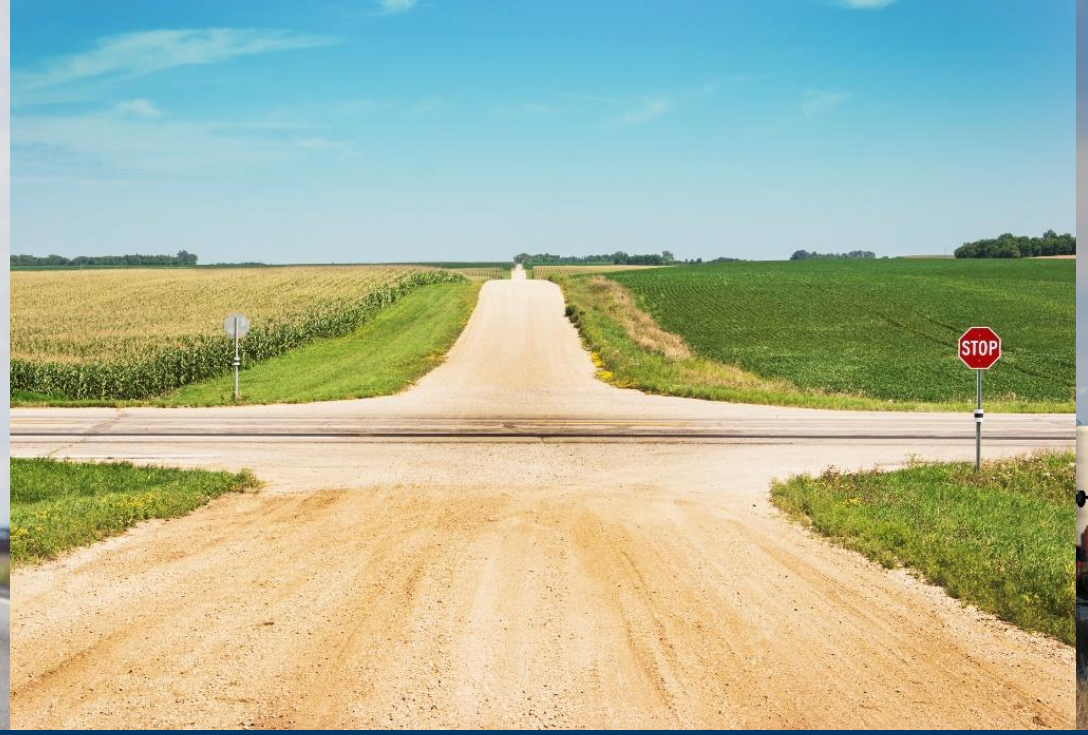


MnDOT District 4 Freight Plan

Advisory Committee Meeting 2

July 21, 2021

DEPARTMENT OF TRANSPORTATION

mndot.gov

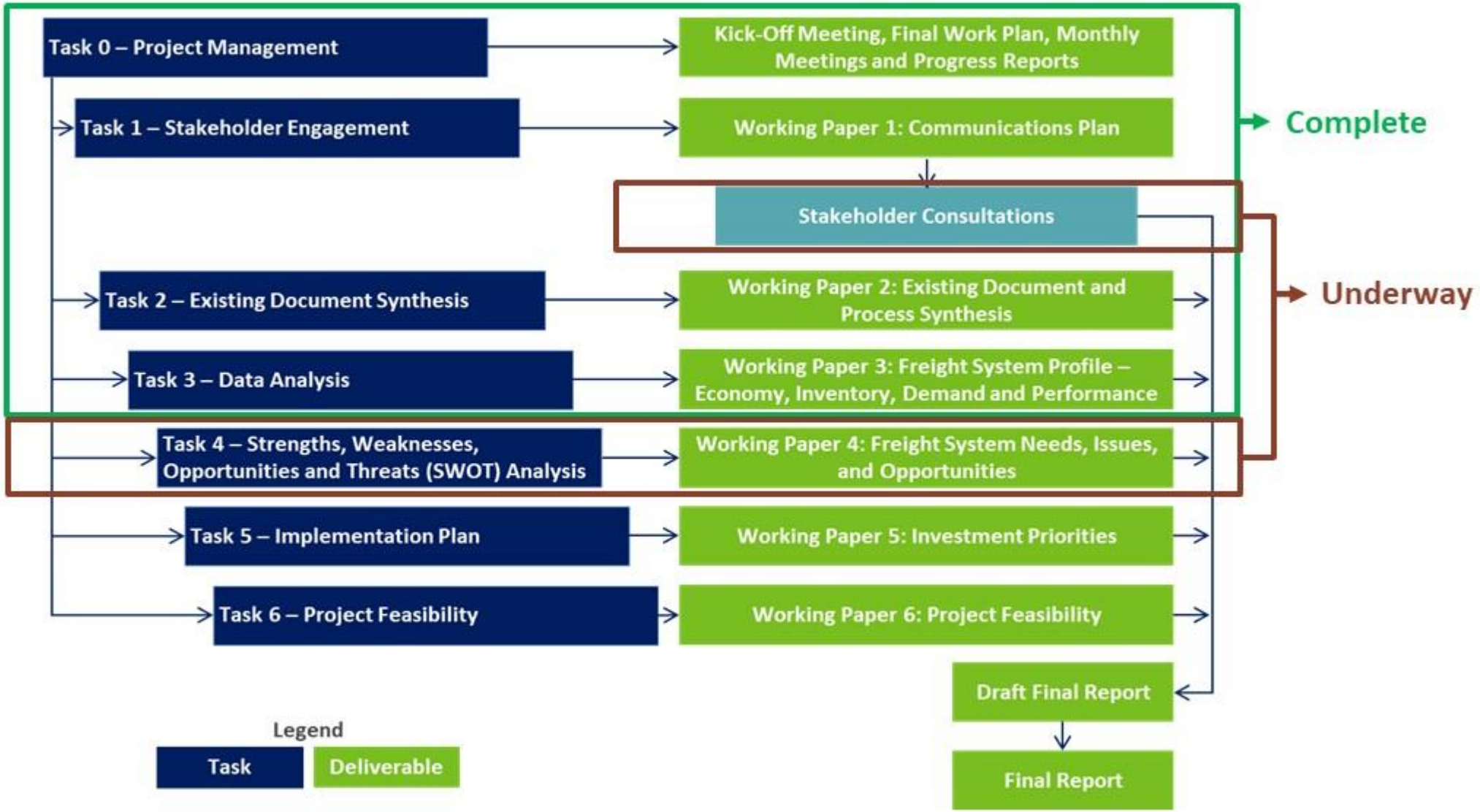
Welcome back to the Advisory Committee

Help us keep the "Big Picture" in mind

Via Mentimeter (or the chat box, if you do not have Mentimeter available):

- Type in your name and organization
- What is the biggest strength or opportunity for the District 4 freight system?

Work Plan Overview



Goals for Today's Meeting:

1. **Provide a "snapshot" of major findings from Working Paper 3.** A copy of WP3 will be distributed after the meeting. Please feel free to provide comments on topics relevant to your work or communities.

2. **Collect feedback on District 4's freight transportation-related strengths, weaknesses, opportunities, and threats.** This information is a key element to help us develop Working Paper 4: Freight System Needs Issues and Opportunities.

Presentation Map

Economic and Freight System Profiles

Condition and Performance

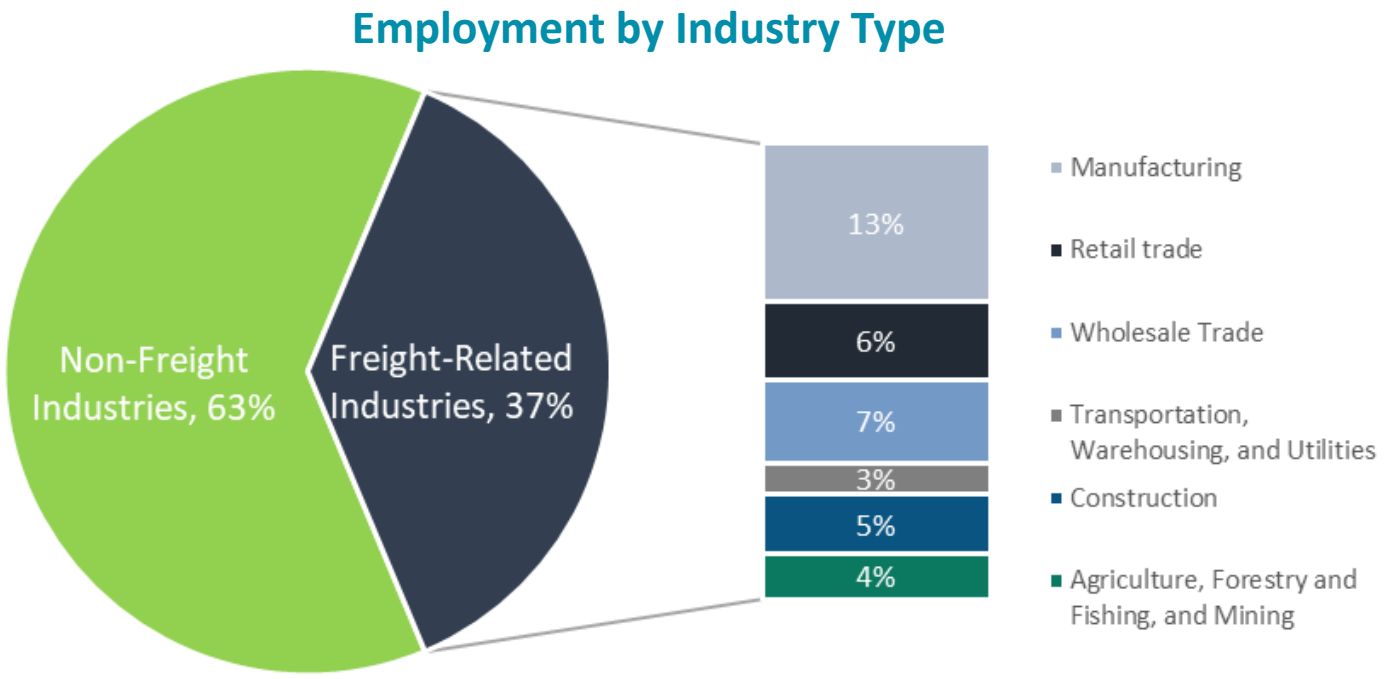
Future Outlook and SWOT Assessment

Next Steps & Discussion

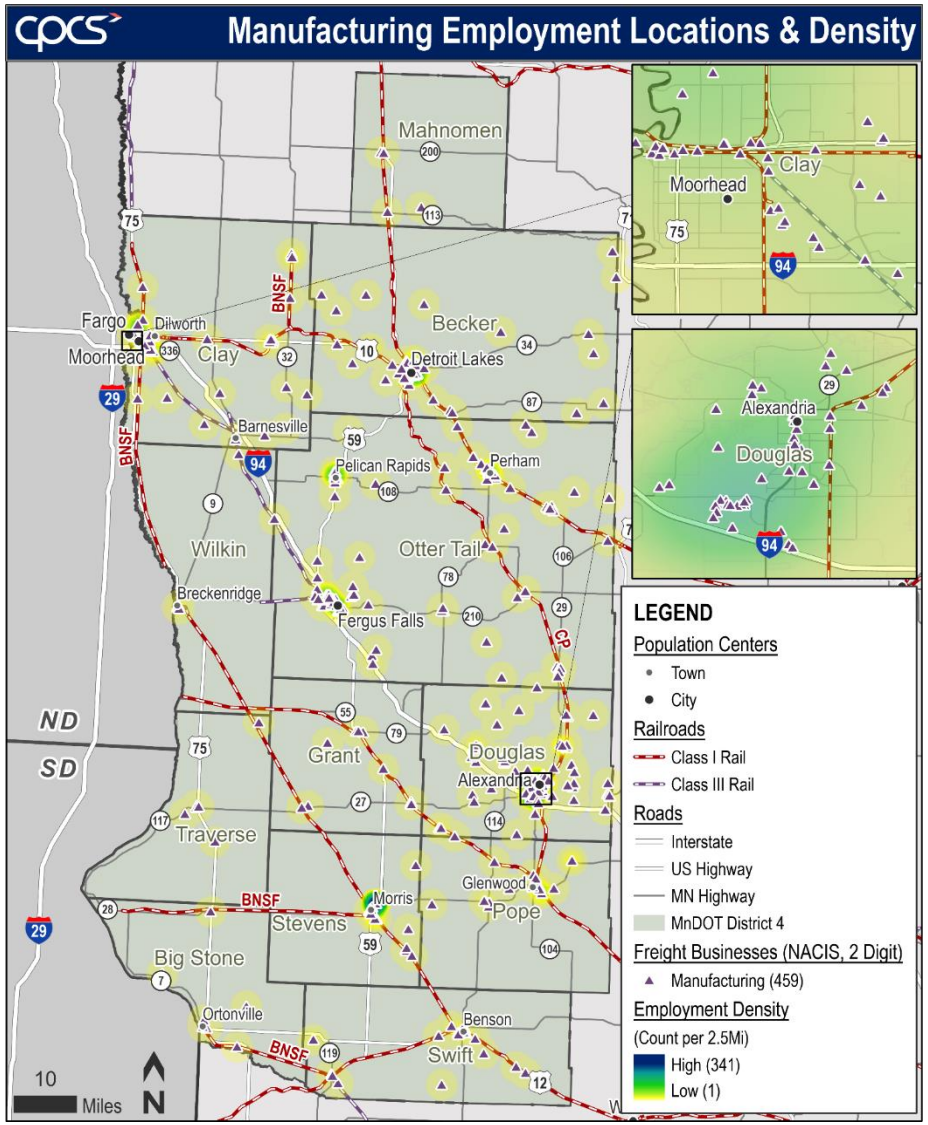
Economic Context

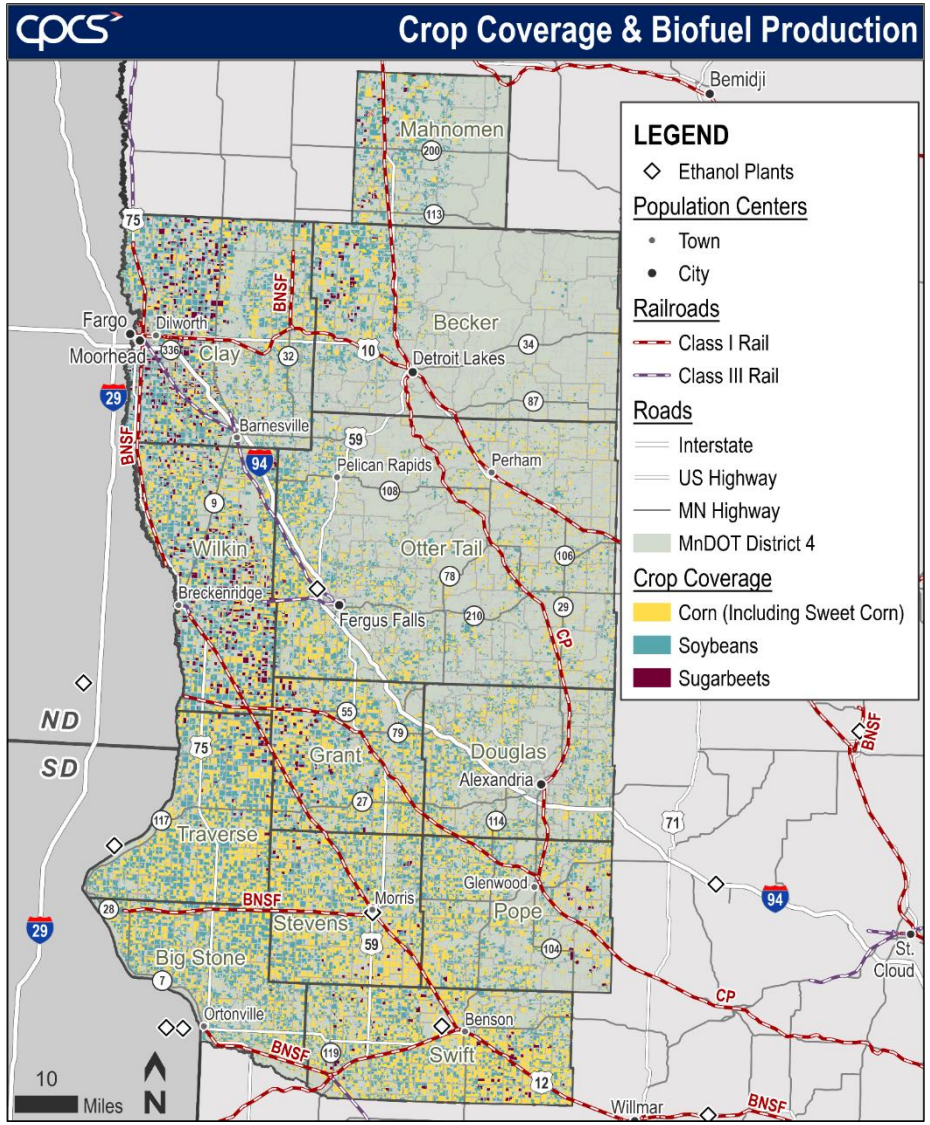
Freight transportation is a critical service for much of the District's economy

- ~37% of District 4's employment and GDP is associated with freight-related industries.
- Agriculture and manufacturing are particularly important, and growing.

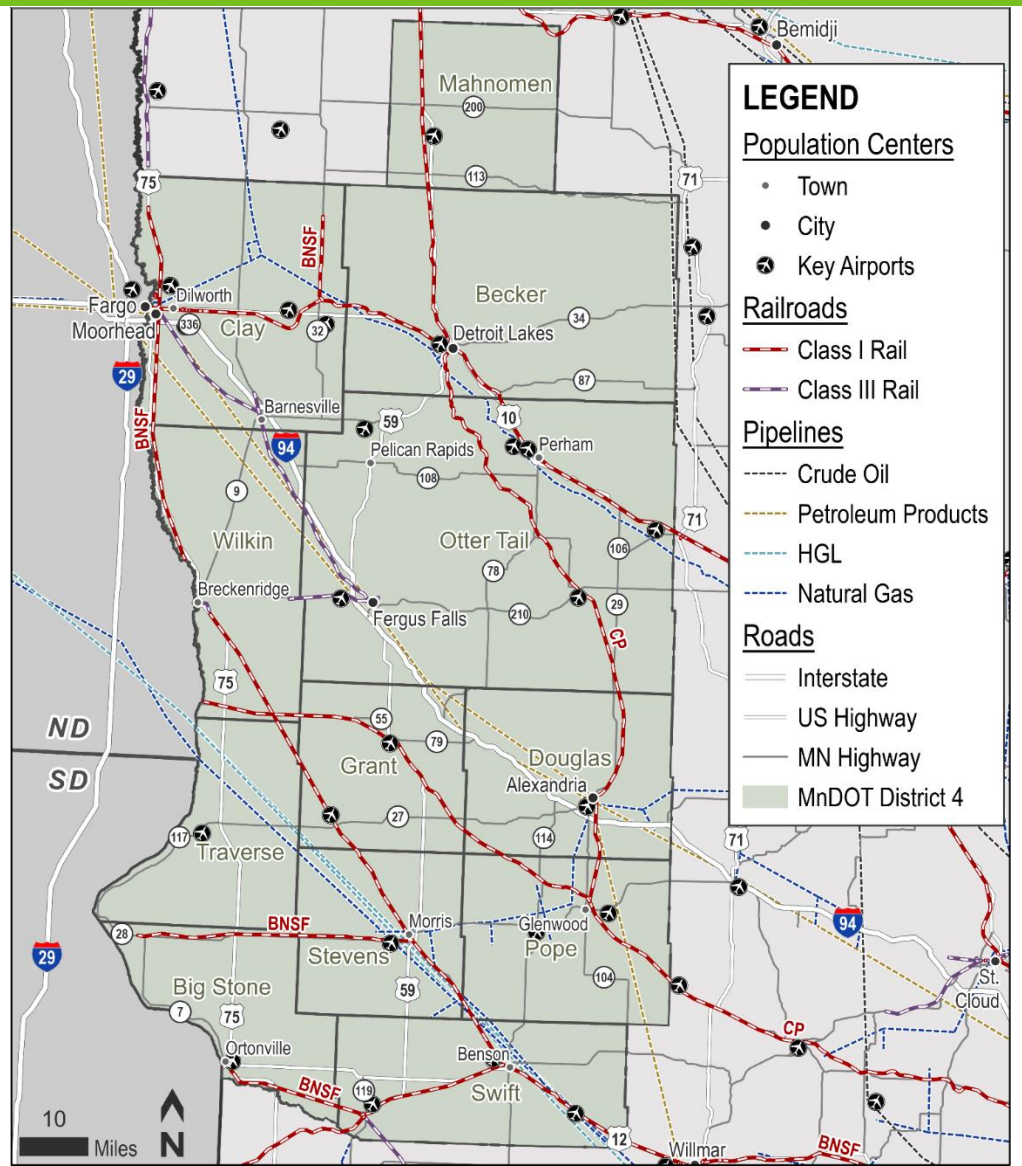


The Importance of Freight Transportation





District 4's Multimodal Freight Transportation System



What is District 4's freight system?

Roads

- 115 miles of Interstate
- 1,557 miles of Trunk Highways
- 333 state-owned bridges

Railroads

- 668 miles of railroad
- 619 public grade crossings

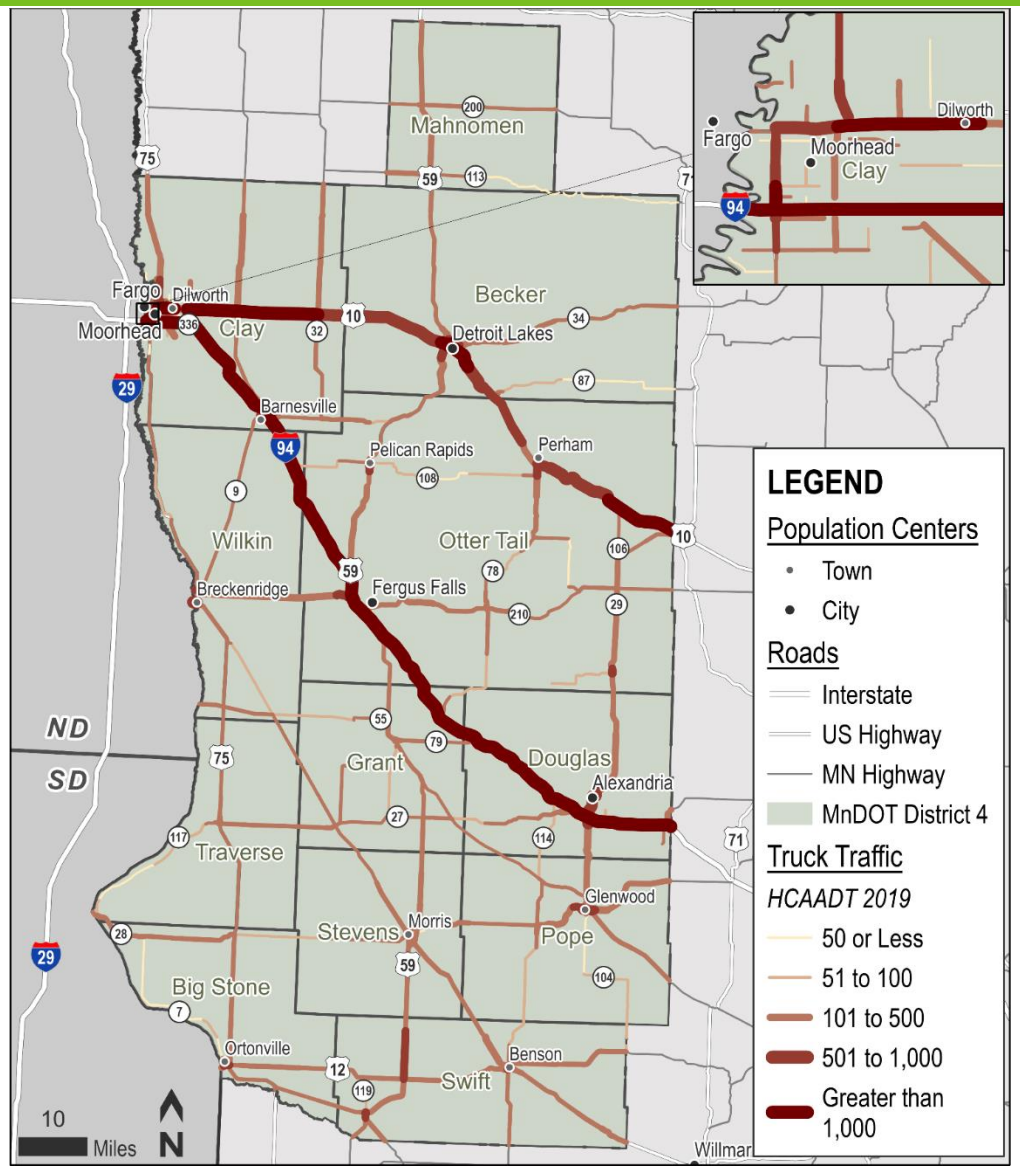
Pipelines

- 646 miles of pipelines

Airports

- 18 public airports

Trucking: Average Annual Daily Traffic



Truck traffic counts show the District's key freight corridors

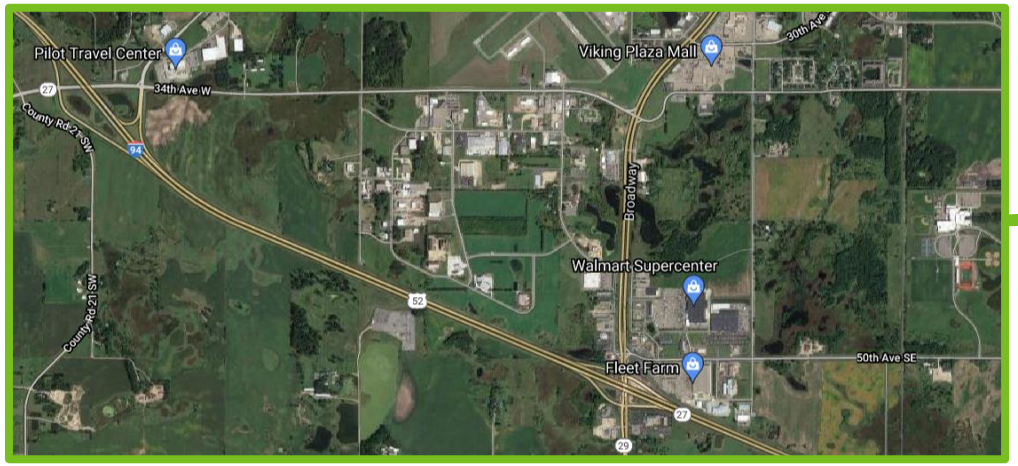
Key Freight Routes

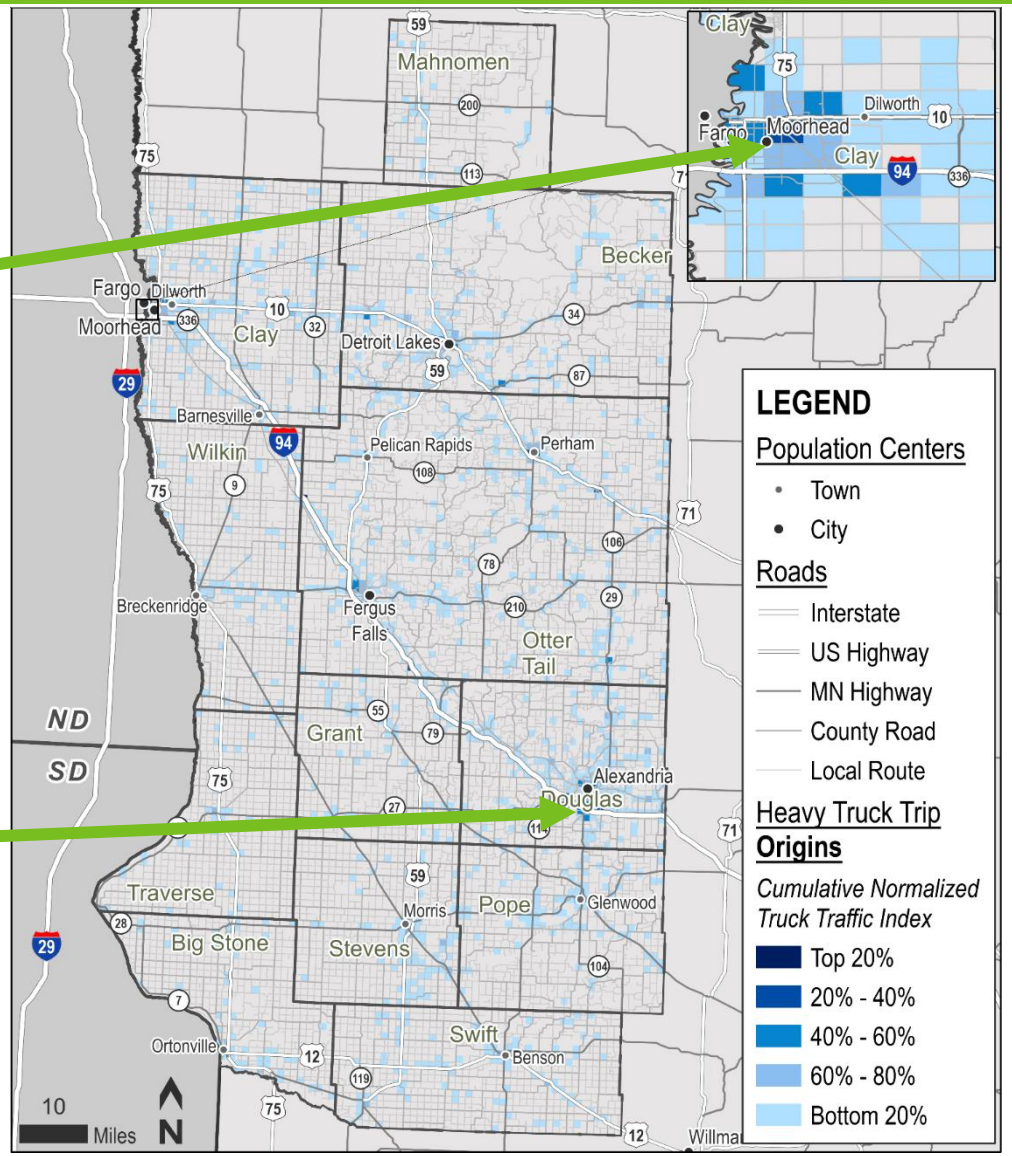
- I-94 – connections to Fargo and the Cities
- US-10 – connections to Fargo and St. Cloud
- US-59 – North-South connections
- US-12 – Connection to the Cities and I-29

Other Freight Routes

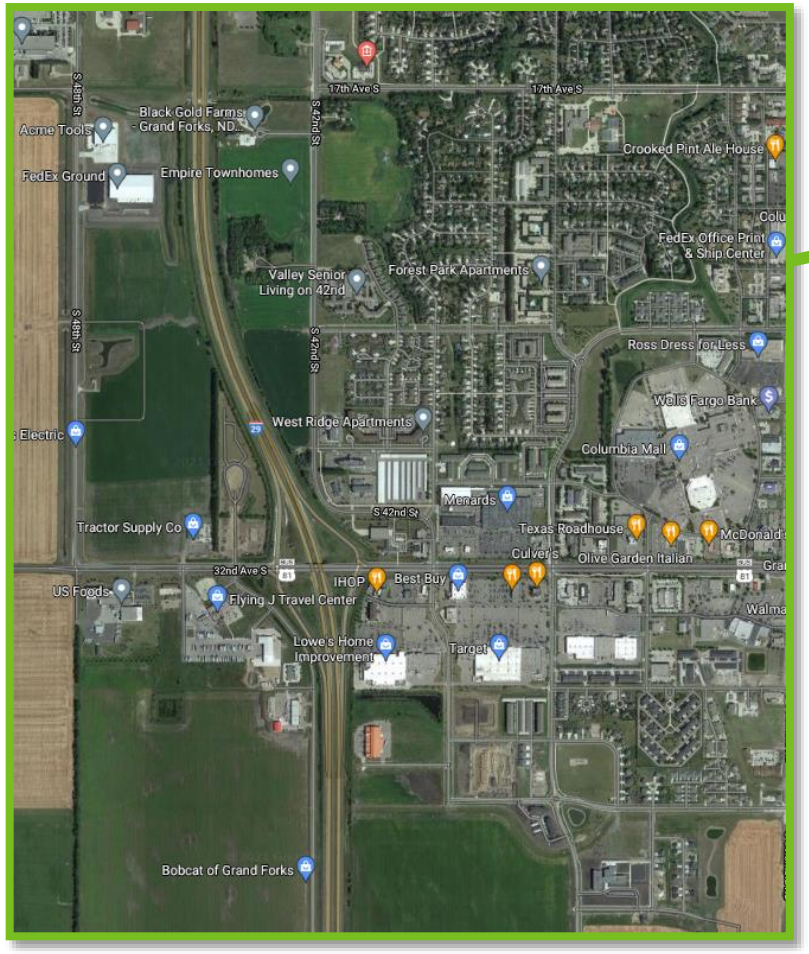
- US-75
- MN-9
- MN-29
- MN-336

Trucking: StreetLight Data

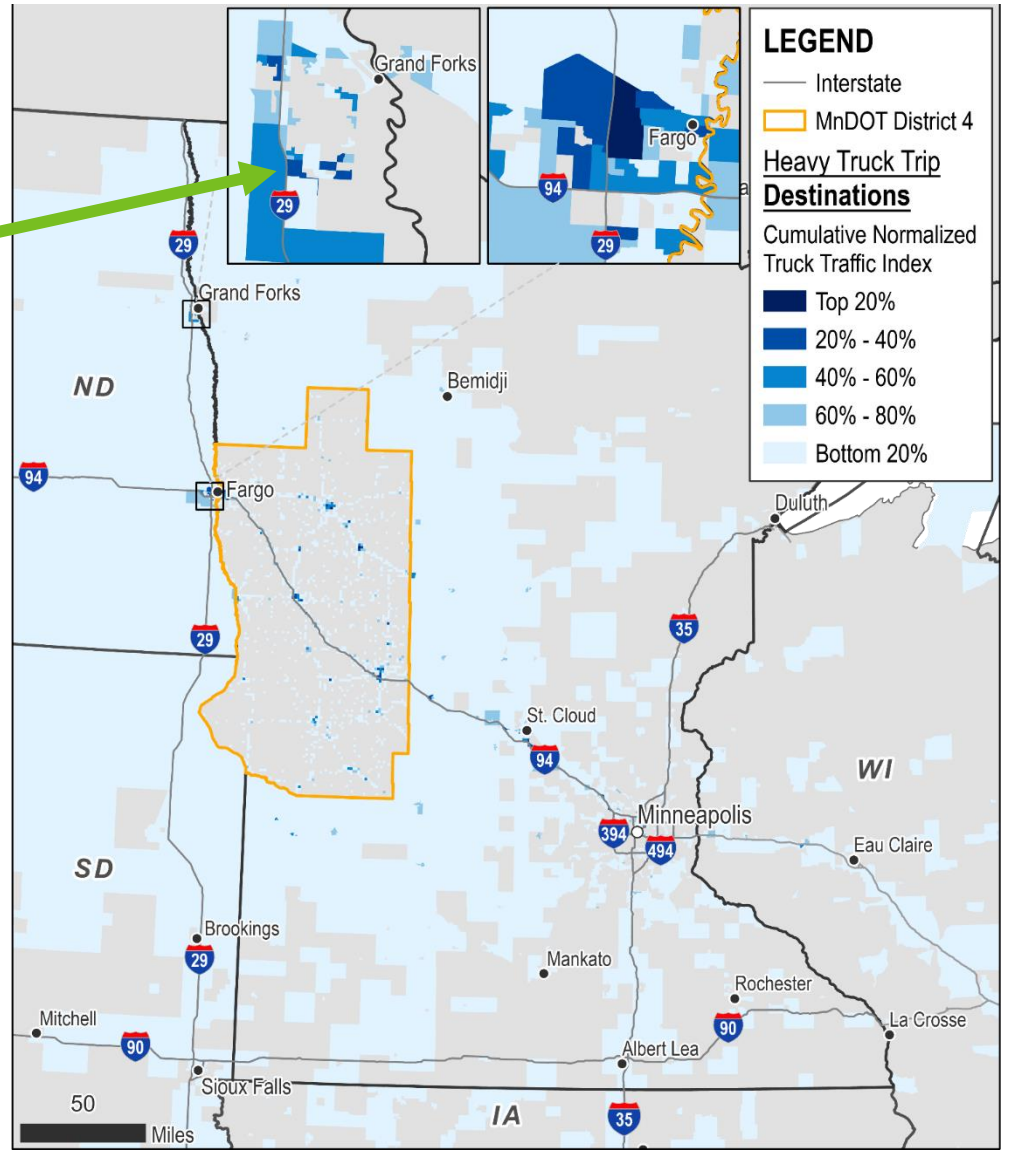




Trucking: StreetLight Data

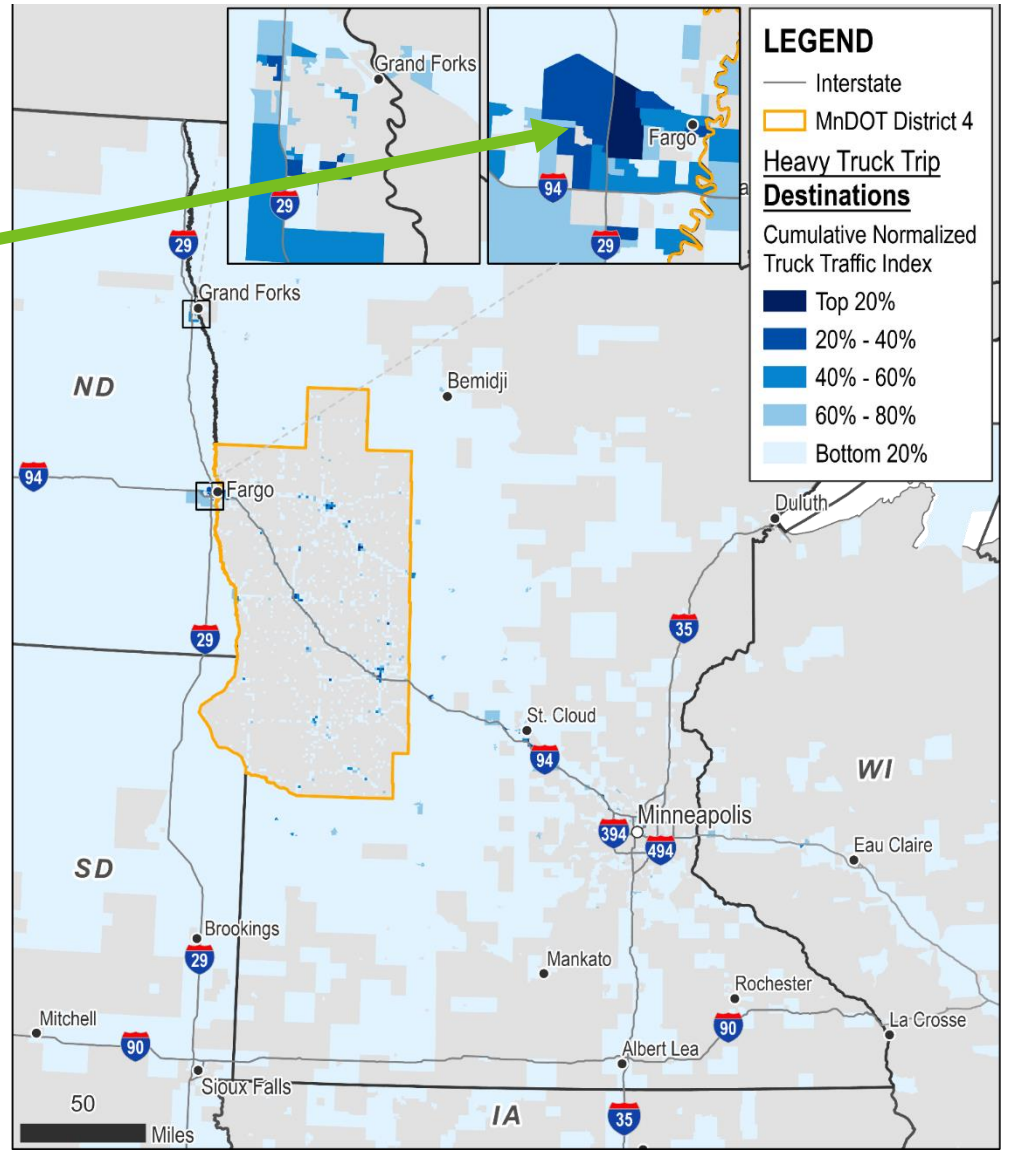


Warehousing and distribution centers and truck facilities near I-29 in Grand Forks

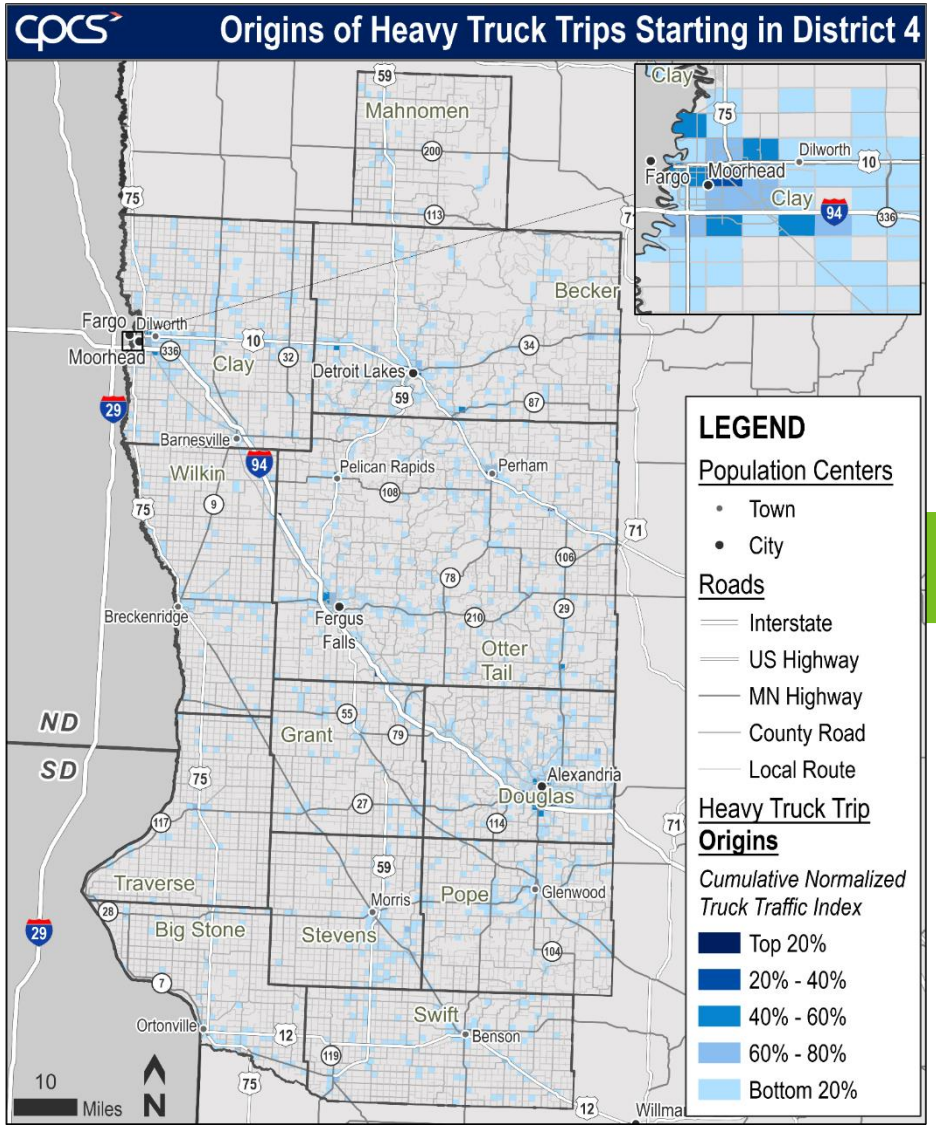


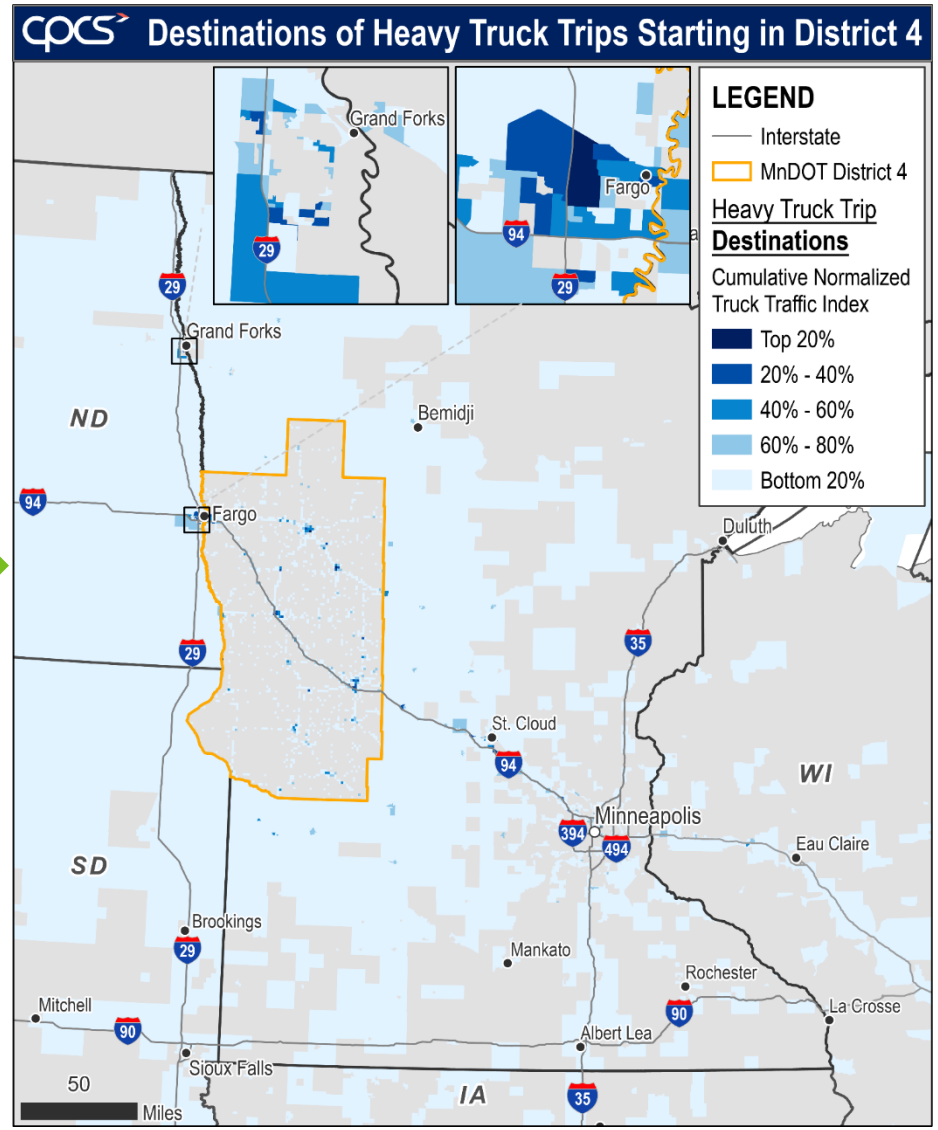
Trucking: StreetLight Data

Hector International Airport and industrial land use near I-29 in Fargo

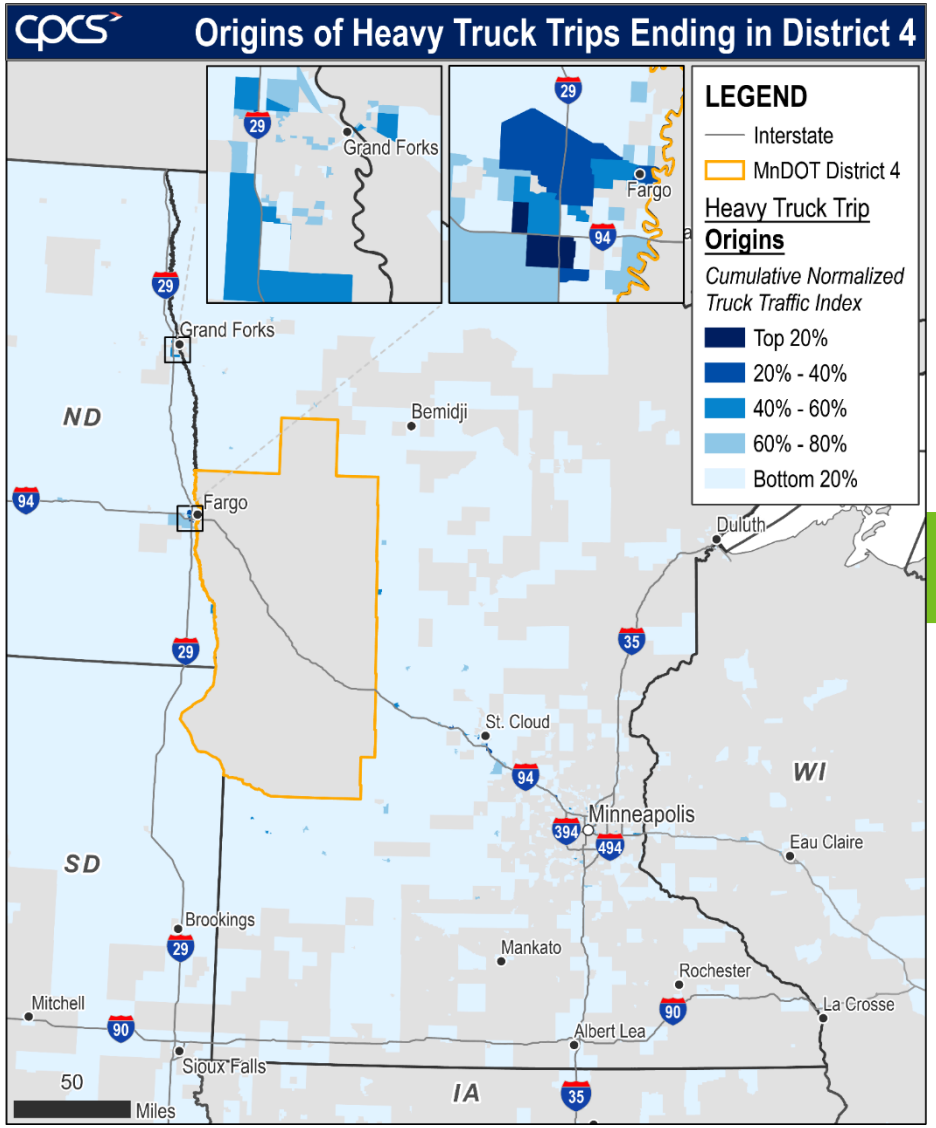


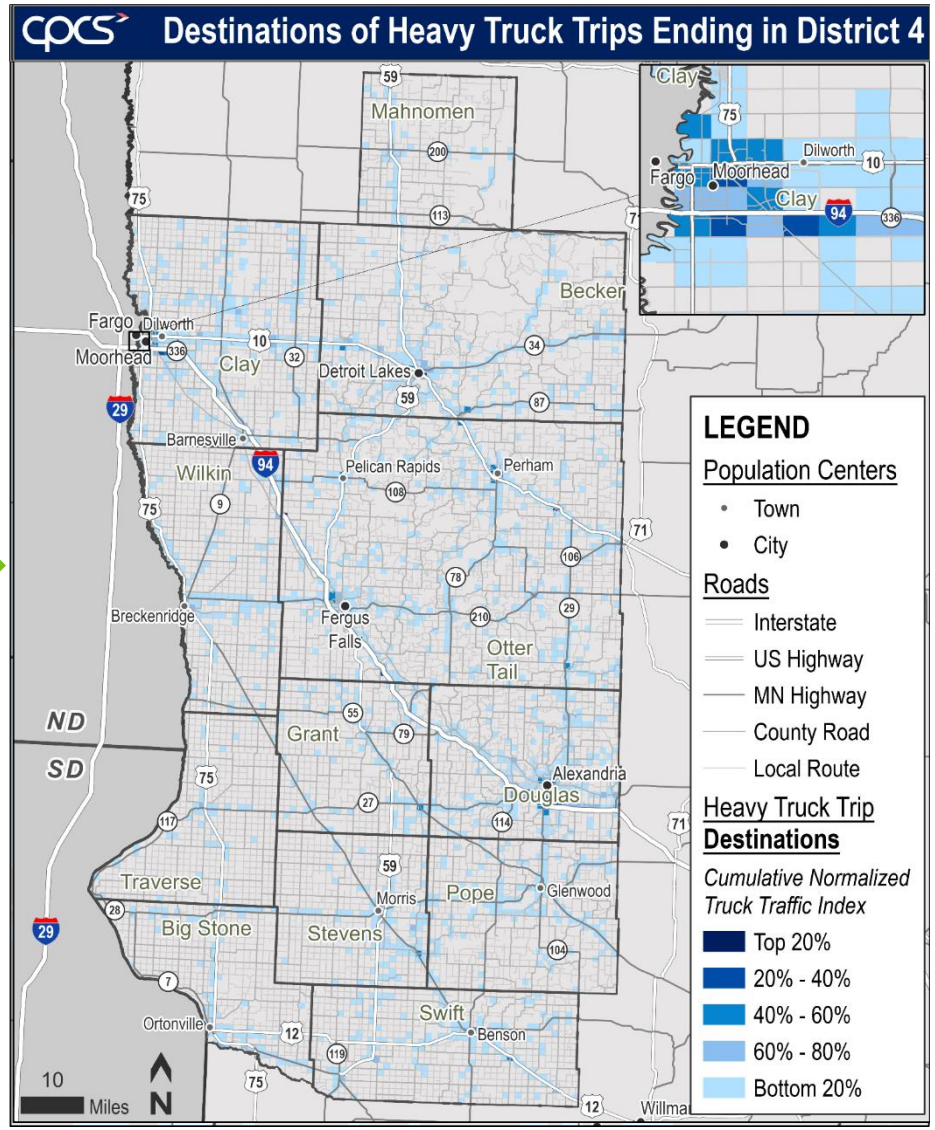
Trucking: Truck Trips Starting in the District





Trucking: Truck Trips Ending in the District





Rail System, Volumes, and Speeds

3 railroads have significant operations in District 4

Burlington Northern Santa Fe

- 359 miles of track
- 358 road grade crossings

Canadian Pacific

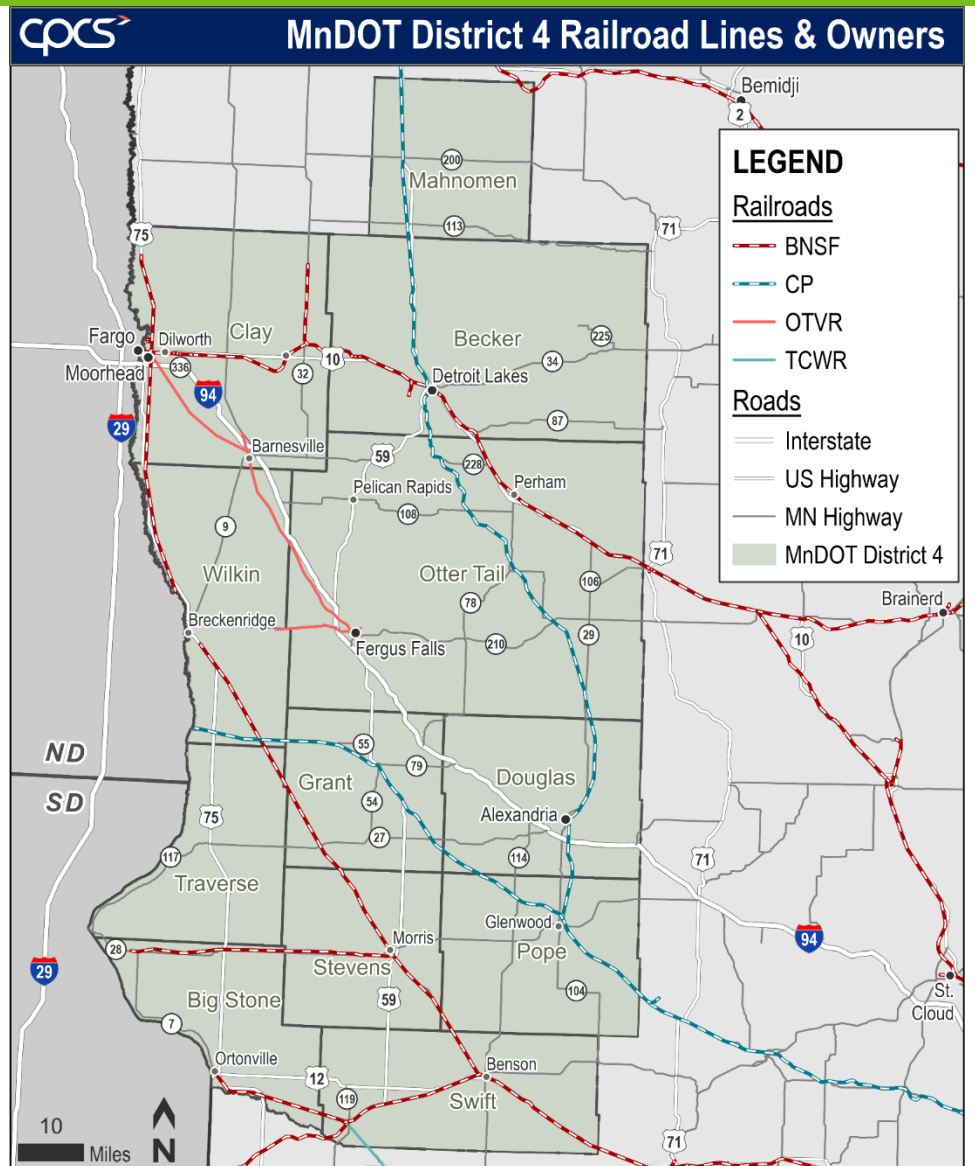
- 223 miles of track
- 216 road grade crossings

Otter Tail Valley (Genesee & Wyoming)

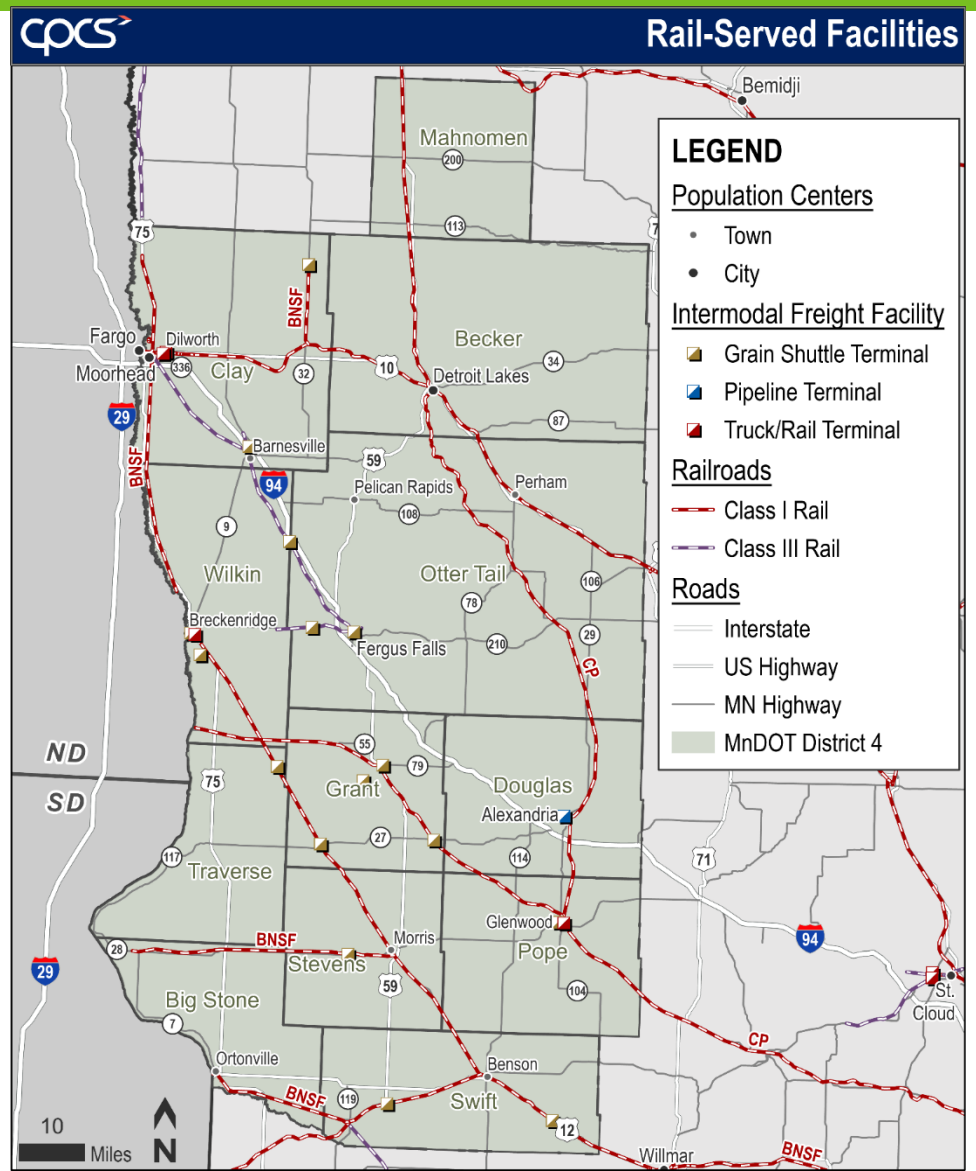
- 71 miles of track
- 93 road grade crossings

Other Railroads

- Twin Cities & Western (4.8 miles in Swift County)
- Red River Valley & Western (2.3 miles in Breckenridge)



Rail Infrastructure: Rail-Served Facilities and Crossings



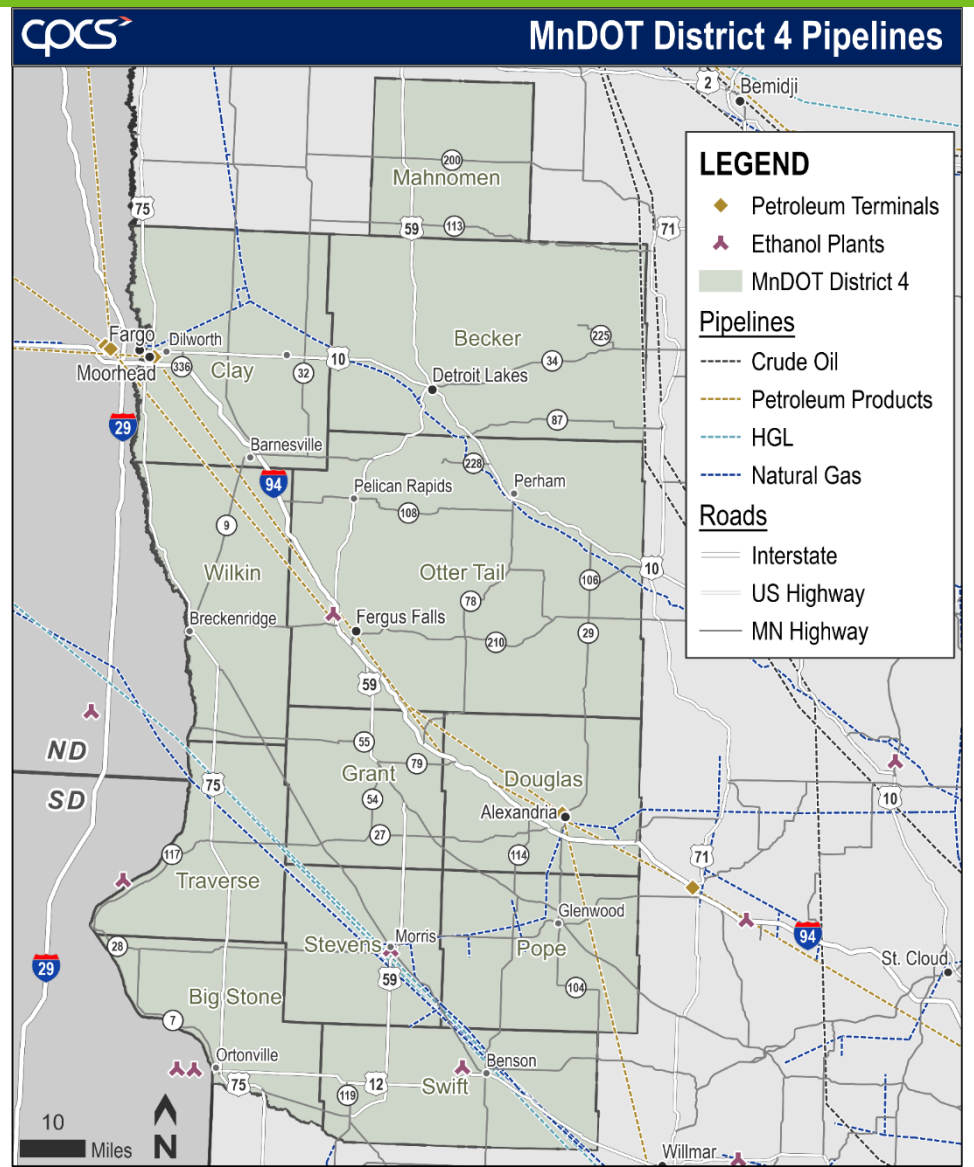
Grade Crossings

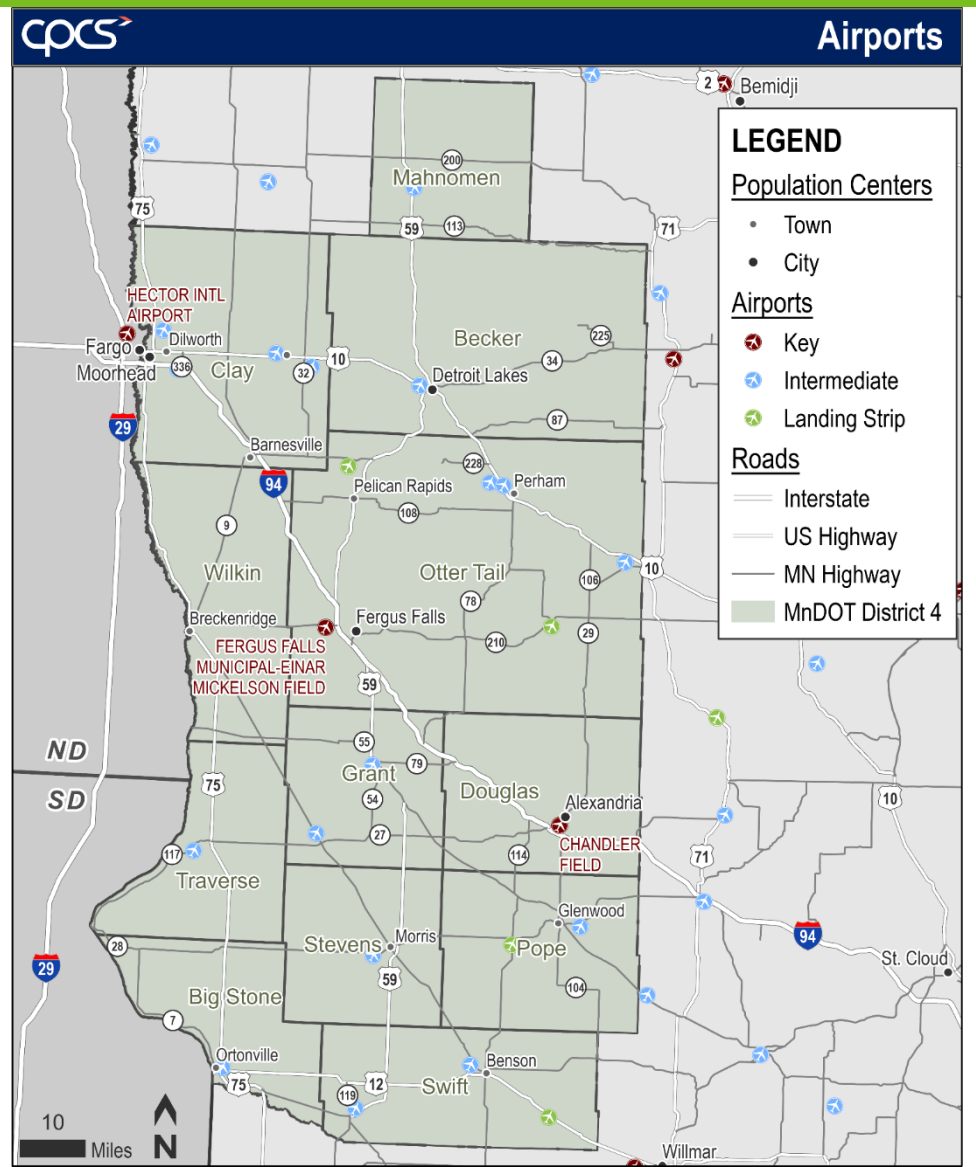
- 191 actively-protected public crossings
- 674 passively-protected public crossings

Transloading and Supporting Facilities

- 16 grain shuttle terminals
- 3 railroad yards
- 1 truck-rail transload terminal
- 1 pipeline terminal

District 4's Other Freight Modes





Discussion

Working Paper 3 provides further in-depth inventory of freight infrastructure across the District.

Questions

- Which modes of transportation are most relevant to your company or community?
- What questions do you have about the freight transportation system's elements?

Presentation Map

Economic and Freight System Profiles

Condition and Performance

Future Outlook and SWOT Assessment

Next Steps & Discussion

System Evaluation

Performance assessment is driven by criteria from MnDOT District Freight Plan Guidance

Freight Safety

- **Previous crashes**
- **Crash risk factors**
- **Grade crossing incidents**
- **Grade crossing risk factors**

Freight System Condition

- **Bridge Condition***

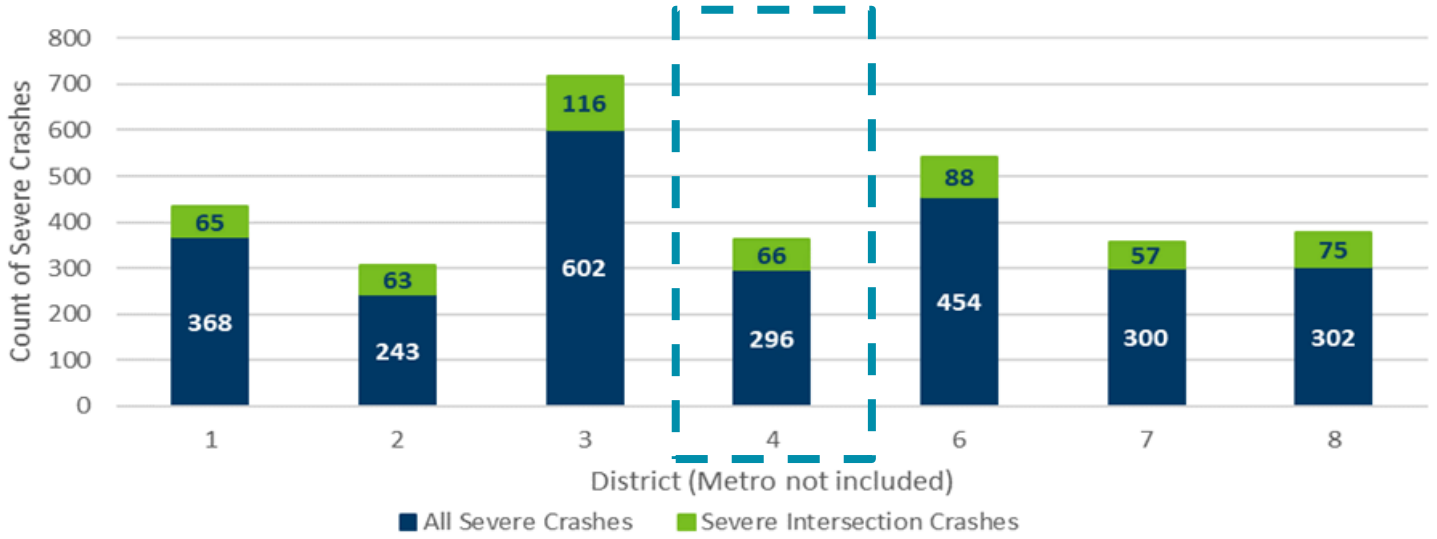
*Roadway condition is evaluated and addressed as part of other MnDOT activities

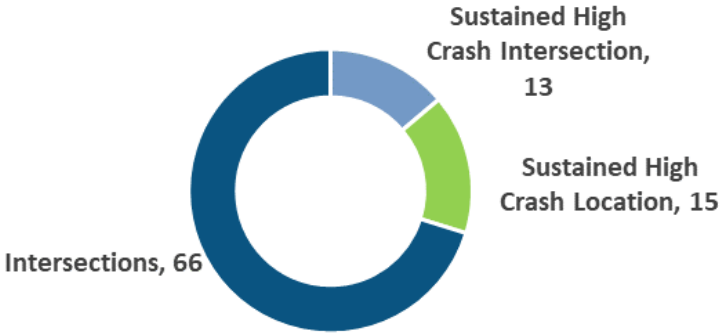
Freight Mobility

- **Truck Speed**
- **Travel Time Index**
- **Travel Time Reliability**
- **Bridge Clearance**
- **OSOW Movement**

Road Safety: Background Information

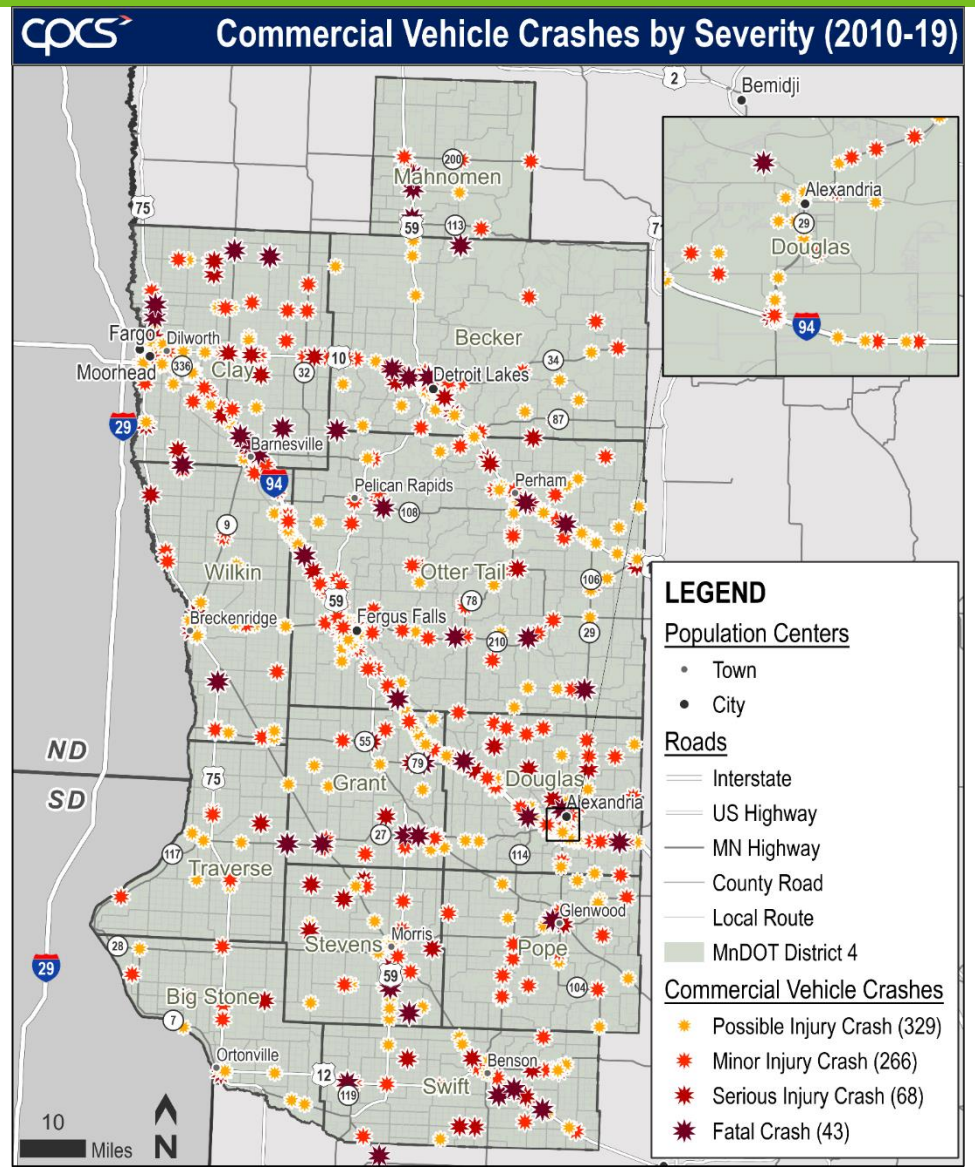
Between 2009 and 2013 District 4 ranked 6th in terms of the number of severe crashes.





Severe crashes are a particular concern at intersections.

Road Safety: Truck-Related Crashes



Between 2010 and 2019, commercial vehicle crashes were primarily concentrated in areas with higher traffic volumes.

Crash Severity	Total
Fatality	44
Injury	669
Property Damage Only	1,919
Unknown	2

Road Safety: Assessing Risk

Truck-involved crashes are concentrated in areas with higher traffic volumes, but severe and fatal crashes are distributed across the system more "randomly"

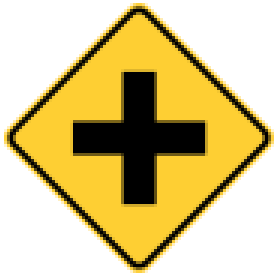
The District Freight Plan incorporates the results of roadway and intersection safety risk screenings that were conducted as part of prior District Safety Plans. Example risk factors include:

Vehicle Volume

Median Width

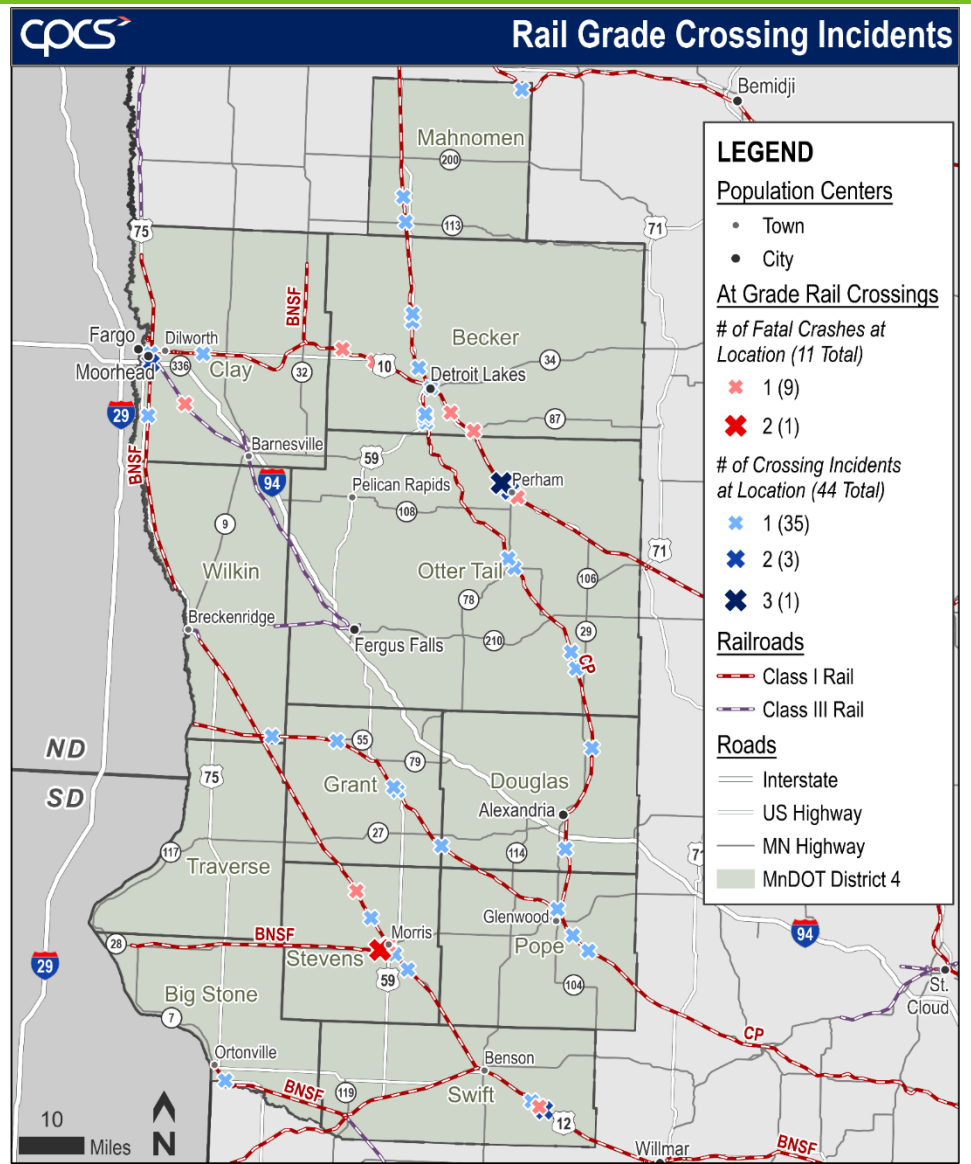
Shoulder Width

Intersection Density

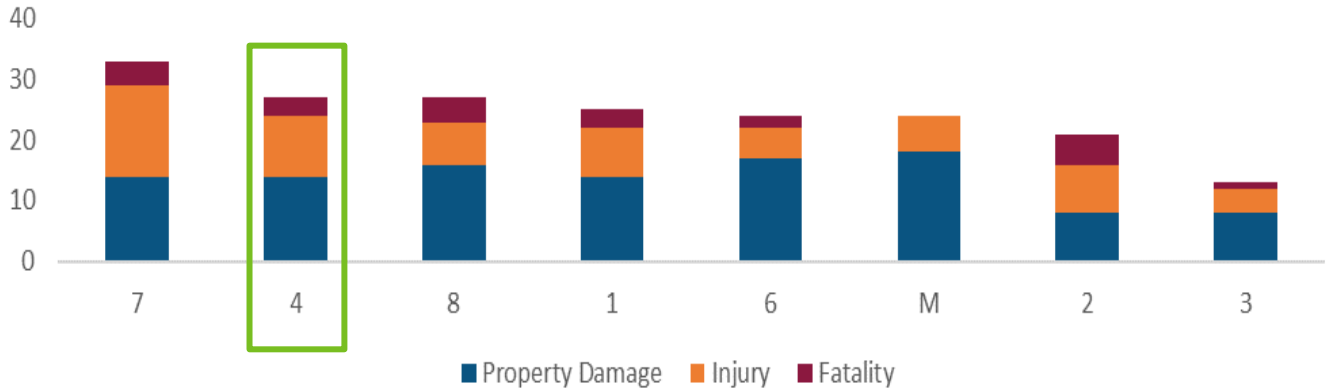


Curve Density

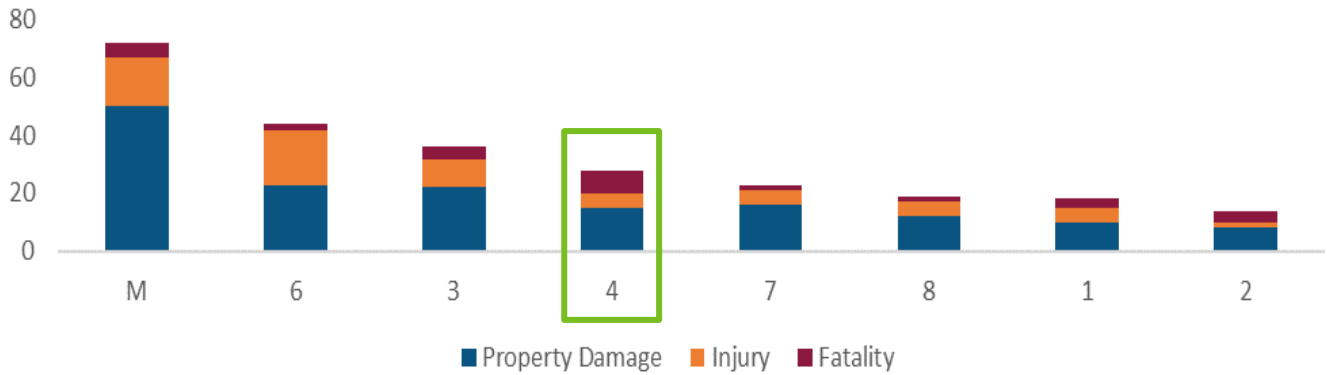
Grade Crossing Safety



Incidents at Passively-Protected Crossings (2004-2013)



Incidents at Actively-Protected Crossings (2004-2013)



Safety: Grade Crossing Risk Factors

Like severe road crashes, grade crossing incidents exhibit a similar "randomness" in distribution.

Review of risk factors for crashes can help guide safety investment and ensure planners are not "chasing" more "random" severe crashes

Example Risk Factors:

Vehicle Speeds

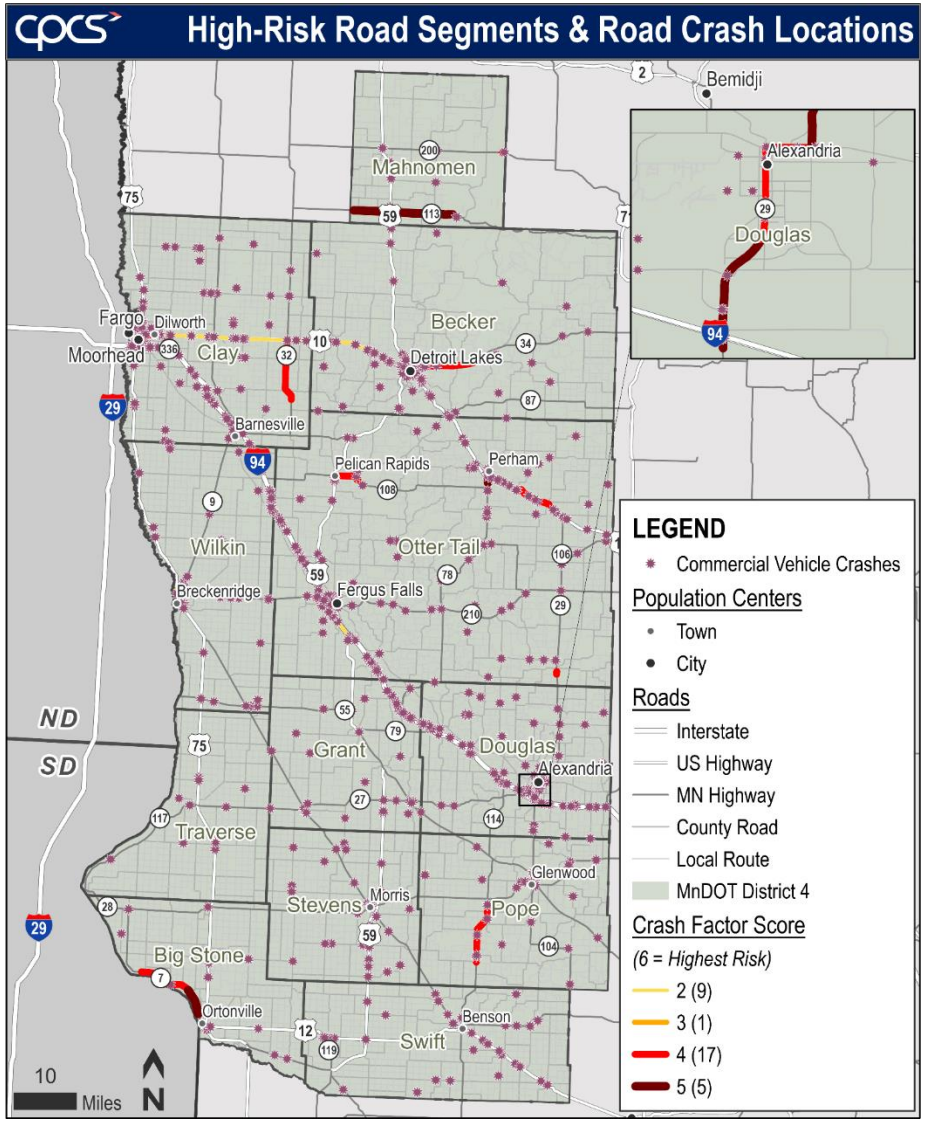
Distance to Intersection

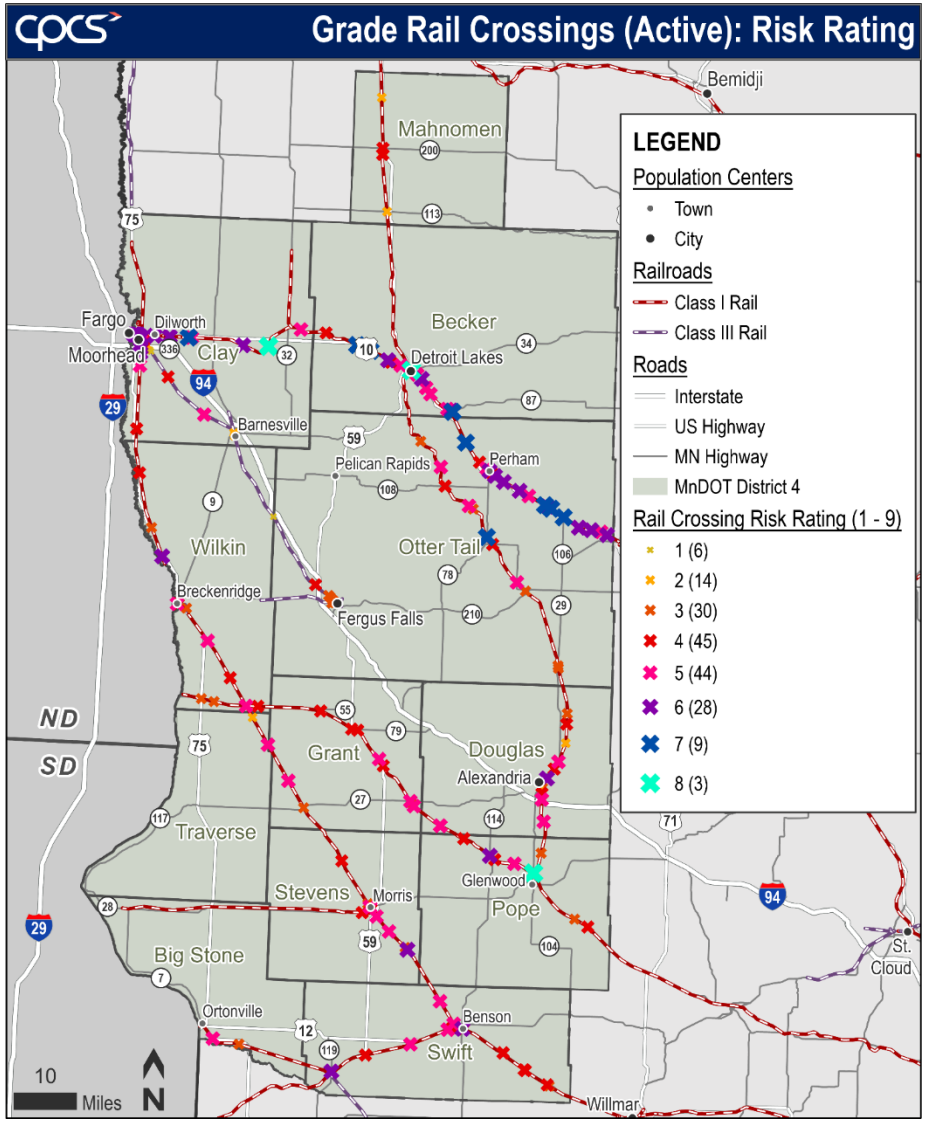
Skew

Number of Tracks

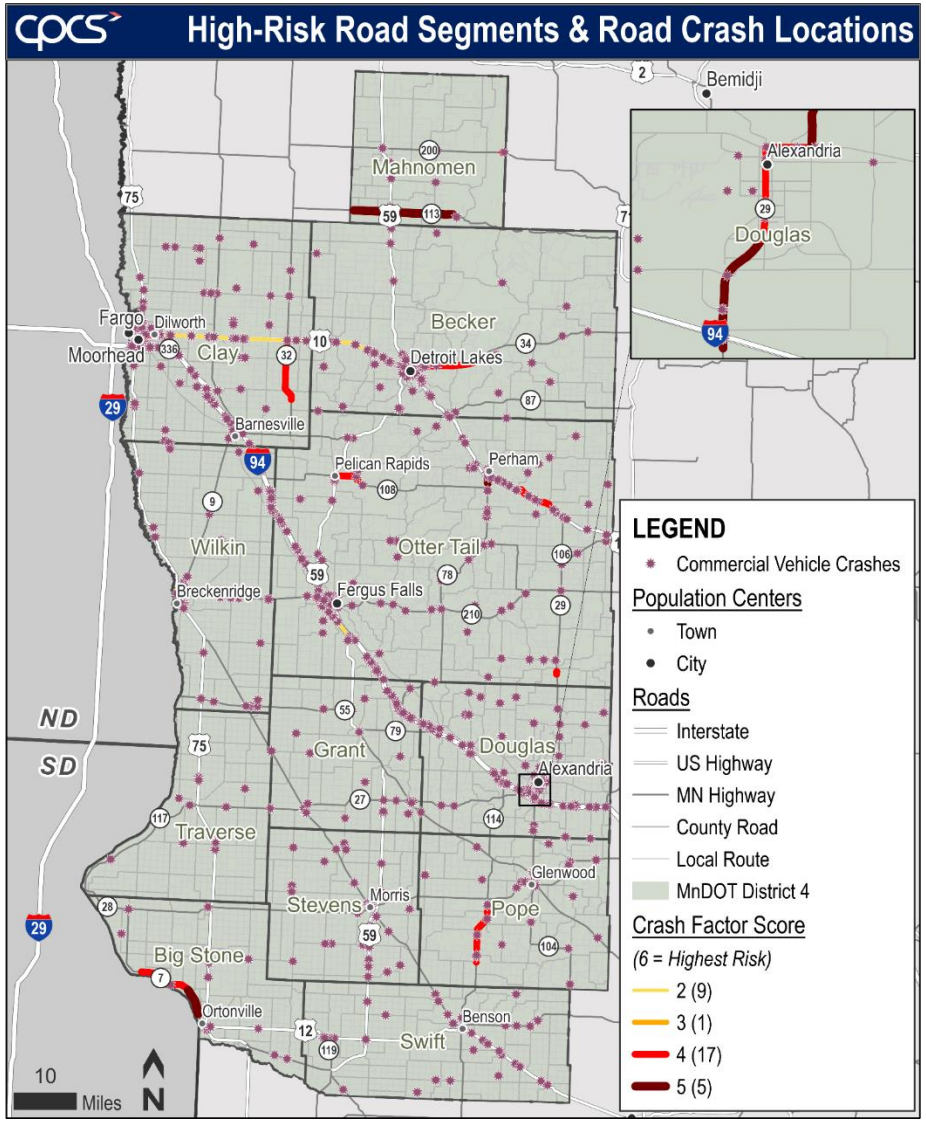
Sight Lines

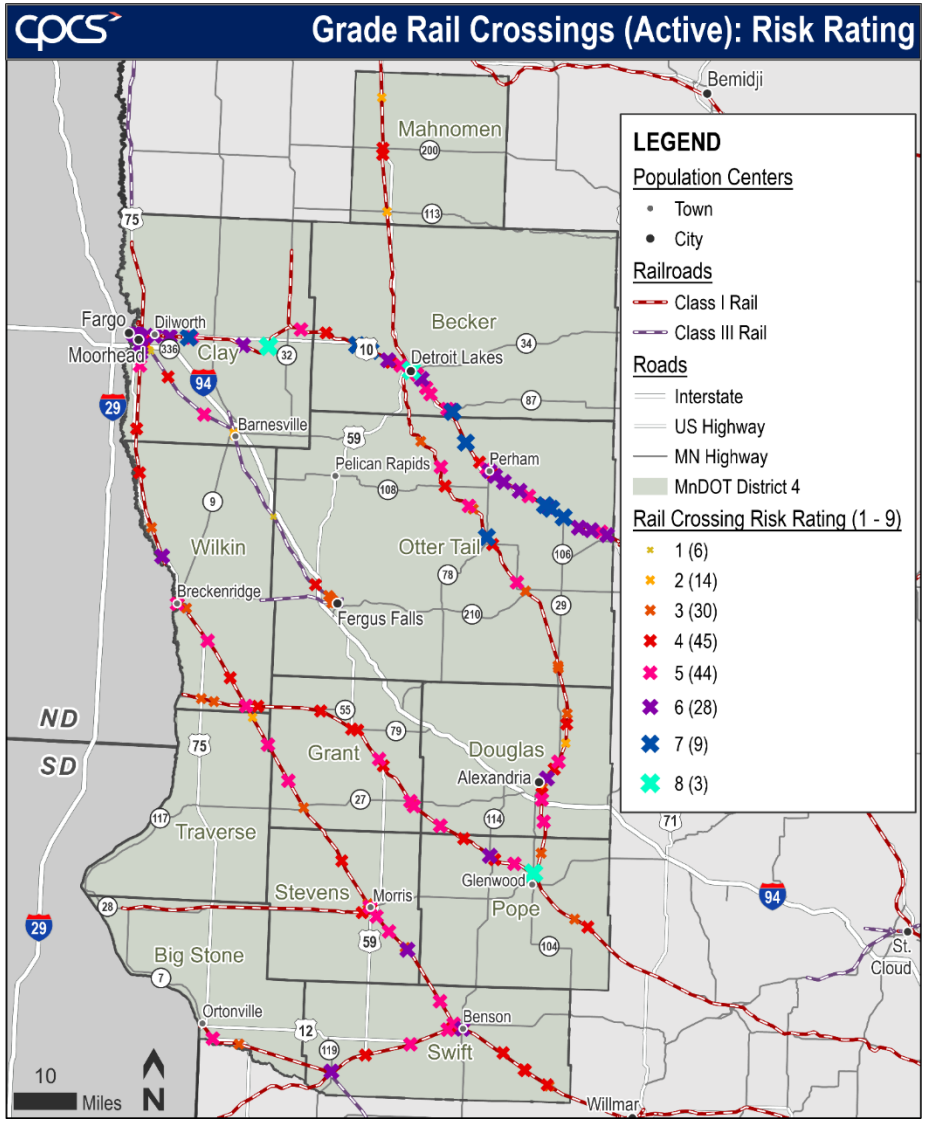
Examples of Safety Risk Ratings





Examples of Safety Risk Ratings





Safety Summary

District 4's safety performance is mixed.

- District 4 has a relatively average count of severe crashes compared to other districts.
- Road segments identified as high-risk had little overlap with severe truck crashes.
- Active grade crossing incident rates are average with respect to other districts, but there is a high rate of accidents at passively-protected crossings.
- Grade crossing incidents are concentrated on higher-volume corridors: BNSF line in Otter Tail County and the CP line in Pope, Douglas, and Grant Counties

Safety Discussion

Questions

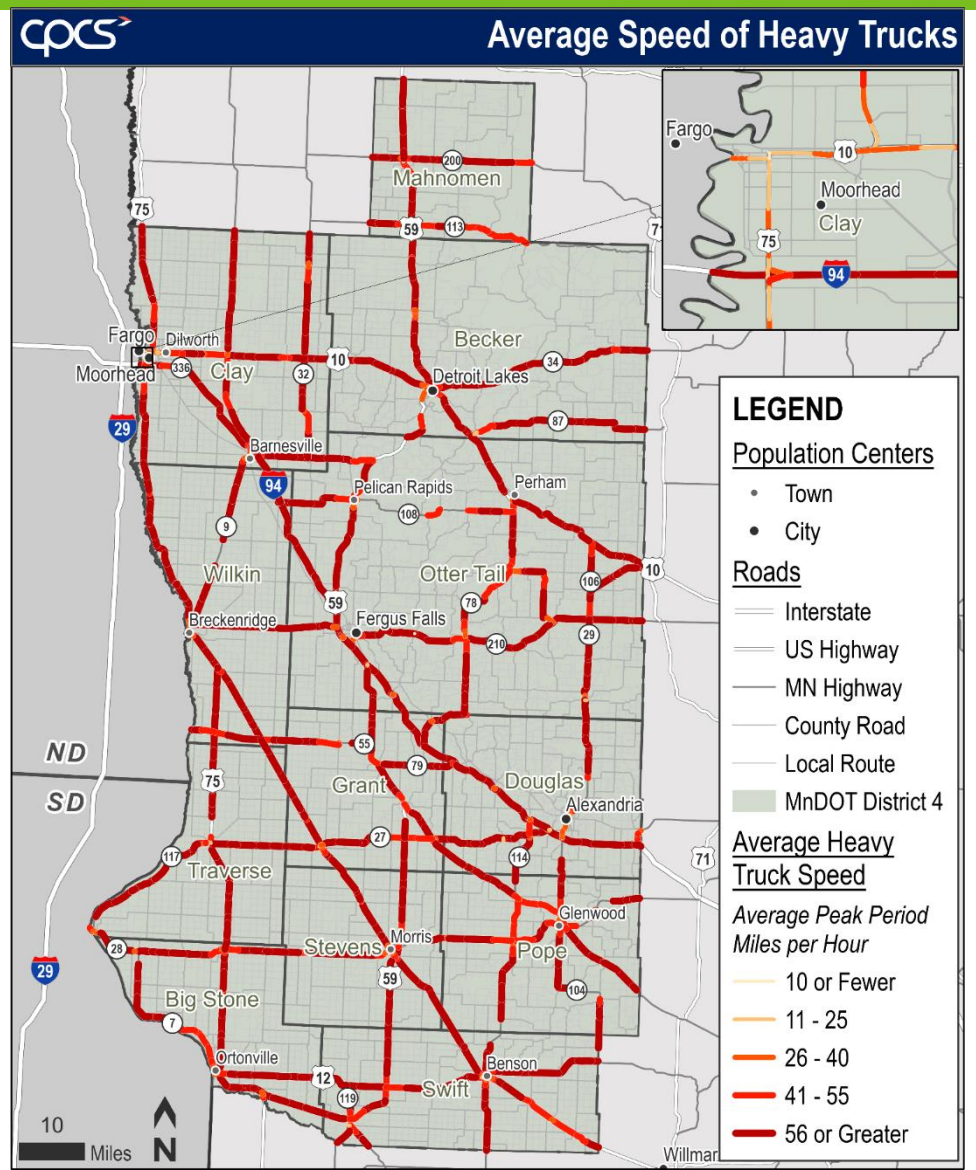
- Are there any safety considerations that are unique to District 4?
- Is our understanding of District 4's safety accurate?
- How have these issues affected you?

Mobility

Mobility measures how "easily" freight moves in the District.

- **Truck Speed**
- **Travel Time Index**
- **Travel Time Reliability**
- **Bridge Clearance**
- **OSOW Movement**

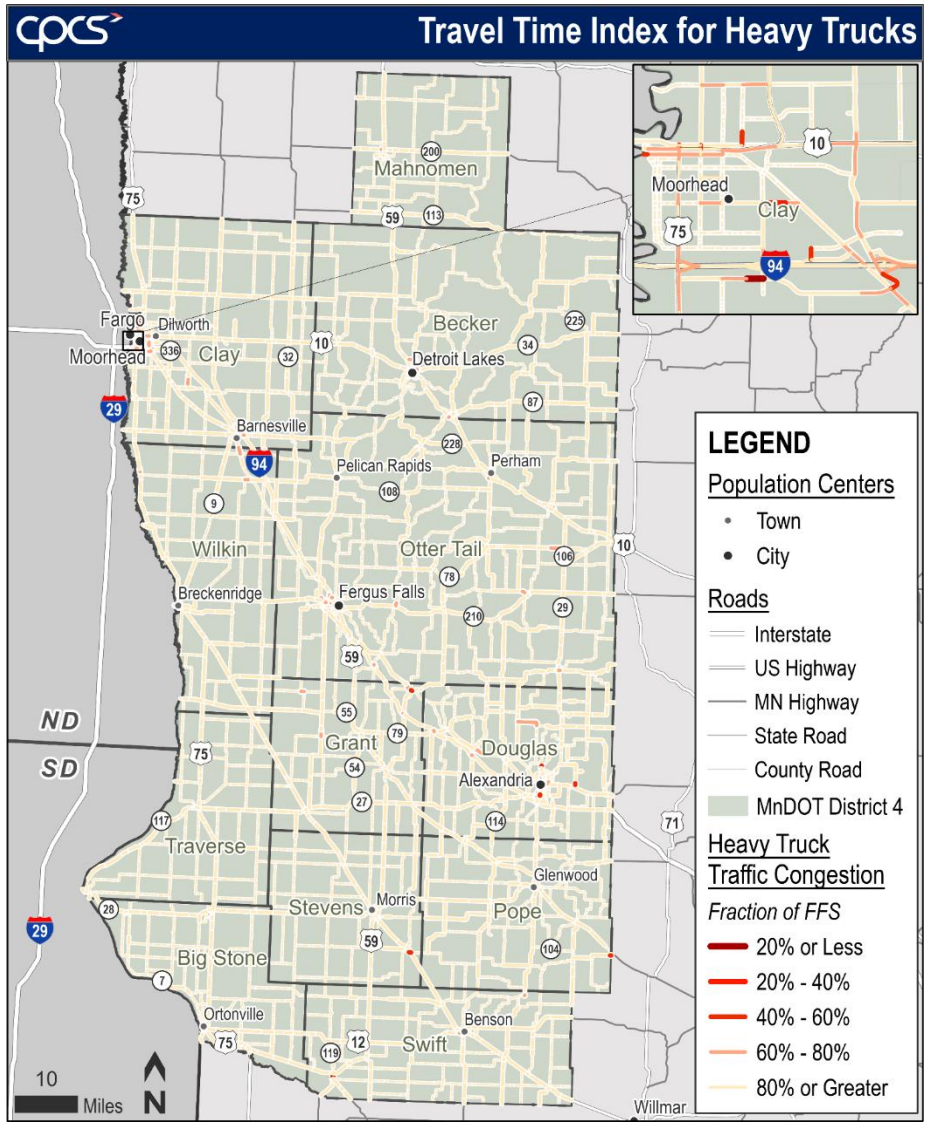
Average Truck Speed

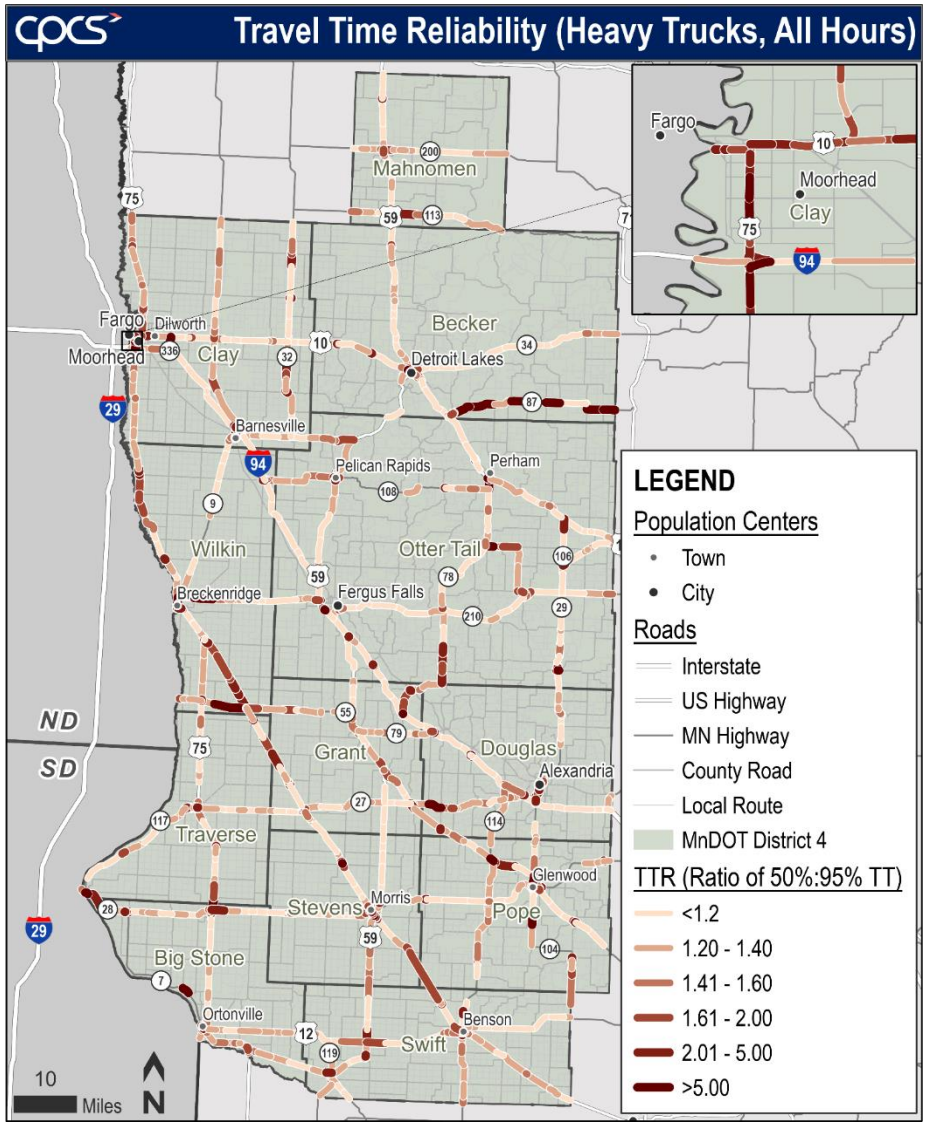


Average truck speeds are particularly low where major highway corridors pass through urban areas such as:

- I-94, US-10, and US-75 in Moorhead
- I-94, MN-210, and County Road 88 in Fergus Falls
- I-94, MN-29, and County Road 82 in Alexandria
- US-10, US-59, and MN-34 in Detroit Lakes

Travel Time Index (TTI) and Travel Time Reliability (TTR)





Mobility: Travel Speed Summary

Truck congestion and travel speed is not an issue for District 4, but appropriate infrastructure can continue to support safe mobility.

- Heavy passenger vehicle traffic congestion occurs on some road segments such as US-10 between Perham and Wadena, MN-29 in Parkers Prairie, and US-75 in Breckenridge.
- Travel Time Reliability (TTR) values are highest on routes that provide access to major highways such as I-94 and US highways.

OSOW Operations in District 4

Oversize-Overweight permits are broken into three types:

Transactional

Source: US Cargo Control.

Collaborative

Source: MnDOT

Consultative

Source: MnDOT

Permit Type	Height	Width	Length	Gross Vehicle Weight (1000s of lbs)
No Permit	Up to 13.5 feet	Up to 8.5 feet	Up to 75 feet	Up to 80
Transactional	13.5 to 15 feet	8.5 to 15 feet	75 to 140 feet	80 to 187
Collaborative	15 to 16.5 feet	15 to 17 feet	140 to 180 feet	187 to 255
Consultative	Over 16.5 feet	Over 17 feet	Over 180 feet	Over 255

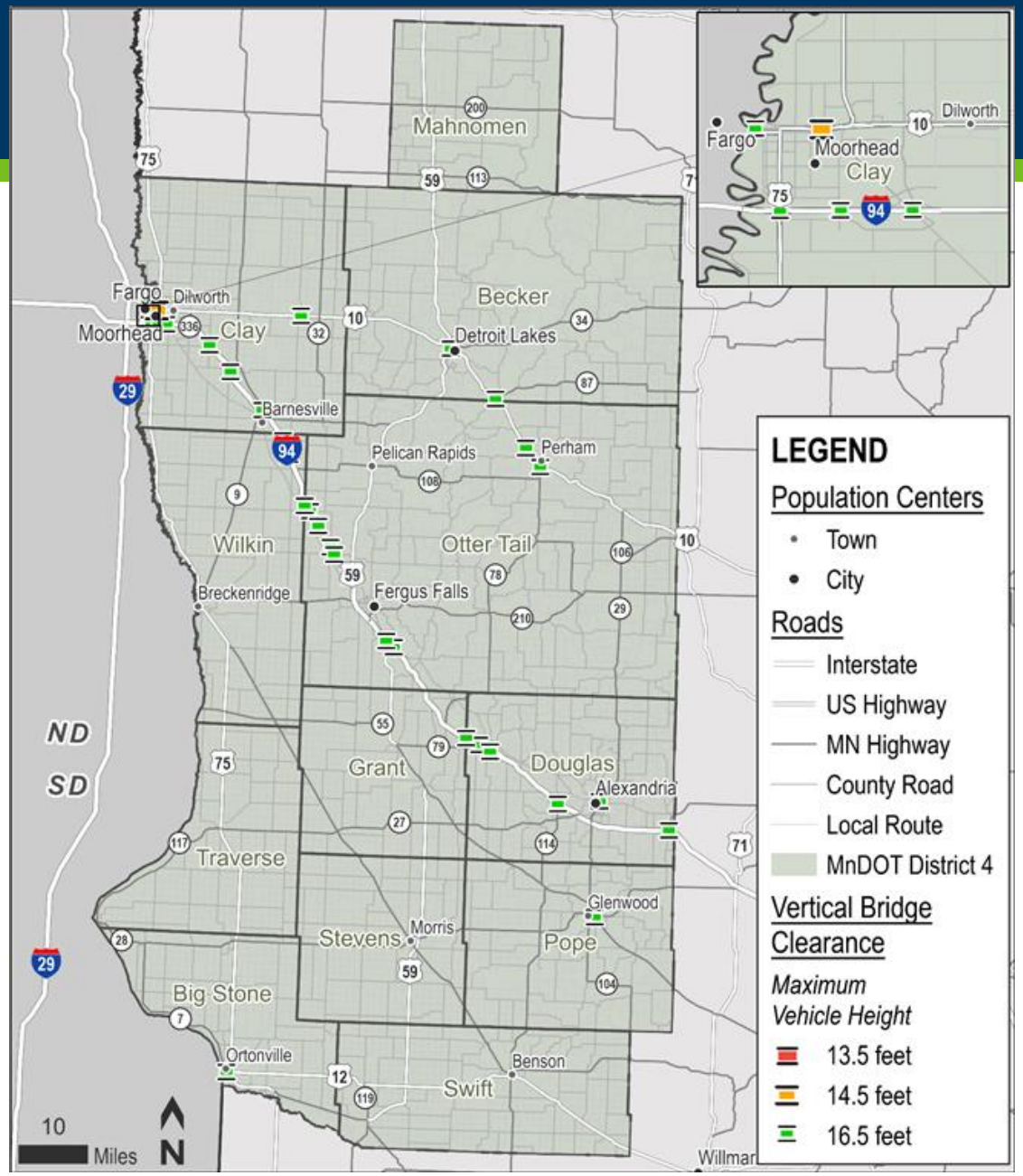
Source: MnDOT

OSOW Load Dimensions in District 4

Height and vertical clearances are key considerations for OSOW permits in D4

Source: MnDOT

Bridge Clearances



District 4 has one bridges that could create barriers to some truck traffic due to height clearance.

- The BNSF rail bridge located in Moorhead, on US-10 west of 21st Street has a vertical clearance of 14’6”, which can pose limitations to some truck movements.

Mobility Discussion

Questions

- Is our understanding of District 4's performance accurate?
- Are there any mobility considerations that are unique to District 4?
- How have these issues affected you?

Bridge Condition

Bridge condition is primarily a concern on local roads, and trunk highways (major freight corridors) are in good condition.

Count of Bridges and Sufficiency Rating by County:

County	Total No. of Bridges 10 ft and Over	Average Age	Average Sufficiency Rating
Becker	93	27	96
Big Stone	37	42	94
Clay	443	30	93
Douglas	83	32	95
Grant	60	37	92
Mahnomen	61	38	90
Otter Tail	202	39	93
Pope	73	33	98
Stevens	69	33	98
Swift	136	29	95
Traverse	163	38	96
Wilkin	290	31	96
Total	1,710	33	94
% of MN	12.95%	-	-

Count of Deficient Bridges by System and County:

County	Trunk	County	Township	City	Total
Becker	0	1	1	0	2
Big Stone	0	0	1	0	1
Clay	0	11	8	1	20
Douglas	1	0	0	0	1
Grant	1	4	1	0	6
Mahnomen	0	4	3	0	7
Otter Tail	2	6	1	1	10
Pope	0	0	1	0	1
Stevens	0	0	1	0	1
Swift	0	0	1	0	1
Traverse	1	2	2	0	5
Wilkin	0	7	6	0	13
Total	**5**	**35**	**26**	**2**	**68**
% of MN	**2.03%**	**4.96%**	**4.22%**	**1.01%**	**3.98%**

Source: CPCS analysis of MnDOT Minnesota Bridges, 2021.

Condition Discussion

Questions

- Are there any specific bridges that are a concern?
- Are there any condition considerations that are unique to District 8?
- Is our understanding of District 4's condition accurate?
- How have these issues affected you?

Presentation Map

Economic and Freight System Profiles

Condition and Performance

Future Outlook and SWOT Assessment

Next Steps & Discussion

What Future Trends will Affect District 4?

Think "STEEP" factors

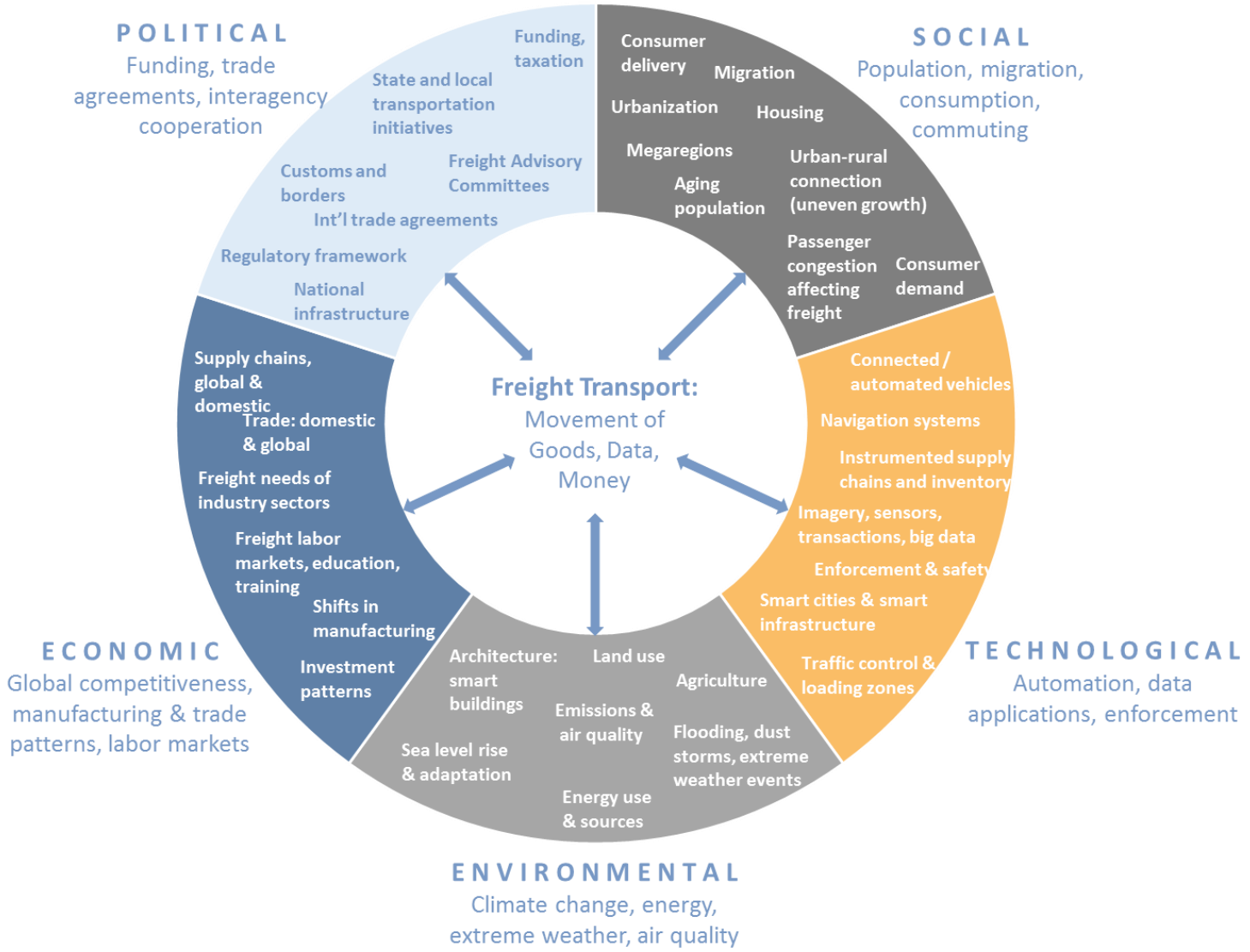
- **S**ocial
- **T**echnological
- **E**nvironmental
- **E**conomic
- **P**olitical

What STEEP factors will be important to District 4?

How could these factors influence freight movements?

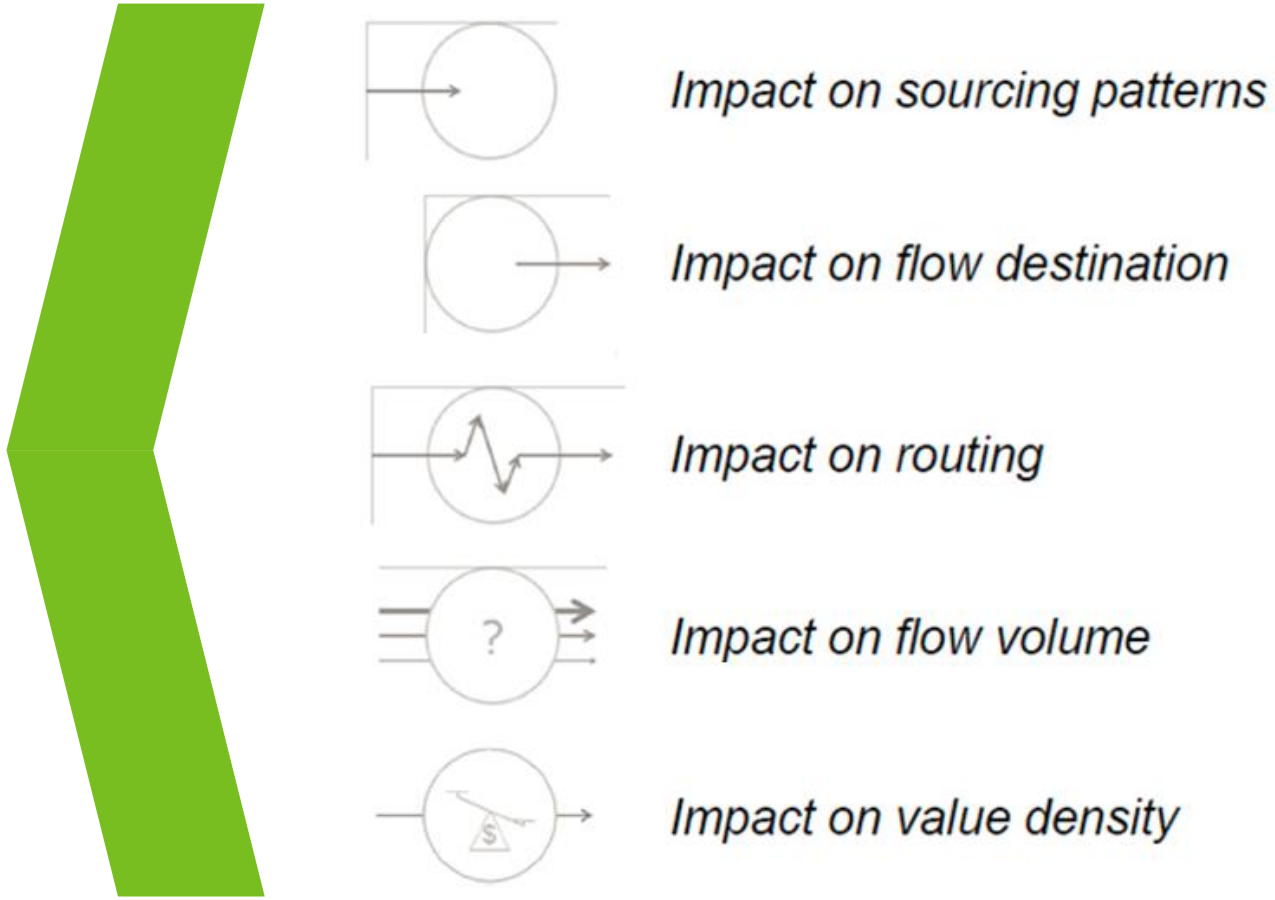
STEEP Factors – *examples, only*

Factors considered will reflect District 4's unique context



Translating STEEP Factors into Effects

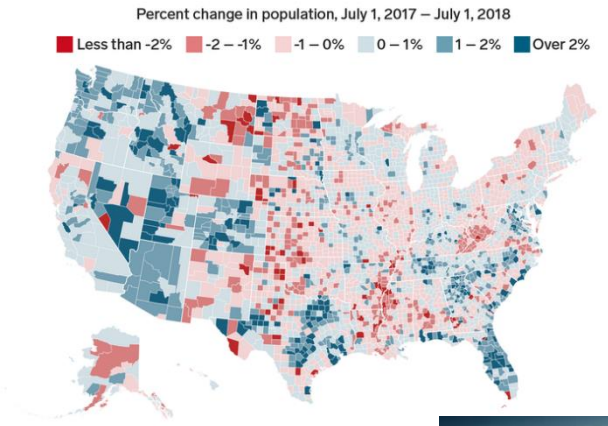
External Factors



Source: Chris Caplice, MIT

Potential District 4 STEEP Trends

- **Social:** declining population base or workforce
- **Technological:** autonomous or connected vehicles
- **Environmental:** climate change impacts on agriculture and infrastructure, energy use
- **Economic:** international trade and demand for commodities
- **Political:** funding uncertainty



Source: US Census Bureau

Source: Tesla

Source: AgFax

Strengths, Weaknesses, Opportunities, and Threats

Use the information presented today to help us identify District 4's S, W, O, and Ts

Strengths	Weaknesses
• Strong agricultural and manufacturing industry base. • Truck congestion and travel speed is not an issue in the District. • Timely snow and ice removal operations on major highways.	• Rail crossing safety concerns. • Need for rail transload facilities. • OSOW permitting system and need for weight/size harmonization. • Need for OSOW permitting harmonization with neighboring states (e.g., ND)
Opportunities	**Threats**
• Renewable energy development (electricity and biofuels).	• Declining population/workforce. • Need to repair or maintain infrastructure. • Secondary route closures due to ice and snow in the western portions of the District and potential impacts on the area's businesses

Breakout Session

Reconvene in 15 Minutes

Report Back and Open Discussion

Questions

- What are your top 2-3 most important findings?
- How are these findings relevant to District 4 or MN as a whole?
- What could MnDOT do to leverage or address these findings?

What we heard…

Strengths	Weaknesses
Opportunities	**Threats**

Presentation Map

Initial Economic and Freight System Profiles

Condition and Performance

Future Outlook and SWOT Assessment

Next Steps & Discussion

Looking Forward

Work will be conducted over 13-14 months

Meeting 1 – Agenda (Month 3)

- Review Working Paper 2
- Confirm Plan Goals

Meeting 2 – Agenda (Month 6)

- Freight system profile
- Summary of findings – needs, issues & opportunities

Meeting 3 – Agenda (Month 8)

- Freight Plan Recommendations
- Evaluation of projects and concepts

Meeting 4 – Agenda (Month 11)

- Present major findings and draft plan deliverables
- Receive feedback

Meeting 5 – Agenda (Month TBD)

- Final plan presentation, review
- Other tasks TBD

Consultant Team
At the meeting

Eric Oberhart
Project Manager

Rahil Saeedi, PE
Project Coordinator

Maya Rusten
Senior Consultant

Rebecca Lieser
Engagement Specialist

Questions

Andrew Andrusko, AICP
Project Manager with the Office of Freight and Commercial Vehicle Operations
Minnesota Department of Transportation

Email: andrew.andrusko@state.mn.us

Tel: 651-366-3644