Appendix A

Public Engagement Summary

Open House 1 Overview

On October 24 and 25, 2018, Metro COG held two public open houses to gather input on transportation issues and opportunities, transportation vision, and funding priorities. Public open houses were held at the following times and locations:

- Moorhead Public Library, October 24, 2018 from 11:00 am – 1:00 pm
- Rustad Recreation Center in West Fargo, October 25, 2018 from 5:30pm - 7:30pm.

It is estimated that a total of approximately 40 to 50 attendees were at the two open houses.

Open House Activities

The open house format provided the following interactive elements:

Technical Analysis Boards

To orient users to the technical analyses that had been completed to date, the following maps of transportation conditions were provided:

- **Existing Conditions Boards**: maps of existing bicycle and pedestrian system, transit routes, and traffic operations and safety were provided to orient users to the technical analysis that had been completed to date.
- **Future Conditions Boards**: maps of projected housing growth and employment growth (2015-2045) and future traffic congestion estimates.

Activities

Three different activity stations were developed for the open house to get feedback from those in attendance. Metro COG and HDR staff facilitated the activities with the public.

"Map Your Issues" Station

At both open houses, two large plots of the metro area were provided at the Map Your Issues Station. Attendees were encouraged to identify issues and opportunities for all modes, with color-coded stickers provided to identify the type of issue / opportunity identified. **Figure 1** shows an example of an issues map marked with comments from the Moorhead open house. **Figure 2** (wider regional issues) and **Figure 3** (central Fargo and Moorhead issues) summarize all comments received. As shown in **Figures 2 and 3**, the most frequent types of issues identified in the public meetings were:

- Opportunities to improve bicycle and pedestrian system connections
- Options for improving transit connections to employment centers
- Potential areas for safety improvements

"Your Transportation Vision" Station

At both open houses, a large white board was available for recording attendees' thoughts on transportation vision and "big ideas" for the future of transportation in the region. The idea was to identify goals, ideas, and examples of good practice from other cities to help shape the goals and vision of the plan. **Figure 4** shows an example of the white board from the Moorhead open house. **Table 1** provides a summary of the vision ideas received, including some of the non-location specific ideas received at the "Map Your Issues" station.

Figure 1. Example Issues Map from Moorhead Open House

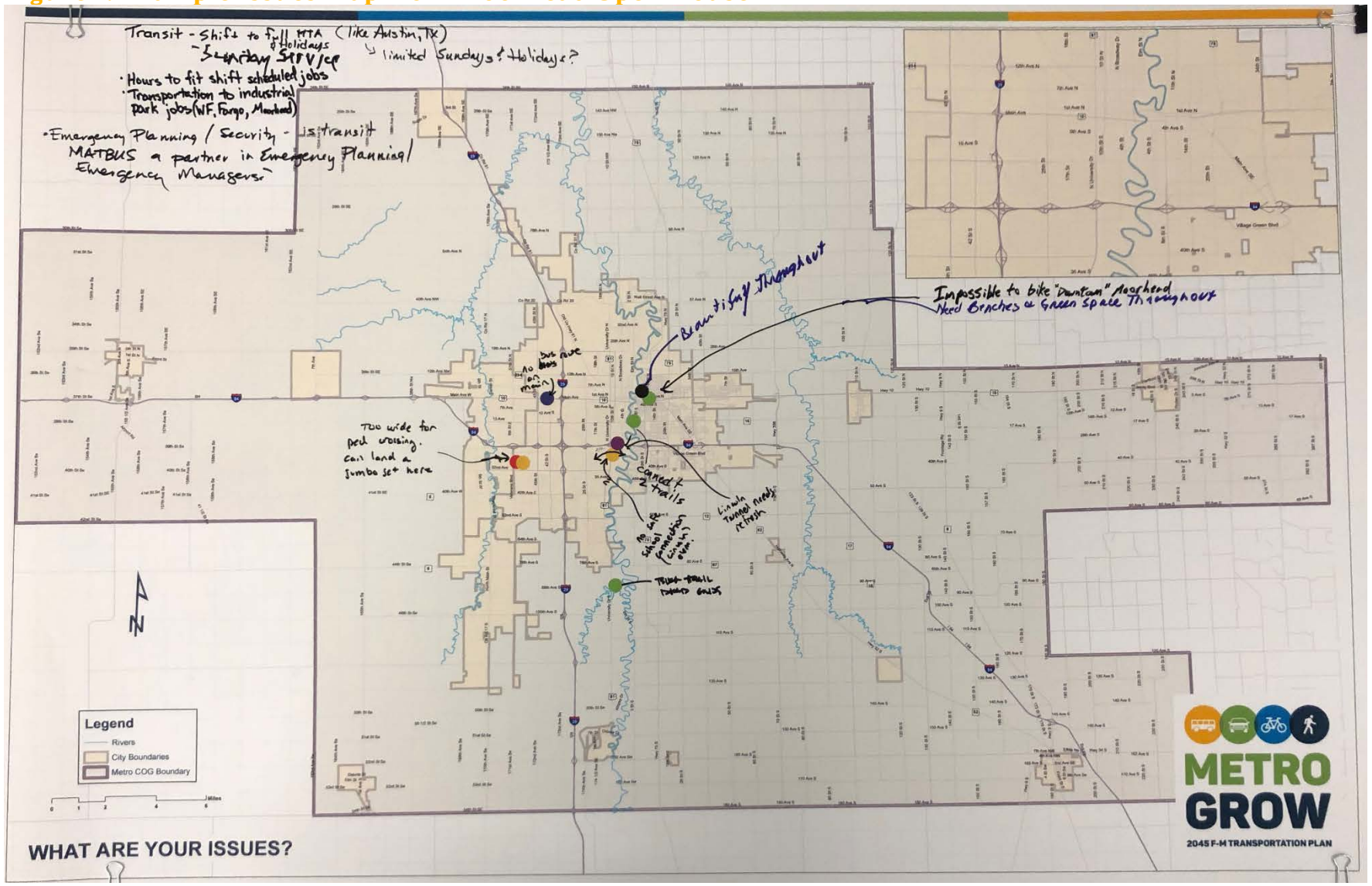


Figure 2. Public-Identified Issues from Open Houses (Wider Scale Issues)

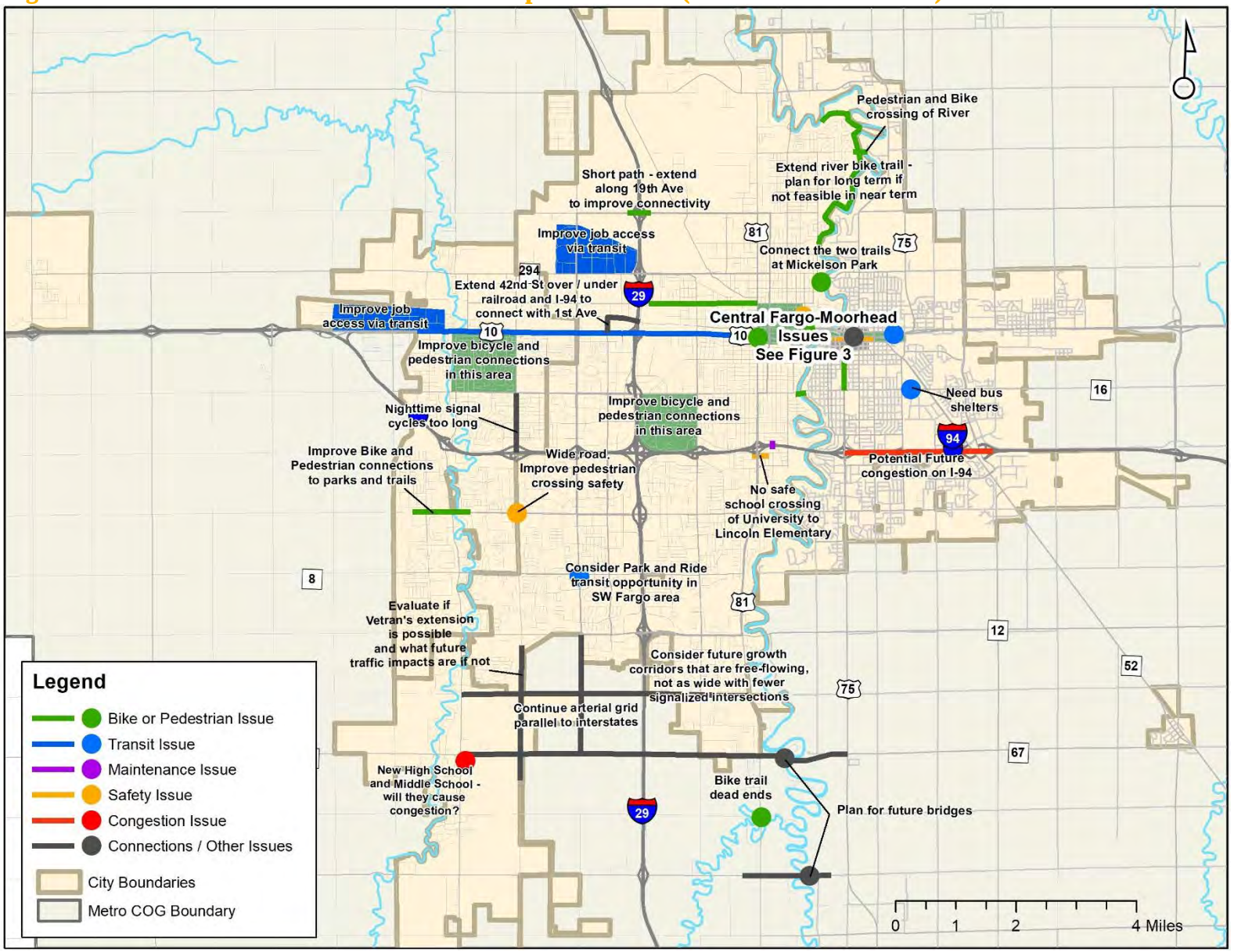


Figure 3. Public-Identified Issues from Open Houses (Central Fargo - Moorhead Issues)

Figure 4. Example Transportation Vision Input from Moorhead Open House

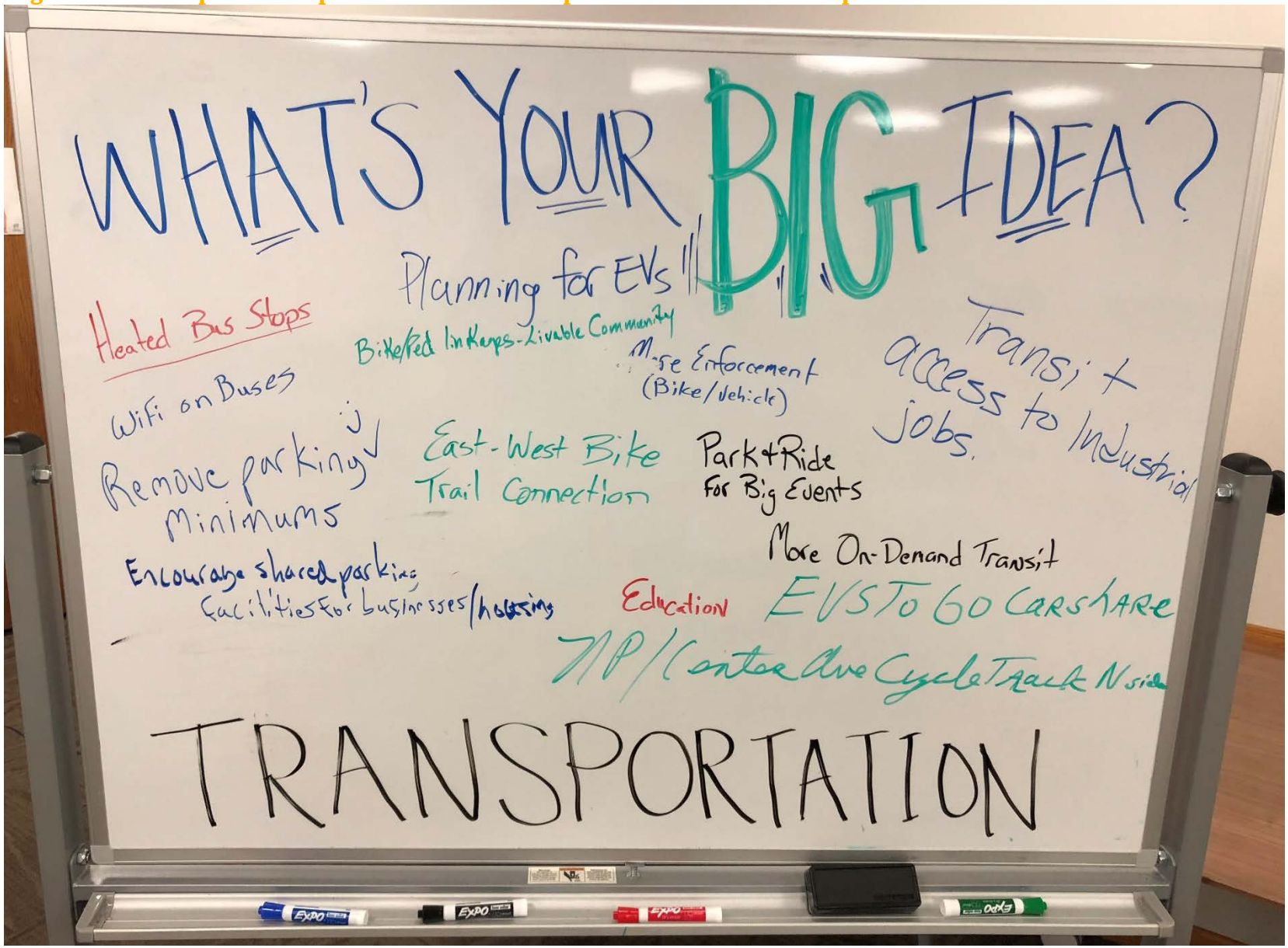


Table 1. Public-Identified Transportation Vision Ideas from Open Houses

Transit Ideas	Open House Location
Add more heated bus stops	Moorhead
Provide Wifi on buses	Moorhead
Neighborhood transit circulators to support major bus routes	Moorhead
Rideshare/shuttles to employees	Moorhead
Communicate construction projects with MATBUS to lessen route impacts	Moorhead
Create a Regional Transit Authority; Good example is Austin, TX	Moorhead
Extend transit service times, including Sunday and Holiday service	Moorhead
Provide transportation (shuttles, buses, vanpools) to industrial park jobs across region concurrent with shift changes	Moorhead
Better connect transit services and jobs	Moorhead
Better transit access to industrial jobs	Moorhead
Consider more service to non-downtown transit hubs for more convenient transfers - focus seems to be on downtown	West Fargo
Provide more resources to transit for improved service levels	West Fargo
More on-demand transit	Moorhead
Provide park and ride services for big events	Moorhead
Provide streetcar circulators	West Fargo
Provide express bus services - potentially free	West Fargo
Bicycle and Pedestrian Ideas	
Develop NP Ave / Center Avenue cycle track	Moorhead
Create walkable, bikable, livable connections everywhere.	Moorhead
Expanded bicycle and pedestrian linkages for a more livable community	Moorhead
East-West trail connection	Moorhead

Safety Ideas	Open House Location
Educate drivers and bicyclists on sharing the road	Moorhead
Enforcement of driver and bicyclist rules for sharing the road	Moorhead
Vehicular Travel Ideas	
Continue to limit congestion issues in Metro area.	West Fargo
Mitigate noise from Interstate traffic	West Fargo
Planning for autonomous vehicles / potentially with an AV car share service	West Fargo
Create an I-94 Bypass of the metro area	West Fargo
Electric Vehicle Ideas	
More electric vehicle (EV) charging stations in Metro	West Fargo
Planning for EVs	Moorhead
Provide EV car share service	Moorhead
Electric buses	West Fargo
Other Ideas	
Remove parking minimums from developments	Moorhead
Encourage shared parking for businesses and housing	Moorhead
Add green space and cleanup downtown Moorhead	Moorhead
Improve Americans with Disabilities Act (ADA) compliance on all streets, including winter maintenance	West Fargo
Involve MATBUS as a partner in regional emergency planning and management	Moorhead

"Investment Emphasis" Station

At both open houses, attendees were provided an exercise that reflected a simplified version of the difficult investment choices that Metro COG and its partner jurisdictions are faced with. At this station, attendees were provided a personal board with a limited amount of resource magnets to allocate amongst funding levels for 5 transportation investment categories:

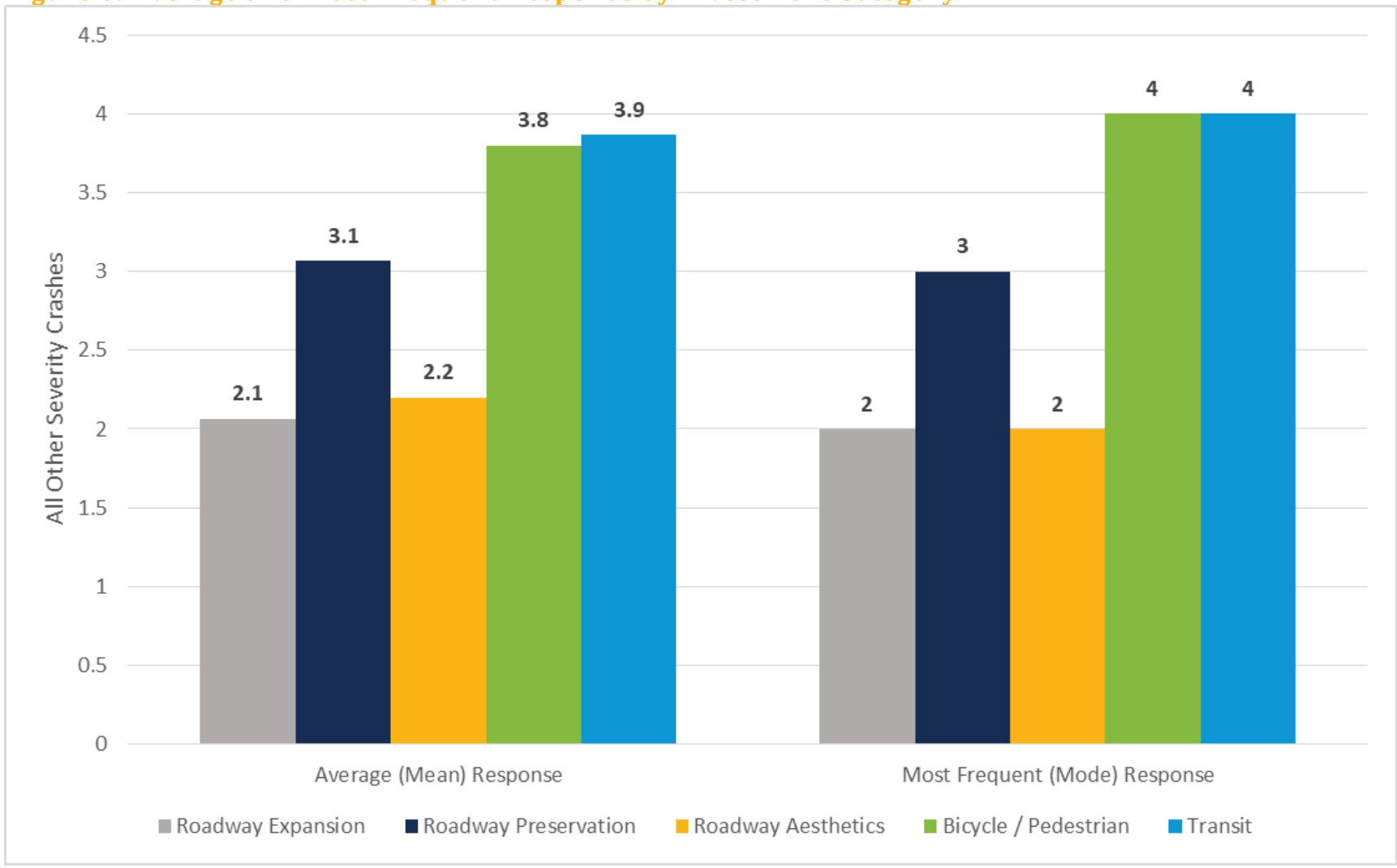
- Roadway Preservation
- Roadway Expansion (Widenings and Extensions)
- Roadway Aesthetics
- Bike and Pedestrian System
- Bus and Transit System

Figure 5 illustrates the activity prior to participant completion, and shows the activity as completed by one of the open house participants. Individual results were recorded and summarized as the open house progressed. **Figure 6** provides a summary of the investment emphasis feedback received. Results are presented for the average (mean) response and the most frequent response (mode) for each investment category.

As illustrated in **Figure 6**, of those attendees that completed the exercise, the average respondent supported slightly more funding for bicycle / pedestrian and transit modes.

Figure 5. Example Before and After Investment Emphasis Activity

Figure 6. Average and Most Frequent Response by Investment Category



Comment Box

Comment cards were provided to attendees so that they could provide any additional comments they might not have provided via the activities. Scans of these comment cards are provided in the **Materials Appendix**.

Presentation

At each open house, a short, formal presentation was provided 30 minutes after the open house started. The purpose of the presentation was to give a brief overview of the Plan, and to orient attendees to the activities that they could participate in. The presentation is included in the **Materials Appendix**

Meeting Promotion

Several different channels were used for meeting promotion leading up to the meeting:

- Social Media posts via the Metro COG Facebook page
- Targeted Facebook ads for regional residents.
- Email to residents who had signed up for our mailing list at summer events and via the online survey.
- Email sent by MATBUS to its mail list ("rider alert").
- Promotion at the Metro COG website.
- Fliers were distributed to civic buildings across the region, and provided at stakeholder meetings such as Metro COG's Traffic Operations Committee and the Bicycle and Pedestrian Committee members.
- News release sent to local media outlets, which yielded interviews of the Metro COG project manager on two TV news stations and a live interview on one radio show.

An example of the meeting promotion materials used is provided in **Figure 7**.

Figure 7. Metro Grow Open House Flier

METROGROW

The Fargo - Moorhead Metropolitan Council of Governments is in the process of updating its Long Range Transportation Plan called Metro Grow, which will help shape our transportation future through the year 2045. The plan will be developed to meet our community's goals, needs, and priorities for all modes of travel.

JOIN US AT A PUBLIC OPEN HOUSE!

Wednesday, October 24
11am - 1pm
A formal presentation will begin at 11:30am
Moorhead Public Library
118 5th St S
Moorhead, MN

Thursday, October 25
5:30 - 7:30pm
A formal presentation will begin at 6:00pm
Rustad Recreation Center - Dakota Rm
601 26th Ave E
West Fargo, ND

Attendees will have the opportunity to speak one-on-one with the project team and provide input for the future of transportation in our area. Meeting information will also be available on metrogrow.org beginning October 24.

METRO GROW

Metro COG is committed to ensuring all individuals, regardless of race, color, sex, age, national origin, disability/ handicap, sexual orientation, and/or income status have access to Metro COG's programs and services. Meeting facilities will be accessible to mobility impaired individuals. Metro COG will make a good faith effort to accommodate requests for translation services for meeting proceedings and related materials. Please contact Savanna Leach, Metro COG Executive Secretary at 701-232-3242 at least 5 days in advance of the meeting if any special accommodations are required for any member of the public to be able to participate in the meeting.

Materials Appendix

METRO GROW

2045 F-M TRANSPORTATION PLAN

Public Open Houses | October 24-25, 2018

Agenda

- Introductions
- Overview of the Long Range Transportation Plan (LRTP)
- Input Received to Date
- Transportation Assessments to Date
- Input Activities

Introductions

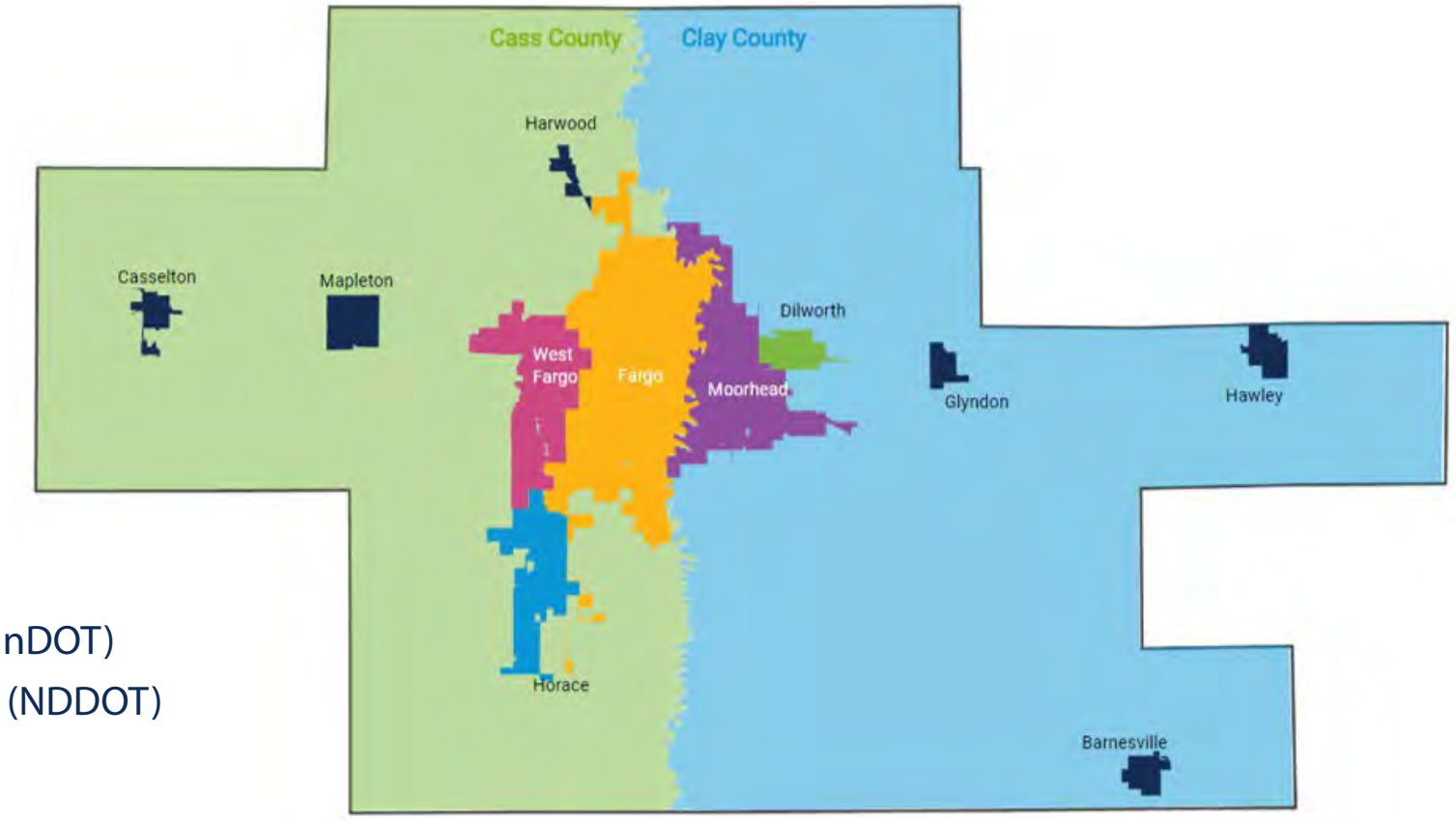
- Michael Maddox, Metro COG Project Manager
- Cindy Gray, Metro COG Executive Director
- Dan Farnsworth, Metro COG
- Jason Carbee, HDR Project Manager
- Brian Ray, HDR
- Matt Huettl, HDR
- Amy Acquard, Flint Group

What is Metro COG?

The Designated Metropolitan Planning Organization (MPO) for the Fargo-Moorhead Region

Includes the following Partners:

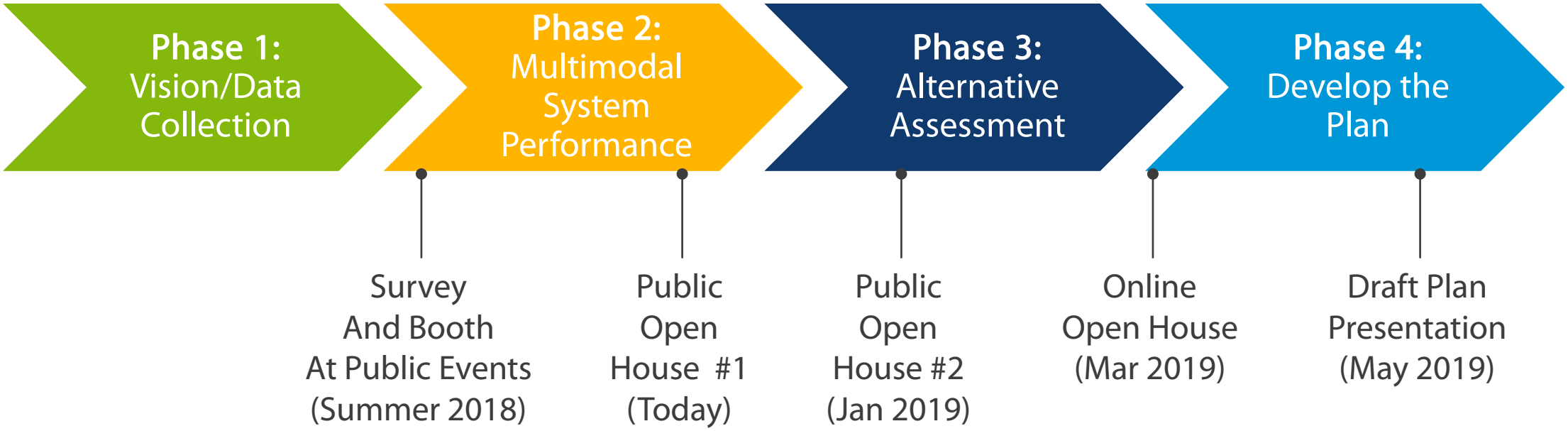
- Cass County
- Clay County
- City of Dilworth
- City of Fargo
- City of Horace
- City of Moorhead
- City of West Fargo
- Minnesota Department of Transportation (MnDOT)
- North Dakota Department of Transportation (NDDOT)
- Transit Agencies in Fargo and Moorhead



Study Overview

- Metro COG coordinates regional cooperation between communities & agencies
- LRTP is a plan to accomplish transportation goals
- Must update LRTP every 5 years
- All travel modes included: Highway, Bicycle, Pedestrian, Transit, Freight
- Plan costs and expected budgets must balance

Input Opportunities



What We've Been Up To

Public Outreach

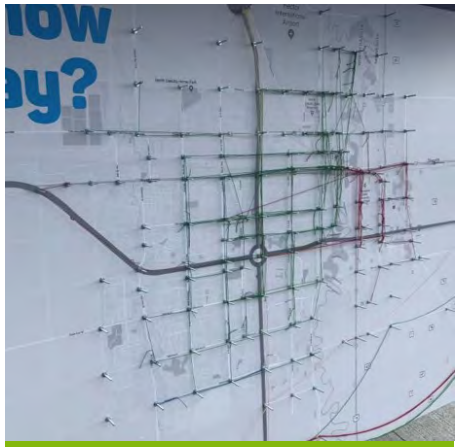
- Booth at events
- Online survey
- Project website
- Social media
- MetroGrow video

Technical Analysis

- Road & bridge condition
- Traffic safety
- Travel efficiency
- Bike & pedestrian connections
- Transit system
- Freight

MetroGrow Events

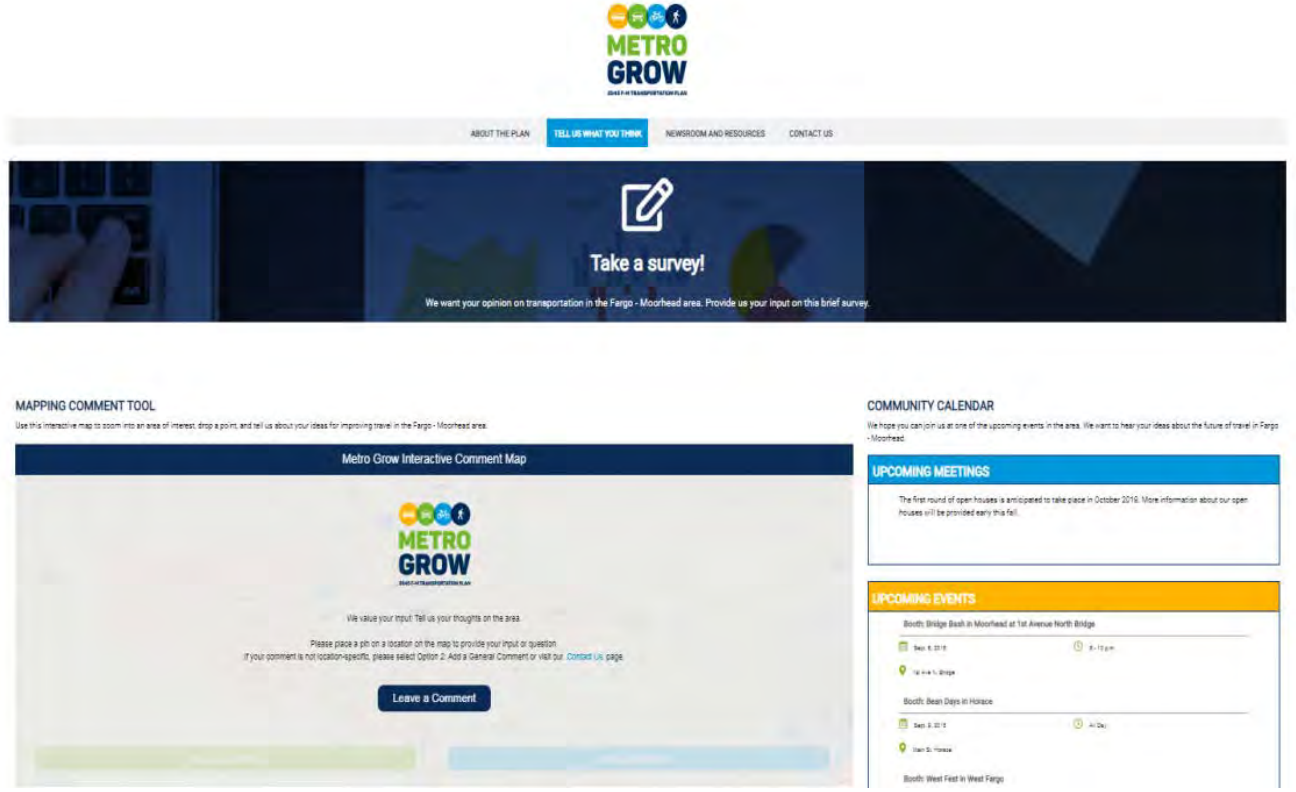
- Downtown Street Fair (Fargo)
- Loco Daze (Dilworth)
- Bridge Bash (Moorhead)
- Movie Night in the Park (Fargo)
- Bean Days (Horace)
- Red River Market (Fargo)
- West Fest (West Fargo)



Booth Events

Online Survey

- Began in July
- Survey Goal: Collect Residents' Transportation Opinions
- Around 200 responses thus far
- Open through early November



What We've Heard So Far

Travel efficiency & dependability

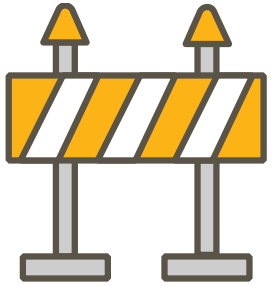
Safety

Improve pedestrian facilities

More trails

More "Complete Streets"

Leverage technology

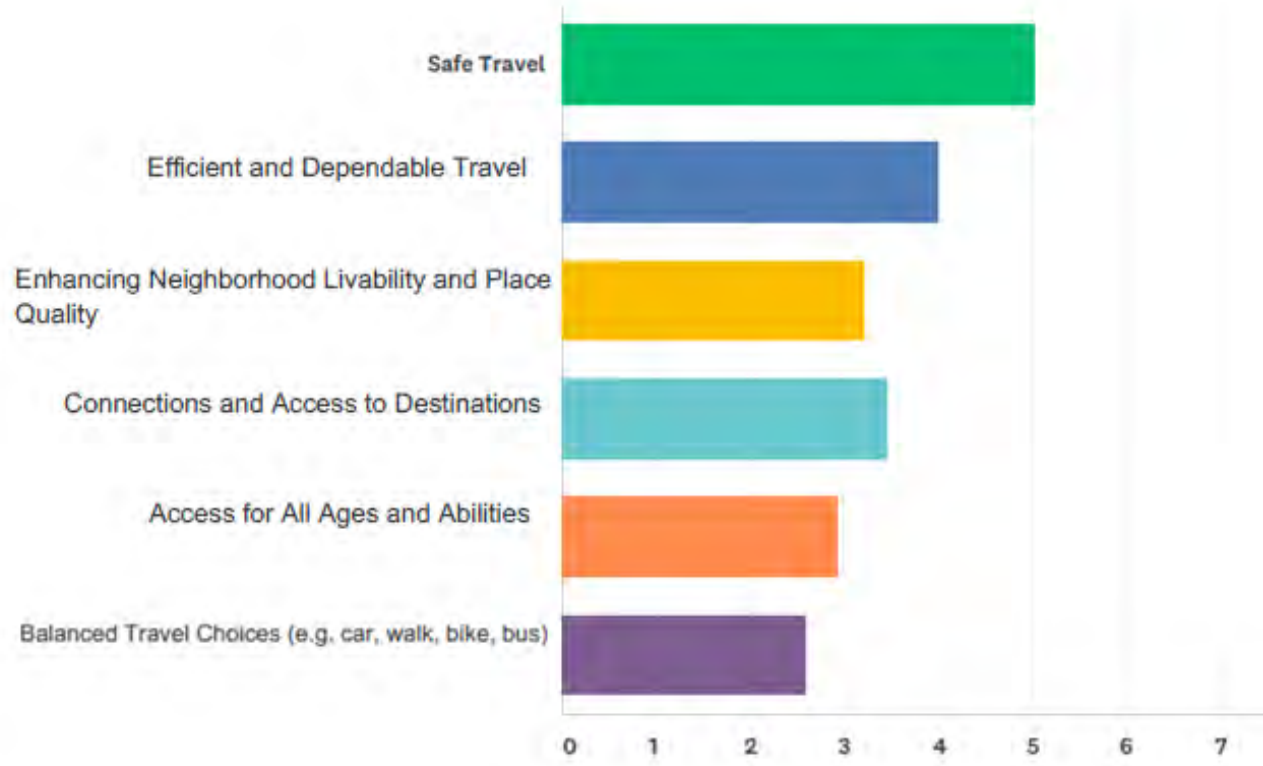


Maintain existing streets and bridges

Preliminary Survey Results - System Characteristics

Top 3 Important Characteristics for F-M Transportation System:

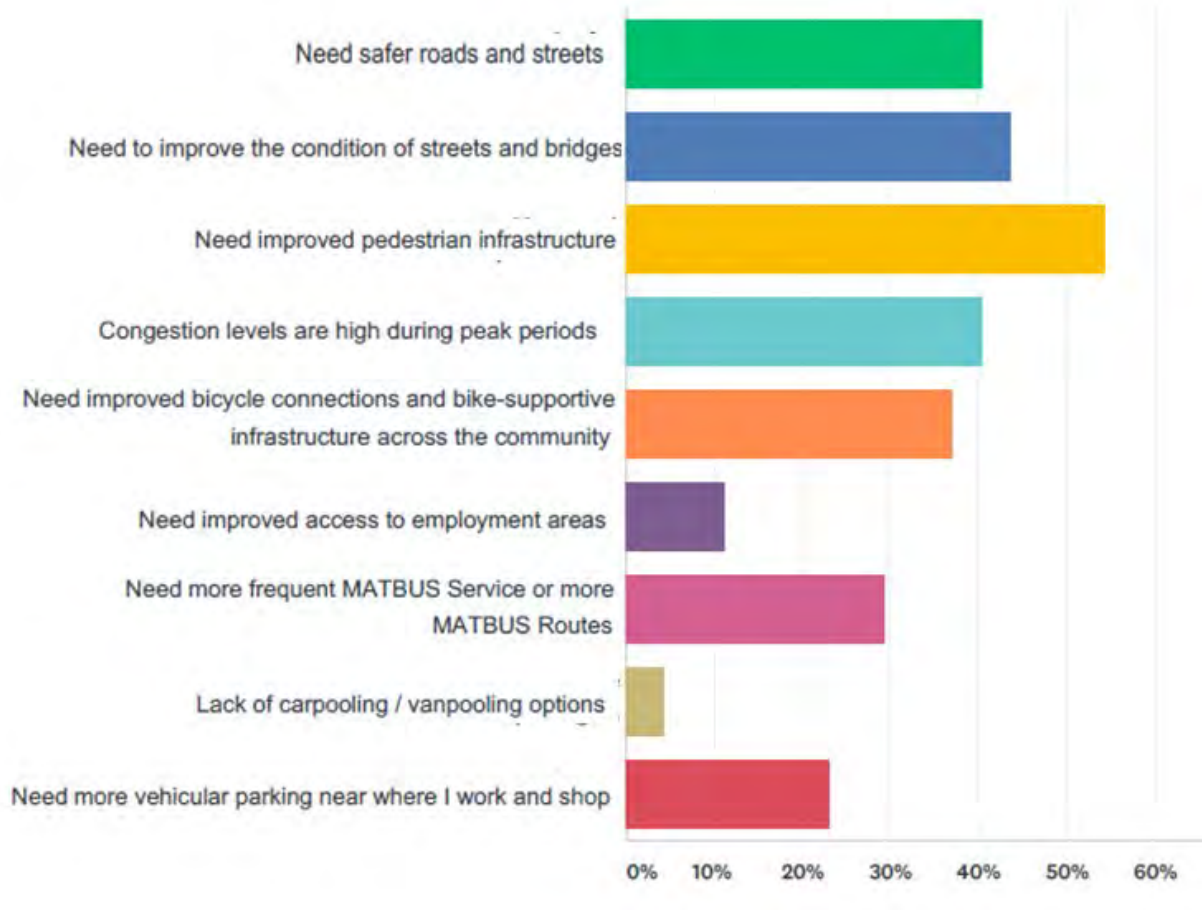
1. Safe
2. Efficient & Dependable
3. Connected



Preliminary Survey Results - System Issues

Top 3 Transportation Issues or problems with F-M transportation:

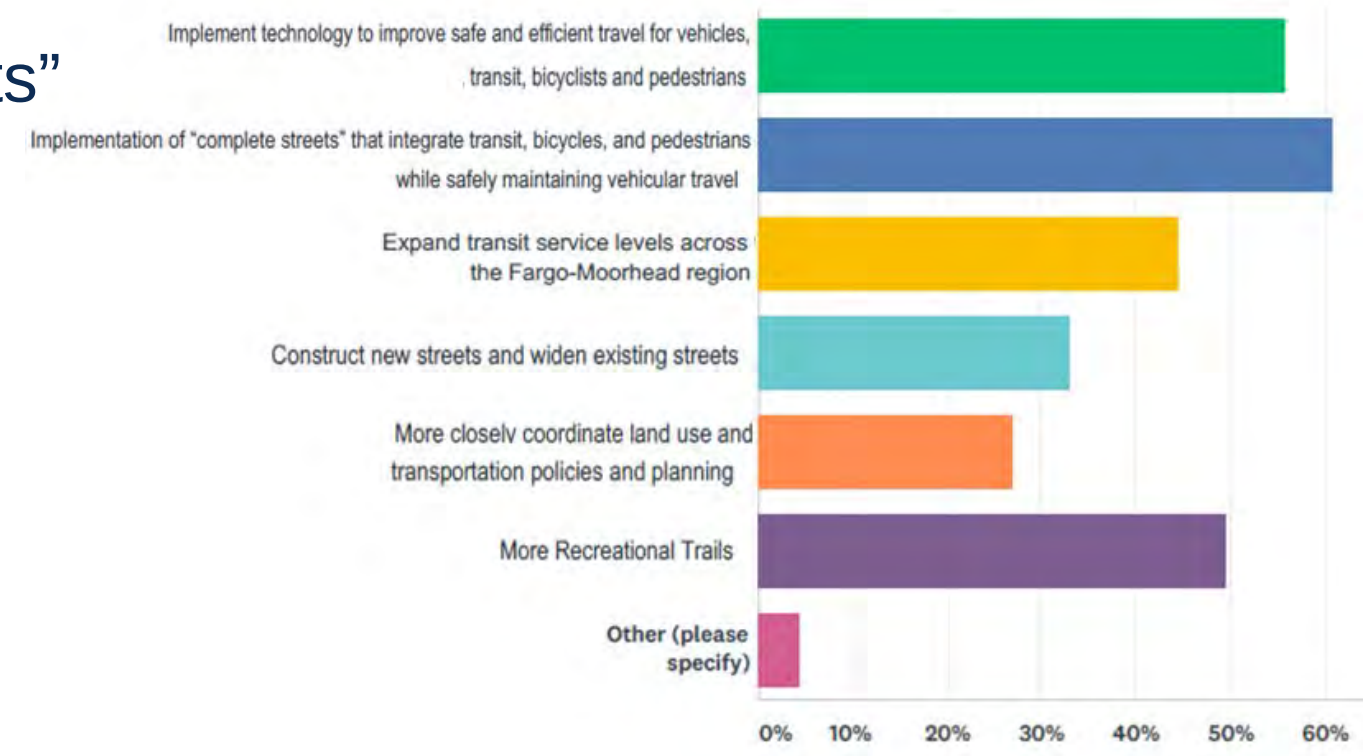
1. Pedestrian Improvements
2. Street and Bridge Conditions
3. Safety (tie)
3. Peak Congestion (tie)



Preliminary Survey Results – Strategies to Implement

Top 3 Transportation Strategies to Implement:

1. Implement “Complete Streets”
2. Technology Solutions
3. Recreational Trails



Preliminary Survey Results – Neighborhood Characteristics

Top 3 Characteristics Your Neighborhood should Reflect:

1. Walkable and Bikeable
2. Trail Connections
3. More Transportation Options

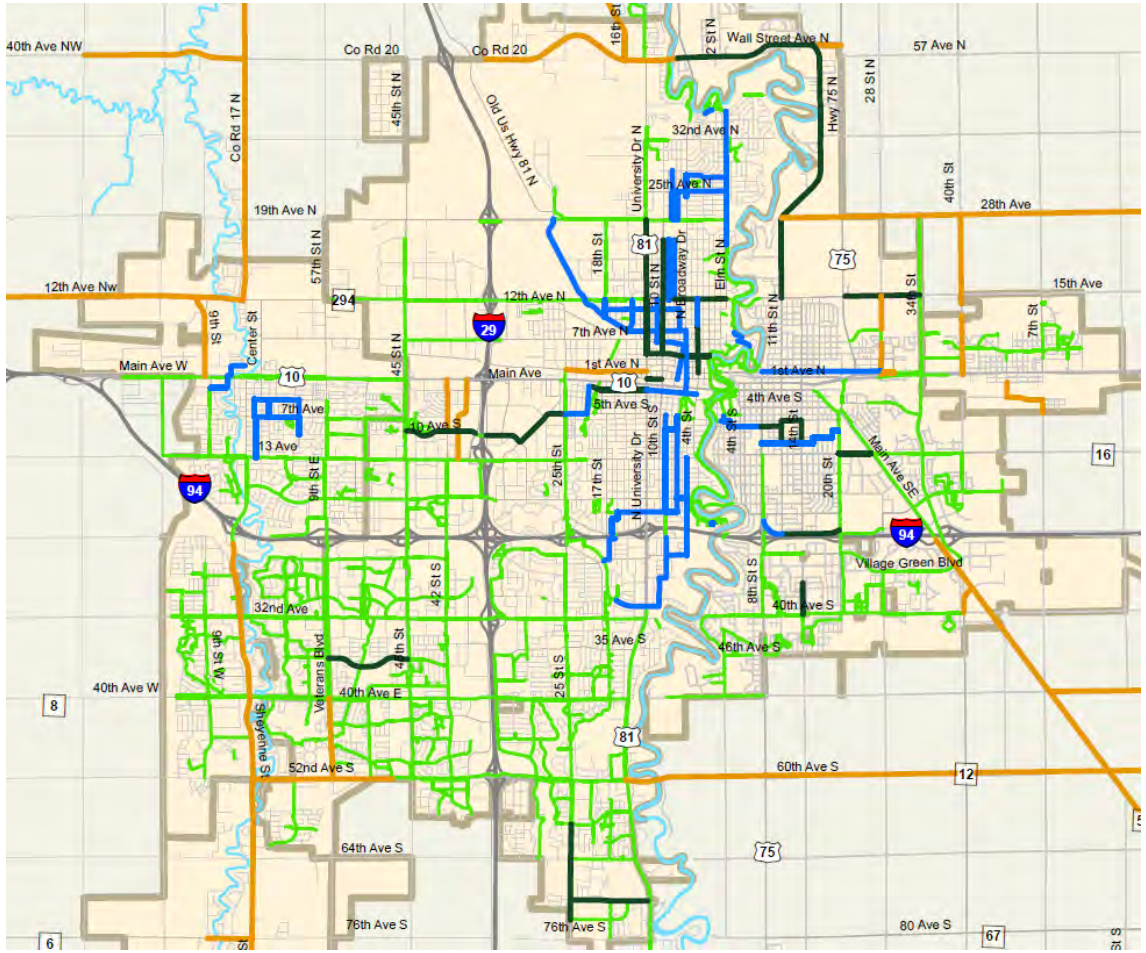
Technical Analysis

Your input will help supplement the Technical Analysis!

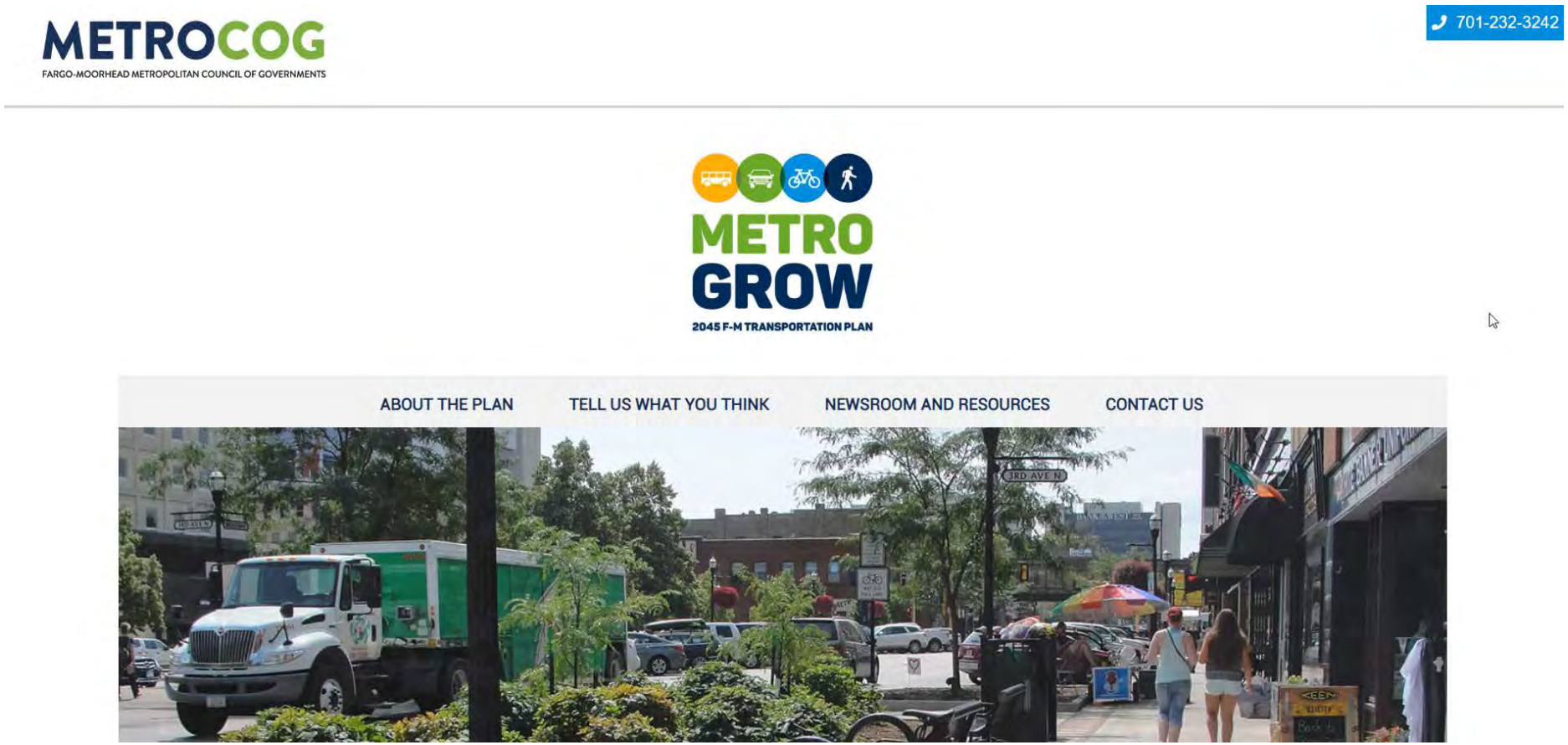
Identify How System Operates:

- Traffic Crashes
- Traffic Congestion
- Travel Reliability
- Bicycle / Pedestrian Connections
- Transit System
- Freight Movement

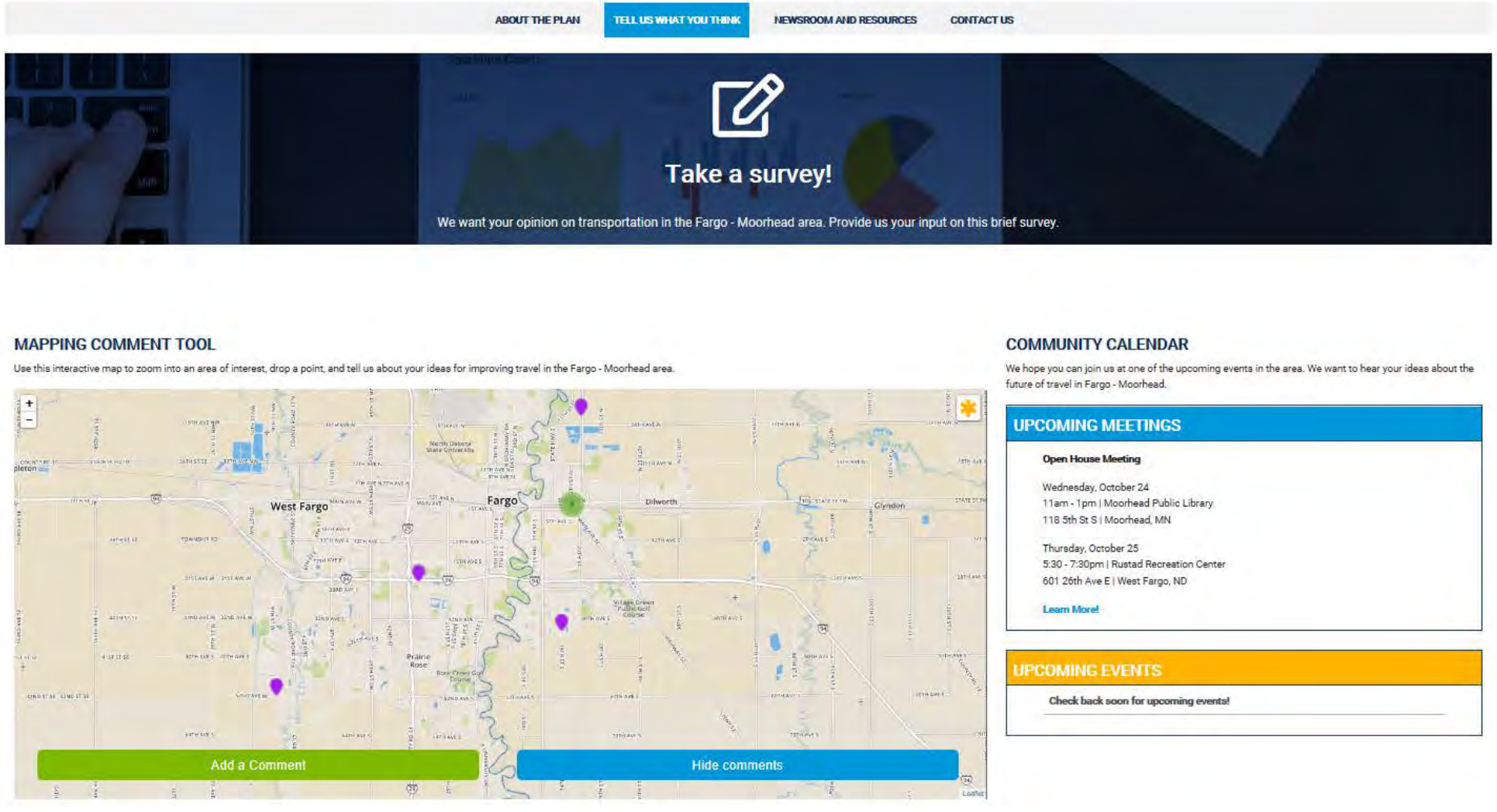
More information will be available at each station.



Ways to Stay Engaged: Metrogrow.org



MetroGrow.org Input Opportunities

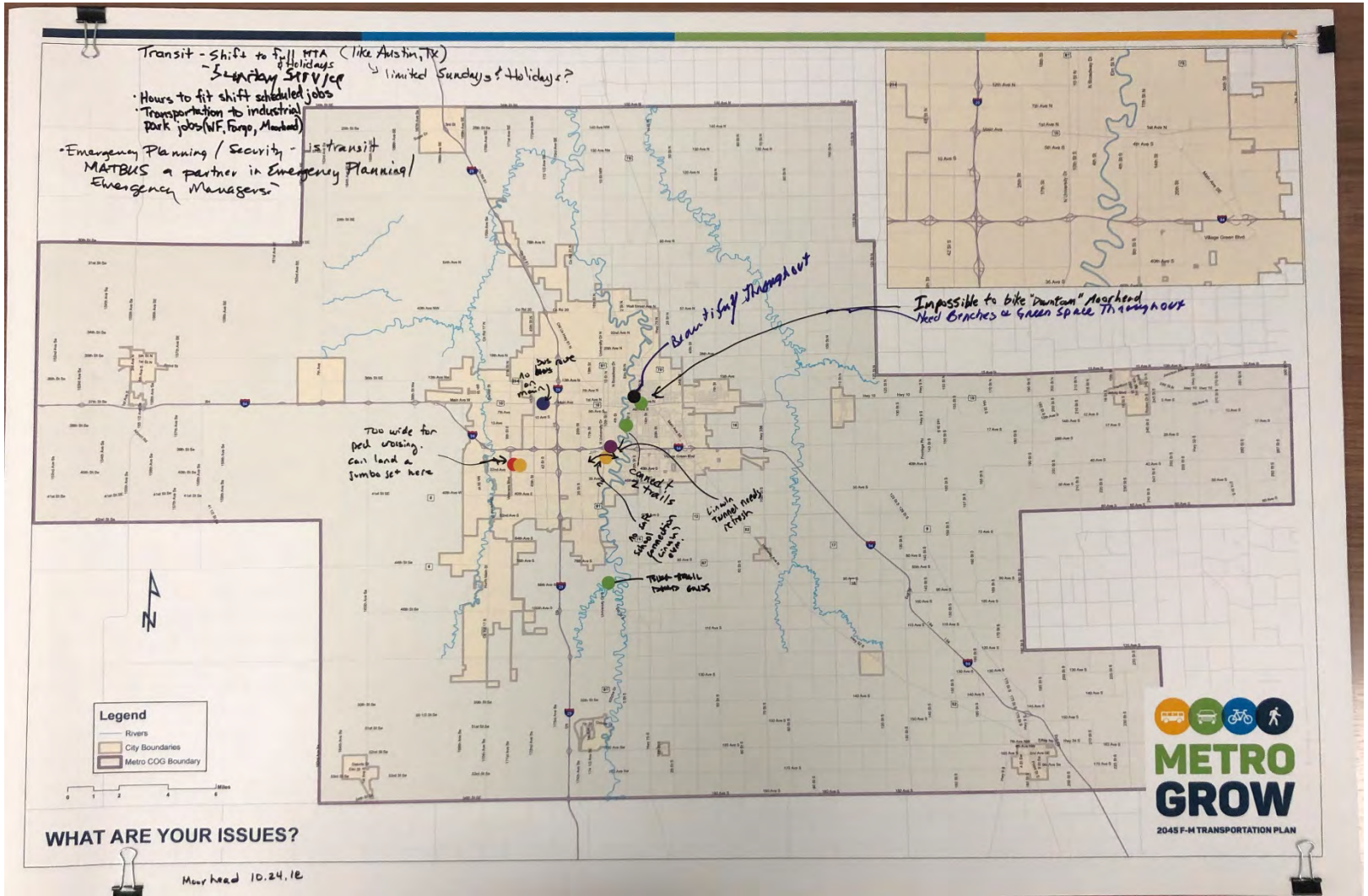


Activity Stations

- Map Your Issues
- Funding Emphasis Areas
- Your Transportation Vision

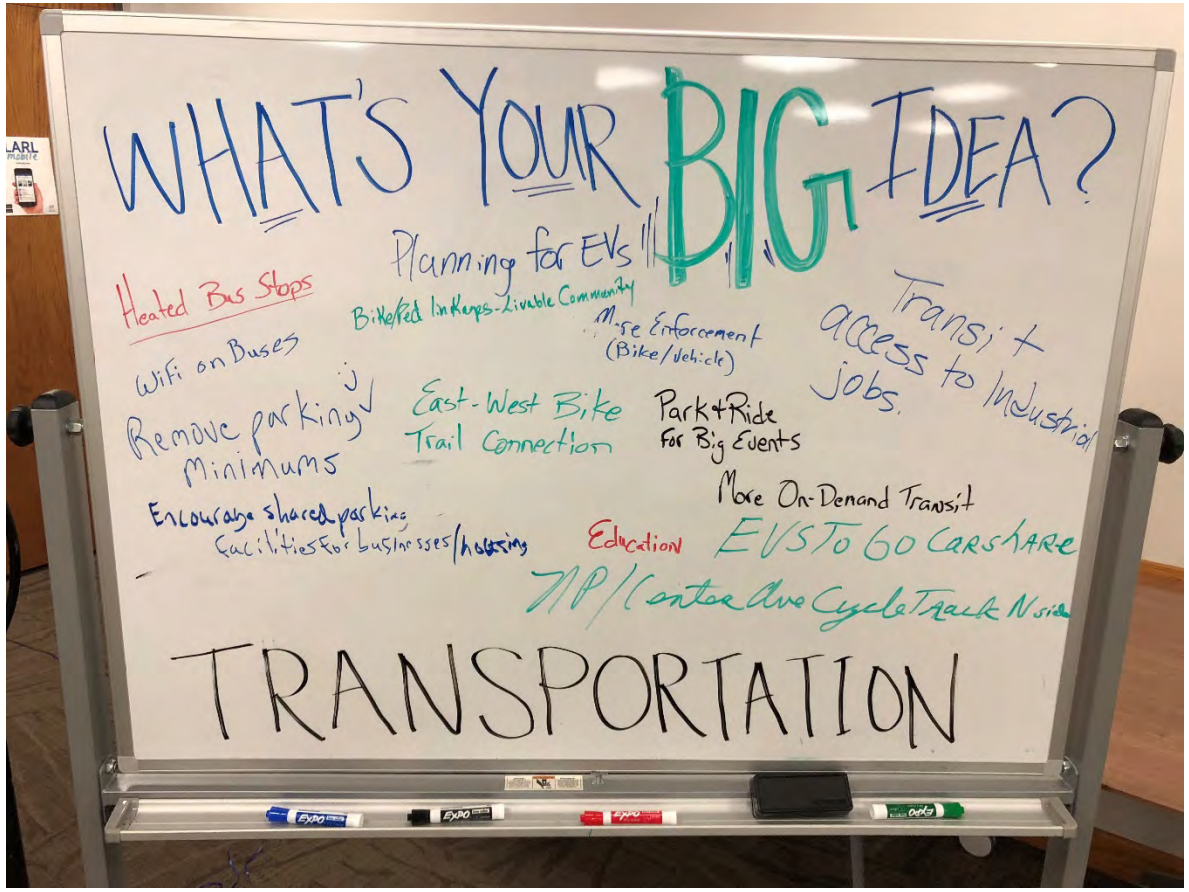
Map Your Issues – Activity #1

- What did we miss?
- Problem areas
- Good examples
- Initial Plan Ideas
- Color Code Stickers:
  - Bike / Pedestrian Issue
  - Transit Route
  - Roadway Congestion
  - Safety Issue
  - Maintenance Issue
  - Other



Your Transportation Vision – Activity #2

- What Should the Future of Fargo-Moorhead Area Transportation Look Like?
  - Themes
  - Goals
  - Your “Big Idea”
  - What Works in Other Cities?



Funding Emphasis Areas – Activity #3

- How much emphasis would you place on:
  - Roadway Preservation
  - Roadway Expansion
  - Roadway Aesthetics
  - Bicycle and Pedestrian
  - Bus / Transit

Next Steps

- Finalize Plan Goals
- Finalize Future Funding Levels
- Develop Project & Policy Alternatives
- Alternatives Development Workshop (Winter)

Contact Us

We want to hear from you!

Metrogrow.org

Facebook.com/fmmetrocog

LetsGrow@metrogrow.org

701-232-3242

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

Transit - Arterial System

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

- Mike W. - Will the plan be looking at Tradeoffs, such as more transit less pkg, less capacity?
- Affordability of housing - 2 cars vs. 3 - $9K/yr savings.

Bobb - I-94 in Mhd - not a over capacity by 2045?

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

my daughter got in trouble for riding her bike in the street even though she knows that is the correct thing to do.

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

Create a Metro Transit authority

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

EVs to go Carshare

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For more information, visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

Instead of overpass on 6th or 72nd double Matheus budget

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WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

NP/Center Avenue cycle track on N side to not inhibit Matheus.

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WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

How can the LRTP encourage adoption of EVs? Access to charging stations? (DC fast charge)

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WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

Auto oriented design, esp. in suburban areas. [redacted] to [redacted] Strict adherance to hierarchy of streets, access control, etc. favors cars and produces wide [redacted], high-spd arterial environments. Need more multipurpose streets.

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

Motorist Awareness - Lookout for Bicyclists

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

Snow storage in landscaped, bike lanes, & ADA curb cuts

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

We Need More Ice Cream Trucks!

- the kids

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

Clearing the Bike paths during the winter months (esp. 12th Ave N, New path)

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

more connectivity south of 52nd Ave S. Possibility of higher speed route.

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

15th Ave N - paving the gravel section in Dilworth (get around the city route)

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING
TRANSPORTATION ISSUE?

19th Ave N Bike Path stops right by train. It'd be great if we could get over the tracks with being on the road.

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For more information visit: metrogrow.org

WHAT'S YOUR BURNING TRANSPORTATION ISSUE?

Create an app based system that operates similar to Uber or Lyft. Fleet of vans offering on demand rides. I think this could get more people using public transportation, which means less cars on the road, less parking lots, etc. Might be less efficient than Uber or Lyft, but it would be subsidized meaning

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For more information visit: metrogrow.org

701.232.3242

lower costs / reliant drivers / would be much more efficient than the status quo and fares could make up a greater % of the budget.

-Aaron Templin

METROCOG
F-M REGIONAL TRANSPORTATION PLANNING ORGANIZATION

One North 2nd Street
Suite 232
Fargo, ND 58102

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SFN 59531 (Rev. 03-2012)

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Division/District/Consultant
FM Metropolitan Council of Governments

Meeting Location	Meeting Type	Meeting Date
Moorhead Downtown Library	Public Open House	10/24/2018
Project Number		PCN
Project Description: Metro Grow (LRTP) Public Open House		

Name (Please print)	Title/Representing			
Alison Wolbeck	A Place For Hope			
Address: 1204 27th Av S #110				
City: Moorhead	State: MN	Zip code: 56560	Email: a.wolbeck@yahoo.com	

Name (Please print)	Title/Representing			
Paul C. Mott	self/citizen			
Address: 3203 9th St S. #304				
City: Austin	State: TX	Zip code: 56560	Email: pcmott@yahoo.com	

Name (Please print)	Title/Representing			
Matthew Huettl	FDR			
Address: 51 N Broadway Ste 550				
City: FARGO	State: ND	Zip code: 58102	Email: Matthew.Huettl@ldrinc.com	

Name (Please print)	Title/Representing			
Thomas Hill	united way of cass.clay			
Address: 219 7th St. S.				
City: Fargo	State: ND	Zip code: 58103	Email: th.hill@unitedwaycassclay.org	

Name (Please print)	Title/Representing			
Amy Feland	Lakes & Prairies			
Address: 715 11th St N Suite 101				
City: Moorhead	State: MN	Zip code: 56560	Email: amyf@lakesandprairies.net	

Name (Please print)	Title/Representing			
Kristie Leshovsky	City of Moorhead			
Address: 500 Center Ave				
City: Moorhead	State	Zip code	Email: Planning@cityofmoorhead.com	

Name (Please print)	Title/Representing			
Aaron Templin				
Address: 1206 2nd Ave S				
City: Fargo	State: ND	Zip code: 58103	Email: aaron.templin@gmail.com	

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Division/District/Consultant
FM Metropolitan Council of Governments

Meeting Location	Meeting Type	Meeting Date
Moorhead Downtown Library	Public Open House	10/24/2018
Project Number		PCN
Project Description: Metro Grow (LRTP) Public Open House		

Name (Please print)	Title/Representing		
Sara Watson Curry	City of Moorhead		
Address: 412 10th St N			
City: Moorhead	State: MN	Zip code: 56560	Email: sara.watsoncurry@cityofmoorhead.com

Name (Please print)	Title/Representing		
Mike Bitter			
Address: 3008 Prairie Farms Creek S			
City: Fargo	State: ND	Zip code: 58104	Email

Name (Please print)	Title/Representing		
Jamie Wark	SRF Consulting Group		
Address: 1 North Second St Suite 220 Case Plaza			
City: Fargo	State: ND	Zip code: 58103	Email: jwark@srfconsulting.com

Name (Please print)	Title/Representing		
Larry Weil	City of West Fargo		
Address: 800 4th Ave E			
City: West Fargo	State: ND	Zip code: 58078	Email: larry.weil@westfargond.gov

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

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FM Metropolitan Council of Governments

Meeting Location	Meeting Type	Meeting Date
Moorhead Downtown Library	Public Open House	10/24/2018
Project Number		PCN
Project Description		
Metro Grow (LRTP) Public Open House		

Name (Please print)	Title/Representing	
Sharon Weber	Realtor	
Address		
1204 15th St S		
City	State	Zip code	Email
Moorhead	MN	56560	sharon@beyondrealtyfm.com

Name (Please print)	Title/Representing	
BRIAN KING	Public / HDR	
Address		
3514 10th St S		
City	State	Zip code	Email
FARGO	ND	58104	brian.j-king@hdrinc.com

Name (Please print)	Title/Representing	
Bethany Brandt-Sargent		
Address		
City	State	Zip code	Email
Fargo	ND	58102	

Name (Please print)	Title/Representing	
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SIGN-IN SHEET
North Dakota Department of Transportation, Civil Rights Division
SFN 59531 (Rev. 03-2012)

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Division/District/Consultant
FM Metropolitan Council of Governments

Meeting Location	Meeting Type	Meeting Date
Moorhead Downtown Library	Public Open House	10/24/2018
Project Number		PCN
Project Description: Metro Grow (LRTP) Public Open House		

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SIGN-IN SHEET
North Dakota Department of Transportation, Civil Rights Division
SFN 59531 (Rev. 03-2012)

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Division/District/Consultant
FM Metropolitan Council of Governments

Meeting Location	Meeting Type	Meeting Date
Moorhead Downtown Library	Public Open House	10/24/2018
Project Number		PCN
Project Description: Metro Grow (LRTP) Public Open House		

Name (Please print)	Title/Representing		
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Address			
City	State	Zip code	Email

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Open House 2 Overview

On February 8, 2019, Metro COG held a public open house to gather input on potential improvement strategies (vehicular, bike and pedestrian, and transit) to address transportation needs for corridors and intersections in the Metro COG region. Attendees provided specific input on where they would like to see transportation strategies implemented. The public open house was held at the Stone Building, in downtown Fargo at 613 1st Ave N. The open house was held between 11:00 am – 7:00 pm.

It was estimated that approximately 100 - 120 residents attended the open house over the course of the day.

Open House Activities

The open house format provided the following elements:

Technical Analysis Boards

The technical analysis work, some from the October work shop and some newly-developed, was displayed to inform attendees about the technical analyses that had been completed to date. The following maps of transportation conditions were provided:

- **Existing Conditions Boards**: maps of existing bicycle and pedestrian system, transit routes, and traffic operations and safety were provided to orient users to the technical analysis that had been completed to date.
- **Future Conditions Boards**: maps of projected housing growth and employment growth (2015-2045) and future traffic congestion estimates.

Activities

Two different activity stations were developed for the open house to get feedback from those in attendance. Metro COG and HDR staff facilitated the activities with the public.

Interactive Strategy Stations

The first station was designed to get open house attendees thinking about the types of transportation improvement strategies they'd like to see implemented in their community. The station was split into three parts: **vehicular strategies**, **bike and pedestrian strategies**, and **transit strategies**. Plan staff talked with attendees about various strategies that could be considered, to give a high level overview of the types of strategies, the effectiveness, benefits, and potential drawbacks of each strategy, and illustrations and case studies of locations each strategy has been implemented.

After attendees had a good understanding of the strategies, attendees had the option of filling out voting sheets to say whether they liked / supported, were neutral / unsure, or disliked / did not support each strategy. A tabulation of the voting sheets is shown in **Table 1**.

Map Your Strategies Station

A large plot of the metro area was provided at the "Map Your Strategies" Station. Attendees were encouraged to pick a few strategies from the Interactive Strategy stations and use color coded tape / stickers to identify a corridor or intersection they would like to see an improvement made in the future. **Figure 1** and **Figure 2** show the resulting strategy ideas that were identified at the open house. The goal was to educate attendees on the technical analyses and strategy options for the region, and then provide attendees the opportunity to talk about strategies / projects that they believe should be included in the LRTP. This also provided the study team the options to see potential critical projects that may have been missed by the technical analysis.

Table 1. Strategy Voting Tabulation from Open House

Vehicular Strategy Voting		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Active Traffic Management		11	1	0
New Signals and / or Improved Coordination		11	1	1
Grade Separation		9	3	0
Multi-way Boulevard Roadways		9	4	0
Ramp Metering		7	4	1
Innovative Intersection Types		7	5	2
Expressways		6	1	4
Travel Demand Management		6	2	0
More Travel Lanes		5	3	6
Hard Shoulder Running / Bus on Shoulder		3	5	0
Transit Strategy Voting				
Local Bus Transit	Increased Hours of Service	10	1	0
	Extend Existing Routes or Add More Routes	9	2	0
	Increased Frequency of Service	7	3	0
Express Bus Transit		9	2	0
Bus Rapid Transit		8	2	2
Streetcar		6	2	4
Light Rail		5	4	3

Bike and Pedestrian Voting	Like / Support	Neutral / Unsure	Dislike / Do Not Support
Grade Separation	15	2	0
Raised Crosswalks and Intersections	14	5	2
Recreational Trail	14	1	0
Leading Pedestrian Interval	14	5	0
Sidepath	13	2	0
Curb Extensions / Bump Outs	12	3	2
Median / Pedestrian Refuge Islands	11	4	1
Bike Lanes	10	3	3
Actuated Pedestrian Signals at Mid-Block	10	6	0
Protected "Dutch Intersection"	7	7	2
Bike Boulevard	7	6	3
On-Street Shared Lane Markings or Sharrows	7	6	5
Cycle Tracks	5	1	1

Figure 1. Public-Identified Strategies from Open House (Wider Scale)

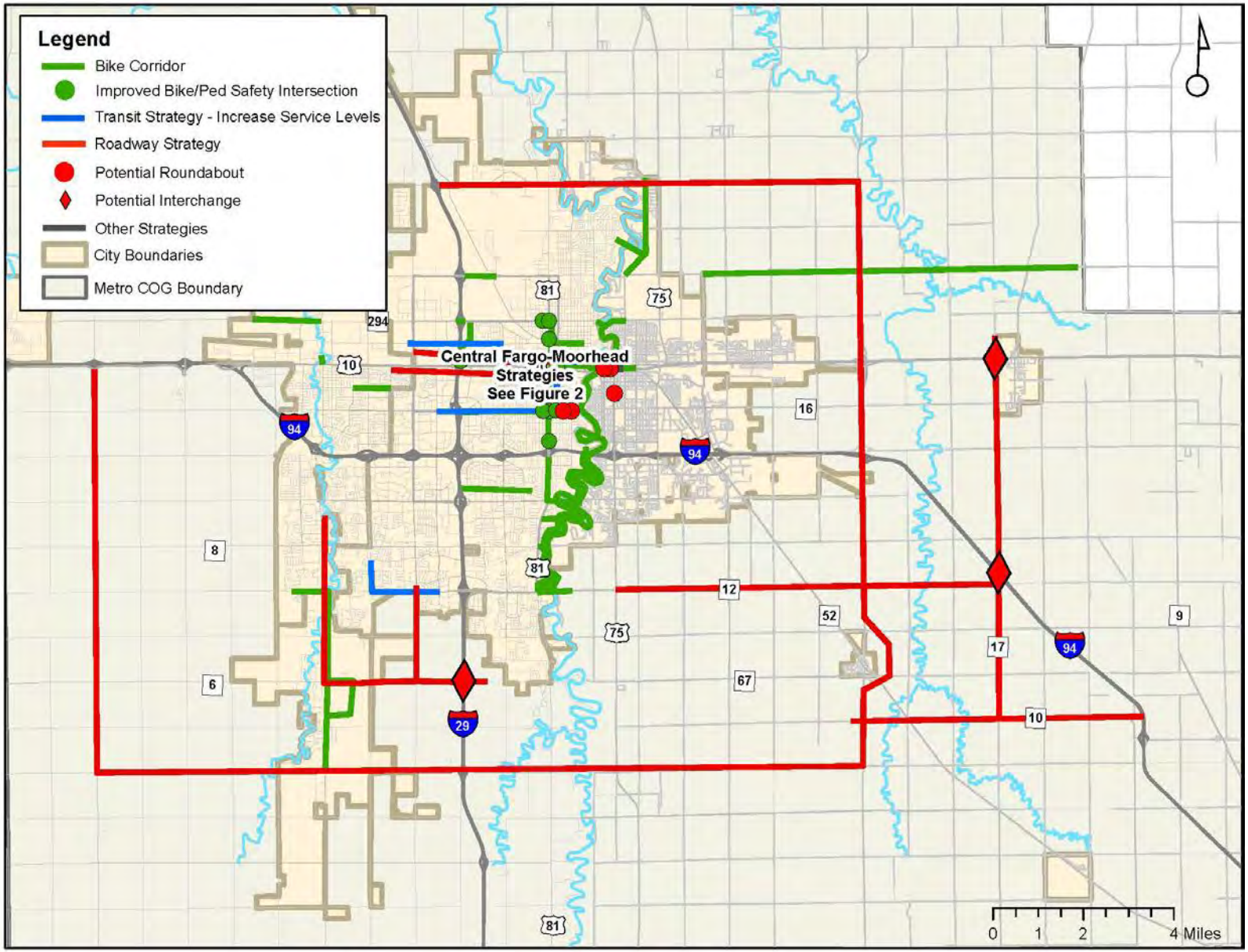
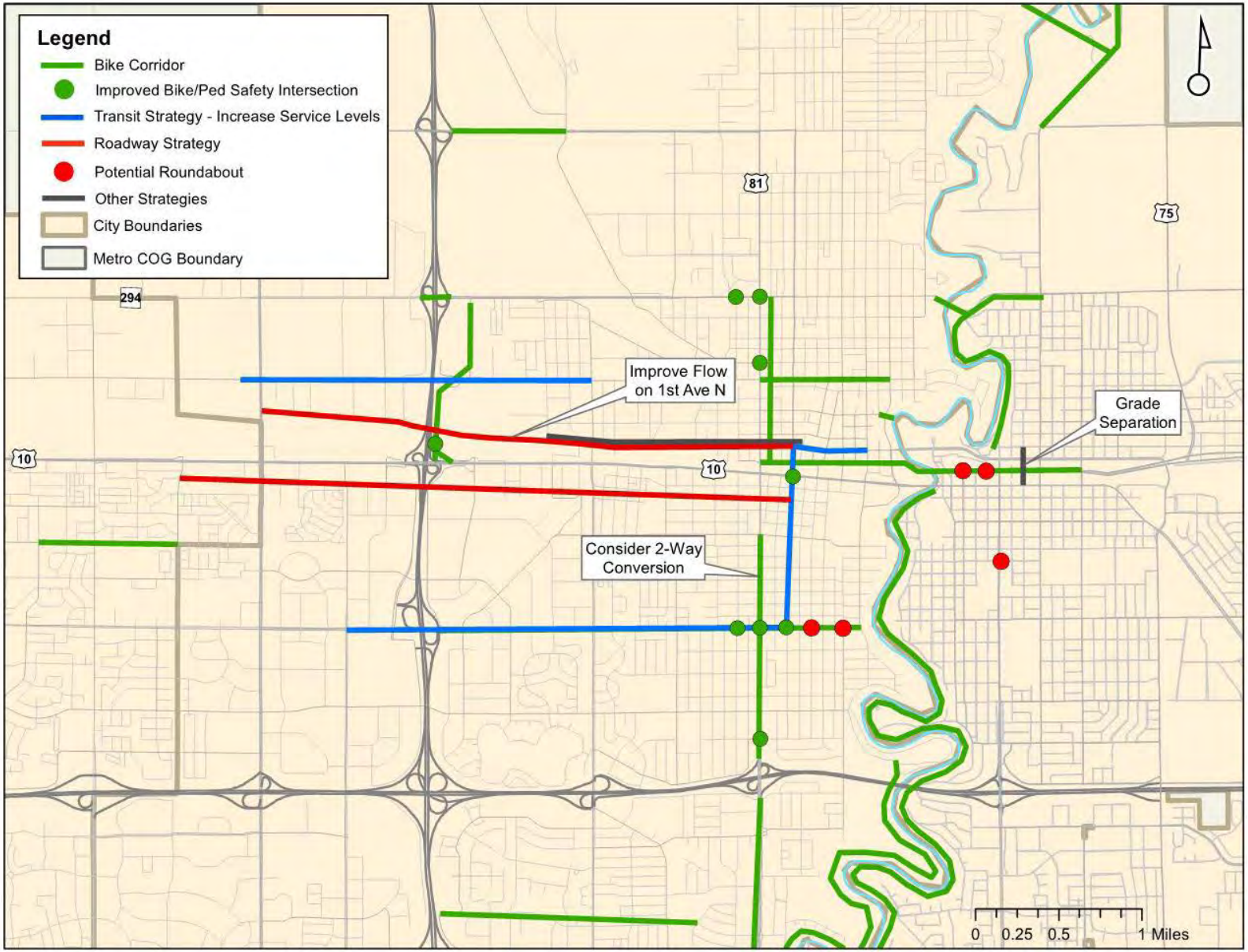


Figure 2. Public-Identified Strategies from Open House (Central Fargo - Moorhead)



Comment Box

Comment cards were provided to attendees so that they could provide any additional comments they might not have provided via the activities.

Meeting Promotion

Several different channels were used for meeting promotion leading up to the meeting:

- Social Media posts via the Metro COG Facebook page
- Targeted Facebook ads for regional residents.
- Email to residents who had signed up for our mailing list at summer events and via the online survey.
- Email sent by MATBUS to its mail list ("rider alert") and to public relations contacts at partner agencies.
- Promotion at the Metro COG website.
- Fliers and poster signs were distributed to civic buildings across the region, and provided at stakeholder meetings such as Metro COG's Traffic Operations Committee and the Bicycle and Pedestrian Committee members.
- News release sent to local media outlets, which yielded interviews of the Metro COG project manager on TV news stations and a live interview on one radio show.

Figure 3 shows one of the social media advertisements that was utilized. **Figure 4** includes pictures from the open house.

The strategy education materials shared with open house attendees at the Interactive Strategy Stations are shown in the **Materials Appendix.**

Figure 3. Example Social Media Advertisement

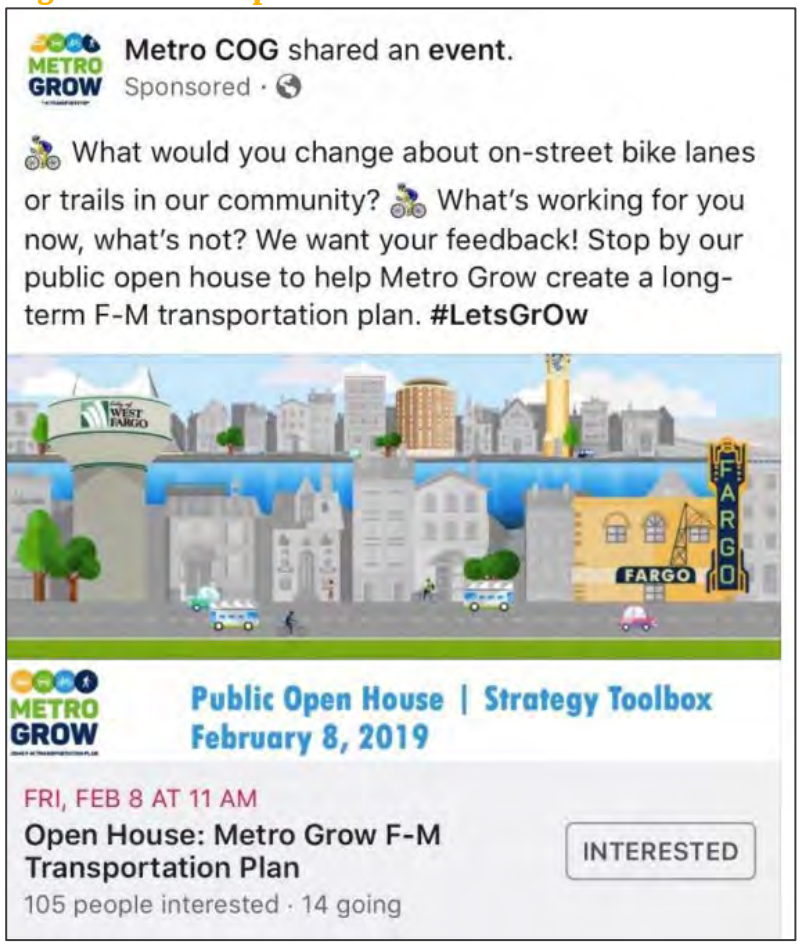


Figure 4. Pictures from Open House

Materials Appendix

METRO GROW
2045 F-M TRANSPORTATION PLAN

Public Open House | Transit Strategy Toolbox
February 8, 2019

Discuss and Rate each Strategy

- Learn about each strategy.
  - Strategy purpose
  - Pros and cons
- Rate each strategy on voting sheet.
- Use that information on the Map Your Strategy Activity.

Strategy Toolbox:
Local Bus (MATBUS) Transit

Source: MATBUS

Source: MATBUS

Strategy Toolbox: Express Bus Transit

Source: Minneapolis-St Paul Metro Transit

Source: Nashville MTA

Strategy Toolbox: Bus Rapid Transit

Source: Missouri Public Transit Association

Source: NACTO

Strategy Toolbox: Streetcar

Source: Portland Streetcar

Strategy Toolbox: Light Rail

Source: FHWA

Source: Minneapolis-St Paul Metro Transit

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Local Bus Transit (MATBUS)  	**Increased Hours of Service (Morning / Night / Weekends)**			
	Increased Frequency			
	More Routes			
Express Bus Transit				

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Bus Rapid Transit (BRT)				
Streetcar				
Light Rail				

METRO GROW
2045 F-M TRANSPORTATION PLAN

Public Open House | Bike and Pedestrian Strategy Toolbox
February 8, 2019

Discuss and Rate each Strategy

- Learn about each strategy.
  - Strategy purpose
  - Pros and cons
- Rate each strategy on voting sheet.
- Use that information on the Map Your Strategy Activity.

Strategy Toolbox: Pedestrian Strategies at Intersections

- Curb extensions/bump outs

Source: NACTO

Strategy Toolbox: Pedestrian Strategies at Intersections

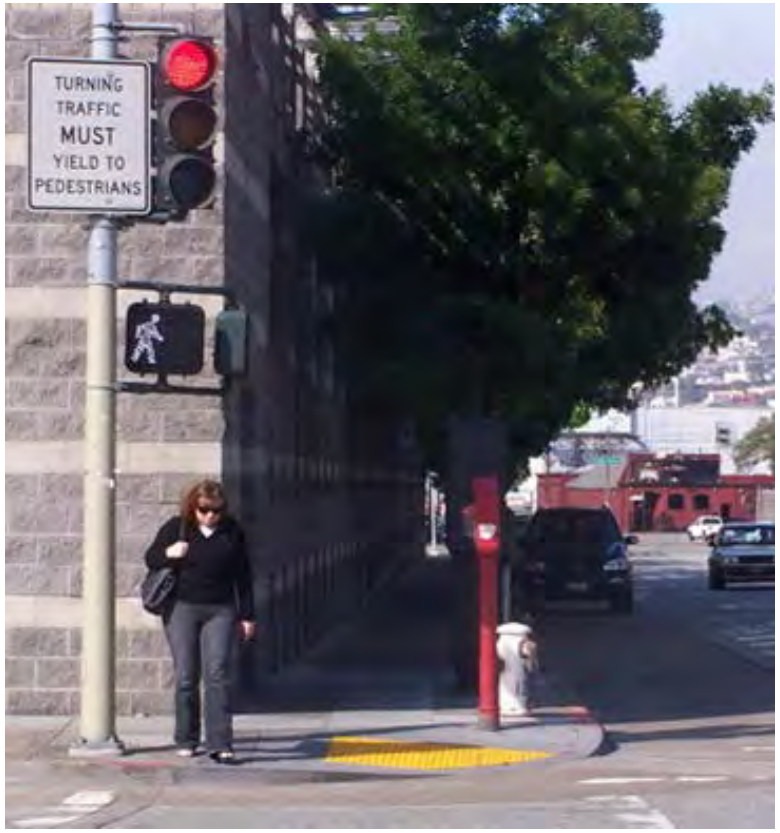
- Medians/pedestrian refuge islands

Source: NACTO

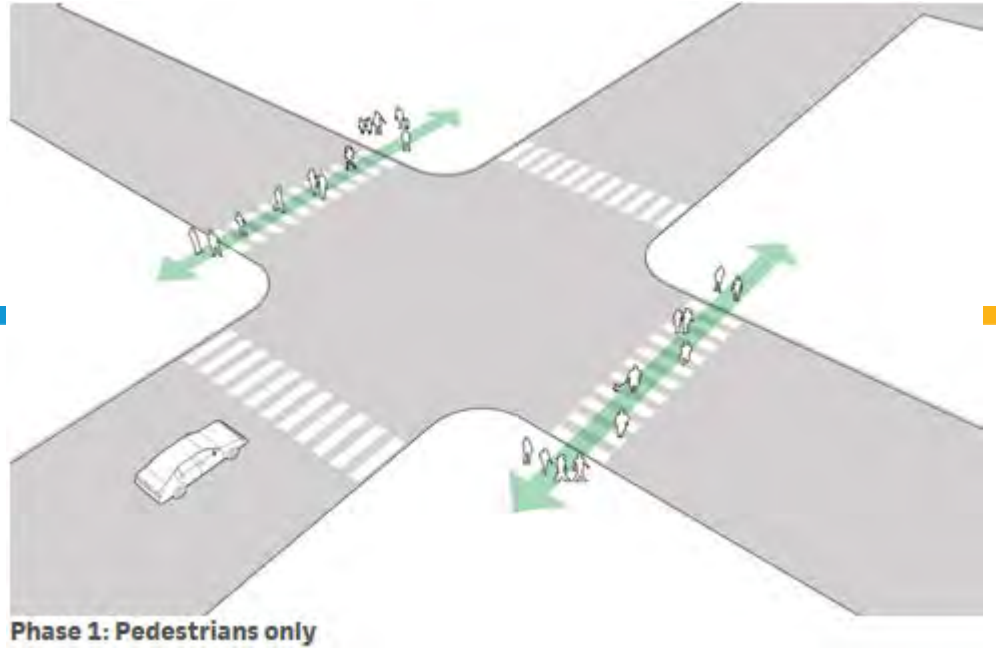
Source: Google Street View

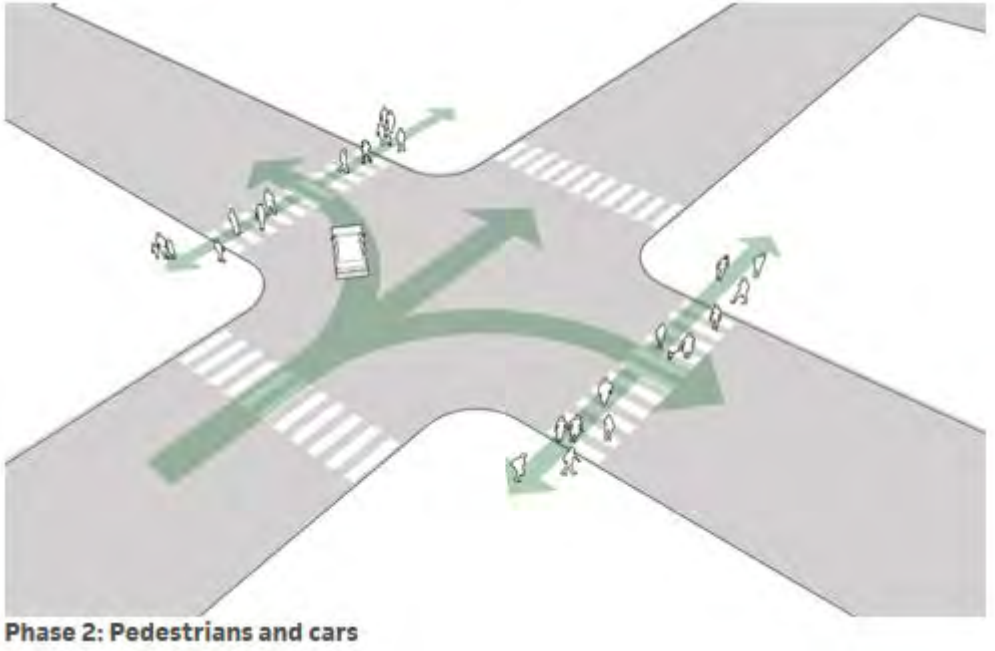
Pedestrian Strategies at Intersections

- Leading pedestrian interval



Source: FHWA





Source: NACTO

Strategy Toolbox: Pedestrian Strategies

- Raised Crosswalks and Intersections

Raised Mid-Block Cross-Walk
Source: FHWA

Raised Intersection
Source: City of Boulder, CO

Strategy Toolbox: Pedestrian Strategies at Mid-Block

- Actuated pedestrian signals

Rectangular Rapid Flashing Beacon Example
Source: City of Ft Lauderdale

Pedestrian Hybrid Beacon Example
Source: Mike Cynecki

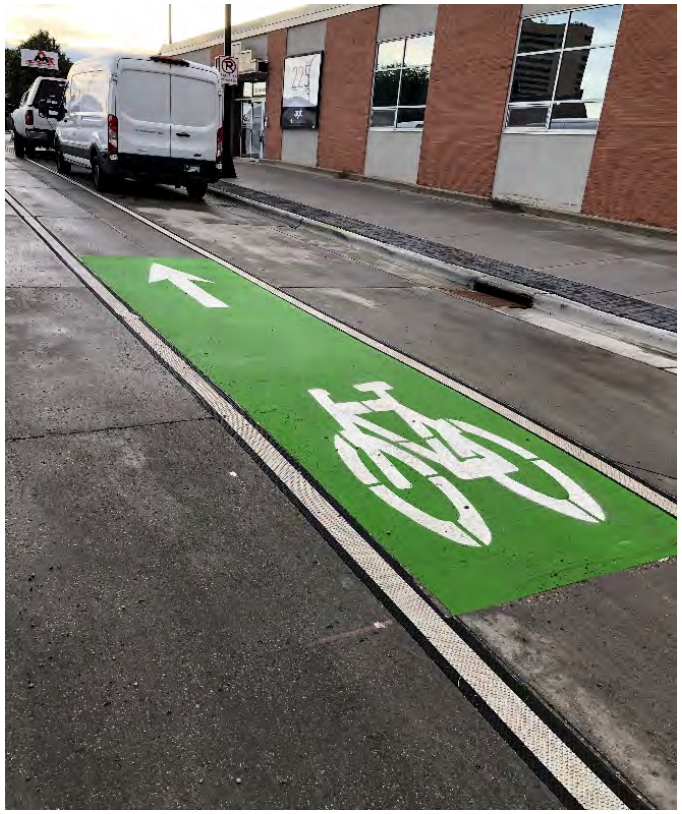
Strategy Toolbox:
On-Street Bicycle Strategies

- On-Street Shared Lane Markings or Sharrows

Source: City of Ft Lauderdale

Strategy Toolbox: On-Street Bicycle Strategies

- Bike Lanes



Source: NACTO

Strategy Toolbox:
On-Street Bicycle Strategies

- Cycle Tracks

Source: NACTO

Strategy Toolbox:
On-Street Bicycle Strategies

- Bike Boulevard

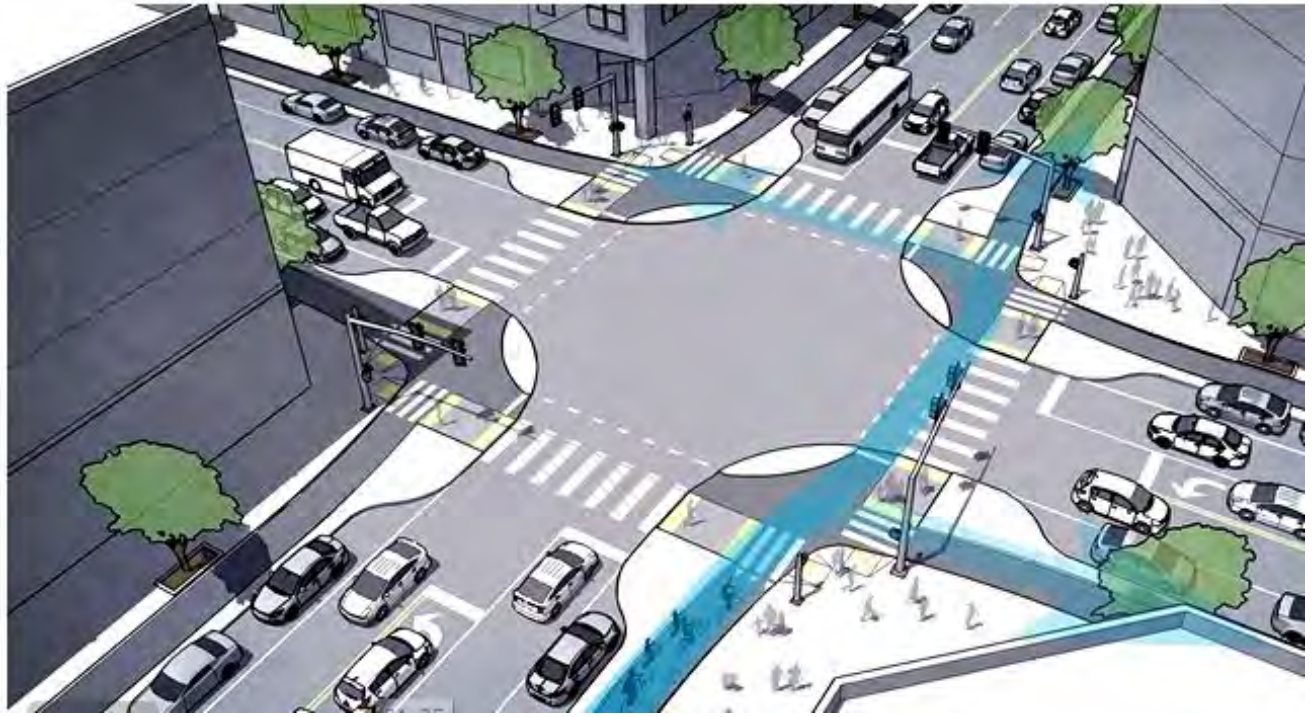
Source: NACTO

Source: US DOT

Strategy Toolbox: On-Street Bicycle Strategies

- Protected (“Dutch”) Intersection

Source: City of Davis



Source: Creative Commons

Strategy Toolbox: Off-Street Bicycle Strategies

- Multiuse Trails – Sidepath

Source: City of Boulder

Source: Google Street View

Strategy Toolbox: Off-Street Bicycle Strategies

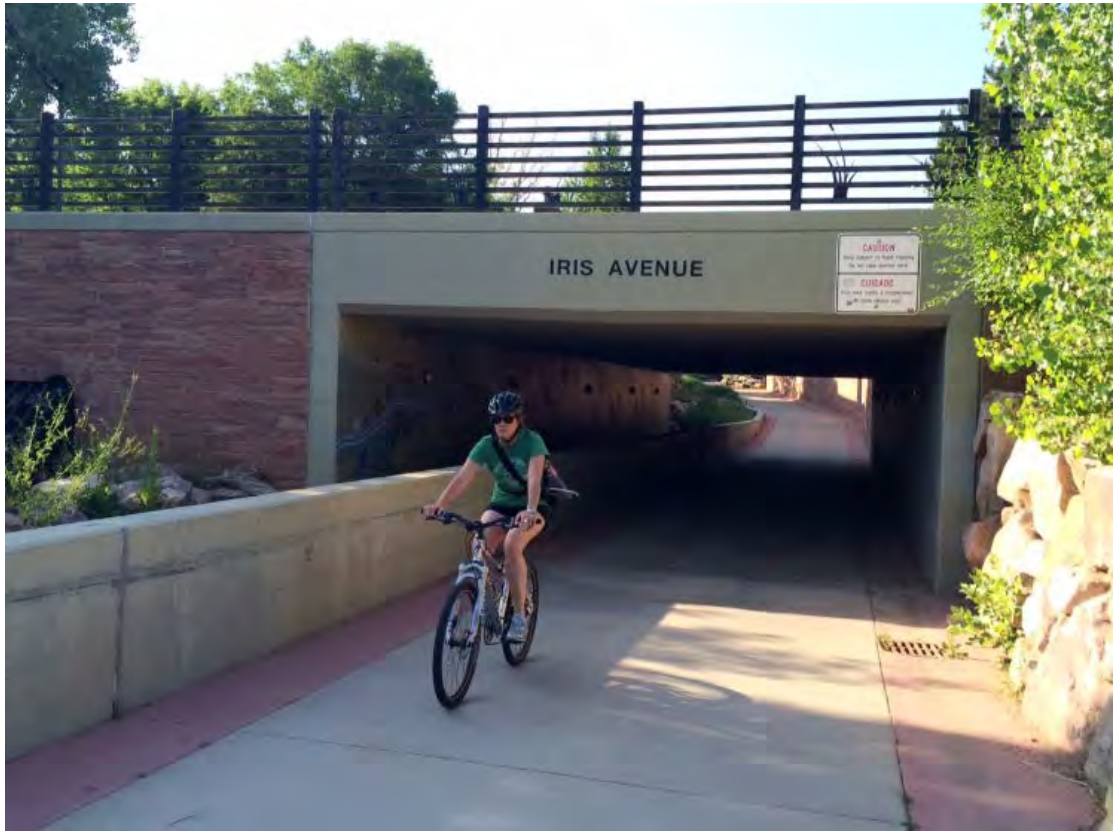
- Recreational Trails

Source: Metro COG

Source: Travel Iowa

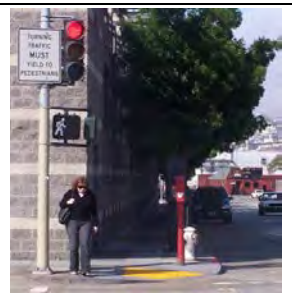
Strategy Toolbox: Off-Street Bicycle Strategies

- Grade Separation



Source: Bicycle Colorado

Source: Google Earth

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Curb Extensions / Bump Outs				
Median / Pedestrian Refuge Islands				
Leading Pedestrian Interval				

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Raised Crosswalks and Intersections				
Actuated Pedestrian Signals at Mid-Block				
On-Street Shared Lane Markings or Sharrows				

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Bike Lanes ~~and Cycle Tracks~~	 			
Cycle Tracks				

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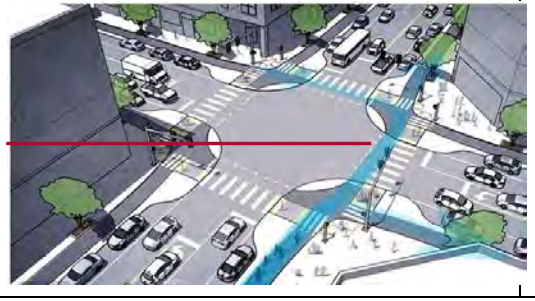
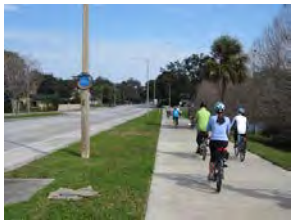
Bike Boulevard				
~~**Protected "Dutch" Intersection**~~				

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Protected "Dutch" Intersection				
Sidepath				
Recreational Trail				
Grade Separation				

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METRO GROW
2045 F-M TRANSPORTATION PLAN

Public Open House | Roadway Strategy Toolbox
February 8, 2019

Discuss and Rate each Strategy

- Learn about each strategy.
  - Strategy purpose
  - Pros and cons
- Rate each strategy on voting sheet.
- Use that information on the Map Your Strategy Activity.

Strategy Toolbox: Addressing Vehicular Congestion

- More Travel Lanes (Street Widening)

Source: Omaha.com

Source: Google Street View

Strategy Toolbox: Addressing Vehicular Congestion

- New Signals and / or Improved Coordination

Source: FHWA

Source: FHWA

Strategy Toolbox: Addressing Vehicular Congestion

- Other Innovative Intersection Types

Roundabout south of Moorhead
Source: Google Earth

Displaced Left Turn Lanes
Source: FHWA / MoDOT

Median U-Turn
Source: FHWA

Strategy Toolbox: Addressing Vehicular Congestion

- New Roadway Type - Multiway Boulevard

Source: Streets.mn

Source: NACTO

Strategy Toolbox: Addressing Vehicular Congestion

- New Roadway Type - Expressway

Source: Wikipedia

Source: Google Earth

Strategy Toolbox: Addressing Vehicular Congestion

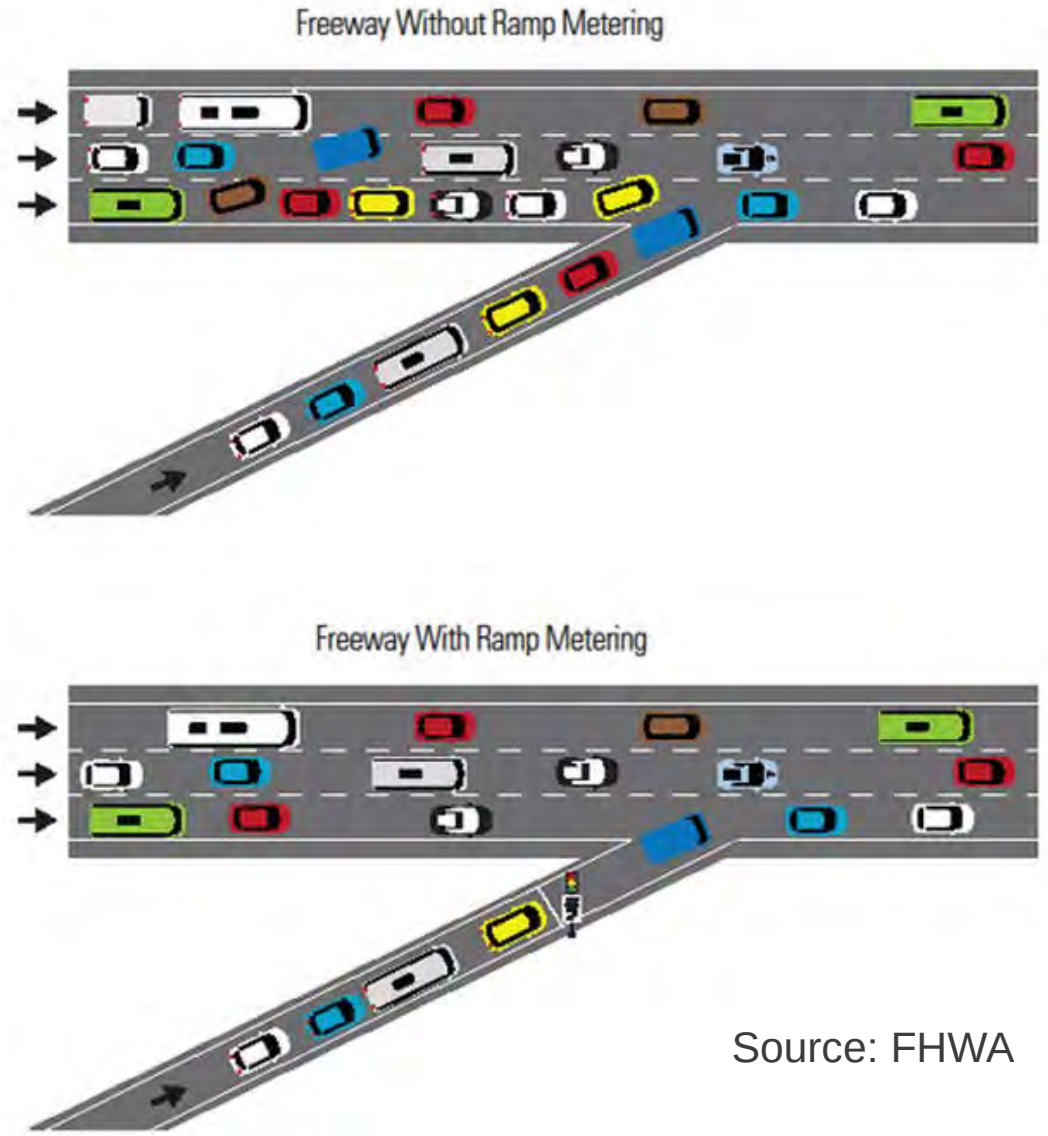
- Grade Separations

Source: Google Earth

Strategy Toolbox: Interstate Management

- Ramp Metering

Source: FHWA



Source: FHWA

Strategy Toolbox: Interstate Management

- Variable Speed Limits, Queue Warnings and Dynamic Junction Control, and Traveler Information

Source: VDOT

Source: Iowa DOT

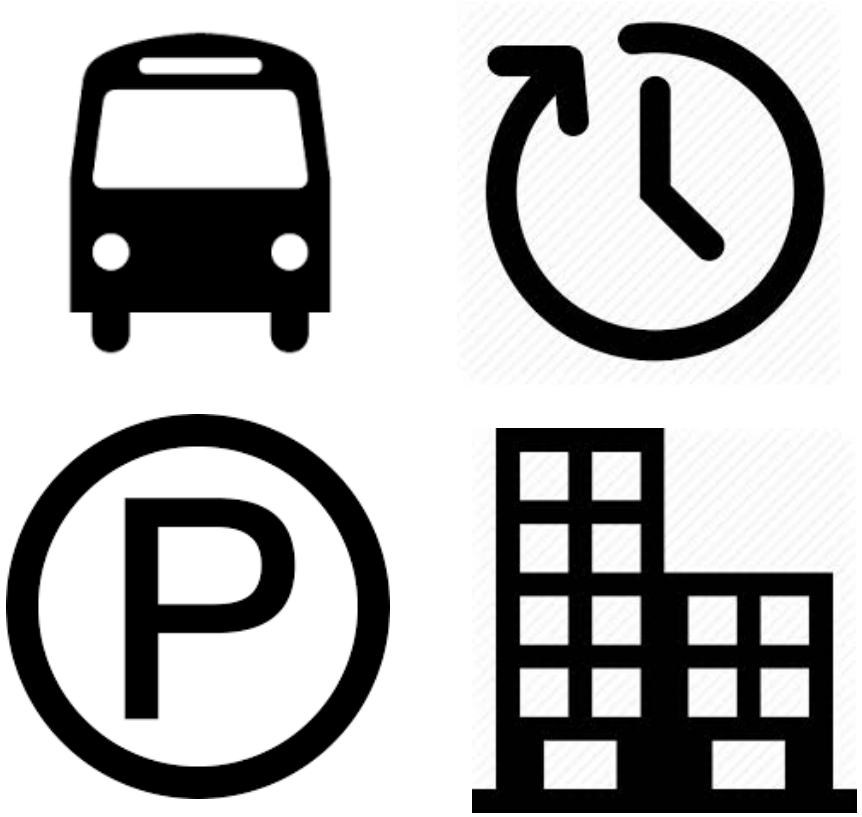
Strategy Toolbox: Interstate Management

- Hard Shoulder Running / Bus on Shoulder

Source: FHWA

Source: MnDOT

Strategy Toolbox:
Travel Demand Management Strategies



Source: Tennessee DOT

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
More Travel Lanes				
New Signals and / or Improved Coordination				
Innovative Intersection Types				

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Multi-way Boulevard Roadways				
Expressways				
Grade Separation / Barrier Removal				

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Ramp Metering				
Active Traffic Management				

See Next Page for Two More Strategies

Strategy		Like / Support	Neutral / Unsure	Dislike / Do Not Support
Hard Shoulder Running / Bus on Shoulder				
Travel Demand Management				

Open House 3 Overview

A third open house was held on July 18 and July 19, 2019 at the Downtown Fargo Street Fair. The study team hosted a booth with three activities that offered community members a final opportunity to express their vision and ideas for investment in the future transportation system. The specific focus of this open house event was to better understand the desires of residents in the Metro COG region in terms of public expenditures for different modal options as well as identified roadway expansion, roadway preservation, and bicycle and pedestrian projects. The three activities for the open house were:

- "My Transportation Spending Decision": Participants were shown a breakdown of the current Metro COG allocation of $13.5 million in federal transportation funds on bike and pedestrian projects, transit projects, street and roadway preservation projects, and new street and roadway projects in pie chart format. Participants were then asked to allocate the $13.5 million by filling out a pie chart corresponding to their desired level of funding for each of the four categories.
- "Priority Big Project": This activity asked participants to review 9 potential major roadway projects for the metro area and vote for their top two by placing a blue bead, indicating their favorite big project, and a red bead, indicating their second favorite project, into jars labeled with the project name.
- "Spend Your Transportation Dollars": Two large plots were presented to participants that depicted the locations of various projects that were proposed by Metro COG for implementation. Participants were then encouraged to review a packet that contained a description and estimated cost for each project; with a total budget of $102 million, participants were able to select projects they would like to see funded by placing stickers that represented either $1 million, $5 million, or $10 million next to their project selection so that they could share how their idea of how best to spend the $102 million on the region's transportation system.

"My Transportation Spending Decision" Activity

Open house attendees were invited to share their vision for how Metro COG allocates future transportation funds across four different categories—bicycle and pedestrian, transit system, street and roadway preservation, and new street and roadways. 21 individuals participated in the activity and gave a range of ideas about their ideal allocation of transportation funds between these categories.

As **Table 1** indicates, the mean responses were relatively balanced amongst the modes range. The theme of the input received from those in attendance was to increase the level of funding for bicycle and pedestrian facilities and transit operations.

Table 1: Average Transportation Funding Allocations by Category

Spending Category	Percent of Funding Allocated
Bike and Ped Spending	18%
Transit System Spending	22%
Street and Roadway Preservation Spending	33%
New Street and Roadway Spending	27%

"Choose Your Priority Big Project" Activity

A second activity available for attendees of the open house asked participants to review 9 different major transportation projects and cast their votes for the two projects they would prioritize. 33 individuals participated in this activity and the breakdown of their votes is presented in **Table 2**.

Table 2: Breakdown of Votes for "Choose Your Priority Big Project" Activity

Project	Description	1st Place Votes	2nd Place Votes	Total Votes
A	South Bypass Roadway Project	7	3	10
B	Northwest Bypass Roadway Project	5	6	11
C	9th St Railroad Grade Separation and Improvements	2	3	5
D	76th Ave South Interchange with I-29	6	8	14
E	11th St Railroad Grade Separation	9	4	13
F	64th Ave South Interchange with I-29	1	4	5
G	55th St Interchange with I-94	1	1	2
H	South Dilworth Grade Separation	0	3	3
I	12th St Interchange with HWY 336	3	0	3

As shown in **Table 2**, the project receiving the highest amount of 1st place votes was the 11th Street Railroad Grade Separation Project in the City of Moorhead, while the South Bypass Roadway Project received the second highest number of 1st place votes. The project receiving the most combined 1st and 2nd place votes was the 76th Avenue South Interchange with I-29 Project.

"Spend Your Transportation Dollars" Activity

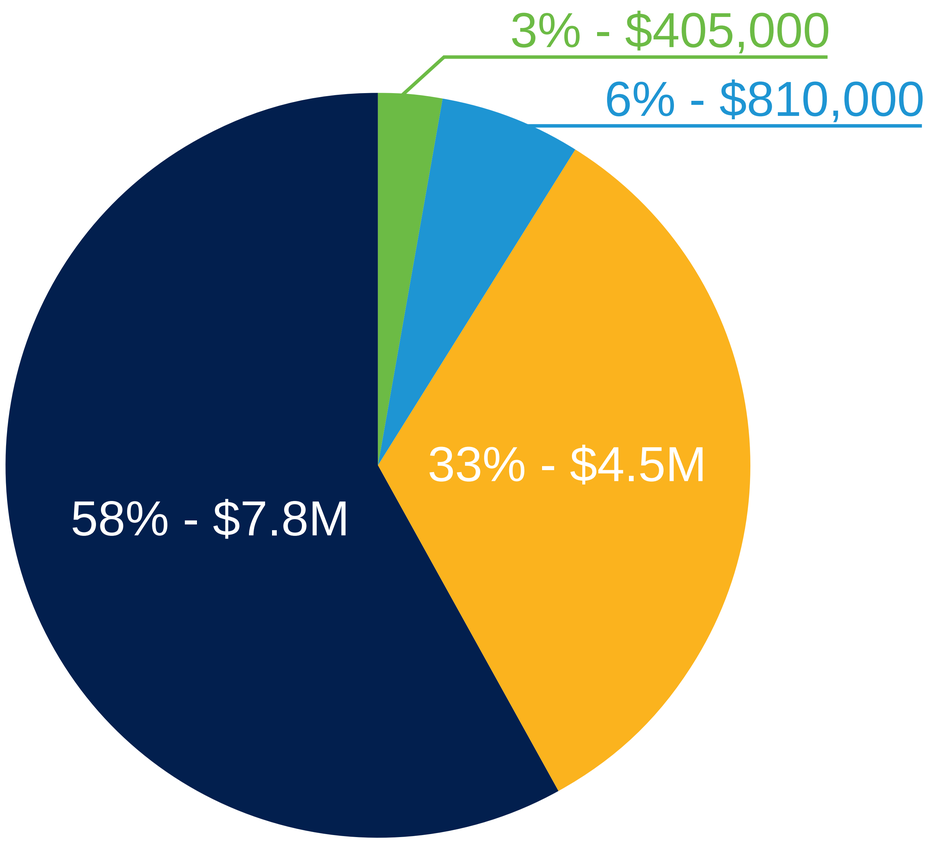
The third activity during the open house event asked participants to review a list of potential roadway and bicycle and pedestrian projects and each project's estimated cost, with the goal of allocating a budget of $102 million to the projects they would like to see constructed. The activity was the last activity in the booth, and only three attendees completed the activity. Although low participation does not represent a trend, the projects selected were:

- Bike Ped Project #4 – 2 votes
- Bike Ped Project #5 – 1 vote
- Bike Ped Project #6 – 1 vote
- Bike Ped Project #8 – 2 votes
- Bike Ped Project #10 – 1 vote
- Bike Ped Project #43 – 1 vote
- Bike Ped Project #45 – 1 vote
- Bike Ped Project #50 – 1 vote
- Bike Ped Project #74 – 1 vote
- Bike Ped Project #77 – 1 vote
- Bike Ped Project #1001 – 1 vote
- Roadway Project #15 – 1 vote
- Roadway Project #65 – 1 vote
- Roadway Project #72 – 1 vote
- Roadway Project #80 – 1 vote
- Roadway Project #81 – 1 vote

.

CURRENT TRANSPORTATION SPENDING

ANNUAL BUDGET: APPROXIMATELY $13.5M



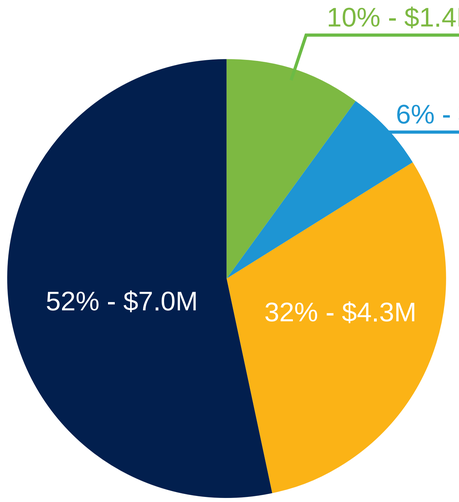
POTENTIAL ANNUAL OUTCOMES

- 3/4 mile of new 4-lane road
- 3.7 lane miles of reconstructed street
- 1.2 miles of new trail or 1/3 of a new bicycle/pedestrian bridge
- 1.2 new buses or 11 miles of extended bus route

METRO GROW
2045 F-M TRANSPORTATION PLAN

- Bike and Pedestrian Spending
- Transit System Spending
- Street and Roadway Preservation Spending
- New Street and Roadway Spending

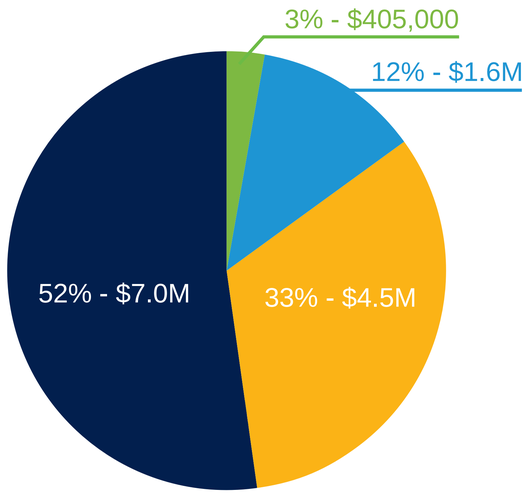
EXAMPLE TRANSPORTATION SPENDING SCENARIOS



INCREASE BICYCLE AND PEDESTRIAN FUNDING SCENARIO

POTENTIAL ANNUAL OUTCOMES

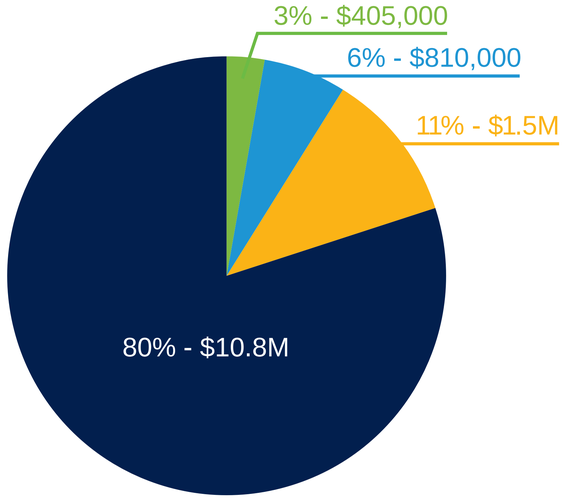
- 2/3 mile of new 4-lane road
- 3.6 lane miles of reconstructed street
- 4 miles of new trail or 1 new bicycle/pedestrian bridge
- 1.2 new buses or 11 miles of extended bus route



INCREASE TRANSIT FUNDING SCENARIO

POTENTIAL ANNUAL OUTCOMES

- 2/3 mile of new 4-lane road
- 3.7 lane miles of reconstructed street
- 1.2 miles of new trail or 1/3 of a new bicycle/pedestrian bridge
- 2.4 new buses or 22 miles of extended bus route

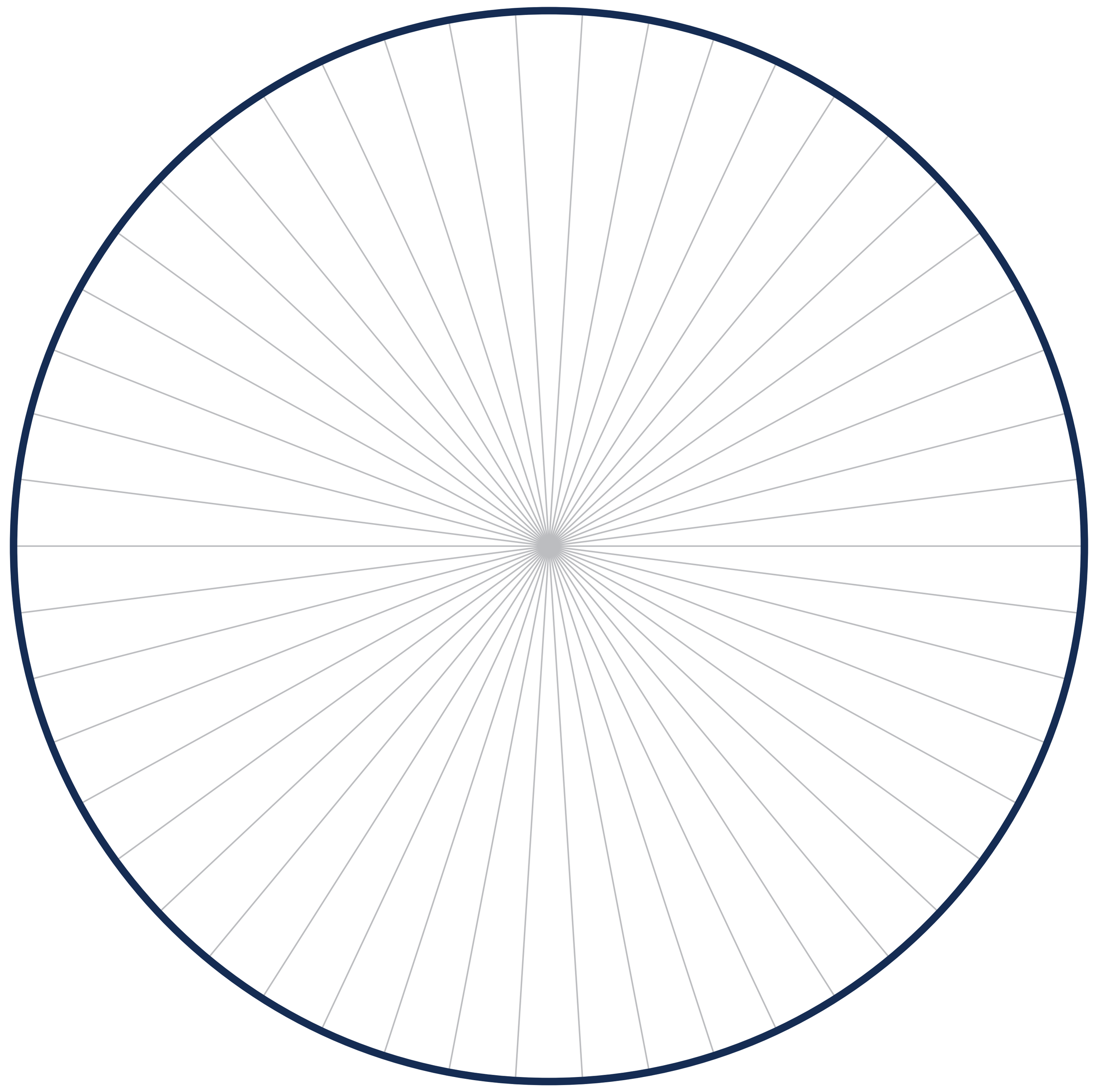


INCREASE NEW ROADWAY FUNDING SCENARIO

POTENTIAL ANNUAL OUTCOMES

- 1 mile of new 4-lane road
- 1.2 lane miles of reconstructed street
- 1.2 miles of new trail or 1/3 of a new bicycle/pedestrian bridge
- 1.2 new buses or 11 miles of extended bus route

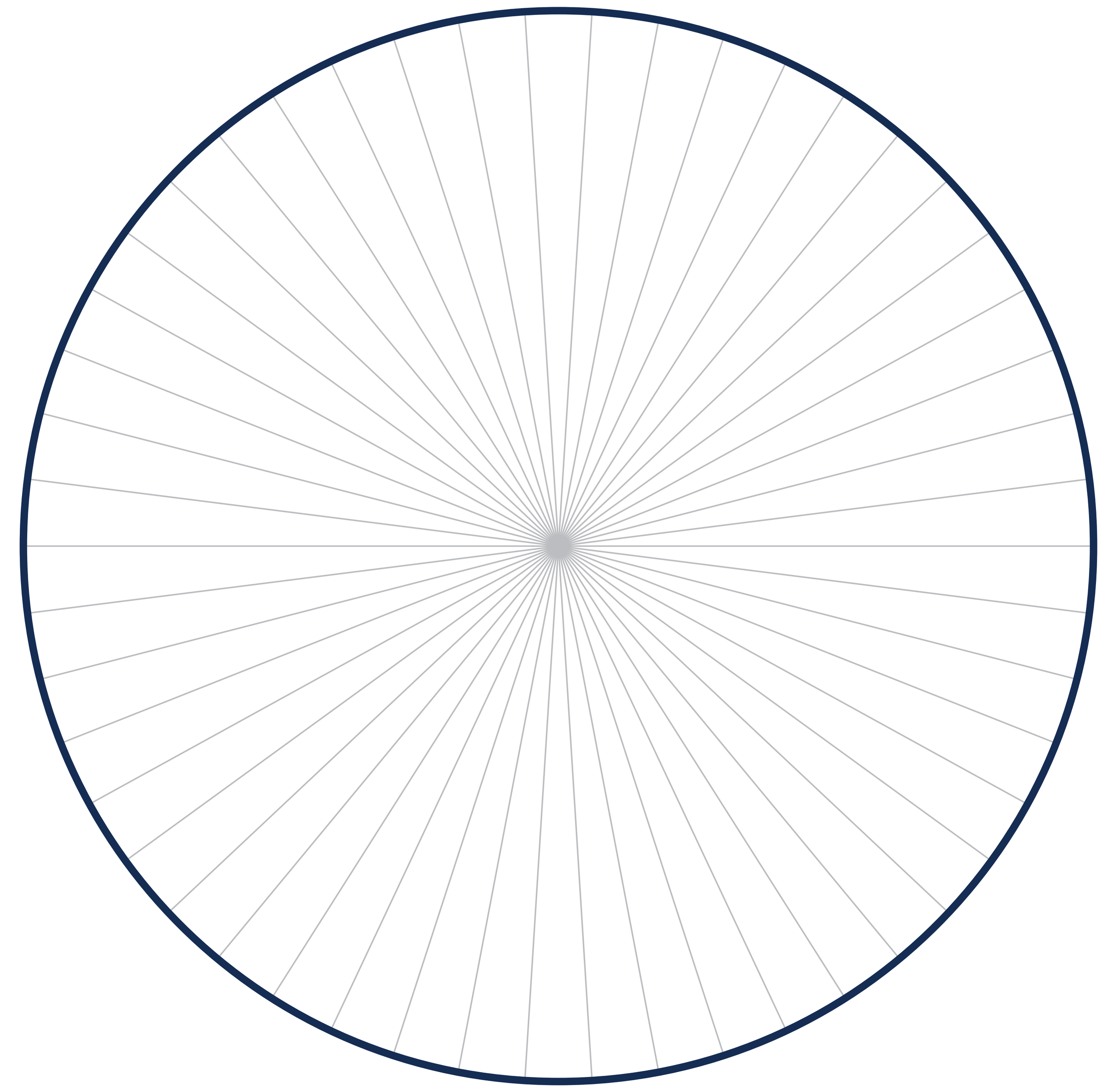
MY TRANSPORTATION SPENDING DECISION



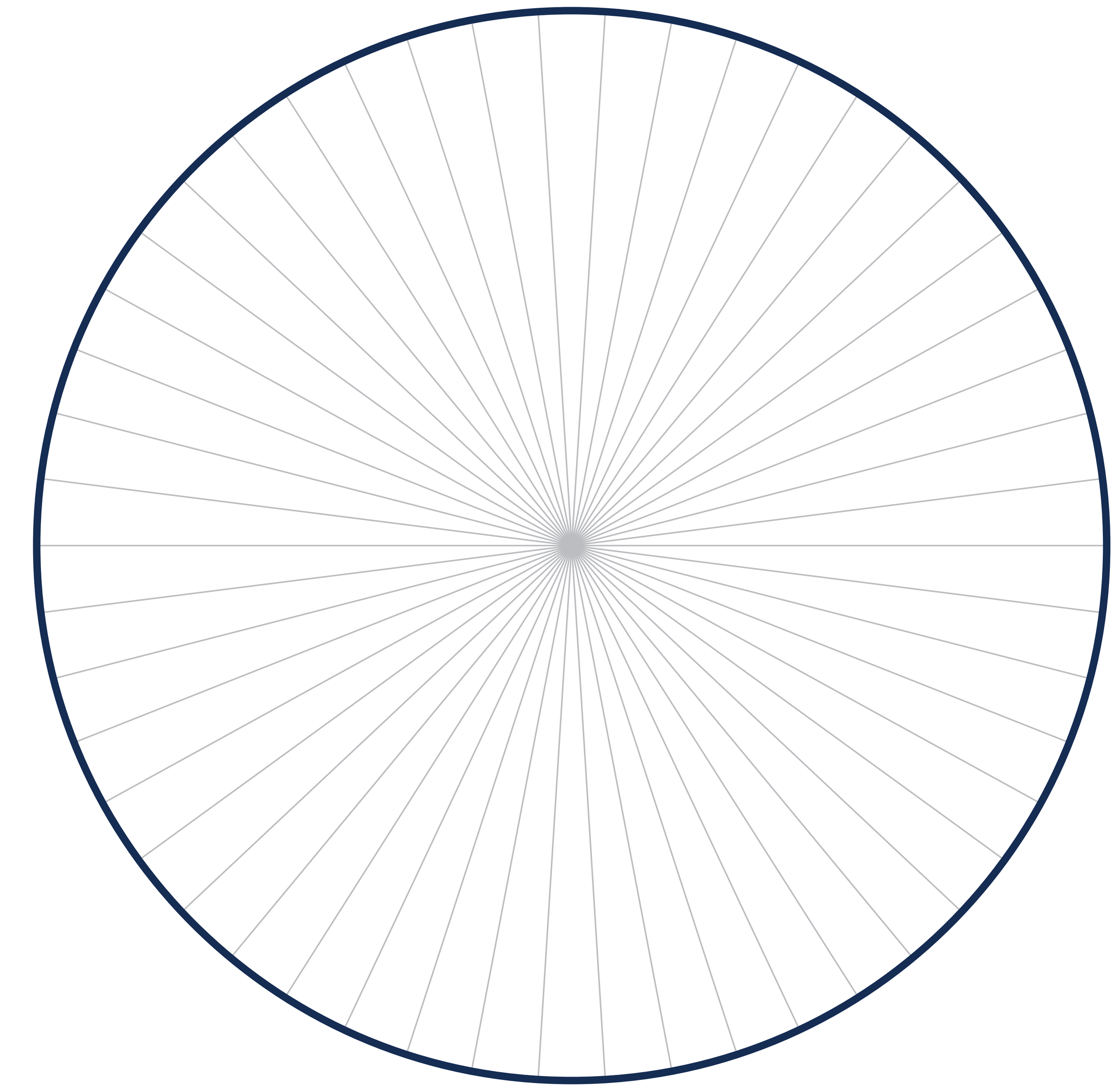
METRO GROW
2045 F-M TRANSPORTATION PLAN

- Bike and Pedestrian Spending
- Transit System Spending
- Street and Roadway Preservation Spending
- New Street and Roadway Spending
- = 2% or $270,000 Annually

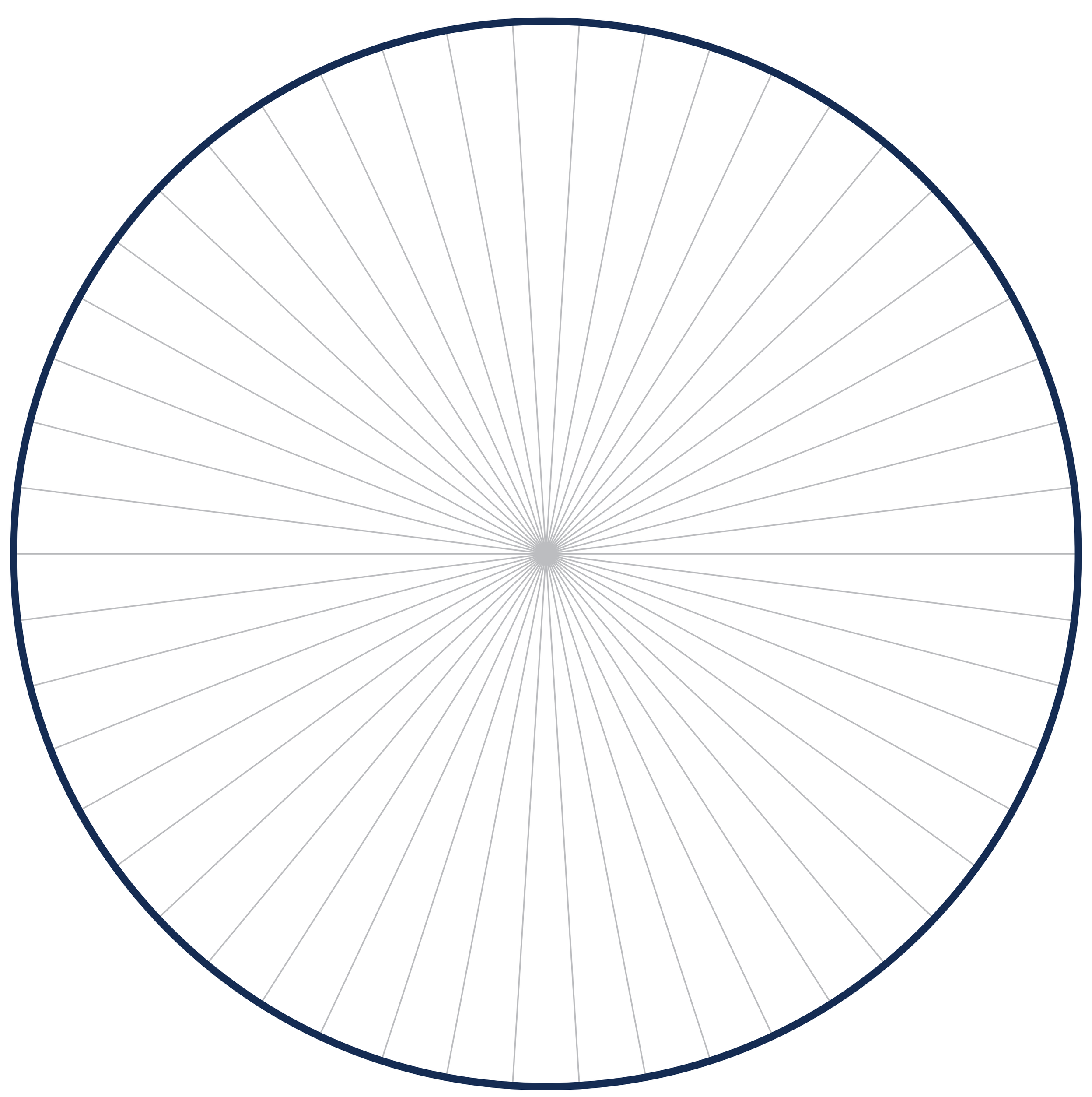
MY TRANSPORTATION SPENDING DECISION



METRO GROW
2045 F-M TRANSPORTATION PLAN
- Bike and Pedestrian Spending
- Transit System Spending
- Street and Roadway Preservation Spending
- New Street and Roadway Spending
- = 2% or $270,000 Annually
MY TRANSPORTATION SPENDING DECISION



METRO GROW
2045 F-M TRANSPORTATION PLAN
- Bike and Pedestrian Spending
- Transit System Spending
- Street and Roadway Preservation Spending
- New Street and Roadway Spending
- = 2% or $270,000 Annually
MY TRANSPORTATION SPENDING DECISION



METRO GROW
2045 F-M TRANSPORTATION PLAN
- Bike and Pedestrian Spending
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- Street and Roadway Preservation Spending
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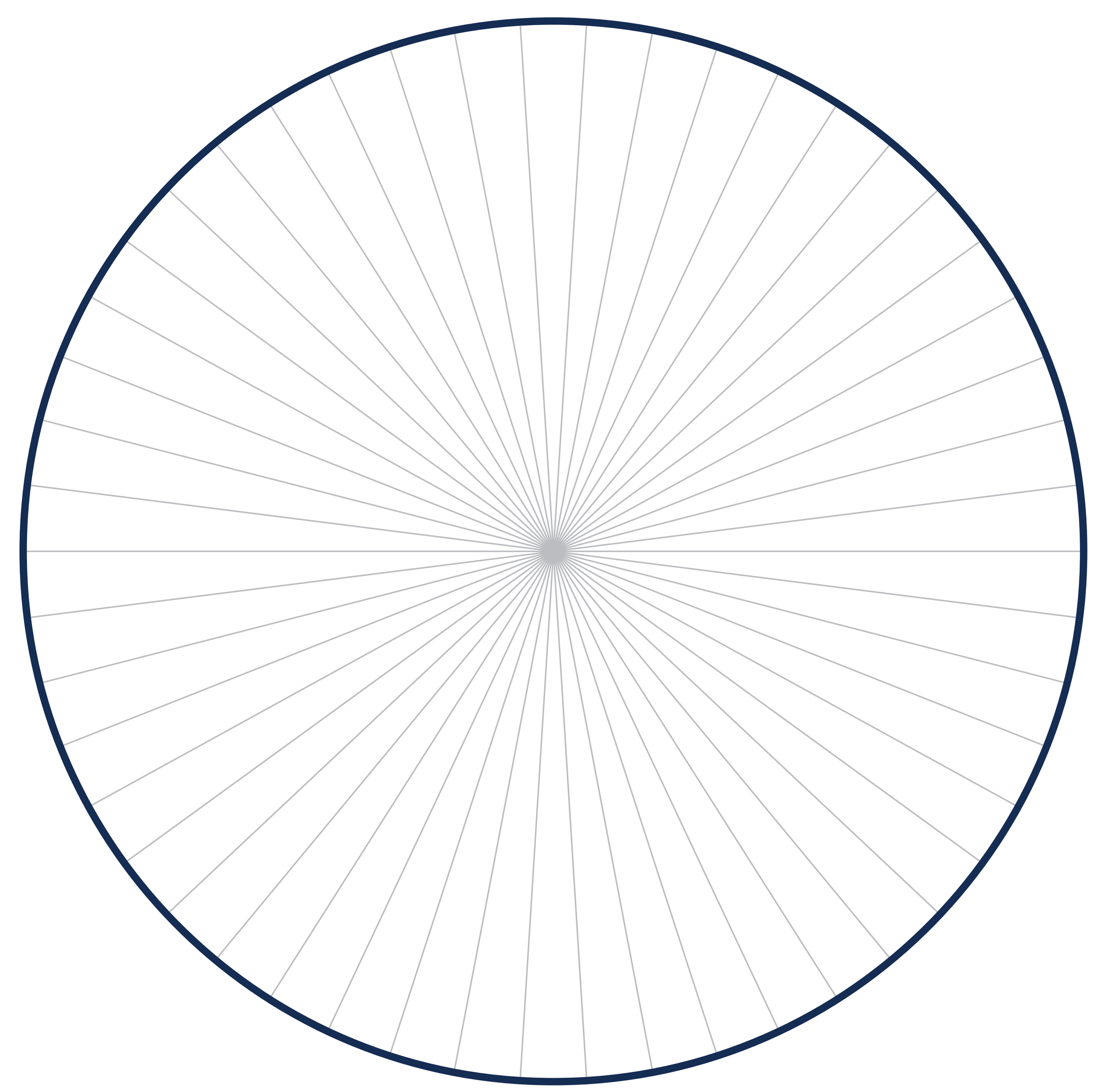
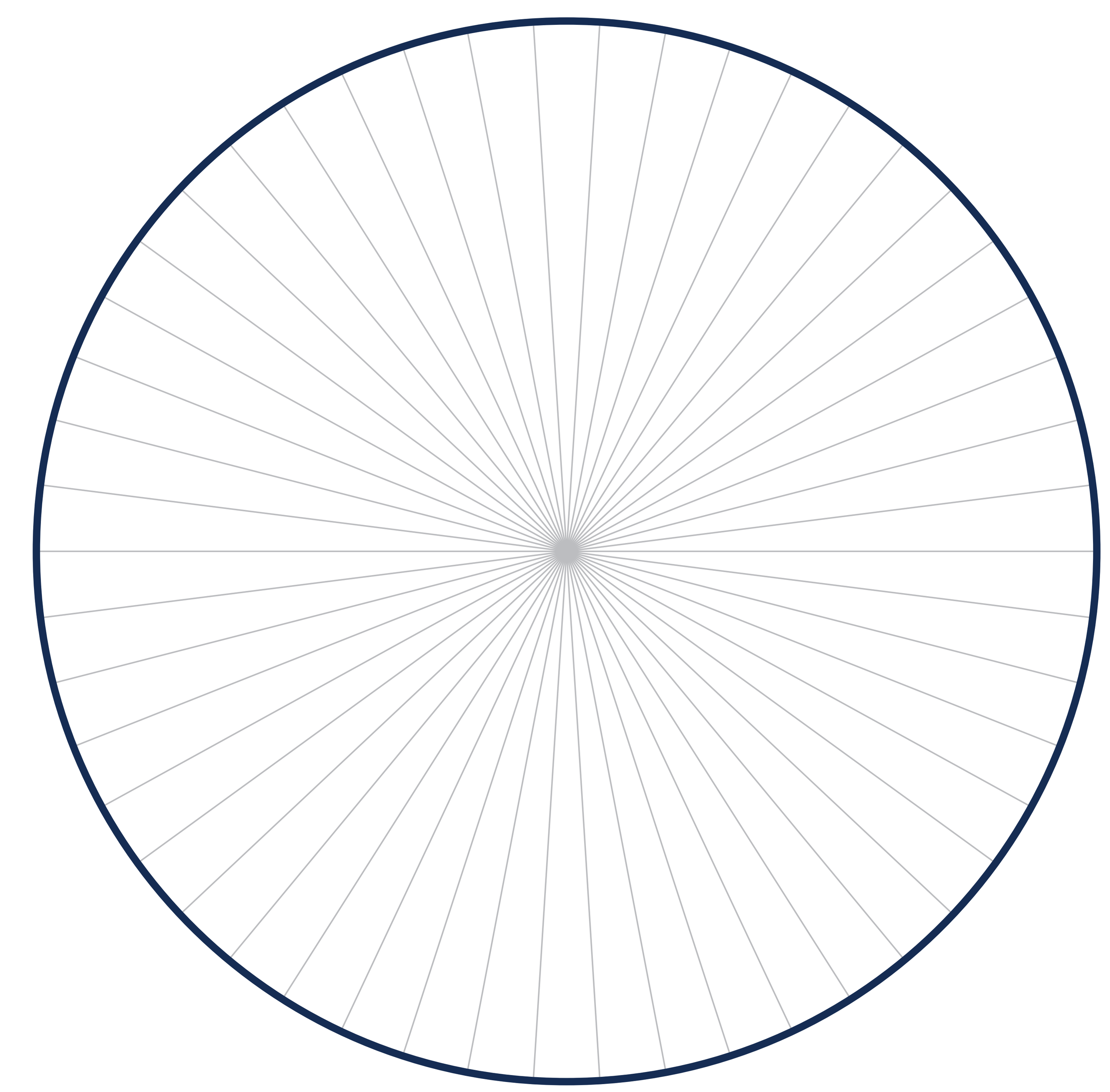
- = 2% or $270,000 Annually
MY TRANSPORTATION SPENDING DECISION



METRO GROW
2045 F-M TRANSPORTATION PLAN
- Bike and Pedestrian Spending
- Transit System Spending
- Street and Roadway Preservation Spending
- New Street and Roadway Spending
- = 2% or $270,000 Annually
MY TRANSPORTATION SPENDING DECISION



METRO GROW
2045 F-M TRANSPORTATION PLAN
- Bike and Pedestrian Spending
- Transit System Spending
- Street and Roadway Preservation Spending
- New Street and Roadway Spending
- = 2% or $270,000 Annually

Activity 2:
Priority Big Project

Review the 9 projects on the "Priority Big Project" board and use the beads to vote for your favorite and second favorite "big project".

- *Blue Bead – Favorite Big Project*
- *Red Bead – Second Favorite Big Project*

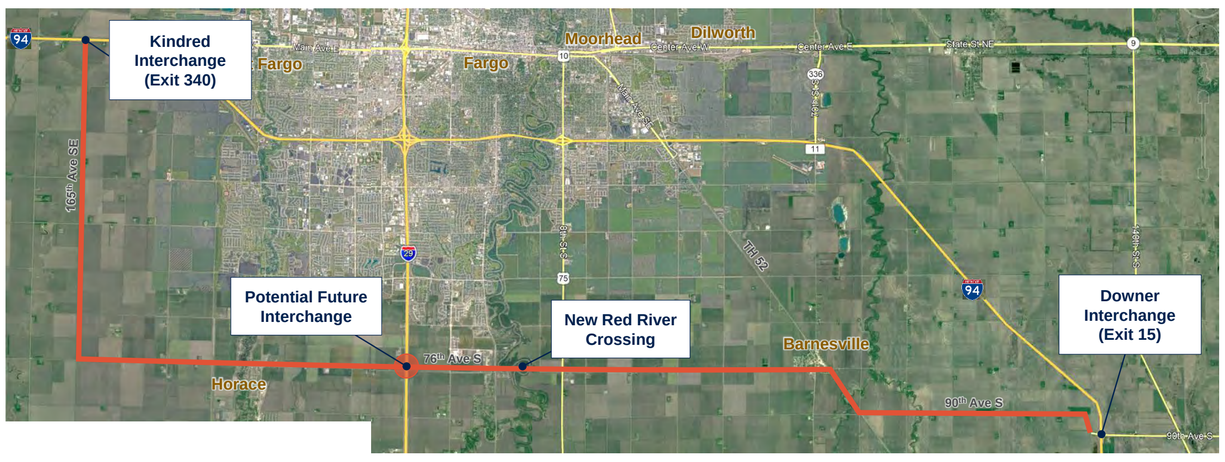
Choose Your PRIORITY Big Project:

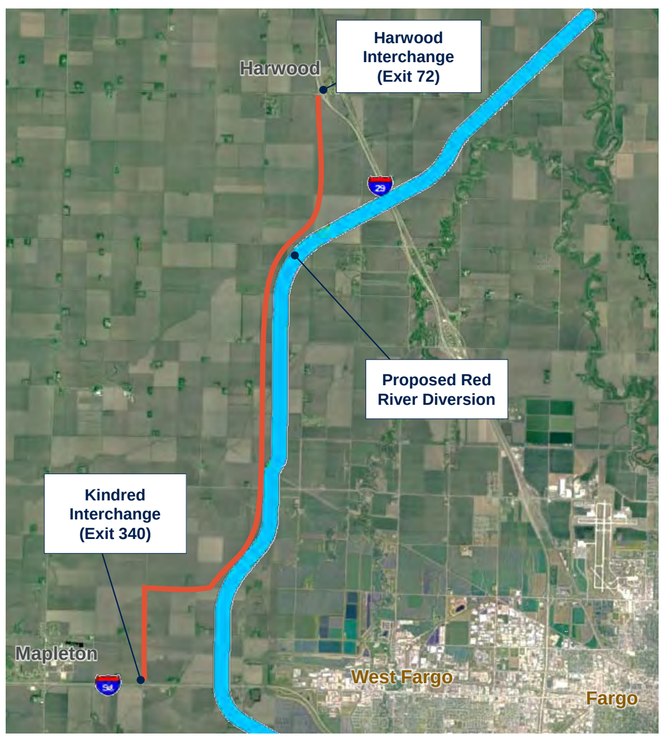
A. South Bypass Roadway Project

Regional

PROJECT DESCRIPTION:

High speed regional route connecting I-94 west of West Fargo with I-94 southwest of Moorhead. Includes new Red River Crossing and potential I-29 interchange





B. Northwest Bypass Roadway Project

Cass County

PROJECT DESCRIPTION:

High speed regional route connecting I-94 west of West Fargo with I-29 southwest of Moorhead. Includes new Red River Crossing and potential I-94 interchange

C. 9th Street Railroad Grade Separation and Improvements

West Fargo

PROJECT DESCRIPTION:

This project would create a bridge or underpass to eliminate conflicts between trains and 9th Street car and truck traffic. Would include turn lane additions at 7th Avenue N and 12th Avenue N.

D. 76th Avenue South Interchange With I-29

Fargo

PROJECT DESCRIPTION:

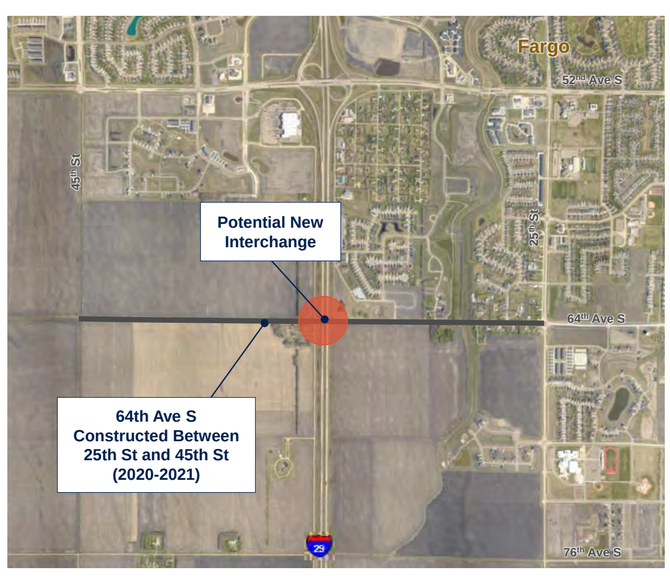
This project would add an interchange access to I-29 for the 76th Street Corridor. The 76th Avenue corridor is anticipated to be a corridor with future development, and it is assumed the interchange would occur after the corridor been improved between 45th St and 25th St (and potentially all the way west to Sheyenne).

E. 11th Street Railroad Grade Separation

Moorhead

PROJECT DESCRIPTION:

This project would be a bridge or underpass on 11th Street to create a downtown Moorhead corridor with no train-vehicular conflicts. The project would decrease delays and access conflicts associated with the two sets of BNSF rail lines in downtown.



F. 64th Avenue South Interchange with I-29

Fargo

PROJECT DESCRIPTION:

64th Avenue will be constructed between 25th Street and 45th Street in 2020-2021, with a bridge across I-29. This project would add an interchange access to I-29 for the 64th Street Corridor.

G. 55th Street Interchange With I-94

Moorhead

PROJECT DESCRIPTION:

East Moorhead is anticipated to be a long-term growth area. As the roadway network is built out, this project would add an interchange access to I-94 at approximately 55th Street.

H. South Dilworth Grade Separation

Dilworth

PROJECT DESCRIPTION:

Railroad grade separation options for access between Dilworth / US 10 and existing and planned future development in South Dilworth and East Moorhead.

I. 12th Street Interchange With Highway 336

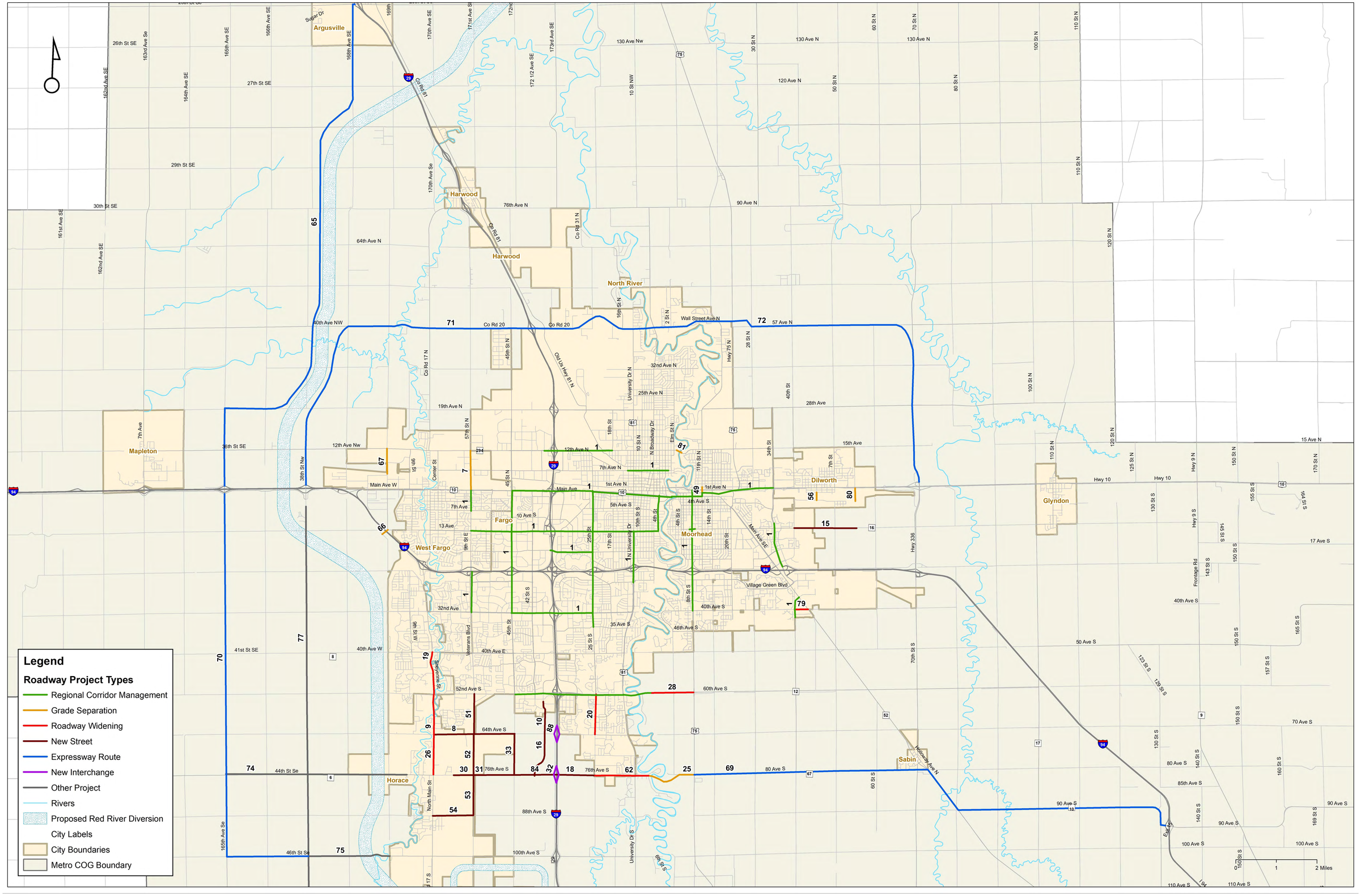
Moorhead

PROJECT DESCRIPTION:

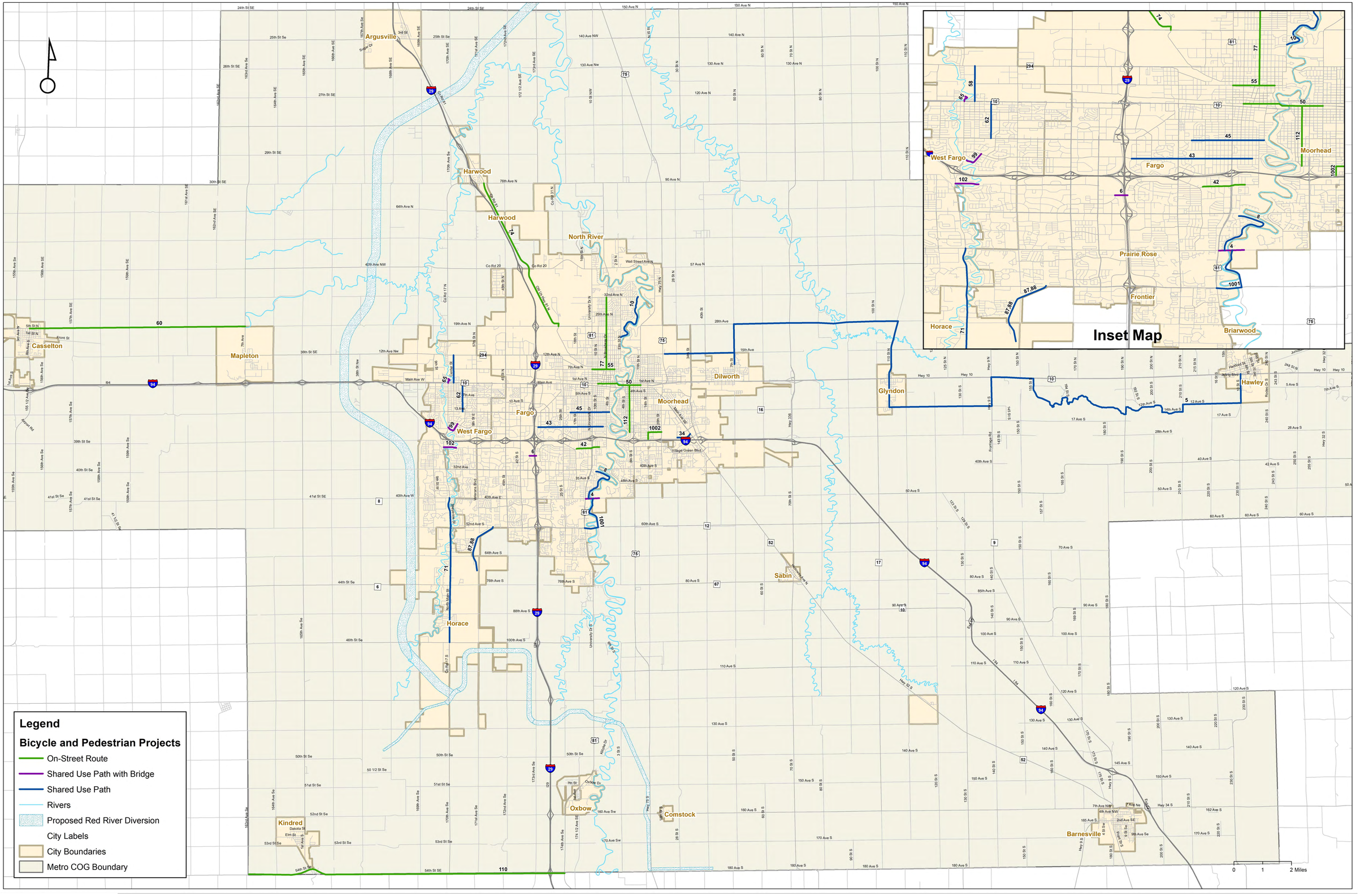
East Moorhead is anticipated to be a long-term growth area. As the roadway network is built out, this project would add an interchange access to Highway 336 at 12th Avenue S.

Activity 3: Spend Your Transportation Dollars

- *You have $102M to spend on roadway and bicycle & pedestrian projects*
- *Stickers are your money:*
  - Green Stickers = $10M
  - Red Stickers = $5M
  - Blue Stickers = $1M



METRO GROW
2045 F-M TRANSPORTATION PLAN



METRO GROW
2045 F-M TRANSPORTATION PLAN

ID	Corridor	From	To	Type	Specifics	Description	Jurisdiction	Cost	Place Stickers Here ▾
1	Corridor Management / Regionwide			Corridor Management	Coordinated and Adaptive Traffic Signals, Turn Lane Additions, Access Management	Corridor management applies improved technology and small scale improvements to mature, urban corridors to get more efficient and safe operations significant without roadway widening.	Regionwide	$17M	
5	76th Ave S	45th St	I-29	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$8M	
7	9th St	Main Ave	12th Ave N	Grade Separation	Grade Separation from Railroad tracks	New underpass or bridge would reduce rail conflicts to industrial area. Includes turn lane additions: 7th Ave N to 12th Ave N	West Fargo	$20M	
8	64th Ave S	Sheyenne	Veterans Blvd	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Horace	$7M	
9	Sheyenne	52nd Ave S	64th Ave S	Roadway Widening	2-Lane with Turn Lanes	Arterial to support fringe area growth	Horace	$7M	
10	38th St	54th Ave S	64th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$6M	
15	12th Ave S	40th St	55th St	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Moorhead	$12M	
16	38th St	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$8M	

ID	Corridor	From	To	Type	Specifics	Description	Jurisdiction	Cost	Place Stickers Here ▾
18	76th Ave S	I-29	25th St	New Street	2-Lane with Turn Lanes and I-29 Overpass	New corridor to supports fringe area growth	Fargo	$14M	
19	Sheyenne St	40th Ave S	52nd Ave S	Roadway Widening	2-Lane with Turn Lanes	Rebuild to include turn lanes along corridor	West Fargo	$8M	
20	25th St	52nd Ave S	64th Ave S	Roadway Widening	4-lane Widening	Arterial to support fringe area growth	Fargo	$5M	
25	76th Ave S/ 80th Ave S	Red River (Forest River Road)	US 75	Bridge	New Red River Crossing	Supports growth in southern metro area, would eliminate need for 52nd Ave bridge improvement	Fargo / Clay County	$18M	
26	Sheyenne St	64th Ave S	76th Ave S	Roadway Widening	2-Lane with Turn Lanes	Future growth might require turn lanes to improve operations and safety	Horace	$8M	
27	64th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$8M	
28	60th Ave S	Red River	US 75	Roadway Widening	4-lane Widening	Project would not be needed if 76th Ave Red River bridge was added	Moorhead	$11M	
30	76th Ave S	63rd St	Veterans Blvd	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Horace	$4M	

ID	Corridor	From	To	Type	Specifics	Description	Jurisdiction	Cost	Place Stickers Here ▾
31	76th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$8M	
32	I-29	at 76th Ave		Interchange	Interchange	Access to growth area. Bridge costs included in project 18.	NDDOT	$18M	
33	45th St	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7M	
49	11th St	Main Ave	1st Ave N	Grade Separation	Grade Separation from Railroad tracks	Grade separation of Central Moorhead rail tracks to eliminate delays and access issues due to train crossings	Moorhead	$60M	
51	Veterans Blvd	52nd Ave S	64th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo / Horace	$7M	
52	Veterans Blvd	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	Expressway route would uses existing paved roads	Fargo / Horace	$8M	
53	Veterans Blvd	76th Ave S	88th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo / Horace	$8M	
54	88th St	CR 17	Veterans Blvd	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Horace	$8M	

ID	Corridor	From	To	Type	Specifics	Description	Jurisdiction	Cost	Place Stickers Here ▾
56	Main St	2nd Ave SE	Co Rd 78	Grade Separation	Grade Separation from Railroad tracks	Grade separation of existing Main St from railroad tracks for reduced conflicts into growth area	Dilworth	$15M	
62	76th Ave	25th St	Red River	Roadway Widening	2-Lane with Turn Lanes	Needed with Project 25, a new 76th Ave Red River crossing	Fargo	$10M	
65	NW Regional Rte	I-29	I-94	Expressway Route	2-Lane with Turn Lanes	New bypass route outside of proposed diversion	Cass County	$28M	
66	13th Ave	at I-94		Grade Separation	Grade Separation	13th Ave West / 15th St NW Grade Separation of I-94 providing access into future development area	West Fargo	$12M	
67	15th St NW	4th Ave NW	12th Ave NW	Grade Separation	Grade Separation from Railroad tracks	BNSF Underpass & Diversion Overpass to provide improved connection to Industry area	West Fargo	$27M	
69	SE Beltway Route	Hwy 75	I-94	Expressway Route	Bypass Route	Long term vision project for high-speed access around the metro area.	Clay County	$12M	
70	SW Beltway Route	I-94	100th Ave S	Expressway Route	Bypass Route	Route runs along existing paved roads and Cass County projects 74, 75, and 77.	Cass County	$3M	
71	NW Beltway Route	I-29	I-94	Expressway Route	Bypass Route	New bypass route inside of proposed diversion	Cass County	$12M	

ID	Corridor	From	To	Type	Specifics	Description	Jurisdiction	Cost	Place Stickers Here ▾
72	NE Beltway Route	I-29	US 10	Expressway Route	Bypass Route	Long term vision project for high-speed access around the metro area.	Fargo/ Moorhead/ Clay County	$11M	
74	76th Ave S	165th Ave	Horace	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$7M	
75	100th Ave S	38th St	Horace	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$3M	
77	38th St	I-94	124th Ave	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$16M	
79	40th Ave S	CR 7	Hwy 52	Roadway Widening	2-Lane with Turn Lanes	Anticipated Short-Term Project, improves safety and operations	Moorhead	$2M	
80	Approx 14th St	2nd Ave SE	Adams Ave	Grade Separation	Grade Separation from Railroad tracks	Location to be determined. Part of potential long-term corridor. Railroad grade separation option.	Dilworth	$25M	
81	12th Ave N / 15th Ave N	Elm Street (Fargo)	11th St N (Moorhead)	Grade Separation	Raise existing bridge elevation	Raise existing bridge so that it could remain open during a 37' flood event	Fargo / Moorhead	$10M	
88	I-29	at 64th Ave		Interchange	Interchange	Access to growth area. Bridge across I-29 will be part of 2020 64th Ave project.	NDDOT	$18M	

ID	Location	Description	Length	Cost	Place Stickers Here ▾
4	Red River at 40th Ave S	Shared use path and Red River Bridge	0.5	$3M	
5	Future Heartland Trail - Moorhead to Hawley	Construct shared use path (MN state trail)	29.0	$10M	
6	28th Ave S at I-29	Construct underpass / overpass and shared use path	0.2	$1M	
8	River Path - Lemke Park to 40th Ave S	Construct shared use path	1.8	$1M	
10	River Path - 32nd Ave N to 16th Ave N	Construct shared use path	2.1	$1M	
19	7th St NE - 8th Ave NE to 15th Ave NE	Construct shared use path	0.4	$1M	
34	27th Ave S - 26th St to SE Main Ave	Bike lanes, sharrows, or signed roadway	0.5	$1M	
42	24th Ave S - Milwaukee Trail to 9th St	Sharrows	0.8	$1M	
43	17th Ave S - 35th St to 5th St	Shared use path, bike lanes, sharrows	2.3	$1M	

ID	Location	Description	Length	Cost	Place Stickers Here ▾
45	13th Ave S - 21st St to 4th St	Shared use path, bike lanes, sharrows	1.4	$1M	
50	NP Ave - 10th St to Red River | Center Ave - Red River to 11th St	Separated bike lanes or bike lanes	1.5	$1M	
55	7th Ave N - Univeristy Dr to 2nd St	Bike lanes, sharrows, or signed roadway	0.8	$1M	
58	Center St - 12th Ave NE to Main Ave	Construct shared use path	1.0	$1M	
60	CR 10 - ND Hwy 18 to CR 11	Construct paved shoulders (4ft +)	7.5	$3M	
62	Path over Drain 45 - Main Ave to 13th Ave	Construct shared use path	1.0	$1M	
65	Sheyenne St to Armour Park	Construct bridge over Sheyenne River	0.2	$1M	
71	CR 17 - 40th Ave S to 100th Ave S	Construct shared use path	5.0	$2M	
74	CR 81 - 19th Ave N to Harwood	Construct paved shoulders (4ft +)	5.8	$2M	

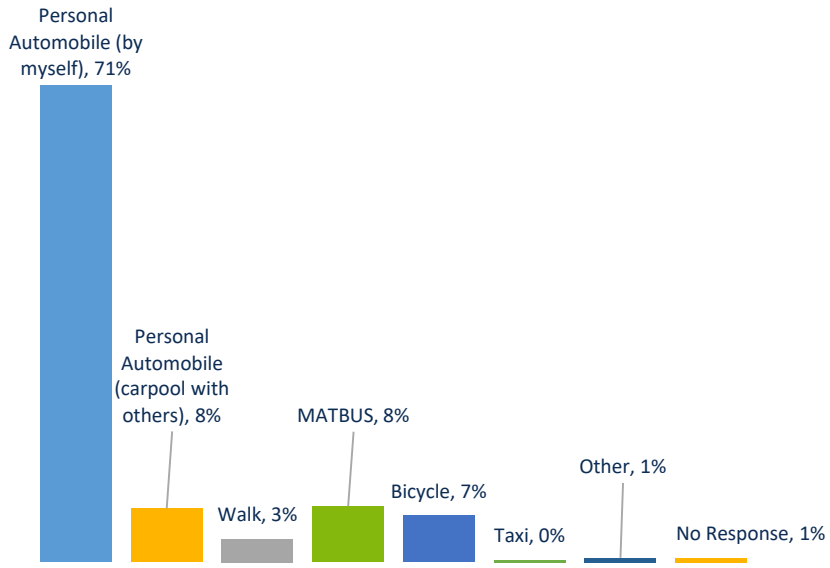
ID	Location	Description	Length	Cost	Place Stickers Here ▾
77	Broadway - 15th Ave N to 8th Ave N	On-Street Bike Facility - Broadway from 8th-35th	2.5	$1M	
87, 88	Path along Drain - 52nd Ave S to 70th Ave S	Construct shared use path along drain	1.9	$1M	
99	17th Ave E to Sheyenne St (Charleswood Area)	Construct shared use path & river bridge	0.5	$1M	
102	23rd Ave E to Sheyenne St	Construct shared use path & river bridge	0.4	$1M	
110	ND Hwy 46 - 163rd Ave SE to CR 81	Construct paved shoulders (4ft +)	11.0	$4M	
112	6th St - 24th Ave S to Center Ave (through Concordia campus)	6th St: 24th Ave S to Center (through Concordia)	1.6	$1M	
1001	52nd Ave S, 60th Ave S to Bluestem along Red River	Shared use path Bluestem to 60th Ave Red River Br	1.7	$2M	
1002	14th St and 24th Ave in south Moorhead	On-Street Facility: 14thSt and 24th Ave	0.7	$1M	

METRO GROW
2045 F-M TRANSPORTATION PLAN

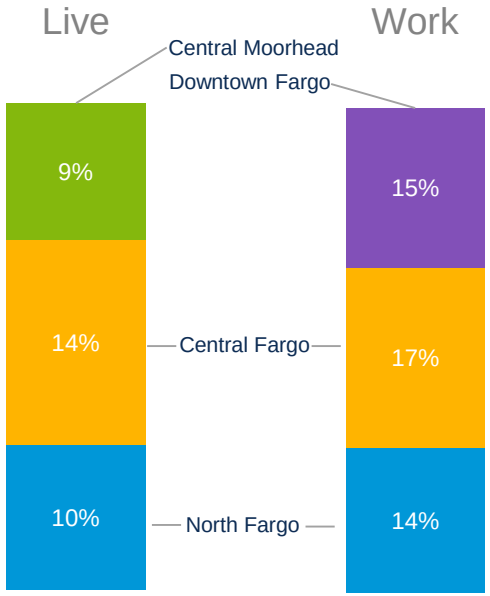
Metro Grow Survey Analysis

Survey At-A Glance

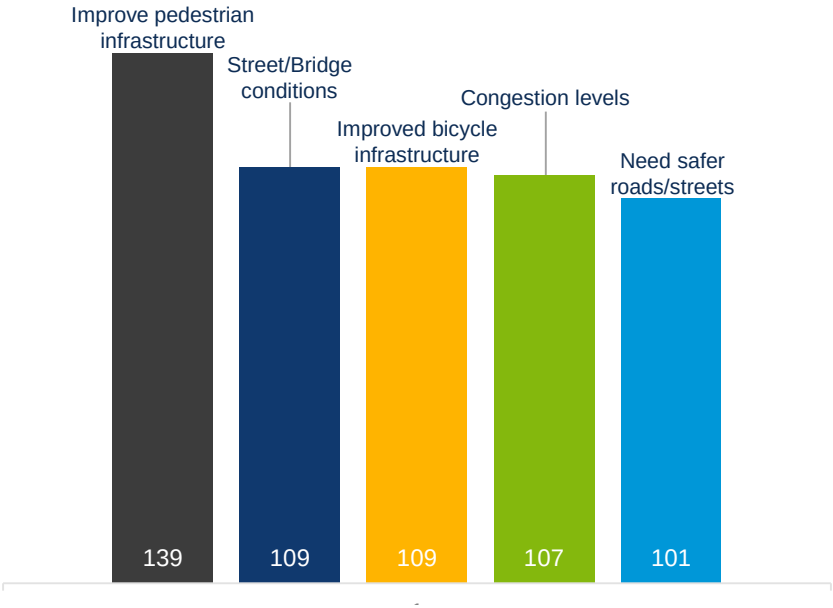
287 respondents provided information about transportation preferences & living/work locations



Most Common Travel Mode



Live / Work Locations



Top Transportation Issues

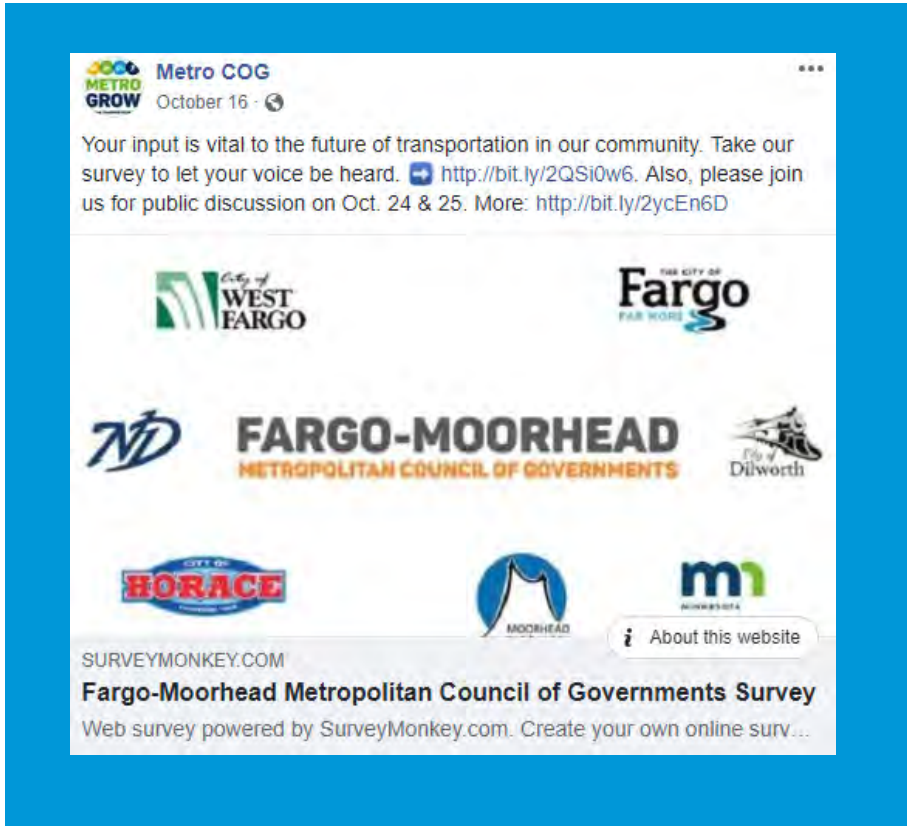
Survey Distribution

Facebook

- Run time: 11/8-11/9
- Reach: 1,437
- Link clicks: 12
- Cost per click: $2.08
- Engagements: 65

Email Distribution

- MATBUS
- City of Horace
- NDDOT
- City of Fargo FargoStreets



Events

Pop-up events

- Downtown Street Fair
- Dilworth Loco Daze
- Red River Market
- Greater Moorhead days – Bridge Bash
- Bean Days
- WestFest
- Cruise Night

Open houses

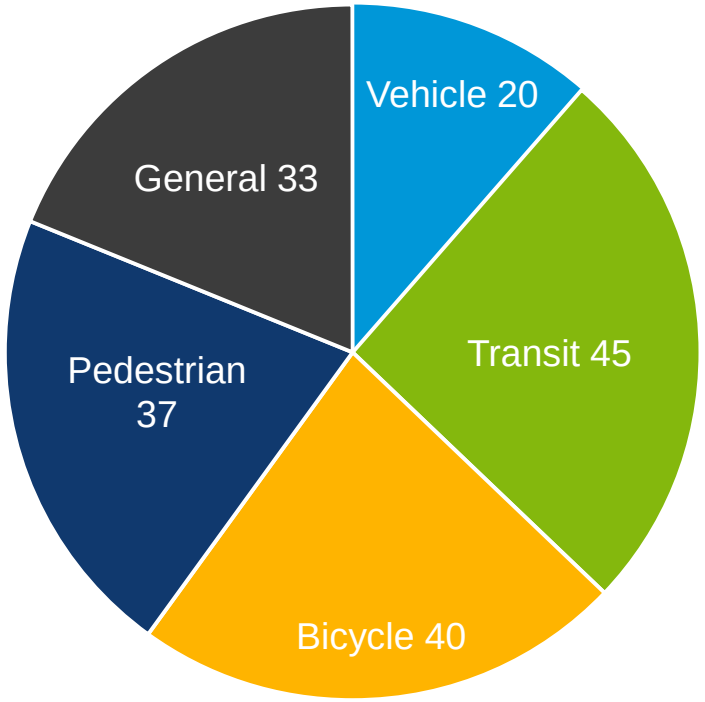
- Moorhead:10/24
- West Fargo: 10/25

Open-Ended Feedback

- 175 Open Ended Responses
- 62% of Surveys Provided Comments
- Many were about one specific mode, others were more general

Vehicle	20
Transit	45
Bicycle	40
Pedestrian	37
General	33

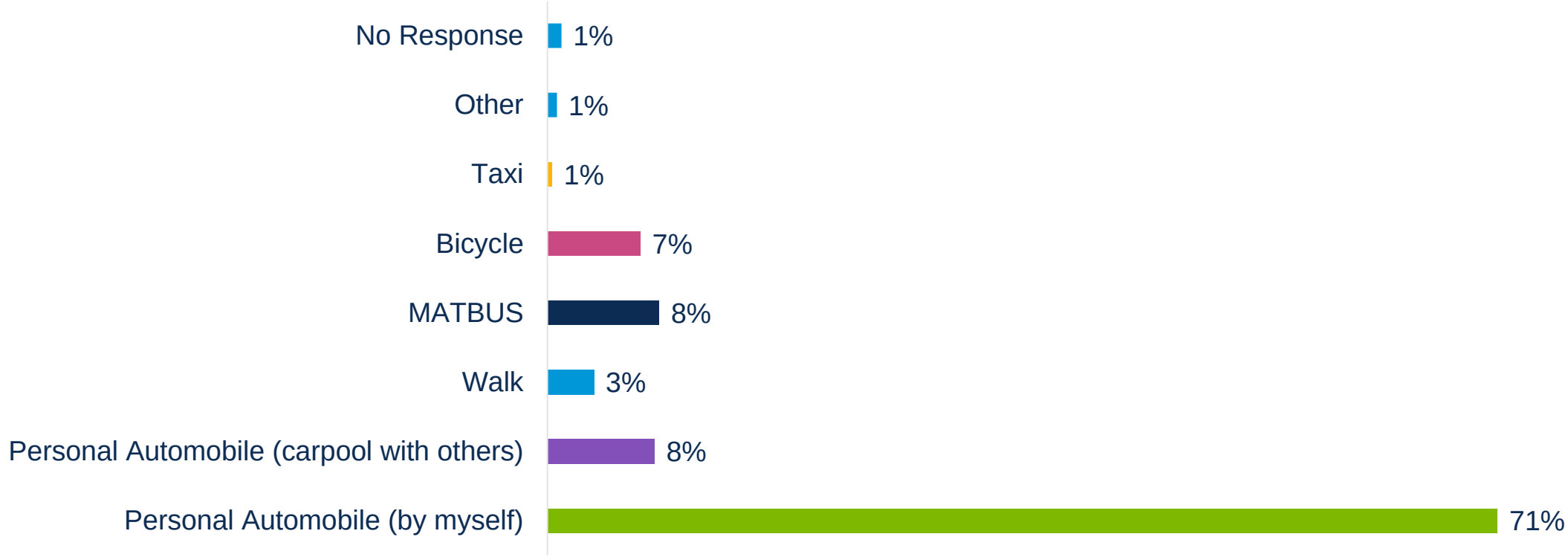
*Many comments reference multiple topics or modes of travel



Comments by Travel Mode

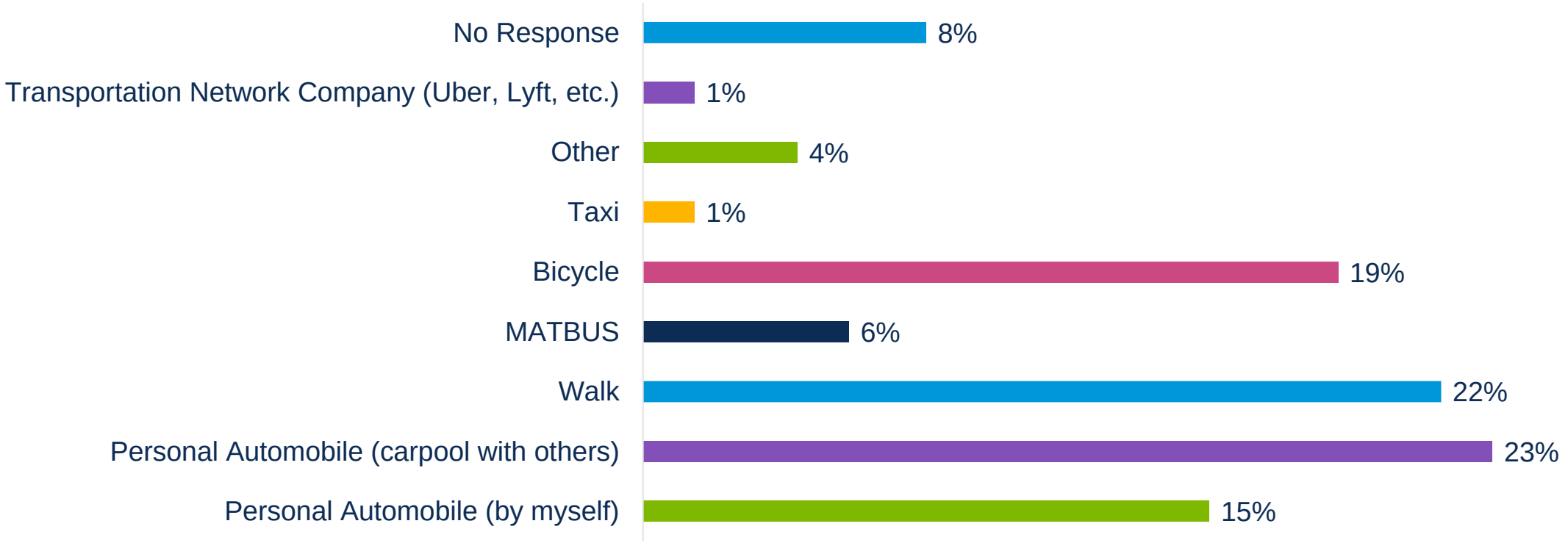
How do People in your household most often travel to work, school, and shopping?

Most Common - Travel Mode to Work, School & Shopping



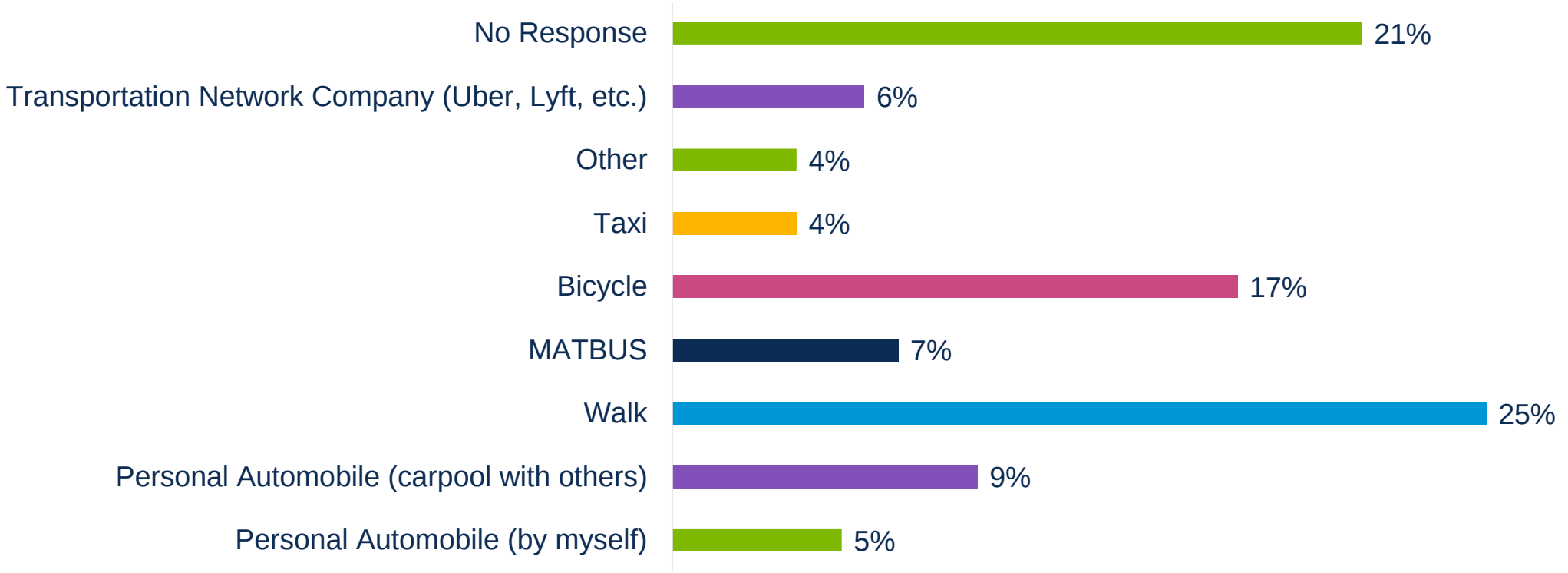
How do People in your household most often travel to work, school, and shopping?

Second Most Common - Travel Mode Work, School, & Shopping

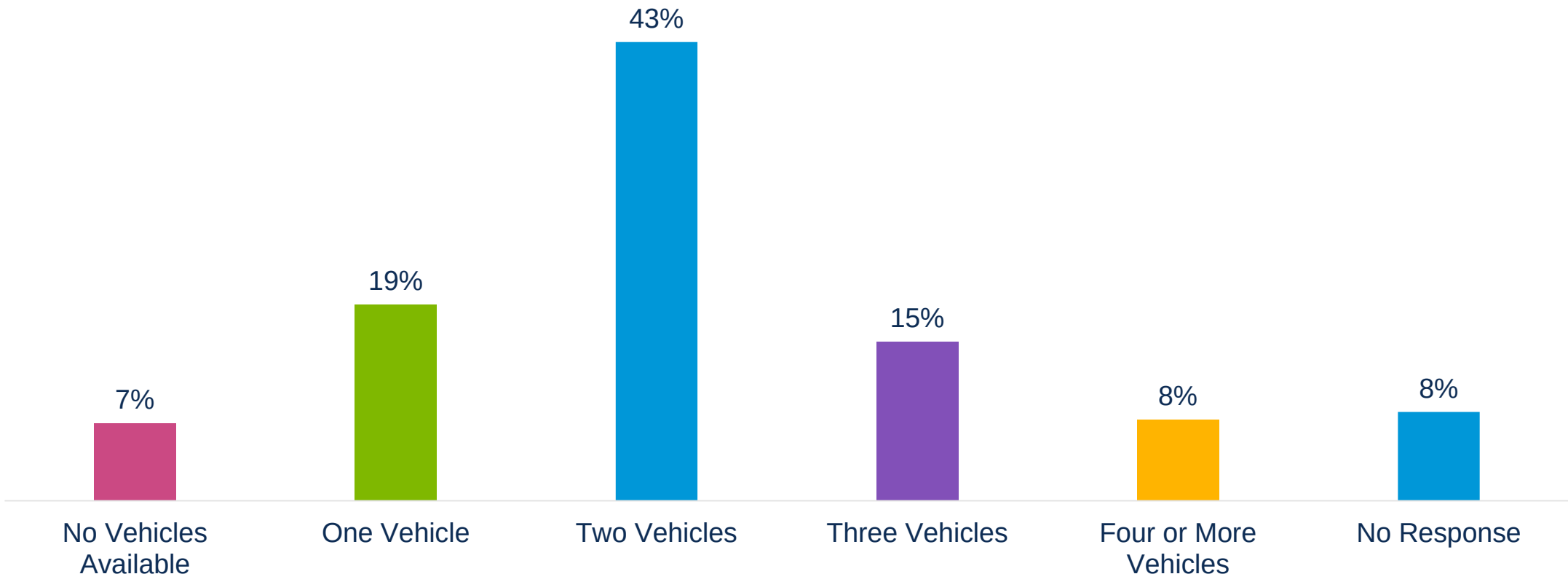


How do People in your household most often travel to work, school, and shopping?

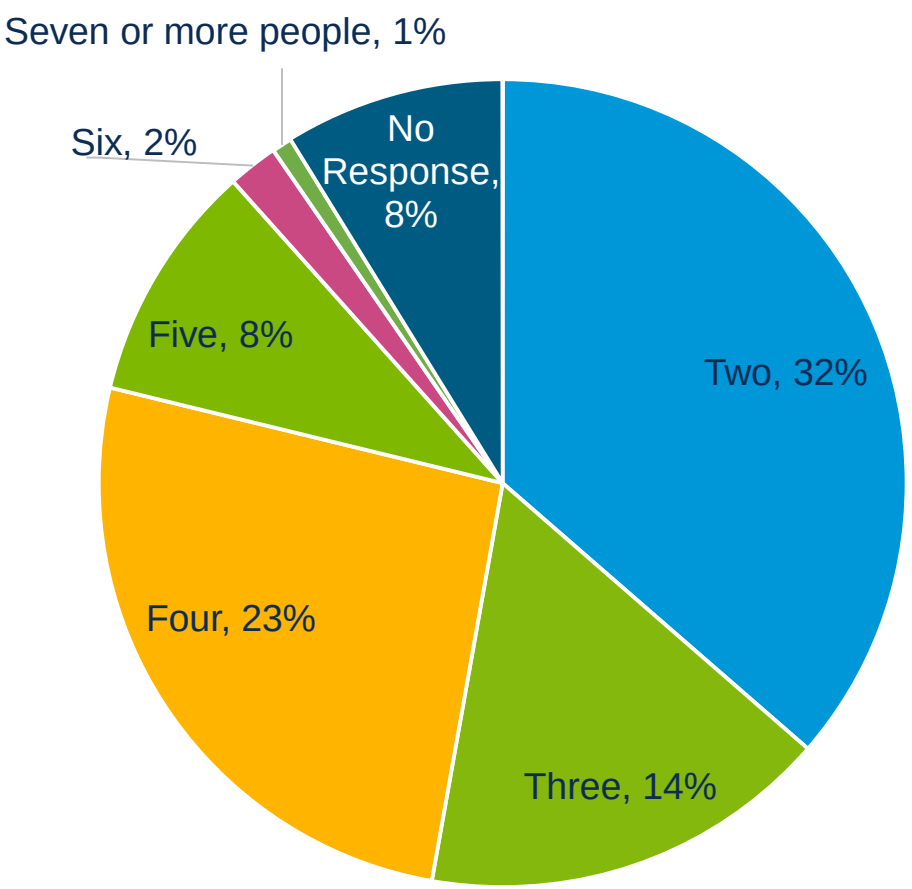
Third Common - Travel Mode to Work, School, & Shopping



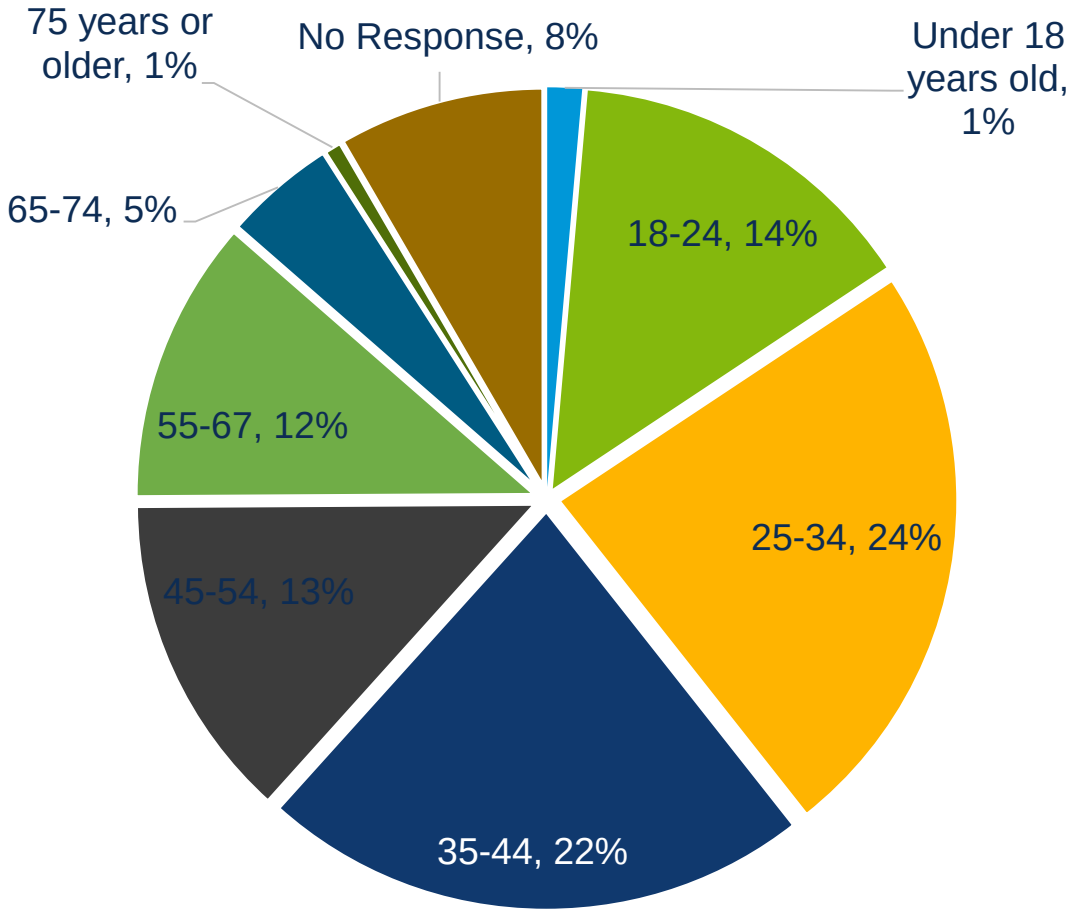
Number of personal vehicles are kept at your residence for the use of household members?



Household Demographics

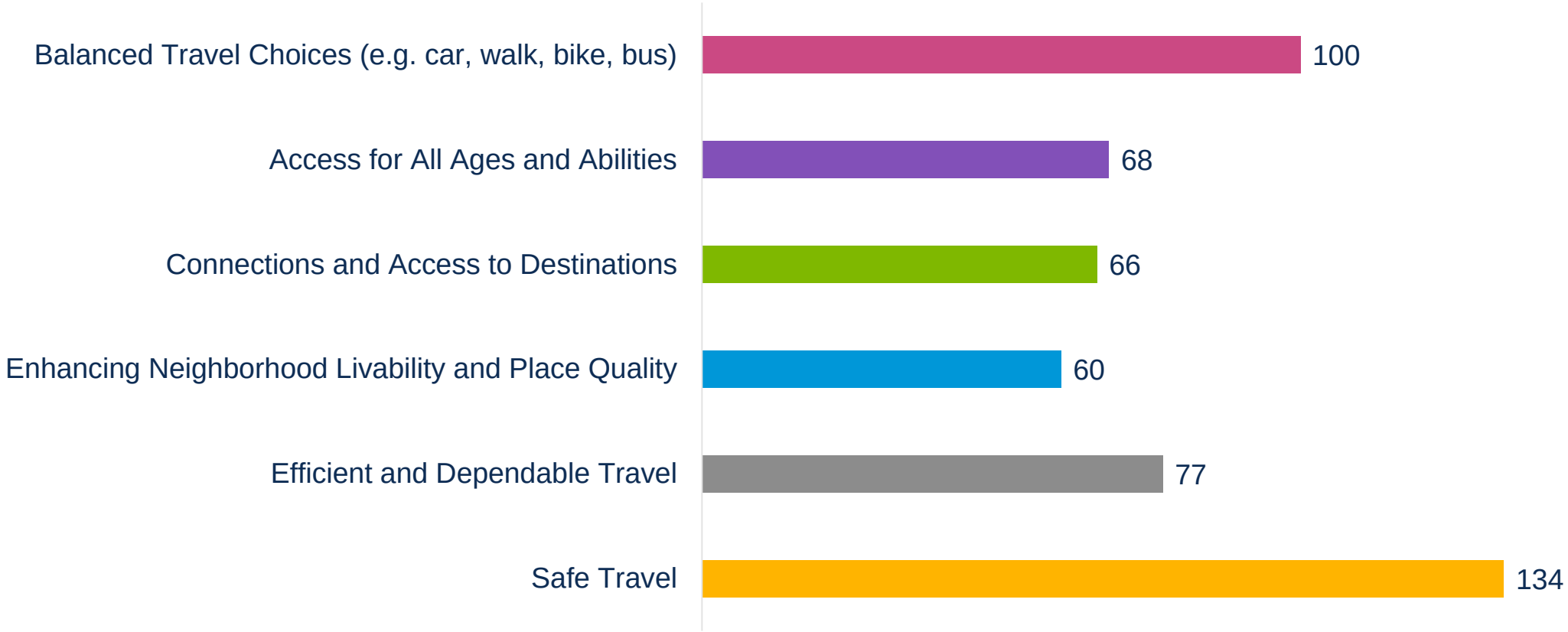


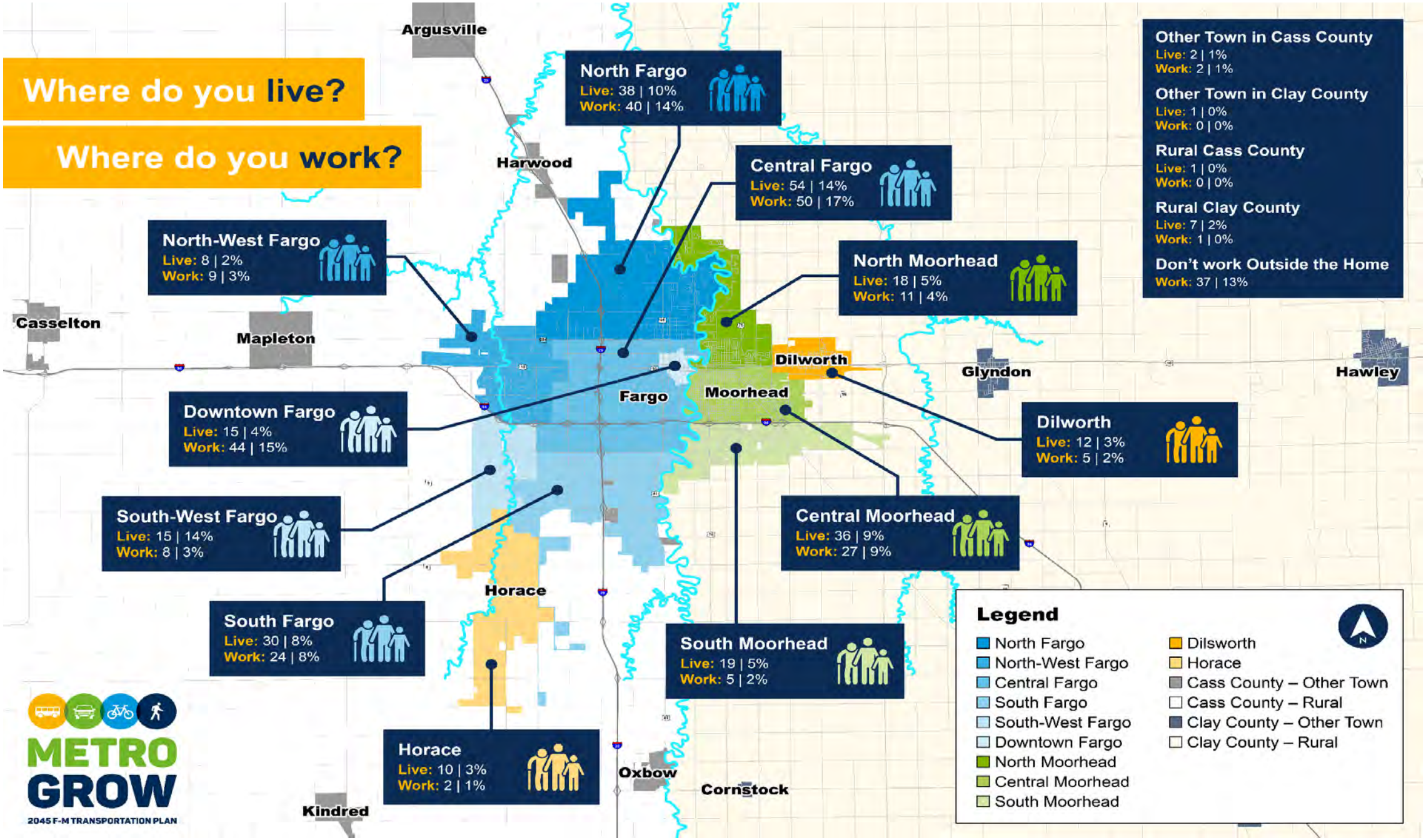
Household Occupants



Age

Fargo-Moorhead Transportation System Important Transportation Characteristics

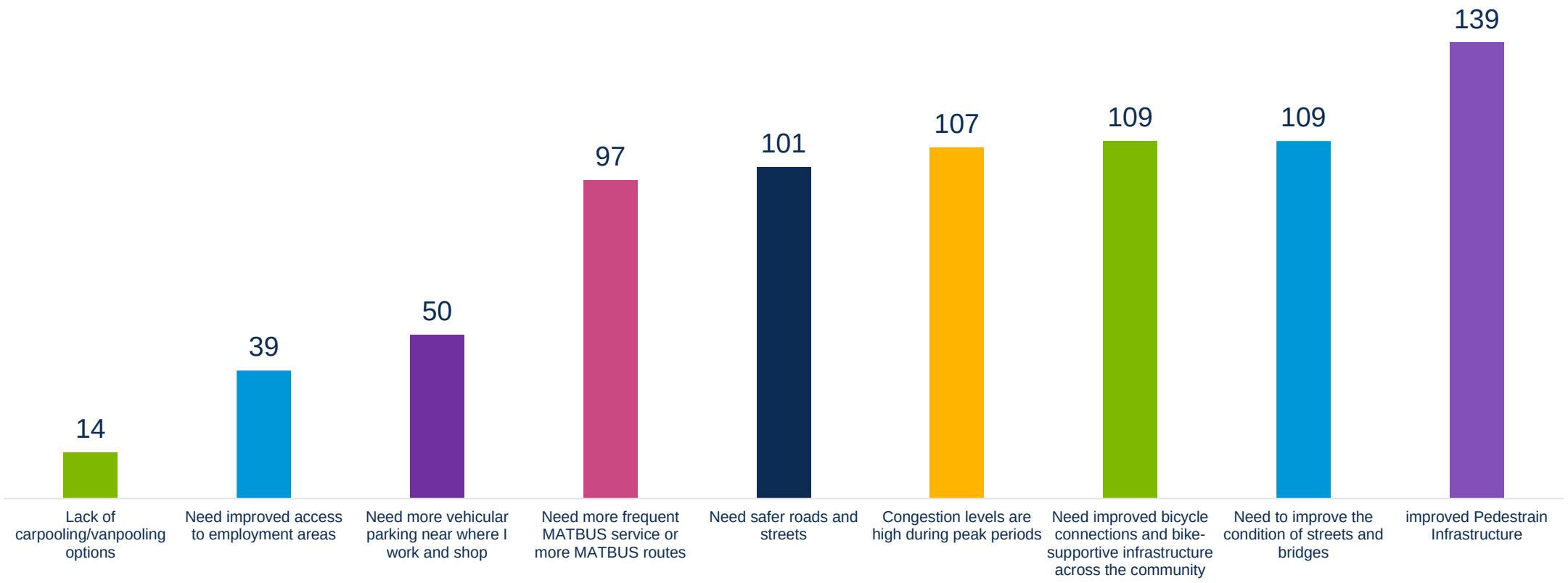



Where do you live?
Where do you work?
Argusville
Harwood
Casselton
Mapleton
Fargo
Moorhead
Dilworth
Glyndon
Hawley
Horace
Oxbow
Cornstock
Kindred
North Fargo
Live: 38 | 10%
Work: 40 | 14%
Central Fargo
Live: 54 | 14%
Work: 50 | 17%
North-West Fargo
Live: 8 | 2%
Work: 9 | 3%
North Moorhead
Live: 18 | 5%
Work: 11 | 4%
Downtown Fargo
Live: 15 | 4%
Work: 44 | 15%
Dilworth
Live: 12 | 3%
Work: 5 | 2%
South-West Fargo
Live: 15 | 14%
Work: 8 | 3%
Central Moorhead
Live: 36 | 9%
Work: 27 | 9%
South Fargo
Live: 30 | 8%
Work: 24 | 8%
South Moorhead
Live: 19 | 5%
Work: 5 | 2%
Horace
Live: 10 | 3%
Work: 2 | 1%
Other Town in Cass County
Live: 2 | 1%
Work: 2 | 1%
Other Town in Clay County
Live: 1 | 0%
Work: 0 | 0%
Rural Cass County
Live: 1 | 0%
Work: 0 | 0%
Rural Clay County
Live: 7 | 2%
Work: 1 | 0%
Don't work Outside the Home
Work: 37 | 13%
Legend
North Fargo
North-West Fargo
Central Fargo
South Fargo
South-West Fargo
Downtown Fargo
North Moorhead
Central Moorhead
South Moorhead
Dilsworth
Horace
Cass County – Other Town
Cass County – Rural
Clay County – Other Town
Clay County – Rural
N
METRO GROW
2045 F-M TRANSPORTATION PLAN

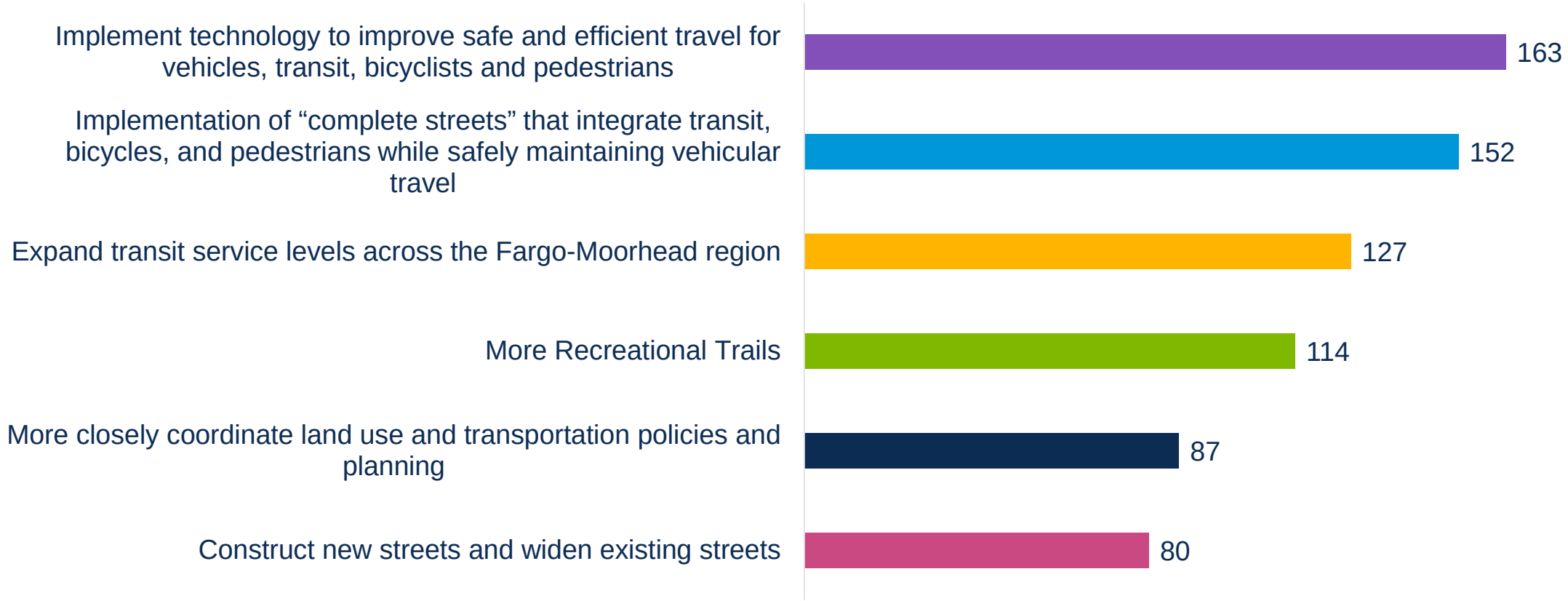
Top Six Live – Work Combinations in Survey

- Live and Work in Central Fargo
- Live and Work in North Fargo
- Live in Central Fargo, Work in Downtown Fargo
- Live in Central Fargo, Work in North Fargo
- Live in North Fargo, Work in Central Fargo
- Live and Work in South Fargo

Top three transportation issues or problems in the Fargo-Moorhead Area?



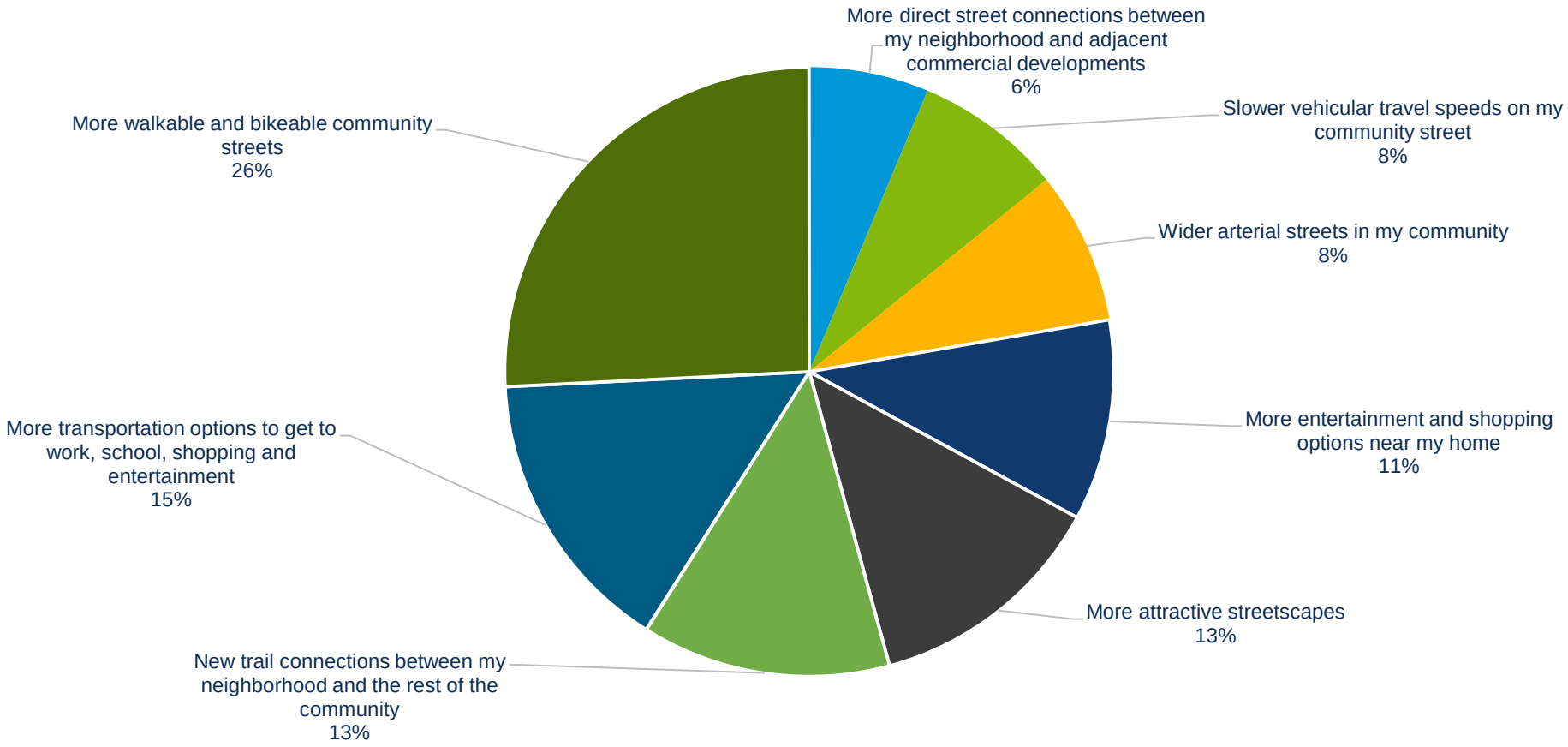
The top three strategies the Fargo-Moorhead area should implement to address transportation issues?



Example Survey Comments

- A better skyway system downtown like Des Moines would help
- Access to bus service to place of employment- Industrial Park, etc.
- Add more bridges over the river and interstates.
- Affordable senior rides
- Bike trails on quiet streets not busy streets
- Build a fast transit rail
- Closer bus stops. Mine is too far to walk to get bus
- Create and maintain sidewalks and pedestrian ways especially in winter!
- Downtown parking
- EV charging
- I would like to see more MATBUS stops being put up
- Improve the quality of our infrastructure while reducing costs. Narrow down streets, add public art, add street trees, improve transit signage and amenities, decrease bus headway wait times
- Minnesota plans for expanded commuter rail
- More investment in Public transportation strategies
- More metro and bus. Also bus schedules and stops should be VISIBLE and available. On the stop it should say which bus stops there and a list of the stops it does
- More parking if possible
- More River Crossings

Three characteristics that your neighborhood and community would like to see in the future?



Online and Email Comments Received

Comment Source	Comment
Map Comment	Please continue working on trails along the Red River in North Fargo to connect with Edgewood Golf Course and Trollwood Park.
Map Comment	Add a bus route that goes further south (at 40th Ave S and 14th St S in Moorhead). Stopping at Hornbacher's does not connect or make it reliable to take the bus anywhere. Don't have a south loop go back to the GTC before continuing into Fargo. Add a transfer station on the south side of Fargo (52nd).
Map Comment	We would like to have a bike path or sidewalk available to help kids get from Ponderosa Dr and the other streets along 52nd Ave to Legacy Elementary safely.
Map Comment	Suggestion: Provide a dedicated lane for traffic merging from northbound I29 to westbound I94. It is dangerous when traffic is heavy to try and merge with the traffic merging from southbound I29 to westbound I94.
Map Comment	The sequencing of the traffic movements along with the east to northbound turn land (at US 10 to US 75 N) stacking make the south to eastbound merge difficult at peak times.
Map Comment	Please consider complete streets/bike-pedestrian facilities to connect Moorhead High/Park Christian Schools with Centennial Park amenities along Hwy 75 corridor.
Map Comment	Convert the abandon rail to a trail (north of 28th Ave N in Moorhead) and connect to a new trail system on the Oakport levees and possibly north to Kragness?
Map Comment	The bike lane on 10th St N ends at 17th Ave leaving the biker two choices; try to move across three or four lanes to get to the right hand side of the road so that when you cross 19th Ave you are on the right side of the road or bike on the sidewalk and cross at the crosswalk at 10th St and 19th Ave. Could the bike lane be extended to 19th Ave N. Also why is the bike lane on the left hand side of the road instead of the right hand side?
Map Comment	The bike lane portion of 4th St N (southbound) is in horrible condition in this area. The asphalt is very uneven. Also as you travel further south, parking is allowed in the bike lane, this causes the biker to shift into the vehicle lane. 4th St is fairly busy with frequent vehicles so it would be safer to have a dedicated bike lane where parked vehicles are not allowed to share the lane.
Map Comment	The intersection of 4th Ave N and 2nd St N needs to be improved. The eastbound bike lane does not have a sidewalk approach on the east side of 2nd St N. The only sidewalk approach matches up on the north side of 4th Ave N. This causes the biker to cross 2nd St N diagonally to enter the bike trail on the east side of 2nd St. Can a sidewalk approach be added to match up with the sidewalk and bike lane on the south side of 4th Ave N?
Map Comment	Increase the speed limit on Main Ave in West Fargo to 40 mph. This road was built with multiple lanes of traffic, frontage roads, and turning lanes. The design makes it "feel" that the speed limit should be faster than 30 mph. Also the speed limit is 40 mph on the west end of Main Ave and also once you are in Fargo city limits. Can the entire stretch of Main Ave be posted as 40 mph (traffic typically travels at this speed anyway)
Map Comment	Add signage to make trail connections/ bicycle routes easier to find from arterial roadways. Example: how to get to the river trails from US75 and 40th Ave S in Moorhead.
Map Comment	Add signage to make trail connections/ bicycle routes easier to find from arterial roadways. Example: how to get to the river trails from US75 and 40th Ave S in Moorhead.
Map Comment	Add bike lanes to 32nd Ave N between Broadway and Eagle St NE.

Map Comment	Add a shared use path along 19th Ave N between the Dakota Drive and I-29.
Map Comment	Decision makers should capitalize on existing neighborhood centers, such as Northport, by focusing transportation and development decisions to create transportation oriented developments that are walkable and more-urban in nature. These areas present fantastic opportunities to increase a dense mix of uses while focusing on improving access and convenience of multi-modal transportation options.
Map Comment	We seem to overbuild our streets way before there is adequate development/demand in the area--presumably to address a potential problem before it becomes a problem. However, it seems this money could be put to much better use to improve existing problem areas throughout the metro, to maintain existing transportation investments, or to reduce the debt that local governments (aka citizens/tax payers) owe to finance unnecessary road expansions.
Map Comment	Conversion of 10th and University to two-way operations should be studied in detail. MTP should discuss this as an emerging issue and put the concept in the context of the MTP as a potential future study for the UPWP.
Map Comment	Need an updated and detailed corridor study for South University Drive (13th to I-94). The current study is outdated, and not sure it was ever actually approved by anyone. New study should evaluate changing dynamics of the corridor and develop a new mobility strategy for this important corridor. MTP should put this issue in context; and set the stage for future investments through the UPWP for studying this corridor.
Map Comment	Previous MTPs going back to the 1990s have put significant effort into demonstrating future corridor preservation needs on the eastside of the MPO planning area. Please consider retaining these older concepts, and update as needed to reflect current conditions.
Map Comment	Several previous MTPs have efficiently documented a prioritized list of needed interstate improvements; and do so with the constrained element of the MTP. These are critical to ensuring coordination between the MPO and both DOTs.
Map Comment	Significant previous analysis was developed over the past two decades on the impact of no toll at 12th/15th Avenue. Now that the toll is gone, and there are several changes to east-west mobility through downtown, the MTP needs to put these impacts in context to the larger system.
Map Comment	Are there any plans to complete 23rd Ave across the Sheyenne River to connect with Sheyenne St? This would help reduce traffic on I-94, and traffic that goes over the bridge on Veteran's in order to get to places like Rustad Rec Center, the new Sanford Hospital, etc.
Web comment	Bicycles do NOT belong in the streets with cars, this is a major safety issue!
Map Comment	Do not add capacity to 7th Avenue, 12th, Avenue or 19th Avenue N. It will erode the walkability and bikeability of the neighborhoods around these corridors.
Web comment	I hope that MetroCOG will prioritize roadways/drivers. I get that pedestrian and bike facilities are important, but I think lately, traffic planning has not centered around the most important part - roadways. We're so focused on pedestrian safety that we forget about the safety of a car. Let's prioritize reduced roadway congestion and then look at pedestrian facilities. Pedestrian facilities are great, but during our long long winters, they're almost useless.
Web comment	Multi-use trails and grade separations are something we could certainly see more of. I understand the purpose of shared lanes, but the volume of bicycles does not warrant the expense.

Web comment	The Pedestrian trails throughout West Fargo, on both City R-O-W and Park controlled lands need to be maintained throughout the entire year. The West Fargo Parks do not clear the bike paths during the winter in any of their parks. This results in the bikepaths not being accessible for upwards of 5 months every year. These Bikepaths were constructed with public money yet the public cannot use them in the winter. People still want to walk all winter. The City of West Fargo is better but are very slow in their response time to clean the bikepaths during the winter. The Ped crossings are not cleared of snow and it creates a hazardous situation
Web comment	If there are going to be more bike lanes the buffer between bikes and cars is important. I don't use a bike but when in a car I notice some areas bike lanes just cut off.
Web comment	Greater transit access to surrounding areas and industrial jobs was mentioned in this virtual meeting at one point and I agree with that. Even though I don't necessarily need those services to those jobs I believe it's important to make employment more accessible to people of all socioeconomic backgrounds. Many people I know wanted to work at Costco when it opened but were told there would only be bus service when the nearby Sanford hospital was built and started to receive bus service. I realize there is a funding issue but people with cars are still favored. And while I want people on bikes to be safe they are given priority but when driving in Fargo or walking downtown I witness many of them ignoring rules and randomly biking on and off sidewalks and streets as it suits them. They focus on speed/convenience instead of safety for themselves and others so maybe rules and signage need to be more clear for them.
Web comment	Parking downtown is near impossible. Tried to shop and had to park three blocks away. It has always been like that in Fargo. Never enough parking for what is built. No plan for parking for growth.
Map Comment	Possible (albeit smaller) hub for MATBus here? (At South 24th Ave and 8th S in Moorhead) Build enclosed structure with heat, restrooms, water, etc.
Web comment	Better maintenance of current multi-use trails. Include signage
Map Comment	Add stops and extend MATBus line 1 to this neighborhood (near River Dr and 10th Ave S in Moorhead) --nearest stop is too far away, especially in winter
Web comment	Develop more high-density housing in the downtown areas rather than expanding outward.
Web comment	More roundabouts would be nice! They are significantly safer and faster than typical signal-regulated intersections
Web comment	Some sort of commuter rail would be an excellent thing to keep in mind for the future! I don't exactly know how it should work, but a fast, efficient, short-line rail would significantly benefit commuters in the FM area
Map Comment	Install bike-share systems at colleges or downtown Moorhead, similar to the bikes in Island Park
Map Comment	If I were to rank these, the study of bike/ped projects 90, 71, and 88 would be of highest priority to Horace. We have some newly planned mixed-use paths we should consider highlighting on future maps that enhance the planned connective shown here.

Appendix B

Travel Demand Model Documentation

NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

ATAC ADVANCED TRAFFIC ANALYSIS CENTER

Fargo Moorhead 2015 TRAVEL DEMAND MODEL UPDATE

DRAFT REPORT

To the Fargo Moorhead MPO

August, 2018

Diomo Motuba, PhD & Muhammad Asif Khan (PhD Candidate)
Advanced Traffic Analysis Center

Upper Great Plains Transportation Institute

North Dakota State University

Fargo, North Dakota 58102

TABLE OF CONTENTS

1. INTRODUCTION

The Fargo Moorhead MPO's (The F-M MPO) Travel Demand Model (TDM) is updated every five years to replicate new data and the advancements in the state-of-the-art in transportation modeling methods and techniques. The current model update reflects 2015 base year data. The four-step TDM include trip generations, trip distributions, modal split and trip assignment. The model update process involves the calibration of model input parameters and validation of model output with ground truths. The calibration of the model is a cyclical process as shown in Figure 1.

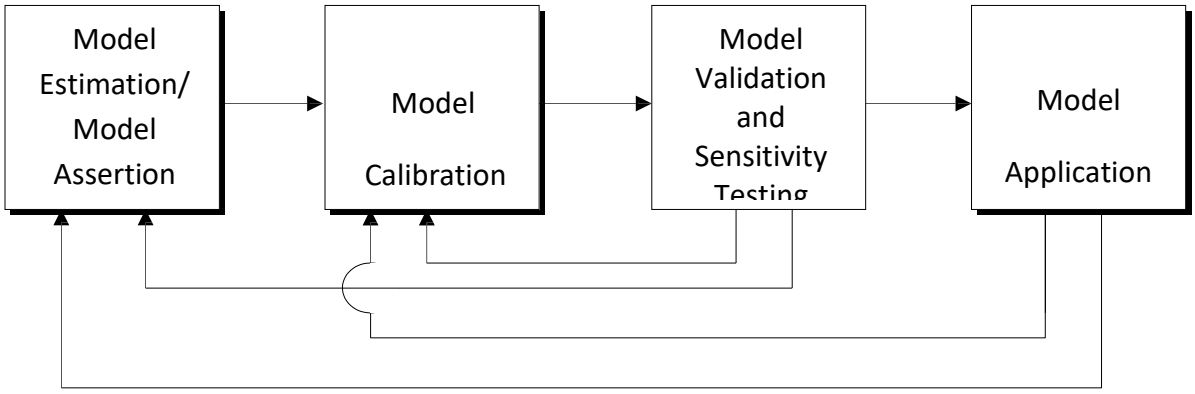


Figure 1 F-M TDM Calibration Flow Chart

The rest of this document describes the model update process including the data, methods and models that were used to update the model. Chapter 2 discusses the improvements made to the 2015 TDM; Chapter 3 discusses the capacity calculation methodology; Chapter 4 discusses the input data used in the model; Chapter 5 summarizes the trip generation models and methods; Chapter 6 discusses the trip distribution step; Chapter 7 discusses the trip assignment step; Chapter 8 discusses the model calibration, validation and output.

2. IMPROVEMENTS TO THE 2015 TDM

For the 2015 base year model, several updates were made to reflect the availability of new and improved data, new and advanced methods in modeling software and the inclusion of long-haul freight movements as part of the model. New data that was used for 2015 model update included: Origin Destination Data (Obtained from Airsage), the traffic analysis tool data, incorporation of truck counts and FAF data to model freights.

2.1. Origin Destination Data Obtained from Airsage

Origin-destination (OD) data were obtained from a commercial vendor Airsage. Airsage is a company that aggregates cell phone cellular-signal data points anonymously in partnership with the nation's largest wireless carriers. Origin Destination data were collected for the entire North Dakota and external locations rather than for the F-M MPO area only. Overall, a total of 301 OD TAZs were used. OD TAZs are defined as TAZS that were used in the OD survey data collection. Of the 301 OD TAZs, 105 were TAZs internal to the F-M MPO area. The internal OD TAZs were an aggregation of the TAZs in the F-M TDM which had a total of 799 TAZs. Figure 2 shows the overall OD TAZs and the F-M MPO TAZs geographies.

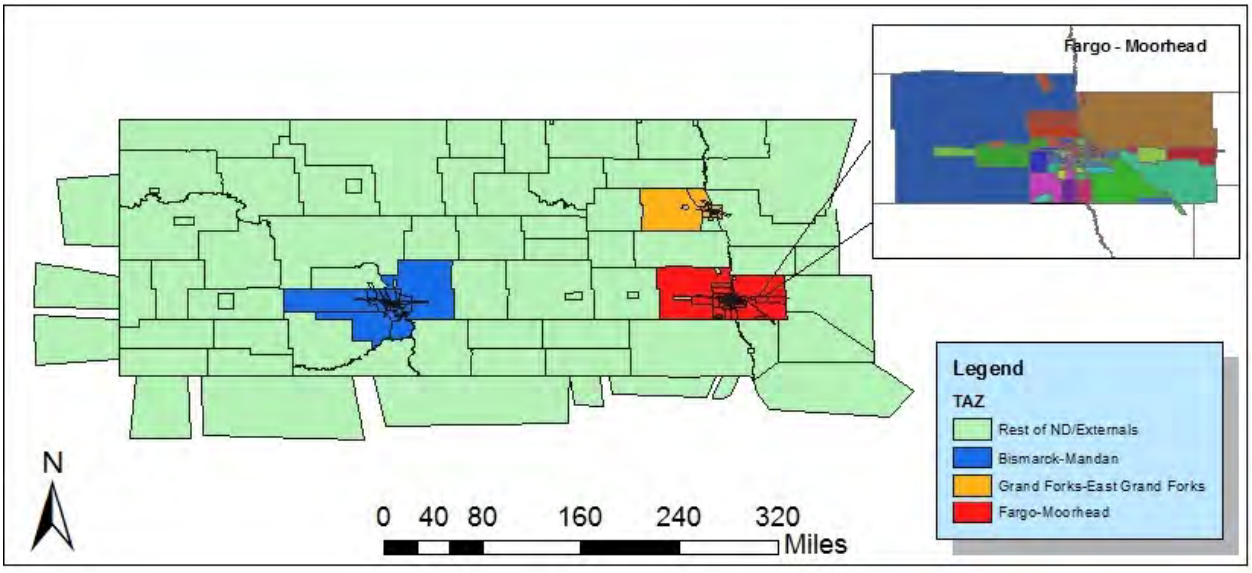


Figure 2 OD TAZs

Different datasets were provided by Airsage reflecting temporal, socioeconomic and weekday/weekend data and included the following tables:

1. Average Weekday 24 Hour trip matrix reflecting the total 24 hour Origin-Destination by trip purposes (HBW, HBO, NHB). Four Matrices were provided for different socioeconomic variables

including age (5 year cohorts), income ($10,000 increments), and vehicle attributes (0->5 for rent/owner households).

2. Average Weekday Peak Hour matrices (7:00AM-10:00AM, 10:00AM-4:00PM, 4:00PM-7:00PM) by trip purposes. Four Matrices were provided for different socioeconomic variables including age (5 year cohorts), income ($10,000 increments), and vehicle attributes (0->5 for rent/owner households).
3. Weekend matrices for each of the weekends of October 2015 by trip purposes (HBW, HBO, NHB). Four Matrices were provided for different socioeconomic variables including age (5 year cohorts), income ($10,000 increments), and vehicle attributes (0->5 for rent/owner households) for each weekend.
4. Long Distance ODs, showing external-external trips for the full day for both weekday averages and each weekend for HBW, HBO and NBH trips. No socioeconomic data were provided for these matrices.

The OD data is very useful in differentiating trips that are internal to the F-M MPO area: internal-internal (II) trips, trips that pass through the F-M MPO area: external-External (E-E) trips, and trips that start/end in the MPO area with the other end outside the MPO area: internal-external/external-internal (IE/EI) trips.

2.1.1. Internal-Internal OD Trip Summary

Table 1 shows the trip purposes by time of day, Peak AM, Peak Afternoon, Peak PM and Night trips. For HBW trips for F-M MPO TAZs, AM Peak, PM Peak and Night had the proportions of 27%, 20% and 22% respectively while the late-morning to early evening period had the highest proportion of 31%. Similarly, for HBO trips late-morning to early-evening had the highest proportion of 35% trips, followed by the Night period (27%), PM Peak (21%) and AM Peak (18%). This is expected and possibly because fewer non-work trips originate from homes during the morning peak period. Trip activity locations such as schools, malls, banks, walk-in hospitals typically open after 8:00 AM. The late-morning to early-evening period again had the highest proportion of NHB trips (44%), followed by the PM Peak (23%), AM Peak (17%) and Night period (15%).

The % overall column reflects the percentage of trips that had at least one end in the Fargo Moorhead MPO area with respect to the entire dataset. 33% of HBW, 17 % of HBO, and 13% of NHB, of total trips in the overall North Dakota data had trip ends in the F-M MPO area.

Table 1 Summary of Internal-Internal OD Data from Airsage

Fargo - Moorhead MPO TAZ OD Trips						
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**	**% of Overall**
HBW	17406	20009	13175	14069	64659	33%
HBO	25134	47883	28818	36768	138603	17%
NHB	24497	63863	33347	21967	143674	13%
Total	67037	131755	75340	72804	346936	17%
Proportions by Trip Purpose and Time of Day, F-M MPO TAZs Only						
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**	**% of Overall**
HBW	27%	31%	20%	22%	100%	33%
HBO	18%	35%	21%	27%	100%	17%
NHB	17%	44%	23%	15%	100%	13%
NCHRP 718 Time-of-day Distributions by Purpose						
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**	
HBW	25%	22%	26%	27%	100%	
HBO	15%	38%	26%	21%	100%	
NHB	15%	53%	21%	11%	100%	

2.1.2. Internal-External/External-Internal Origin Destination Data

Table 2 shows the IE and EI trip data and the proportions of IE/EI trips to the total trips for each trip purpose and time period. The table shows OD trips that had at least one trip end in the study area. Overall, IE/EI trips made up 13% of the total trips for the F-M MPO OD study area. For HBW trip purposes, the proportions of EI/IE 8% of the total trips and ranged from 7% to 11% for the different time periods. For HBO trips, the IE/EI made up 12% of total trips and ranged from 10% to 16% for the different time periods. The NHB trips were for IE/EI where 16% of the total F-M NHB trips and ranged from 13% to 20% for the different time periods.

Table 2 IE and EI Trips from OD Data for the F-M MPO Area

IE Trips Total					
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**
HBW	1275	1450	994	1488	5207
HBO	3158	5011	2928	5955	17052
NHB	4793	10256	4430	3787	23266
Total	9226	16717	8352	11230	45525
Percentage of IE Trips to Total Trips for F-M Area					
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**
HBW	7%	7%	8%	11%	8%
HBO	13%	10%	10%	16%	12%
NHB	20%	16%	13%	17%	16%
Total	14%	13%	11%	15%	13%

2.1.3. External-External OD Data

External-External (EE) OD data shows the trips that pass through the F-M MPO area without stopping. Transient locations were not included in the OD dataset provided by Airsage which would have simplified the task of obtaining EE trips. The data itself does not inform us if a trip between two OD pairs possibly passed through the F-M MPO area. The implication was that EE data had to be estimated using an algorithm that took into account the possibility that trips between OD pairs passed through the F-M MPO area. The methodology developed incorporated the use of real time travel data between OD pairs and was developed using an online mapping application APIs. The method assumed that trips between OD pairs will use the shortest travel time path between the OD pairs. The methodology to estimate EE OD pairs that passed through the F-M MPO is as follows

1. Select all OD pairs that are not part of the internal F-M MPO OD TAZs i.e. not part of the 105 F-M OD TAZs. 196 OD TAZs fit this category.
2. Calculate average shortest travel path between all OD pairs using API algorithm developed for online mapping application for each time period.
3. Evaluate whether any portion of the route between each OD pair included a spatial location point within the F-M MPO area (longitude/latitude).
4. If yes to 3, trips between those OD pairs were considered as EE trips for the F-M MPO area.

Error! Reference source not found. shows the percentages of EE trips that pass through the F-M MPO area by trip type and by trip purpose. **Error! Reference source not found.** also shows the proportion of each EE trip type as the overall proportion of EE and EI trips. Overall, EE trips made up about 9% of total EE and EI/IE trips. This was a little lower than the typically used 10-12% through trip percentages.

The percentage of EE only trips ranged from 15% for the PM Peak period to 39% for the late-morning to early-afternoon period. For HBW, the majority of trips occurred during the Night period (37%) with the least amount of trips occurring during the PM Peak period. This could be because this time period includes the early morning (6:00AM to 7:00 AM) and late evening (7:00PM to 9:00PM). Trips passing through the F-M MPO area for work may typically leave early and arrive later due to comparatively longer travel times. For HBO trips, the pattern is similar to the HBW trips with 38% of trips occurring at night and 16% of trips occurring during the AM Peak period. For NHB trips, the late-morning to early-afternoon period had the highest percentage of trips (45%) followed by the AM Peak period (25%), Night periods (16% each) and PM Peak (14%).

Table 3 EE Trips from OD Data

EE Trips Passing through F-M MPO					
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**
HBW	21	20	19	36	96
HBO	237	460	230	563	1489
NHB	691	1212	388	429	2719
Total	948	1692	637	1027	4304
Percentage of EE Trips Passing through F-M MPO					
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**
HBW	22%	21%	20%	37%	100%
HBO	16%	31%	15%	38%	100%
NHB	25%	45%	14%	16%	100%
Total	22%	39%	15%	24%	100%
Percentage of EE Trips to Total EE/EI Trips					
Purpose	**7-10AM**	**10AM-4PM**	**4-7PM**	**Night**	**Total**
HBW	2%	1%	2%	2%	2%
HBO	7%	9%	8%	9%	9%
NHB	14%	12%	9%	11%	12%
Total	10%	10%	8%	9%	9%

2.1.4. Use of Airsage OD Data in the TDM

The OD data were used to calibrate and validate the trip generation and trip distribution steps of the model. Prior models could not distinguish between EE trips for HBW and HBO trips for the AM Peak period for example. Ultimately, it leads to more precise and accurate models.

2.1.4.1. Trip Generation

For trip generation, the data were used primarily to disaggregate daily trips into peak and off peak periods for the different trip purposes and for different trip types (II/IE/EI and EE trips).

This created a more refined and more accurate output that was used for later parts of the model. The refinement greatly enhanced the ability of the model to replicate ground truths.

2.1.4.2. Trip Distribution

Trip distribution assigns trips generated in the trip generation step between origin and destination pairs. The typical output of the trip distribution step in TDMs is a matrix showing the origins and destination of each trip. For the F-M MPO TDM, the gravity model was used to distribute trips. The gravity model uses the trip generation outputs (production and attractions by trip purpose for each zone), a measure of travel impedance between each zonal pair (travel time), and socioeconomic/area characteristic variables ("K-factor") as input. The K-factor is used to account for the effects of variables other than travel impedance in the model. The OD data were used to develop K-factor matrices imputed in the trip gravity model that were used for distributing trips for each time period and purpose.

2.1.4.3. Evaluating the OD Data for Major Trip Generators

NDSU, MSUM, Concordia, Fargo Mall and Sanford Hospital are some of the "Special" trip generators within the F-M MPO area. An analysis of the OD data for trips attracted to these TAZS was performed to show how the data can be used to visually show the OD data. Figures 3, 4, 5, 6 and 7 show trip attractions to NDSU, MSUM, Concordia, Fargo Mall and Sanford Hospital respectively.

Figure 3 shows the weekday trip attractions to NDSU for 18-24 years old. It shows that most trips originate and end up within NDSU TAZs (20-45%). Figure 4 shows percentage of trips attracted to MSUM from different TAZs. Most of the trips attracted to MSUM originate from 32nd Ave South, 17th Ave South, 7th Ave North and 12th Ave North and trips within MSUM TAZ (4 to 6.5%). Figure 5 shows the percentage of trips attracted to Concordia. Almost similar trend of trips attraction to Concordia has been found as for MSUM. Majority of the trips are originating from within Concordia TAZ and from 19th Ave East, 17th Ave South, 13th Ave South, 7th Ave North, 1st Ave North and 12th Ave North (4 to 6.5%). Figure 6 shows the trips attracted to Fargo Mall. Most of the trips attracted to Fargo Mall originate and end up within Fargo Mall TAZ (8 to 10%). Trips attracted to Fargo Mall from 32nd Ave East, 13th Ave East from west Fargo area comprise 4 to 8% of the trips. Similarly, 7th Ave North and 1st Ave North from Fargo area contribute 4 to 8% of the trips attracted to Fargo Mall. Figure 7 shows the trips attracted

Sanford hospital. It shows that most of the trips attracted to Sanford hospital originate and end up within Sanford TAZ (12 to 18%).

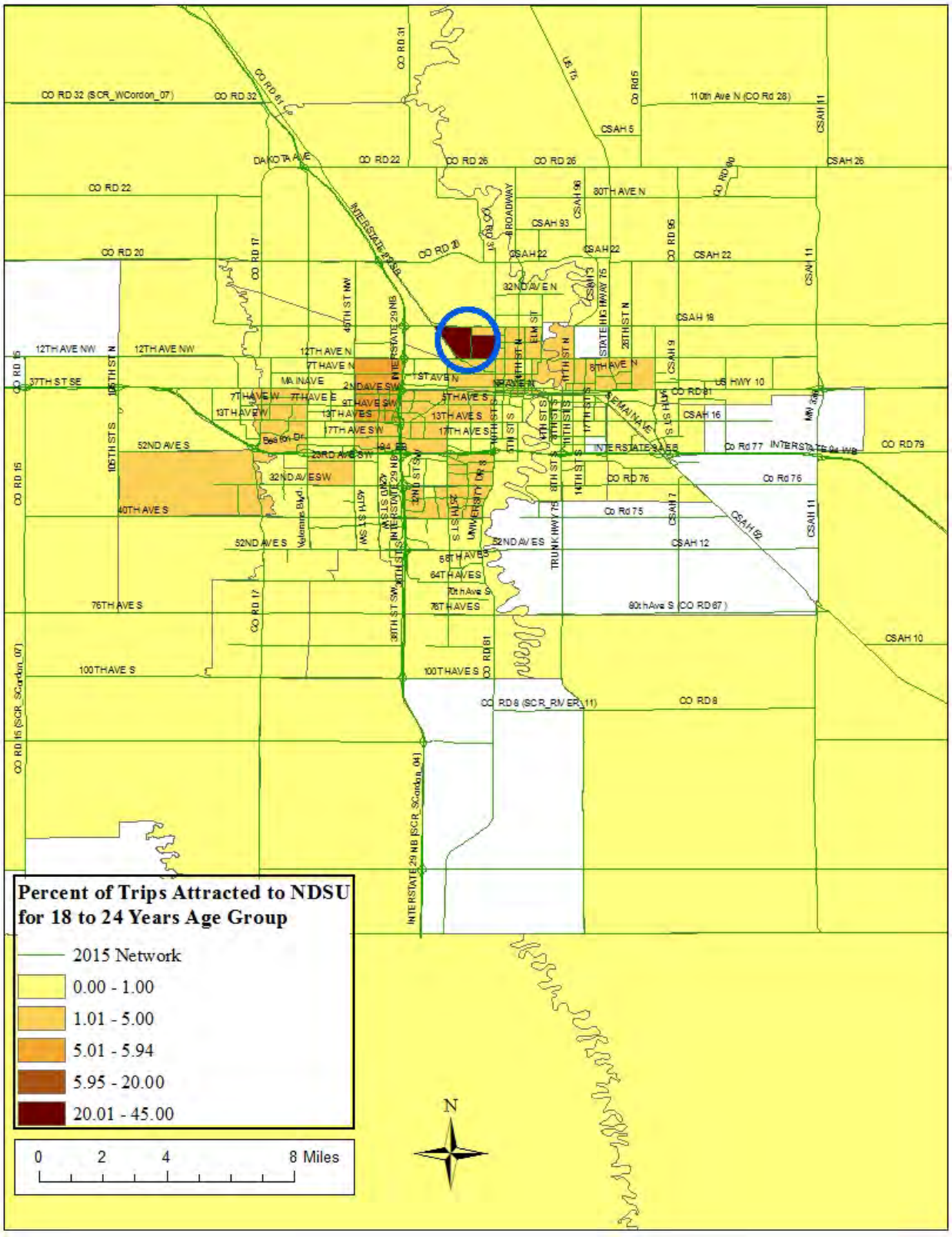


Figure 3 Origin Percent of Trips Attracted to NDSU for 18-24 Year Olds from Airsage OD Data

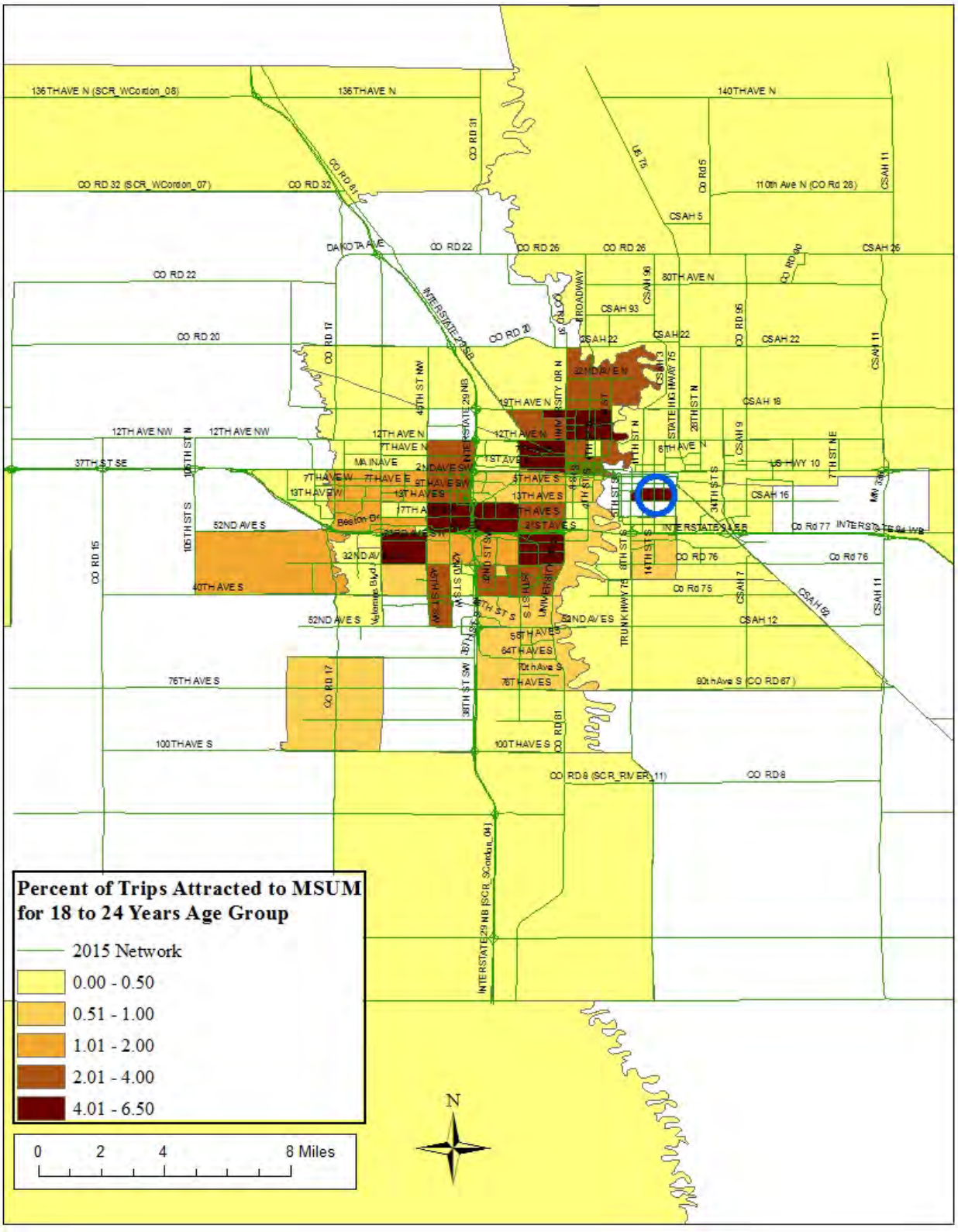


Figure 4 Origin Percent of Trips Attracted to MSUM for 18-24 Year Olds from Airsage OD Data

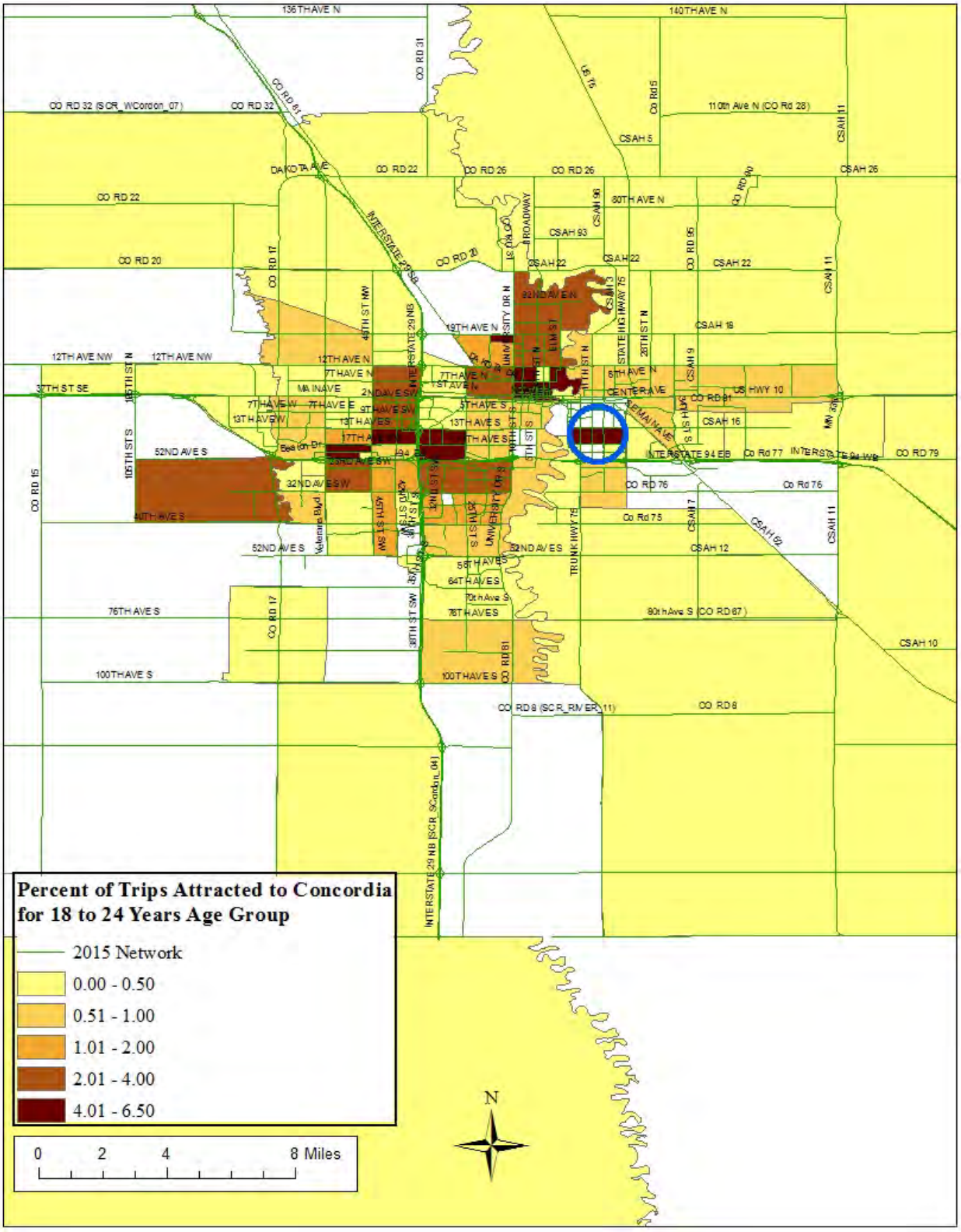


Figure 5 Origin Percent of Trips Attracted to Concordia for 18-24 Year Olds from Airsage OD Data

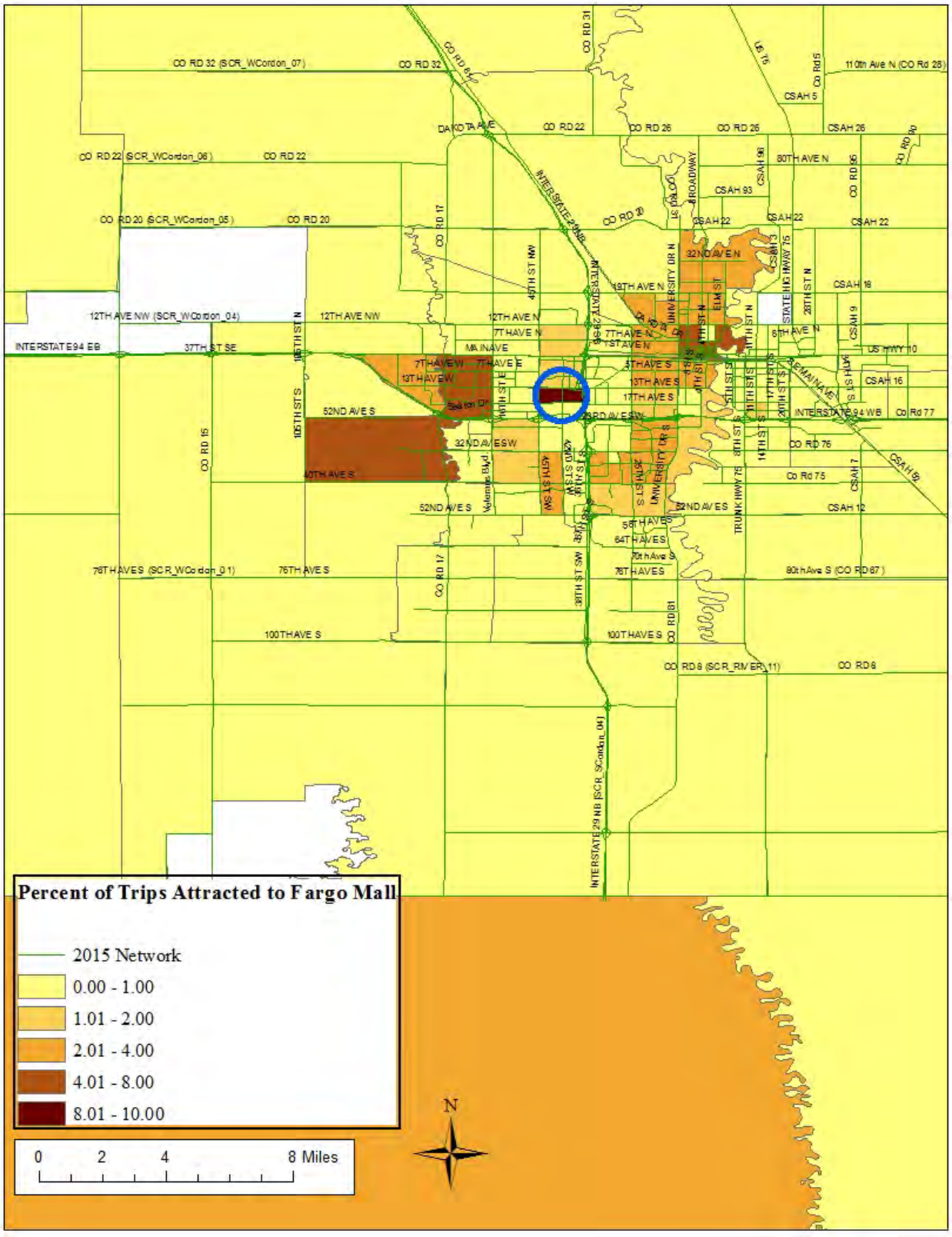


Figure 6 Origin Percent of Trips Attracted to the Fargo Mall from Airsage OD Data

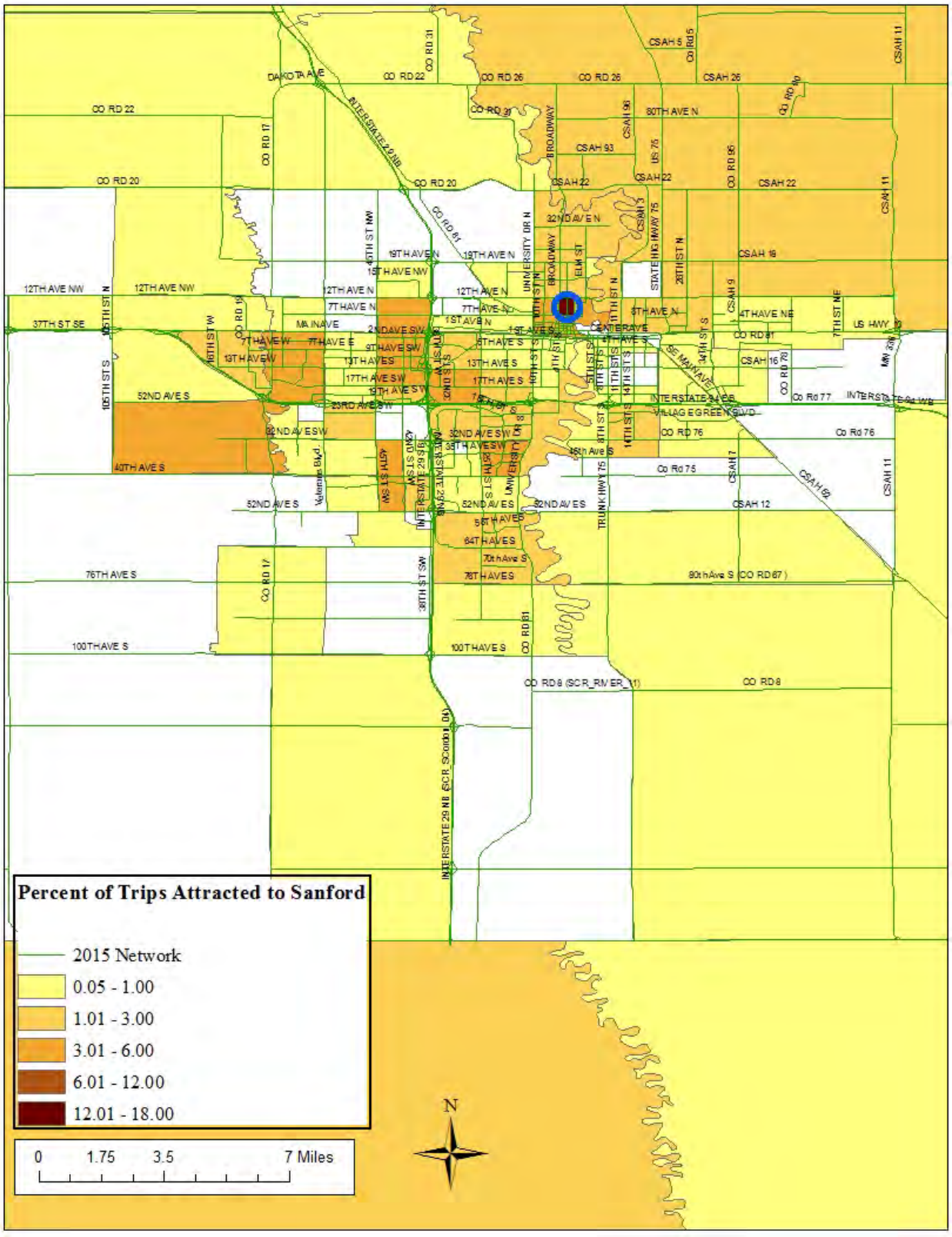


Figure 7 Origin Percent of Trips Attracted to the Sanford Hospital TAZ from Airsage OD Data

2.1.5. Shortcomings of the OD Data

Although the OD data provides unique opportunities to improve on the TDM, there were some deficiencies in the data.

1. The data did not show transient locations between Origins and Destinations. Paths between OD pairs can be estimated using network data.
2. The data does not include all cell phone networks and could suffer from cell phone provide biases. For example, low income earners might use different networks from the major networks for cost savings.
3. The raw data collected is anonymous and does not contain the demographic data that is provided with the dataset. The provider uses an algorithm to create the profile for average users (age, gender etc) based on their socioeconomic data. We cannot verify the veracity of the algorithm or the socioeconomic data that was used for this process.
4. Truck Data is not included in the dataset.

2.2. Freight Analysis Framework Data

The Freight Analysis Framework (FAF) data integrates data from various sources to create a comprehensive freight movement data among states and major metropolitan areas for all transportation modes. The data provides estimates for tonnage (thousand tons) and value (million dollars) by regions of origins and destinations, commodity type, and mode. Data are available for the 2012 base years, years 2012-2015, and forecasts from 2020 to 2045 in five-year increments.

The FAF data for North Dakota is aggregated for the entire state. For Minnesota, the data is aggregated into two zones: The twin Cities Metropolitan area and the rest of the state. A methodology was necessary to disaggregate the data to the MPO level. Data for Fargo came from the North Dakota FAF aggregate data while data for Moorhead came from the aggregate Minnesota FAF Data. A regression model was developed to disaggregate the statewide data to the MPO level. The model used the employments as the explanatory variable. Overall, the model had very good fit with R-square ranges from 65-95 %.

The output of the regression models were the tonnage of freight produced and attracted to each of the Cities in the MPO (Fargo and Moorhead respectively). The Tonnage was then distributed to each TAZ proportionally based on the employment for that TAZ. Tonnages were then converted to truck trips using the commodity type characteristics (typical weight and size).

3. CAPACITY CALCULATIONS

Capacities play a critical role in TDM as they are not only used to measure the Level of Service but are also critical in the assignment step. Traffic is assigned based on the saturation (Volume to Capacity) of each link, which will result in traffic being moved to other links as this value increases. The Transportation Research Board 2010 defined capacity as follows: "The capacity of a system element is the maximum sustainable hourly flow rate which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions. Capacity analysis examine roadway elements under uniform traffic, roadway, and control conditions."

NCHRP 716 defined on the other hand "Capacity" in a traffic engineering sense is not necessarily the same as the capacity variable used in travel demand model networks. In early travel models, the capacity variable used in such volume-delay functions as the BPR formula represented the volume at Level of Service (LOS) C; whereas, in traffic engineering, the term "capacity" traditionally referred to the volume at LOS E."

Link capacities are a function of the number of lanes on a link; however, lane capacities can also be specified by facility and area type combinations. Several factors are typically used to account for the variation in per-lane capacity in a highway network, including:

- Lane and shoulder widths;
- Peak-hour factors;
- Transit stops;
- Percentage of trucks
- Median treatments (raised, two-way left turn, absent, etc.);
- Access control;
- Type of intersection control;
- Provision of turning lanes at intersections and the amount of turning traffic; and
- Signal timing and phasing at signalized intersections.

Some networks combine link capacity and node capacity to better define the characteristics of a link (Kurth et al., 1996). This approach allows for a more refined definition of capacity and speed by direction on each link based on the characteristics of the intersection being approached.

To update the model capacity calculations, first a literature review was performed among similar type of MPO outside of North Dakota (Lincoln-NE, Des Moines Area-IA, Syracuse Metropolitan Transportation Council-NY, Chattanooga-Hamilton County Regional Planning Agency-TN, Knoxville Regional Transportation Planning Organization-TN, Tulare County Associations of Governments-CA); larger MPO than FM Metro COG (Atlanta Regional Commission-GA, Dallas-Fort Worth-TX, Chicago Metropolitan Agency for Planning-IL, Capital Area-MO. The assumptions of similar MPOs or larger MPOs are came from the population's threshold value defined by NCHRP 716. Table 4 summarizes the literature review used in different MPO planning models for capacity calculations.

Table 4 Summary of Capacity Calculations for MPO Planning Models

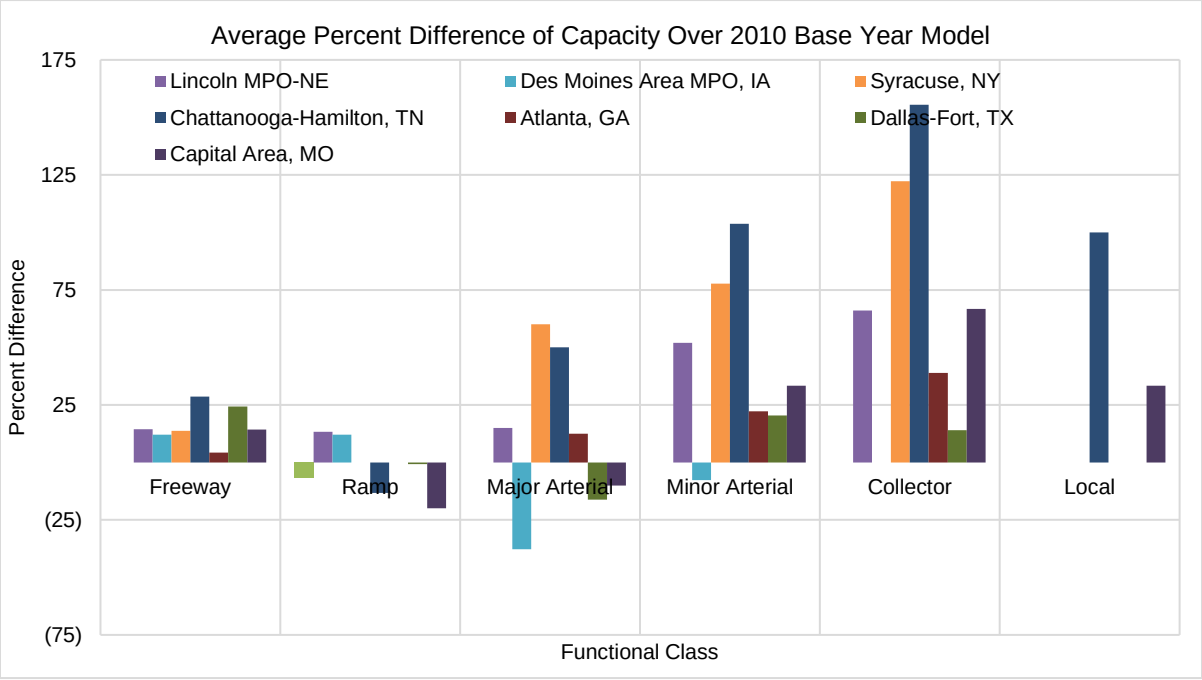
Lincoln MPO-NE, 2006	For the Lincoln MPO model, capacity at Level of Service (LOS) C was used as the threshold capacity. Highway Capacity Manual (HCM) 2000 procedures were used for estimating the capacity for each combination of functional class and area type. First, peak hour lane capacity was calculated after the effects of percent green time, and peak hour factor. Second, the 24 hour lane capacity was calculated using peak hour lane capacity and percent of traffic in the peak hour. Finally, threshold capacity at LOS C was assumed to be 75% of the 24 hour lane capacity. Reference: LIMA & Associates, 2006 http://www.princeton.edu/~alaink/Orf467F12/LincolnTravelDemandModel.pdf
VDOT, 2014	For all model regions, it is acceptable practice and recommended practice to use the most recent version Highway Capacity Manual (HCM) as the basis for roadway capacities. It is not acceptable to use older versions of the HCM or arbitrary figures for roadway capacities. Based on functional class and land use/area type Tabulation process Reference: http://www.virginiadot.org/projects/resources/vtm/vtm_policy_manual.pdf
ODOT, 1995	The procedure used to estimate free flow speed and capacity is a detailed methodology that utilizes the maximum amount of information from the network and "connects" this data with information from the Highway Capacity Manual. http://www.oregon.gov/ODOT/TD/TP/docs/reports/guidex.pdf
Memphis MPO-TN	Hourly capacities were developed for the Memphis model in order to use collected street data. This provides the most accurate representation of actual capacity (levels of service A through E) on an individual link. These capacities — detailed in the Technical Memorandum #8(b) – Capacity Development — are implemented using an equation which takes into account functional classification, speed limit, lanes, signal density, median treatment, area type, average lane width, and average shoulder width. The capacity equations are built into the model process as a TransCAD lookup table, so modifications to network attributes automatically update the capacity in subsequent runs Since the model is based on four multi-hour time periods, a conversion factor must be used to create a time period capacity for each of the four time periods. The capacity factors below are based on hourly traffic count data and the Memphis household travel survey http://www.memphismpo.org/sites/default/files/public/documents/lrtp/appendix-g-travel-demand-model.pdf
GDOT, 2013	Facility type and area type are used in combination to determine free-flow speeds and capacities. Link capacities for the model network are obtained from a lookup table of per-lane hourly capacities based on facility type and area type. The final link capacity is calculated by multiplying the hourly capacity per lane by the number of lanes, which is automatically added to the links during the model application. http://www.dot.ga.gov/BuildSmart/Programs/Documents/TravelDemandModel/GDOT%20Model%20Users%20Gude_050813.pdf
MassDOT, 2013	The coding of the EMME/2 highway network basically follows the hierarchy of the functional classification system. Expressways, other than those passing through denser urban areas, are generally coded for 60 mph speeds and hourly capacity per lane of 1,950. Higher-level arterials are coded for speeds ranging from 45 to 50 mph and corresponding capacities of 1,050 to 1,100. Lower-level arterials and major collectors range from 35 mph to 40 mph, with capacities of 950 to 1,000. Minor collectors and local streets that are not in urban centers range from 23 mph to 30 mph, with capacity generally at 800. Streets in urban centers can have substantially lower speeds and capacities. https://www.massdot.state.ma.us/theurbanring/downloads/CTPS_Travel_Demand_Modeling_Methodology.pdf

Syracuse Metropolitan Transportation Council, NY, 2012	The speed and capacity values are stored in lookup tables and automatically imported to the network each time the model runs. The main benefits of importing these data from a lookup table, as opposed to maintaining an explicit speed and capacity for every link within the highway network, are that the user has less data to manage and can easily quote values. However, there are some links in the SMTC network that warrant special attention because their actual speed or capacity is substantially different from what the lookup tables say. Therefore, the SMTC model also supports the ability to code a speed or capacity for each link by entering a value into the "TOTAL_HCAP_FIXED" or "SPEED_FIXED" fields on the network http://www.thei81challenge.org/cm/ResourceFiles/resources/SMTC%20Model%20Version%203.023%20Documentation.pdf
Atlanta Regional Commission (ARC), GA, 2011	By area type and facility type Tabulation method 20 facility type and 7 area type Total link capacity (1Hr- LOS E) http://www.atlantaregional.com/transportation/travel-demand-model
Capital Area MPO (CAMPO)-MO, 2013	The model computes link capacities at run time. Capacities are initially based on functional class and number of lanes, adjusted based on directionality, median type, and roadway slope. Capacity is expressed in terms of vehicles per day for each link by direction. http://www.jeffersoncitymo.gov/11Jan2013CAMPOTDMDocumentation.pdf
Champaign-Urbana Urbanized Area Transportation Study (CUUATS), IL	The daily capacity for each link in the Champaign County model network was calculated based on its facility type and area type. If a Two-Way Left Turn Lane (TWLTL) was present, the link capacity was increased by 30%. The lookup table was included in the model script to uniformly assign the capacity on the model network. The centroid connectors have high capacity and very low speed (15mph).
Chattanooga-Hamilton County Regional Planning Agency, TN, 2013	Using the collected street data, the proposed capacity calculation for Chattanooga model will be implemented using an equation which takes into account data such as functional classification, speed limit, lanes, median treatment, area type, average lane width, and average shoulder width. Traffic signal delays and impact of steep grades may also be considered. The equations were originally developed using the Highway Capacity Manual (HCM) and analysis performed by the Indiana Department of Transportation in 1997 for the Indiana State Highway Congestion Analysis Plan. KHA successfully applied this method in other urban area models, in conjunction with analysis performed using North Carolina DOT's Level of Service (LOS) software. http://www.chcrpa.org/2040RTP/2040RTP_Draft_Plan/Volume_III_Travel_Demand_Model.pdf
Dallas-Fort Worth (DF): North Centeral Texas COG, TX, 2009	Hourly Capacity Per Lane (Divided or One-Way Roads) – The hourly capacity per lane for divided roads is given by area type and functional class. AMFactor, PMFactor, OPFactor – These factors are used in the conversion of capacity from hourly to time period. Factors are defined by functional class 1-8 http://www.nctcog.org/trans/modeling/documentation/DFWRTMModelDescription.pdf
San Diego Association of Governments, CA, 2011	Two capacities are calculated for each direction of a hhghway link: 1. Intersection and mid-link Hourly basis Time category Factored Future ramp metering improved the capacity grow in 10 percent . See the equations http://www.sandag.org/uploads/publicationid/publicationid_1624_13779.pdf
Chicago Metropolitan Agency for Planning, IL, 2014	Zonal capacity system Capacity represented within the link travel time function is approximately the service volume at level of service C. It is calculated as 75 percent of the level of service E time period link capacity. Note that link capacity is calculated by multiplying the hourly lane capacity by the number of lanes and the number of hours in the assignment time period
Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA), NE, 2010	The daily capacity is based on the hourly ultimate capacity, that is, the point at which the Level of Service (LOS) changes from an "E" to an "F" as defined by the Highway Capacity Manual. To support the daily model, the hourly capacity is multiplied by a factor of 10, which represents a typical ratio of peak hour to daily traffic. Capacity varies by functional class, presence of turn lanes, the number of lanes, and whether the road is divided or undivided. The capacities are based on those used in Des Moines, Iowa. The capacities vary by side friction to take into account differences in driveway density. MAPA is currently comparing the capacities with other sources such as the capacity tables developed by the Florida DOT. The model does not include intersection delay separately from link delay. MAPA has attempted to represent intersection delay using downward adjustments to free flow speeds https://www.fhwa.dot.gov/planning/tmip/resources/peer_review_program/mapa/mapa_report.pdf
Des Moines Area MPO, IA, 2006	Daily directional capacity of a link Divided or undivided Number of lanes Access condition

	Facility coding http://www.ctre.iastate.edu/educweb/ce451/LABS/Lab%2012/DSM_Documentation.pdf
KYOVA Interstate Planning Commission, WV, 2013	Capacity based on area and functional class Tabulation and look up method http://www.kyovaipc.org/2040MTP/documents/KYOVA2040_ModelDocumentation_121213_withFigures.pdf
Knoxville Regional Transportation Planning Organization, TN, 2010	Peak hour capacities of the roadway network were estimated using Highway Capacity Manual 2000 procedures, which results in much more precise estimates of capacity verses traditional methods used in models that entail using a lookup table based on functional class and area type. http://www.knoxtrans.org/plans/mobilityplan/cndetern.pdf
Tulare County Association of Governments, CA, 2015	Link capacity is defined as the number of vehicles that can pass a point on a roadway at free-flow speed in an hour. One important reason for using link capacity as a model input is for congestion impact; which can be estimated as the additional vehicle -hours of delay based on the 2000 Highway Capacity Manual (2000 HCM). The capacity assumption used in the TCAG model of each road segment in the network is based on the terrain, facility type, and area type, which is consistent with the methodology suggested in the 2000 HCM http://www.arb.ca.gov/cc/sb375/tcag_scs_staff_report_final.pdf

Figure 8 shows the comparison of the base 2010 F-M MPO planning model capacity calculations to reviewed capacities for several different MPOS. The capacities for freeways are very similar to the capacities for the base 2010 F-M model. For ramps, the capacities for other MPO areas were typically lower in comparison to the 2010 F-M model. For major arterials, minor arterials, collectors and locals, the capacity calculations were typically for the MPOs compared. Most of these MPOs used a Level of Service E for capacity calculations, reason why their capacities were higher.

Figure 8 Capacity Comparisons to Fargo Moorhead MPO 2010 Base Year Model



For the 2015 base year model, network-wide capacities were updated to reflect the most recent Highway Capacity Manual HCM 6th Edition and several other literature. The calculation of capacities took into account several variables including the functional classification, the number of through links, the number of turn lanes, the location of the intersection (rural, urban, CBD, suburban), the intersection control and effective green ratios, heavy vehicle adjustment factors and the speeds. The capacities used for the 2015 model were slightly different from the 2010 models and represent the state-of-the-art in capacity calculations in TDM. The next subsections discusses the capacity calculations for different types of intersections.

3.1. Capacity Calculations for Signalized intersections

For signalized intersections a step by step procedure was used to estimate the capacities.

3.1.1. Step 1: Develop Lane Groups for each Link

The first step defined the lane groups for each link. For the 2015 network, lane groups are defined by the Attribute Linkgrp1. Table 5 shows the codes for each link group. The lane group describes the geometry at the B-node of each link including the number of through lanes, the number of right turn lanes and the number of left turn lanes. The first Number in the linkgroup1 category shows the number of through lanes while the second number represents the number of turn lanes for either right or left turns as shown in Table 5. For example, if Linkgroup1 for a link was 20, it meant that that link had two through lanes with no turn lanes. Similarly, if the Linkgroup1 code was 35, it means the link had three through lanes, with two right turn lanes.

Table 5 Lane Group Classification (Linkgroup 1)

Code	Lane Group Description
N0	N through lanes and no turn lane
N1	N through lanes and single exclusive left turn lane
N2	N through lanes and two exclusive left turn lanes
N3	N through lanes and continuous exclusive left turn lane from intersection to intersection
N4	N through lanes and single exclusive right turn lane
N5	N through lanes and two exclusive right turn lanes
N6	N through lanes and continuous exclusive right turn lane from intersection to intersection
N7	N through lanes, single exclusive left turn lane and single exclusive right turn lane
N8	N through lanes, two exclusive left turn lanes and single exclusive right turn lane
N9	N through lanes, two exclusive right turn lanes and single exclusive left turn lane

3.1.2. Step 2: Determining saturation flow rate (S_i) for each lane group:

Step 2 included determining the saturation flow rate *(S_i)* for each Lanegroup using **Error! Reference source not found.**. It is important to note that not all the parameters in Equation 1 were used for the model. Some of the parameters like the lane width and approach grades are not used in calculating the saturation flow rate. If the data is however available, say for a subarea study, these paramters can potentially be used to estimate capcities. The parameters were developed from different sources including HPMS and HCM6.

Equation 1

$$S_i = S_0 \times N \times f_W \times f_{HV} \times f_g \times f_p \times f_{bb} \times f_a \times f_{LU} \times f_{LT} \times f_{RT} \times f_{Lpb} \times f_{Rpb} \times PHF$$

Where:

S_i	=	Saturation flow rate for subject lane group, expressed as a total for all lanes in lane group (vph)
S_O	=	Base saturation flow rate per lane (pcphpln)
N	=	Number of lanes in lane group
f_W	=	Adjustment factor for lane width
f_{HV}	=	Adjustment factor for heavy vehicles in traffic stream
f_g	=	Adjustment factor for approach grade
f_p	=	Adjustment factor for existence of a parking lane and parking activity adjacent to lane group
f_{bb}	=	Adjustment factor for blocking effect of local buses that stop within intersection area
f_a	=	Adjustment factor for area type
f_{LU}	=	Adjustment factor for lane utilization
f_{LT}	=	Adjustment factor for left turns in lane group
f_{RT}	=	Adjustment factor for right turns in lane group
f_{Lpb}	=	Pedestrian-bicycle adjustment factor for left turn movements
f_{Rpb}	=	Pedestrian-bicycle adjustment factor for right turn movements
PHF	=	Peak Hour Factor

The formulas for calculating the parameters in equation 1 from the HPBS are show next:

1. Base Saturation Flow Rate, So

Following the HPMS procedure, the base saturation flow rate was set at 1,900 per car per hour per lane (pcphpl).

2. Adjustment Factor for Lane Width, f_W

Using HPMS lane adjustment factors directly **Error! Reference source not found.** was used to calculate the adjustment for lane widths,

Equation 2

$$\boldsymbol{f_W = 1 + \frac{(W-12)}{30}}$$

Where:

W = Lane width, minimum of 8ft and maximum of 16ft.

3. Heavy Vehicle Adjustment Factor, f_{HV}

Error! Reference source not found. was used to calculate the heavy vehicle adjustment factor.

Equation 3

$$f_{HV} = \frac{100}{100 + HV(E_T - 1)}$$

Where:

HV = percent heavy vehicles

E_T = 2.0 passenger car equivalents

4. Adjustment for Grade, f_g

Due to lack of grade information on urban minor arterials and collectors, HPMS uses f_g as 1.0.

5. Adjustment for Parking, f_p

For parking adjustment, **Error! Reference source not found.** is used to calculate the capacity adjustment.

Equation 4

$$f_p = \frac{N - 0.1 - \frac{18N_m}{3{,}600}}{N}$$

Where:

f_p = Parking adjustment factor

N = Number of lanes in group

N_m = Number of parking maneuvers per hour (6 for two-way streets with parking one side, 12 for two-way streets with parking both sides or one-way streets with parking one side, 24 for one-way streets with parking on both sides)

If no parking space or parking data is available then f_p is set equal to 1.0.

6. Adjustment for Bus Blockage, f_{bb}

Due to non-availability of bus routes data, f_{bb} is set to 1.0. Also default values of f_{bb} used in HCM 2000 for bus routes are close to one.

7. Type of Area Adjustment, f_a

According to HCM 6, f_a is set to 0.9 for CBDs and 1 elsewhere.

8. Lane Utilization Adjustment, f_{LU}

A lane utilization adjustment factor of 1.0 was used for the model.

9. Adjustment for Left Turns, f_{LT}

Adjustment factor of 0.95 is used for left turn movements to estimate the capacities in this study.

10. Adjustment for Right Turns, f_{RT}

For right turn movements, the adjustment factor of 0.85 was used for the model.

11. Adjustment for Pedestrian-Bicycle Blockage on Left Turns, f_{Lpb}

Adjustment factor for pedestrian-bicycle blockage is set to 1.0 in HPMS procedure due to non-availability of extensive inputs.

12. Adjustment for Pedestrian-Bicycle Blockage on Right-Turns, f_{Rpb}

Similarly, the adjustment factor for pedestrian-bicycle blockage for right turns is also set to 1.

13. Peak Hour Factor (PHF)

The default values of 0.92 and 0.88 are set for urban and rural sections respectively.

14. Effective Green Ratios (g_i/C) for Lane Groups

A g_i/C value of 0.45 is used for principal and minor arterials while 0.40 is used for collectors. These values were default values suggested in HPMS. The values were evaluated based on signal timing data provided by the MPO and were found to be reasonable.

3.1.3. Step 3: Approach Capacity Calculation

After estimating the saturation flow rate for each lane group, the approach capacity for each link at the B end node of the link is calculated. This calculation is done by incorporating

adjustment factors using the effective green ratio as shown in **Error! Reference source not found.**.

Equation 5

$$C_{SI} = \sum_i S_i \times \frac{g_i}{C}$$

Where C_{SI} is signalized intersection approach capacity,

S_i represents saturation flow rate for lane group i and

$\frac{g_i}{C}$ represents effective green ratio for lane group i.

3.2. Capacities for Stop Control Intersections

The calculation for capacities for links that have stop controls at the B-node end also follow a series of steps as described next.

3.2.1. Step 1: Calculate the Potential Capacity for each Turning Movement

The potential capacity for each turning movement uses the conflicting flow rate, the critical gap, the number of lanes, follow up time for each movement, and percent heavy vehicles as input parameters. **Error! Reference source not found.** shows the equation used to calculate the potential capacity for stop controlled intersections in for movements that are not shared.

Equation 6

$$C_{p,x} = CV_{c,x} \times \frac{e^{-V_{c,x} \times t_{c,x}/3600}}{1 - e^{-V_{c,x} \times t_{f,x}/3600}}$$

Where:

$C_{p,x}$	=	Potential Capacity of movement x (vph)
$CV_{c,x}$	=	Conflicting flow rate for each movement x (vph)
$t_{c,x}$	=	Critical gap (seconds) for each movement x $= t_{c,base} + (P_{HV} * t_{c,HV})$
$t_{c,base}$	=	Default values from **Error! Reference source not found.**.
$t_{c,HV}$	=	1.0 for one or two-through lane roads 2.0 otherwise
P_{HV}	=	Percent of heavy vehicles in traffic stream, peak period, expressed as decimal

$t_{f,x}$ = Follow-up time (seconds) for each movement x
$= t_{f,base} + (P_{HV} * t_{f,HV})$

$t_{f,HV}$ = 0.9 for one or two through lane roads
1.0 otherwise

Table 6 and Table 7 show the default values that were used for calculating the potential capacities for stop-controlled intersections in the model.

Table 6 Default values for calculating potential capacities (Cp,x) of stop sign-controlled highways

Vehicle Movement (x)	Base Critical Gap, $t_{c,base}$	Follow-up Time, $t_{f,base}$
Right Turns	6.2	3.3
Through	6.5	4.0
Left Turns	7.1	3.5

Table 7 Default Values for Conflicting Flow Rates

Functional Class	Conflicting Flow Rate, $CV_{c,x}$
Rural Principal Arterials	100
Rural Minor Arterials	150
Other Rural	200
Urban Principal Arterials	250
Urban Minor Arterials	500
Other Urban	750

3.2.2. Step 2: Determine Potential Approach Capacity for Shared Lanes

For stop controlled intersections with shared turning lanes, **Error! Reference source not found.** was used to determine each approach's capacity. If turn lanes are not shared, step 2 is skipped.

Equation 7

$$C_{p,SH} = \frac{\sum_x V_x}{\sum_x \left(\frac{V_x}{C_{p,x}}\right)}$$

Where,

$C_{p,SH}$ = Potential capacity of the shared lane (vph)
V_x = Flow rate of the x movement in the shared lane (vph)
$C_{p,x}$ = Potential capacity of x movement in the shared lane (vph)

3.2.3. Step 3: Calculate Approach Capacity for each Lane Group Type

Table 8 shows the different equations that are used to calculate the approach capacity for each lane group as described previously for stop controlled intersections.

Table 8. Stop Sign Control Intersection Capacity Equations for Different Lane Groups

1	All Movements from Shared Lane	$C_A = N_T \times C_{p,SH}$
2	Shared LT + T lane; exclusive RT lane	$C_A = N_T \times C_{p,SH(LT+T)} + N_{RT} + C_{p,RT}$
3	Shared RT + T lane; exclusive LT lane	$C_A = N_T \times C_{p,SH(RT+T)} + N_{LT} + C_{p,LT}$
4	Exclusive lanes for all movements	$C_A = N_{LT} \times C_{p,LT} + N_T \times C_{p,T} + N_{RT} \times C_{p,RT}$
5	Consider only through volumes	$C_A = N_T \times C_{p,T}$

Where:

N_T	=	Number of peak through lanes; 1 for rural highways with two through lanes, 2 for rural highways with three through lanes
N_{LT}	=	Number of left turn lanes
N_{RT}	=	Number of right turn lanes
$C_{p,SH}$	=	Potential capacity of shared lane (vph)
$C_{p,T}$	=	Potential capacity for through movement (vph)
$C_{p,RT}$	=	Potential capacity for right turn movement (vph)
$C_{p,LT}$	=	Potential capacity for left turn movement (vph)

3.3. Freeway Capacity

For freeways, the following steps detailed the equations and procedures used to calculate their capacities.

3.3.1. Step 1: Calculate Free Flow Speed

Error! Reference source not found. shows the formula used to calculate free flow speeds. The equation utilizes the base free flow speed which is calculated using an algorithm that incorporates real time travel time data, lane width, right shoulder, number of lanes and interchange density adjustments.

Equation 8

$$FFS = BFFS - f_{LW} - f_{LC} - f_N - f_{ID}$$

Where:

BFFS	=	Base free flow speed
f_{LW}	=	Adjustment factor for lane width
f_{LC}	=	Adjustment factor for right shoulder lateral clearance

f_N = Adjustment factor for number of lanes
f_{ID} = Adjustment factor for interchange density

Table 9 shows the adjustment factors for lane width. This value was set as zero since it was assuming the interstate where all 12 feet. However, if different widths exist, the values should be adjusted accordingly.

Table 9 Adjustment Factors Lane Width

Lane Width	Reduction in FFS (mph, f_{LW})
12 Ft	0.0
11 Ft	1.9
<= 10 ft	6.6

Table 10 shows the adjustment factors for right shoulder clearance. The model assumed a right shoulder clearance of greater than 6Ft. Adjustments should be made accordingly if these are different. For studies used to evaluate the construction/reconstruction impacts on freeways, this parameter will be critical in determining the reduced capacity if shoulders are closed or reduced.

Table 10 Right Shoulder Clearance Adjustment Factor

Right Shoulder Width (Ft)	Reduction in FFS (mph, f_{LC})			
	Lanes in one direction			
	2	3	4	>=5
>=6	0.0	0.0	0.0	0.0
5	0.6	0.4	0.2	0.1
4	1.2	0.8	0.4	0.2
3	1.8	1.2	0.6	0.3
2	2.4	1.6	0.8	0.4
1	3.0	2.0	1.0	0.5
0	3.6	2.4	1.2	0.6

Table 11 shows the adjustments used for interchange densities. The distance between two nodes connecting the interchanges is used to calculate the interchange density. The values for small urban areas are used in the model. For the model, all interchange densities were greater than 1 mile. This parameter becomes important when new interchanges that increase interchange densities are being considered as they will potentially reduce freeway capacities.

Table 11 Adjustments for Interchange Density

Area Size	Interchange Density	Interchange Adj. Factor, (f_{ID})
Small Urban	0.70	1.0
Small Urbanized	0.76	1.3
Large Urbanized	0.83	1.7
Small Urban	0.83	1.7
Small Urbanized	0.88	1.9
Large Urbanized	0.91	2.1

Table 12 details the adjustment factors used for adjusting freeway capacities based on the number of lanes.

Table 12 Adjustments for Number of Lanes

No of Lanes (One direction; Urban only)	Reduction in FFS (mph, f_N)
>=5	0.0
4	1.5
3	3.0
2	4.5

3.3.2. Step 2: Calculate Base Freeway Capacity

The base freeway capacity is calculated using **Error! Reference source not found.** for freeways with speeds less than 70mph and freeways with speeds greater than 70mph.

Equation 9

$$BaseCap = 1{,}700 + 10FFS; for\ FFS \leq 70\ mph$$

$$BaseCap = 2{,}400 + 10FFS; for\ FFS > 70\ mph$$

3.4. Ramp Capacity Calculations

The following steps were used to calculate ramp capacities:

3.4.1. Step 1: Calculate Free flow Speed

Using **Error! Reference source not found.Error! Reference source not found.**, the free flow speed for ramps were calculated as follows

Equation 10: Ramp Capacity Equation

$S_{fo} = 25.6 + 0.47 * S_{pl}$

Where S_{fo} = base free-flow speed (BFSS); and

S_{pl}= posted speed limit

3.4.2. Step 2: Calculate Maximum Saturation Flow Capacity

The Chattanooga-Hamilton model was used to develop **Error! Reference source not found.** to calculate ramp capacities as follows:

Equation 11: Maximum Saturation Flow Capacity

$SF = C * N * (v/c)_I * PHF$

Where SF-maximum service flow rate;

C ideal capacity based on S_{fo};

N lumber of lanes;

(v/c) rate of service flow for levels of service D or E. v/c=0.88 at LOS D, 1 at LOS E; and

PHF peak hour factor.

Error! Reference source not found. and **Error! Reference source not found.** Appendix 1 shows sample Capacity calculations that are used in the model for signalized intersections.

4. MODEL INPUT DATA

The main data used as input to the model are the network and socioeconomic data. The two datasets were developed through a collaborative effort between MPO staff and ATAC. These data are discussed next.

4.1. Transportation Network Data

The transportation network is an abstract representation of the transportation system that has essential data describing the available transportation supply. The network is maintained in GIS as a geodatabase that contains four feature classes. These feature classes included: links which represent the roadway, nodes which represent intersections, centroids which are the trip origin/destination points for transportation analysis zones (TAZ) and external centroids which are external loading trip points. The network was updated by ATAC and the MPO to represent 2015 base year conditions.

The main attributes of the network that are used in the model include the network geometries (number of lanes and turn lanes), posted and Free Flow Speeds, functional classification, length of links, link ADTs (passenger and truck counts), link location area type and the intersection controls.

4.1.1. Distribution of Modeled Network by Functional Classifications

Table 13 shows the percentage of centerline miles by functional class.

Table 13 Centerline Miles Distribution by Functional Classification

Functional Class	Centerline Miles	Percentage
Interstate	168.42473	14.72%
Major	79.23257	6.93%
Minors	271.20133	23.70%
Collectors	439.25819	38.39%
Locals	163.13658	14.26%
Unpaved	22.85484	2.00%

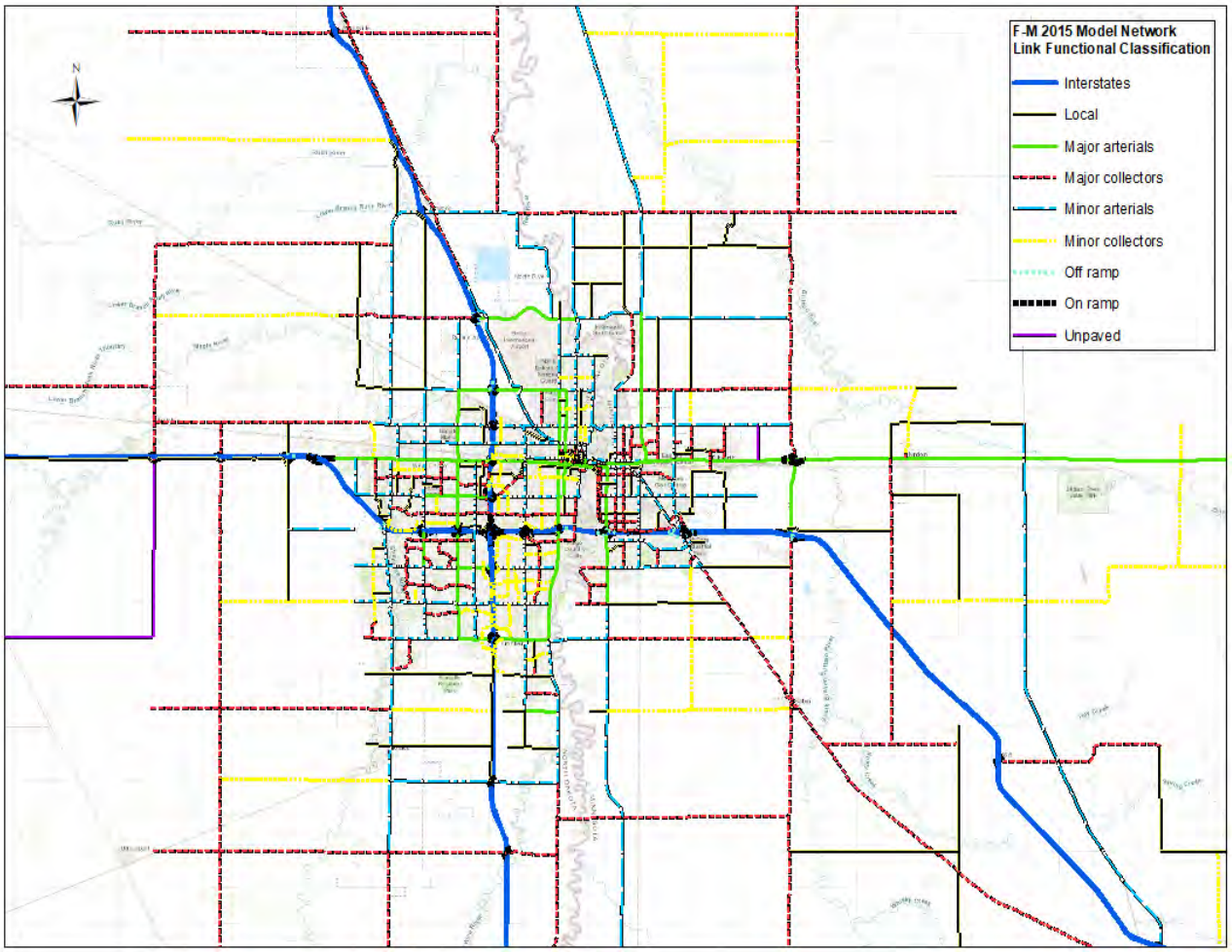


Figure 9 F-M 2015 Model Network

Figure 9 shows the modeled network distribution by functional class. The network does not show the centroid connectors.

Intersection controls were added to the model to incorporate delay experienced by road users. CUBE software uses a built in algorithm to calculate the delays that each intersection type contributes to the model. Two way stop controls; four way stop controls; Signals; Roundabouts and Yield controls were added as inputs to the model and are shown in Figure 10.

The intersection control signal timing data was provided by the F-M MPO and represented actual signal timing data for signals for three time periods: AM Peak, PM Peak and Off peak periods. Using intersection data significantly enhanced the models replication of actual travel times. Without the intersection data, the model could only reasonable replicate 60% of ADT. Additionally, intersection delays would have to be added to the network travel times to represent delays, which may not be represent real world conditions.

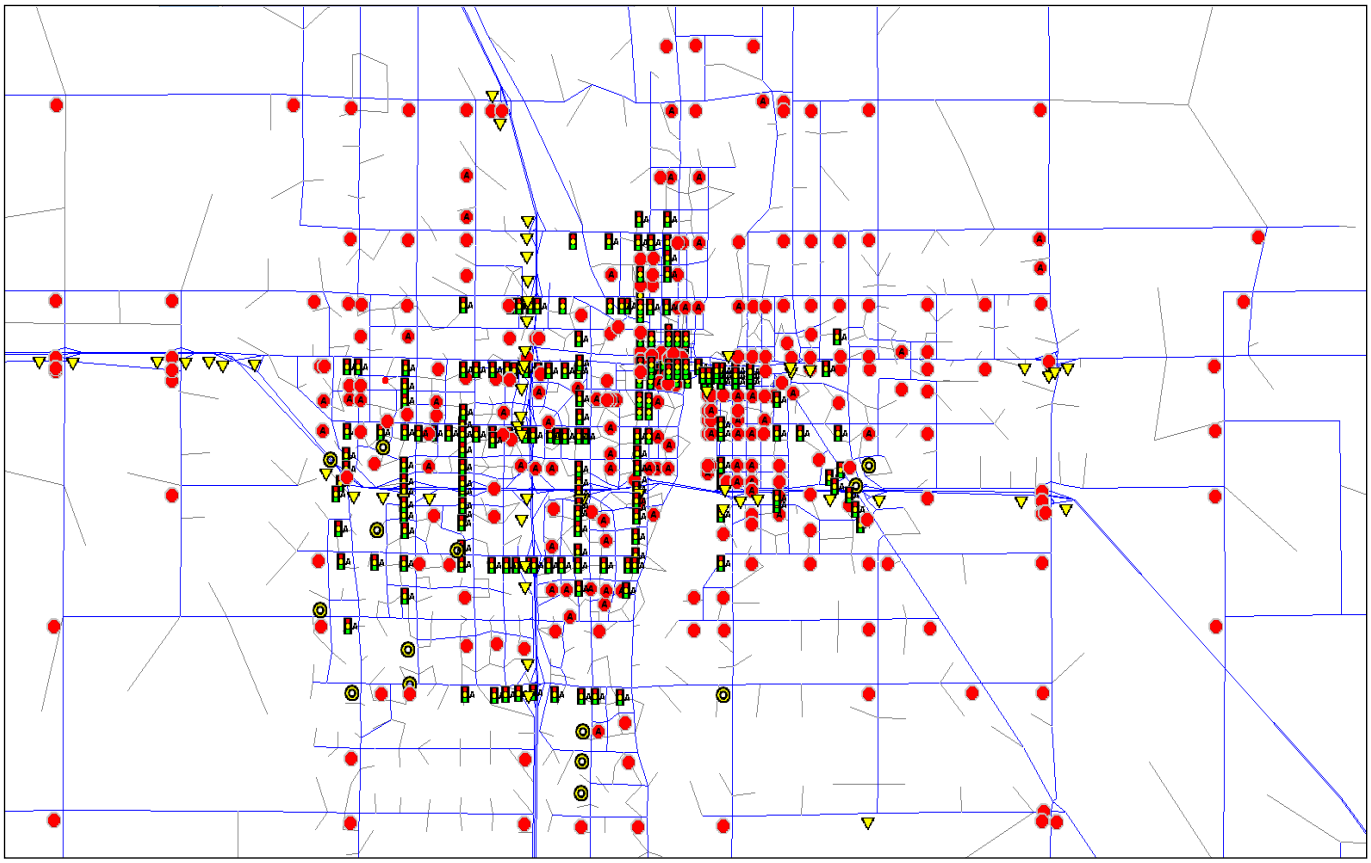


Figure 10 Intersection Data Used in Mode

4.2. Socioeconomic Data

Socioeconomic data are used to generate the total number of trips produced and attracted by each TAZ in the TDM. The TAZ geographies and the socioeconomic data included within each TAZ were developed by a collaborative effort between MPO staff and the ATAC. The socioeconomic data that was used in the model is described next.

4.2.1. TAZ Geography files:

584 internal total TAZs were used for the 2015 model. Several TAZs were modified (split or merged) based on input from both the MPO and ATAC.

4.2.2. Socioeconomic Data TAZ Attributes

The socioeconomic data within the TAZ contained the following fields

4.2.2.1. Number of Persons per household in each TAZ according to the following categories (attributes)

1. # of one person households
2. # of two person households

   # of three person households
3. # of four person households
4. # of five person households
5. > # five person households
6. Total number of households

4.2.2.2. Vehicles per household in each TAZ[1]

1. # of zero vehicle households
2. # of one vehicle households
3. # of two vehicle households
4. # of three vehicle households
5. # of four vehicle households
6. > 4 vehicle households

4.2.2.3. School age children per household in each TAZ in four categories[2]

1. # of Grade school age children
2. # of Middle age school children
3. # of High school age children
4. # of College age (18-23)

[1] Data was not in the 2010 model
[2] Data was not in the 2010 model

4.2.2.4. Employment data (# for each TAZ)[3]

1. Manufacturing (NAICS 31-33)
2. Construction and resources (NAICS 21, 23)
3. Retail (NAICS 44-45)
4. Service (NAICS 52,53,55,56,56,51,,62,71,81,99)
5. Agriculture (NAICS 11)
6. Wholesale Trade, Trans Utilities (NAICS:22,48-49,42)
7. Education (NAICS 61) with the following additional fields
    a. Elementary school enrollment for each TAZ
    b. Middle school enrollment for each TAZ
    c. High school enrollment for each TAZ
    d. College enrollment data
    e. Number of on campus students for each college
    f. Number of off campus students for each college
    g. Number of parking spots reserved for college students
    h. Number of parking spots reserved for staff

4.2.2.5. Enplanements

7. Yearly enplanements for the Fargo Airport for 2015 (429,251)

4.2.2.6. Special generators

8. Special generator TAZS (wholesale distributors (Walmart and Super Target, large retail stores, and Malls).

4.2.2.7. ADT at external locations

Used as estimates of trips that have at least one trip end outside of the MPO area.

[3] Data has been disaggregated (Previously, it included retail, other and service jobs)

5. TRIP GENERATION

Trip generation is the initial step of the TDM and estimates the number of trips produced and attracted to each TAZ. The socioeconomic data discussed in Chapter 4 was used together with regression parameters to estimate the trips produced and attracted to each TAZ. Trips Produced are typically a function of the household characteristics for each TAZ, while trips attracted are a function of the employment of each TAZ. As mentioned previously, an improvement of this model was the inclusion of long-haul freight movements. The next sections describe in detail, the different trip generation procedures that were used and their results.

5.1. Internal-Internal Passenger Vehicle Trip Productions and Attractions

The Internal-Internal Passenger Vehicle Trip Generations (II Trips) represent the passenger vehicle trips that originate and terminate within the MPO area. These trips are classified into five main trip purposes including (Home Based Work) HBW, Home-Based Shop (HB-Shop), Home Based Other (HBO), Home Based School K-12 (HBSchool K-12), Home Based University (HBU) and Non Home Based (NHB) trips.

5.1.1. Trip Productions

Table 14 shows the trip generation equations that were used to develop the II trip production tables. The numbers in bold show the actual regression parameters used while the number underneath each one shows the p-value for each of the regression equations. The model parameters were developed from a household travel survey that was done in the Fargo-Moorhead area. These parameters are the starting equations that were used, the final equations were adjusted during the calibration process to reflect different area types and to match the observed traffic counts in the trip assignment step.

Table 14 Internal-Internal Passenger Trip Generation Equations

Persons per Household					
Purpose	**1**	**2**	**3**	**4+**	**Overall**
HBW	**1**	**1.72**	**2.56**	**2.42**	**1.75**
	14.9	*19.82*	*13.61*	*17.15*	*30.45*
HBO	**1.09**	**2.4**	**2.51**	**4.8**	**2.46**
	11.9	*21.04*	*9.64*	*9.74*	*20.81*
NHB	**1.57**	**2.4**	**2.89**	**3.57**	**2.43**
	11.44	*17.78*	*7.39*	*10.1*	*22.49*
HB-HiSch	**0**	**0**	**0.47**	**0.46**	**0.16**
	.	.	*4.65*	*4.66*	*6.64*
HB-GrSch	**0**	**0.13**	**0.8**	**2.4**	**0.62**
	0.88	*5.09*	*6*	*12.52*	*11.94*
HB-Sch	**0**	**0.13**	**1.27**	**2.86**	**0.77**
	0.88	*5.09*	*8.38*	*14.21*	*13.29*
IE	**0.05**	**0.3**	**0.18**	**0.31**	**0.21**
	2.25	*6.71*	*2.8*	*3.52*	*7.71*
Total	**3.72**	**7**	**9.52**	**14.04**	**7.66**
	27.77	*35.97*	*18.52*	*19.59*	*35.69*

5.1.2. Trip Attractions

Trip attractions represent the number of trips attracted to each zone based typically based on employment the size of the school for school trips. Table 15 shows the trip attraction rates (from NCHRP 718) that were used to develop trip attraction tables. Although the socioeconomic data showed several different job types, these aggregated to represent the categories shown in Table 15.

Table 15 Trip Attraction Rates

Purpose	Retail	Service	Other
HBW	1.2	1.2	1.2
HBO	8.1	1.5	.2
NHB	4.7	1.4	.5

Table 16 shows the school trip attraction rates that were used for the model. These trip rates were obtained from the ITE Trip Generation Manual and were calibrated to the local conditions.

Table 16 School Trip Attraction Rates

School	Fargo/Moorhead Schools	West Fargo Schools	Dilworth/Barnesville/Hawley	Private Schools
Elem	2.28	2.68	2.08	4.68
Middle	2.28	2.68	2.08	4.68
High	2.28	2.68	2.08	4.68

5.2. Freight Data

Freight movements have been an issue for previous models as they have not accounted for freight movements. Long haul freight movements for the 2015 model. A commodity-based model will be developed using the Commodity Flow Survey Data. This data is publicly available for the 2015 base year. Commodity Flow Survey Data exists only for the largest metropolitan areas and for the rest of the states. The implication is that for the F-M MPO, the commodity flow survey data had to be disaggregated from statewide totals to local data. Data on the employment for the North Dakota state was used to disaggregate freight data to F-M MPO and for the rest of the state.

Ordinary Least Square Models were used to develop model parameters that were applied to the number of jobs for each freight generation industry for productions and attractions. The model used data for the metropolitan areas that had disaggregate commodity flow survey data to develop the parameter estimates. This parameter estimates were then applied to the commodity flow survey data for both North Dakota and Minnesota to obtain the total tonnage of freight produced and attracted to the MPO. The total tonnage was assigned to the TAZ level based on the number of jobs for each commodity group in the TAZ. Table 17shows the results of the freight model.

Table 17 Freight Trip Productions and Attractions (IE/EI)

Productions	
NAICS Category	Freight Productions
Manufacturing Jobs	952
Industrial Jobs	2085
Retail	1746
Whole Sale	2518
Service Jobs	6
Total	7307
Attractions	
NAICS Category	Freight Attractions
Manufacturing Jobs	2581
Industrial Jobs	2612
Agricultural	262
Total	5455

6. TRIP DISTRIBUTION

The trip distribution step takes the trip productions and attractions developed in the trip generation step and assigns them between Origin-Destination pairs. The gravity model assigns trips based on the number of productions, attractions, a friction factor (F), and a scaling factor (K). The friction factor is a value that is inversely proportional to distance, time, or cost which is a measure of the travel impedance between any two zonal pairs. The k factor is a scaling factor that is used during calibration and it limits or increases the volume of traffic that crosses sections of the network. **Error! Reference source not found.** shows the gravity model formulation that was used.

Equation 12 Gravity Model Used for Trip Distribution

$$T_{ij} = P_i \frac{K_{ij} A_j F_{ij}}{\sum(K_j A_j F_j)}$$

T_{ij} = Number of trips assigned between Zones i and j;

P_i = Number of Productions in Zone i;

A_j = Number of Attractions in Zone j;

F_{ij} = Friction Factor; and

K_{ij} = Scaling factor used in calibration to influence specific ij pairs

The typical output of the trip distribution step in TDMs is a matrix showing the origins and destination of each trip. The gravity model uses the trip generation outputs (production and attractions by trip purpose for each zone), a measure of travel impedance between each zonal pair (travel time), and socioeconomic/area characteristic variables ("K-factor") variables as input. The K-factor is used to account for the effects of variables other than travel impedance in the model. The OD data were used to develop K-factor matrices imputed in the trip gravity model that were used for distributing IE/EI trips. For the TDM, trips were distributed separately for the different periods.

To develop K-factors, it was necessary to aggregate the external portions of these trips into four main external super zones. For example, all the trips that originated from zones to the North of the MPO area were aggregated to one "super TAZ". The proportions of trips from every internal F-M OD TAZ to the "super TAZ" was calculated and used as the K-Factor for the trip distribution of trips. The K-factors used in this way enabled the model to distribute trips more efficiently.

For EE trips, the OD data were used to develop K factors in a similar manner to those described for EI/IE trips. This were then used in the EE trip distribution step for the TDM.

For K-12 school trip distribution, school zones were used to assign trips for Fargo Moorhead Public Schools
K-12 school trips. The K-factor matrix used ensured that no Public school trips between the cities

7. TRIP ASSIGNMENT

Trip assignment is computationally the last step in travel demand modeling. The trip assignment step develops route paths that each trip will be choosing on the network when going from its origin to its destination. Trip assignments were carried out for three origin destination matrixes; AM peak, PM peak and off peak periods.

The user equilibrium traffic assignment method was used for assigning trips for the model. Additionally In the user equilibrium method, road users of the system choose the route that would minimize their cost (or travel time) without consideration to the overall average travel time on the system. In system-equilibrium, system users would behave cooperatively in choosing their own route to ensure the most efficient use of the system, thus optimizing the overall average cost of travel on the system.

The formulation used to calculate the travel cost for the equilibrium assignment method is shown in equation **Error! Reference source not found.**. It takes into account the link travel time, the value of travel time and the link distance.

Equation 13 Trip Assignment Cost Equation

$$TC = (VTT * L_t) + 0.76 * L_d$$

Where:

TC = Link Travel Cost

VTT= Value of Travel Time ($12.85 for the metro area)

L_t = Link Travel Time, and

L_d = Link Length.

Junction-based assignment uses an intersection constrained assignment method and uses the intersection controls to assign node delays to the network. Junction-based modeling attempts to simulate congestion on a roadway network by modeling what happens at the intersections using the intersection control data like signal timing data.

8. VALIDATION AND CALIBRATION

Model calibration refers to the adjustment of model input parameters in order to replicate observed real world data for a base year to otherwise produce reasonable results. It involves adjusting model input parameters such as trip generation rates, node delays, free flow speeds, K factors and friction factors. Figure 11 shows the calibration and validation flow chart that was used for the model. It was an iterative process that involved adjusting the model parameters until a certain level of confidence of the model's replication of real world data was achieved.

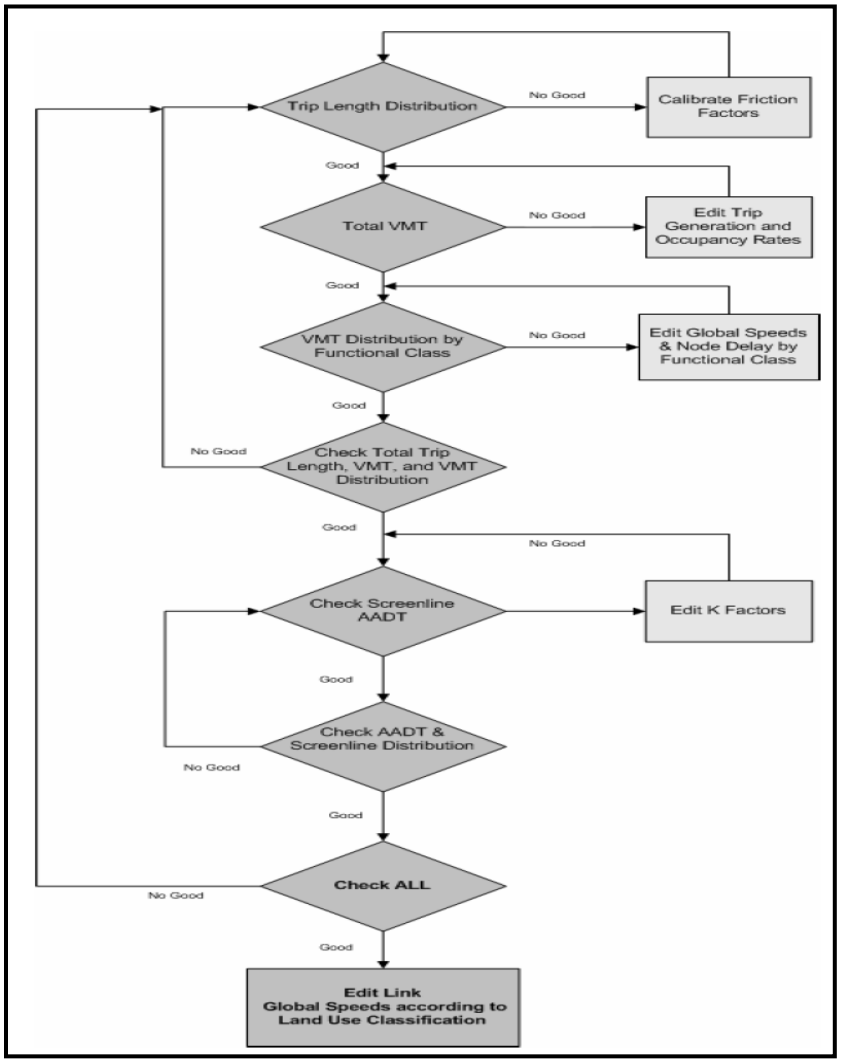


Figure 11 Calibration Flow Chart

Model validation compares base year calibrated models output to observed data. Ideally, model estimation and calibration data should not be used for validation but this is not always feasible. The two processes, calibration and validation typically go hand in hand in an iterative process The next sections describe the different model parameters that were used for model calibration and validation.

8.1. Trip Length Frequency Calibration and Validation

Trip length frequency distributions describe the travelers sensitivity to travel time by trip purpose. Steeper curves mean more sensitive travel times. Friction factors are calibrated until a desired trip length frequency is validated against observed data. The friction factors are the main dependent variable in the gravity model. The gamma function was used to develop the friction factor for this model and are shown in Figure 12.

Equation 14 Friction Factor Equation

$$F_{ij}^{p} = a * t_{ij}^{b} * exp(c * t_{ij})$$

Where,

F_{ij}^{p} = Friction factor for purpose p (HBW,HBO, NHB)

t_{ij}^{b} = travel impedance between zone i and j,

a, b and c are gamma function scaling factors.

The friction factors were calibrated by adjusting the b and c parameters until the desirable trip length frequency distribution for Home Based Work Travel times were reached. Observed trip length frequency data for the home-based work trips were obtained from the census journey to work database for the metropolitan area. Only trips lower than 35 minutes were considered with the assumption that 35 minutes was the highest possible travel time between any two points within the metro area.

The average trip length for the observed data was calculated as 13.78 minutes compared to the average trip length of 14.41 minutes produced by the model for HBW trips. The desired average trip lengths for HBO and NHB trips were 72% and 66% of the average trip length for HBO and NHB trips. The average trip length for the models HBO and NHB trips were 12.68 and 10.33 minutes respectively.

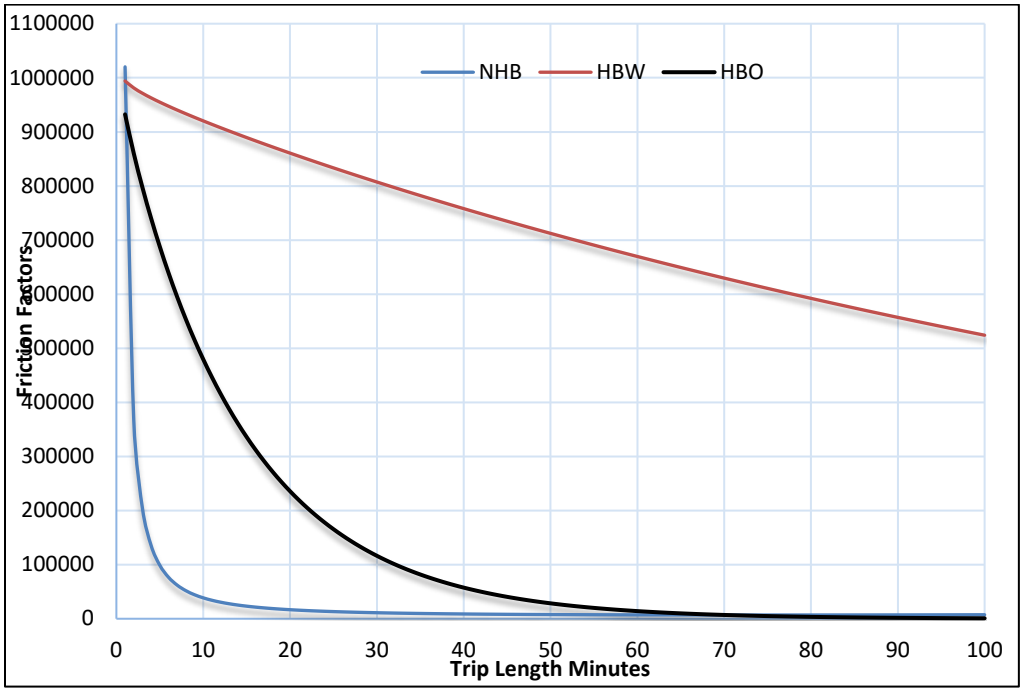


Figure 12 Friction Factors

Figure 13 shows the comparison between observed trip length frequencies and the modeled trip length frequencies for HBW trips. The comparison was done for only HBW trips since that's the only observed data available. The two graphs are very similar to each other.

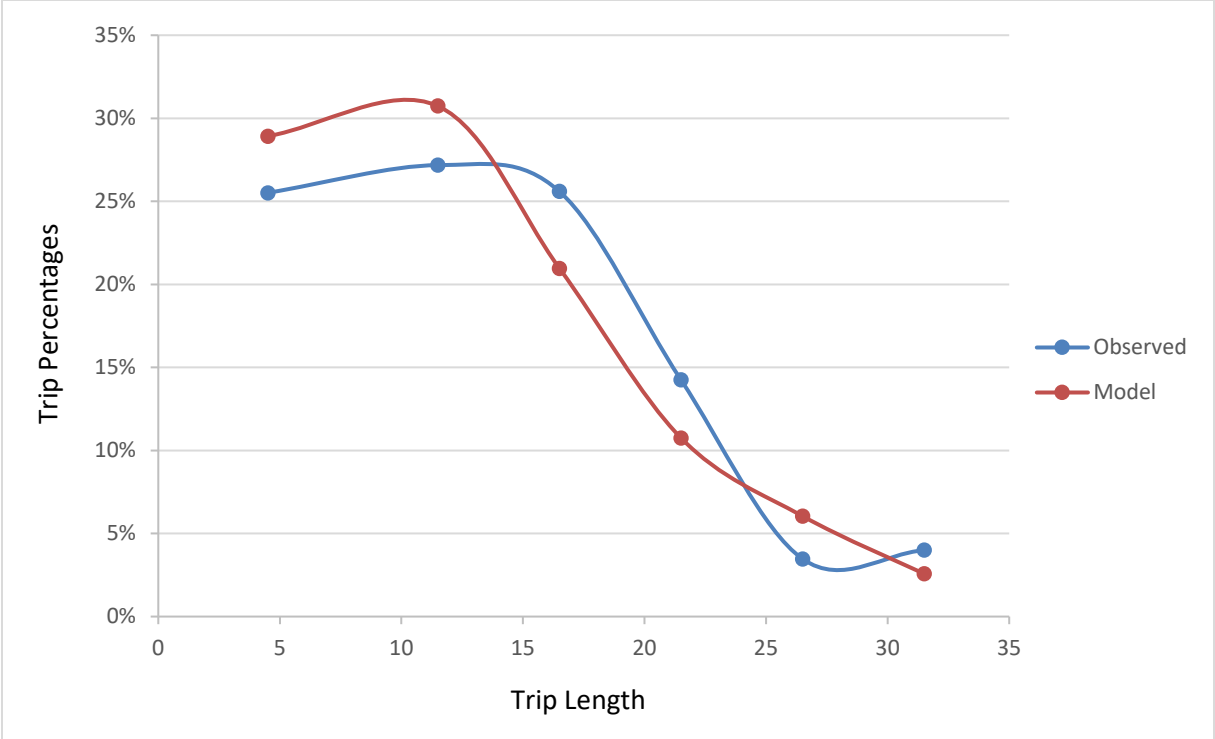


Figure 13 Comparison of Observed to Model Trip Length Frequency

8.2. Vehicle Miles Traveled (VMT) Calibration and Validation

The modeled vehicle miles traveled are a function of trips generated by the model and the length of those trips in miles. VMTs summaries provide an indication of the overall reasonableness of the travel demand in the study area. To calibrate the VMT values, ATAC first calibrated the total VMT for the entire model area. If the modeled VMT values were different from the values calculated by multiplying the counted ADTs by length (observed VMTs), ATAC adjusted the trip generation and vehicle occupancy rates until the model and reported VMT values were similar. Adjusting the trip generation and occupancy rates changes the total number of trips that are generated within the transportation model. This in turn increases or decreases the total number of vehicle miles traveled.

Once the total VMT was reasonable, ATAC checked the VMT distribution according to the functional class. VMT summaries by functional classification provide an indication of how well the models assignment procedures perform. They will indicate if the model handles free flow speeds, capacities or whether the trip assignment function has any issues. To calibrate the VMT

by facility type, if functional class VMT distribution was off target, global speeds by facility type were adjusted.

Table 18 shows the VMT comparison between modeled and observed VMTs and their various distributions as a percentage of total VMT. The model performs very well in replicating the VMTs for Interstates and Minor arterials with VMT differences of less than 5% and had similar distributions to the observed VMTs. Overall, the model performs within reasonable deviations in replicating VMTS by functional class with overall 0.39% deviation.

Table 18 Modeled VMTs compared to Observed VMTs

Functional Class	Observed VMT	Modeled VMT	% Diff
Interstate	1110676.959	1151581.035	4%
Major	640604.1117	683410.815	7%
Minors	626691.1533	610368.3518	-3%
Collectors	216868.1075	176975.0959	-18%
Locals	35704.02405	18584.5187	-48%
Total	2630544.356	2640919.816	0.39%

8.3. Modeled ADT Comparison to Observed ADT

Comparing the modeled ADTs to the Observed ADTs is the ultimate test of how well the model can replicate ground truths. The MP provided traffic counts for several links that were compared to the Model ADTs. Two comparisons are made, one for the different functionally classifications and one by volume ranges.

Table 20 shows the comparison of the modeled and observed ADTs by functional classification. Overall, the model performs reasonably replicating over 77% of observed counts. Major arterials have the lowest replication of observed counts at 73%.

Table 19 Comparison of Modeled and Observed ADTS by Functional Classification

Functional Classification	Below Criteria	Within Criteria	Above Criteria	Total	%age Within
Interstates	1	48	2	51	94%
Major Arterials	15	97	20	132	73%
Minor Arterial	59	339	58	456	74%
Collectors	50	260	29	339	77%
Locals	7	67	4	78	86%
Total	132	811	113	1056	77%
Percent	13%	77%	11%		

Table 20 shows the comparison of modeled and Observed ADTs by volume range. The FHWA criterion sets limits to the deviations between observed and modeled ADTs. Overall the model meets all deviation criterion for all the volume ranges and replicates 77% of the observed traffic.

Table 20 Comparison of Modeled and Observed ADT by Volume Range

ADT Range	#Above	#Within	#Below	%Within	RMSE
ADT >25,000	6	32	2	80%	0.131
25,000 TO 10,000	28	125	44	63%	0.2353
10,000 TO 5,000	26	143	53	64%	0.3429
5,000 TO 2,500	19	160	33	75%	0.487
2,500 TO 1,000	19	205	0	92%	0.7046
ADT<1000	12	149	0	93%	3.605
Total	110	814	132	77%	

8.4. Root Mean Square Error and Percent Root Mean Squared Error

The comparison between the modeled and observed ADTS give a good indication of a how well the model replicates real life. However, they do not provide statistical measures of goodness of fit test for the models replication of ground truths. Root Mean Squared Error (RMSE) and Percent Root Mean Squared Errors %RMSE were used to calculate the accuracy of the model. RMSE compares the error between the modeled and observed traffic volumes for the entire network, giving a statistical measure of the accuracy of the model. RMSE and % RMSE were found by squaring the error (difference between modeled and counted ADTs) for each link and then taking the square root of the averages as shown in **Error! Reference source not found.**.

Equation 15 RMSE and % RMSE Calculations

$$RMSE = \sqrt{\frac{\sum_{i=1}^{N}[(Count_i - Model_i)^2]}{N}}$$

and

$$\%RMSE = \left[\frac{RMSE}{\sum_{i=1}^{N} Count_i/N}\right] * 100$$

Where:

$Count_i$ = Observed traffic count on link *i;*

Modeli = Modeled traffic volume for link *I;* and

N = The number of links in the group of links including link *i, (number of links with counts)*

Table 21 shows the %RMSE by volume range. The %RMSE is below the typical deviation limits for all the volume ranges shown indicating a good fit between the modeled and observed traffic volumes. This is an indication that the model is performing reasonably in replicating observed traffic. The overall % RMSE for the model is 32.90.

Table 21 RMSE Comparison by Volume Range

Volume Range	RMSE (%)	Typical Limits (%)
AADT>25,000	13%	15-20 %
25,000 to 10,000	24%	25-30 %
10,000 to 5,000	35%	35-45 %
5,000 to 2,500	50%	45-100 %
2,500 to 1,000	70%	45-100 %
AADT<1000	355%	>100 %

8.5. Scatter Plots, R Squares of Model and Observed Traffic

Scatter plots of the modeled traffic volumes against the observed traffic volumes are a good indicator of the model's fit. Figure 14 shows the scatter plot of modeled traffic volumes versus observed counts. The scatter plot suggests that the amount of error in the modeled volumes is proportional to the observed traffic count which is an indication of a good fit between the model and the observed traffic counts.

The R-square (coefficient of determination) is the proportion of the variance in a dependent variable that is attributable to the variance of the independent variable. They typically measure the strength of the relationships between the assigned volumes and the traffic counts. It measures the amount of variation in traffic counts explained by the model. The modeled R-square of 0.93 shows a strong linear relationship between modeled and observed traffic counts.

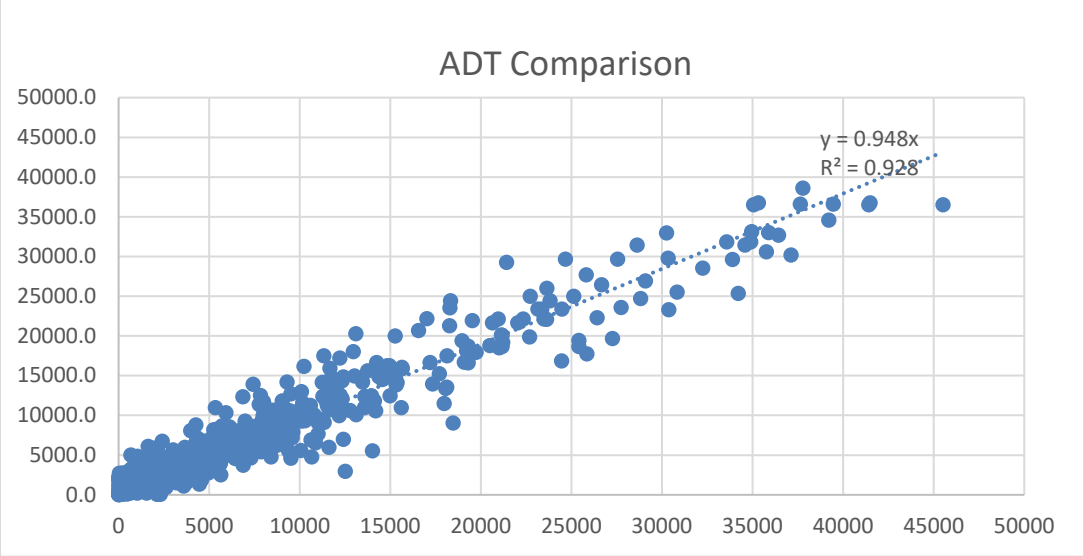


Figure 14 Scatter Plot of Modeled and Observed ADTS

8.6. Screenline Comparisons

Table 22 shows the Screenline comparisons for three major Screenlines: I-94, I-29 and the Red River. The difference between modeled and observed volumes for all screenlines is below 5% which is within reasonable deviations.

Table 22 Screenline Comparisons

Screenline	Modeled	ADT	% Difference	Difference
I-29	217,026	210,613	-3.0%	(6,413)
I-94	231,411	224,715	-3.0%	(6,696)
Red River	146,703	140,170	-4.7%	(6,533)

9. CONCLUSIONS

This document describes the development, calibration and validation of the F-M MPO base 2015 TDM. Several improvements were made to previous modeling efforts including the addition of Freight movements and better representation of capacities. Overall the model replicates observed traffic within typically accepted deviation limits.

10. APPENDIX

Table 23 Calculated Capacities for Signalized Intersections for Different Functional Classifications

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
N0	1	0	0	1	**Principal**	**Urban**	**0.9**	**1900**	**0.90**	**1416**	**1416**	**0.55**	**779**	**7,787**
	1	0	0			**Rural**	**1**	**1900**	**0.90**	**1505**	**1505**	**0.55**	**828**	**8,276**
	1	0	0		Minor	Urban	0.9	1900	0.90	1416	1416	0.45	637	**6,371**
	1	0	0			Rural	1	1900	0.90	1505	1505	0.45	677	**6,772**
	1	0	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	1308	1308	**0.4**	523	**5,233**
	1	0	0			**Rural**	**1**	**1900**	0.99	1390	1390	**0.4**	556	**5,562**
	2	0	0	2	Principal	Urban	0.9	1900	0.90	2832	2832	0.55	1557	**15,575**
	2	0	0			Rural	1	1900	0.90	3010	3010	0.55	1655	**16,553**
	2	0	0		Minor	Urban	0.9	1900	0.90	2832	2832	0.45	1274	**12,743**
	2	0	0			Rural	1	1900	0.90	3010	3010	0.45	1354	**13,543**
	2	0	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	2866	2866	**0.4**	1146	**11,463**
	2	0	0			**Rural**	**1**	**1900**	0.99	3046	3046	**0.4**	1218	**12,183**
	3	0	0	3	Principal	Urban	0.9	1900	0.90	4248	4248	0.55	2336	**23,362**
	3	0	0			Rural	1	1900	0.90	4514	4514	0.55	2483	**24,829**
	3	0	0		Minor	Urban	0.9	1900	0.90	4248	4248	0.45	1911	**19,114**
	3	0	0			Rural	1	1900	0.90	4514	4514	0.45	2031	**20,315**
	3	0	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	4439	4439	**0.4**	1776	**17,755**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	3	0	0			**Rural**	**1**	**1900**	0.99	4718	4718	**0.4**	1887	**18,870**
N1	1	1	0	2	Principal	Urban	0.9	1900	0.90	1416	1841	0.55	1012	**10,124**
	1	1	0			Rural	1	1900	0.90	1505	1956	0.55	1076	**10,759**
	1	1	0		Minor	Urban	0.9	1900	0.90	1416	1841	0.45	828	**8,283**
	1	1	0			Rural	1	1900	0.90	1505	1956	0.45	880	**8,803**
	1	1	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	1433	1863	**0.4**	745	**7,451**
	1	1	0			**Rural**	**1**	**1900**	0.99	1523	1980	**0.4**	792	**7,919**
	2	1	0	3	Principal	Urban	0.9	1900	0.90	2832	3257	0.55	1791	**17,911**
	2	1	0			Rural	1	1900	0.90	3010	3461	0.55	1904	**19,036**
	2	1	0		Minor	Urban	0.9	1900	0.90	2832	3257	0.45	1465	**14,654**
	2	1	0			Rural	1	1900	0.90	3010	3461	0.45	1557	**15,575**
	2	1	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	2959	3403	**0.4**	1361	**13,612**
	2	1	0			**Rural**	**1**	**1900**	0.99	3145	3617	**0.4**	1447	**14,467**
	3	1	0	4	Principal	Urban	0.9	1900	0.90	4248	4672	0.55	2570	**25,698**
	3	1	0			Rural	1	1900	0.90	4514	4966	0.55	2731	**27,312**
	3	1	0		Minor	Urban	0.9	1900	0.90	4248	4672	0.45	2103	**21,026**
	3	1	0			Rural	1	1900	0.90	4514	4966	0.45	2235	**22,346**
	3	1	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	4486	4934	**0.4**	1974	**19,736**
	3	1	0			**Rural**	**1**	**1900**	0.99	4767	5244	**0.4**	2098	**20,976**
N2	1	2	0	3	Principal	Urban	0.9	1900	0.90	1416	2265	0.55	1246	**12,460**
	1	2	0			Rural	1	1900	0.90	1505	2408	0.55	1324	**13,242**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	1	2	0		Minor	Urban	0.9	1900	0.90	1416	2265	0.45	1019	**10,194**
	1	2	0			Rural	1	1900	0.90	1505	2408	0.45	1083	**10,835**
	1	2	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	1480	2367	**0.4**	947	**9,469**
	1	2	0			**Rural**	**1**	**1900**	0.99	1573	2516	**0.4**	1006	**10,064**
	2	2	0	4	Principal	Urban	0.9	1900	0.90	2832	3681	0.55	2025	**20,247**
	2	2	0			Rural	1	1900	0.90	3010	3912	0.55	2152	**21,519**
	2	2	0		Minor	Urban	0.9	1900	0.90	2832	3681	0.45	1657	**16,566**
	2	2	0			Rural	1	1900	0.90	3010	3912	0.45	1761	**17,606**
	2	2	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	2990	3887	**0.4**	1555	**15,550**
	2	2	0			**Rural**	**1**	**1900**	0.99	3178	4132	**0.4**	1653	**16,526**
	3	2	0	5	Principal	Urban	0.9	1900	0.90	4248	5097	0.55	2803	**28,034**
	3	2	0			Rural	1	1900	0.90	4514	5417	0.55	2980	**29,795**
	3	2	0		Minor	Urban	0.9	1900	0.90	4248	5097	0.45	2294	**22,937**
	3	2	0			Rural	1	1900	0.90	4514	5417	0.45	2438	**24,378**
	3	2	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	4532	5439	**0.4**	2175	**21,755**
	3	2	0			**Rural**	**1**	**1900**	0.99	4817	5780	**0.4**	2312	**23,121**
N3	1	1	0	2	Principal	Urban	0.9	1900	0.90	1416	1841	0.55	1012	**10,124**
	1	1	0			Rural	1	1900	0.90	1505	1956	0.55	1076	**10,759**
	1	1	0		Minor	Urban	0.9	1900	0.90	1416	1841	0.45	828	**8,283**
	1	1	0			Rural	1	1900	0.90	1505	1956	0.45	880	**8,803**
	1	1	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	1433	1863	**0.4**	745	**7,451**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	1	1	0			**Rural**	**1**	**1900**	0.99	1523	1980	**0.4**	792	**7,919**
	2	1	0	3	Principal	Urban	0.9	1900	0.90	2832	3257	0.55	1791	**17,911**
	2	1	0			Rural	1	1900	0.90	3010	3461	0.55	1904	**19,036**
	2	1	0		Minor	Urban	0.9	1900	0.90	2832	3257	0.45	1465	**14,654**
	2	1	0			Rural	1	1900	0.90	3010	3461	0.45	1557	**15,575**
	2	1	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	2959	3403	**0.4**	1361	**13,612**
	2	1	0			**Rural**	**1**	**1900**	0.99	3145	3617	**0.4**	1447	**14,467**
	3	1	0	4	Principal	Urban	0.9	1900	0.90	4248	4672	0.55	2570	**25,698**
	3	1	0			Rural	1	1900	0.90	4514	4966	0.55	2731	**27,312**
	3	1	0		Minor	Urban	0.9	1900	0.90	4248	4672	0.45	2103	**21,026**
	3	1	0			Rural	1	1900	0.90	4514	4966	0.45	2235	**22,346**
	3	1	0		**Collector**	**Urban**	**0.9**	**1900**	0.99	4486	4934	**0.4**	1974	**19,736**
	3	1	0			**Rural**	**1**	**1900**	0.99	4767	5244	**0.4**	2098	**20,976**
N4	1	0	1	2	Principal	Urban	0.9	1900	0.90	1416	1557	0.55	857	**8,566**
	1	0	1			Rural	1	1900	0.90	1505	1655	0.55	910	**9,104**
	1	0	1		Minor	Urban	0.9	1900	0.90	1416	1557	0.45	701	**7,009**
	1	0	1			Rural	1	1900	0.90	1505	1655	0.45	745	**7,449**
	1	0	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	1433	1576	**0.4**	630	**6,305**
	1	0	1			**Rural**	**1**	**1900**	0.99	1523	1675	**0.4**	670	**6,701**
	2	0	1	3	Principal	Urban	0.9	1900	0.90	2832	2973	0.55	1635	**16,353**
	2	0	1			Rural	1	1900	0.90	3010	3160	0.55	1738	**17,380**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	2	0	1		Minor	Urban	0.9	1900	0.90	2832	2973	0.45	1338	**13,380**
	2	0	1			Rural	1	1900	0.90	3010	3160	0.45	1422	**14,220**
	2	0	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	2959	3107	**0.4**	1243	**12,429**
	2	0	1			**Rural**	**1**	**1900**	0.99	3145	3302	**0.4**	1321	**13,209**
	3	0	1	4	Principal	Urban	0.9	1900	0.90	4248	4389	0.55	2414	**24,141**
	3	0	1			Rural	1	1900	0.90	4514	4665	0.55	2566	**25,657**
	3	0	1		Minor	Urban	0.9	1900	0.90	4248	4389	0.45	1975	**19,752**
	3	0	1			Rural	1	1900	0.90	4514	4665	0.45	2099	**20,992**
	3	0	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	4486	4635	**0.4**	1854	**18,540**
	3	0	1			**Rural**	**1**	**1900**	0.99	4767	4926	**0.4**	1970	**19,704**
N5	1	0	2	3	Principal	Urban	0.9	1900	0.90	1416	1699	0.55	934	**9,345**
	1	0	2			Rural	1	1900	0.90	1505	1806	0.55	993	**9,932**
	1	0	2		Minor	Urban	0.9	1900	0.90	1416	1699	0.45	765	**7,646**
	1	0	2			Rural	1	1900	0.90	1505	1806	0.45	813	**8,126**
	1	0	2		**Collector**	**Urban**	**0.9**	**1900**	0.99	1480	1776	**0.4**	710	**7,102**
	1	0	2			**Rural**	**1**	**1900**	0.99	1573	1887	**0.4**	755	**7,548**
	2	0	2	4	Principal	Urban	0.9	1900	0.90	2832	3115	0.55	1713	**17,132**
	2	0	2			Rural	1	1900	0.90	3010	3311	0.55	1821	**18,208**
	2	0	2		Minor	Urban	0.9	1900	0.90	2832	3115	0.45	1402	**14,017**
	2	0	2			Rural	1	1900	0.90	3010	3311	0.45	1490	**14,898**
	2	0	2		**Collector**	**Urban**	**0.9**	**1900**	0.99	2990	3289	**0.4**	1316	**13,157**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	2	0	2			**Rural**	**1**	**1900**	0.99	3178	3496	**0.4**	1398	**13,984**
	3	0	2	5	Principal	Urban	0.9	1900	0.90	4248	4531	0.55	2492	**24,919**
	3	0	2			Rural	1	1900	0.90	4514	4815	0.55	2648	**26,484**
	3	0	2		Minor	Urban	0.9	1900	0.90	4248	4531	0.45	2039	**20,389**
	3	0	2			Rural	1	1900	0.90	4514	4815	0.45	2167	**21,669**
	3	0	2		**Collector**	**Urban**	**0.9**	**1900**	0.99	4532	4834	**0.4**	1934	**19,338**
	3	0	2			**Rural**	**1**	**1900**	0.99	4817	5138	**0.4**	2055	**20,552**
N6	1	0	1	2	Principal	Urban	0.9	1900	0.90	1416	1557	0.55	857	**8,566**
	1	0	1			Rural	1	1900	0.90	1505	1655	0.55	910	**9,104**
	1	0	1		Minor	Urban	0.9	1900	0.90	1416	1557	0.45	701	**7,009**
	1	0	1			Rural	1	1900	0.90	1505	1655	0.45	745	**7,449**
	1	0	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	1433	1576	**0.4**	630	**6,305**
	1	0	1			**Rural**	**1**	**1900**	0.99	1523	1675	**0.4**	670	**6,701**
	2	0	1	3	Principal	Urban	0.9	1900	0.90	2832	2973	0.55	1635	**16,353**
	2	0	1			Rural	1	1900	0.90	3010	3160	0.55	1738	**17,380**
	2	0	1		Minor	Urban	0.9	1900	0.90	2832	2973	0.45	1338	**13,380**
	2	0	1			Rural	1	1900	0.90	3010	3160	0.45	1422	**14,220**
	2	0	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	2959	3107	**0.4**	1243	**12,429**
	2	0	1			**Rural**	**1**	**1900**	0.99	3145	3302	**0.4**	1321	**13,209**
	3	0	1	4	Principal	Urban	0.9	1900	0.90	4248	4389	0.55	2414	**24,141**
	3	0	1			Rural	1	1900	0.90	4514	4665	0.55	2566	**25,657**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	3	0	1		Minor	Urban	0.9	1900	0.90	4248	4389	0.45	1975	**19,752**
	3	0	1			Rural	1	1900	0.90	4514	4665	0.45	2099	**20,992**
	3	0	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	4486	4635	**0.4**	1854	**18,540**
	3	0	1			**Rural**	**1**	**1900**	0.99	4767	4926	**0.4**	1970	**19,704**
N7	1	1	1	3	Principal	Urban	0.9	1900	0.90	1416	1982	0.55	1090	**10,902**
	1	1	1			Rural	1	1900	0.90	1505	2107	0.55	1159	**11,587**
	1	1	1		Minor	Urban	0.9	1900	0.90	1416	1982	0.45	892	**8,920**
	1	1	1			Rural	1	1900	0.90	1505	2107	0.45	948	**9,480**
	1	1	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	1480	2071	**0.4**	829	**8,286**
	1	1	1			**Rural**	**1**	**1900**	0.99	1573	2202	**0.4**	881	**8,806**
	2	1	1	4	Principal	Urban	0.9	1900	0.90	2832	3398	0.55	1869	**18,690**
	2	1	1			Rural	1	1900	0.90	3010	3612	0.55	1986	**19,863**
	2	1	1		Minor	Urban	0.9	1900	0.90	2832	3398	0.45	1529	**15,292**
	2	1	1			Rural	1	1900	0.90	3010	3612	0.45	1625	**16,252**
	2	1	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	2990	3588	**0.4**	1435	**14,354**
	2	1	1			**Rural**	**1**	**1900**	0.99	3178	3814	**0.4**	1526	**15,255**
	3	1	1	5	Principal	Urban	0.9	1900	0.90	4248	4814	0.55	2648	**26,477**
	3	1	1			Rural	1	1900	0.90	4514	5116	0.55	2814	**28,140**
	3	1	1		Minor	Urban	0.9	1900	0.90	4248	4814	0.45	2166	**21,663**
	3	1	1			Rural	1	1900	0.90	4514	5116	0.45	2302	**23,023**
	3	1	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	4532	5137	**0.4**	2055	**20,546**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	3	1	1			**Rural**	**1**	**1900**	0.99	4817	5459	**0.4**	2184	**21,836**
N8	1	2	1	4	Principal	Urban	0.9	1900	0.90	1416	2407	0.55	1324	**13,238**
	1	2	1			Rural	1	1900	0.90	1505	2558	0.55	1407	**14,070**
	1	2	1		Minor	Urban	0.9	1900	0.90	1416	2407	0.45	1083	**10,831**
	1	2	1			Rural	1	1900	0.90	1505	2558	0.45	1151	**11,512**
	1	2	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	1495	2542	**0.4**	1017	**10,167**
	1	2	1			**Rural**	**1**	**1900**	0.99	1589	2701	**0.4**	1081	**10,806**
	2	2	1	5	Principal	Urban	0.9	1900	0.90	2832	3823	0.55	2103	**21,026**
	2	2	1			Rural	1	1900	0.90	3010	4063	0.55	2235	**22,346**
	2	2	1		Minor	Urban	0.9	1900	0.90	2832	3823	0.45	1720	**17,203**
	2	2	1			Rural	1	1900	0.90	3010	4063	0.45	1828	**18,283**
	2	2	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	3021	4079	**0.4**	1632	**16,316**
	2	2	1			**Rural**	**1**	**1900**	0.99	3211	4335	**0.4**	1734	**17,341**
	3	2	1	6	Principal	Urban	0.9	1900	0.90	4248	5239	0.55	2881	**28,813**
	3	2	1			Rural	1	1900	0.90	4514	5568	0.55	3062	**30,623**
	3	2	1		Minor	Urban	0.9	1900	0.90	4248	5239	0.45	2357	**23,574**
	3	2	1			Rural	1	1900	0.90	4514	5568	0.45	2505	**25,055**
	3	2	1		**Collector**	**Urban**	**0.9**	**1900**	0.99	4532	5590	**0.4**	2236	**22,359**
	3	2	1			**Rural**	**1**	**1900**	0.99	4817	5941	**0.4**	2376	**23,763**
N9	1	1	2	4	Principal	Urban	0.9	1900	0.90	1416	2124	0.55	1168	**11,681**
	1	1	2			Rural	1	1900	0.90	1505	2257	0.55	1241	**12,415**

Lane Group	Number of Through Lanes (N)	Number of Left Turn Lanes	Number of Right Turn Lanes	Total Number of Through Lanes	Type of Arterial	Area Type	Area Type Adjustment Factor (f_a)	Base Saturation Flow Rate (S_o)	Heavy Vehicle Adjustment Factor (f_{HV})	Saturation Flow Rate for Through Lanes (S)	Total Saturation Flow Rate	Effective Green Ratio (g_i/C)	Intersection Approach Hourly Capacity (C_A)	Intersection Daily Approach Capacity
	1	1	2		Minor	Urban	0.9	1900	0.90	1416	2124	0.45	956	**9,557**
	1	1	2			Rural	1	1900	0.90	1505	2257	0.45	1016	**10,157**
	1	1	2		**Collector**	**Urban**	**0.9**	**1900**	0.99	1495	2243	**0.4**	897	**8,971**
	1	1	2			**Rural**	**1**	**1900**	0.99	1589	2384	**0.4**	953	**9,534**
	2	1	2	5	Principal	Urban	0.9	1900	0.90	2832	3540	0.55	1947	**19,468**
	2	1	2			Rural	1	1900	0.90	3010	3762	0.55	2069	**20,691**
	2	1	2		Minor	Urban	0.9	1900	0.90	2832	3540	0.45	1593	**15,929**
	2	1	2			Rural	1	1900	0.90	3010	3762	0.45	1693	**16,929**
	2	1	2		**Collector**	**Urban**	**0.9**	**1900**	0.99	3021	3777	**0.4**	1511	**15,107**
	2	1	2			**Rural**	**1**	**1900**	0.99	3211	4014	**0.4**	1606	**16,056**
	3	1	2	6	Principal	Urban	0.9	1900	0.90	4248	4956	0.55	2726	**27,256**
	3	1	2			Rural	1	1900	0.90	4514	5267	0.55	2897	**28,967**
	3	1	2		Minor	Urban	0.9	1900	0.90	4248	4956	0.45	2230	**22,300**
	3	1	2			Rural	1	1900	0.90	4514	5267	0.45	2370	**23,701**
	3	1	2		**Collector**	**Urban**	**0.9**	**1900**	0.99	4532	5288	**0.4**	2115	**21,150**
	3	1	2			**Rural**	**1**	**1900**	0.99	4817	5620	**0.4**	2248	**22,479**

Table 24 Calculated Capacities for Ramps

	Speed	Ideal Capacity (Ex 13-10)	Speed Adjustment	V/C	PHF	Capacity	Daily Capacity
Urban	>50	2,100	1.00	0.9	0.800	1,512	15,120
	>40-50	2,100	0.95	0.9	0.800	1,443	14,433
	>30-40	2,100	0.91	0.9	0.800	1,375	13,745
	>=20-30	2,100	0.86	0.9	0.800	1,306	13,058
	<20	2,100	0.82	0.9	0.800	1,237	12,371
Rural	>50	2,200	1.00	0.9	0.868	1,719	17,186
	>40-50	2,200	0.95	0.9	0.868	1,641	16,405
	>30-40	2,200	0.91	0.9	0.868	1,562	15,622
	>=20-30	2,200	0.86	0.9	0.868	1,484	14,843
	<20	2,200	0.82	0.9	0.868	1,406	14,062

Appendix C

Major Reconstruction Projects Identified

Table. Agency-Identified Roadway Pavement Preservation Projects and Planning Level Costs

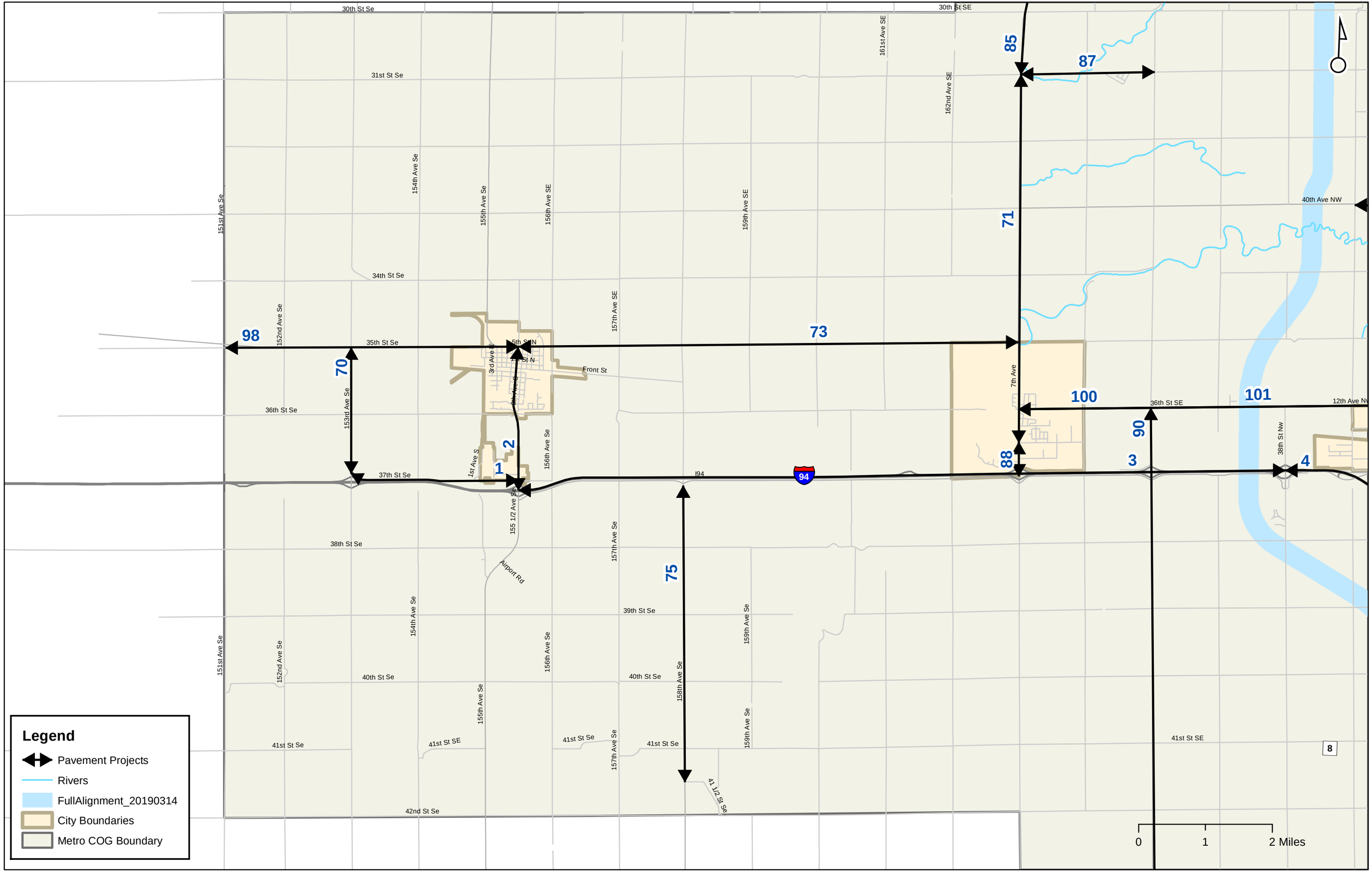
Reconstruction Project ID	Corridor	From	To	Project Type	Project Jurisdiction	Base Year Cost Estimate (2019)
R1	37th St	153rd Ave	HWY 18	Reconstruction	NDDOT	$3,100,000
R2	HWY 18	I94	5th St N	Reconstruction	NDDOT	$2,600,000
R3	I94	HWY 18	38th St N	Reconstruction	NDDOT	$26,500,000
R4	I94	38th St N	I94 1.2mi W Sheyenne	Reconstruction	NDDOT	$11,300,000
R5	I94	42nd St S	I94 at border	Reconstruction	NDDOT	$23,300,000
R6	I29	40th Ave N	24th St	Reconstruction	NDDOT	$46,800,000
R7	I29	19th Ave N	40th Ave N	Reconstruction	NDDOT	$9,700,000
R8	I29	13th Ave S	19th Ave N	Reconstruction	NDDOT	$20,600,000
R9	I29	I29 .036 mi N HWY exchange	13th Ave	Reconstruction	NDDOT	$5,700,000
R10	I29	32nd Ave	0.36mi N interchange	Reconstruction	NDDOT	$9,600,000
R11	I29	52nd Ave	32nd Ave	Reconstruction	NDDOT	$9,000,000
R12	I29	54th St SE	52nd Ave	Reconstruction	NDDOT	$55,400,000
R13	40th Ave N	Cass CO 81	Wall St Ave NW	Reconstruction	Fargo	$8,600,000
R14	186th Ave	Dakota Dr N	40th Ave N	Reconstruction	Fargo	$7,200,000
R15	Dakota Dr N	12th Ave N	19th Ave N	Reconstruction	Fargo	$4,100,000
R16	19th Ave N	I29	Dakota Dr N	Reconstruction	Fargo	$5,000,000
R17	19th Ave N	Dakota Dr N	18th St N	Reconstruction	Fargo	$4,200,000
R18	42nd St S	13th Ave	Main Ave	Reconstruction	Fargo	$6,400,000
R19	42nd St S	19th Ave	13th Ave	Reconstruction	Fargo	$6,600,000
R20	17th Ave S	35th St	25th St	Reconstruction	Fargo	$2,800,000
R21	17th Ave S	25th St	University	Reconstruction	Fargo	$3,200,000
R22	17th Ave S	University	5th St	Reconstruction	Fargo	$1,600,000
R23	17th St S	20th Ave	13th Ave	Reconstruction	Fargo	$3,000,000
R24	University Dr	University Dr .01 mi N of I94	14th Ave	Reconstruction	Fargo	$5,200,000
R25	25th St s	25th St 0.13 mi N Rose Creek	23rd Ave	Reconstruction	Fargo	$18,400,000
R26	32nd Ave S	36th St	25th St	Reconstruction	Fargo	$6,100,000
R27	32nd Ave S	25th St	University	Reconstruction	Fargo	$7,900,000
R28	University Dr	38th Ave	Harwood Dr	Reconstruction	Fargo	$4,800,000
R29	40th Ave S	40th Ave S .28 mi E of 33rd St S	25th St S	Reconstruction	Fargo	$1,100,000
R30	40th Ave S	40th Ave S .05 mi E of Rose Creek Dr	15th St	Reconstruction	Fargo	$500,000
R32	76th Ave S	73rd Ave S	University	Reconstruction	Fargo	$4,000,000
R33	36th St S	35th Ave	32nd Ave	Reconstruction	Fargo	$1,600,000

Reconstruction Project ID	Corridor	From	To	Project Type	Project Jurisdiction	Base Year Cost Estimate (2019)
R34	34th St S	Interstate Blvd	36th St	Reconstruction	Fargo	$2,400,000
R35	Westrac Dr S	13th Ave	Interstate Blvd	Reconstruction	Fargo	$1,300,000
R36	25th St N	8th Ave N	12th Ave N	Reconstruction	Fargo	$2,100,000
R37	10th St N	17th Ave N	19th Ave N	Reconstruction	Fargo	$1,200,000
R38	10th St N	19th Ave N	29th Ave N	Reconstruction	Fargo	$1,900,000
R39	Broadway N	25th Ave N	Broadway St border	Reconstruction	Fargo	$4,500,000
R40	32nd Ave N	Broadway N	Elm St N	Reconstruction	Fargo	$1,600,000
R41	Elm St N	12th Ave N	32nd Ave N	Reconstruction	Fargo	$6,400,000
R42	Oak St N	7th Ave N	12th Ave N	Reconstruction	Fargo	$2,400,000
R43	Main Ave	25th St	University	Reconstruction	Fargo	$4,900,000
R44	4th St N	NP Ave N	7th Ave N	Reconstruction	Fargo	$2,400,000
R45	7th Ave N	University	Broadway	Reconstruction	Fargo	$1,600,000
R46	7th Ave N	Broadway N	1st St N	Reconstruction	Fargo	$1,100,000
R47	1st Ave N	10th St N	3rd St N	Reconstruction	Fargo	$1,700,000
R48	NP Ave N	10th St N	Center Ave	Reconstruction	Fargo	$3,700,000
R49	10th St N	1st Ave N	8th Ave N	Reconstruction	Fargo	$2,400,000
R50	19th Ave N	10th St N	Elm St N	Reconstruction	Fargo	$2,500,000
R51	25th Ave S	25th St S	University Dr	Reconstruction	Fargo	$3,300,000
R52	NP Ave N	14th St N	University Dr N	Reconstruction	Fargo	$400,000
R53	University Dr N	10th St N	7th Ave N	Reconstruction	Fargo	$2,800,000
R54	57th St N	12th Ave N	19th Ave N	Reconstruction	West Fargo	$4,400,000
R55	6th St E	13th Ave E	10th Ave E	Reconstruction	West Fargo	$1,500,000
R56	17th St E	13th Ave S	7th Ave E	Reconstruction	West Fargo	$2,000,000
R57	9th St E	Prairie Pkwy	7th Ave E	Reconstruction	West Fargo	$3,300,000
R58	9th St NE	Main Ave E	12th Ave NE	Reconstruction	West Fargo	$5,500,000
R59	Center St	4th Ave N	12th Ave NE	Reconstruction	West Fargo	$3,300,000
R60	Sheyenne St	7th Ave W	Main Ave W	Reconstruction	West Fargo	$4,400,000
R61	9th St E	7th Ave E	Main Ave E	Reconstruction	West Fargo	$3,300,000
R62	13th Ave E	Sheyenne St	Prairie Pkwy	Reconstruction	West Fargo	$3,300,000
R63	8th St W	13th Ave W	5th Ave W	Reconstruction	West Fargo	$3,300,000
R64	4th Ave E	Sheyenne St	9th St E	Reconstruction	West Fargo	$3,300,000
R65	7th Ave E	Sheyenne St	8th St E	Reconstruction	West Fargo	$1,600,000
R66	7th Ave W	8th St W	Sheyenne St	Reconstruction	West Fargo	$4,400,000
R67	7th Ave NE	9th St NE	7th Ave N	Reconstruction	West Fargo	$2,600,000
R68	6th St E	7th Ave E	4th Ave E	Reconstruction	West Fargo	$1,300,000
R69	1st Ave E	1st St	4th St E	Reconstruction	West Fargo	$2,200,000
R70	153rd Ave SE	37th St SE	35th St SE	Resurfacing	Cass County	$200,000

Reconstruction Project ID	Corridor	From	To	Project Type	Project Jurisdiction	Base Year Cost Estimate (2019)
R71	163rd Ave SE	Carl Olsen St	31st St SE	Reconstruction	Cass County	$500,000
R72	186th Ave	24th St SE	40th Ave N	Reconstruction	Cass County	$2,000,000
R73	35th St SE	Langer Ave N	163rd Ave SE	Reconstruction	Cass County	$9,000,000
R74	25th St SE	162nd Ave SE	163rd Ave SE	Reconstruction	Cass County	$1,200,000
R75	158th Ave SE	41 1/2 St SE	37th St SE	Reconstruction	Cass County	$5,300,000
R76	Main Ave	Clubhouse Dr	7th St	Reconstruction	Cass County	$600,000
R77	48th St SE	163rd Ave SE	165th Ave SE	Reconstruction	Cass County	$400,000
R78	165th Ave SE	54th St SE	48th St SE	Reconstruction	Cass County	$1,200,000
R79	15th St NW	13th Ave W	Main Ave W	Reconstruction	Cass County	$300,000
R80	124th Ave S	I29	175th Ave SE	Reconstruction	Cass County	$300,000
R81	175th Ave SW	54th St SE	124th Ave S	Reconstruction	Cass County	$1,300,000
R82	52nd St SE	I29	160th Ave SW	Reconstruction	Cass County	$300,000
R83	38th St S	124th Ave S	100th Ave S	Reconstruction	Cass County	$400,000
R84	112th Ave S	University Dr S	110th Ave S	Resurfacing	Cass County	$100,000
R85	163rd Ave SE	31st St SE	25th St SE	Reconstruction	Cass County	$1,200,000
R86	25th St SE	163rd Ave SE	186th Ave	Reconstruction	Cass County	$1,100,000
R87	31st St SE	163rd Ave SE	165th Ave SE	Reconstruction	Cass County	$400,000
R88	163rd Ave SE	I94	Carl Olsen St	Resurfacing	Cass County	$100,000
R89	40th Ave NW	26th St NW	186th Ave	Reconstruction	Cass County	$1,000,000
R90	165th Ave SE	48th St SE	36th St SE	Reconstruction	Cass County	$2,400,000
R91	48th St SE	165th Ave SE	170th Ave SE	Reconstruction	Cass County	$1,000,000
R92	170th Ave SE	54th St SE	52nd Ave S	Reconstruction	Cass County	$2,400,000
R93	100th Ave S	81st St S	University Dr S	Reconstruction	Cass County	$1,200,000
R94	76th Ave S	75th St S	170th Ave SE	Resurfacing	Cass County	$100,000
R95	University Dr S	124th S	76th Ave S	Reconstruction	Cass County	$800,000
R96	76th Ave N	12th Ave NW	90th Ave NW	Reconstruction	Cass County	$1,900,000
R97	64th Ave N	16th St N	76th Ave N	Reconstruction	Cass County	$700,000
R98	35th St SE	151st Ave SE	5th St N	Reconstruction	Cass County	$900,000
R99	124th Ave S	170th Ave SE	I29	Reconstruction	Cass County	$4,300,000
R100	36th St SE	Meridian RD	12th Ave NW	Reconstruction	Cass County	$1,100,000
R101	36th St SE	Meridian RD	12th Ave NW	Reconstruction	Cass County	$1,100,000
R102	S 8th St	24th Ave	N 5th Ave	Reconstruction	MnDOT	$12,400,000
R103	US 10	HWY 75 N	34th St N	Reconstruction	MnDOT	$3,500,000

Reconstruction Project ID	Corridor	From	To	Project Type	Project Jurisdiction	Base Year Cost Estimate (2019)
R104	HWY 75 N	N 5th Ave	57th Ave N	Reconstruction	MnDOT	$4,100,000
R105	S 8th St	46th Ave S	S 30th Ave	Reconstruction	MnDOT	$5,000,000
R106	HWY 75 S	60th Ave S	46th Ave S	Reconstruction	MnDOT	$2,400,000
R107	I94	I94 ND MN border	S 20th St	Reconstruction	MnDOT	$7,400,000
R108	I94	S 20th St	70th St S	Reconstruction	MnDOT	$17,100,000
R109	70th St S	I94	HWY 10	Reconstruction	MnDOT	$3,000,000
R110	HWY 10	34th St S	230th St N	Reconstruction	MnDOT	$47,900,000
R111	HWY 9 S	HWY 52	HWY 10	Reconstruction	MnDOT	$16,000,000
R112	I94	90th Ave S	70th St S	Reconstruction	MnDOT	$33,000,000
R113	I94	HWY 34	90th Ave S	Reconstruction	MnDOT	$15,700,000
R114	I94	90th Ave S	HWY 34	Reconstruction	MnDOT	$15,600,000
R115	HWY 75 S	180th Ave S	60th Ave S	Reconstruction	MnDOT	$12,100,000
R116	N 1st Ave	8th St N	US 10 E	Reconstruction	Moorhead	$6,400,000
R117	Center Ave	NP Ave N	N 8th St	Reconstruction	Moorhead	$1,600,000
R118	Main Ave	S 8th St	S 3rd Ave	Reconstruction	Moorhead	$3,300,000
R119	Main Ave	S 3rd Ave	S Oakway	Reconstruction	Moorhead	$1,800,000
R120	S 21st St	S 6th Ave	S 4th Ave	Reconstruction	Moorhead	$1,000,000
R121	S 11th St	S 12th Ave	S 9th Ave	Reconstruction	Moorhead	$300,000
R122	S 14th St	S 4th Ave	Center Ave	Reconstruction	Moorhead	$500,000
R123	S 11th St	S 6th Ave	Main Ave	Reconstruction	Moorhead	$600,000
R124	S 14th St	S 12th Ave	S 4th Ave	Reconstruction	Moorhead	$900,000
R125	S 17th St	S 12th Ave	Main Ave	Reconstruction	Moorhead	$1,200,000
R126	S 12th Ave	S 4th St	S 25th St	Preservation	Moorhead	$2,400,000
R127	46th Ave S	9th St S	40th St S	Reconstruction	Moorhead	$3,900,000
R128	S 30th Ave	S 14th St	S 20th St	Preservation	Moorhead	$1,868,000
R129	S 30th Ave	S 20th St	SE Main Ave	Reconstruction	Moorhead	$5,000,000
R130	S 12th Ave	Appletree Ln	34th St S	Reconstruction	Moorhead	$2,600,000
R130b	S 12th Ave	34th St S	40th St S	Preservation	Moorhead	$500,000
R131	34th St S	24th St S	S 12th Ave	Reconstruction	Moorhead	$1,800,000
R132	N 15th Ave	12th Ave N	N 28th St	Reconstruction	Moorhead	$2,900,000
R133	34th St N	3rd Ave NW	28th Ave N	Reconstruction	Moorhead	$2,800,000
R134	90th Ave N	76th Ave N	110th St N	Reconstruction	Clay County	$2,400,000
R135	40th St N	W Center Ave	28th Ave N	Reconstruction	Clay County	$400,000
R136	Wall St Ave N	40th Ave N	HWY 75 N	Reconstruction	Clay County	$400,000
R137	Broadway St NW	Broadway N ND MN border	90th Ave NW	Reconstruction	Clay County	$600,000
R138	Oakport St N	Wall St Ave N	100th Ave N	Reconstruction	Clay County	$800,000
R139	70th St N	HWY 10	150th Ave N	Reconstruction	Clay County	$2,600,000
R140	N 11th St	N 1st Ave	HWY 75 N	Reconstruction	Clay County	$500,000
R141	28th Ave N	HWY 75 N	80th St N	Reconstruction	Clay County	$1,100,000

Reconstruction Project ID	Corridor	From	To	Project Type	Project Jurisdiction	Base Year Cost Estimate (2019)
R142	28th Ave N	80th St N	120 St N	Reconstruction	Clay County	$800,000
R143	110th St N	State St NE	28th Ave N	Reconstruction	Clay County	$400,000
R144	100th St S	90th Ave S	HWY 10	Reconstruction	Clay County	$1,600,000
R145	50th Ave S	100th St S	HWY 9 S	Reconstruction	Clay County	$800,000
R146	130th St S	160th Ave S	90th Ave S	Reconstruction	Clay County	$2,400,000
R147	160th Ave S	70th St S	130th St S	Reconstruction	Clay County	$1,200,000
R148	230th St S	60th Ave S	40th Ave S	Reconstruction	Clay County	$400,000
R149	170th St N	HWY 10	15th Ave N	Resurfacing	Clay County	$200,000
R150	HWY 52	130th St S	HWY 9 S	Reconstruction	Clay County	$1,100,000
R151	160th Ave S	130th St S	2nd St NW	Reconstruction	Clay County	$1,000,000
R152	Front St S	6th Ave SE	180th Ave S	Reconstruction	Clay County	$300,000
R153	160th Ave SW	52nd St SE	HWY 75 S	Reconstruction	Clay County	$400,000
R154	110th Ave S	112th Ave S	HWY 75 S	Reconstruction	Clay County	$200,000
R155	90th Ave S	HWY 9 S	180th St S	Reconstruction	Clay County	$700,000
R156	90th Ave S	130th St S	HWY 9 S	Reconstruction	Clay County	$400,000
R157	HWY 52	Main St	130th St S	Reconstruction	Clay County	$1,600,000
R158	SE Main St	I94	Main St	Reconstruction	Clay County	$1,200,000
R159	70th St S	100th St	Main St	Reconstruction	Clay County	$2,100,000
R160	70th St S	Main St	I94	Reconstruction	Clay County	$900,000
R161	110th Ave S	HWY 75 S	70th St S	Reconstruction	Clay County	$5,000,000
R162	60th Ave SW	52nd Ave S	HWY 75 S	Reconstruction	Clay County	$300,000
R163	60th Ave S	HWY 52	80th St S	Reconstruction	Clay County	$400,000
R164	50th Ave S	HWY 52	70th St S	Reconstruction	Clay County	$400,000
R165	50th Ave S	70th St S	80th St S	Reconstruction	Clay County	$1,000,000
R166	60th Ave S	HWY 75 S	HWY 52	Reconstruction	Clay County	$900,000
R167	1st St S	4th Ave W	Holloway St S	Resurfacing	Clay County	$100,000
R168	190th St S	40th Ave S	HWY 10	Reconstruction	Clay County	$600,000
R169	5th St	230th St N	15th Ave N	Reconstruction	Clay County	$200,000
R170	155th St S	155th St S .28 mi Buffalo State Park	HWY 10	Resurfacing	Clay County	$100,000
R171	230th St S	40th Ave S	Hobart St	Reconstruction	Clay County	$600,000
R172	160th Ave S	HWY 75 S	70th St S	Reconstruction	Clay County	$1,000,000
R173	4th Ave SE	S Main St	12th Ave S	Reconstruction	Clay County	$200,000
R174	230th St S	HWY 34	120th Ave S	Reconstruction	Clay County	$900,000
R175	230th St S	180th Ave S	HWY 34	Reconstruction	Clay County	$400,000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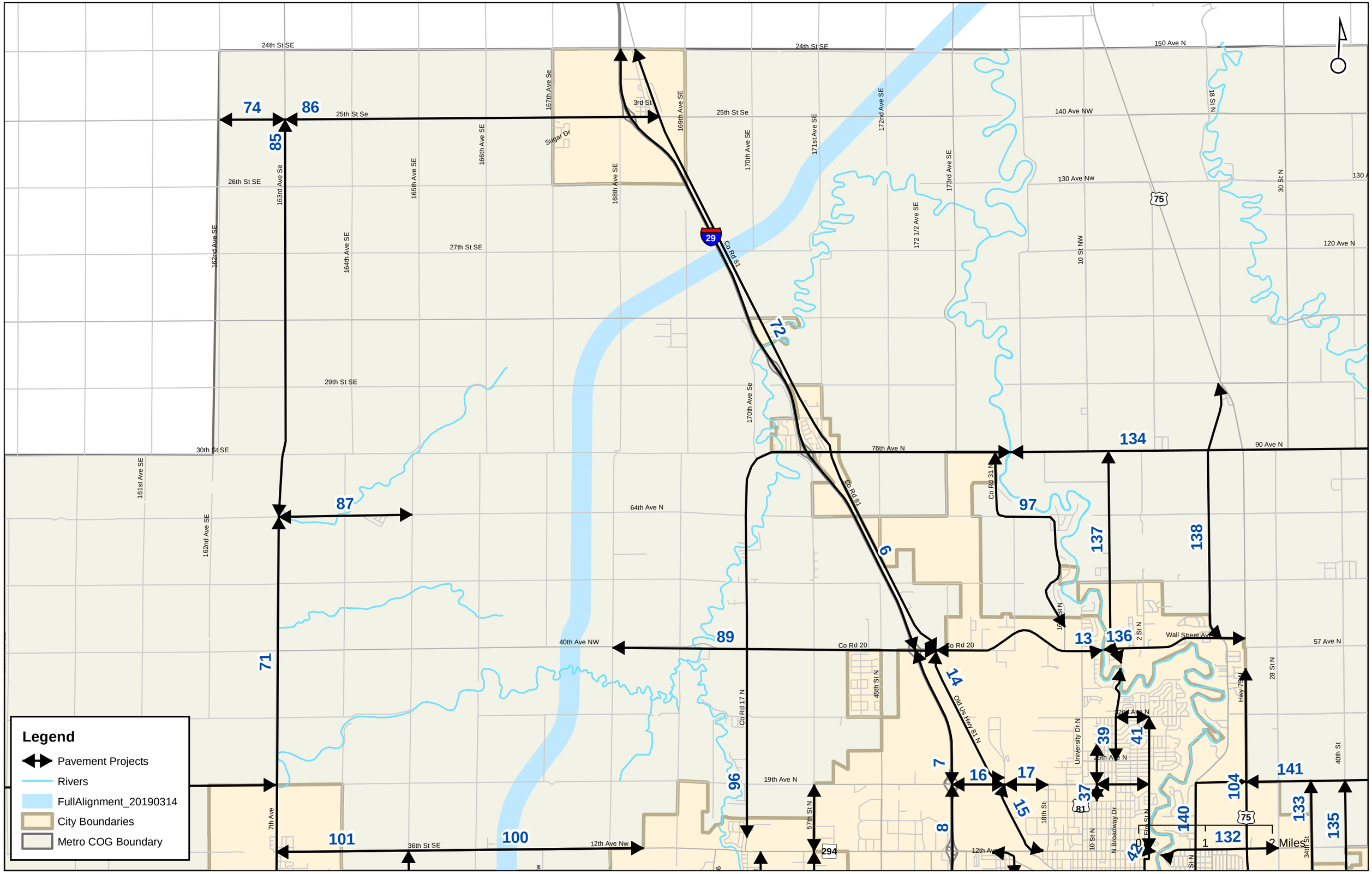
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169th Ave SE
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162nd Ave SE
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27th St SE
29
Co Rd 81
72
29th St SE
30th St SE
161st Ave SE
162nd Ave SE
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64th Ave N
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Co Rd 20
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19th Ave N
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25th Ave N
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Pavement Projects
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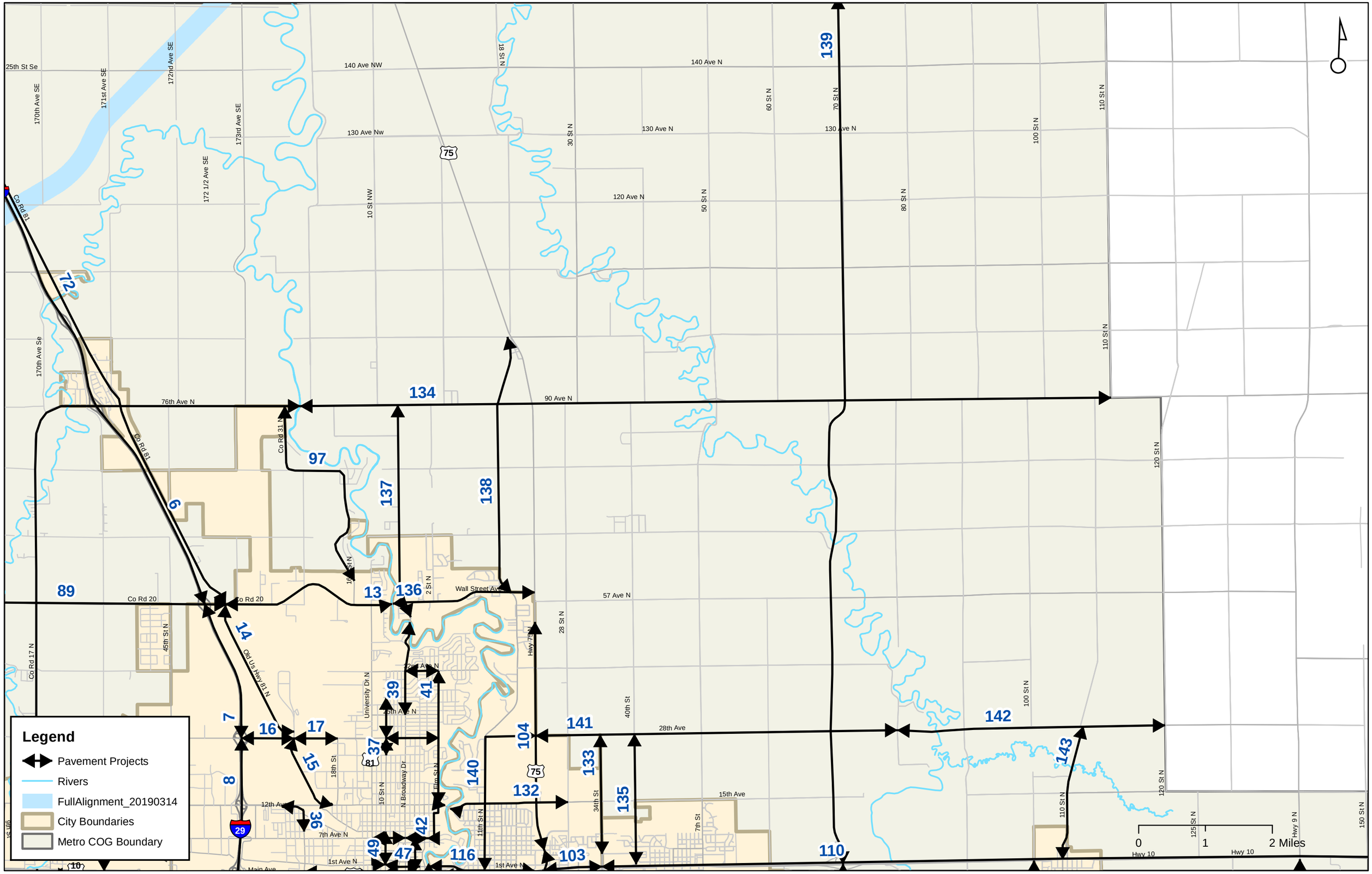
Metro COG Boundary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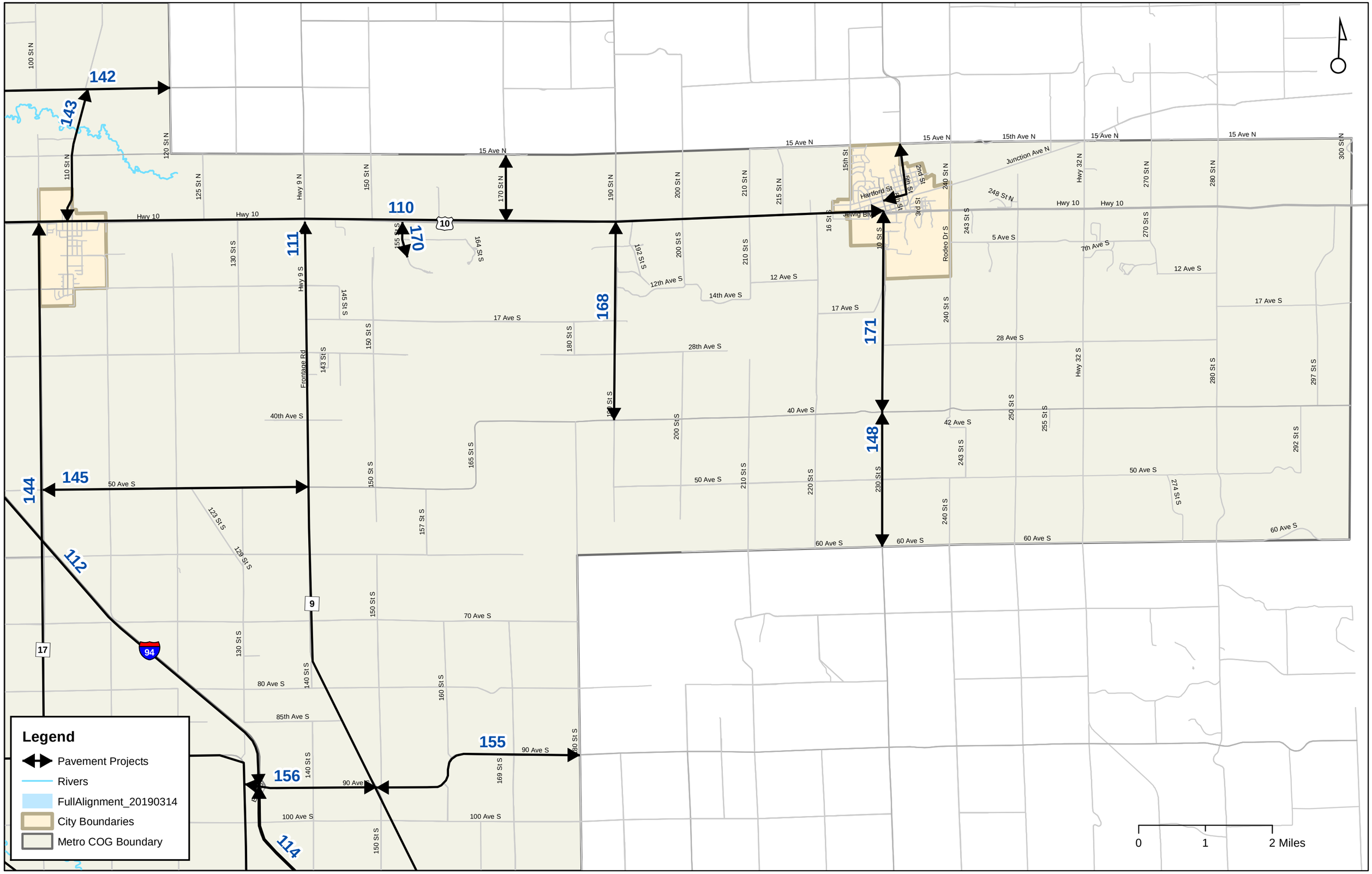
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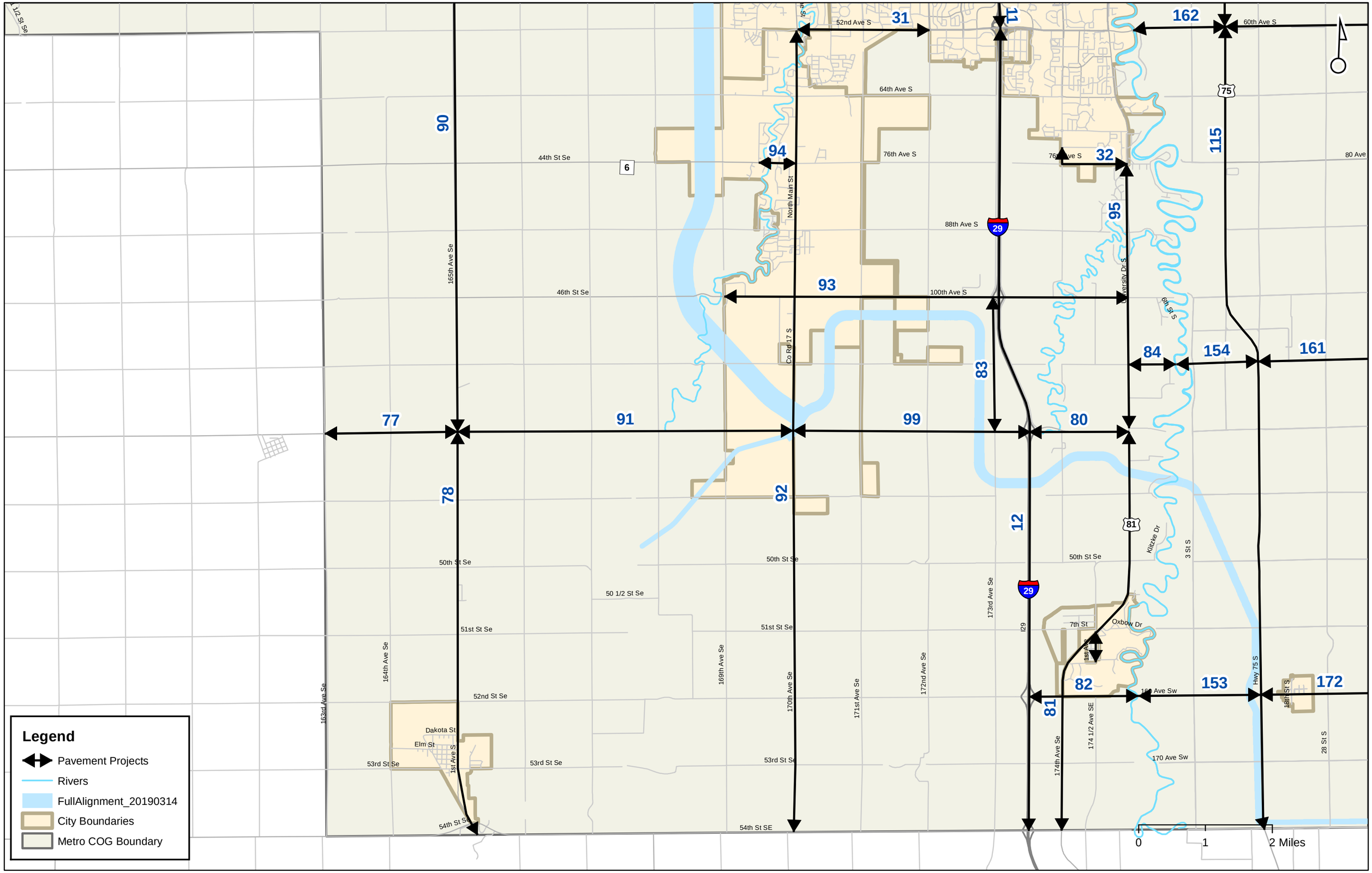
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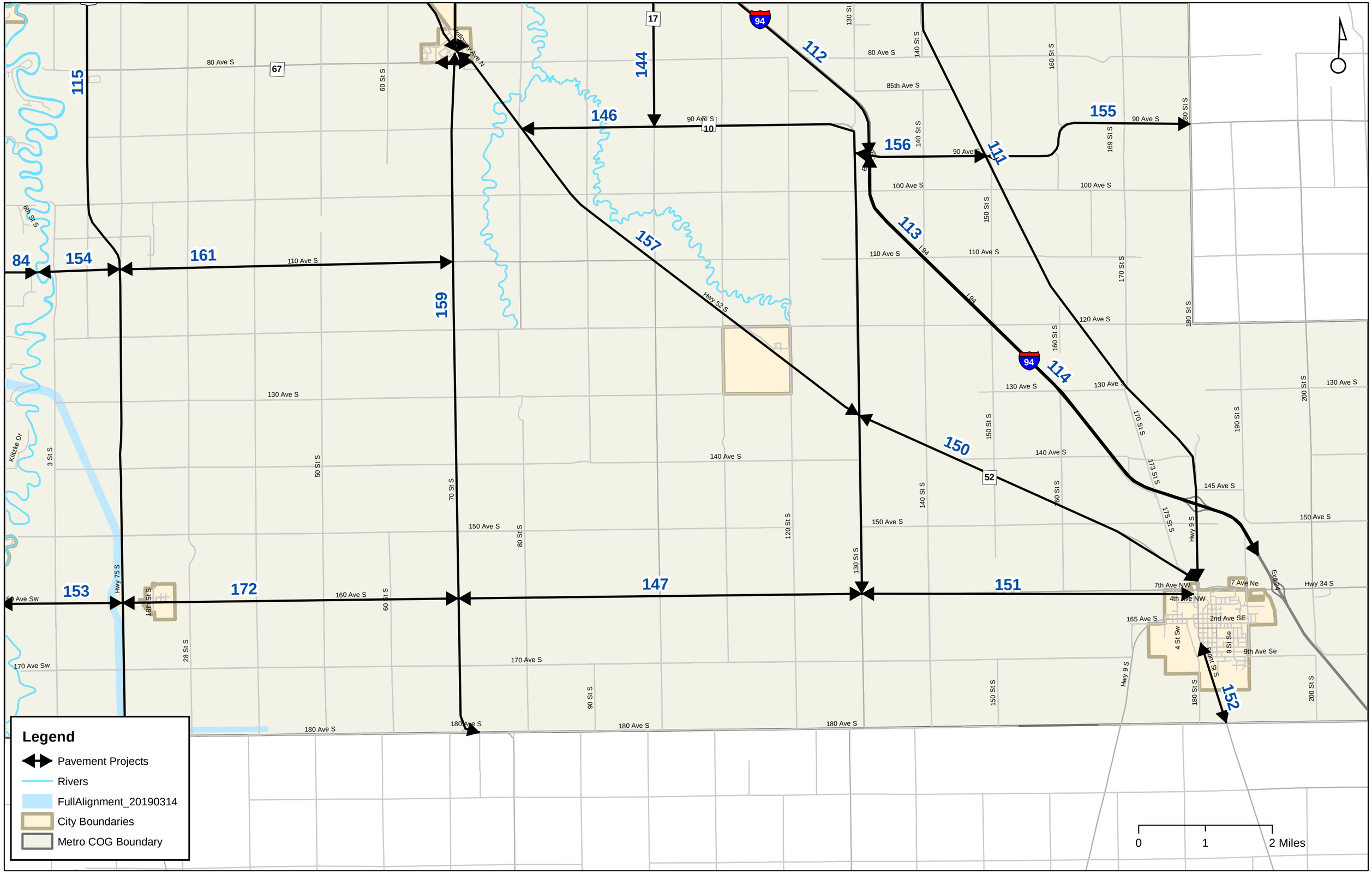
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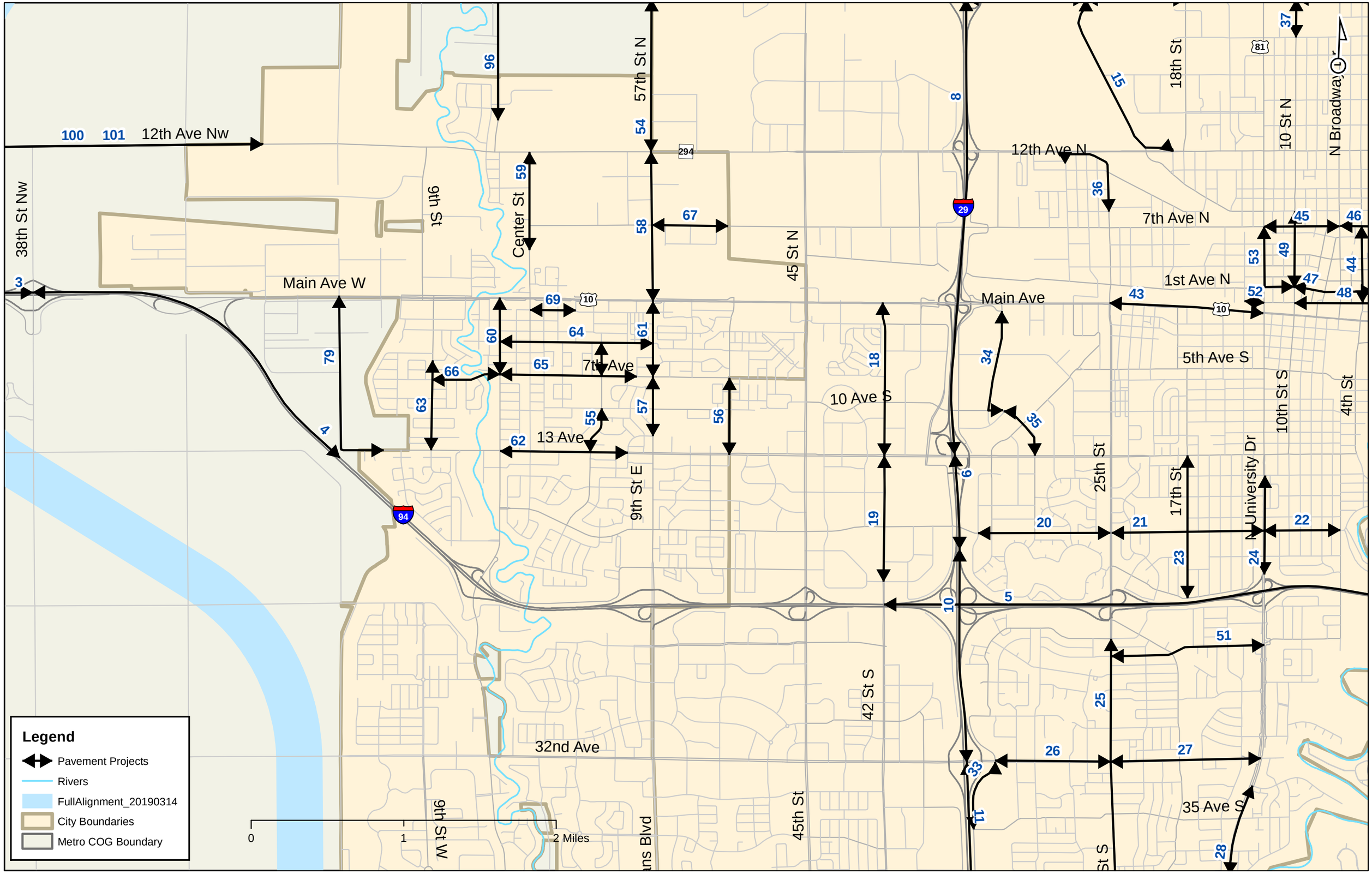

Legend

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- City Boundaries
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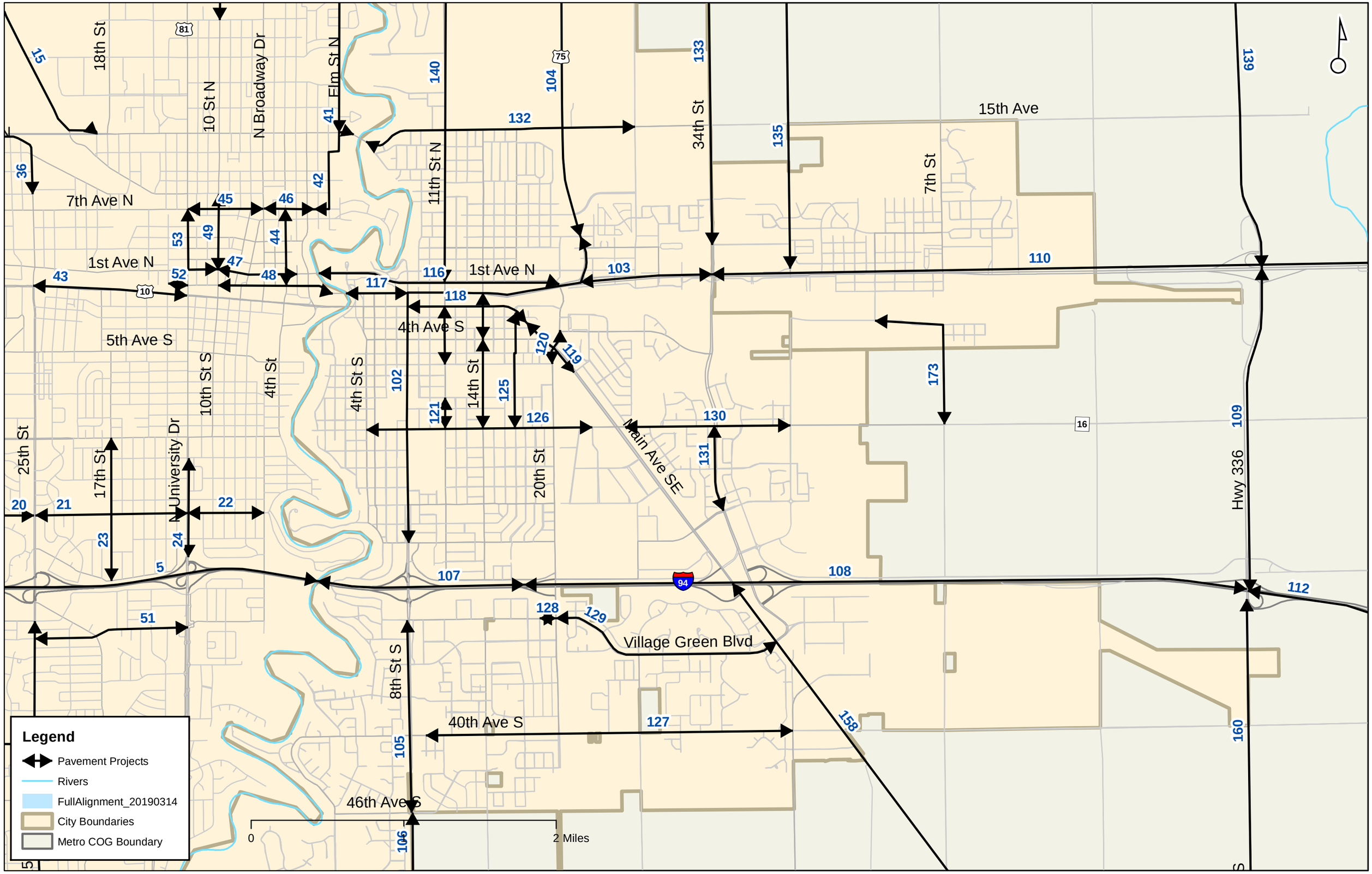
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City Boundaries
Metro COG Boundary

Appendix D

Prioritization Results
and Detailed Project Descriptions

Table. Roadway Project Descriptions and Costs, Base Year and by Potential Implementation Time Frame

Project ID	Corridor	From	To	Project Type	Project Specifics[1]	Project Description	Project Jurisdiction	Draft Cost Estimate (2019)	Short Term (2019-2025) Costs	Mid Term (2026-2035) Costs	Long Term (2036-2045) Costs
1	13th Ave S	9th St	25th St	Corridor Management	Corridor Management; Adaptive Signals	Mature corridor; provides mobility and reliability improvements	West Fargo / Fargo	$750,000	$844,000	$1,177,000	$1,742,000
2	Main Ave	Red River	11th St	Corridor Management	Corridor Management	Mature corridor; provides mobility and reliability improvements	Moorhead	$300,000	$338,000	$471,000	$697,000
3	Veterans	32nd Ave S	I-94	Corridor Management	Signal coordination	Provides sufficient operations for short- and mid-term	Fargo / West Fargo	$300,000	$338,000	$471,000	$697,000
4	Veterans	32nd Ave S	I-94	Roadway Widening	6-Lane Widening	Long-term consider 6-lanes on Veterans. Corridor management (Project 84) sufficient for short-term	Fargo / West Fargo	$7,000,000	$7,874,000	$10,990,000	$16,261,000
5	76th Ave S	45th St	I-29	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7,500,000	$8,436,000	$11,775,000	$17,422,000
6	7th Ave N	University Dr	2nd St	Corridor Management	Corridor Management; Adaptive Signals	Adaptive signals change timing as traffic changes	Fargo	$200,000	$225,000	$314,000	$465,000
7	9th St	Main Ave	12th Ave N	Grade Separation	Grade Separation from Railroad tracks	New underpass or bridge would reduce rail conflicts to industrial area. Includes turn lane additions: 7th Ave N to 12th Ave N	West Fargo	$20,000,000	$22,497,000	$31,399,000	$46,460,000
8	64th Ave S	Sheyenne	Veterans Blvd	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Horace	$7,425,000	$8,352,000	$11,657,000	$17,248,000
9	Sheyenne St	52nd Ave S	64th Ave S	Roadway Widening	2-Lane with Turn Lanes	Arterial to support fringe area growth	Horace	$7,275,000	$8,183,000	$11,421,000	$16,900,000
10	38th St	54th Ave S	64th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$6,225,000	$7,002,000	$9,773,000	$14,461,000
11	17th Ave S	38th St	25th St	Corridor Management	Implement Roundabouts	Roundabouts at 32nd, 34th, and 38th; Pedestrian improvements	Fargo	$1,790,000	$2,014,000	$2,810,000	$4,158,000
12	52nd Ave	University Dr	Red River	Corridor Management	Corridor Management	Restripe bridge for 4-lanes; reconstruct 52nd Ave	Fargo / Moorhead	$2,500,000	$2,812,000	$3,925,000	$5,808,000
15	12th Ave S	40th St	55th St	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Moorhead	$11,550,000	$12,992,000	$18,133,000	$26,831,000
16	38th St	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$8,250,000	$9,280,000	$12,952,000	$19,165,000
17	38th St	76th Ave S	88th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7,725,000	$8,690,000	$12,128,000	$17,945,000
18	76th Ave S	I-29	25th St	New Street	2-Lane with Turn Lanes & I29 Overpass	New corridor to supports fringe area growth	Fargo	$14,425,000	$16,226,000	$22,646,000	$33,509,000
19	Sheyenne St	40th Ave S	52nd Ave S	Roadway Widening	2-Lane with Turn Lanes	Rebuild to include turn lanes along corridor	West Fargo	$7,725,000	$8,690,000	$12,128,000	$17,945,000
20	25th St	52nd Ave S	64th Ave S	Roadway Widening	4-lane Widening	Arterial to support fringe area growth	Fargo	$4,950,000	$5,568,000	$7,771,000	$11,499,000
21	25th St	76th Ave S	88th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7,575,000	$8,521,000	$11,892,000	$17,597,000
22	40th St	Hwy 52	50th Ave S	Corridor Management	Intersection Control Improvements	New intersection control for safety and traffic operations	Moorhead	$600,000	$675,000	$942,000	$1,394,000
23	20th St	42nd Ave S	50th Ave S	New Street	2-Lane with Turn Lanes	Long-term project to support fringe area growth	Moorhead	$6,000,000	$6,749,000	$9,420,000	$13,938,000
24	20th St	50th Ave S	60th Ave S	New Street	2-Lane with Turn Lanes	Long-term project to support fringe area growth	Moorhead	$7,425,000	$8,352,000	$11,657,000	$17,248,000
25	76th Ave S / 80th Ave S	Red River (Forest River Road)	US 75	Bridge	New Red River Crossing	Supports growth in southern metro area, would eliminate need for 52nd Ave bridge improvement	Fargo / Clay County	$18,075,000	$20,320,000	$28,377,000	$42,000,000
26	Sheyenne St	64th Ave S	76th Ave S	Roadway Widening	2-Lane with Turn Lanes	Future growth might require turn lanes to improve operations and safety	Horace	$7,575,000	$8,521,000	$11,892,000	$17,597,000
27	64th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7,500,000	$8,436,000	$11,775,000	$17,422,000

Project ID	Corridor	From	To	Project Type	Project Specifics[1]	Project Description	Project Jurisdiction	Draft Cost Estimate (2019)	Short Term (2019-2025) Costs	Mid Term (2026-2035) Costs	Long Term (2036-2045) Costs
28	60th Ave S	Red River	US 75	Roadway Widening	4-lane Widening	Project would not be needed if 76th Ave Red River bridge was added	Moorhead	$10,600,000	$11,924,000	$16,641,000	$24,624,000
29	I-94	at 55th St		Interchange	Interchange	Location to be determined. Potential long-term project from Moorhead Growth Area Plan Study	MnDOT	$25,000,000	$28,122,000	$39,249,000	$58,075,000
30	76th Ave S	63rd St	Veterans Blvd	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Horace	$3,750,000	$4,218,000	$5,887,000	$8,711,000
31	76th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7,500,000	$8,436,000	$11,775,000	$17,422,000
32	I-29	at 76th Ave		Interchange	Interchange	Access to growth area. Bridge costs included in project 18.	NDDOT	$18,000,000	$20,248,000	$28,259,000	$41,814,000
33	45th St	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7,425,000	$8,352,000	$11,657,000	$17,248,000
34	52nd Ave S	45th St	University Dr	Corridor Management	Corridor Management; Adaptive Signals	Adaptive signals change timing as traffic changes	Fargo	$400,000	$450,000	$628,000	$929,000
35	13th Ave	west of 25th Street	4th St	Corridor Management	Corridor Management; Signal Coordination	Improved signal coordination for mobility	Fargo	$300,000	$338,000	$471,000	$697,000
36	University Dr	24th Ave S	13th Ave S	Corridor Management	Corridor Management; Adaptive Signals	Adaptive signals change timing as traffic changes	Fargo	$400,000	$450,000	$628,000	$929,000
37	25th St	35th Ave S	Main Ave	Corridor Management	Corridor Management; Adaptive Signals	Adaptive signals change timing as traffic changes	Fargo	$650,000	$731,000	$1,020,000	$1,510,000
38	32nd Ave S	45th St	25th St	Corridor Management	Corridor Management; Adaptive Signals	Adaptive signals change timing as traffic changes	Fargo	$450,000	$506,000	$706,000	$1,045,000
39	45th St	32nd Ave S	Main Ave	Corridor Management	Corridor Management; Adaptive Signals	Adaptive signals change timing as traffic changes	Fargo	$700,000	$787,000	$1,099,000	$1,626,000
40	Main Ave	45th St	Red River	Corridor Management	Corridor Management; Adaptive Signals	Adaptive signals change timing as traffic changes	Fargo	$500,000	$562,000	$785,000	$1,162,000
41	8th St / US 75	40th Ave S	1st Ave N	Corridor Management	Corridor Management; Adaptive Signals	Lane Reconfiguration and Adaptive Signals	Moorhead	$600,000	$675,000	$942,000	$1,394,000
42	12th Ave	55th St	Hwy 336	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Moorhead	$7,200,000	$8,099,000	$11,304,000	$16,726,000
43	I-94	Veterans	45th St	Roadway Widening	New Interstate Lanes	Future operational and reliability issues - lane added during I-94 reconstruction project	NDDOT	$2,928,000	$3,294,000	$4,597,000	$6,802,000
44	I-94	45th St	University Dr	Roadway Widening	New Interstate Lanes	Interstate Operations study identified issues.Improvements with reconstruction	NDDOT	$19,032,000	$21,408,000	$29,879,000	$44,211,000
45	I-29	Main Ave	52nd Ave S	Corridor Management	Corridor Management; ITS applications	Technology such as ramp metering and traffic management for future operations	NDDOT	$1,500,000	$1,687,000	$2,355,000	$3,484,000
46	52nd Ave	63rd St	Sheyenne St	Roadway Widening	4-lane Widening	Consistent with 52nd Ave widening planned to east (Programmed Project P4)	West Fargo	$6,800,000	$7,649,000	$10,676,000	$15,796,000
47	40th Ave N / CR 20	at CR 81		Corridor Management	Turn Lanes and Signal or Roundabout	Consider signal and turn lanes or roundabout at CR 81 intersection	Fargo	$500,000	$562,000	$785,000	$1,162,000
48	US 10	34th St	11th St	Corridor Management	Corridor Management	Access Control for limiting driveways and Improved Signal Coordination	Moorhead	$350,000	$394,000	$549,000	$813,000
49	11th St	Main Ave	1st Ave N	Grade Separation	Grade Separation from Railroad tracks	Grade separation of Central Moorhead rail tracks to eliminate delays and access issues due to train crossings	Moorhead	$60,000,000	$67,492,000	$94,196,000	$139,380,000

Project ID	Corridor	From	To	Project Type	Project Specifics[1]	Project Description	Project Jurisdiction	Draft Cost Estimate (2019)	Short Term (2019-2025) Costs	Mid Term (2026-2035) Costs	Long Term (2036-2045) Costs
50	12th Ave N	I-29	NDSU	Corridor Management	Corridor Management; Adaptive Signals	Mature corridor with future operational issues	Fargo	$300,000	$338,000	$471,000	$697,000
51	Veterans Blvd	52nd Ave S	64th Ave S	New Street	2-Lane with Turn Lanes	Long term vision project for high-speed access around the metro area.	Fargo / Horace	$7,425,000	$8,352,000	$11,657,000	$17,248,000
52	Veterans Blvd	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	Expressway route would uses existing paved roads	Fargo / Horace	$7,500,000	$8,436,000	$11,775,000	$17,422,000
53	Veterans Blvd	76th Ave S	88th Ave S	New Street	2-Lane with Turn Lanes	Long term vision project for high-speed access around the metro area.	Fargo / Horace	$7,500,000	$8,436,000	$11,775,000	$17,422,000
54	88th St	CR 17	Veterans Blvd	New Street	2-Lane with Turn Lanes	Long term vision project for high-speed access around the metro area.	Horace	$7,500,000	$8,436,000	$11,775,000	$17,422,000
55	55th St	12th Ave	28th Ave S	New Street	2-Lane with Turn Lanes	Location to be determined. Part of potential long-term corridor. Arterial to support growth area	Moorhead	$5,625,000	$6,327,000	$8,831,000	$13,067,000
56	Main St	2nd Ave SE	Co Rd 78	Grade Separation	Grade Separation from Railroad tracks	Grade separation of existing Main St from railroad tracks for reduced conflicts into growth area	Dilworth	$15,000,000	$16,873,000	$23,549,000	$34,845,000
58	34th St	I-94	12th Ave S	Corridor Management	Corridor Management	Signal at 28th Ave, fix lane offset at 12th Ave, implement coordinated signal system	Moorhead	$1,000,000	$1,125,000	$1,570,000	$2,323,000
59	55th St	4th Ave	12th Ave S	New Street	2-Lane with Turn Lanes	Location to be determined. Part of potential long-term corridor. Arterial to support growth area	Moorhead	$5,025,000	$5,652,000	$7,889,000	$11,673,000
60	88th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	Likely long term and lower priority; this is on the edge of 2045 growth area	Fargo	$7,500,000	$8,436,000	$11,775,000	$17,422,000
61	88th Ave S	38th St	25th St	New Street	2-Lane with Turn Lanes & I-29 Overpass	Likely long term and lower priority; this is on the edge of 2045 growth area	Fargo	$12,050,000	$13,555,000	$18,918,000	$27,992,000
62	76th Ave	25th St	Red River	Roadway Widening	2-Lane with Turn Lanes	Needed with Project 25, a new 76th Ave Red River crossing	Fargo	$9,900,000	$11,136,000	$15,542,000	$22,998,000
63	45th Street	76th Ave	88th Ave S	New Street	2-Lane with Turn Lanes	Arterial to support fringe area growth	Fargo	$7,500,000	$8,436,000	$11,775,000	$17,422,000
64	88th Ave S	45th St	38th St	New Street	2-Lane with Turn Lanes	Likely long term and lower priority; this is on the edge of 2045 growth area	Fargo	$4,950,000	$5,568,000	$7,771,000	$11,499,000
65	NW Regional Rte	I-29	I-94	Expressway Route	2-Lane with Turn Lanes	New bypass route outside of proposed diversion	Cass County	$28,050,000	$31,552,000	$44,037,000	$65,160,000
66	13th Ave	at I-94		Grade Separation	Grade Separation	13th Ave West / 15th St NW Grade Separation of I-94 providing access into future development area	West Fargo	$12,180,000	$13,701,000	$19,122,000	$28,294,000
67	15th St NW	4th Ave NW	12th Ave NW	Grade Separation	Grade Separation from Railroad tracks	BNSF Underpass & Diversion Overpass to provide improved connection to Industry area	West Fargo	$26,890,000	$30,248,000	$42,216,000	$62,465,000
68	52nd Ave	Sheyenne St	Horace Diversion	Roadway Widening	2-Lane with Turn Lanes	Project identified by Horace	Horace / West Fargo	$5,368,000	$6,038,000	$8,427,000	$12,470,000
69	SE Beltway Route	Hwy 75	I-94	Expressway Route	Bypass Route	Long term vision project for high-speed access around the metro area.	Clay County	$12,190,000	$13,712,000	$19,138,000	$28,317,000

Project ID	Corridor	From	To	Project Type	Project Specifics[1]	Project Description	Project Jurisdiction	Draft Cost Estimate (2019)	Short Term (2019-2025) Costs	Mid Term (2026-2035) Costs	Long Term (2036-2045) Costs
70	SW Beltway Route	I-94	100th Ave S	Expressway Route	Bypass Route	Route runs along existing paved roads west of future Diversion channel. Two miles of additional paved road required.	Cass County	$3,000,000	$3,375,000	$4,710,000	$6,969,000
71	NW Beltway Route	I-29	I-94	Expressway Route	Bypass Route	New bypass route inside of proposed diversion	Cass County	$12,180,000	$13,701,000	$19,122,000	$28,294,000
72	NE Beltway Route	I-29	US 10	Expressway Route	Bypass Route	Long term vision project for high-speed access around the metro area.	Fargo/Moorhead/Clay Cnty	$11,270,000	$12,677,000	$17,693,000	$26,180,000
73	32nd Ave	165th Ave	current diversion	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$6,000,000	$6,749,000	$9,420,000	$13,938,000
74	76th Ave S	165th Ave	Horace	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$6,690,000	$7,525,000	$10,503,000	$15,541,000
75	100th Ave S	38th St	Horace	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$3,015,000	$3,392,000	$4,733,000	$7,004,000
76	64th Ave N	CR 17	165th Ave SE	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$7,485,000	$8,420,000	$11,751,000	$17,388,000
77	38th St	I-94	124th Ave	Other	Pave Gravel Road	Identified by Cass County as future gravel to black top project	Cass County	$15,930,000	$17,919,000	$25,009,000	$37,005,000
78	Hwy 336	at 12th Ave		Interchange	Interchange	Required for 12th Ave and Hwy 336 connection	MnDOT	$25,000,000	$28,122,000	$39,249,000	$58,075,000
79	40th Ave S	CR 7	Hwy 52	Roadway Widening	2-Lane with Turn Lanes	Anticipated Short-Term Project, improves safety and operations	Moorhead	$2,460,000	$2,767,000	$3,862,000	$5,715,000
80	Approx 14th St	2nd Ave SE	Adams Ave	Grade Separation	Grade Separation from Railroad tracks	Location to be determined. Part of potential long-term corridor. Railroad grade separation option.	Dilworth	$25,000,000	$28,122,000	$39,249,000	$58,075,000
81	12th Ave N / 15th Ave N	Elm Street (Fargo)	11th St N (Moorhead)	Grade Separation	Raise existing bridge elevation	Raise existing bridge so that it could remain open during a 37' flood event	Fargo / Moorhead	$10,300,000	$11,586,000	$16,170,000	$23,927,000
82	14th St	8th Ave N	15th Ave N	New Street	2-lane with Turn Lanes	Long term extension of 14th St as Dilworth growth continues in future	Dilworth	$3,850,000	$4,331,000	$6,044,000	$8,944,000
83	Approx 14th St	Potential 13th Ave	32nd Ave	New Street	2-Lane with Turn Lanes	Potential alignment to provide arterial access to future West Fargo growth area near 13th Ave	West Fargo	$14,690,000	$16,524,000	$23,062,000	$34,125,000
85	9th St	Main Ave	7th Ave S	Corridor Management	Intersection control and turn lanes	Currently being studied in corridor study	West Fargo	$1,125,000	$1,266,000	$1,766,000	$2,613,000
87	12th Ave S	at 8th St		Corridor Management	Added turn lanes on 12th Ave S	Turn lanes on 12th Avenue south, recommended as a part of 12th Ave Corridor study	Moorhead	$1,040,000	$1,170,000	$1,633,000	$2,416,000

Table 3. Unit Costs for Cost Estimates

Improvement Type	Cost per Unit (2019 $)	Units	Source
Urban Roads, New	$2.5 M	per lane mile	Local Costs on Other Projects
Roadway Bridges, New	$200	per square foot	NDDOT
Traffic Signals, New	$300,000	per signal	Local Costs on Other Projects
Corridor Management Signal Projects	$50,000	per signal	HDR / FHWA
Paving Gravel Roads	$1.5 M	per mile	Cass County
Bypass Projects	$2.3 M	per mile	NDDOT
Interchanges	$25 M	per interchange	HDR / Local Costs
Pedestrian Bridges	$150	per square foot	Metro COG
Concrete Trail	$325,000	per mile	Metro COG
Asphalt Trail	$300,000	per mile	Metro COG
On-Street Bike Treatments	$50,000	per mile	Metro COG

Note: Individual project costs can vary from these unit costs based on input from jurisdiction staff.

Final Bicycle and Pedestrian Project Prioritization Criteria

Goal	Objective	Prioritization Approach	Project Scoring Criteria			
			+2	+1	0	-2
System Safety Goal	Reduce the number of bicycle and pedestrian crashes.	Project has potential to improve pedestrian safety in corridor with bicycle and pedestrian crash history.	Project improves bicycle and pedestrian safety in a corridor with identified bicycle and/or pedestrian crash issues.	Project improves bicycle and/or pedestrian safety in a corridor with limited bicycle and pedestrian crash issues.	Project would have limited impact of bicycle and/or pedestrian safety.	Project has potential to reduce bicycle and/or pedestrian safety.
		Based on 1/2 mile radius of any K-8 public school	Project would improve the safety of bicycling or walking within 1/2 mile radius of a K-8 public school.		Project would have limited impact on cycling or walking safety for schools.	Project has potential to reduce the safety of bicycling or walking within 1/2 mile radius of a K-8 public school.
Travel Efficiency and Reliability Goal	Improve the connectivity of the street network and promote a grid street pattern.	Project would complete a street system connection where one does not currently existing, has the potential to reduce out-of-direction travel, and is context sensitive.	Project that would connect two bicycle and / or pedestrian corridors through new sidewalk or path.	Project that would introduce a new bicycle corridor through new sidewalk or path.	Project does not improve walking and biking connections via a new street connection.	Project has potential to reduce bicycle and pedestrian connectivity through removed street.
Walking and Bicycling Goal	Improve walking and biking connections and reduce network gaps.	Review network connectivity measures (intersection density, walk scores) to determine project impact on connectivity.	Improves bicycle and / or pedestrian corridors in a zone which currently has low or moderate levels on walkability index.	Improves bicycle and / or pedestrian corridors in a zone which currently has high levels on walkability index.	Project would have limited impact of bicycle and pedestrian connectivity.	Project has potential to remove bicycle and pedestrian connections.
	Promote active, mixed use developments that mix residential, work, and entertainment uses.	Related qualitative assessment of project elements that promote improved walking and biking.	Project would be a significant new bicycle and pedestrian facility in an area / corridor with current or planned mixed land uses; or is consitent with recommendation of a corridor, comprehensive, or other planning study.	Project would be an enhancement to exising bicycle and pedestrian facilities in an area / corridor with current or planned mixed land uses.	Project would not enhance walking and biking.	Project has potential to negatively impact walking and biking.
	Identify transportation projects that promote environments conducive to walking and biking.		Project would connect residential area to commerical or industrial center.	Project would connect residential area to a park.	Project does not connect residential and commercial / industrial centers.	
	Increase mode share for travel that is not single-occupant vehicle (SOV).	Project would increase non-SOV travel. Examples include: bike / ped projects, transit improvements, travel demand management program and strategies. Policy-based objective, too.	Project will provide new bicycle or pedestrian connections for areas with high levels of trip density (50 or more trips per acre)	Project will provide new bicycle or pedestrian connections for areas with high levels of trip density (25 to 50 trips per acre)	Project does not improve walking and biking connections via a new street connection.	Project would increase SOV mode share by impacting transit operations or remove major bike / pedestrian connection.
Economic Development and Transportation Decisions	Project would improve "first mile / last mile" access	Project would improve bicycle, pedestrian, or other modal connection between a large generator (higher-density residential, commercial, or industrial) and a MATBUS transit stop.	Project would connect to existing MATBUS routes.		Project does not impact bicycle and pedestrian access to transit route.	Project has potential to reduce bicycle and pedestrian access to transit route.
	Promote complete streets improvements in corridors that would see economic benefits.	Project improves walking or biking conditions in a defined Mixed Use Arterial, Mixed Use Collector, or Mixed Use Neighborhood corridor (based on Parking & Access study, apply to Moorhead).	Bicycle and pedestrian project is located in a designated mixed use corridor.		Project is not located in designated mixed use corridor.	
Transit Access Goal	Improve pedestrian and bicycle connections to transit corridors.	Bicycle and Pedestrian projects that improve safety or provide new connections to existing bus route corridors.	The relevant scoring metrics for this objective are redundant with first mile / last mile measure under Economic Development goal.			

Bicycle and Pedestrian Project Prioritization Scoring

			PROJECT ID - WEST FARGO					PROJECT ID - FARGO														PROJECT ID - DILWORTH	PROJECT ID - OTHER JURISDICTIONS			
			62	65	99	102	58	50	43	10	74	4	87/88	55	8	77	45	42	6	112	34	1002	1001	19	110	5	60	71
Goal	**Objective**	**Scoring approach / Comment**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**	**SCORE**
System Safety Goal	Reduce the number of bicycle and pedestrian crashes.	Use bicycle and pedestrian high crash intersections identified in existing system performance.	1	1	1	1	1	2	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1
		GIS file derived from National Center for Education Statistics and Google API. Confirmed through Metro COG review.	2	2	0	2	2	0	2	0	1	0	0	2	2	2	2	2	0	0	0	2	0	0	0	0	2	2
Travel Efficiency and Reliability Goal	Improve the connectivity of the street network and promote a grid street pattern.	Review connections to other bike / pedestrian facilities	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2
Walking and Bicycling Goal	Improve walking and biking connections and reduce network gaps.	Updated walkability index that combines access to jobs and access to services.	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	0	2
	Promote active, mixed use developments that mix residential, work, and entertainment uses.	Note - this objective was amended to include other plans by Metro COG in February. So all of these projects are from Bicycle and Pedestrian plan.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2
	Identify transportation projects that promote environments conducive to walking and biking.	Review aerial mapping to see if project connects residences and commercial. If no commerical / industrial connection, review if it connects to park or recreation area. This measure is not additive (cannot get +2 for commercial and +1 for park connections)	2	2	2	2	2	2	2	1	2	0	2	2	1	2	2	2	2	2	2	1	1	0	0	1	0	1
	Increase mode share for travel that is not single-occupant vehicle (SOV).	Use trip density categories of high (50+ trips / acre), moderate (25-50 trips / acre), and low (0-25 trips / acre)	1	0	1	0	0	2	2	1	0	1	0	2	1	2	1	2	1	2	0	1	0	0	0	0	0	0
Economic Development and Transportation Decisions	Project would improve "first mile / last mile" access	Review to see if bike / ped project is adjacent to MATBUS route	2	0	0	0	0	2	2	0	0	0	0	2	0	2	2	2	0	2	2	2	0	0	0	0	0	0
	Promote complete streets improvements in corridors that would see economic benefits.	Applied the Fargo and West Fargo Parking and Access Study corridor typologies of mixed use corridors.	0	0	0	0	2	2	0	0	0	0	0	0	0	2	2	2	0	2	0	2	0	0	0	0	0	2
Total Prioritization Score			14	11	10	11	12	15	16	9	10	8	9	14	11	17	17	17	10	15	11	13	8	7	7	8	6	12

Bicycle and Pedestrian Project Priority Scoring

Legend

Bike and Pedestrian Projects

Priority Score

- Low Tier (6 - 9 points)
- Medium Tier (10 - 12 points)
- High Tier (13 - 17 points)

Table. Roadway Project Prioritization Criteria

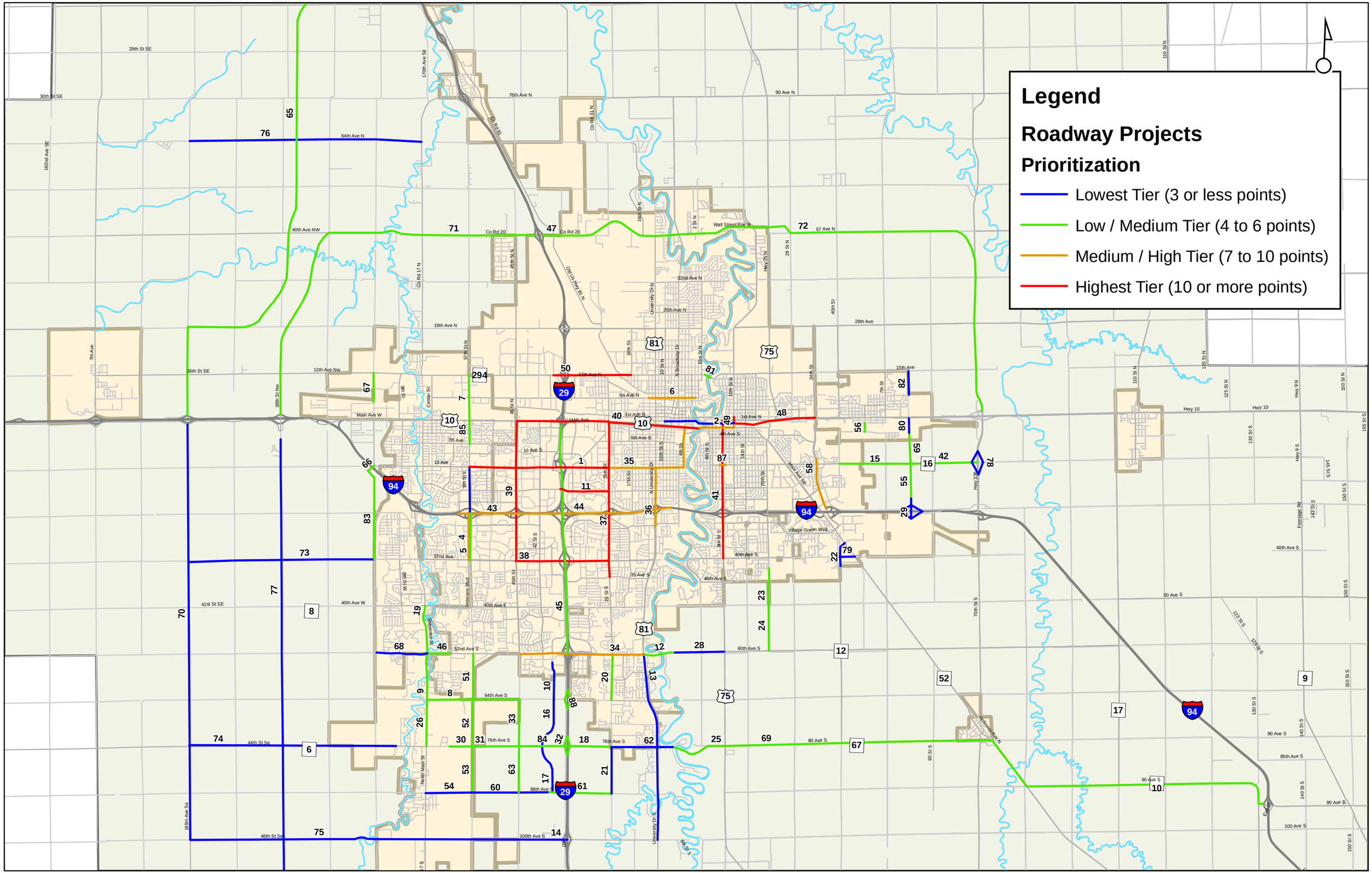
Goal	Objective	Prioritization Approach	Project Scoring Criteria				Scoring Discussion
			+2	+1	0	-2	
System Safety and Security Goal	Reduce the number and rate of crashes.	Project has potential to reduce vehicular crashes.	Project directly improves roadway safety in a corridor with identified crash issues.	Project directly improves roadway safety in a corridor with low or moderate crash issues.	Project would have limited impact of safety.	Project has potential to reduce roadway safety.	Reviewed top 20 "All Crash" and "Severe Crash" Corridors and projects that improved traffic flow / safety were given +2. Other urban corridors with operational improvements or new grade separations were given +1.
	Reduce the number and rate of serious injury and fatal crashes.	Project has potential to reduce serious injury and fatal vehicular crashes.					
	Identify strategies to make transportation infrastructure more resilient to natural and manmade events.	Project has potential to reduce flooding impact to connections, or provides a more resilient system to other hazards.	Project elevates facility out of floodplain or creates a more reliable connection for emergency response.		Project would have limited impact and system resiliency.	Project has potential to negatively impact system resiliency.	Identified projects that would elevate system connections (like bridges) out of traditional areas that flood, or would replace an active at-grade rail crossing with a grade separation.
Travel Efficiency and Reliability Goal	Improve travel reliability on the National Highway System.	Project would improve safety or system management in a corridor with reliability issues. At a policy level, this would be part of the Congestion Management Plan and on-going system monitoring.	Project includes elements shown to improve reliability on an NHS roadway with identified reliability issues.	Project includes elements shown to improve reliability on an NHS roadway.	Project would likely have limited reliability improvements.		Reviewed LOTTR from Existing Conditions Report - anything on NHS over 1.25 was used
	Improve travel reliability on arterials.			Project includes elements shown to improve reliability on an arterial roadway.			Reviewed projects that might improve reliability on existing urban corridors. Note that non-NHS corridors do not have a LOTTR.
	Limit recurring peak period delay on the National Highway System.	Project would improve traffic operations / improve forecasted level-of-service (use LOS E/F as deficiency).	Project would improve traffic operations on an NHS or arterial roadway to LOS D or better.	Project would improve traffic operations on an NHS or arterial roadway.	Project would not improve travel delay significantly.	Project would degrade traffic operations to LOS F on an NHS or arterial roadway.	Identified projects that would directly improve traffic operations on the congested corridor
	Limit recurring peak period delay on arterial roadways.						
	Improve the connectivity of the street network and promote a grid street pattern.	Project would complete a street system connection where one does not currently existing, has the potential to reduce out-of-direction travel, and is context sensitive.	Project is context sensitive and would complete a roadway connection where a gap of 1 mile or more exists.	Project is context sensitive and would complete a roadway connection where a gap of 1/2 mile or more exists.	Project has limited impact on street network connectivity.	Project is not context sensitive or limits grid pattern.	Grade separations were included if they offered the only separation for the 1 mile or 1/2 mile threshold. Rural paving assumed to provide new connection.
	Promote the development of high-speed corridors for alternative routes.	Project is a new corridor with potential to limit access levels, and provide high mobility without impacting urban neighborhoods.	Project provides a new regional route with the potential to offer high-speed connections with limited impacts to existing neighborhoods.		Project is not a high-speed route.		Bypass routes receive +2 points
	Promote consistent corridor traffic flow with reduced starting and stopping.	Project would reduce create less starting and stopping of traffic. Examples include: corridor management, adaptive signals, freeway and arterial management technologies, and innovative intersections and street treatments.	Project provides a concept with limited signalized intersections such as innovative intersections, or is a TSM&O project that promotes improved corridor flow.	Project provides traffic signals or roundabouts where stop-control intersections existed before.	Project does not significantly change traffic signal control.	Project has the potential to reduce corridor traffic flow.	Signal management projects +2, projects with just additional signals or roundabouts +1 in existing corridors.
Walking and Bicycling Goal	Promote active, mixed use developments that mix residential, work, and entertainment uses.	Related qualitative assessment of project elements that promote improved walking and biking.	Street project includes a significant new bicycle and pedestrian facility in an area / corridor with current or planned mixed land uses; or is consistent with recommendation of a corridor, comprehensive, or other planning study.	Street project would be an enhancement to existing bicycle and pedestrian facilities in an area / corridor with current or planned mixed land uses.	Project would not enhance walking and biking.	Project has potential to negatively impact walking and biking.	Assume arterials in growth areas have new bike paths, connecting residential to existing bike / ped system and job and services access (+2)
Transit Access	Implement streetscape elements that support transit.	Project provides amenities that make transit usage more attractive and accessible. Examples include: ADA curbs, bike share stations, sidewalk improvements, and permanent stations.	Street project would upgrade an existing transit corridor to provide transit amenities such as transit signal priority or bus shelters.		Project would have no impact on transit signal amenities.		TSP part of concept in MATBUS corridors
Economic Development and Transportation Decisions	Improve freight reliability on the Interstate System to support regional and national commerce.	Project would improve freight safety or system management on Interstate system, per Federal performance measures.	Project would improve Freight travel time reliability on an Interstate corridor identified as an issue.	Project would improve Freight travel time reliability on any Interstate corridor.	Project would have not impact on Interstate freight reliability.	Project would degrade freight reliability in an Interstate corridor.	Truck Reliability segments on interstate over 1.5
	Enhance the regional economy.	Project is consistent with or directly supports regional economic development goals, or provides enhanced access to major employment centers.	Project is consistent with a regional economic development plan, or provides improved connection to an existing or future major employment center.		Project provides no significant economic development connection.		Employment centers defined as TAZs with 15 or more jobs / acre. Locations include: 1) Downtown Fargo, 2) Downtown Moorhead, 3)NDSU, 4) Concordia, 5) Broadway (7th-12th), 6) West Acres area, 7) Fletchner / 13th Area. Projects needed to be within 1/4 mile.
	Promote financially sustainable transportation investments.	Project reduces long-term operations and / or maintenance costs.	Project would involve reconstruction of a corridor at a time consistent with its anticipated replacement date.		Project has limited benefit in terms of timing of reconstruction.		Project elements can take advantage of reconstruction project at time of anticipated pavement need.
	Manage access in commercial corridors to promote mobility.	Project reduces number of access points along defined Commercial Arterial corridor (based on Parking & Access study, apply to Moorhead and other cities). Also include TSMO and widening projects that improve mobility.	Project would implement access control or improve vehicular mobility in Commercial Arterial corridor	Project would reduce access levels in any arterial corridor.	Project would have limited impact on access levels in a commercial arterial corridor.		Access control or mobility improvement project in commercial corridor.
	Provide improvements to the truck freight system.	Project would increase corridor load limits, or provide an alternate route that could be used by heavy trucks.	Project was identified in Regional Freight Plan or provides enhanced freight route access.		Project would have limited impact on freight travel.		Project provides significantly enhanced freight through grade separation or new high speed facility. No project-specific Freight plan recommendations, just additional studies / evaluations.

Table. Roadway Prioritization Scores

Project ID	Corridor	From	To	Project Type	Project Specifics	Scoring Metric														Total Priority Score
						Improve High Crash Corridor	Improve System Security / Resiliency	Improve Reliability	Improve Delay on Congested Corridor	Completes a street system connection	New high-speed regional connection	Consistent Traffic Flow / TSM&O	New bike / ped facility with street project	Transit-supportive elements like TSP	Improve freight travel time reliability	Connection to major job center	Implemented during reconstruction project	Improve mobility in Commercial Arterial corridor	Improved Freight Connection	
1	13th Ave S	9th St	25th St	Corridor Management	Corridor Management; Adaptive Signals	2	0	2	1	0	0	2	0	2	0	2	0	2	0	13
2	Main Ave	Red River	11th St	Corridor Management	Corridor Management	1	0	2	1	0	0	2	0	2	0	2	0	0	0	10
3	Veterans	32nd Ave S	I-94	Corridor Management	Signal coordination	1	0	1	2	0	0	1	0	0	0	2	0	2	0	9
4	Veterans	32nd Ave S	I-94	Roadway Widening	6-Lane Widening	1	0	1	2	0	0	0	0	0	0	2	0	2	0	8
5	76th Ave S	45th St	I-29	New Street	2-Lane with Turn Lanes	0	0	0	2	0	0	0	2	0	0	0	0	0	0	4
6	7th Ave N	University Dr	2nd St	Corridor Management	Corridor Management; Adaptive Signals	1	0	1	1	0	0	2	0	0	0	2	0	0	0	7
7	9th St	Main Ave	12th Ave N	Grade Separation	Grade Separation from Railroad tracks	1	0	0	0	1	0	0	0	0	0	0	0	0	2	4
8	64th Ave	Sheyenne	Veterans Blvd	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
9	Sheyenne	52nd Ave S	64th Ave S	Roadway Widening	2-Lane with Turn Lanes	1	0	1	2	0	0	0	0	0	0	0	0	0	0	4
10	38th St	54th Ave S	64th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
11	17th Ave S	38th St	25th St	Corridor Management	Implement Roundabouts	1	0	0	2	0	0	2	2	0	0	2	2	0	0	11
12	52nd Ave	University Dr	Red River	Corridor Management	Corridor Management	0	0	1	2	0	0	0	0	0	0	0	0	2	0	5
13	University Ave	52nd Ave S	100th Ave S	Other	Access Control	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3
14	100th Ave	Sheyenne Diversion	I-29	Other	Access Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	12th Ave S	40th St	55th St	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
16	38th St	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
17	38th St	76th Ave S	88th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
18	76th Ave S	I-29	25th St	New Street	2-Lane with Turn Lanes & I29 Overpass	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
19	Sheyenne St	40th Ave S	52nd Ave S	Roadway Widening	2-Lane with Turn Lanes	1	0	1	2	0	0	0	0	0	0	0	0	0	0	4
20	25th St	52nd Ave S	64th Ave S	Roadway Widening	4-lane Widening	1	0	1	2	0	0	0	0	0	0	0	0	0	0	4
21	25th St	76th Ave S	88th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
22	40th St	Hwy 52	50th Ave S	Corridor Management	Intersection Control Improvements	1	0	1	0	0	0	1	0	0	0	0	0	0	0	3
24	20th St	50th Ave S	60th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
23	20th St	42nd Ave S	50th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
25	76th Ave S	University Dr	US 75	Bridge	New Red River Crossing	0	0	0	2	2	0	0	2	0	0	0	0	0	0	6
26	Sheyenne St	64th Ave S	76th Ave S	Roadway Widening	2-Lane with Turn Lanes	1	0	1	2	0	0	0	0	0	0	0	0	0	0	4
27	64th Ave	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
28	60th Ave S	Red River	US 75	Roadway Widening	4-lane Widening	0	0	1	2	0	0	0	0	0	0	0	0	0	0	3
29	I-94	at 55th St		Interchange	Interchange	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
30	76th Ave S	63rd St	Veterans Blvd	New Street	2-Lane with Turn Lanes	0	0	1	1	0	0	0	2	0	0	0	0	0	0	4
84	76th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	0	0	0	2	0	0	0	2	0	0	0	0	0	0	4
32	I-29	at 76th Ave		Interchange	Interchange	0	0	0	2	2	0	0	0	0	0	0	0	2	0	6
33	45th St	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
34	52nd Ave S	45th St	University Dr	Corridor Management	Corridor Management; Adaptive Signals	1	0	2	2	0	0	2	0	0	0	0	0	2	0	9
35	13th Ave	west of 25th Street	4th St	Corridor Management	Corridor Management; Signal Coordination	2	0	1	1	0	0	1	0	0	0	2	0	0	0	7
36	University Dr	24th Ave S	13th Ave S	Corridor Management	Corridor Management; Adaptive Signals	2	0	2	2	0	0	2	0	2	0	0	0	0	0	10

Project ID	Corridor	From	To	Project Type	Project Specifics	Scoring Metric														Total Priority Score
						Improve High Crash Corridor	Improve System Security / Resiliency	Improve Reliability	Improve Delay on Congested Corridor	Completes a street system connection	New high-speed regional connection	Consistent Traffic Flow / TSM&O	New bike / ped facility with street project	Transit-supportive elements like TSP	Improve freight travel time reliability	Connection to major job center	Implemented during reconstruction project	Improve mobility in Commercial Arterial corridor	Improved Freight Connection	
37	25th St	35th Ave S	Main Ave	Corridor Management	Corridor Management; Adaptive Signals	2	0	1	2	0	0	2	0	2	0	2	0	0	0	11
38	32nd Ave S	45th St	25th St	Corridor Management	Corridor Management; Adaptive Signals	2	0	2	2	0	0	2	0	2	0	0	0	2	0	12
39	45th St	32nd Ave S	Main Ave	Corridor Management	Corridor Management; Adaptive Signals	2	0	2	2	0	0	2	0	2	0	2	0	2	0	14
40	Main Ave	45th St	Red River	Corridor Management	Corridor Management; Adaptive Signals	2	0	2	1	0	0	2	0	2	0	0	0	2	0	11
41	8th St	40th Ave S	1st Ave N	Corridor Management	Corridor Management; Adaptive Signals	1	0	2	1	0	0	2	0	2	0	2	2	2	0	14
42	12th Ave	55th St	Hwy 336	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
43	I-94	Veterans	45th St	Roadway Widening	New Interstate Lanes	1	0	1	2	0	0	0	0	0	2	0	2	0	0	8
44	I-94	45th St	University Dr	Roadway Widening	New Interstate Lanes	1	0	1	2	0	0	0	0	0	2	0	2	0	0	8
45	I-29	Main Ave	52nd Ave S	Corridor Management	Corridor Management; ITS applications	1	0	1	2	0	0	0	0	0	2	0	0	0	0	6
46	52nd Ave	63rd St	Sheyenne St	Roadway Widening	4-lane Widening	1	0	1	2	0	0	0	0	0	0	0	0	2	0	6
47	40th Ave N	at CR 81		Corridor Management	Turn Lanes and Signal or Roundabout	0	0	1	2	0	0	0	0	0	0	0	0	2	0	5
48	US 10	34th St	11th St	Corridor Management	Corridor Management	1	0	2	2	0	0	2	0	2	0	2	0	2	0	13
49	11th St	Main Ave	1st Ave N	Grade Separation	Grade Separation from Railroad tracks	1	2	2	0	1	0	0	0	0	0	2	0	2	2	12
50	12th Ave N	I-29	NDSU	Corridor Management	Corridor Management; Adaptive Signals	1	0	1	2	0	0	2	0	2	0	2	0	2	0	12
51	Veterans Blvd	52nd Ave S	64th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
52	Veterans Blvd	64th Ave S	76th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
53	Veterans Blvd	76th Ave S	88th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
54	88th St	CR 17	Veterans Blvd	New Street	2-Lane with Turn Lanes	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
55	55th St	12th Ave	28th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
56	Main St	2nd Ave SE	Co Rd 78	Grade Separation	Grade Separation from Railroad tracks	1	2	0	0	2	0	0	0	0	0	0	0	0	0	5
58	34th St	I-29	12th Ave S	Corridor Management	Corridor Management	1	0	1	2	0	0	2	0	0	0	0	0	2	0	8
59	55th St	4th Ave	12th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
60	88th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
61	88th Ave S	38th St	25th St	New Street	2-Lane with Turn Lanes & I-29 Overpass	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
62	76th Ave	25th St	Red River	Roadway Widening	2-Lane with Turn Lanes	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
63	45th Street	76th Ave	88th Ave S	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
64	88th Ave S	45th St	38th St	New Street	2-Lane with Turn Lanes	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
65	NW Regional Rte			Expressway Route	2-Lane with Turn Lanes	0	0	0	0	1	2	0	0	0	0	0	0	0	2	5
66	13th Ave	at I-94		Grade Separation	Grade Separation	1	2	0	0	2	0	0	0	0	0	0	0	0	0	5

Project ID	Corridor	From	To	Project Type	Project Specifics	Scoring Metric														Total Priority Score
						Improve High Crash Corridor	Improve System Security / Resiliency	Improve Reliability	Improve Delay on Congested Corridor	Completes a street system connection	New high-speed regional connection	Consistent Traffic Flow / TSM&O	New bike / ped facility with street project	Transit-supportive elements like TSP	Improve freight travel time reliability	Connection to major job center	Implemented during reconstruction project	Improve mobility in Commercial Arterial corridor	Improved Freight Connection	
67	15th St NW	4th Ave NW	12th Ave NW	Grade Separation	Grade Separation from Railroad tracks	1	0	0	0	2	0	0	0	0	0	0	0	0	2	5
68	52nd Ave	Sheyenne St	Horace Diversion	Roadway Widening	2-Lane with Turn Lanes	0	0	1	0	0	0	0	0	0	0	0	2	0	0	3
69	SE Bypass Route			Expressway Route	Bypass Route	0	0	0	0	0	2	0	0	0	0	0	0	0	2	4
70	SW Bypass Route			Expressway Route	Bypass Route	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
71	NW Bypass Route			Expressway Route	Bypass Route	0	0	0	0	0	2	0	0	0	0	0	0	0	2	4
72	NE Bypass Route			Expressway Route	Bypass Route	0	0	0	0	0	2	0	0	0	0	0	0	0	2	4
73	32nd Ave	165th Ave	current diversion	Other	Pave Gravel Road	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
74	76th Ave S	165th Ave	Horace	Other	Pave Gravel Road	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
75	100th Ave S	38th St	Horace	Other	Pave Gravel Road	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
76	64th Ave N	CR 17	165th Ave SE	Other	Pave Gravel Road	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
77	38th St	I-94	124th Ave	Other	Pave Gravel Road	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
78	Hwy 336	at 12th Ave		Interchange	Interchange	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
79	40th Ave S	CR 7	Hwy 52	Roadway Widening	2-Lane with Turn Lanes	0	0	1	0	0	0	0	0	0	0	0	2	0	0	3
80	Approx 14th St	2nd Ave SE	Adams Ave	Grade Separation	Grade Separation from Railroad tracks	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
81	12th Ave N	at Red River		Grade Separation	Raise existing bridge elevation	0	2	0	0	0	0	0	2	0	0	0	0	0	0	4
82	14th St	8th Ave N	15th Ave N	New Street	2-lane with Turn Lanes	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3
83	Approx 14th St	Potential 13th Ave	32nd Ave	New Street	2-Lane with Turn Lanes	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
84	76th Ave S	Veterans Blvd	45th St	New Street	2-Lane with Turn Lanes	0	0	0	2	0	0	0	2	0	0	0	0	0	0	4
85	9th St	Main Ave	7th Ave S	Corridor Management	Intersection control and turn lanes	0	0	1	0	0	0	2	0	0	0	0	2	0	0	5
86	NP and Center	10th St (Fargo)	11th St (Moorhead)	Other	Road Diet from 4-lanes to 3-lanes	1	1	1	0	1	0	0	2	0	0	2	2	0	0	10
87	12th Ave S	at 8th St		Corridor Management	Added turn lanes on 12th Ave S	1	0	0	1	0	0	2	0	0	0	2	2	0	0	8
88	I-29	at 64th Ave		Interchange	Interchange	0	0	0	2	2	0	0	0	0	0	0	0	2	0	6


Legend
Roadway Projects
Prioritization
Lowest Tier (3 or less points)
Low / Medium Tier (4 to 6 points)
Medium / High Tier (7 to 10 points)
Highest Tier (10 or more points)
29th St SE
30th St SE
162nd Ave SE
76th Ave N
90 Ave N
110 St N
64th Ave N
40th Ave NW
Co Rd 20
Wall Street Ave N
57 Ave N
Co Rd 17 N
19th Ave N
32nd Ave N
25th Ave N
28th Ave
36th St SE
12th Ave Nw
12th Ave N
7th Ave N
1st Ave N
Main Ave W
Main Ave
5th Ave S
4th Ave S
13 Ave
10 Ave S
32nd Ave
35 Ave S
46th Ave S
40th Ave S
Village Green Blvd
41st St SE
40th Ave W
40th Ave E
52nd Ave S
60th Ave S
64th Ave S
44th St Se
76th Ave S
80 Ave S
85th Ave S
90 Ave S
100th Ave S
46th St Se
50 Ave S
Hwy 10
Hwy 9 N
Hwy 9 S
Hwy 336
Frontage Rd
Holloway Ave N
Old Us Hwy 81 N
N Broadway Dr
University Dr N
University Dr S
Main Ave SE
Veterans Blvd
Hwy 75 N
Co Rd 81
Co Rd 31 N
170th Ave Se
165th Ave Se
38th St Nw
7th Ave
Center St
9th St
9th St E
45th St N
57th St N
16th St N
2 St N
28 St N
40th St
34th St
15th Ave
7th St
10 St N
11th St N
18th St
Elm St N
4th St S
10th St S
14th St
17th St
20th St
25th St
8th St S
42 St S
45th St
23 St S
70th St S
60 St S
6th St S
110 St N
120 St N
125 St N
130 St S
140 St S
143 St S
145 St S
150 St S
155 St S
Exit 145
81
75
94
29
10
294

Appendix E

Agency Consultation

METROCOG Fargo-Moorhead Metropolitan Council of Governments

Case Plaza Suite 232 | One 2nd Street North
Fargo, North Dakota 58102-4807
p: 701.532.5100| f: 701.232.5043
e: metrocog@fmmetrocog.org
www.fmmetrocog.org

May 28, 2019

The Fargo-Moorhead Metro COG is in the process of updating its Metropolitan Transportation Plan. As a part of that plan update, we desire to consult with other officials and agencies that are responsible for other types of planning in our region.

We are in the process of garnering input on the range of potential projects being considered for inclusion in our final transportation plan. We encourage you to review the projects being considered for inclusion in our plan, and provide input on any projects that might be relevant to your agency. The agency comment period will be open through July 1, 2019.

- The bicycle and pedestrian projects we are considering for inclusion are here: http://metrogrow.org/agencybikeped.html
- The roadway projects we are considering for inclusion are here: http://metrogrow.org/agencyroadway.html
- The transit strategies we are considering for inclusion are here: http://metrogrow.org/agencybustransit.html

Agency comments can be submitted via the form on the web pages, or mailed to Metro COG at:

Metro COG
Case Plaza, Suite 232
1 - 2nd Street North
Fargo, ND 58102

More information on the Metropolitan Transportation Plan update, called Metro Grow, is available here: http://metrogrow.org/About.html

More information on the Fargo-Moorhead Metro COG is available here: http://www.fmmetrocog.org

Thank you for your consideration of providing your agency's input on our plan update.

Sincerely

Michael Maddox, AICP
Senior Transportation Planner

Cindy Gray, AICP
Executive Director

Fargo-Moorhead MTP SOV LIST

	Type	Code	Letter	Notes	CTitle	First	Last	Title	Department	Agency	Address	City	State	Zip	Phone	Fax	Date Edited
1	STATE	100		If it is a county or local gvmt project— send Bob C.sfn 52748; he then solicits SHPO If it is a state or US highway project— send Jeani B. letter #5; she then solicits SHPO	Ms.	Valerie	Barbie	Cultural Resource Specialist	Cultural Resource Section	ND Department of Transportation	608 E. Boulevard Ave.	Bismarck	ND	58505-0700	701-328-2152		12/05/06
2	STATE	100	#5		Ms.	Jeani	Borchert	Cultural Resource Specialist	Cultural Resource Section	ND Department of Transportation	608 E. Boulevard Ave.	Bismarck	ND	58505-0700	701-328-4378		12/05/06
3	TRIBAL	500	1	NDDOT will coordinate directly with THPO and Cultural Resource Program Directors. Send general SOV to Tribal Chairs. Use if project is within 20 miles of their reservation.	Mr.	David	Flute	Tribal Chairman		Sisseton-Wahpeton Oyate	PO Box 509	Sisseton	SD	57262-0267			06/25/15
4	TRIBAL	500	1		Mr.	Myra	Pearson	Tribal Chairperson	Ft. Totten Tribal Business Office	Spirit Lake Tribe	PO Box 359	Ft. Totten	ND	58335			06/25/15
5	TRIBAL	500	1		Mr.	Mark	Fox	Tribal Chairman		Three Affiliated Tribes	404 Frontage Road	New Town	ND	58763			06/25/15
6	TRIBAL	500	1		Mr.	Richard	McCloud	Tribal Chairman		Turtle Mountain Band of Chippewa Indians	PO Box 900	Belcourt	ND	58316-0900			06/25/15
7	TRIBAL	500	1		Mr.	Mike	Faith	Tribal Chairman		Standing Rock Sioux Tribe	PO Box D	Fort Yates	ND	58538			06/25/15
8	TRIBAL	500	1	Use if project is within 20 miles of their reservation.	Ms.	Allyson	Two Bears	Director	Department of Environmental Regulations	Standing Rock Sioux Tribe	PO Box 516	Fort Yates	ND	58538	701-854-8500 ext. 117		06/25/15
9	TRIBAL	500	1	Use if project is within 20 miles of their reservation.	Mr.	Edmund	Baker	Environmental Division Director	Natural Resources Department	Three Affiliated Tribes	404 Frontage Road	New Town	ND	58763			06/25/15
10	TRIBAL	500	1	Use if project is within 20 miles of their reservation.	Mr.	Joshua	Tweeten	Director	SLT EPA Office	Spirit Lake Tribe	P.O. Box 99	Fort Totten	ND	58335			06/25/15
11	FEDERAL	100	1		Mr.	Daniel	Lewis, P.E.		Chief Missile Engineering	Minot Air Force Base	445 Peacekeeper Place	Minot AFB	ND	58705	701-723-4815		03/11/14
12	FEDERAL	100	1		Mr.	Cy	Munos	Cable Affairs Officer	91st Missile Maintenance Squadron	Minot Air Force Base	300 Minuteman Drive	Minot AFB	ND	58705	701-723-4834		07/24/14
13	FEDERAL	100	1		Mr.	Timothy	LaPointe	Regional Director	Great Plains Regional Office	Bureau of Indian Affairs	115 4th Ave. SE, Suite 400	Aberdeen	SD	57401			12/02/15
14	FEDERAL	500	1	Projects affecting lakes, rivers, or coal mines	Mr.	Joe	Hall	Chief, Environmental and Resource Manag	Dakotas Area Office	Bureau of Reclamation	PO Box 1017	Bismarck	ND	58502-1017			01/31/12
15	FEDERAL	200	1					Acting Regional Administrator	Regional Office	Department of HUD	1670 Broadway, Ste. 200	Denver	CO	80202-4813			
16	FEDERAL	500	1	Use if project is within 5 miles of an airport identified in ND Aeronautics Commission Airport Directory (and Airport named in SOV email) OR if a structure (temporary or permanent) is associated with proposed project exceeds 200 feet in height in the State of ND.				Manager	Bismarck Airports District Office	Federal Aviation Administration	2301 University Drive, Bldg 23B	Bismarck	ND	58504			08/13/18
17	FEDERAL	200	1	Use on high EA/EIS probability projects				Director, Federal Insurance & Hazard Mitigation Division	Region 8	Federal Emergency Mngmt. Agency	Bldg 710, Box 25267	Denver	CO	80225			
18	FEDERAL	500	1	Use on projects near rail lines					Office of Economic Analysis	Federal Railroad Administration	1200 New Jersey Avenue SE	Washington	DC	20590			07/11/11
19	FEDERAL	100	1					Deputy Base Civil Engineer	319 CES/CD	Grand Forks Air Force Base	525 Tuskegee Airmen Blvd.	Grand Forks AFB	ND	58205-6434			08/16/13
20	FEDERAL	200	#2	Separate SOV letter- do not include in main merge	Ms.	Patricia	McQueary	Manager	ND Regulatory Office	US Army Corps of Engineers	3319 University Drive	Bismarck	ND	58504			12/30/15
21	FEDERAL	200	1	Use on high EA/EIS probability projects affecting lakes, rivers, or wetlands	Mr.	Eric	Laux	Chief, Environmental Resources and MO River Recovery Program Plan Formulation Section	Omaha District Attn: CENWO-PM-AC	US Army Corps of Engineers	1616 Capitol Avenue	Omaha	NE	68102-4901	402-995-2507		08/29/18
22	FEDERAL	500	1	Projects in/adjacent to Red River Valley and Devils Lake	Mr.	Nathan	Wallerstedt	Chief, Project Management & Development Branch	St. Paul District	US Army Corps of Engineers	180 5th St. E., Ste 700	St. Paul	MN	55101-1678			01/20/11
23	FEDERAL	500	1	Projects within 10 miles of Bowman Haley Dam, Pipestem Dam, or Lake Sakakawea/Garrison Dam	Mr.	Skip	Stonesifer	Natural Resources Manager		US Army Corps of Engineers	PO Box 527	Riverdale	ND	58565			02/17/11
24	FEDERAL	500	1	Bridge projects on Little Missouri, Missouri, and Red Rivers					Eighth Coast Guard Dist.	US Coast Guard	1222 Spruce Street	St. Louis	MO	63103-2832			02/20/15
25	FEDERAL	200	#3	Separate SOV letter- do not include in main merge. See "LETTER CODES" below for threshold of consultation.	Ms.	Mary	Podoll	State Conservationist		US Department of Agriculture - NRCS	PO Box 1458	Bismarck	ND	58502-1458			11/07/12
26	FEDERAL	200	1	Use on high EA/EIS probability projects	Mr.	Kirk	Keysor		Economic Development Administration	US Department of Commerce	1244 Speer Blvd., Suite 431	Denver	CO	80204	406-599-9795		12/02/15
27	FEDERAL	100	1		Mr.	Marc	Kress	North Dakota Maintenance Manager	Western Area Power Admin.	US Department of Energy	PO Box 1173	Bismarck	ND	58502-1173			03/01/19
28	FEDERAL	200	1	Use on high EA/EIS probability projects	Ms.	Suzanne	Bohan	NEPA Transportation Coordinator	Region 8, EPR-N	US Environmental Protection Agency	1595 Wynkoop Street	Denver	CO	80202-1129	303-312-6223		07/11/11
29	FEDERAL	200	1	Use on high EA/EIS probability projects	Mr.	Richard	Clark	Wetlands Coordinator	Region 8, EPR-EP	US Environmental Protection Agency	1595 Wynkoop Street	Denver	CO	80202-1129	303-312-6794		05/06/10
30	FEDERAL	200	1	Use on high EA/EIS probability projects	Senator	Kevin	Cramer			US Federal Building, Room 228	220 E. Rosser Ave.	Bismarck	ND	58501	701-258-4648	701-258-1254	03/21/13
31	FEDERAL	200	1	Use on high EA/EIS probability projects	Senator	John	Hoeven			US Federal Building, Room 312	220 E. Rosser Ave.	Bismarck	ND	58501	701-250-4618	701-250-4484	03/21/13
32	FEDERAL	200	1	Use on high EA/EIS probability projects	Congressman	Kelly	Armstrong			US Federal Building, Room 228	220 E. Rosser Ave.	Bismarck	ND	58501	701-224-0355	701-224-0431	03/21/13
33	FEDERAL	100	#7	Separate SOV letter- do not include in main merge.		*Noreen*	*Walsh*	Regional Director	Mountain-Prairie Region Office	US Fish & Wildlife Service	134 Union Blvd	Lakewood	CO	80228			11/07/12
34	FEDERAL	200	1	Regrading/ROW acquisition	Mr.	Joel	Galloway	Supervisor	Water Resources Division	US Geological Survey	821 E. Interstate Ave.	Bismarck	ND	58501			05/31/16
35	FEDERAL	500	1	Use if project is located on BIA route		Curtis R.	Scott	Project Development Engineer	Highway Division	Central Federal Lands	12300 West Dakota Avenue, Suite 390	Lakewood	CO	80228			05/06/15

Fargo-Moorhead MTP SOV LIST

	Type	Code	Letter	Notes	CTitle	First	Last	Title	Department	Agency	Address	City	State	Zip	Phone	Fax	Date Edited
36	FEDERAL	500	1	Use if project is on, or if project is within 1 mile of the NPS Lewis and Clark National Historic Trail auto tour. See excel spread sheet tab for routes.		Mark	Weekley	LECL Superintendent		Lewis & Clark NHT	601 Riverfront Drive	Omaha	NE	68102	402-661-1806		05/06/15
37	STATE	100	1		Mr.	Scott	Davis	Executive Director		Indian Affairs Commission	600 E. Blvd. Ave. 1st Floor, Judicial Wing, Rm 117	Bismarck	ND	58505-0300			01/12/11
38	STATE	500	1	Use if project is within 5 miles of airport	Mr.	Kyle	Wanner	Director		ND Aeronautics Commission	PO Box 5020	Bismarck	ND	58502-5020			07/06/16
39	STATE	200	1	Use on high EA/EIS probability projects	Mr.	Mark	Johnson	Executive Director		ND Association of Counties	1661 Capitol Way, PO Box 877	Bismarck	ND	58502-0877			
40	STATE	100	1		Mr.	Justin	Messner	Disaster Recovery Chief	Department of Homeland Security	ND Department of Emergency Services	PO Box 5511	Bismarck	ND	58506	701-328-8107		05/22/19
41	STATE	100	#4	Separate SOV letter- do not include in main merge	Mr.	David	Glatt	Chief	Environmental Health Section Gold Seal Center	ND Department of Environmental Quality	918 E. Divide Ave., 4th floor	Bismarck	ND	58501-1947	701-328-5150	701-328-5200	
42	STATE	200	1	Use when there are tree impacts or on Forest Service land	Mr.	Thomas	Claeys	Interim State Forester		ND Forest Service	916 East Interstate Ave., Suite #4	Bismarck	ND	58503-1227			05/22/19
43	STATE	100	1		Mr.	Steve	Dyke	Supervisor	Conservation Section	ND Game & Fish Department	100 Bismarck Expressway	Bismarck	ND	58501-5095	701-328-6347	701-328-6352	09/27/11
44	STATE	200	1	Regrading/ROW acquisition	Mr.	Edward	Murphy	State Geologist		ND Geological Survey	600 E. Blvd. Ave.	Bismarck	ND	58505-0840	701-328-8000	701-328-8010	01/20/11
45	STATE	100	1		Ms.	Kathy	Duttenhefner	Program Coordinator/Biologist		ND Parks & Recreation Dept.	1600 E. Century Ave., Suite 3	Bismarck	ND	58503-0649	701-328-5357	701-328-5363	05/06/10
46	STATE	100	#6	Separate SOV letter- do not include in main merge	Mr.	Garland	Erbele	State Engineer		ND State Water Commission	900 E. Blvd. Ave.	Bismarck	ND	58505-0850			07/06/16
47	STATE	500	1	Use on projects such as rest areas and those that would affect visitor services	Ms.	Sara	Otte Coleman	Director	Century Center	ND Tourism Division	1600 E. Century Ave., Suite 2	Bismarck	ND	58503-2057			
48	STATE	100	1		Mr.	Scott	Hochhalter	State Soil Specialist	NDSU Extension Service	Soil Conservation Committee	2718 Gateway Ave., #104	Bismarck	ND	58503	701-328-9715	701-328-9721	01/20/11
49	STATE	100	1	Use on rural Major Rehabilitation and New/Reconstruction projects	Mr.	Jeff	Person	Paleontologist		ND Geological Survey	600 E. Blvd. Ave.	Bismarck	ND	58505	701-328-8006	701-328-8010	05/06/15
50	TRANSIT	100	1	Send to Transit Agency(s) in the project's county. See the Transit Agencies excel tab for mailing information.					Send to Transit Agency(s) in the project's county. See the Transit Agencies excel tab for mailing information.								05/31/16
51	ADVOCACY	200	#8	Separate SOV letter- do not include in main merge. Use only on DCE projects through or adjacent to communities, and for all EA/EIS.	Advocacy	Group	Contact		The Designer or Technical Support Contact shall scan the signed letter, and email it to their respective Administrative Assistant. The Administrative Assistant shall forward the letter to the Advocacy Group using GovDelivery.								09/21/15
52	CITY	300	1			Craig	Whitney	President	Chamber of Commerce	Fargo Moorhead West Fargo	202 First Ave N	Moorhead	MN	56560			
53	CITY	300	1			Joe	Raso	President		Greater FM EDC	51 Broadway, Suite 500	Fargo	ND	58102			
	CITY	300	1			Matt	Marshall		Economic Development Department	West Fargo	800 4th Ave E, Ste. 1	West Fargo	ND	58078			
	CITY	300	1			Joel	Vettel	Director		Fargo Park District	701 Main Ave	Fargo	ND	58103			
54	CITY	300	1			Rusty	Papachek	President	Park Board	Fargo Park District	701 Main Ave	Fargo	ND	58103			
	CITY	300	1	add						Moorhead Parks & Recreation	Moorhead Sports Center, 2400 4th St S	Moorhead	MN	56560			
	CITY	300	1	add		Ladina	Sanders	Camp Host	Brewer Lake	Cass County Park Board	2160 146th Ave SE	Erie	ND	58029			
	CITY	300	1	add						Horace Park District	City Hall, 215 Park Drive E	Horace	ND	58047			
	CITY	300	1	add					Soil & Water Conservation District	Clay County	USDA Service Center, 1615 30th Ave E	Moorhead	MN	56560			
55	CITY	300	1	add		Shawn	Dobberstein	Executive Director	Municipal Airport Authority	Hector International Airport	PO Box 2845	Fargo	ND	58108-2845			
56	CITY	300	1					Chairman	Planning/Zoning Committee	City of ?							
57	CITY	300	1					Superintendent	Public Works	City of ?							
58	CITY	300	1					Superintendent	Water Works	City of ?							
59	CITY	300	1					Auditor		City of ?							
60	CITY	300	1					Commission		City of ?							
61	CITY	300	1					Fire Chief		City of ?							
62	CITY	300	1					Forester		City of ?							
63	CITY	300	1					Mayor		City of ?							
64	CITY	300	1					Police Chief		City of ?							
65	CITY	300	1					Recreation Director		City of ?							
66	CITY	300	1					Road Foreman		City of ?							
67	CITY	300	1	add		Rupak	Gandhi	Superintendent		Fargo Public Schools District	415 N 4th St	Fargo	ND	58102			
68	CITY	300	1	add		Brandon	Lunak	Superintendent	Independent School District 152	Moorhead Area Public School District	2410 14th St S	Moorhead	MN	56560			
69	CITY	300	1	add		Bryan	Thygeson	Superintendent	Independent School District 2164	DGF School District	108 N Main St	Dilworth	MN	56529			
70	CITY	300	1	add		Beth	Slette	Superintendent		West Fargo School District	207 Main Ave W	West Fargo	ND	58078			
71	COUNTY	400	1					Director	Finance	? County							
72	COUNTY	400	1					Chairman	Park Board	? County							
73	COUNTY	400	1					Chairman	Planning/Zoning Committee	? County							
74	COUNTY	400	1					Chairman	Soil Conservation District	? County							
75	COUNTY	400	1					Chairman	Water Resource District	? County							
76	COUNTY	400	1					Auditor		? County							
77	COUNTY	400	1					Commission		? County							
78	COUNTY	400	1					Disaster Management		? County							
79	COUNTY	400	1					Highway Engineer/Supervisor		? County							

Fargo-Moorhead MTP SOV LIST

	Type	Code	Letter	Notes	CTitle	First	Last	Title	Department	Agency	Address	City	State	Zip	Phone	Fax	Date Edited
80	COUNTY	400	1					Sheriff		? County							
81	REGIONAL	500	1							Bis-Man Transit Board	3750 E. Rosser	Bismarck	ND	58501			
82	REGIONAL	500	1							Center City Partnership	PO Box 5503	Bismarck	ND	58506-5503			
83	REGIONAL	500	1							Downtown Business Association	400 E. Broadway Ave.	Bismarck	ND	58501			
84	REGIONAL	500	1		Ms.	Cindy	Gray	Executive Director		Fargo-Moorhead Metro. Council of Govts.	1 2nd St. N., Ste. 232 Case Plaza	Fargo	ND	58102			07/06/15
85	REGIONAL	500	1		Mr.	Steve	Saunders	Executive Director		Bismarck/Mandan MPO	221 N 5 Street, P.O. Box 5503	Bismarck	ND	58506	701-355-1842		07/23/07
86	REGIONAL	500	1		Mr.	Earl	Haugen	Executive Director		Grand Forks - E GF	P.O. Box 5200	Grand Forks	ND	58206-5200	701-232-3242	701-232-5043	07/23/07
87	FEDERAL	500	1	Projects affecting national parks or access to these parks	*Mr.*	Tokey	Boswell	Regional Environmental Coordinator	Midwest Regional Office	National Park Service	601 Riverfront Drive	Omaha	NE	68102-4226	402-661-1534		02/26/07
88	FEDERAL	500	1	Use for projects in Devils Lake area	Mr.	Stephen	Herda	Environmental Program Manager		ND National Guard	PO Box 5511	Bismarck	ND	58506-5511	701-333-2065		01/20/11
89	FEDERAL	500	1	Projects affecting national parks or access to these parks	Ms.	Wendy	Ross	Superintendent		Theodore Roosevelt National Park	PO Box 7	Medora	ND	58645-0007			10/14/15
90	FEDERAL	500	1		Mr.	William	O'Donnell	Grassland Supervisor	Dakota Prairie Grasslands	US Forest Service	2000 Miriam Circle	Bismarck	ND	58501			03/11/14
91	FEDERAL	500	1		Mr.	Alex	Michalek	District Ranger	Grand River Ranger District	US Forest Service	PO Box 390	Lemmon	SD	57638			10/14/15
92	FEDERAL	500	1		Ms.	Nancy	Veres	District Ranger	McKenzie Ranger District	US Forest Service	1905 S. Main St. South	Watford City	ND	58854			10/14/15
93	FEDERAL	500	1	Projects near National Grasslands or Forest	Ms.	Misty	Hays	Acting District Ranger	McKenzie Ranger District	US Forest Service	1905 S. Main St. South	Watford City	ND	58854			12/11/18
94	FEDERAL	500	1	Service lands	Mr.	Shannon	Boehm	District Ranger	Medora Ranger District	US Forest Service	99 23rd Ave W. Suite B	Dickinson	ND	58601			10/14/15
95	FEDERAL	500	1		Mr.	Casey	Johnson	District Ranger	Sheyenne Ranger District	US Forest Service	PO Box 946	Lisbon	ND	58054			10/14/15
96	FEDERAL	500	1		Mr.	Marcario	Herrera	RHELM Staff Officer	Dakota Prairie Grasslands	US Forest Service	2000 Miriam Circle	Bismarck	ND	58501			12/11/18
97	FEDERAL	500	1		Ms.	Kathy	Stone	Executive Assistant	Dakota Prairie Grasslands	US Forest Service	2000 Miriam Circle	Bismarck	ND	58501			12/11/18
98	REGIONAL	500	1					Executive Director	Region ?	Regional Planning Council							
99	REGIONAL	500	1					Township Board		? Township							
100	COMMRCL	600	1	All railroads and utilities located within the project limits, and adjacent to the project shall be solicited. Contact the NDDOT Utility Engineer or Technical Support person for a list of utility companies to solicit views. List all entities contacted in this space and inlcude table in the environmental document.													
101	COMMRCL	600	1		Mr.	Richard	Scott	Manager	Public Projects	BNSF Railway Company	80 44th Avenue, NE	Minneapolis	MN	55421	763-782-3492		06/02/16
102	COMMRCL	600	1		Mr.	Jim	Krieger	Manager	Public Works - Southern Region	Canadian Pacific Railroad	120 South 6th Street, Suite 900	Minneapolis	MN	55402	612-330-4555		06/03/16
103	COMMRCL	600	1		Mr.	Jeff	Wood	Executive Vice President		Dakota, Missouri Valley & Western Railroad, Inc.	3501 East Rosser Avenue	Bismarck	ND	58501	701-223-9282		06/04/16
104	COMMRCL	600	1		Mr.	Dan	Zink	Director of Administration		Red River Valley & Western Railroad	PO Box 608	Wahpeton	ND	58074	701-642-8257		06/05/16
105	COMMRCL	600	1		Mr.	Jason	Bierwerth	Manager	Operations	Dakota Northern Railroad	Box 705	Crookston	MN	56716	218-281-4704		06/06/16
106	COMMRCL	600	1		Mr.	Jesse J.	Chalich	President		Northern Plains Railroad	PO Box 38	Fordville	ND	58231	701-229-3444		06/07/16
107	COMMRCL	600	1		Mr	Dan	Rickel	General Manager	Tomahawk Railway, Ltd. Partnership	Otter Tail Valley Railroad	200 N Mill St	Fergus Falls	MN	56537			

NORTH Dakota | Transportation
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June 5, 2019

JUN 10 2019

Metro COG
Case Plaza, Suite 232
1 – 2nd Street North
Fargo, ND 58102

Metropolitan Transportation Plan

To whom it may concern,

In consideration of cultural resources, I encourage consultation with the Fargo Historic Preservation Commission and the ND State Historical Society to identify any potential effects to historic properties and historic districts and to assist in avoidance, minimization or mitigation of effects.

Best,

Valerie Barbie
Cultural Resources Specialist, NDDOT

North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.state.nd.us/ndgs

June 10, 2019

Mr. Michael Maddox
Fargo-Moorhead Metro COG
1 – 2nd Street North
Fargo, ND 58102

Re: Fargo-Moorhead Metro COG – Metropolitan Transportation Plan Update
Comments on Final Transportation Plan

Dear Mr. Maddox,

The North Dakota Geological Survey (NDGS) appreciates the notification and opportunity to review and provide comment on this plan. The May 28, 2019 comment solicitation letter sent to us was reviewed on June 10, 2019.

Since several of the proposed transportation improvement projects occur along the Red and Sheyenne Rivers it may be beneficial to review some of the recently completed geologic mapping work completed in these areas.

We have recently completed some geologic mapping work in the Fargo area (May-2019), which identifies problematic areas where riverbank slumping along the Red and Sheyenne Rivers has occurred.

These maps and associated data sets can be found on our website at:

https://www.dmr.nd.gov/ndgs/landslides/

Please feel free to contact me at (701) 328-8000 or via email at fjanderson@nd.gov at any time if there are any questions or comments.

Sincerely,

North Dakota Geological Survey:

Fred Anderson

Fred J. Anderson
Geologist

FJA\

NORTH Dakota | Environmental Quality
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RECEIVED
JUN 20 2019

June 17, 2019

Michael Maddox
Senior Transportation Planner
One 2nd Street North
Case Plaza Suite 232
Fargo, ND 58102-4807

Re: Project Code: Fargo-Moorhead Metro COG Transportation Plan in Cass County

Dear Mr. Maddox:

This North Dakota Department of Environmental Quality has reviewed the information concerning the above-referenced project received at the department on May 31, 2019, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.

2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

3. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the department's website or by calling the Division of Water Quality (701-328-5210). Projects disturbing less than one acre are also required to have a permit to discharge storm water runoff if they are part of a larger common plan of development or sale that disturbs one or more acres. A permit is not required for routine maintenance activities performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

   Projects that discharge to a water body that has a total maximum daily load allocation or is listed as impaired under section 303(d) of the Federal CWA should ensure construction activity does not affect the water body.

   Slurry, residue and concrete wash water resulting from concrete paving or repair activities must be managed or treated to prevent the material from adversely affecting waters of the state.

The cities of Fargo, Horace and West Fargo, Cass County, North Dakota State University, and the North Dakota Department of Transportation are required to address post-construction storm water quality as part of the North Dakota Pollutant Discharge Elimination System (NDPDES) Small Municipal Separate Storm Sewer System (MS4) General Permit requirements. Check with local officials to be sure local storm water management considerations are addressed.

4. The proposed construction project includes many individual projects located within Cass County, ND. It is possible that some projects may be located over defined glacial drift aquifers, defined sensitive glacial drift aquifers, or within wellhead or source water protection areas. Care should be taken to avoid spills of any materials that may have an adverse effect on groundwater quality. All spills must be immediately reported to this department and appropriate remedial actions performed.

5. All necessary measures must be taken to minimize the disturbance of any asbestos-containing material and to prevent any asbestos fiber release episodes. Any facility that is to be renovated or demolished must be inspected for asbestos. Notification of the department's Division of Air Quality (701-328-5188) is required before any demolition. Removal of any friable asbestos-containing material must be accomplished in accordance with section 33-15-13-02 of the North Dakota air pollution control rules.

6. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

7. Many buildings constructed prior to 1978 have interior and exterior surfaces coated with lead-based paint. The Office of Housing and Urban Development (HUD), as well as other Federal Housing Authorities, have implemented requirements for reducing exposure to lead from lead-based paint during renovation activities. If the building/ or child-occupied facility receives Federal funding, LBP containing materials must be handled according to the agency's regulations and/or contract requirements, which may include the use of properly trained and state certified abatement contractors for testing, removal and disposal. In addition, notification to the department's Division of Air Quality (701-328-5188) is required 10 working days before any abatement occurs.

8. All solid waste materials must be managed and transported in accordance with the state's solid and hazardous waste rules. Appropriate efforts to reduce, reuse and/or recycle waste materials are strongly encouraged. As appropriate, segregation of inert waste from non-inert waste can generally reduce the cost of waste management. Further information on waste management and recycling is available from the department's Division of Waste Management at (701) 328-5166.

9. The NDDEQ UST Program does have historical and current underground storage tanks within Fargo, ND, see attached list.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Director
North Dakota Department of Environmental Quality

LDG:dlp
Attach.

Facility Report

City = Fargo

Friday, June 7, 2019

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
1	C I Farm Power Inc	3401 S 32nd Avenue	Fargo	3	Commercial	46.833181	-96.835417	Inactive
17	BlueLinx Corporation	3941 North 15th Avenue	Fargo	3	Railroad	46.898233	-96.847294	Inactive
19	Berkley Block	26 10th Street North	Fargo	3	Not Listed	46.876375	-96.794201	Inactive
24	ODay Equipment Inc	1301 NW 40th Street	Fargo	3	Commercial	46.893322	-96.848328	Inactive
29	American Linen Supply Company	206 NP Avenue	Fargo	3	Commercial	46.875835	-96.781905	Inactive
89	UHaul Company of Fargo	1436 Main Avenue	Fargo	3	Commercial	46.873758	-96.803381	Inactive
91	Main Avenue Center	1443 Main Avenue	Fargo	3	Commercial	46.875489	-96.804227	Inactive
121	Thompson Brothers Inc	801 40th Street NW	Fargo	3	Truck/Transporter	46.885273	-96.845660	Inactive
140	Northern Improvement Company	2500 9th Avenue South	Fargo	3	Contractor	46.865600	-96.820075	Inactive
157	Sahrs Sudden Service	601 4th St N	Fargo	3	Gas Station	46.877272	-96.825417	Inactive
164	City of Fargo Park District Maintenance Shop	1202 7th Ave N	Fargo	3	Local Government	46.883258	-96.798322	Inactive
215	Food Services of America	2700 Main Avenue	Fargo	3	Commercial	46.875703	-96.821477	Inactive
228	Fleet Farm Main Store	3730 SW 36th St	Fargo	3	Gas Station	46.821556	-96.834606	Active
235	Ames Sand and Gravel Inc	2702 1st Ave N	Fargo	3	Industrial	46.877764	-96.821685	Inactive
244	Northern Pipe Products	1302 39th St NW	Fargo	3	Industrial	46.892431	-96.844417	Active
246	F and C Supply Inc	2401 3rd Ave N	Fargo	3	Commercial	46.879543	-96.818228	Inactive
258	H V Johnston Culvert Company	1522 40th Street NW	Fargo	3	Industrial	46.897855	-96.849365	Inactive
260	Western Fuel Company	1002 3rd Ave N	Fargo	3	Gas Station	46.879678	-96.794500	Inactive
264	W W Walworks Inc	4001 West Main Avenue	Fargo	3	Auto Dealership	46.876457	-96.846302	Inactive
280	LTP Enterprises Inc	500 36th St S	Fargo	3	Commercial	46.868656	-96.839953	Active
282	North Dakota State University	1301 N 12th Ave	Fargo	3	State Government	46.890533	-96.798290	Active
288	West Park Auto Plaza	501 SW 40th ST	Fargo	3	Auto Dealership	46.870500	-96.846303	Inactive
289	Corwin Buick Toyota	201 SW 40th St	Fargo	3	Commercial	46.874186	-96.848131	Inactive
297	Firestone Tire Service Center	202 North 4th Street	Fargo	3	Commercial	46.878071	-96.784814	Inactive
304	Fargo Glass and Paint Company	1801 7th Ave N	Fargo	3	Commercial	46.883289	-96.809074	Inactive
319	Lehigh Portland Cement Co	1702 3rd Ave N	Fargo	3	Commercial	46.879361	-96.808423	Inactive
325	Sweeney Cleaners	1135 17th St N	Fargo	3	Commercial	46.889772	-96.807692	Inactive
349	Russ Honda West	3910 2nd Ave S	Fargo	3	Auto Dealership	46.874040	-96.843958	Inactive
351	Congress Inc	1402 39th St N	Fargo	3	Commercial	46.894780	-96.844641	Inactive
352	The Williams Company	3255 15th St S	Fargo	3	Truck/Transporter	46.833000	-96.801849	Inactive
357	Mid America Steel Inc	92 N P Avenue	Fargo	3	Industrial	46.874605	-96.779135	Inactive
373	Northwestern Equipment Inc	2750 Main Avenue	Fargo	3	Commercial	46.875464	-96.824092	Inactive
375	Super Valu Stores Inc	3501 12th Ave N	Fargo	3	Commercial	46.891258	-96.828844	Active

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
396	Swanston Equipment Company	3404 West Main Avenue	Fargo	3	Commercial	46.875864	-96.834850	Inactive
400	Executive Aviation	Hector Field	Fargo	3	Commercial	46.907694	-96.805519	Inactive
420	F M Lawn Equipment Company	10 N University Dr	Fargo	3	Commercial	46.876292	-96.797820	Inactive
426	Fargo Tank Company	4401 West Main Avenue	Fargo	3	Industrial	46.877917	-96.857444	Inactive
428	Sweeney Bros Tractor Company	1622 Main Avenue	Fargo	3	Commercial	46.875418	-96.807453	Inactive
465	The Video Station	702 North University Dri	Fargo	3	Gas Station	46.883313	-96.798361	Inactive
471	Union Storage and Transfer Company	4275 Main Avenue	Fargo	3	Commercial	46.876462	-96.853695	Inactive
472	Cablecom of Fargo	1024 Page Drive	Fargo	3	Utilities	46.863622	-96.827394	Inactive
478	University Discount	1445 S University	Fargo	3	Gas Station	46.858700	-96.798660	Inactive
500	City of Fargo Garbage Utility	2301 8th Ave N	Fargo	3	Local Government	46.885717	-96.816432	Inactive
519	Lincoln Mutual Life Insurance Company	711 N 2nd Avenue	Fargo	3	Commercial	46.878361	-96.791246	Inactive
548	United Parcel Service	3901 NW 12th Ave	Fargo	3	Commercial	46.891199	-96.846322	Active
568	Pan O Gold Baking Company	501 N University Dr	Fargo	3	Commercial	46.881711	-96.798074	Active
608	Cummins Diesel Sales Inc	4050 W Main Avenue	Fargo	3	Industrial	46.875958	-96.847340	Inactive
627	Daytons	;)	Fargo	3	Commercial	46.877186	-96.789803	Inactive
628	Traffic Safety Services	1543 1st Avenue S	Fargo	3	Commercial	46.874119	-96.805216	Inactive
748	North Dakota State Dept of Transportation	503 38th St S	Fargo	3	State Government	46.867717	-96.843367	Active
804	City of Fargo	402 23rd St N	Fargo	3	Local Government	46.880244	-96.817408	Active
810	Fargo Service Center	2302 Great Northern D	Fargo	3	Utilities	46.887231	-96.817131	Inactive
838	Jordan Millwork Company	1358 North 38th St	Fargo	3	Industrial	46.892658	-96.840959	Inactive
844	O K Tire Store Inc	102 23rd Street South	Fargo	3	Commercial	46.874720	-96.816258	Inactive
848	U S Post Office	657 2nd Avenue N	Fargo	3	Federal Non-Military	46.878140	-96.789827	Inactive
849	U S Courthouse	655 1st Avenue N	Fargo	3	Federal Non-Military	46.877076	-96.790103	Inactive
870	Dakota Fence Company	1110 25th Ave N	Fargo	3	Commercial	46.908700	-96.795889	Active
893	Midwest Motor Express Inc	314 27th St N	Fargo	3	Commercial	46.880292	-96.823500	Active
896	K Mart Store 3449	4305 13th Avenue Sout	Fargo	3	Commercial	46.861964	-96.854066	Inactive
898	K Mart 4057	2301 University Drive S	Fargo	3	Commercial	46.844832	-96.798944	Inactive
914	Duane Rogne	801 31st Ave North	Fargo	3	Not Listed	46.917530	-96.789871	Inactive
933	Ryder Truck Rental Inc	4020 4th Ave S	Fargo	3	Truck/Transporter	46.871675	-96.848358	Active
1030	Holiday Station Store 40	1402 Main Avenue	Fargo	3	Gas Station	46.874833	-96.801219	Inactive
1036	Holiday Station Store 219	3302 SW 13th Avenue	Fargo	3	Gas Station	46.860844	-96.833014	Inactive
1054	Fargo Laundry and Cleaners	1002 South 1st Avenue	Fargo	3	Commercial	46.873618	-96.794418	Inactive
1056	Dans Oil South	1220 South 24th Avenu	Fargo	3	Gas Station	46.843898	-96.797015	Inactive
1057	Petro Serve USA 087	2921 N Broadway	Fargo	3	Gas Station	46.914703	-96.786950	Active
1091	Mclaughlin Equipment Company Inc	320 South 27th Street	Fargo	3	Commercial	46.879994	-96.822483	Inactive
1095	Petro Serve USA 083	1340 34th St SW	Fargo	3	Gas Station	46.860944	-96.835500	Active
1097	Petro Serve USA 086	2903 Main Ave	Fargo	3	Gas Station	46.876150	-96.826361	Active

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
1100	Mini Mart 619	1833 S University Ave	Fargo	3	Gas Station	46.850800	-96.799125	Active
1102	Mini Mart 688	3201 N Broadway	Fargo	3	Gas Station	46.919392	-96.786633	Active
1104	Mini Mart 687	1201 N University	Fargo	3	Gas Station	46.890769	-96.798028	Active
1105	Mini Mart 686	1304 South 34th Street	Fargo	3	Commercial	46.861194	-96.836544	Inactive
1129	Dacotah Paper Company	1401 5th Avenue N	Fargo	3	Commercial	46.881676	-96.801201	Inactive
1185	Thompson Building	2902 1st Avenue North	Fargo	3	Commercial	46.878072	-96.826654	Inactive
1186	Great North Construction	1405 N 4th Avenue	Fargo	3	Contractor	46.880636	-96.801295	Inactive
1188	Twin City Construction Components Building	2011 Great Northern Dri	Fargo	3	Contractor	46.885968	-96.812423	Inactive
1208	Burlington Northern Railroad Company	801 Main Avenue	Fargo	3	Railroad	46.874659	-96.791131	Inactive
1209	Burlington Northern Railroad Company	Broadway and 5th Aven	Fargo	3	Railroad	46.881178	-96.787720	Inactive
1221	Holiday Station Store 106	805 South 10th St	Fargo	3	Gas Station	46.866636	-96.795397	Inactive
1222	Food N Fuel 1501	707 North 10th ST	Fargo	3	Gas Station	46.867602	-96.795077	Inactive
1230	McKee Enterprises	2715 12th Avenue North	Fargo	3	Commercial	46.890447	-96.822974	Inactive
1238	Beverage Wholesalers Inc	729 21st St N	Fargo	3	Commercial	46.883828	-96.813539	Inactive
1239	Zoesha	3333 North 7th Avenue	Fargo	3	Contractor	46.883600	-96.830528	Inactive
1279	Case Corporation	3401 N 1st Avenue	Fargo	3	Commercial	46.878541	-96.833801	Inactive
1313	John T Jones Construction Company	2213 N 7th Avenue	Fargo	3	Contractor	46.883387	-96.815538	Inactive
1325	Flying J Travel Plaza 685	3150 39th St SW Ste A	Fargo	3	Gas Station	46.832997	-96.845025	Active
1329	Tesoro 62081	1301 University Avenue	Fargo	3	Gas Station	46.861414	-96.798858	Inactive
1330	Tesoro 62080	3521 Main Avenue	Fargo	3	Gas Station	46.876667	-96.843436	Inactive
1331	Tesoro 62082	2109 S University Ave	Fargo	3	Gas Station	46.846517	-96.799233	Inactive
1333	Amoco SS 2113	1302 12th Avenue N	Fargo	3	Gas Station	46.890183	-96.798363	Inactive
1336	Tesoro 62078	3131 Broadway	Fargo	3	Gas Station	46.919033	-96.787003	Inactive
1337	Red Carpet West Acres	3441 13th Ave S	Fargo	3	Gas Station	46.861908	-96.836506	Active
1357	S and S Landscaping Company Inc	114 N 14th Street	Fargo	3	Commercial	46.877892	-96.801636	Inactive
1361	Dons Speed Lube	1345 South University D	Fargo	3	Gas Station	46.860682	-96.798619	Inactive
1362	Petro Serve USA 084	2110 S University Dr	Fargo	3	Gas Station	46.846561	-96.797892	Active
1367	Gerdau Ameristeel US, Inc.	3240 Main Avenue	Fargo	3	Industrial	46.875692	-96.798769	Inactive
1387	Mid States Truss	3320 W Main Ave	Fargo	3	Commercial	46.875813	-96.833529	Active
1388	Kotaco Fuels Inc	1902 7th Ave N	Fargo	3	Gas Station	46.882886	-96.812542	Active
1389	Doyles Yellow Checker Cab Inc	2704 5th Avenue South	Fargo	3	Commercial	46.869042	-96.821561	Inactive
1417	Gateway Chevrolet	501 38th ST S	Fargo	3	Auto Dealership	46.868914	-96.844061	Inactive
1420	Star Oil Company	1421 North 7th Avenue	Fargo	3	Gas Station	46.883320	-96.802144	Inactive
1431	Wrigley Mechanical Inc	303 14th Street North	Fargo	3	Contractor	46.879598	-96.800817	Inactive
1434	Berg Grain and Produce	2202 5th Avenue North	Fargo	3	Commercial	46.881445	-96.815387	Inactive
1447	George E Haggart Inc	1802 7th Avenue North	Fargo	3	Gas Station	46.883058	-96.809106	Inactive
1448	Red Owl Stores Whsl	3030 West Main Ave	Fargo	3	Commercial	46.875794	-96.827723	Inactive

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
1449	Hall GMC Inc	4242 W Main Avenue	Fargo	3	Auto Dealership	46.875606	-96.853156	Inactive
1450	Dons Car Washes Inc	I-29 at 13th Ave S	Fargo	3	Gas Station	46.862001	-96.845675	Inactive
1451	Dons Car Wash	1802 Main Avenue	Fargo	3	Gas Station	46.875008	-96.810569	Inactive
1452	Petro Serve USA 088	205 NP Avenue	Fargo	3	Gas Station	46.876056	-96.781822	Active
1456	Dacotah Paper Company	3940 15th Ave N	Fargo	3	Commercial	46.897492	-96.847303	Active
1460	M and H Gas	1602 Main Ave	Fargo	3	Gas Station	46.875189	-96.807014	Active
1476	Hertz Rent A Car	PO Box 627	Fargo	3	Commercial	46.908640	-96.803242	Inactive
1484	Agassiz Food and Gas	721 South University Dri	Fargo	3	Gas Station	46.866956	-96.798928	Inactive
1487	Pepsi Cola Bottling Company	3802 15th Avenue North	Fargo	3	Commercial	46.896020	-96.841142	Inactive
1495	B H Chesley Company	2315 7th Avenue North	Fargo	3	Auto Dealership	46.883322	-96.816952	Inactive
1528	Border Cities Service	30 North University Driv	Fargo	3	Other	46.876460	-96.798410	Inactive
1530	Dahl Honey	2114 1st Avenue S	Fargo	3	Commercial	46.874599	-96.813786	Inactive
1541	Laffens Food and Gas Center	2501 7th Ave N	Fargo	3	Gas Station	46.882939	-96.821722	Inactive
1542	S S Landscaping	2777 Fiechtner Dr	Fargo	3	Contractor	46.869751	-96.824561	Active
1544	Stanley B Goodman Investments	3215 W Main Avenue	Fargo	3	Commercial	46.876273	-96.831870	Inactive
1547	Petro Serve USA 082	3902 W Main Ave	Fargo	3	Gas Station	46.875735	-96.844260	Active
1728	Chandler Wilbert Vault Company	4525 University Drive S	Fargo	3	Commercial	46.811049	-96.804607	Inactive
1733	Lehigh Cement Company	1702 North 7th Avenue	Fargo	3	Commercial	46.883109	-96.807844	Inactive
1734	Fritz Electric Inc	1346 3rd Avenue	Fargo	3	Commercial	46.879320	-96.799513	Inactive
1735	Stamart LIQ Market	3220 12th Ave N	Fargo	3	Other	46.890100	-96.832006	Inactive
1737	Caseys General Store 3349	2002 25th St S	Fargo	3	Gas Station	46.850777	-96.819504	Active
1760	Simonson Station Stores Inc	2400 Main Avenue	Fargo	3	Gas Station	46.875503	-96.818486	Inactive
1850	Corwin Chrysler	301 South 38th Street	Fargo	3	Auto Dealership	46.872162	-96.842264	Inactive
1857	Roadway Express Inc	625 N 29th Street	Fargo	3	Gas Station	46.877272	-96.825417	Inactive
1859	Lewis Trucklines Inc	4001 NW 12th Avenue	Fargo	3	Truck/Transporter	46.891525	-96.849714	Inactive
1862	Fargo Implement Company	4515 South University D	Fargo	3	Commercial	46.811146	-96.804601	Inactive
1873	Biosciences Research Lab	1605 Albrecht Boulevard	Fargo	3	Federal Non-Military	46.899430	-96.802624	Inactive
1874	Meinecke Johnson Company	5 N 14th ST	Fargo	3	Commercial	46.876326	-96.800736	Inactive
1906	CenturyLink	302 29th Street North	Fargo	3	Commercial	46.879558	-96.826494	Inactive
1907	US West Communications	601 North 15th Street	Fargo	3	Commercial	46.882624	-96.803410	Inactive
1908	US West Communications	222 W 4th ST	Fargo	3	Commercial	46.878240	-96.784859	Inactive
1943	Bjornson Oil	734 N University Dr	Fargo	3	Gas Station	46.882897	-96.799839	Active
1995	Department of Veterans Affairs	2101 Elm St N	Fargo	3	Federal Military	46.906520	-96.776724	Active
2005	Reiles Transfer	1707 7th Avenue North	Fargo	3	Truck/Transporter	46.883289	-96.807885	Inactive
2014	Pizza Hut	1601 South University D	Fargo	3	Gas Station	46.855482	-96.798665	Inactive
2021	North Dakota Air National Guard	1400 N 28th Avenue	Fargo	3	Federal Military	46.911810	-96.799331	Inactive
2244	Northport Service (aka Dons North)	2501 N Broadway	Fargo	3	Gas Station	46.910433	-96.786092	Inactive

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
2245	Simonson Station Store	3810 W Main Ave	Fargo	3	Gas Station	46.875744	-96.843436	Active
2263	Interstate Detroit Diesel Allison	3902 N 12th Avenue	Fargo	3	Commercial	46.890476	-96.844715	Inactive
2282	Teds Northport Tesoro	2740 N Broadway	Fargo	3	Gas Station	46.911047	-96.788028	Active
2283	Alloway Mfg Inc	1330 43rd St NW	Fargo	3	Commercial	46.893037	-96.856410	Inactive
2303	Nash Finch Company	3101 North 12th Avenue	Fargo	3	Commercial	46.890619	-96.828839	Inactive
2304	American Freight Systems Inc	2502 7th Avenue North	Fargo	3	Truck/Transporter	46.883096	-96.819765	Inactive
2305	Metro Service Center	415 North 5th ST	Fargo	3	Commercial	46.880179	-96.785914	Inactive
2307	Thorstad Service	1123 1st Avenue North	Fargo	3	Gas Station	46.877497	-96.795955	Inactive
2337	Caseys General Store 3354	301 10th St N	Fargo	3	Gas Station	46.879725	-96.793728	Active
2338	Caseys General Store 3353	2701 S University Dr	Fargo	3	Gas Station	46.839028	-96.799528	Active
2339	Caseys General Store 3352	1462 N Broadway	Fargo	3	Gas Station	46.897603	-96.787872	Inactive
2340	Caseys General Store 3350	1901 N University Dr	Fargo	3	Gas Station	46.904850	-96.796006	Active
2341	Caseys General Store 3351	1401 S University Dr	Fargo	3	Gas Station	46.859411	-96.798814	Active
2344	Community Family Market	602 23rd St S	Fargo	3	Gas Station	46.868625	-96.816717	Active
2357	Dons Service Center South	1701 South University D	Fargo	3	Gas Station	46.853772	-96.798711	Inactive
2358	Gateway Service Center Inc	330 Main Ave	Fargo	3	Gas Station	46.872369	-96.783697	Active
2370	Goodyear Auto Service Center	401 N Broadway	Fargo	3	Commercial	46.880127	-96.787548	Inactive
2389	Octagon Investment	65 North 5th Street	Fargo	3	Gas Station	46.876563	-96.785905	Inactive
2393	Villa Nazareth dba Friendship Inc	3004 S 11th ST	Fargo	3	Other	46.834690	-96.795309	Inactive
2398	Northwest Beverage Inc	1358 N 39th St	Fargo	3	Industrial	46.894606	-96.844825	Inactive
2420	Keebler Distribution Center	112 North University Dri	Fargo	3	Commercial	46.877578	-96.798442	Inactive
2444	Federal Aviation Administration	;)	Fargo	3	Federal Non-Military	46.908573	-96.804183	Inactive
2445	Federal Aviation Administration	RR 2 Box 97	Fargo	3	Federal Non-Military	46.918792	-96.822265	Inactive
2446	Federal Aviation Administration	RR 2 Box 97	Fargo	3	Federal Non-Military	46.918737	-96.822166	Inactive
2485	Fargo Freight Terminal and Warehouse	2301 7th Avenue N	Fargo	3	Truck/Transporter	46.883275	-96.816788	Inactive
2499	Jacob Gust Farm	RR 2 Box 187	Fargo	3	Farm	46.942959	-96.926355	Inactive
2500	Bergseth Brothers Company Inc	501 23rd Street North	Fargo	3	Industrial	46.881721	-96.816494	Inactive
2510	Corwin Toyota	222 S 40th Street	Fargo	3	Commercial	46.872906	-96.845575	Inactive
2520	Valley Aviation	1803 23rd Avenue North	Fargo	3	Air Taxi (Airline)	46.908631	-96.806669	Inactive
2525	Greyhound Bus Lines	402 NP Avenue	Fargo	3	Truck/Transporter	46.875078	-96.785061	Inactive
2530	Plymouth Congregational Church	901 Broadway	Fargo	3	Other	46.885929	-96.787635	Inactive
2546	Consolidated Freightways	601 N 24th Street	Fargo	3	Truck/Transporter	46.882372	-96.817954	Inactive
2555	Reiles Transfer and Delivery Inc	4001 32nd St N	Fargo	3	Commercial	46.936770	-96.821339	Active
2613	Advance United Expressways Terminal	725 18th Street N	Fargo	3	Truck/Transporter	46.883628	-96.808688	Inactive
2632	Aamco Transmission	201 SW 38th Street	Fargo	3	Commercial	46.873933	-96.842469	Inactive
2634	Cass County Juvenile Justice Building	1015 3rd Avenue South	Fargo	3	Local Government	46.871768	-96.794831	Inactive
2666	American Specialty Foods Inc	1301 North 39 Street	Fargo	3	Commercial	46.892992	-96.844303	Inactive

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
2667	Booth Delivery Service Inc	202 N 15th Street	Fargo	3	Commercial	46.878461	-96.804050	Inactive
2669	Target Stores	4202 13th Avenue S	Fargo	3	Commercial	46.861519	-96.851220	Inactive
2693	Fargo Country Club	509 S 26th Avenue	Fargo	3	Commercial	46.842861	-96.786817	Inactive
2755	Fairway Foods Inc	3225 NW 12th Ave	Fargo	3	Commercial	46.890561	-96.830986	Inactive
2763	Northwest Airlines Inc	;)	Fargo	3	Air Taxi (Airline)	46.910284	-96.806074	Inactive
2813	National Weather Service	1801 23rd Avenue North	Fargo	3	Federal Non-Military	46.908631	-96.806640	Inactive
2919	Kum and Go Store 818	2237 13th Ave S	Fargo	3	Gas Station	46.861781	-96.817056	Active
2920	Kum and Go Store 815	1318 South 25th Avenu	Fargo	3	Gas Station	46.843158	-96.800197	Inactive
2934	Holiday Station Store 125	554 North 6th Avenue	Fargo	3	Gas Station	46.882042	-96.787264	Inactive
2935	Holiday Station Store 124	101 N University Dr	Fargo	3	Gas Station	46.876650	-96.799600	Active
2955	Sears Roebuck and Company	3902 13th Ave S	Fargo	3	Commercial	46.859085	-96.844147	Inactive
2976	Metro Service Center	417 North 5th Street	Fargo	3	Commercial	46.880190	-96.785906	Inactive
2977	Metropolitan Federal Bank	215 North 5th Street	Fargo	3	Commercial	46.878177	-96.785927	Inactive
3018	Headquarters Station	637 NP Avenue	Fargo	3	Local Government	46.876038	-96.789390	Inactive
3019	Fargo Fire Department	1105 25 Avenue North	Fargo	3	Local Government	46.909969	-96.794830	Inactive
3020	Fargo Fire Department	1202 24 Avenue South	Fargo	3	Local Government	46.843899	-96.796882	Inactive
3021	Fargo Fire Department	2701 1st Avenue South	Fargo	3	Local Government	46.874940	-96.817919	Inactive
3063	KXJB TV	4302 South 13th Avenu	Fargo	3	Commercial	46.860778	-96.854150	Inactive
3068	Prairie Public Television	207 North 5th Street	Fargo	3	Other	46.878109	-96.785927	Inactive
3109	Keebler Distribution Center	3502 SW 36th Street	Fargo	3	Industrial	46.832730	-96.835899	Inactive
3115	USDA	N Crops Science Lab	Fargo	3	Federal Non-Military	46.892851	-96.807334	Inactive
3151	Federal Aviation Administration	RR 2 Box 97	Fargo	3	Federal Non-Military	46.918669	-96.822198	Inactive
3237	Cass Clay Creamery Inc	500 North 21st Street	Fargo	3	Contractor	46.881794	-96.814564	Inactive
3238	Cass Clay Creamery Inc	200 North 20th Street	Fargo	3	Commercial	46.878277	-96.812373	Inactive
3266	Cossette Land Management(Ruan Leasing)	1241 NW 41st Street	Fargo	3	Commercial	46.891739	-96.855908	Inactive
3473	Phillips Travel Centers	4350 13th Ave SW	Fargo	3	Gas Station	46.861414	-96.857536	Active
3536	Broadway Service	829 Broadway	Fargo	3	Gas Station	46.885808	-96.787475	Inactive
3726	Hector Airport	N University	Fargo	3	Air Taxi (Airline)	46.906828	-96.806962	Inactive
3837	National Car Rental	1702 Ave N	Fargo	3	Commercial	46.876940	-96.781139	Inactive
3885	Knox Lumber Company	701 36th Street N	Fargo	3	Commercial	46.883726	-96.836519	Inactive
4050	Caseys General Store 3360	204 42nd St S	Fargo	3	Gas Station	46.873694	-96.850478	Active
4162	Cass County Courthouse	215 South 9th Street	Fargo	3	Local Government	46.872318	-96.792976	Inactive
4305	Cardinal Muench Seminary	100 NE 35th Avenue	Fargo	3	Other	46.922967	-96.769082	Inactive
4309	Municipal Airport Authority	3130 Dakota Dr	Fargo	3	Local Government	46.918717	-96.827564	Active
4445	Car Rental Shop	;)	Fargo	3	Commercial	46.919505	-96.825884	Inactive
4517	Lavelle Lumber Company	115 South 31st Street	Fargo	3	Commercial	46.874275	-96.828864	Inactive
4686	Magnum Ltd Fargo (Terminal Yard)	1015 40th St NW	Fargo	3	Commercial	46.887735	-96.845722	Active

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
4828	Fargo Mills Inc	205 North 19th Street	Fargo	3	Commercial	46.877855	-96.811789	Inactive
4835	Montes on Main	1122 Main	Fargo	3	Gas Station	46.874732	-96.796055	Inactive
5246	S/S Electronics	809 4th Avenue N	Fargo	3	Other	46.880565	-96.791912	Inactive
5261	Holiday Stationstore #96	3040 25th St S	Fargo	3	Gas Station	46.834131	-96.786286	Active
5280	Automated Maintenance Service	408 North 3rd Street	Fargo	3	Commercial	46.880244	-96.783274	Inactive
5293	Edgewood Golf Course	19 NE Golf Course Roa	Fargo	3	Local Government	46.927401	-96.766985	Inactive
5357	Hector International Airport	1801 23rd Avenue N	Fargo	3	Local Government	46.908631	-96.806640	Inactive
5494	Cenex Convenience Store	1301 Page Drive	Fargo	3	Gas Station	46.861183	-96.827672	Inactive
5602	Mini Mart 689	2201 18th St S	Fargo	3	Gas Station	46.845467	-96.818894	Active
5646	Fargo South Pointe (Tesoro)	3202 S 33rd St	Fargo	3	Gas Station	46.832406	-96.832531	Active
5657	Concrete Sectional Culvert	1910 N 1st Ave	Fargo	3	Industrial	46.877145	-96.810541	Inactive
5683	J C Penney	Box 9978	Fargo	3	Commercial	46.857352	-96.847546	Inactive
5705	University of North Dakota	1919 North Elm Street	Fargo	3	State Government	46.905068	-96.776714	Inactive
5903	Menards	1623 SW 38th Street	Fargo	3	Commercial	46.856022	-96.843108	Inactive
6026	Caseys General Store 3365	3545 25th St S	Fargo	3	Gas Station	46.824739	-96.819944	Active
6027	Love It Furniture	2520 University Drive	Fargo	3	Commercial	46.841502	-96.798216	Inactive
6039	Keiths Oil Company	1534 North 1st Avenue	Fargo	3	Petroleum Distributor	46.886978	-96.792694	Inactive
6213	North Dakota State University	1235 Bolley Drive	Fargo	3	State Government	46.891564	-96.803932	Inactive
6217	The Forum	101 N 5th Street	Fargo	3	Commercial	46.877066	-96.785986	Inactive
6319	Roman Meal Milling Company	3301 NW 12 Avenue	Fargo	3	Industrial	46.890697	-96.832154	Inactive
6405	Midstates Electric Inc	601 NW 29th Street	Fargo	3	Contractor	46.882128	-96.825056	Inactive
6474	A Transmission City	3151 W Main Avenue	Fargo	3	Commercial	46.876083	-96.829619	Inactive
6522	Sacred Heart Convent	1101 South 32nd Avenu	Fargo	3	Other	46.864201	-96.815530	Inactive
6638	Champion Auto 391	2820 N Broadway	Fargo	3	Commercial	46.912208	-96.787947	Inactive
6639	Champion Auto 392	2221South 13th Avenue	Fargo	3	Commercial	46.861931	-96.816111	Inactive
6675	Bauer Built Tires	4001 SW 4th Avenue	Fargo	3	Commercial	46.871796	-96.846047	Inactive
6696	Gjervold Motor Company	1303 North First Avenue	Fargo	3	Gas Station	46.877507	-96.798605	Inactive
6707	J Care Service Center	3152 39th St SW	Fargo	3	Gas Station	46.833854	-96.845589	Active
6743	Dons Car Wash	2727 13th Ave SW	Fargo	3	Gas Station	46.861728	-96.822796	Active
6782	Hertz Rent A Car	1725 North 23rd Ave	Fargo	3	Commercial	46.908629	-96.805527	Inactive
6789	NDANG Organizational Shop #2	3920 N 31st Street	Fargo	3	Other	46.931585	-96.824956	Inactive
6792	Petro Travel Center	4510 19th Ave SW	Fargo	3	Gas Station	46.849972	-96.865933	Active
10000	Accent Improvement Company	325 North 25th Street	Fargo	3	Contractor	46.879892	-96.819288	Inactive
10013	Raymond Cossette Trucking	1325 41st Street NW	Fargo	3	Truck/Transporter	46.892788	-96.850850	Inactive
10015	SCR Coaches	3210 Feichtner	Fargo	3	Truck/Transporter	46.865599	-96.830032	Inactive
10018	Sanford Medical Center Broadway	801 Broadway	Fargo	3	Aircraft Owner	46.884060	-96.784758	Active
10042	US Postal Service	;)	Fargo	3	Federal Non-Military	46.857960	-96.832113	Inactive

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10044	Petro Serve USA 080	4440 9th Ave SW	Fargo	3	Gas Station	46.866713	-96.860378	Active
10046	Holiday Stationstore #399	1902 45th St SW	Fargo	3	Gas Station	46.850709	-96.861694	Active
10056	Fargo Municipal Airport	1704 Gen Aviation Drive	Fargo	3	Local Government	46.876940	-96.781139	Inactive
10065	Caseys General Store 3366	4301 13th Ave S	Fargo	3	Gas Station	46.861960	-96.853687	Active
10068	Petro Serve USA 085	3820 12th Ave N	Fargo	3	Gas Station	46.890431	-96.843100	Active
10069	Butler Machinery Company	3402 36th St SW	Fargo	3	Commercial	46.828787	-96.838876	Active
10078	City of Fargo Water Treatment Plant	1308 5th Street South	Fargo	3	Local Government	46.861254	-96.787624	Inactive
10091	Titan Machinery	4001 38th Street SW	Fargo	3	Truck/Transporter	46.817949	-96.840563	Inactive
10092	South Plaza	1621 South University	Fargo	3	Commercial	46.855276	-96.798704	Inactive
10098	Asplin Excavating Inc.	3100 41st St SW	Fargo	3	Commercial	46.834641	-96.848973	Active
10103	Phillips Travel Centers	2501 23rd Ave S	Fargo	3	Gas Station	46.844347	-96.820053	Active
10107	Laneys Inc	55 South 27th Street	Fargo	3	Industrial	46.875092	-96.821410	Inactive
10132	Integrity Windows	1616 43rd Street N W	Fargo	3	Not Listed	46.900004	-96.856249	Inactive
10146	Food Services of America	4101 15th Ave NW	Fargo	3	Other	46.897487	-96.851474	Inactive
10155	Verizon Wireless	4121 4th Ave SW	Fargo	3	Utilities	46.871807	-96.848821	Inactive
10217	Fargo Air Inc	1700 Block of 19th Aven	Fargo	3	Not Listed	46.904711	-96.806004	Inactive
10287	Border States Paving Inc.	4101 North 32nd Street	Fargo	3	Contractor	46.936203	-96.829135	Inactive
10295	Mark Brodshaug Farm	4248 168th Ave	Fargo	3	Farm	46.812170	-96.836098	Inactive
10314	Surplus Tractor Parts	3215 Main Avenue	Fargo	3	Commercial	46.876273	-96.831870	Inactive
10359	Nichelson Oil Inc	4402 15th Avenue North	Fargo	3	Gas Station	46.897138	-96.859829	Inactive
10373	Nichelson Oil Inc	2305 7th Avenue North	Fargo	3	Gas Station	46.883300	-96.816835	Inactive
10381	Fargo Freightliner	3440 36th Street so w	Fargo	3	Truck/Transporter	46.875910	-96.781764	Inactive
10383	Sahr Oil Co Inc bulk plant	1800 3rd Ave N	Fargo	3	Petroleum Distributor	46.879361	-96.809770	Inactive
10516	Sprint Fargo POP	2505 33rd Ave SW	Fargo	3	Utilities	46.843007	-96.831150	Active
10533	Holiday Stationstore #454	1020 19th Ave N	Fargo	3	Gas Station	46.904674	-96.794218	Active
10538	Stamart 5	3500 12th Ave N	Fargo	3	Gas Station	46.890409	-96.835112	Active
10541	SES Vanderhave	5908 52nd Ave South	Fargo	3	Commercial	46.803818	-96.885377	Inactive
10543	Autobahn LLC Hector Airport	2911 32nd Ave N	Fargo	3	Commercial	46.919492	-96.828243	Active
10596	Caseys General Store 3369	2401 45th St SW	Fargo	3	Gas Station	46.843038	-96.862328	Active
10609	Longfellow Elementary School	20 29th Ave NE	Fargo	3	Local Government	46.915191	-96.775601	Inactive
10634	Fargo South High School	1840 South 15th Avenu	Fargo	3	Local Government	46.857505	-96.811500	Inactive
10646	Integrity Motors Building	1617 Main Avenue	Fargo	3	Auto Dealership	46.875693	-96.809039	Inactive
10649	Greyhound Bus Fueling Site	417 5th Street North	Fargo	3	Commercial	46.880190	-96.785906	Inactive
10656	Holiday Stationstore #721	4377 45th St S	Fargo	3	Gas Station	46.815228	-96.861524	Active
10657	Sams Club 8172	4831 13th Ave S	Fargo	3	Gas Station	46.862122	-96.867758	Active
10659	City of Fargo Metro Garage	650 23rd St N	Fargo	3	Local Government	46.882705	-96.816764	Active
10661	Cashwise Little Dukes	1401 33rd St SW	Fargo	3	Commercial	46.859600	-96.832667	Active

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10662	Holiday Stationstore #720	1510 32nd Ave S	Fargo	3	Gas Station	46.832492	-96.803175	Active
10667	Red River Human Services	15 Broadway	Fargo	3	Local Government	46.875184	-96.787625	Inactive
10669	North Dakota State University	Old Naval Reserve Build	Fargo	3	State Government	46.891188	-96.805701	Inactive
10673	Tools	SE Corner of I-29 and M	Fargo	3	Commercial	46.875290	-96.838908	Inactive
10680	Berg Fargo Motor	324 NP Avenue	Fargo	3	Commercial	46.875775	-96.784103	Inactive
10683	Collins Construction	2705 5th Avenue South	Fargo	3	Contractor	46.869907	-96.821304	Inactive
10691	Hector International Airport Terminal	2801 32nd Ave NW	Fargo	3	Commercial	46.919596	-96.824600	Active
10719	A H Bennett Company	1532 40th Street NW	Fargo	3	Not Listed	46.898057	-96.849361	Inactive
10753	Loves Travel Stop 353	3220 39th St S	Fargo	3	Gas Station	46.832143	-96.845788	Active
10765	Inland Truck Parts Company	3525 38th St S	Fargo	3	Commercial	46.825647	-96.841934	Inactive
10776	Dons Express Car Wash	2500 52nd Ave S	Fargo	3	Gas Station	46.802910	-96.819378	Active
10778	Holiday Stationstore #418	2755 Brandt Dr S	Fargo	3	Gas Station	46.836914	-96.863019	Active
10798	Discovery Middle School	1717 40th Ave S	Fargo	3	Local Government	46.819758	-96.810837	Active
10799	Kennedy Elementary School	4401 42nd St S	Fargo	3	Local Government	46.813712	-96.852412	Active
10800	Jefferson	1701 S 4th Ave	Fargo	3	Local Government	46.871252	-96.809164	Active
10827	Caseys General Store 3370	5680 23rd Ave S	Fargo	3	Gas Station	46.843443	-96.881382	Active
10831	Gary Griffeth Insurance	324 North University Dr	Fargo	3	Other	46.880220	-96.798504	Inactive
10862	Caseys General Store 3296	4405 45th St S	Fargo	3	Gas Station	46.814322	-96.862332	Active
10863	Former Lileks Oil AST Bulk Plant	331 23rd Street North	Fargo	3	Petroleum Distributor	46.880913	-96.816243	Inactive
10908	North Park Maintenance Shop	550 15th St N	Fargo	3	Local Government	46.882014	-96.803637	Active
10920	Union Storage and Transfor Company	1026 NP Avenue	Fargo	3	Commercial	46.875951	-96.794477	Inactive
10930	Royal Logistics	4455 33rd St N	Fargo	3	Truck/Transporter	46.934772	-96.832939	Active
10933	Former Collins Construction	27045th Avenue South	Fargo	3	Contractor	46.870361	-96.822075	Inactive
10942	Southpointe Service Center	3231 33rd St S	Fargo	3	Other	46.831247	-96.833560	Active
10963	GTC Parking Lot	4th Street and NP Aven	Fargo	3	Local Government	46.875327	-96.785095	Inactive
10965	Landmark Properties	3302 15th Street South	Fargo	3	Commercial	46.828776	-96.803310	Inactive
10988	Woodrow Wilson School (Former)	315 North University Dri	Fargo	3	Local Government	46.879989	-96.797616	Inactive
10990	Caseys General Store 3477	5151 Prosperity Way S	Fargo	3	Gas Station	46.804188	-96.826755	Active
10993	Kilbourne Group	63 5th St N	Fargo	3	Commercial	46.876462	-96.786005	Inactive
10995	Sanford Southpoint Clinic	2400 32nd Ave S	Fargo	3	Other	46.831661	-96.818333	Active
11002	Saint Marks Church	620 4th Avenue North	Fargo	3	Other	46.879884	-96.788237	Inactive
11022	Thunder Road	2902 Thunder Road	Fargo	3	Other	46.837501	-96.843204	Active
11024	Former Kerr-McGee Oil-Univ. Deep Rock	401 North Unvirsity Driv	Fargo	3	Not Listed	46.880756	-96.797777	Inactive
11026	Caseys General Store 3541	3202 43rd St S	Fargo	3	Gas Station	46.832101	-96.855778	Active
11027	Parking Lot	93 NP Ave N	Fargo	3	Not Listed	46.876081	-96.780741	Inactive
11037	Sanford South University Hospital	1720 South University D	Fargo	3	Other	46.852817	-96.798149	Active
11038	Sanford Health Medical Building	1717 South University D	Fargo	3	Other	46.853151	-96.798746	Active

Facility ID	Facility	Address	City	Region	Facility Type	Latitude	Longitude	Status
11039	Sanford Medical Center Fargo	5225 23rd Avenue Sout	Fargo	3	Other	46.845432	-96.876480	Active
11044	Border States Electric	105 25th St North	Fargo	3	Commercial	46.878921	-96.818716	Inactive
11048	Cobalt Rehabilitation Hospital	4671 38th Street South	Fargo	3	Utilities	46.810174	-96.840074	Active
11052	Cash Wise 3050	4907 Timber Parkway S	Fargo	3	Not Listed	46.804577	-96.830544	Active

Number of Records 333

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
3319 UNIVERSITY DRIVE
BISMARCK, NORTH DAKOTA 58504-7565

RECEIVED
JUN 14 2019

June 12, 2019

NWO-2019-00975-BIS

Metro COG
1 - 2nd Street North, Case Plaza, Suite 232
Fargo, ND 58102

Dear Sir or Madam:

This is in response to your letter dated 05/28/2019, requesting comments on the proposed Metropolitan Transportation Plan with multiple bicycle, pedestrian, and roadway projects. The projects are located within the City of Fargo, Cass County, North Dakota.

U. S. Army Corps of Engineers Regulatory Offices administer Section 10 of the Rivers and Harbors Act (Section 10) and Section 404 of the Clean Water Act (Section 404). A Section 10 permit would be required for work impacting navigable waters, this includes work over, through, or under Section 10 waters. Section 10 waters in North Dakota are the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River (south of the railroad tracks in Jamestown, North Dakota), Bois de Sioux River, Red River of the North, and Upper Des Lacs Lake. A Section 404 permit would be required for the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

Based on the information contained in your letter and on your website, the Corps has determined that your proposed projects may need a Clean Water Act Section 404 permit. The permit application and instructions for completing the application may be found at: http://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Obtain-a-Permit. Be sure to accurately describe all proposed work and construction methodology. Once the application is complete, mail it to the letterhead address or to the email address below.

The North Dakota Regulatory office can accept (and prefers) electronic submissions to the following email: CENWO-OD-RND@usace.army.mil.

Please refer to identification number NWO-2019-00975-BIS in any correspondence concerning this project. If you have any questions, please contact Jeremy Nygard at U.S. Army Corps of Engineers, North Dakota Regulatory Office, 3319 University Drive, Bismarck, North Dakota 58504-7565, by email at *Jeremy.S.Nygard@usace.army.mil*, or telephone at (701) 255-0015 X 2006. For more information regarding our program, please visit our website at *http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota.aspx*.

Sincerely,

for Jason Renschler
Acting State Program Manager
North Dakota

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

JUN 12 2019

RECEIVED
JUN 17 2019

Planning, Programs, and Project Management Division

Mr. Michael Maddox
Fargo-Moorhead Metropolitan Council of Governments
One 2nd Street North, Casa Plaza Suite 232
Fargo, North Dakota 58102-4807

Dear Mr. Maddox:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated May 28, 2019 (received May 31, 2019) regarding the environmental review of the Metro COG Metropolitan Transportation Plan update, in Fargo, North Dakota. The project area is land located outside of the Corps, Omaha District's civil works boundary; therefore, we cannot provide specific comments on impacts to Corps owned or operated lands or environmental-based comments on the project. For these type of comments you will need to contact our St. Paul District as they have civil works jurisdiction over this area. Please direct all future correspondence regarding this project to the following address:

St. Paul District
U.S. Army Corps of Engineers
St. Paul District
Attention: Mr. Chad Konickson, CEMVP-OP-R
180 Fifth Street East, Suite 700
St. Paul, Minnesota 55101

This project is located within the Corps' State of North Dakota regulatory boundary. As such, any proposed placement of dredged or fill material into waters of the United States will require Department of the Army authorization under Section 404 of the Clean Water Act. Inquiries on Section 404 permit requirements should be directed to the Bismarck Regulatory Office. Preliminary and final project plans should be sent to the following address:

U.S. Army Corps of Engineers
Bismarck Regulatory Office
Attention: Ms. Patricia McQueary, CENWO-ODR-ND
3319 University Drive
Bismarck, North Dakota 58504-7565

If you have any questions, please contact Ms. Shelly McPherron of my staff at (402) 995-2507 or michelle.m.mcpherron@usace.army.mil and reference PD# 8193 in the subject line.

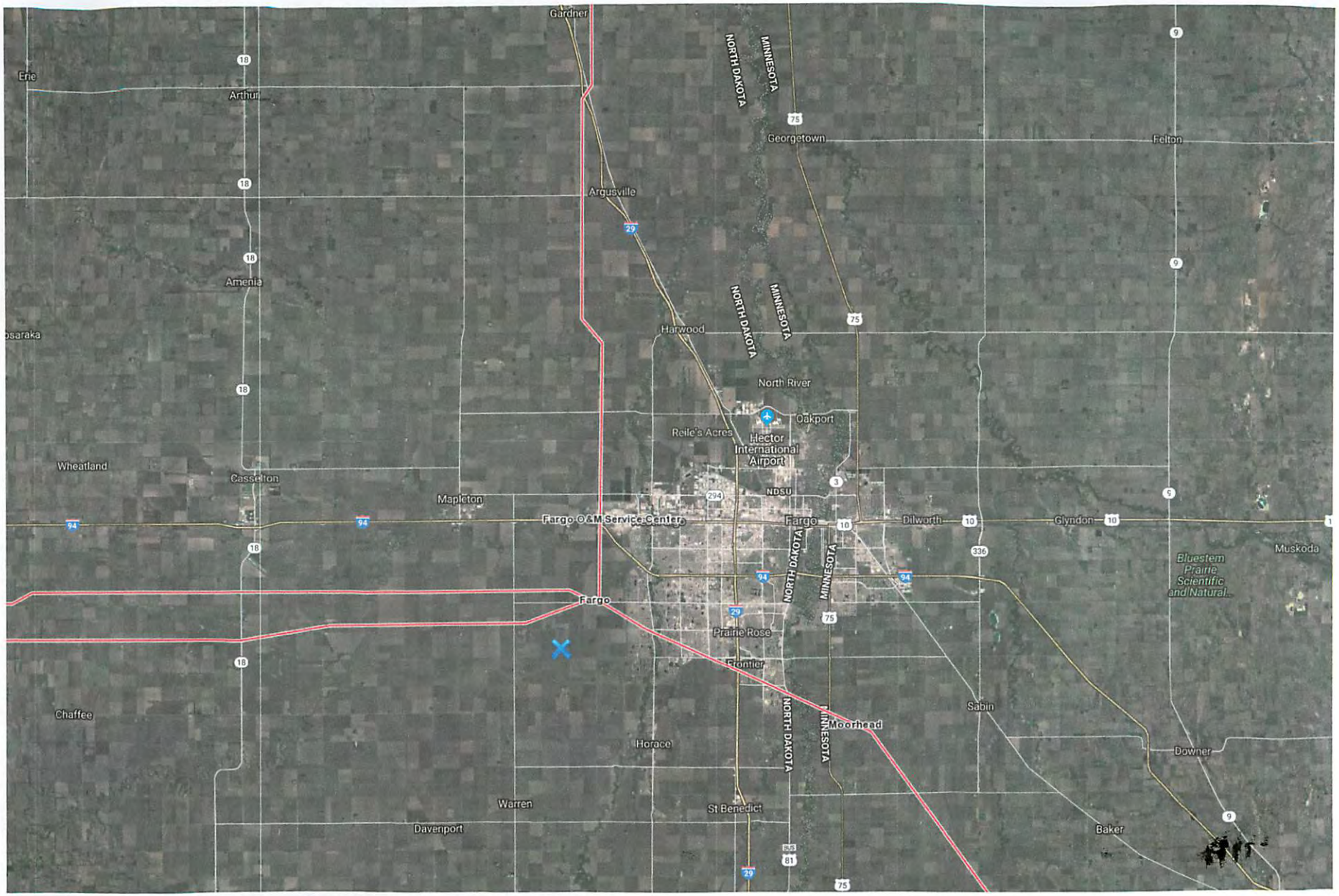
Sincerely,

Eric A. Laux, PMP
Chief, Environmental & Cultural Resources

From: Wood, Lowell <AWood@WAPA.GOV>
Sent: Tuesday, June 18, 2019 11:59 AM
To: Michael Maddox <maddox@fmmetrocog.org>
Cc: Diede, Randy <Diede@WAPA.GOV>; Ibeneme, Bob <Ibeneme@WAPA.GOV>
Subject: Fargo-Moohead Metro COG / Transportation Plan

Mr. Maddox:
As per our phone call on June 18, 2019, we are not able to access your website that shows the proposed bicycle and pedestrian projects, roadway projects, and transit strategies,
Data, mentioned in your May 28, 2019 letter, due to security restrictions placed on our system.
Attached is a drawing that shows the location of our transmission lines in your area.
Please provide us with information for the areas where our transmission lines are located so we can evaluate any proposed impacts to our system.
Thanks.
-Al

L. Alan Wood | Realty Specialist
Western Area Power Administration | Upper Great Plains
(O) 701.221.4510 | awood[at]wapa.gov


Gardner
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Oakport
Reile's Acres
Hector International Airport
Wheatland
Casselton
Mapleton
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Fargo O&M Service Center
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Bluestem Prairie Scientific and Natural...
Prairie Rose
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METROCOG Fargo-Moorhead Metropolitan Council of Governments

Case Plaza Suite 232 | One 2nd Street North
Fargo, North Dakota 58102-4807
p: 701.532.5100 | f: 701.232.5043
e: metrocog@fmmetrocog.org
www.fmmetrocog.org

May 28, 2019

The Fargo-Moorhead Metro COG is in the process of updating its Metropolitan Transportation Plan. As a part of that plan update, we desire to consult with other officials and agencies that are responsible for other types of planning in our region.

We are in the process of garnering input on the range of potential projects being considered for inclusion in our final transportation plan. We encourage you to review the projects being considered for inclusion in our plan, and provide input on any projects that might be relevant to your agency. The agency comment period will be open through July 1, 2019.

- The bicycle and pedestrian projects we are considering for inclusion are here: http://metrogrow.org/agencybikeped.html
- The roadway projects we are considering for inclusion are here: http://metrogrow.org/agencyroadway.html
- The transit strategies we are considering for inclusion are here: http://metrogrow.org/agencybustransit.html

Agency comments can be submitted via the form on the web pages, or mailed to Metro COG at:

Metro COG
Case Plaza, Suite 232
1 - 2nd Street North
Fargo, ND 58102

More information on the Metropolitan Transportation Plan update, called Metro Grow, is available here: http://metrogrow.org/About.html

More information on the Fargo-Moorhead Metro COG is available here: http://www.fmmetrocog.org

Thank you for your consideration of providing your agency's input on our plan update.

Sincerely

Michael Maddox, AICP
Senior Transportation Planner

Cindy Gray, AICP
Executive Director

s/w Mike 6/18/19. will send.

F.M
Maddox@fmmetrocog.org

Comment Received at Website:

Project ID 29 is within an Airport Influence Area and may not be a compatible use. Please contact kevin.r.carlson@state.mn.us.

^ Note this was in regards to a potential long-term interchange for I-94 east of Moorhead in a future growth area – at approximately 55th Street. This project was not included in the fiscally-constrained plan.