

MnDOT District 7 Freight Plan

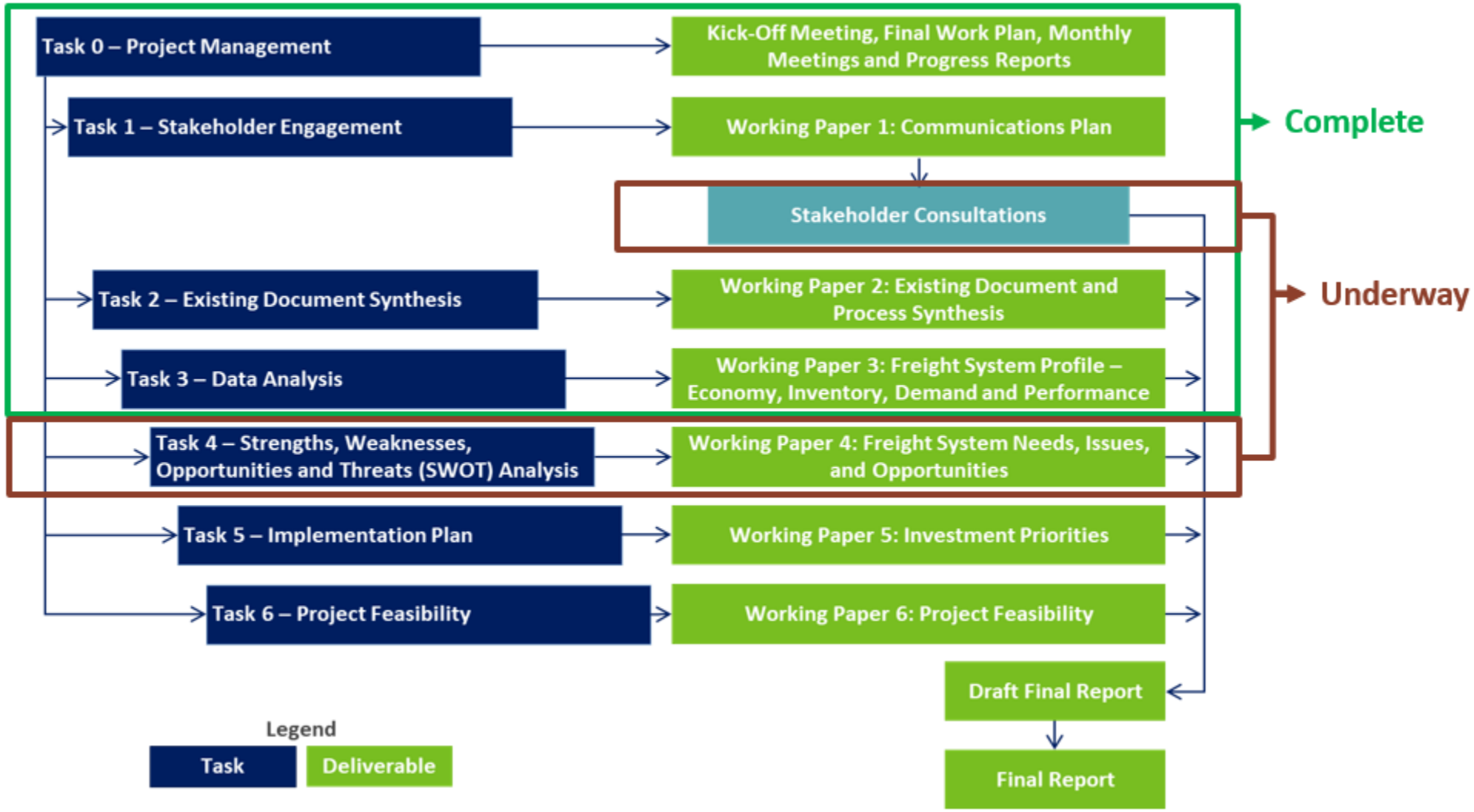
Advisory Committee Meeting 2

July 22, 2021

DEPARTMENT OF TRANSPORTATION

mndot.gov

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 following the meeting. Please feel free to provide comments on topics relevant to your work or communities.

2. **Collect feedback on District 7'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

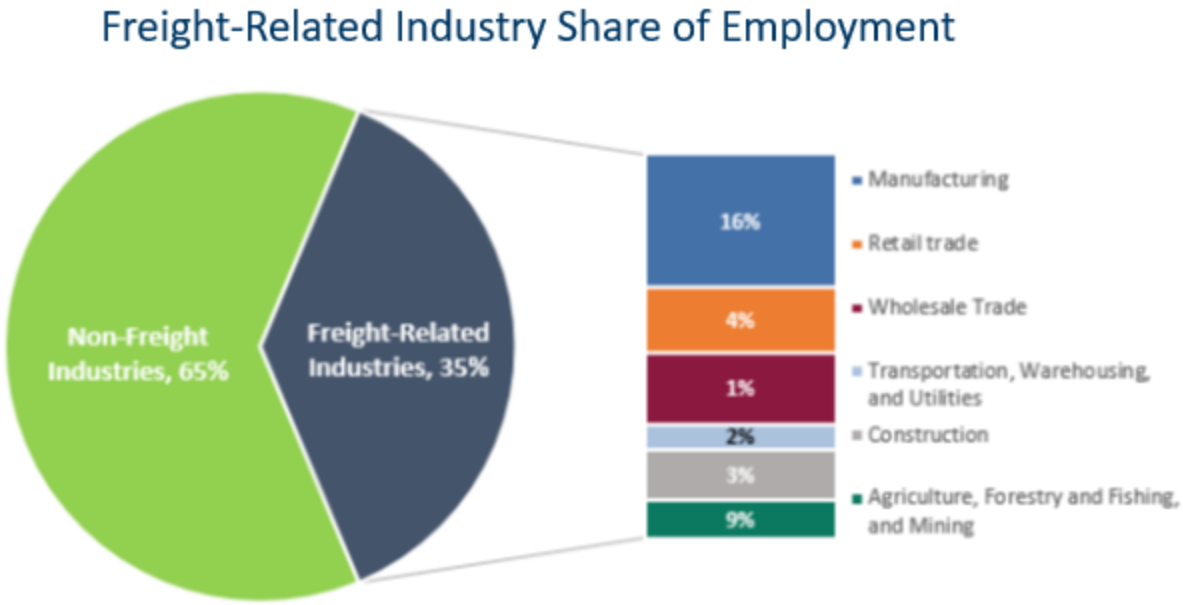
Future Outlook and SWOT Assessment

Next Steps & Discussion

Economic Context

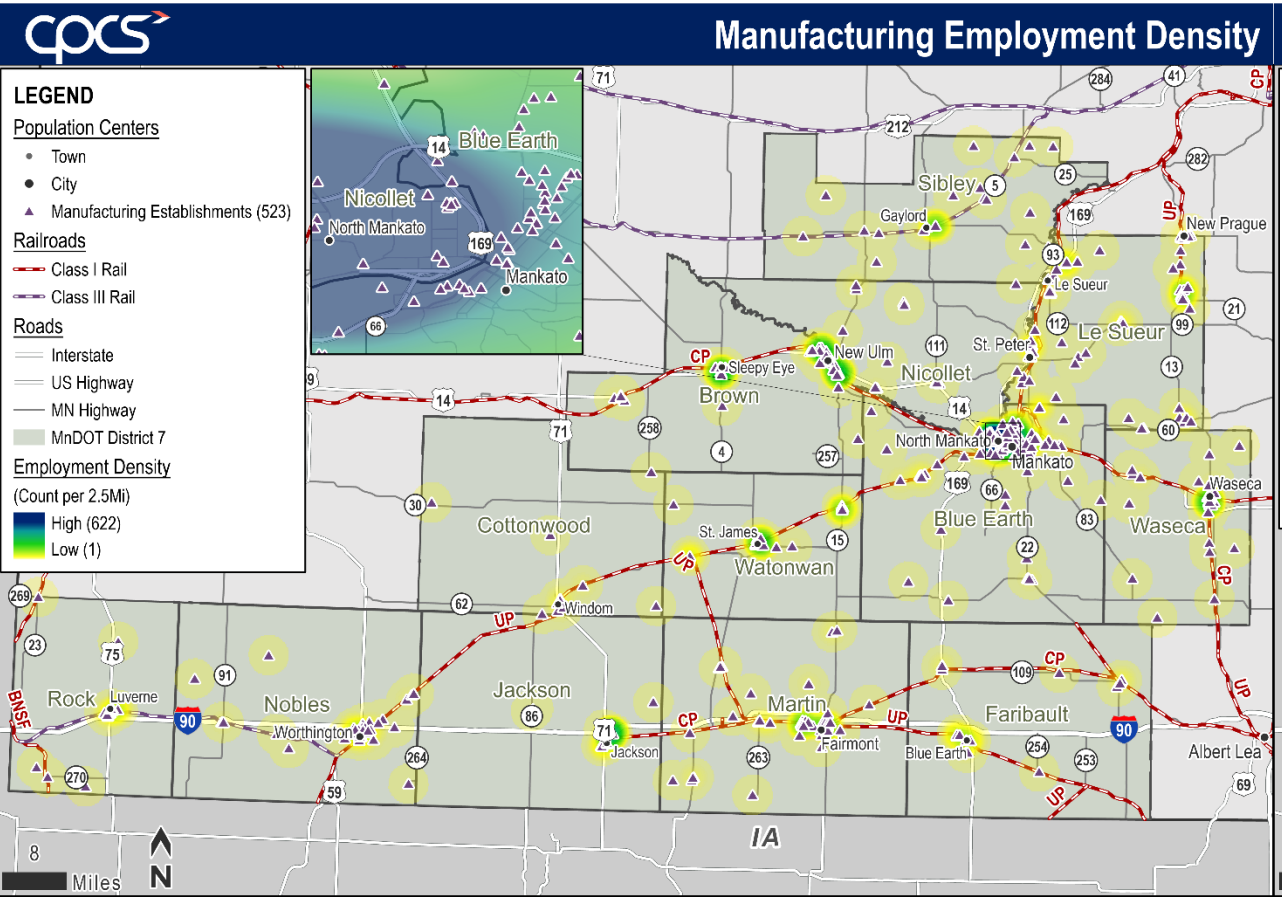
Freight transportation is a critical service for much of the District's economy

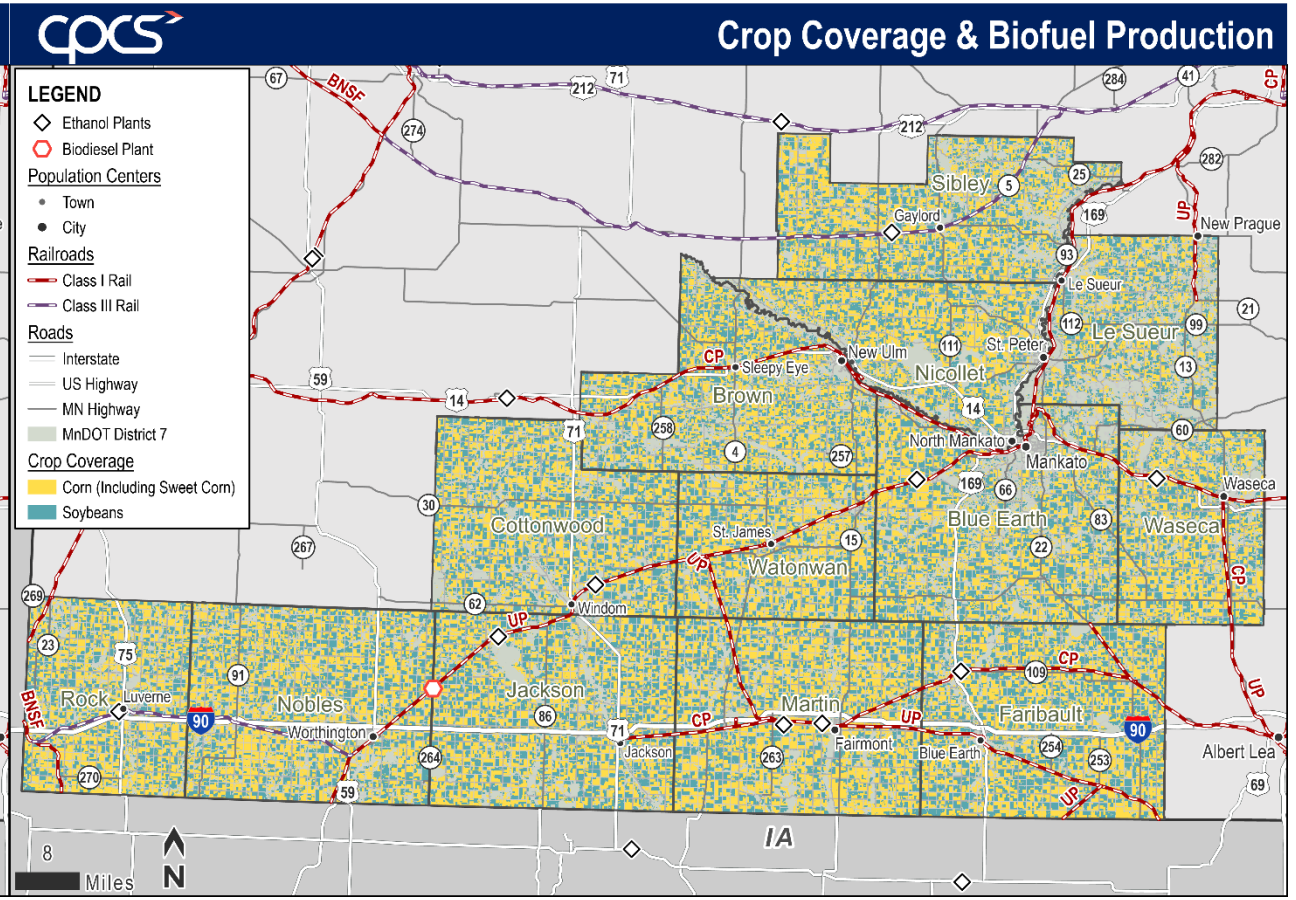
- In District 7, **35%** of employment and **39%** of GDP are associated with freight-related industries.
- Agriculture and manufacturing are particularly important freight-related industries for D7.



The Importance of Freight Transportation

Freight transportation is relevant to all of District 7's communities





District 7's Multimodal Freight Transportation System

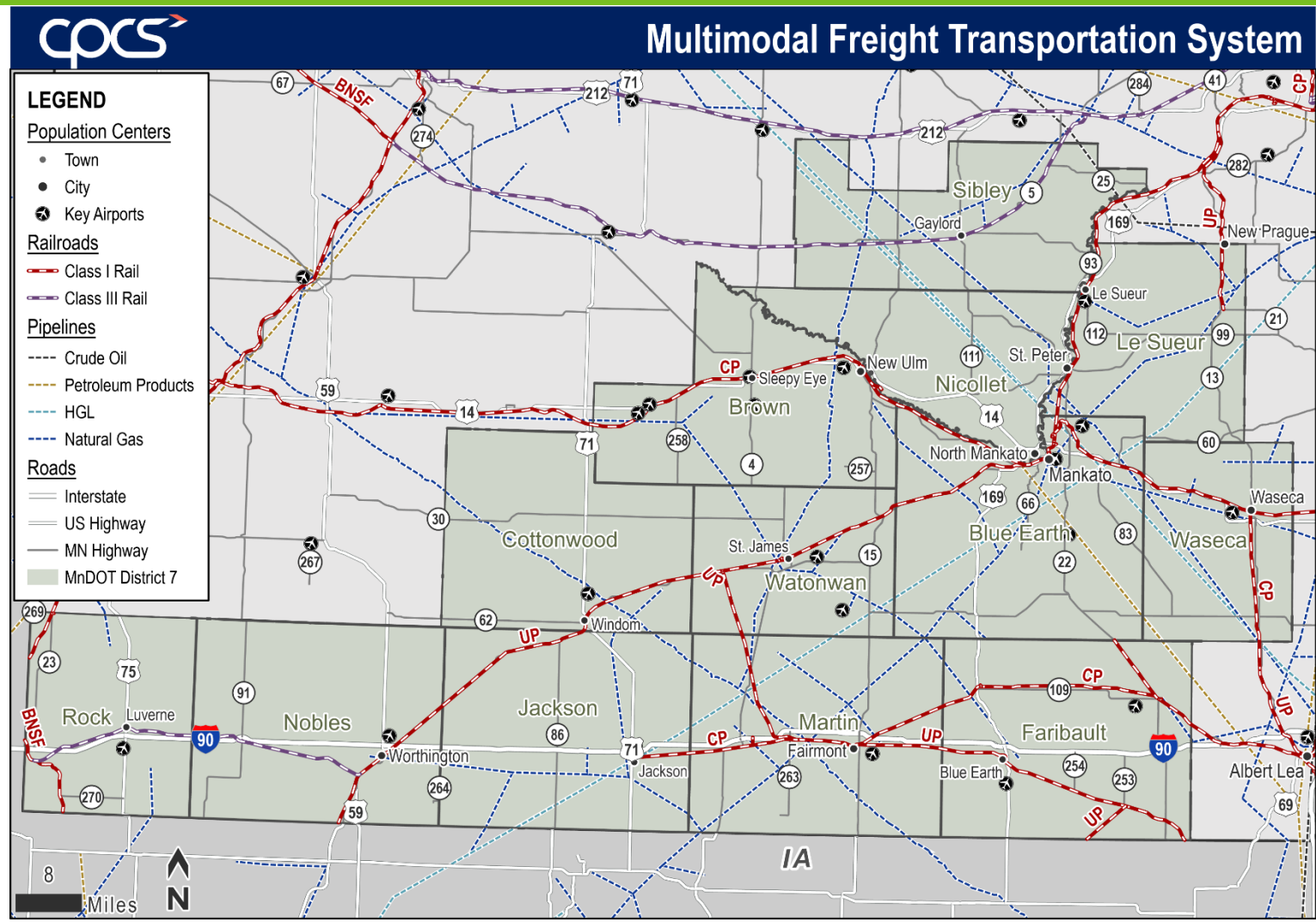
What is District 7's freight system?

Roads
- 146 miles of Interstate
- 1,326 miles of US and State Highways
- 476 state-owned bridges

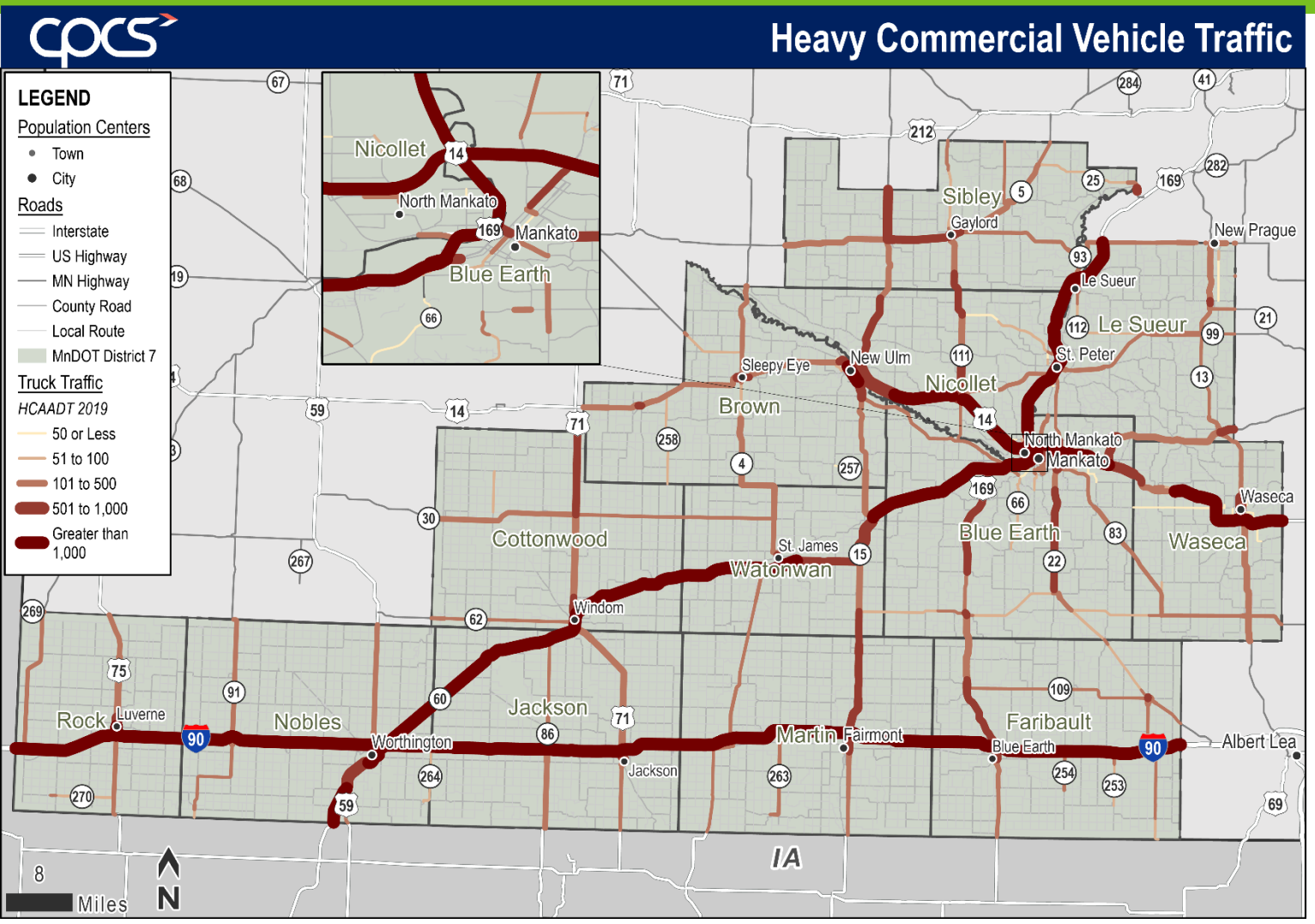
Railroads
- 503 miles of railroad
- 538 public grade crossings

Pipelines
- 879 miles of pipelines

Airports
- 19 public airports



Trucking: Average Annual Daily Traffic



Truck traffic counts show the District's key freight corridors

Key Freight Routes

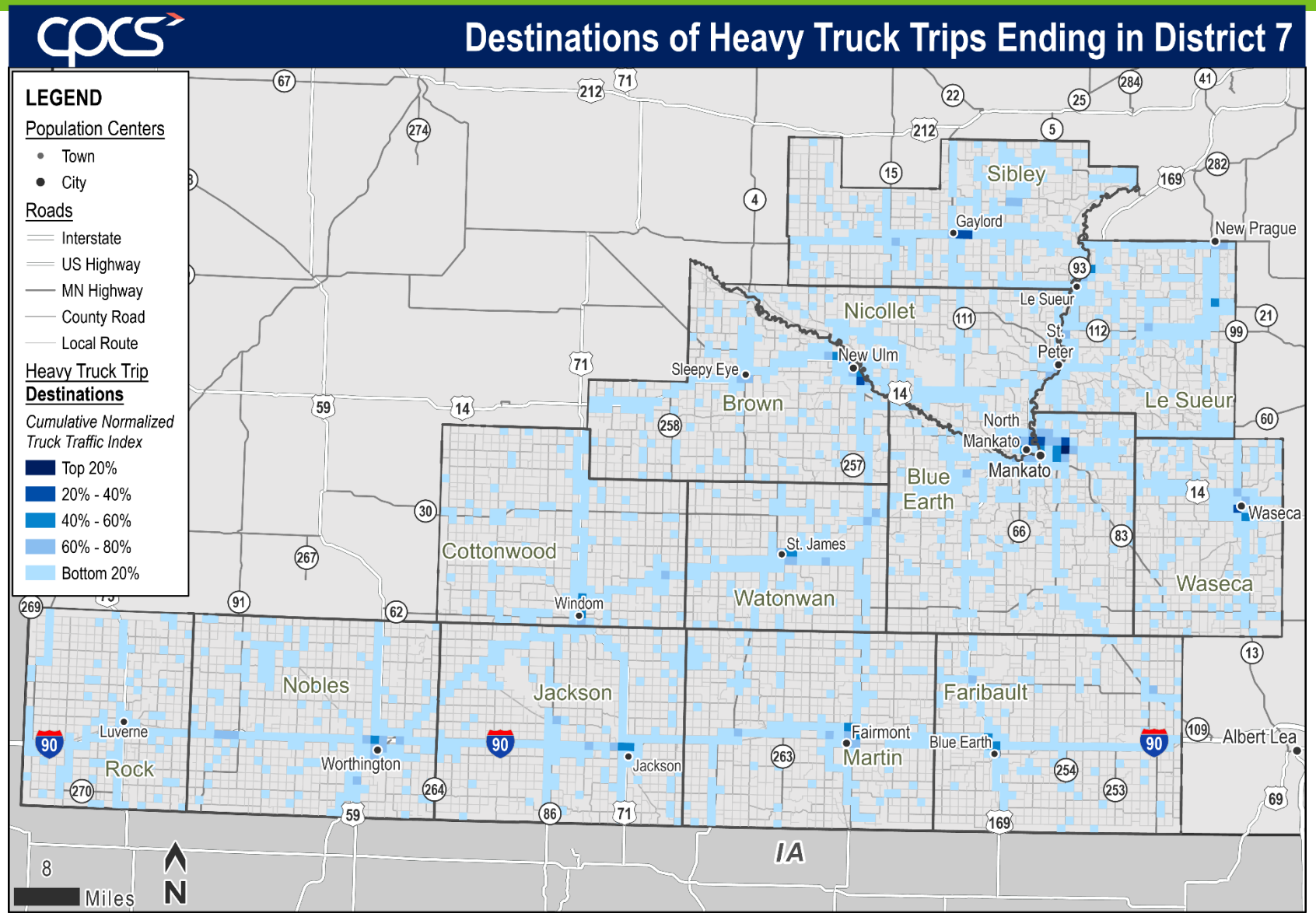
- I-90 – Major east-west connection
- MN-60 – Mankato to Worthington
- US-169 – Connection to the Cities
- US-14 – Connections to Mankato, I-35

Secondary Routes:

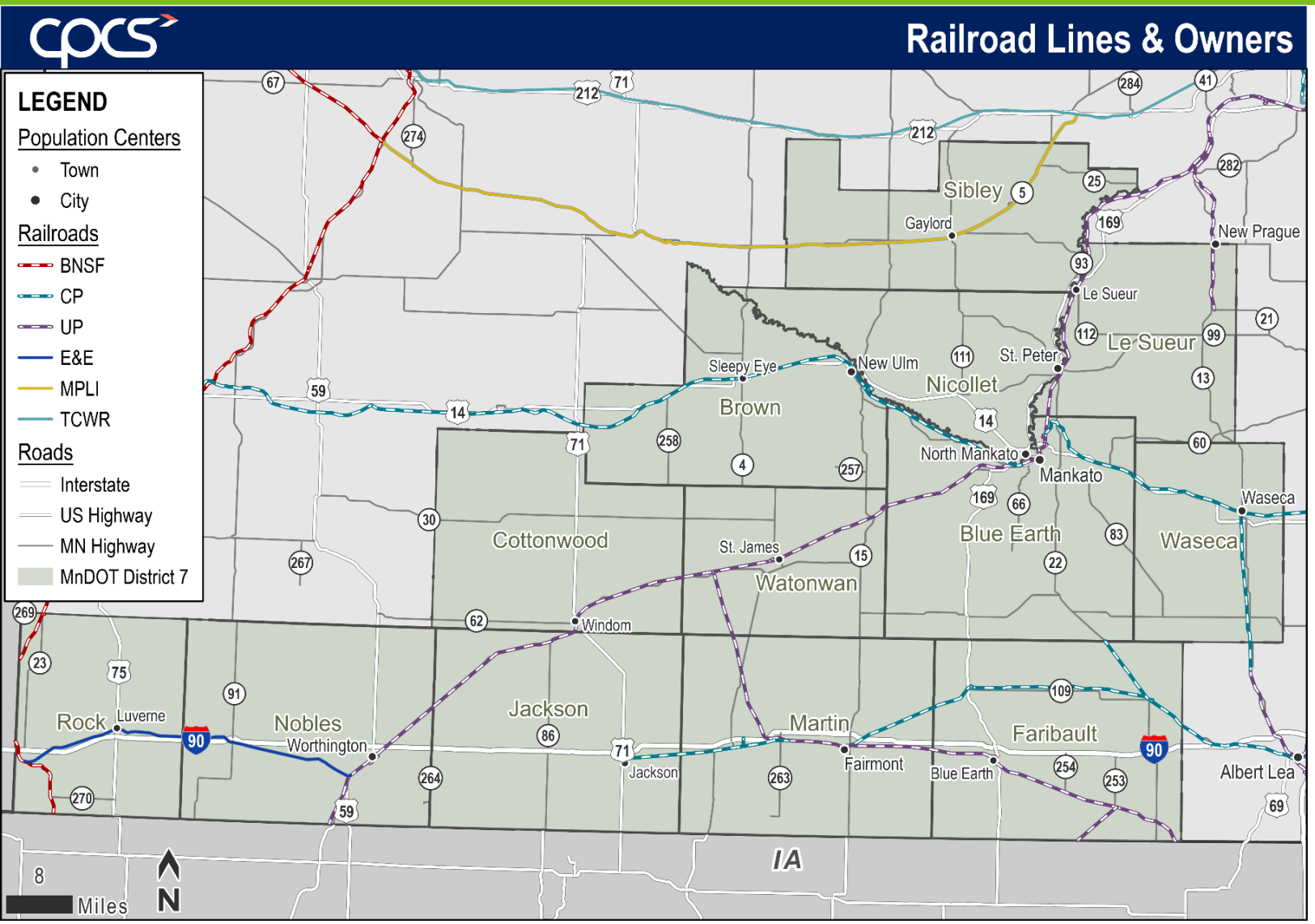
- MN-15
- US-59
- MN-13
- MN-22
- US-75
- US-71

Truck Trip Origins: StreetLight Data

Truck Trip Destinations



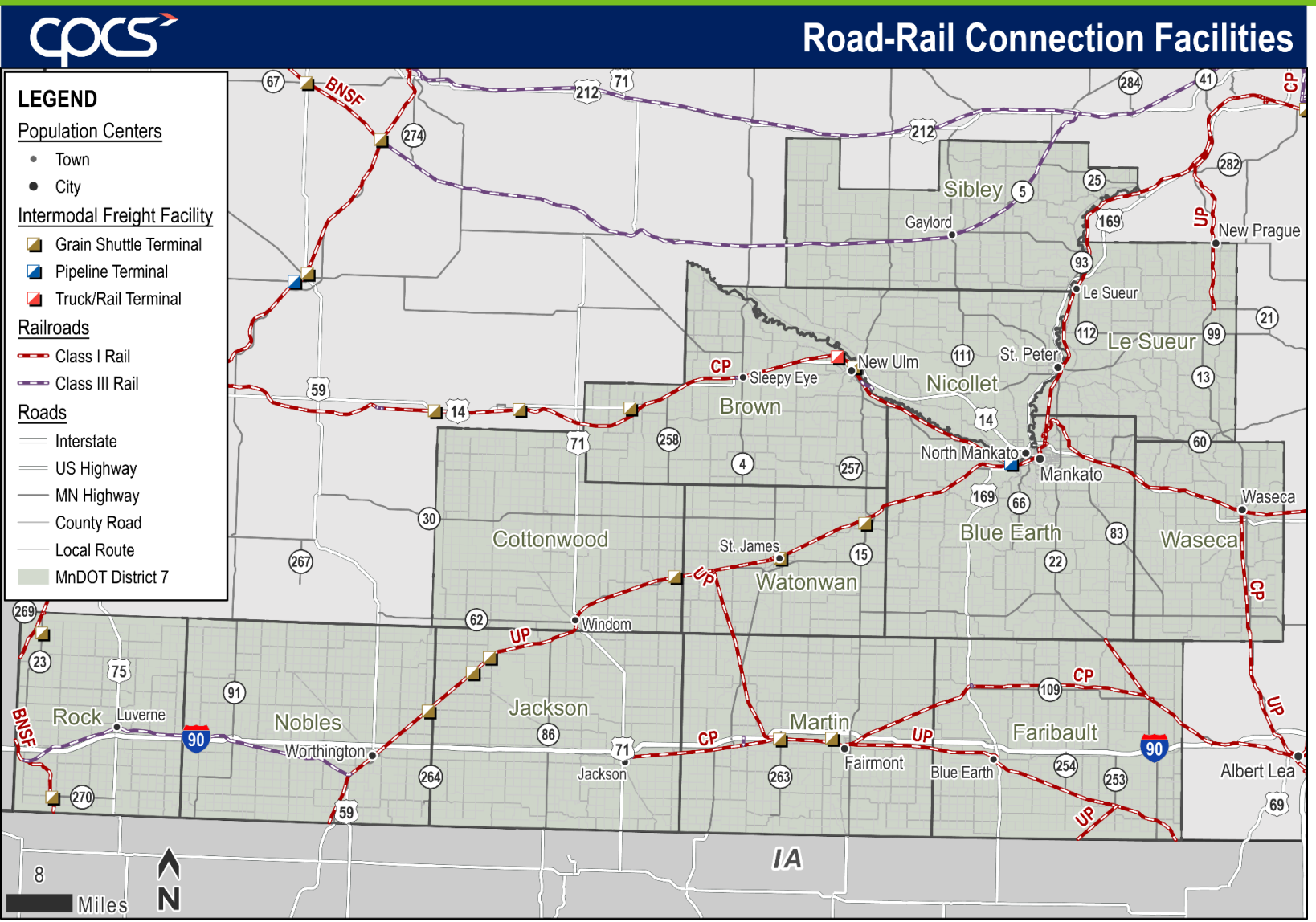
Rail System: Operators



5 railroads operate in District 7

Railroad	System Miles	Public Road Crossings
Union Pacific	221	226
Canadian Pacific	186	209
Burlington Northern Santa Fe	18	12
Ellis & Eastern	41	54
Minnesota Prairie Line	37	45

Rail Infrastructure: Rail-Served Facilities and Crossings



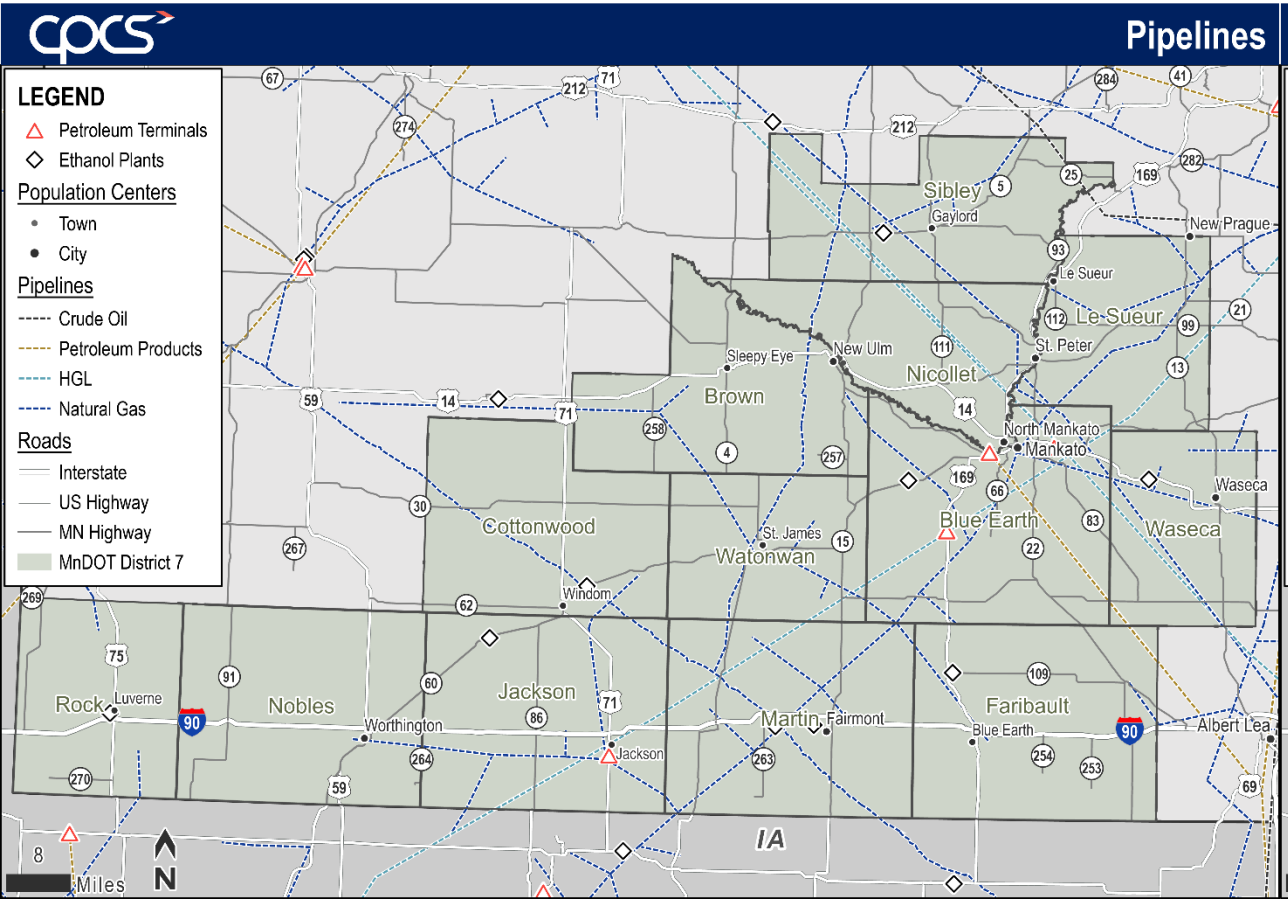
Grade Crossings

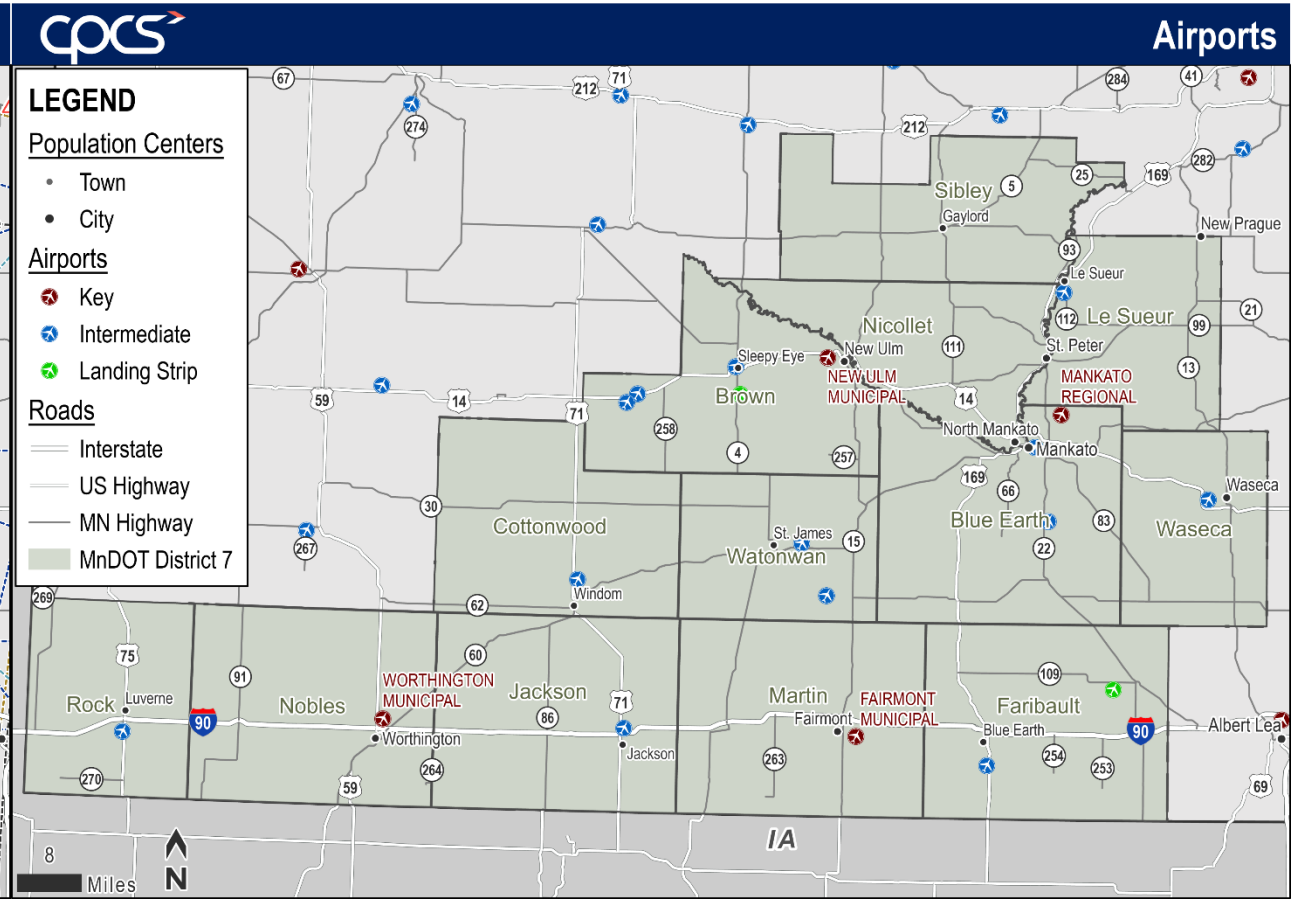
- 148 actively-protected public crossings
- 390 passively-protected public crossings

Transloading and Supporting Facilities

- 19 grain facilities
- 4 railroad yards
- 1 truck-rail transload terminal
- 1 pipeline terminal

District 7's Other Freight Modes





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

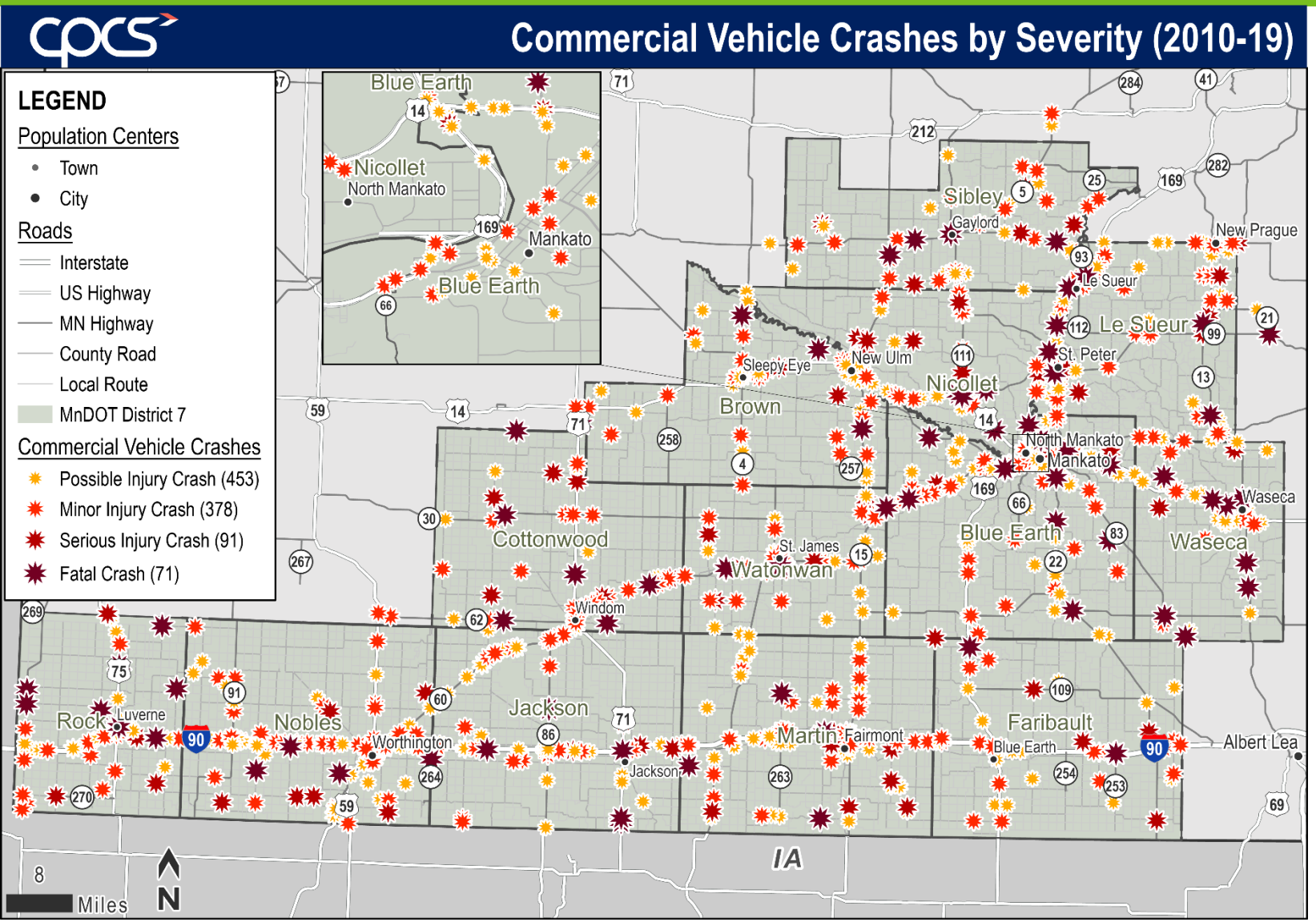
- **Bridge Condition***

*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: Truck-Related Crashes



Between 2010 and 2019, truck-involved crashes were primarily concentrated in areas with higher traffic volumes.

Crash Severity	Total
Fatality	19
Serious Injury	26
Minor Injury	322
Property Damage Only	1,216
Unknown	307

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"

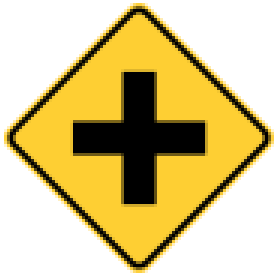
The District Freight Plan incorporates the results of roadway and intersection safety risk screenings that were conducted as part of prior District Safety Plans. Example risk factors include:

Vehicle Volume

Median Width

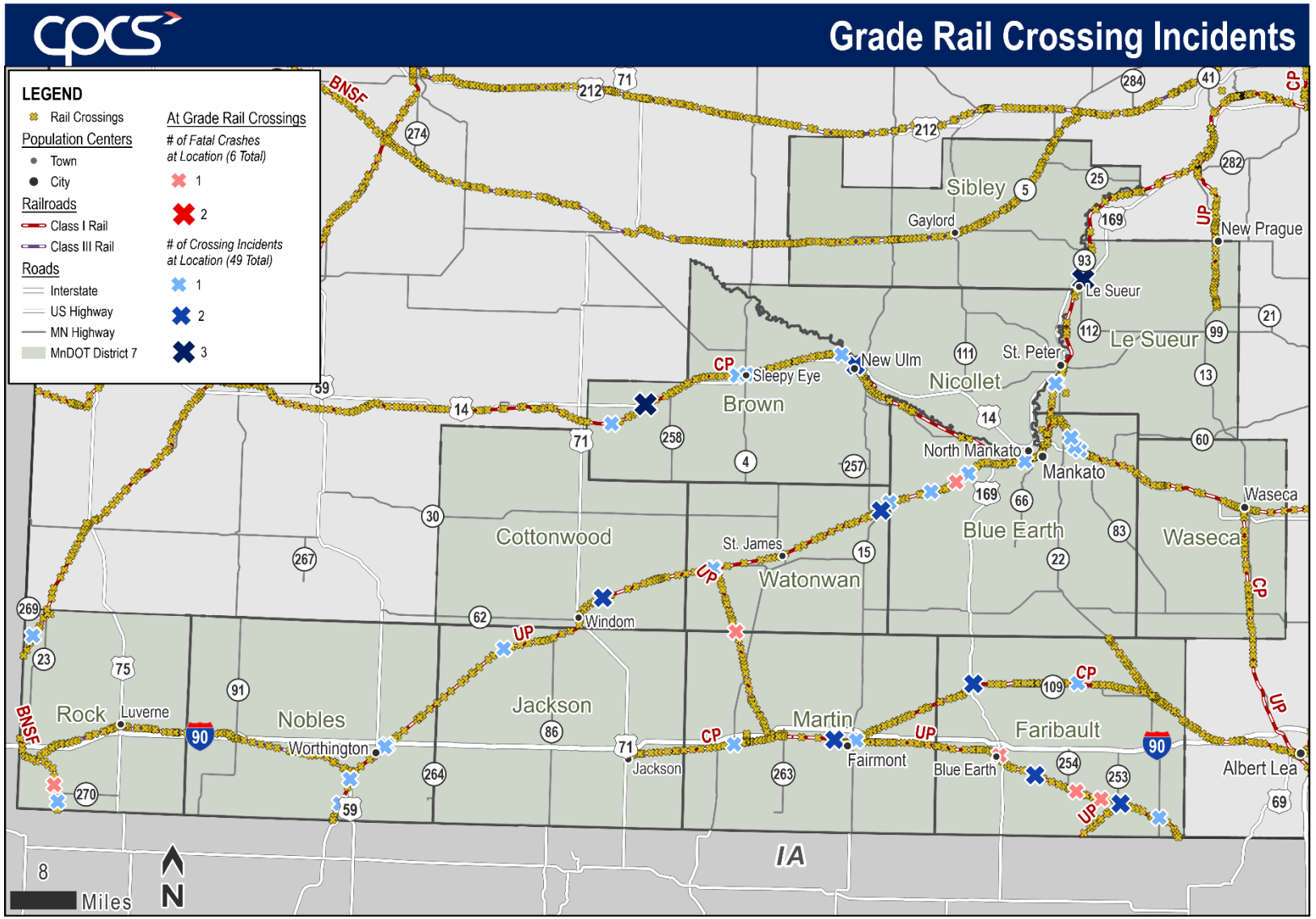
Shoulder Width

Intersection Density



Curve Density

Grade Crossing Safety



Between 2004 and 2013, District 7 ranked:

- ***1st for number of passively-protected crossing incidents***
- ***5th for number of actively-protected crossing incidents***

Safety: Grade Crossing Risk Factors

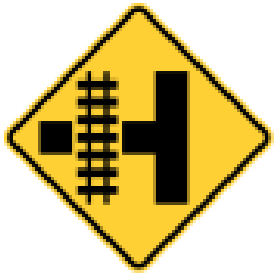
Like severe road crashes, grade crossing incidents exhibit a similar "randomness" in distribution.

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

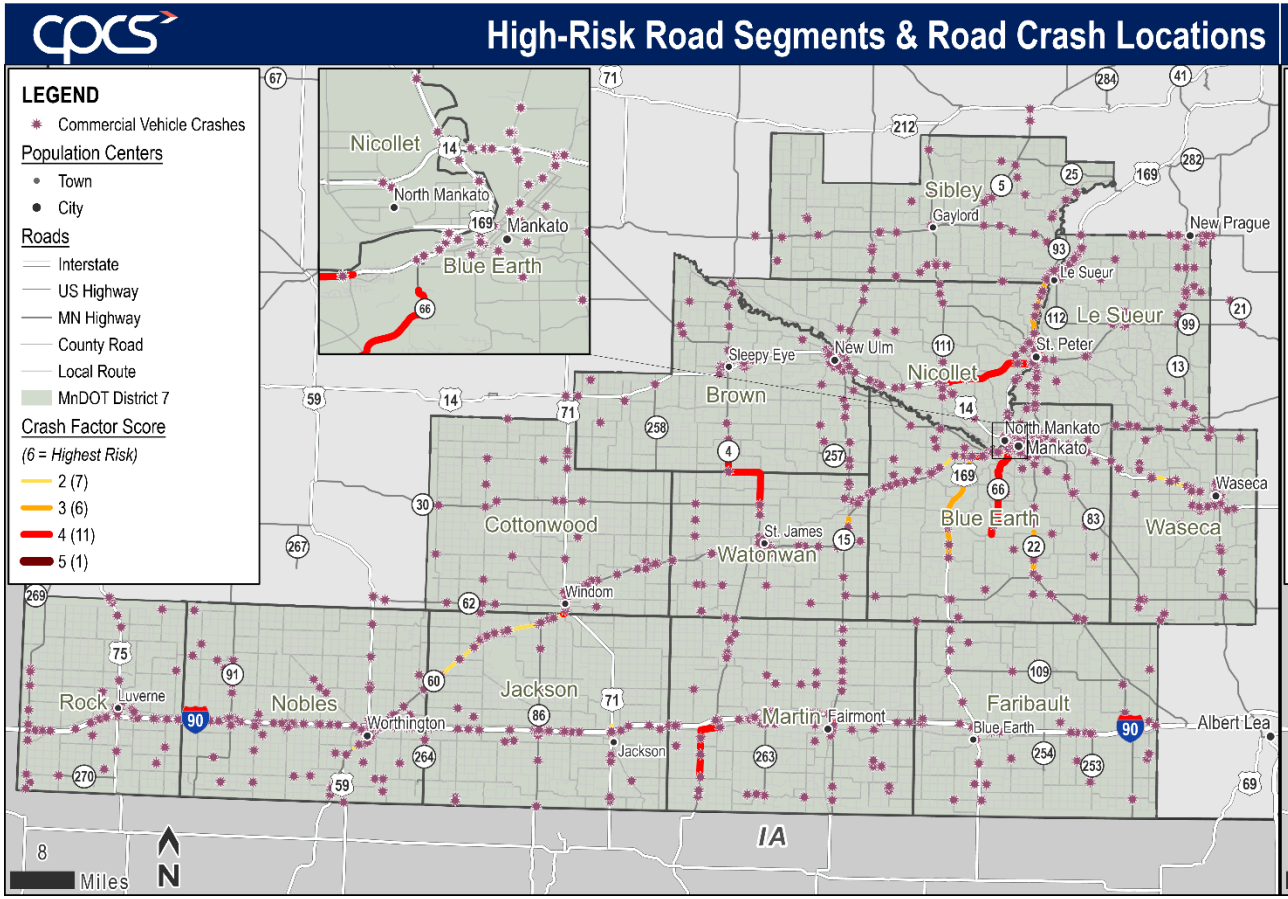


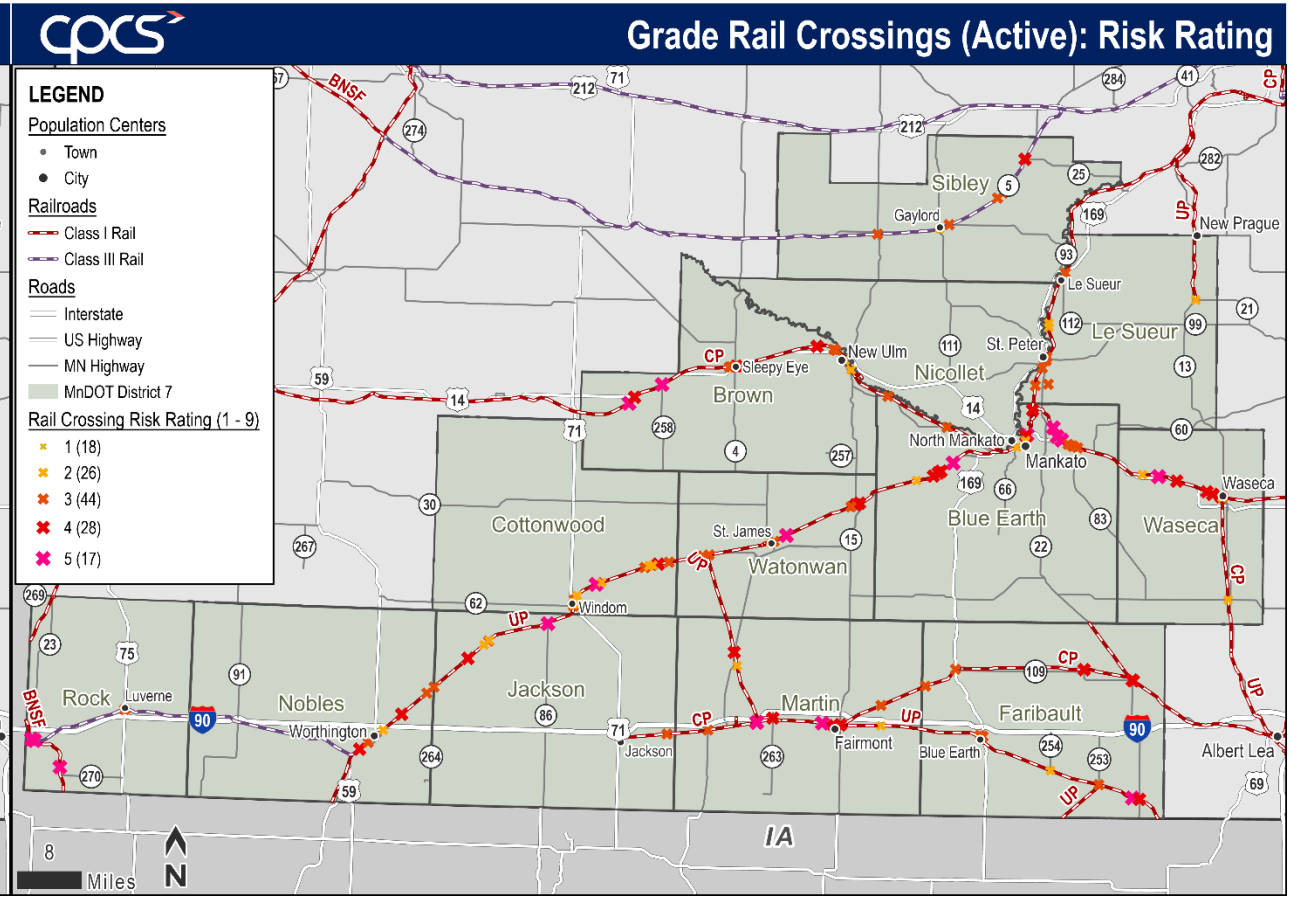
Skew

Number of Tracks

Sight Lines

Examples of Safety Risk Ratings





Safety Summary

District 7's freight safety conditions are mixed.

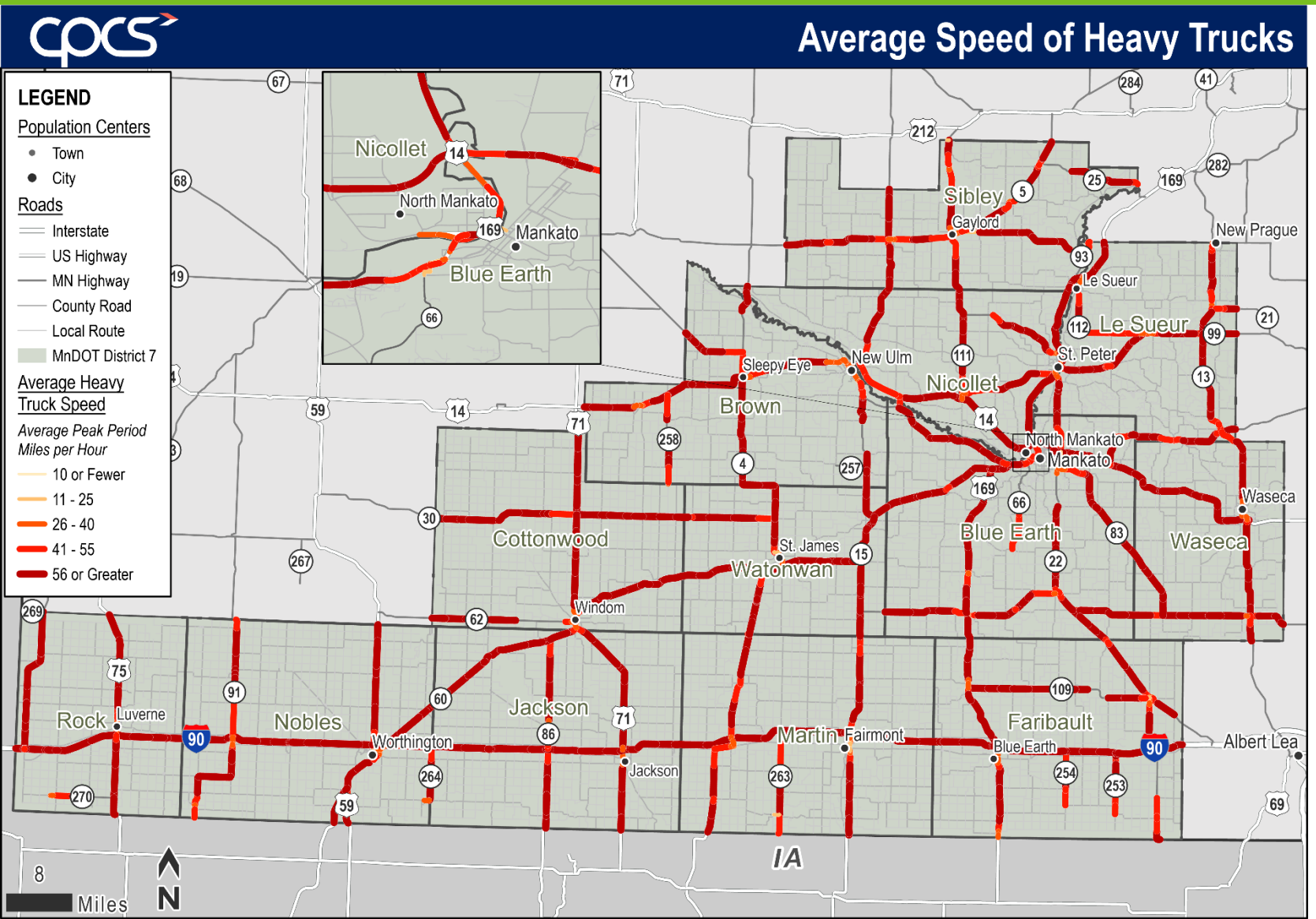
- District 7 has an **average count** of severe roadway crashes compared to other MnDOT Districts.
- Active grade crossing incident counts are below-average compared to other districts, but District 7 had the **greatest number** of passively-protected grade crossing crashes among all Districts.
- Grade crossing incidents are **concentrated on higher-volume rail corridors**: UP line from Watonwan County to Mankato, UP line in Faribault County, and UP line west from Mankato

Mobility

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

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

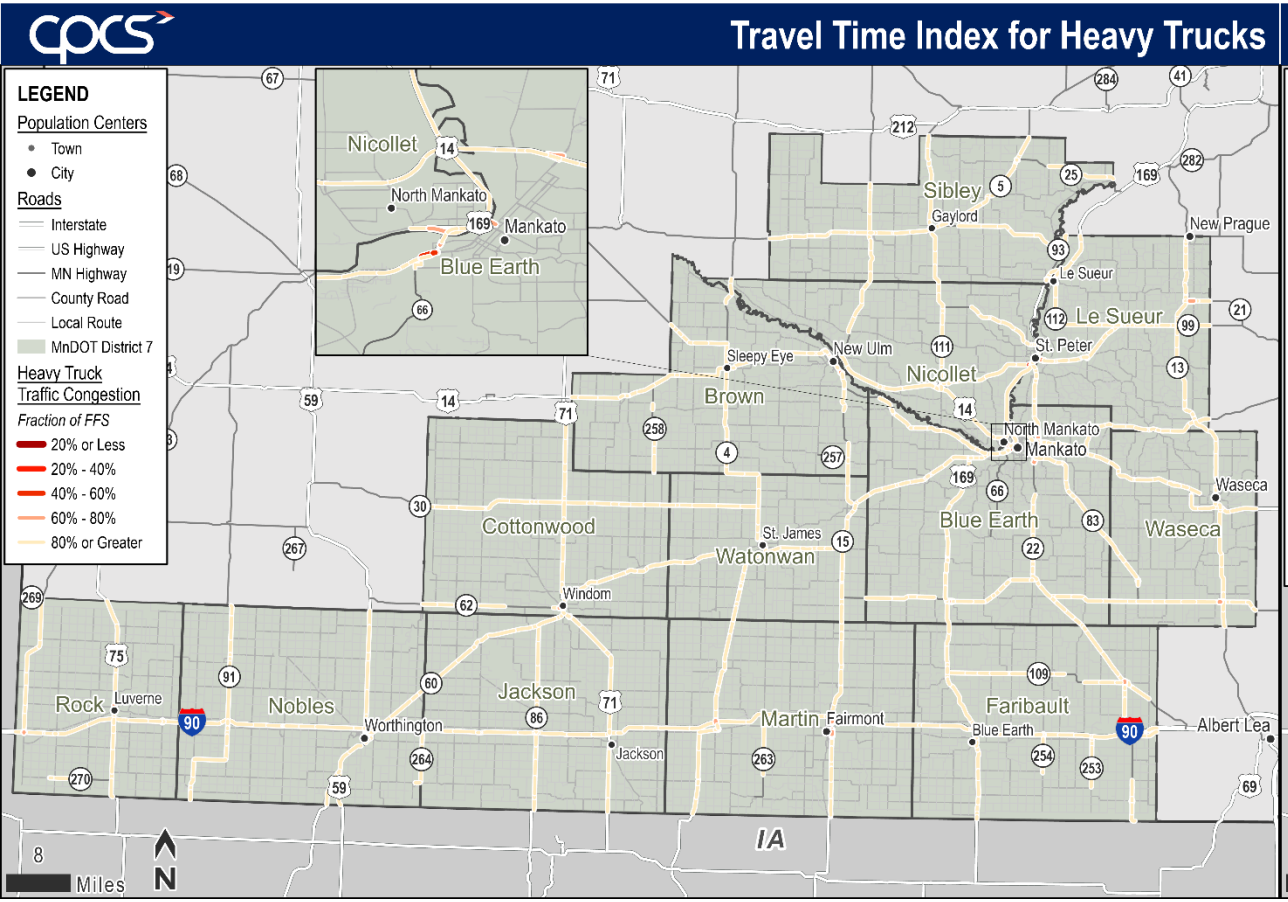
Average Truck Speed

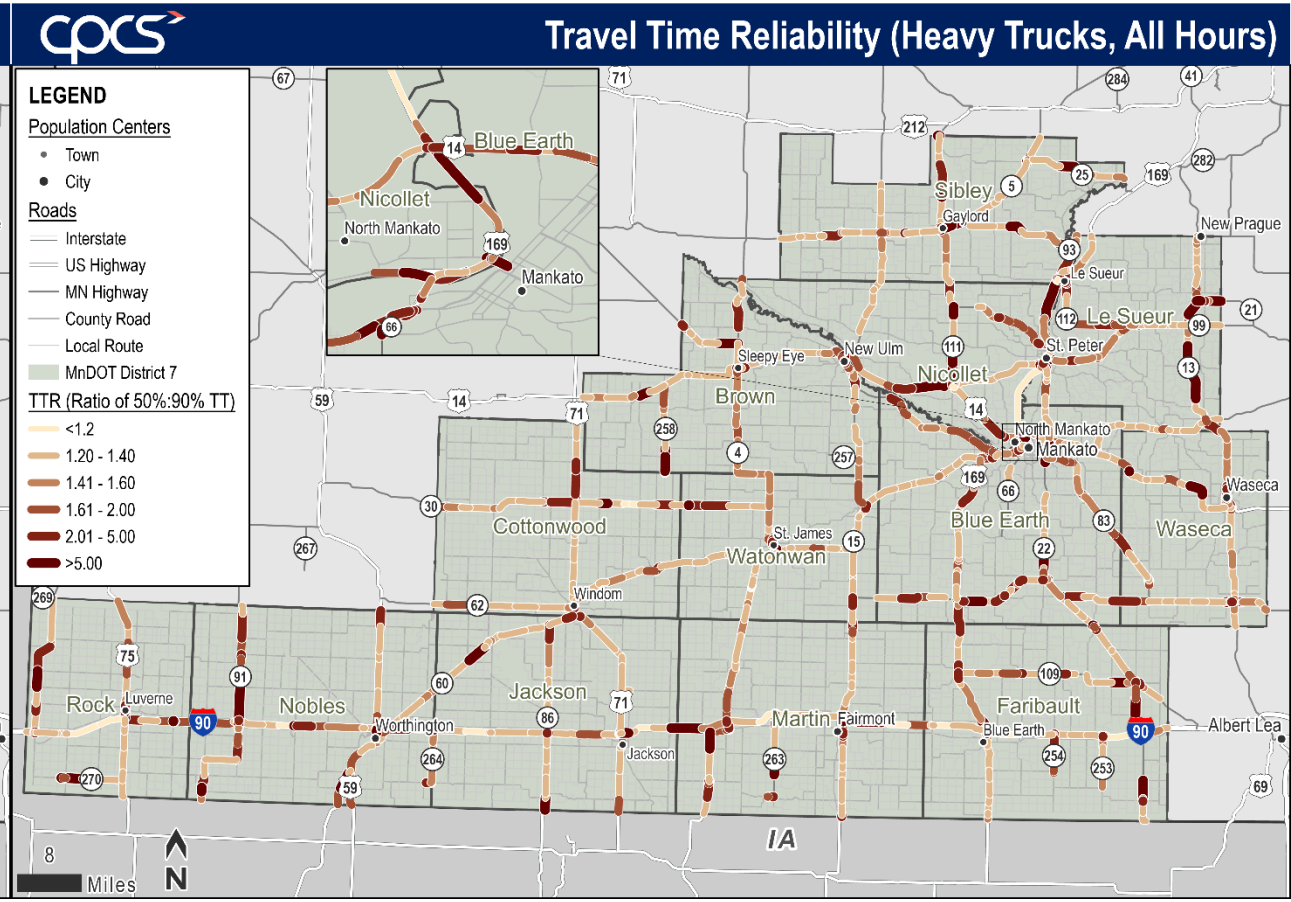


Aside from expected lower speeds in urban areas, District 7's average truck speeds generally match free-flowing posted speeds.

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

Truck congestion and travel speed is generally not a problem in D7





Mobility: Travel Speed Summary

Truck congestion and travel speed is generally not an issue for District 7 outside of urban areas

- Heavy passenger vehicle traffic congestion can occur on random segments of roads in Mankato/North Mankato, Eagle Lake, Lake Crystal, and New Ulm
- Travel Time Reliability (TTR) values are highest on routes that provide access to major highways such as I-90 and US highways (US-169 and US-14), but it is generally not an issue.
  - High TTR values mean there is more congestion than normal

OSOW Operations in District 7

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

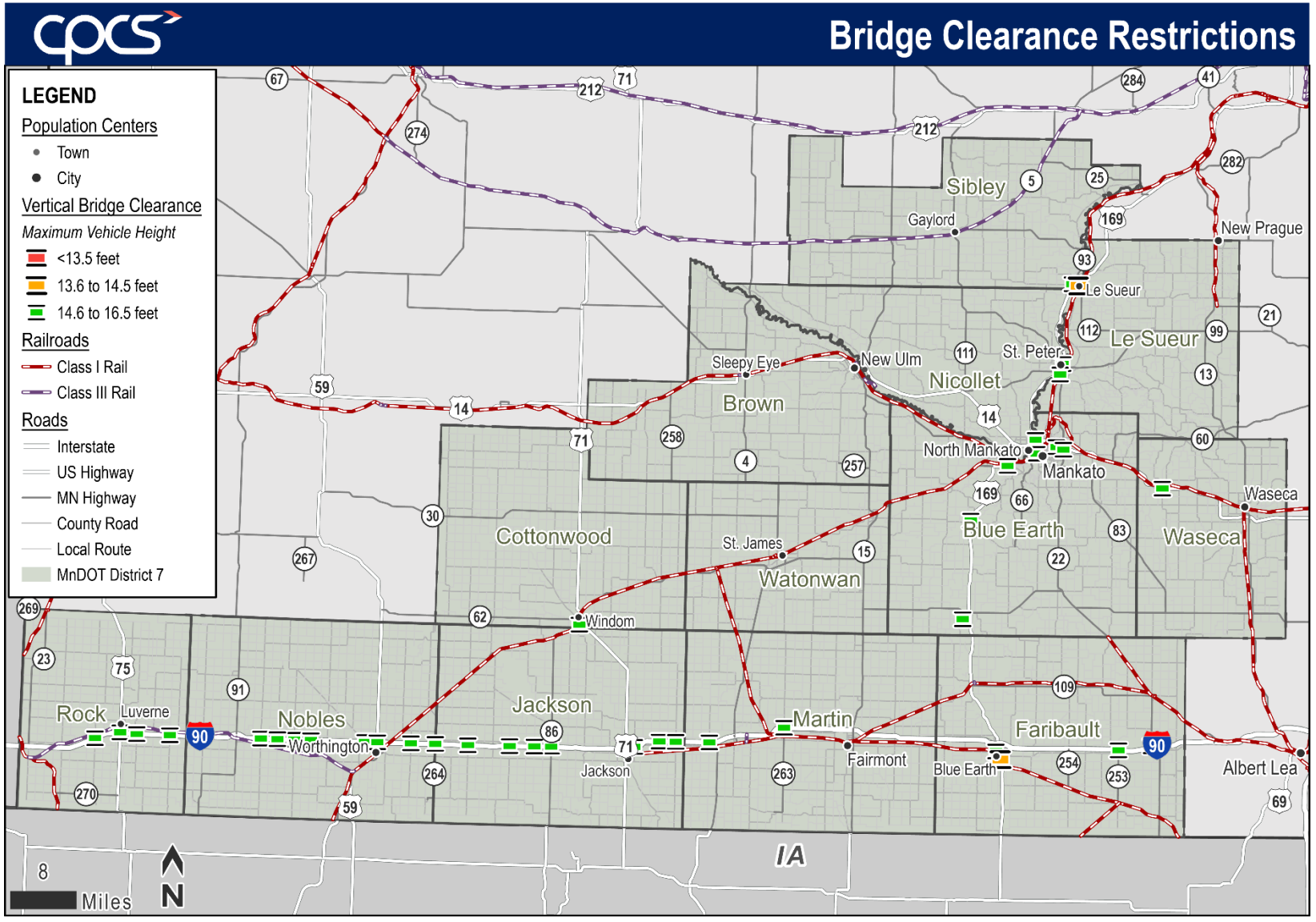
Source: MnDOT

OSOW Load Dimensions in District 7

Height and vertical clearances are key considerations for OSOW permits in D7

Source: MnDOT

Bridge Clearances



District 7 has several bridges that could create barriers to oversize truck traffic due to height clearance.

- US-169 south of downtown Blue Earth
- UP Windom rail bridge on US-71
- UP rail bridge where US-59 and 1st Ave intersect in Worthington

Bridge Condition

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

Count of Deficient Bridges, by System and County:

County	Interstate/TH	County	Township	City	Total
Blue Earth	2	12	0	0	14
Brown	0	2	3	0	5
Cottonwood	0	2	5	0	7
Faribault	0	12	15	0	27
Jackson	0	7	6	0	13
Le Sueur	1	2	0	0	3
Martin	0	4	12	1	17
Nicollet	1	1	1	0	3
Nobles	1	2	3	2	8
Rock	0	8	3	3	14
Sibley	1	3	1	0	5
Waseca	0	5	1	0	6
Watonwan	0	2	2	0	4
Total	6	62	52	6	126

Presentation Map

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Next Steps & Discussion

What Future Trends will Affect District 7?

Think "STEEP" factors

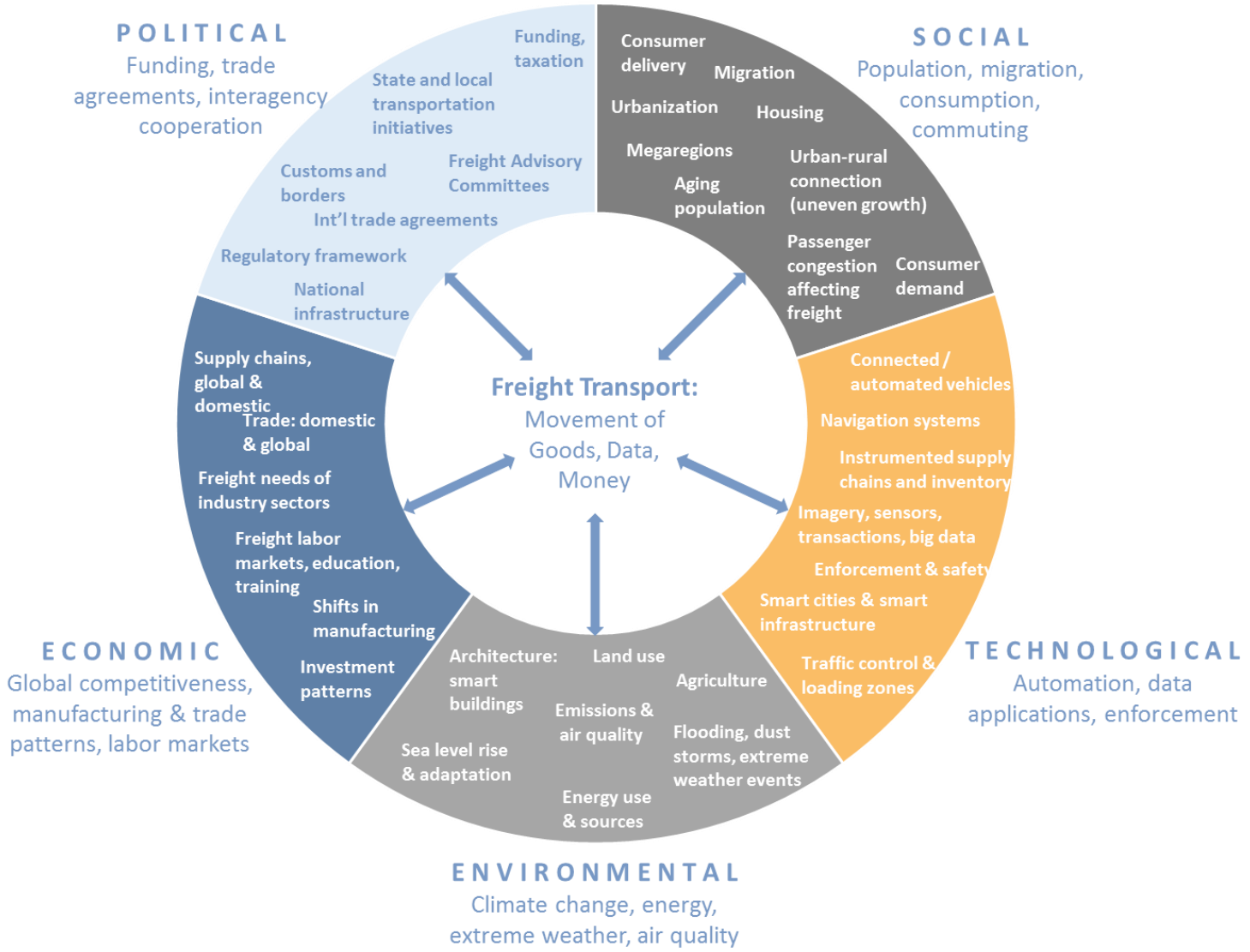
- **S**ocial
- **T**echnological
- **E**nvironmental
- **E**conomic
- **P**olitical

What STEEP factors will be important to District 7?

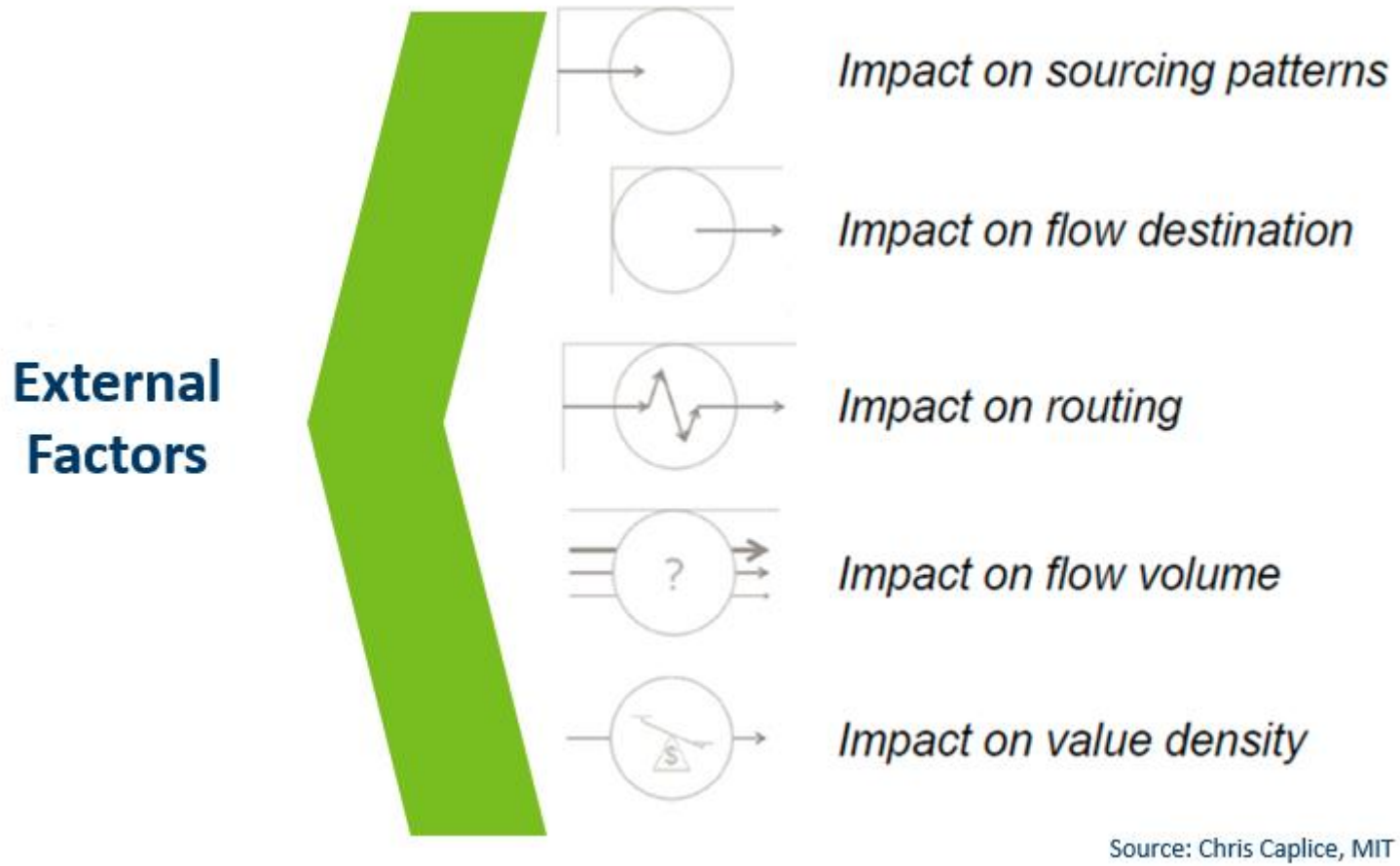
How could these factors influence freight movements?

STEEP Factors – *examples, only*

Factors considered will reflect District 7's unique context



Translating STEEP Factors into Effects



Source: Chris Caplice, MIT

Potential District 7 STEEP Trends

- **Social:** aging workforce
- **Technological:** autonomous or connected vehicles
- **Environmental:** decarbonizing freight, or climate change impacts on agriculture and infrastructure
- **Economic:** rising costs of freight combined with increasing demand for commodities
- **Political:** funding uncertainty

Source: Getty Images

Source: Tesla

Source: AgFax

Strengths, Weaknesses, Opportunities, and Threats

Use the information presented today to help us identify District 7'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.	• Need for rail intermodal service. • Rail crossing safety issues at passively-protected crossings. • Lack of harmonization of truck size and weight.
Opportunities	**Threats**
• Facilitation of rail intermodal service • Decarbonizing freight. • Renewable energy development (electricity and biofuels).	• Aging workforce. • Limited funding to address infrastructure maintenance and updates.

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 7 or Minnesota as a whole?
- What could MnDOT do to leverage or address these findings?

Presentation Map

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Task 4 – SWOT Analysis

Key Questions:

- What are the District's common freight-related needs, issues, opportunities, and challenges?
- How can the District mitigate threats and weaknesses, and take advantages of strengths and opportunities?

Advisory Committee and Technical Team Meetings

Stakeholder Consultations

Online Survey

Analysis of Data

Previous Studies and Plans

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

Eddie Wytkind
Project Coordinator

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