4 of \$2.1 million/year. MnDOT has estimated that the Fargo-Moorhead metropolitan area will receive \$50,000 per year. This is based on the conditions of the bridges in the Fargo-Moorhead metropolitan area being above average for the district.
- NHPP Non-Interstate National Highway System (NHS) for Pavements & Performance – MnDOT approved subtarget for ATP 4 of \$12.5 million/year. MnDOT has estimated that the Fargo-Moorhead metropolitan area will receive \$800,000/year.
- Surface Transportation Program (STP) Statewide/District Risk Management (DSR) – MnDOT approved subtarget for ATP 4, then distributed by % of the population and/lane miles, etc. in Fargo-Moorhead metropolitan area compared to population of ATP 4. In cooperation with MnDOT District 4 it was determined that \$1,339,500/year would be available to the Fargo-Moorhead metropolitan area. However, of this amount, approximately \$1.038 million is set aside for the following categories of improvements (City Roads, County Roads, Transit Capital, HSIP and TAP).
- **Traveler Safety (other than HSIP)** Investments in project elements that add or improve features with proven safety benefits \$24,400/year.

- Roadside Infrastructure Includes repair, replacement or rehabilitation of existing non-pavement, non-bridge infrastructure elements including culverts, other drainage structures, guardrails, fencing, overhead structures, other structures, rest areas, signs, lighting, signals, other traffic control devices, retaining walls and concrete barriers -\$249,300/year.
- **Bicycle Infrastructure** Historically used to add bicycle infrastructure to new bridges \$40,000/year available only for the next 10 years.
- Accessible Pedestrian Infrastructure \$118,400/year for the next 10 years and will be reduced to about 25% of this amount after 10 years.
- Regional and Community Improvement Priorities (RCIP) ATP 4 is estimated to receive \$1.93 million/year. Based on lane miles and population, the Fargo-Moorhead metropolitan area is estimated to receive \$300,000/year for the next 10 years. This will not be available after 10 years.
- Project Support MnDOT has estimated the amount of funds to deliver projects and programs including right of way, consultant services, supplemental agreements and construction incentives. MnDOT has estimated \$440,400/year for NHS projects, \$147,000/year for Non-NHS Pavement projects, and \$20,000/year for Non-NHS Bridge projects for project support in the Fargo-Moorhead metropolitan area.

- Highway Safety Improvement Program (HSIP) MnDOT approved subtarget for ATP 4 of \$900,000/year. MnDOT has estimated that the Fargo-Moorhead metropolitan area will receive \$30,000/year.
- State Funds/Gas Tax MnDOT approved subtarget for ATP 4, then distributed by % of the population in Fargo-Moorhead metropolitan area compared to population of ATP 4. The Fargo-Moorhead Area has approximately 16% of the total ATP 4 population. \$14.0 million/year * 16% = \$2.24 million/year. However, these funds are to provide state match on Federal revenues and should not be used for specific investments.
- State Funds/Other (CIMS/TED) Assuming \$15 million/year will be available to Greater MN ATPs and ATP 4 is estimated to receive \$1.8 million/year, the Fargo-Moorhead metropolitan area has approximately 16% of ATP 4 population and is estimated to receive \$288,000/year. MnDOT has advised that these funds will not be available after 10 years.

MINNESOTA DEPARTMENT OF TRANSPORTATION REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

									Revenue							
							Fede	eral							State	
	Year	NHPP - Bridges	NHPP - Interstate NHS Pavement	NHPP-Non-Interstate NHS	STP - Statewide (allocated to District Sub Categories)	HSIP/Safety	Project Support	Non-NHS Pavement	Non-NHS Bridge	Traveler Safety (Other than HSIP)	Infrastructure - Roadside	Bicycle Infrastructure	Accessible Pedestrian Infrastructure	State Funds (Match on Federal Projects)	Regional & Community Improvement Priorities (RCIP)	State Funds Other (CIMS/TED)
	2010													\$0.9217		
a	2011													\$0.9857		
tori	2012													\$0.2710		
Hist	2013													ŞU. 7930		
	Annual Avg.	\$0.0500	\$0.5500	\$1,1250	\$0.0000	\$0.0300	\$0,4404	\$0.7350	\$0.0200	\$0.0244	\$0,2493	\$0.0400	\$0,1184	\$2,2400	\$0,3000	\$0.3600
	2015	\$0.0510	\$0.5605	\$1 1464	\$0,0000	\$0,0306	\$0.4488	\$0.7490	\$0.0204	\$0.0251	\$0.2568	\$0.0412	\$0.1220	\$2 3072	\$0.3090	\$0.3708
_	2015	\$0.0519	\$0.5711	\$1.1682	\$0.0000	\$0.0312	\$0.4573	\$0.7632	\$0.0204	\$0.0251	\$0.2645	\$0.0412	\$0.1256	\$2.3764	\$0.3183	\$0.3819
E L	2017	\$0.0529	\$0.5819	\$1.1904	\$0.0000	\$0.0317	\$0.4660	\$0.7777	\$0.0212	\$0.0267	\$0.2724	\$0.0437	\$0.1294	\$2.4477	\$0.3278	\$0.3934
t-T	2018	\$0.0539	\$0.5930	\$1,2130	\$0.0000	\$0.0323	\$0.4748	\$0.7925	\$0.0216	\$0.0275	\$0.2806	\$0.0450	\$0.1333	\$2,5211	\$0.3377	\$0.4052
hor	2019	\$0.0549	\$0.6043	\$1,2360	\$0.0000	\$0.0330	\$0.4839	\$0.8075	\$0.0220	\$0.0283	\$0,2890	\$0.0464	\$0.1373	\$2,5968	\$0.3478	\$0.4173
s	2020	\$0.0560	\$0.6158	\$1.2595	\$0.0000	\$0.0336	\$0.4931	\$0.8229	\$0.0224	\$0.0291	\$0.2977	\$0.0478	\$0.1414	\$2.6747	\$0.3582	\$0.4299
	Total	\$0.3206	\$3.5265	\$7.2134	\$0.0000	\$0.1924	\$2.8238	\$4.7127	\$0.1282	\$0.1626	\$1.6610	\$0.2665	\$0.7888	\$14.9239	\$1.9987	\$2.3985
	2021	\$0.0570	\$0.6275	\$1.2834	\$0.0000	\$0.0342	\$0.5024	\$0.8385	\$0.0228	\$0.0300	\$0.3066	\$0.0492	\$0.1456	\$2.7549	\$0.3690	\$0.4428
	2022	\$0.0581	\$0.6394	\$1.3078	\$0.0000	\$0.0349	\$0.5120	\$0.8544	\$0.0233	\$0.0309	\$0.3158	\$0.0507	\$0.1500	\$2.8376	\$0.3800	\$0.4428
	2023	\$0.0592	\$0.6515	\$1.3327	\$0.0000	\$0.0355	\$0.5217	\$0.8707	\$0.0237	\$0.0318	\$0.3253	\$0.0522	\$0.1545	\$2.9227	\$0.3914	\$0.4560
-	2024	\$0.0604	\$0.6639	\$1.3580	\$0.0000	\$0.0362	\$0.5316	\$0.8872	\$0.0241	\$0.0328	\$0.3350	\$0.0538	\$0.1591	\$3.0104	\$0.4032	\$0.4560
ern	2025	\$0.0615	\$0.6765	\$1.3838	\$0.0000	\$0.0369	\$0.5417	\$0.9041	\$0.0246	\$0.0338	\$0.3451	\$0.0554	\$0.1639	\$3.1007	\$0.0000	\$0.0000
L-bi	2026	\$0.0627	\$0.6894	\$1.4101	\$0.0000	\$0.0376	\$0.5520	\$0.9213	\$0.0251	\$0.0348	\$0.3554	\$0.0570	\$0.1688	\$3.1937	\$0.0000	\$0.0000
Σ	2027	\$0.0639	\$0.7025	\$1.4369	\$0.0000	\$0.0383	\$0.5625	\$0.9388	\$0.0255	\$0.0358	\$0.3661	\$0.0587	\$0.1739	\$3.2895	\$0.0000	\$0.0000
	2028	\$0.0651	\$0.7158	\$1.4642	\$0.0000	\$0.0390	\$0.5732	\$0.9566	\$0.0260	\$0.0369	\$0.3771	\$0.0605	\$0.1791	\$3.3882	\$0.0000	\$0.0000
	2029	\$0.0663	\$0.7294	\$1.4920	\$0.0000	\$0.0398	\$0.5841	\$0.9748 \$0.0022	\$0.0265	\$0.0380	\$0.3884	\$0.0623	\$0.1845	\$3.4898	\$0.0000	\$0.0000
	Total	\$0.0076 \$0.6217	\$6.8391	\$1.5203 \$13.9891	\$0.0000 \$0.0000	\$0.0405 \$0.3730	\$0.5952 \$5.4763	\$0.9933 \$9.1396	\$0.0270 \$0.2487	\$0.0392 \$0.3440	\$0.4001 \$3.5149	\$0.0642	\$0.1900 \$1.6693	\$31,5820	\$0.0000 \$1.5436	\$0.0000 \$1.7976
	2031	\$0.05217	\$0.7574	\$1 5/197	\$0.0000	\$0.0413	\$0.6065	\$1 0122	\$0.0275	\$0.0/102	\$0.4121	\$0.0661	\$0 1957	\$3 7024	\$0,0000	\$0.0000
	2032	\$0.0702	\$0.7718	\$1.5787	\$0.0000	\$0.0421	\$0.6180	\$1.0314	\$0.0281	\$0.0415	\$0.4244	\$0.0681	\$0.2016	\$3,8135	\$0.0000	\$0.0000
	2033	\$0.0715	\$0.7865	\$1.6087	\$0.0000	\$0.0429	\$0.6297	\$1.0510	\$0.0286	\$0.0428	\$0.4371	\$0.0701	\$0.2076	\$3,9279	\$0.0000	\$0.0000
	2034	\$0.0729	\$0,8014	\$1.6392	\$0,0000	\$0.0437	\$0.6417	\$1.0710	\$0.0291	\$0.0441	\$0,4503	\$0.0722	\$0.2138	\$4.0457	\$0,0000	\$0.0000
E	2035	\$0.0742	\$0.8166	\$1.6704	\$0.0000	\$0.0445	\$0.6539	\$1.0913	\$0.0297	\$0.0454	\$0.4638	\$0.0744	\$0.2203	\$4.1671	\$0.0000	\$0.0000
g-Te	2036	\$0.0756	\$0.8321	\$1.7021	\$0.0000	\$0.0454	\$0.6663	\$1.1120	\$0.0303	\$0.0468	\$0.4777	\$0.0766	\$0.2269	\$4.2921	\$0.0000	\$0.0000
3uo-	2037	\$0.0771	\$0.8479	\$1.7344	\$0.0000	\$0.0463	\$0.6790	\$1.1332	\$0.0308	\$0.0482	\$0.4920	\$0.0789	\$0.2337	\$4.4208	\$0.0000	\$0.0000
-	2038	\$0.0786	\$0.8641	\$1.7674	\$0.0000	\$0.0471	\$0.6919	\$1.1547	\$0.0314	\$0.0496	\$0.5068	\$0.0813	\$0.2407	\$4.5535	\$0.0000	\$0.0000
	2039	\$0.0800	\$0.8805	\$1.8010	\$0.0000	\$0.0480	\$0.7050	\$1.1766	\$0.0320	\$0.0511	\$0.5220	\$0.0838	\$0.2479	\$4.6901	\$0.0000	\$0.0000
	2040	\$0.0816	\$0.8972	\$1.8352	\$0.0000	\$0.0489	\$0.7184	\$1.1990	\$0.0326	\$0.0526	\$0.5376	\$0.0863	\$0.2553	\$4.8308	\$0.0000	\$0.0000
	Total	\$0.7505	\$8.2555	\$16.8862	\$0.0000	\$0.4503	\$6.6104	\$11.0323	\$0.3002	\$0.4623	\$4.7237	\$0.7579	\$2.2434	\$42.4436	\$0.0000	\$0.0000
	Grand Total	\$1.6928	\$18.6211	\$38.0887	\$0.0000	\$1.0157	\$14.9104	\$24.8846	\$0.6771	\$0.9689	\$9.8996	\$1.5884	\$4.7016	\$88.9496	\$3.5423	\$4.1961

						Expenses				
			0 & M							
	Year				State Funded	CIMS/TED	NHPP - Bridges	NHPP - Interstate Pavement	SHN-ddHN	STP - Statewide
	2010									
a	2011									
oric	2012									
isto	2013									
т	2014									
	Annual Avg.									
	2015				\$1.5570	\$3.4020			\$2.2000	\$7.1050
F	2016								\$0.0000	
er	2017						\$0.3570		\$4.9900	
ц-Т	2018									
ho	2019									
0,	2020									
	Total	\$21.4759	\$0.0000	\$0.0000	\$1.5570	\$3.4020	\$0.3570	\$0.0000	\$7.1900	\$7.1050
	2021									
	2022									
	2023									
_	2024									
r m	2025									
μ-Τe	2026									
Mic	2027									
_	2028									
	2029									
	2030									
	Total	\$48.0558	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000
	2031									
	2032									
	2033									
-	2034									
m	2035									
5-Te	2036									
ĵuo.	2037									
-	2038									
	2039									
	2040									
	Total	\$48.7210	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$0.0000
	Grand Total	\$118.2526	\$0.0000	\$0.0000	\$1.5570	\$3.4020	\$0.3570	\$0.0000	\$7.1900	\$7.1050

Clay County, MN (MPA Portion)

- Levy Dollars
 - County currently programs \$1,100,000/year for general O&M (includes materials and labor for graveling, patching, shoulder work, etc.).
 - County currently programs \$1,000,000/year for culvert and bridge replacement.
 - County currently programs \$350,000/year to use as a federal aid match or backfill state aid dollars.
- State-Aid County currently receives \$2,650,000/year in stateaid gas tax to be used on state-aid designated roadways and bridges.
- Surface Transportation Program (STP) County's current annual sub-target is \$291,000/year in Federal STP Funds.

Estimates are based on the percentage of facilities within the MPA.

				Revenue						Expenses			
		Federal	State		Local			0 & M		Committed	TIP Projects	(Federal, Sta	te & Local)
	Year	STP - Rural	State Aid (CSAH)	Levy (O&M)	Levy (Federal aid match)	Levy (Culvert & Bridge Replacement)				Locally Funded	STP-Rural	ТАР	
	2010												
al	2011												
oric	2012												
listo	2013												
-	2014		4.5	4	4	4							
	Annual Avg.	\$0.2910	\$2.6500	\$1.1000	Ş0.3500	\$1.0000							
	2015	\$0.2954	\$2.6898	\$1.1440	\$0.3640	\$1.0400				\$3.7250			
E	2016	\$0.2998	\$2.7301	\$1.1898	\$0.3786	\$1.0816							
Ter	2017	\$0.3043	\$2.7710	\$1.2374	\$0.3937	\$1.1249							
Ľ-tu	2018	\$0.3089	\$2.8126	\$1.2868	\$0.4095	\$1.1699							
Shc	2019	\$0.3135	\$2.8548	\$1.3383	\$0.4258	\$1.2167							
	2020	\$0.3182	\$2.8976	\$1.3919	\$0.4429	\$1.2653	40.00			4.5 - 5 - 5	40.00	40.00	1
	Total	\$1.8400	\$16.7559	\$7.5881	\$2.4144	\$6.8983	\$24.3441	\$0.0000	\$0.0000	\$3.7250	\$0.0000	\$0.0000	\$0.0000

CLAY COUNTY REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

				Revenue						Expenses			
		Federal	State		Local			0 & M		Committed	TIP Projects	(Federal, Stat	te & Local)
	Year	STP - Rural	State Aid (CSAH)	Levy (O&M)	Levy (Federal aid match)	Levy (Culvert & Bridge Replacement)				Locally Funded	STP-Rural	TAP	
	2021	\$0.3230	\$2.9411	\$1.4475	\$0.4606	\$1.3159							
	2022	\$0.3278	\$2.9852	\$1.5054	\$0.4790	\$1.3686							
	2023	\$0.3327	\$3.0300	\$1.5656	\$0.4982	\$1.4233							
c	2024	\$0.3377	\$3.0754	\$1.6283	\$0.5181	\$1.4802							
ern	2025	\$0.3428	\$3.1216	\$1.6934	\$0.5388	\$1.5395							
id-T	2026	\$0.3479	\$3.1684	\$1.7611	\$0.5604	\$1.6010							
Ξ	2027	\$0.3531	\$3.2159	\$1.8316	\$0.5828	\$1.6651							
	2028	\$0.3584	\$3.2642	\$1.9048	\$0.6061	\$1.7317							
	2029	\$0.3638	\$3.3131	\$1.9810	\$0.6303	\$1.8009							
	2030	\$0.3693	\$3.3628	\$2.0603	\$0.6555	\$1.8730	<u> </u>	ć0.0000	ć0.0000	¢0.0000	ćo 0000	ć0.0000	ć0.0000
	Iotal	\$3.4566	\$31.4///	\$17.3791	\$5.5297	\$15.7992	\$48.8568	Ş0.0000	Ş0.0000	Ş0.0000	Ş0.0000	Ş0.0000	Ş0.0000
	2031	\$0.3748	\$3.4133	\$2.1427 \$2.2284	\$0.6818	\$1.9479 \$2.0259							
	2032	\$0.3804	\$3.4645	\$2.2284 \$2.2175	\$0.7090	\$2.0258 \$2.1000							
	2033	\$0.3861 \$0.2010	\$3.5164 \$3.5104	\$2.31/5 \$2.4100	\$U./3/4	\$2.1068							
Ę	2034	\$0.3919 \$0.2070	25.0092 \$2,6227	\$2.41UZ	\$0.709 \$0.7076	۶۲.1211 دی کور							
Ter	2035	\$0.5976 \$0.4020	\$3.0227 \$2.6770	\$2.5000 \$2.6060	\$0.7970 \$0.9205	\$2.2760							
-guo	2030	30.4030 \$0.4030	33.0770 \$2,7272	ېد.0009 د 77112	\$0.0295 \$0.8677	\$2.3099 \$2.4647							
P	2037	20.4098 \$0.4160	30./322 \$2 7007	\$2.7112	30.0027 \$0 2072	32.4047 \$3 5633							
	2030	\$0.4100	\$3.7662 \$3.8450	\$2.0190	\$0.0372	\$2,5035							
	2035	\$0.4286	\$3,9027	\$3 0497	\$0.9330	\$2 7725							
	Total	\$4.0115	\$36.5311	\$25.7254	\$8.1853	\$23.3867	\$62,2565	\$0.0000	\$0.0000	\$0.000 0	\$0.0000	\$0.0000	\$0.0000
	Grand Total	\$9.3081	\$84.7647	\$50.6926	\$16.1295	\$46.0842	\$73.2009	\$0.0000	\$0.0000	\$3.7250	\$0.0000	\$0.0000	\$0.0000

City of Moorhead, MN

- Surface Transportation Program (STP) Moorhead's current annual sub-target is \$605,000/year in Federal STP Funds.
- Transportation Alternatives Program (TAP) MnDOT approved subtarget for ATP 4, then distributed by % of the population in Fargo-Moorhead metropolitan area compared to population of ATP 4. The Fargo-Moorhead metropolitan area has approximately 16% of the total ATP 4 population. \$0.6 million/year * 16% = \$96,000/year.
- State-Aid The City of Moorhead currently receives \$1,700,000/year in state-aid gas tax to be used on state-aid designated roadways and bridges.
- Assessments The City of Moorhead developed a Revenue spreadsheet as part of the development of the 2012-2016 CIP. Five years of data for 2012-2016 were averaged to determine the average annual assessment for transportation projects.
- **Property Tax** The City of Moorhead developed a Revenue spreadsheet as part of the development of the 2012-2016 CIP. Five years of data for 2012-2016 were averaged to determine the average annual property tax utilized for transportation projects.

				Revenu	е			Expen	ses	
		Fede	eral	State	Lo	cal	0 & M	Committ TIP (Fe	ed Proje deral, St	cts from ate &
١	⁄ear	STP-Urban	TAP	State-Aid (MSAH)	Assessments	Property Taxes		Locally Funded	STP-Urban	TAP
	2010									
al	2011									
oric	2012									
istc	2013									
Т	2014									
	Annual	\$0.6050	\$0.0960	\$1.7000	\$2.2772	\$5.0050				
	2015	\$0.6141	\$0.0974	\$1.7510	\$2.3683	\$5.2052		\$10.1830		
۶	2016	\$0.6233	\$0.0989	\$1.8035	\$2.4630	\$5.4134		\$4.6320		
err	2017	\$0.6326	\$0.1004	\$1.8576	\$2.5615	\$5.6299				
Ę	2018	\$0.6421	\$0.1019	\$1.9134	\$2.6640	\$5.8551				
Sho	2019	\$0.6518	\$0.1034	\$1.9708	\$2.7706	\$6.0893				
•,	2020	\$0.6615	\$0.1050	\$2.0299	\$2.8814	\$6.3329				
	Total	\$3.8254	\$0.6070	\$11.3262	\$15.7088	\$34.5260	\$61.5609	\$14.8150	\$0.0000	\$0.0000

CITY OF MOORHEAD REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

				Revenu	e			Expen	ses	
		Fede	eral	State	Lo	cal	0 & M	Committ TIP (Fe	ed Projeo deral, St	cts from ate &
Y	′ear	STP-Urban	TAP	State-Aid (MSAH)	Assessments	Property Taxes		Locally Funded	STP-Urban	TAP
	2021	\$0.6715	\$0.1065	\$2.0908	\$2.9966	\$6.5862				
	2022	\$0.6815	\$0.1081	\$2.1535	\$3.1165	\$6.8497				
	2023	\$0.6918	\$0.1098	\$2.2181	\$3.2412	\$7.1237				
_	2024	\$0.7021	\$0.1114	\$2.2847	\$3.3708	\$7.4086				
erm	2025	\$0.7127	\$0.1131	\$2.3532	\$3.5056	\$7.7050				
d-T	2026	\$0.7233	\$0.1148	\$2.4238	\$3.6459	\$8.0132				
Mi	2027	\$0.7342	\$0.1165	\$2.4965	\$3.7917	\$8.3337				
	2028	\$0.7452	\$0.1182	\$2.5714	\$3.9434	\$8.6670				
	2029	\$0.7564	\$0.1200	\$2.6485	\$4.1011	\$9.0137				
	2030	\$0.7677	\$0.1218	\$2.7280	\$4.2652	\$9.3743				
	Total	\$7.1864	\$1.1403	\$23.9685	\$35.9780	\$79.0751	\$139.0216	\$0.0000	\$0.0000	\$0.0000
	2031	\$0.7793	\$0.1236	\$2.8098	\$4.4358	\$9.7492				
	2032	\$0.7909	\$0.1255	\$2.8941	\$4.6132	\$10.1392				
	2033	\$0.8028	\$0.1274	\$2.9810	\$4.7977	\$10.5448				
٦	2034	\$0.8148	\$0.1293	\$3.0704	\$4.9896	\$10.9666				
Terr	2035	\$0.8271	\$0.1312	\$3.1625	\$5.1892	\$11.4052				
l-gr	2036	\$0.8395	\$0.1332	\$3.2574	\$5.3968	\$11.8614				
Lor	2037	\$0.8521	\$0.1352	\$3.3551	\$5.6127	\$12.3359				
	2038	\$0.8648	\$0.1372	\$3.4557	\$5.8372	\$12.8293				
	2039	\$0.8778	\$0.1393	\$3.5594	\$6.0706	\$13.3425				
	2040	\$0.8910	\$0.1414	\$3.6662	\$6.3135	\$13.8762				
	Total	\$8.3401	\$1.3234	\$32.2117	\$53.2562	\$117.0504	\$202.5183	\$0.0000	\$0.0000	\$0.0000
Gran	d Total	\$19.3519	\$3.0707	\$67.5064	\$104.9430	\$230.6515	\$403.1008	\$14.8150	\$0.0000	\$0.0000

City of Dilworth, MN

- Surface Transportation Program (STP) Dilworth is currently under the population of 5,000 and is not a direct recipient of Federal Aid.
- Transportation Alternatives Program (TAP) Dilworth is currently under the population of 5,000 and is not a direct recipient of Federal Aid. However, in the past Dilworth has received Federal-Aid for TAP eligible projects under the sponsorship of Clay County. We will assume that the City of Dilworth receives \$200,000 for a project every 10 years with equals to \$20,000/year.
- **State-Aid** Dilworth is currently under the population of 5,000 and is not a recipient of funds for state-aid roadways.
- **Property Taxes and State LGA Funds** Dilworth currently spends approximately \$27,000 a year on street repair and maintenance which is covered by property taxes and state LGA funds.
- Special Assessments On new construction and major reconstruction projects, the City has the ability to set up a special assessment district and special assess property owners within the district for up to 50% of the cost. The chart identifies this funding amount as "Varies" as it is a source of funds that can be used, but doesn't have a yearly programmed amount.

• **Bonds** - For large street improvement projects, the City also sometimes sells bonds for financing and asses according to policy. Again, the funding chart identifies this funding amount as "Varies" as it is a source of funds that can be used, but doesn't have a yearly programmed amount.

					Revenu	e				Expe	nses	
			Federal		State		Local		0 & M	Committ TIP (Fe	ed Proje ederal, St Local)	cts from ate &
	Year	STP - Urban (County Sponsored)	TAP (County Sponsored)		State-Aid (MSAH)	Assessments	Property Taxes/State Aid for Street Repair & Maintenance	Bonds		Locally Funded	ТАР	
	2010											
a	2011											
oric	2012											
listo	2013											
т	2014											
	Annual Avg.	N/A	\$0.0200		N/A	Varies	\$0.0270	Varies				
	2015		\$0.1200	\$0.0000			\$0.1620			\$5.5630		
۶	2016		\$0.1218				\$0.1685					
er	2017		\$0.1236				\$0.1752					
Ę	2018		\$0.1255				\$0.1822					
Sho	2019		\$0.1274				\$0.1895					
Ψ,	2020		\$0.1293				\$0.1971					
	Total	\$0.0000	\$0.7475	\$0.0000	\$0.0000	\$0.0000	\$1.0745	\$0.0000	\$1.0745	\$5.5630	\$0.0000	\$0.0000

CITY OF DILWORTH REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

					Revenu	e				Expe	nses	
			Federal		State		Local		0 & M	Committ TIP (Fe	ed Proje ederal, St Local)	cts from ate &
	Year	STP - Urban (County Sponsored)	TAP (County Sponsored)		State-Aid (MSAH)	Assessments	Property Taxes/State Aid for Street Repair & Maintenance	Bonds		Locally Funded	ТАР	
	2021		\$0.2000				\$0.2700					
	2022											
	2023											
_	2024											
erm	2025											
Ĕ	2026											
Μi	2027											
	2028											
	2029											
	2030											
	Total	\$0.0000	\$0.2000	\$0.0000	\$0.0000	\$0.0000	\$0.2700	\$0.0000	\$0.2700	\$0.0000	\$0.0000	\$0.0000
	2031		\$0.2000				\$0.2700					
	2032											
	2033											
_	2034											
eru	2035											
<u>г</u> -8	2036											
Lon	2037											
	2038											
	2039											
[2040											
	Total	\$0.0000	\$0.2000	\$0.0000	\$0.0000	\$0.0000	\$0.2700	\$0.0000	\$0.2700	\$0.0000	\$0.0000	\$0.0000
G	rand Total	\$0.0000	\$1.1475	\$0.0000	\$0.0000	\$0.0000	\$1.6145	\$0.0000	\$1.6145	\$5.5630	\$0.0000	\$0.0000

Moorhead Transit

- FTA 5307 Based on guidance from MnDOT, the actual FFY 2013 apportionment was \$707,000 and should be used as the baseline for the assumption. These forecasts were grown with a 2% annual inflation factor.
- **FTA 5310** Based on guidance from MnDOT, since this program is new, the previously programmed funds for FTA 5317 should be used as a baseline. The 2013 Federal share was \$21,600. The forecasts were grown with a 2% inflation factor.
- FTA 5339 Statewide allocation is \$1.6 million/year. We assumed that Moorhead Transit would receive one \$350,000 bus every four years, which equates to \$87,500/year. MnDOT concurred with this assumption noting that it may be a bit on the optimistic side of reality. The forecasts were grown with a 2% inflation factor.
- Surface Transportation Program (STP) Assume one \$85,000 paratransit bus every four years, which equates to \$21,250/year. The forecasts were grown with a 2% inflation factor.
- State-Aid The state-aid for transit comes from two sources; the General Fund and the Motor Vehicle Sales Tax (MVST). State-aid funding projections are based on 2013 funding levels of \$571,000. These forecasts were grown with a 2% annual inflation factor.

- **Greater Minnesota Transit Fund** The greater MN Transit Fund comes from the general fund and dedicated funds from revenues from the Motor Vehicle Sales Tax and from sales tax on leased motor vehicles. These funding projections are based on the 2013 funding levels of \$350,000. These forecasts were grown with a 2% annual inflation factor.
- Moorhead and Dilworth System Contributions Based on TDP projections. The system contributions in the TDP are based on the usage and service levels of Moorhead and Dilworth. Moorhead's contributions come from property tax. The forecasts were grown with a 2% annual inflation factor.
- Farebox Revenue These revenues are based on projections included in the Moorhead Transit TDP. The projections are developed based on historical revenues; future ridership projected growth, and anticipated fare increases. The forecasts were grown with a 2% annual inflation factor.

MOORHEAD TRANSIT REVENUE ASSUMPTIONS (MILLIONS OF DOLLARS)

								Revenue									Expenses			
				Federal				Stat	e			Local			Op	erating & Ca	pital (Federal, S	tate & Local)		
	Year	FTA 5307	FTA 5310	FTA 5339	STP		State-Aid	Greater MN Transit Fund			Bonding/Other Local	Local Funds*	20% Capital Cost	FTA 5307	FTA 5310	STP	Operation	Capital Fixed (Bus)	Capital Bus And Paratransit	FTA 5339
	2010						\$0.5870	\$0.3180												
8	2011						\$0.5980	\$0.3300				4								
ö	2012	40 7070	60.0046				\$0.6100	\$0.3370				\$1.4997								
Hist	2013	\$0.7070	\$0.0216				\$0.6220	\$0.3440				\$1.5019								
	Annual Avg.	\$0.7070	\$0.0216	Ś0 0875	\$0.0213		\$0.0350	\$0.3510				\$1.8777		-						
	2015	\$0.7070	\$0.0210	\$0.0075 \$0.0975	\$0.0213		¢0.6480	¢0.2650				\$2,0042					¢2 5224		¢0 2491	
	2013	\$0.7211	\$0.0220	\$0.0875	\$0.0213		\$0.0480	\$0.3030				\$2.0043					\$2,3324		\$0.2481 \$0.8577	
E	2010	\$0.7503	\$0.0223	\$0.0875	\$0.0213		\$0.0010	\$0.3720				\$2.1039					\$2,7087		\$0.8377 \$1.1755	
Ę	2017	\$0.7503	\$0.0234	\$0.0875	\$0.0213		\$0.6740	\$0.3800				\$2,2555					\$2.0171		\$1.1755	
Jor 1	2019	\$0.7806	\$0.0245	\$0.0875	\$0.0213		\$0.7010	\$0.3950				\$2,4563					\$3.0470		\$1.2000	
Ś	2015	\$0,7860	\$0.0255	\$0.0873	\$0.0213		\$0,7010	\$0.4030				\$2,5609					\$3 1688		\$1.9409	
	Total	\$4.5490	\$0.1438	\$0.5268	\$0.1279	\$0.0000	\$4.0860	\$2.3020	\$0.0000	\$0.0000		\$13.8019	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$17.2039	\$0.0000	\$6.9604	\$0.0000
	2021	\$0.8121	\$0.0273	\$0.0910	\$0.0221		\$0.7290	\$0.4110				\$2,6698					\$3,2956		\$0.4846	
İ	2022	\$0.8284	\$0.0284	\$0.0929	\$0.0226		\$0,7440	\$0.4190				\$3,1280					\$3.7725		\$0,7732	
İ	2023	\$0.8449	\$0.0296	\$0.0947	\$0.0230		\$0.7590	\$0.4270				\$3.4148					\$4.0786		\$0.3580	
	2024	\$0.8618	\$0.0308	\$0.0966	\$0.0235		\$0.7740	\$0.4360				\$3.5577					\$4.2418		\$0.2606	
E	2025	\$0.8791	\$0.0320	\$0.0985	\$0.0239		\$0.7900	\$0.4450				\$2.6572					\$3.2592		\$0.8837	
۳ <u>۲</u>	2026	\$0.8966	\$0.0333	\$0.1005	\$0.0244		\$0.8050	\$0.4540				\$2.7104					\$3.3896		\$0.9190	
ž	2027	\$0.9146	\$0.0346	\$0.1025	\$0.0249		\$0.8210	\$0.4630				\$2.7646					\$3.5252		\$0.9558	
	2028	\$0.9329	\$0.0360	\$0.1046	\$0.0254		\$0.8380	\$0.4720				\$2.8199					\$3.6662		\$0.9940	
Í	2029	\$0.9515	\$0.0374	\$0.1067	\$0.0259		\$0.8550	\$0.4810				\$2.8763					\$3.8128		\$1.0338	
	2030	\$0.9706	\$0.0389	\$0.1088	\$0.0264		\$0.8720	\$0.4910				\$2.9338					\$3.9654		\$1.0751	
	Total	\$8.8925	\$0.3283	\$0.9968	\$0.2421	\$0.0000	\$7.9870	\$4.4990	\$0.0000	\$0.0000		\$29.5324	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$37.0069	\$0.0000	\$7.7379	\$0.0000
	2031	\$0.9900	\$0.0405	\$0.1110	\$0.0270		\$0.8890	\$0.5010			\$0.2119	\$2.9925					\$4.1240		\$1.1181	
	2032	\$1.0098	\$0.0421	\$0.1132	\$0.0275		\$0.9070	\$0.5110			\$0.2119	\$3.0523					\$4.2889		\$1.1629	
	2033	\$1.0300	\$0.0438	\$0.1155	\$0.0280		\$0.9250	\$0.5210			\$0.2119	\$3.1134					\$4.4605		\$1.2094	
۶	2034	\$1.0506	\$0.0455	\$0.1178	\$0.0286		\$0.9440	\$0.5320			\$0.2119	\$3.1756					\$4.6389		\$1.2578	
Le I	2035	\$1.0716	\$0.0473	\$0.1201	\$0.0292		\$0.9630	\$0.5420			\$0.2119	\$3.2391					\$4.8245		\$1.3081	
-8L	2036	\$1.0930	\$0.0492	\$0.1225	\$0.0298		\$0.9820	\$0.5530			\$0.2119	\$3.3039					\$5.0174		\$1.3604	
Ē	2037	\$1.1149	\$0.0512	\$0.1250	\$0.0304		\$1.0000	\$0.5640			\$0.2119	\$3.3700					\$5.2181		\$1.4148	
	2038	\$1.1372	\$0.0533	\$0.1275	\$0.0310		\$1.0200	\$0.5760			\$0.2119	\$3.4374					\$5.4269		\$1.4/14	
	2039	\$1.1599	\$0.0554	\$0.1300	\$0.0316		\$1.0400	\$0.5870			\$0.2119	\$3.5061					\$5.6439		\$1.5303	
	2040	\$1.1831	\$0.0576	\$0.1326	\$0.0322	ć0.0000	\$1.0600	\$0.5990	ć0.0000	ć0.0000	\$0.2119	\$3.5763	ć0.0000	¢0.0000	ć0.0000	ć0.0000	\$5.8697	ć0.0000	\$1.5915	ć0.0000
	Iotai	\$10.8399	ŞU.4859	\$1.2151	\$0.2951	ŞU.UUUU	\$9.7300	\$5.4860	\$0.0000	\$0.0000	\$2.1190	532.7666	50.0000	\$0.0000	\$0.0000	\$0.0000	\$49.5129	\$0.0000	\$13.4246	\$0.0000
	Grand Total	\$24.2814	\$0.9579	\$2.7387	\$0.6651	\$0.0000	\$21.8030	\$21.8030	\$21.8030	\$21.8030	\$2.1190	\$76.1008	\$0.0000	\$0.0000	\$0.0000	\$0.0000	\$103.7236	\$0.0000	\$28.1229	\$0.0000

APPENDIX 11-2: SUPPLEMENTAL FUNDING SOURCES

Bond Issues

State and local governments are given authority to issue General Obligation and Revenue Bonds. General Obligation bonds are secured by full faith and credit of the issuer. Revenue bonds are payable from a specific source of revenue and do not pledge full faith of the issuer. These bonds must be approved by popular vote and can be used to fund major transportation projects or programs.

Tax Increment Financing (TIF)

TIF allows cities and towns to borrow against an area's future tax revenues in order to invest in immediate projects or encourage present development. When used properly and sparingly, TIF can promote enduring growth and stronger communities. When used improperly, however, TIF can waste taxpayer resources or channel money to politically favored special interests.

Special Districts

A "Special District" designation allows a local government to deliver specific public services within a defined boundary and assess a special tax to cover the cost of these services. Many special districts are created to serve a single purpose, such as wastewater treatment, but there are multi-function districts that provide a range of special services including transit, roadways, parking, streetscapes, and other services determined to be critical to the operation and success of the district.

Tolls

Traditional toll roads require users to pay a fee for using the roadway. A number of states and communities have turned to tolling to finance major highway projects. MAP-21 expands tolling authority if road capacity is increased, though there must be more free lanes than tolled lanes. Often a regional tolling authority is created to manage the construction of the highway corridor, to maintain the road once it is completed, and to collect and account for the toll revenues that are generated. Toll roads have been developed in 31 states, including Minnesota, but none in North Dakota and none in the Minnesota portion of the Fargo-Moorhead metropolitan area.

Shadow Tolling

Shadow tolling, or pass-through financing, is a way for developers of transportation infrastructure to fund a road and be reimbursed for the costs of construction for a highway project. A public or private entity would finance, construct, maintain, and operate the new or expanded road project and then be reimbursed by a public sector entity, in most cases a state agency, through periodic payments for each vehicle that uses the highway. Enabling legislation must be in place in North Dakota and Minnesota for this type of financing tool to be used. This type of financing has been effectively used by other states, including Texas and Kentucky.

Toll Credits

If a state spends toll revenue on public road projects, the state receives toll credit for the unused eligible federal share of the project. For instance, a \$100 million facility is funded using toll revenues, but was eligible for federal funding; the state receives an \$80 million in toll credits that may be used as soft match for other federal-aid projects.

Impact Fees

Transportation impact fees provide funding for construction of transportation facilities needed to support traffic generated by new development and to meet state law requirements. Transportation impact fees are charges assessed by local governments on new development projects and will help fund transportation improvements that will be needed as development occurs. Fees could be assesses on building permits and some conditional use permits. Developers pay impact fees on new developments to help mitigate traffic impacts and to provide part of the funding for the jurisdiction's transportation infrastructure. An impact fee schedule is typically based on trip generation, the cost of additional lane construction, trip length, percent of new trips added to the system, and existing lane capacity.

Design/Build Strategies

Design/build strategies have become a popular infrastructure delivery process allowing developers and governments to reduce costs and shorten the time needed to complete a major capital project. In a design/build process, the design of the project and the construction are performed by the same business entity. This can reduce the cost of the project and creates a significant incentive to incorporate design and construction efficiencies and advanced technologies into the project. These savings result in lower project costs which are shared with the community.

State Infrastructure Banks (SIBs)

State Infrastructure Banks are revolving infrastructure investment funds for surface transportation that are established and administered by the States. North Dakota and Minnesota are two of 35 States that have infrastructure banks. SIBs function as revolving funds that, much like banks, can offer loans and other credit products to public and private sponsors of Title 23 highway construction projects or Title 49 transit and rail capital projects.

Public-Private Partnerships

Public-private partnerships are contractual agreements between a public agency and a private entity that allow for greater private participation in the delivery of transportation projects. Typically, this participation involves the private sector taking on additional project risks, such as design, construction, finance, long-term operation, and traffic revenue.

Transportation Investment Generating Economic Recovery Discretionary Grant Program

The Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grant program, provides a unique opportunity for the UD Department of Transportation (USDOT) to invest in road, rail, transit and port projects that will have a significant impact on the nation, a metropolitan area or a region. The TIGER program enables USDOT to examine a broad array of projects on their merits. In each round of TIGER, USDOT receives many applications to build and repair critical pieces of our freight and passenger transportation networks. Applicants must detail the benefits their project would deliver for five long-term outcomes: safety, economic competitiveness, state of good repair, livability and environmental sustainability. USDOT also evaluates projects on their expected contributions to economic recovery, as well as their ability to facilitate innovation and new partnerships. The competitive structure of the TIGER program and its broad eligibility allow project sponsors at the State and local level to avoid narrow, formula-based categories, and fund multi-modal, multi-jurisdictional projects not eligible for funding through traditional DOT programs.

Nort	н Дакота Де	PARTMENT OF TR	ANSPORTAT	ION										MAP-21 GOAI	LS							COMPOSITE	COMPOSITE
Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	1. Maintenance 20	2	2. Efficier Performa 19	ncy & ance	3. C	ost Effec 14	tiveness	4. Land Use & Transportation 16	5. Safe & Secure Transportation 11	6. E	conomic 13	: Vitality	7.	Environn Resourc 7	nent & ces	SCORE 2020	SCORE 2040
-	-	-	-		-	-	2020/2040	2020	2040	Average	2020	2040	Average	2020/2040	2020/2040	2020	2040	Average	2020	2040	Average		
									ND	DOT Proj	ects												
1	I-94 Sheyenne St Interchange	Widen underpass from 2 to 4 lanes + Interchange Modification	-	-	Fargo/ NDDOT	\$10,000,000	0	2	10	6	4	10	7	0	8	6	8	7	9	9	9	323	585
7	I-29 to I-94 Ramp	I-29 SB to I-94 EB Flyover and Ramp Widening from 1 to 2 lanes	I-29 SB Off- Ramp to I-94 EB	I-94 EB Merge with I-29 NB Off-Ramp	NDDOT	\$5,000,000	0	4	6	5	2	8	5	0	8	4	8	6	8	8	8	300	474
8	I-94 Eastbound	Interstate Widening from 3 to 4 lanes	I-29 SB & I-29 NB Off-Ramp Merge	I-94 EB Off- Ramp to 25th St SB	NDDOT	\$1,800,000	0	4	4	4	6	8	7	0	8	4	8	6	8	8	8	356	436
11A	I-94 Eastbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	25th St S On- Ramp	S University Dr Off-Ramp	NDDOT	\$1,240,000	0	4	4	4	4	8	6	0	8	2	6	4	8	8	8	302	410
2	I-94 Veterans Blvd Interchange (Phase I)	Add 2nd NB left to WB On-Ramp and Widen WB On-Ramp to 2 lanes	-	-	West Fargo/ Fargo/ NDDOT	\$750,000	0	4	4	4	6	8	7	0	8	4	6	5	8	8	8	356	410
11B	I-94 Eastbound	Widening 25th Street Interchange Underpass from 3 to 4 lanes	25th St S Off- Ramp	25th St. to I-94 EB On-Ramp	NDDOT	\$300,000	0	4	4	2	4	8	6	0	8	2	6	4	8	8	8	302	410
16	I-29 Northbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	32nd Ave S On- Ramp	I-94 Off-Ramp	NDDOT	\$580,000	0	2	4	4	4	6	5	0	8	4	8	6	8	8	8	290	408
21	I-29 / 76th Ave S Interchange	New Interchange	-	-	Fargo / NDDOT	\$25,000,000	0	2	10	6	2	8	5	0	2	2	2	2	6	7	6.5	156	399
9	I-94 Westbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	25th St S On- Ramp	I-29 NB On- Ramp	NDDOT	\$1,260,000	0	2	4	3	6	8	7	0	8	3	5	4	8	8	8	305	397
15	I-94 Red River Bridge (1/2 ND)	Bridge Widening from 6 to 8 lanes	-	-	NDDOT	\$10,000,000	0	2	2	2	4	6	5	0	10	4	8	6	5	5	5	291	371
14	I-94 Westbound (1/2 ND)	Interstate Widening from 3 to 4 lanes	State Line	S University Dr Off-Ramp	NDDOT	\$940,000	0	2	3	2.5	8	8	8	0	8	4	6	5	5	5	5	325	370
20	I-29 Northbound	Interstate Widening from 2 to 3 lanes (Auxiliary Lanes	52nd Ave S On- Ramp	32nd Ave S On- Ramp	NDDOT	\$4,600,000	0	2	4	4	4	6	5	0	8	3	5	4	8	8	8	277	369
13	I-94 Eastbound (1/2 ND)	Interstate Widening from 3 to 4 lanes	S University Dr On-Ramp	State Line	NDDOT	\$960,000	0	2	3	2.5	6	8	7	0	9	2	5	2.5	5	5	5	282	368
49	S University Dr	Widen 4 to 6 lanes	13th Ave S	18th Ave S	NDDOT Fargo	\$6,000,000	5	2	2	2	2	2	2	0	10	2	2	2	8	8	8	358	358
12	I-94 Westbound	Interstate Widening from 3 to 4 lanes (Auxiliary Lanes)	S University Dr On-Ramp	25th St S On- Ramp	NDDOT	\$1,920,000	0	2	4	3	4	4	4	0	8	4	6	5	8	8	8	290	354
6	I-94 Westbound	Widening Underpass from 2 to 3 lanes	I-94 WB to I-29 SB Loop Off- Ramp	I-29 SB to I-94 WB On-Ramp Merge	NDDOT	\$740,000	0	2	2	2	6	6	6	0	8	4	6	5	8	8	8	318	344
19	I-29 Southbound	Interstate Widening from 2 to 3 lanes (Auxiliary Lanes	32nd Ave S Off- Ramp	52nd Ave S Off- Ramp	NDDOT	\$3,460,000	0	2	2	2	2	6	4	0	8	2	6	4	7	7	7	229	337
4	I-94 Westbound	Interstate Widening from 2 to 3 lanes	45th St S WB Off-Ramp	Veterans Blvd WB Off-Ramp	NDDOT	\$1,980,000	0	2	2	2	4	8	6	0	8	2	4	3	5	5	5	243	325

Nort	н Дакота Ді	EPARTMENT OF TRA	ANSPORTAT	ION		ſ							MAP-21 GOAI	_S							COMPOSITE	COMPOSITE
Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	1. Maintenance 20	2. Pe	Efficiency & erformance 19	3.	Cost Effecti 14	iveness	4. Land Use & Transportation 16	5. Safe & Secure Transportation 11	6. E	conomic 13	Vitality	7.1	Environm Resource 7	ent & es	SCORE 2020	SCORE 2040
				<u>.</u>			2020/2040	2020	2040 Averag	e 2020	0 2040	Average	2020/2040	2020/2040	2020	2040	Average	2020	2040	Average		
									NDDOT Pr	ojects												
5	I-94 Eastbound	Interstate Widening from	I-29 SB Off-	I-29 NB On- Ramp Merge to	NDDOT	\$900,000	0	2	2 2	4	6	5	0	8	2	2	2	8	8	8	264	292

									NDI	DOT Proje	ects												
5	I-94 Eastbound	Interstate Widening from 2 to 3 lanes	I-29 SB Off- Ramp	I-29 NB On- Ramp Merge to I-94 EB	NDDOT	\$900,000	0	2	2	2	4	6	5	0	8	2	2	2	8	8	8	264	292
3	I-94 Veterans Blvd Interchange (Phase II)	Remove NB left turn lanes and replace with NB to WB loop ramp	-	-	West Fargo/ Fargo/ NDDOT	\$7,000,000	0	2	2	2	2	2	2	0	8	2	2	2	8	8	8	236	236
50	S University Dr	Widen 2 to 3 lanes	1st Ave S	5th Ave S	NDDOT	\$750,000																	
51	10th St N	Widen 2 to 3 lanes	4th Ave N	7th Ave N	NDDOT	\$475,000																	
52	10th St S	Widen 2 to 3 lanes	1st Ave S	5th Ave S	NDDOT	\$710,000																	
			То	tal Interstate Projec	ts - North Dakota	\$86,365,000																	

Nor	н Дакота	LOCAL JURISDICT	IONS											MAP-21 GOALS	;							COMPOSITE	COMPOSITE
Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	1. Maintenance 20	2	2. Efficien Performa 19	cy & nce	3. (Cost Effect 14	tiveness	4. Land Use & Transportation 16	5. Safe & Secure Transportation 11	6. E	conomic 13	: Vitality	7. E	nvironm Resource 7	ent & es	SCORE 2020	SCORE 2040
							2020/2040	2020	2040	Average	2020	2040	Average	2020/2040	2020/2040	2020	2040	Average	2020	2040	Average		
								Lo	ocal Nor	th Dakota	Projec	ts											
27	Sheyenne St	Widen 2 to 4 lanes	19th Ave W	32nd Ave E	West Fargo	\$7,000,000	0	2	8	5	8	8	8	0	8	6	8	7	7	8	7.5	365	512
43	64th Ave S Extension and I-29 Overpass	New 4 lane arterial and bridge	38th St SW	36th St SW	Fargo	\$11,700,000	0	2	8	5	8	8	8	0	8	6	8	7	7	8	7.5	365	512
36A	64th Ave S	New 4 lane arterial	45th St S	38th St SW	Fargo	\$5,050,000	0	2	8	5	6	8	7	0	6	6	8	7	6	6	6	308	476
44	64th Ave S	New 4 lane arterial	36th St SW	25th St S	Fargo	\$3,250,000	0	2	8	5	2	8	5	0	6	6	8	7	5	5	5	245	469
41A	38th St Extension	New 4 lane arterial	55th Ave S	64th Ave S	Fargo	\$4,375,000	0	2	10	6	8	10	9	0	2	4	6	5	7	5	6	273	465
83	12th-15th Ave Toll Bridge (1/2 ND)	Remove Toll (Minor modifications)	-	-	Fargo Share Only	\$50,000	5	4	4	2	10	10	10	0	8	2	2	2	5	5	5	465	465
40A	45th St S Extension	New 4 lane arterial	55th Ave S	64th Ave S	Fargo	\$3,980,000	0	2	8	5	8	8	8	0	6	6	6	6	8	8	8	350	464
80	52nd Ave South / 60th Ave S (ND)	Widen 2 to 4 lanes and bridge	State Line	S University Dr	Fargo Share Only	\$7,500,000	5	2	6	4	4	6	5	0	8	2	4	3	3	3	3	329	459
28	Sheyenne St	Reconstruct and Widen 2 to 4 lanes	32nd Ave E	40th Ave S	West Fargo	\$5,125,000	0	2	10	6	2	8	5	0	8	2	2	2	6	6	6	222	458
45	76th Ave S Extension	New 4 lane arterial	38th St SW	25th St S	Fargo	\$5,150,000	0	2	8	5	6	10	8	0	8	2	2	2	5	7	6	271	455
34	52nd Ave S	Reconstruction + Widen 2 to 4 lanes	Sheyenne St	42nd St S	West Fargo/ Fargo/ Cass County	\$11,450,000	0	2	8	5	2	8	5	0	8	2	4	3	4	6	5	208	446
39A	Veterans Blvd Extension	New 2 lane arterial	52nd Ave S	64th Ave S	Fargo	\$3,960,000	0	2	10	6	2	10	6	0	2	2	2	2	5	7	6	149	427
41B	38th St Extension	New 4 lane arterial	64th Ave S	76th Ave S	Fargo	\$4,375,000	0	2	10	6	8	10	9	0	2	2	2	2	7	5	6	247	413
36B	64th Ave S	New 4 lane arterial	Veterans Blvd Extension	45th St S	Fargo	\$5,050,000	0	2	8	5	6	8	7	0	2	4	6	5	6	6	6	238	406
31	Sheyenne St	Widen 2 to 4 lanes	40th Ave E	52nd Ave S	West Fargo	\$5,125,000	0	2	6	4	2	8	5	0	8	2	2	2	6	6	6	222	382
40B	45th St S Extension	New 4 lane arterial	64th Ave S	76th Ave S	Fargo	\$3,980,000	0	2	8	5	8	8	8	0	2	2	2	2	8	8	8	254	368
29	Veterans Blvd	Widen 4 to 6 lanes	19th Ave E	32nd Ave S	West Fargo/ Fargo	\$4,500,000	0	2	6	4	4	8	6	0	2	4	6	5	6	6	6	210	368
26	Sheyenne St	Widen 2 to 4 lanes	13th Ave W	19th Ave North	West Fargo	\$3,250,000	0	2	8	5	2	4	3	0	8	2	2	2	6	6	6	222	364
46	76th Ave S	New 4 lane arterial	25th St S	County Road 81	Fargo	\$4,950,000	0	2	8	5	2	4	3	0	8	2	2	2	6	6	6	222	364
38A	76th Ave S	New 4 lane arterial	45th St S	38th St SW	Fargo	\$4,925,000	0	2	4	3	4	8	6	0	8	2	2	2	4	4	4	236	330
38B	76th Ave S	New 4 lane arterial	Veterans Blvd Extension	45th St S	Fargo	\$4,925,000	0	2	4	3	4	8	6	0	8	2	2	2	4	4	4	236	330
33	45th St S	Widen 6 to 8 lanes	I-94 EB On- Ramp	23rd Ave S	Fargo	\$660,000	0	2	4	3	2	4	3	0	10	2	2	2	8	8	8	258	324
32A	Sheyenne St	Widen 2 to 4 lanes	52nd Ave S	64th Ave S	Horace	\$5,000,000	0	2	4	6	2	6	6	0	8	2	2	2	5	5	5	215	309
32B	Sheyenne St	Widen 2 to 4 lanes	64th Ave S	76th Ave S	Horace	\$5,000,000	0	2	4	6	2	6	6	0	8	2	2	2	5	5	5	215	309
87	76th/80th Avenue South	Construct New 2 Lane Bridge	-	-	Fargo Share	\$11,200,000	0	2	4	3	2	6	4	0	2	2	6	4	5	6	5.5	149	302

Project ID Project Description From To Jurisdiction Cost (\$) 1. Maintenance 20 2. Efficiency & Performance 19 3. Cost Effectiveness 14 4. Land Use & Transportation 16 5. Safe & Secure Transportation 11 6.	Nort	тн Дакота	LOCAL JURISDICT	TIONS											MAP-21 GOALS	;	
2020/2040 2020 2040 Average 2020 2040 Average 2020/2040 2020/2040 2020/2040 2020	Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	1. Maintenance 20	:	2. Efficier Performa 19	ncy & ance	3. (Cost Effec 14	tiveness	4. Land Use & Transportation 16	5. Safe & Secure Transportation 11	6. Ec
1010/1040 1010 1040 1010 1010 1010 1010								2020/2040	2020	2040	Average	2020	2040	Average	2020/2040	2020/2040	2020

Nort	гн Дакота	LOCAL JURISDICT	TIONS											MAP-21 GOALS	S							COMPOSITE	COMPOSITE
Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	1. Maintenance 20		2. Efficien Performa 19	cy & ince	3. (Cost Effec 14	tiveness	4. Land Use & Transportation 16	5. Safe & Secure Transportation 11	6. E	conomi 13	ic Vitality	7. E	Environm Resource 7	ent & es	SCORE 2020	SCORE 2040
							2020/2040	2020	2040	Average	2020	2040	Average	2020/2040	2020/2040	2020	2040	Average	2020	2040	Average		
								Lo	ocal Nor	th Dakota	a Projec	cts											
39B	Veterans Blvd Extension	New 2 lane arterial	\$3,960,000	0	2	4	3	2	8	5	0	2	2	2	2	5	7	6	149	285			
35	64th Ave S	New 4 lane arterial	Horace	\$4,800,000	0	2	2	2	8	8	8	0	2	2	2	2	5	5	5	233	233		
37	76th Ave S	New 4 lane arterial	County Road 17	Veterans Blvd Extension	Horace/Fargo	\$4,950,000	0	2	2	2	2	2	2	0	8	2	2	2	7	7	7	229	229
89	70th Avenue South Fargo	Construct New 2 Lane Bridge (Option to 76th/80th)	Fargo Share Only	\$10,800,000	0	2	2	2	2	2	2	0	2	2	2	2	4	4	4	142	142		
	Total Local Projects - North Dakota													-									
	TOTAL NORTH DAKOTA \$																						

Metro 2040: Mobility for the Future 🚸 Approved July 17, 2014

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MINN	ESOTA DEPART	MENT OF TRANSPO	DRTATION P	ROJECTS										MAP-21 GOAI	LS							COMPOSITE	COMPOSITE
Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	1. Maintenance 20	2	2. Efficien Performa 19	ance	3. C	ost Effec 14	tiveness	4. Land Use & Transportation 16	5. Safe & Secure Transportation 11	6. E	conomic 13	Vitality	7.	Environr Resour 7	nent & ces	SCORE 2020	SCORE 2040
-	-			-	-	-	2020/2040	2020	2040	Average	2020	2040	Average	2020/2040	2020/2040	2020	2040	Average	2020	2040	Average		
-	-			-					-	-	_	-	-	-		-		<u> </u>			-		
									Mn	DOT Pro	jects												
77	TH 75 / 8th St S	Widen 2 to 4 lanes	46th Ave S	60th Ave S	MnDOT	\$6,050,000	0	2	8	5	4	6	5	0	8	6	6	6	7	7	7	309	451
14	I-94 Westbound (1/2 M)	Interstate Widening from 3 to 4 lanes	8th St S On- Ramp	State Line	MnDOT	\$940,000	0	2	6	4	8	8	8	0	8	4	6	5	5	5	5	325	427
15	I-94 Red River Bridge (1/2 M)	Bridge Widening from 6 to 8 lanes	-	-	MnDOT	\$10,000,000	0	2	2	2	4	6	5	0	10	4	6	5	5	5	5	291	345
13	I-94 Eastbound (1/2 M)	Interstate Widening from 3 to 4 lanes	State Line	8th St S Off- Ramp	MnDOT	\$960,000	0	2	2	2	6	8	7	0	8	2	4	3	5	5	5	271	325
62	I-94 / 20th St Interchange	Rebuild 20th St. Interchange, Reconstruct 20th St. to 4 lanes widen I-94 Eastbound to 3 Lanes to Rest Area	24th Ave	30th Ave	Moorhead/ MnDOT	\$38,300,000	0	2	4	3	4	4	4	0	8	2	4	3	4	4	4	236	300

Total Interstate Projects - Minnesota \$56,250,000

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MIN	NESOTA LOCA	AL JURISDICTIONS	;											MAP-21 GOAI	_S							COMPOSITE	COMPOSITE
Project ID	Project Name	Project Description	From	То	Jurisdiction	Cost (\$)	1. Maintenance 20	2. Pi	Efficient erforma 19	cy & nce	3. Co	ost Effect 14	tiveness	4. Land Use & Transportation 16	5. Safe & Secure Transportation 11	6. E	conomic 13	Vitality	7.	Environm Resourc 7	nent & ces	SCORE 2020	SCORE 2040
							2020/2040	2020	2040	Average	2020	2040	Average	2020/2040	2020/2040	2020	2040	Average	2020	2040	Average		
	Local Minnesota Projects																						
81	8th St/11th St Railroad Grade Separated Crossing	Railroad underpass	8th St/11th St	Main Ave	Moorhead	\$40,000,000	5	6	6	6	8	8	8	0	10	2	2	2	7	7	7	511	511
95	28th Street S	Existing Gravel to Paved	current ending	50th Avenue S	Moorhead	\$1,133,262	0	2	6	4	2	44	3	0	2	2	2	2	6	6	6	156	820

									Local	Minneso	ta Proje	ects											
81	8th St/11th St Railroad Grade Separated Crossing	Railroad underpass	8th St/11th St	Main Ave	Moorhead	\$40,000,000	5	6	6	6	8	8	8	0	10	2	2	2	7	7	7	511	511
95	28th Street S	Existing Gravel to Paved	current ending	50th Avenue S	Moorhead	\$1,133,262	0	2	6	4	2	44	3	0	2	2	2	2	6	6	6	156	820
82	21st St Railroad Grade Separated Crossing	Railroad underpass	21st St	Main Ave	Moorhead	\$30,000,000	5	6	6	6	8	8	8	0	10	2	2	2	8	8	8	518	518
80	52nd Ave South / 60th Ave S (Minnesota)	Widen 2 to 4 lanes and bridge	8th St S	State Line	Clay County Share Only	\$11,250,000	5	2	2	2	2	4	3	0	10	2	4	3	3	3	3	323	377
91	8th Avenue N	New Collector Roadway	28th Street N	34th Street N	Moorhead	\$993,454	0	2	6	4	2	6	4	0	8	2	2	2	6	8	7	222	368
93	40th Street S	New Local Roadway	24th Avenue S	28th Avenue S	Moorhead	\$985,352	0	2	6	4	2	6	4	0	2	2	6	4	8	8	8	170	354
97	8th Ave	New Road	1300 feet east of 34th St	CSAH 9	Dilworth	\$530,542	0	2	6	4	2	6	4	0	2	2	6	4	7	7	7	163	347
84	20th St Extension	New 2-Lane Arterial	40th Ave	50th Ave	Moorhead	\$4,080,000	0	2	6	4	8	8	8	0	2	4	4	4	4	6	5	252	342
83	12th-15th Ave Toll Bridge (1/2 North Dakota)	Remove Toll (Minor Modifications)	-	-	Moorhead Share Only	\$50,000	5	2	2	2	2	2	2	0	8	4	4	4	5	5	5	341	341
92	4th Avenue S	New Collector Roadway	34th Street S	40th Street S	Moorhead	\$1,050,950	0	2	4	3	2	2	2	0	8	2	2	2	8	9	8.5	236	281
102	40th Street S	Existing Gravel to Paved	4th Avenue S	12th Avenue S	Moorhead	\$940,714	0	2	6	4	2	4	3	0	2	2	2	2	7	7	7	163	267
94	46th Street S	New Collector Roadway	12th Avenue S	28th Avenue S	Moorhead	\$2,000,350	0	2	6	4	2	4	3	0	2	2	2	2	6	6	6	156	260
99	CSAH 16	Existing Gravel to Paved	40th Street S	50th Street S	Clay County Share Only	\$2,014,636	0	2	6	4	2	4	3	0	2	2	2	2	6	6	6	156	260
100	50th Street S	Existing Gravel to Paved	12th Avenue S	28th Avenue S	Moorhead	\$1,993,158	0	2	6	4	2	4	3	0	2	2	2	2	6	6	6	156	260
101	28th Avenue S	Existing Gravel to Paved	1 mile west of 50th Street S	-	Moorhead	\$1,863,500	0	2	6	4	2	4	3	0	2	2	2	2	6	6	6	156	260
85	20th St Extension	New 2-Lane Arterial	50th Ave	60th Ave S	Moorhead	\$3,920,000	0	2	4	3	4	4	4	0	2	4	4	4	7	7	7	217	255
90	3rd Street S	New Collector Roadway	50th Avenue S	60th Avenue S	Moorhead	\$1,980,852	0	2	4	3	2	4	3	0	2	2	4	3	7	7	7	163	255
87	76th/80th Avenue South	Construct New 2 Lane Bridge	-	-	Clay County Share Only	\$11,200,000	0	2	4	3	2	4	3	0	2	2	4	3	5	6	5.5	149	248
98	8th Ave North	New road	CSAH 9	7th St East	Dilworth	\$2,004,244	0	2	2	2	2	2	2	0	8	2	2	2	7	8	7.5	229	236
96	14th Street S	Existing Gravel to Paved	46th Avenue S	50th Avenue S	Moorhead	\$1,298,136	0	2	2	2	2	2	2	0	2	2	4	3	6	7	6.5	156	189
103	50th Avenue S	Existing Gravel to Paved	TH 75	28th Street S	Clay County Share Only	\$2,987,354	0	2	2	2	2	2	2	0	2	2	2	2	6	6	6	156	156
89	70th Avenue South Fargo	Existing Gravel to Paved	-	-	Clay County Share Only	\$10,800,000	0	2	2	2	2	2	2	0	2	2	2	2	4	4	4	142	142

Total Local Projects - Minnesota	\$133,076,504
TOTAL MINNESOTA	\$189,326,504
TOTAL Metro COG	\$431,731,504