Chapter 3. Existing Conditions

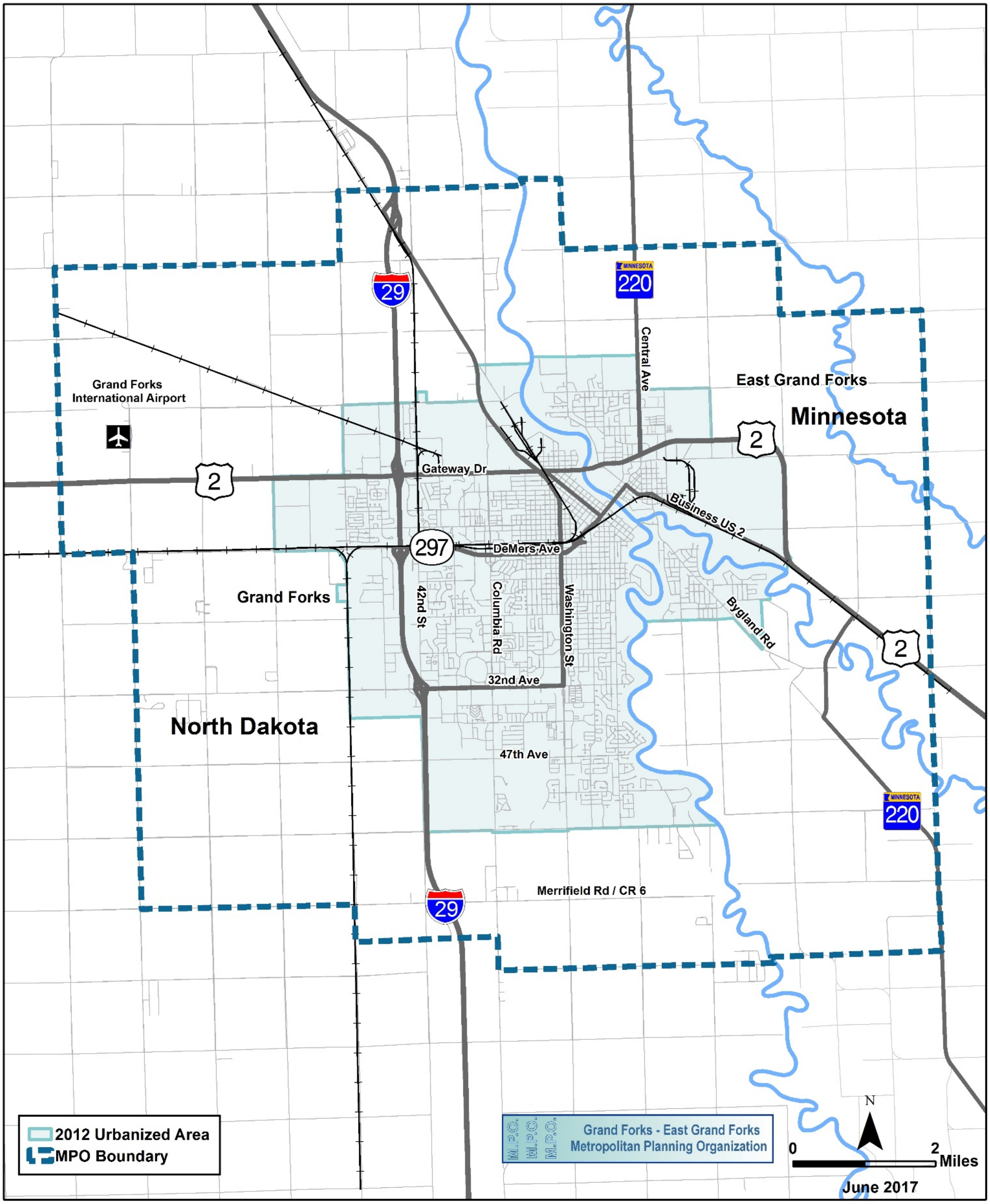
This chapter summarizes existing street/highway conditions for the Grand Forks-East Grand Forks Metropolitan Planning Organization (MPO) area. Planning for the long-term needs of the MPO's street and highway system requires a solid understanding of the various inputs and characteristics that define the function of the current system. Several topics including demographics and land use, street/highway system characteristics, traffic and safety patterns, freight networks, and a summary of recommendations from recent studies are discussed.

Demographics and Land Use

Located in northeast North Dakota and northwest Minnesota, the MPO planning area encompasses the cities of Grand Forks, ND and East Grand Forks, MN. It also includes areas beyond each city that are anticipated to be urbanized it the next 20-years in Grand Forks County, ND and Polk County, MN. See Figure 3-13 for the MPO planning area.

According to the U.S. Census (2010), the populations for the cities of Grand Forks and East Grand Forks were 52,838 and 8,602, respectively. Since 2010, Grand Forks has increased its population by four percent while East Grand Forks has remained close to the 2010 estimate. The 2015 American Community Survey estimates the Grand Forks population at 54,944 and the East Grand Forks population at 8,611; a combined population of 63,555. See Figure 3-2 for population estimates in both cities between 2010 and 2015.

Figure 3-13: MPO Planning Area



Source: Grand Forks-East Grand Forks MPO

Figure 3-2: Grand Forks and East Grand Forks Populations, 2010 to 2015

Source: US Census, American Community Survey

Table 3-1 provides population forecasts to the year 2045 identified in recently adopted land use plans for the cities of Grand Forks and East Grand Forks. The Grand Forks population forecasts are based upon a 1.2 percent annual growth rate, and the East Grand Forks population forecasts are based upon a 0.9 percent annual growth rate. In total, the region's population is forecasted to increase by approximately 39 percent between 2015 and 2045.

Table 3-1: Population Forecasts

City	2010 (US Census)	2015 ACS Estimate	2025	2035	2045
Grand Forks	52,838	54,944	60,247*	67,879*	76,479*
East Grand Forks	8,601	8,611	9,841^	10,764^	11,773^
Total	61,439	63,555	70,088	78,643	88,252

*1.2 percent growth rate assumed per 2045 Grand Forks Land Use Plan

^0.9 percent growth rate assumed per 2045 East Grand Forks Land Use Plan

Source: 2045 Grand Forks Land Use Plan, East Grand Forks 2045 Land Use Plan

Race

Racial composition for both Grand Forks and East Grand Forks is predominantly white (90.7 and 94.9 percent, respectively), as shown in Table 3-2. While minority populations remain low overall, these populations have increased since 2000 in Grand Forks and remained near similar levels in East Grand Forks.

Table 3-2: Race Composition Percentage

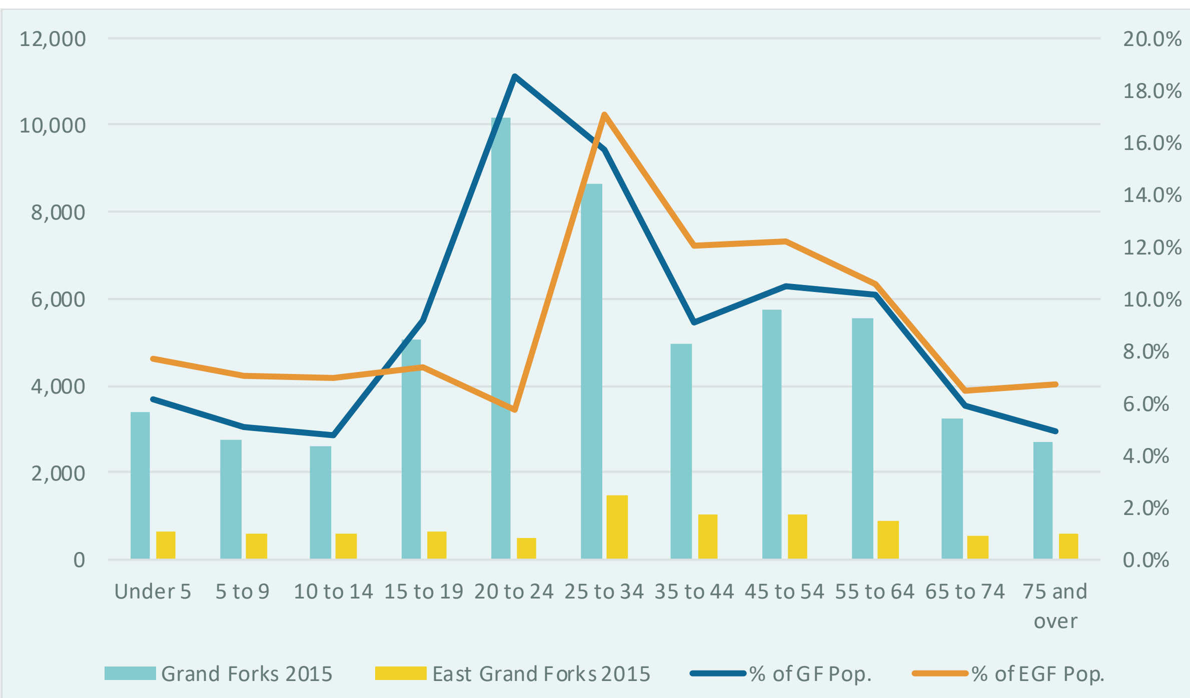
City	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific	Some other race
Grand Forks	90.7%	3.7%	4.7%	3.2%	0.2%	1.1%
East Grand Forks	94.9%	3.7%	3.3%	1.4%	0.1%	0.6%

Source: 2015 American Community Survey

Age

Grand Forks and East Grand Forks are younger than the United States and their respective state average. The median age is 37.6 years in the United States, 35.4 years in North Dakota, and 37.7 years in Minnesota. In comparison, the median age in Grand Forks is just 28.5 years while in East Grand Forks it is 34.1 years. With the University of North Dakota located in Grand Forks, a younger median adult population is expected. Since 2000, the age groups that have seen the largest percentage of increase are young adults (age 20-35) and senior citizens (age 55+). The aging baby boomer population is expected to have a major impact on the transportation network at the regional and national level. As the elderly age, they become less mobile and more reliant on family, friends, taxis, and public transportation to get around. This, along with recent trends in technology and retail, may result in increases in delivery and on-demand services, such as home delivery of everything from medication to groceries.

Figure 3-3: Age Group



Source: 2015 American Community Survey

Income

According to the 2015 American Community Survey (US Census Bureau), the median household income in Grand Forks is $46,149, while in East Grand Forks the median household income is $55,590. Both Grand Forks and East Grand Forks have lower median household incomes compared to their respective states ($57,181 for North Dakota and $61,492 for Minnesota).

In terms of poverty, 20 percent of all Grand Forks residents have incomes below the poverty line, compared to 10.6 percent in East Grand Forks. Both states have about 11.5 percent of individuals below the poverty level. The income and poverty levels for Grand Forks may be reflective of the high number of college students present in the community. These individuals commonly hold part-time and lower income jobs as they work though school.

Environmental Justice

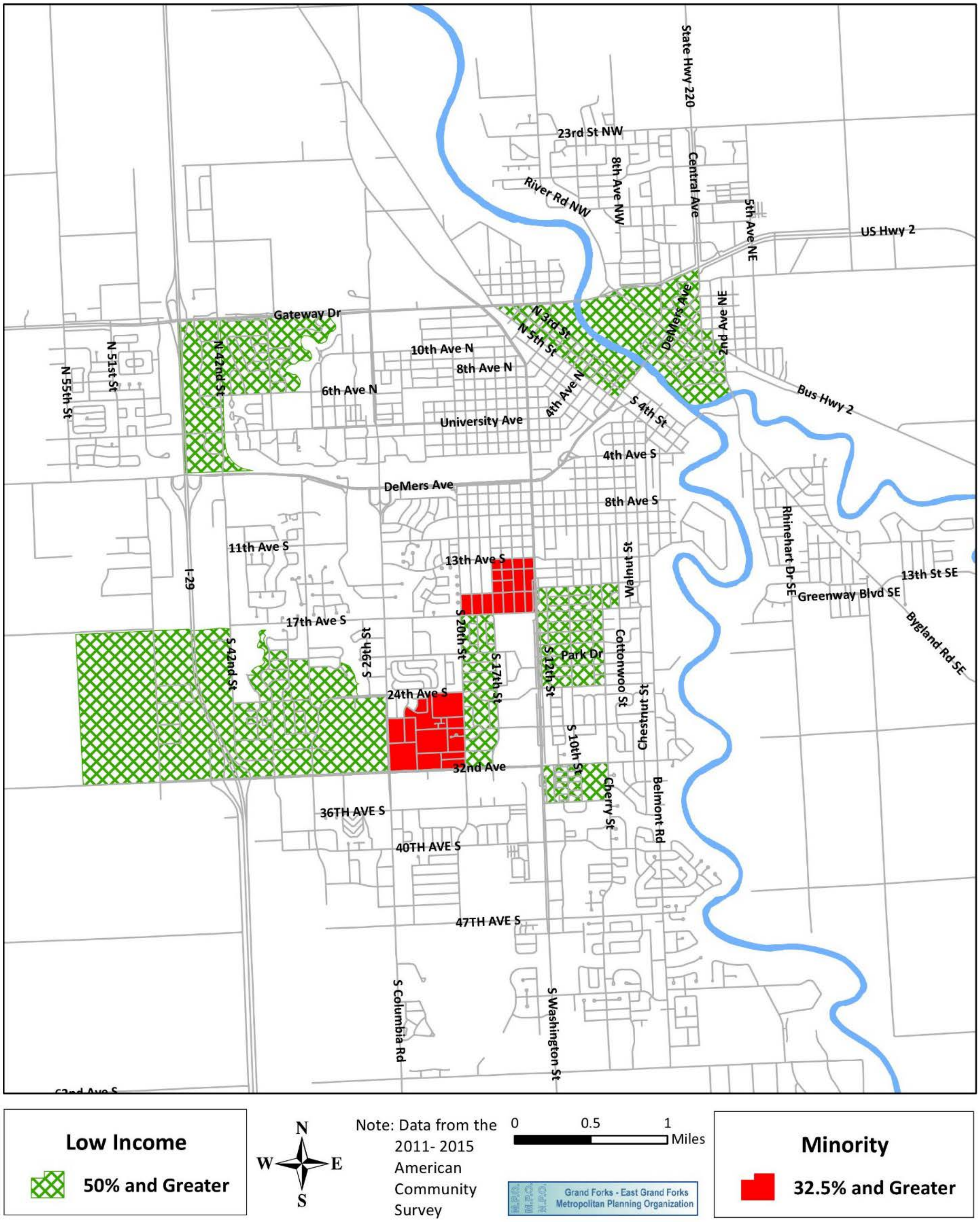
Executive Order 12898 directs Federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects, including the transportation planning process, on the health or environment of minority and low-income populations to the greatest extent practical and permitted by law. USDOT Order 5610.2(a) sets forth the USDOT policy to consider environmental justice (EJ) principles in all (USDOT) programs, policies, and activities. It describes how the objectives of EJ will be integrated into planning and programming, rulemaking, and policy formulation. The Order sets forth steps to prevent disproportionately high and adverse effects to minority or low-income populations through Title VI analyses and EJ analyses conducted as part of Federal transportation planning and NEPA provisions. Disproportionate is defined in two ways: the impact is predominantly borne by the minority or low income population group, or the impact is appreciably more severe than that experienced by non-minority or non-low income populations.

The MPO addresses Environmental Justice to ensure non-discrimination concerning enacted transportation-related laws, regulations, and policies. The MPO has developed an Environmental Justice Program Manual designed to provide guidance in meeting EJ mandates and structuring a public participation plan at the project or study level. To certify compliance with, and to address environmental justice, the MPO:

- Identifies residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed, and the benefits and burdens of transportation investments can be fairly distributed.
- Ensures that the long-range transportation plan and the transportation improvement program (TIP) comply with the tenets of Environmental Justice.
- Utilizes public involvement processes to eliminate participation barriers and engage minority and low income populations in transportation decision making.

According to the most recent Environmental Justice Program Manual, minority populations in Grand Forks were most concentrated east of Columbia Mall between 24th Avenue South and 32nd Avenue South and north of Grand Cities Mall between 13th Avenue South and 17th Avenue South. Concentrations of poverty greater than 50 percent are also located near the two shopping centers, as well as near both downtown areas. See Figure 3-4 for the Environmental Justice Populations map. These areas will be evaluated further to determine whether any disproportionate or adverse effects would occur due to the Range of Alternatives and potential future regionally-significant transportation improvements.

Figure 3-4: Environmental Justice Populations



Source: Grand Forks-East Grand Forks MPO

Workplace and Commuting Patterns

According to the 2015 American Community Survey, most people both live and work within the Grand Forks-East Grand Forks urbanized area. With over 35,000 jobs combined in the two cities in 2014, most employment nodes are located within Grand Forks. Major industry sectors include health care, education, retail, hospitality/food services, and manufacturing. The predominant travel mode for employers is the automobile. The mean travel time to work is under 13 minutes for Grand Forks residents and 14.5 minutes for East Grand Forks residents. MPO data indicates approximately 4,000 East Grand Forks residents commute to Grand Forks for work and approximately 4,000 Grand Forks residents commute to East Grand Forks for work.

Table 3-3: Workplace Location and Travel Patterns

	Percent of People that Live and Work in Same City	Percent of People that Live and Work in Same County	Travel to Work via Automobile	Drive Alone	Mean Travel Time to Work
Grand Forks	84.4%	89.7%	90.1%	82.1%	12.9 minutes
East Grand Forks	22.3%	27.5%	94.6%	86.7%	14.5 minutes

Source: 2015 American Community Survey

Land Uses

The recently adopted 2045 Grand Forks Land Use Plan (2016) emphasizes creating a more compact urban environment, encouraging infill development, creating mixed use areas, and coordinating development with the location of urban services. The Plan utilized the federal Ladders of Opportunity Initiative, which builds on the foundations of sustainable and livable communities to connect low-income and minority transit-dependent residents with economic and educational resources that already exist within the Grand Forks community. The Plan supports mixed use, compact development patterns which provide more transportation choices and strives to increase the share of non-automobile trips.

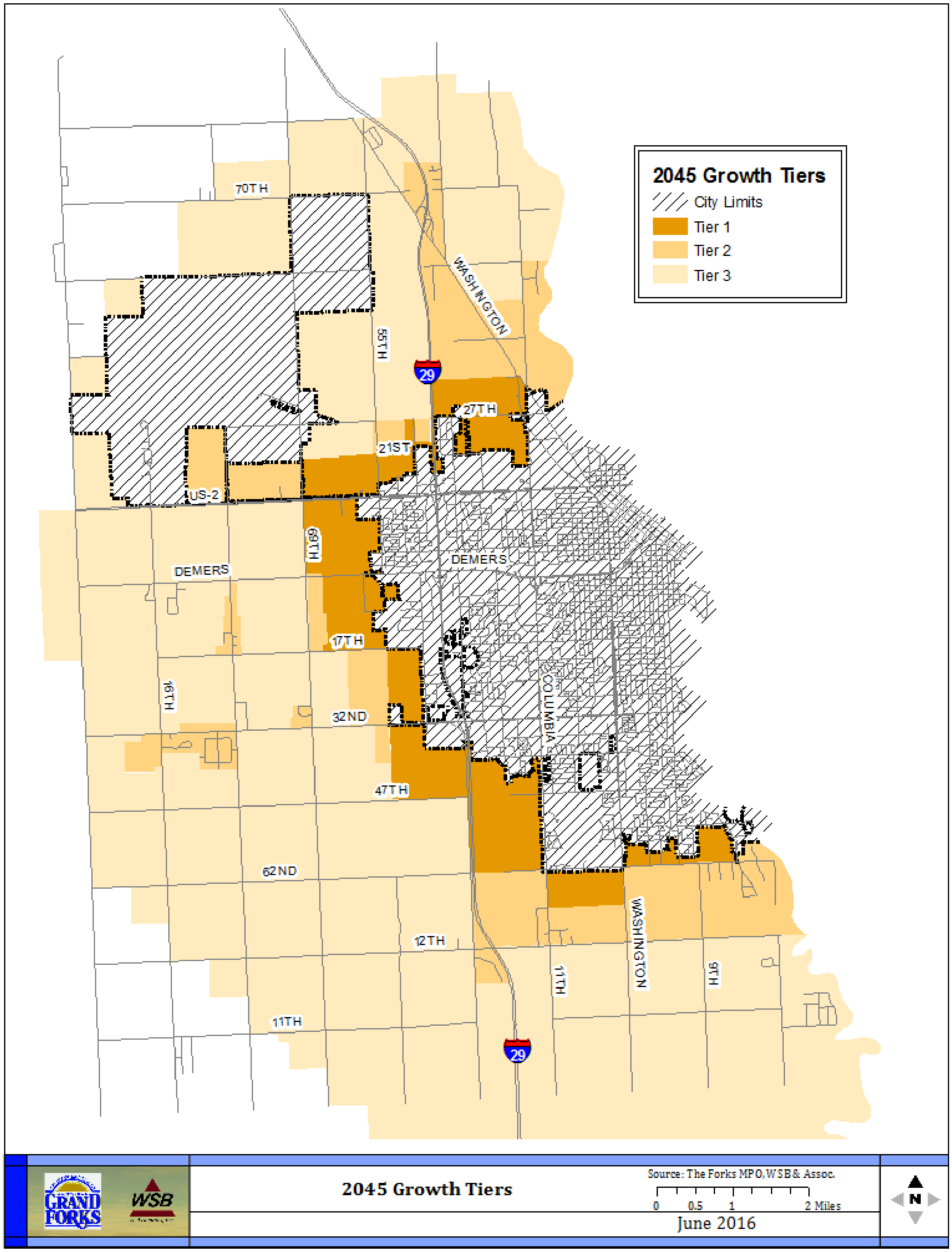
With a focus on more compact development, the 2045 Grand Forks Future Land Use Plan (Figure 3-5 and Figure 3-6) reallocates and reduces overall acreages for the City's growth tiers compared to the 2040 Future Land Use Map. The three-level tier system for managing timing and sequencing of growth includes: Tier 1 (including existing city limits), where all projected growth within the planning horizon will be accommodated; Tier 2 (Urban Reserve Area), which only allows residential development on existing platted lots and if no other Tier 1 land is available; and Tier 3, agricultural preservation area. The 2045 Future Land Use Map is intended to prevent "sprawl" and to create a pattern of development which provides efficient growth creating quality compact urban places including improved accessibility and mobility. Growth is focused primarily to the south and west of the City adjacent to existing land uses.

The East Grand Forks 2045 Land Use Plan (Figure 3-7 and Figure 3-8), also recently adopted in 2016, promotes compact, infill development and responsible greenfield development. The City of East Grand Forks utilizes the existing flood protection system as an interim growth boundary, with phased land available to accommodate anticipated growth within the planning horizon. The Plan includes three new land use categories: mixed use, commercial/industrial, and medium density residential. Mixed use districts, whether utilized for infill or greenfield development, will enable the City to become more compact and walkable, provide the choice for a living arrangement that is different from that which dominates in neighborhoods of single-family detached housing, and soften transitions between higher and lower intensity land uses. East Grand Forks growth is focused primarily north along TH 220, to the east along US Highway 2 and also to the south of Rhinehart Drive near the Red River.

Both the 2045 Grand Forks Land Use Plan and the East Grand Forks 2045 Land Use Plan incorporated livability principles into their planning processes in order to enhance the livability of the community while improving access to employment, goods and services. Livable communities provide a mix of affordable housing, increase transportation options, and lower transportation costs while protecting the environment. Linking transportation and land development results in neighborhoods that are more prosperous, allow people to live closer to jobs, save households time and money, and reduce pollution. The following six principles of livability were utilized as developed by the federal Partnership for Sustainable Communities:

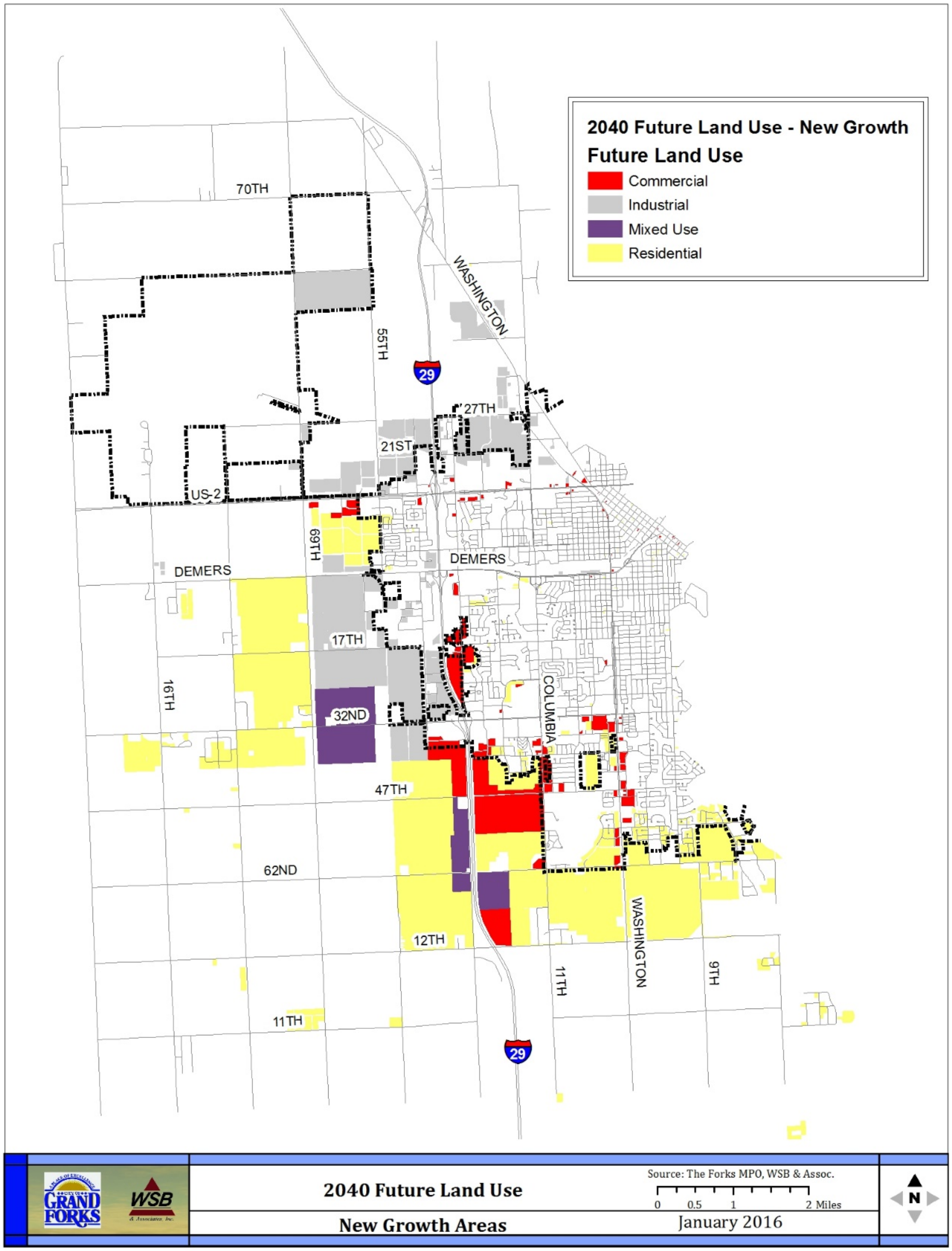
- Provide more transportation choices;
- Promote equitable affordable housing;
- Enhance economic competitiveness;
- Support existing communities
- Coordinate and leverage federal policies and investment; and
- Value communities and neighborhoods.

Figure 3-5: 2045 Grand Forks Future Land Use Growth Tiers



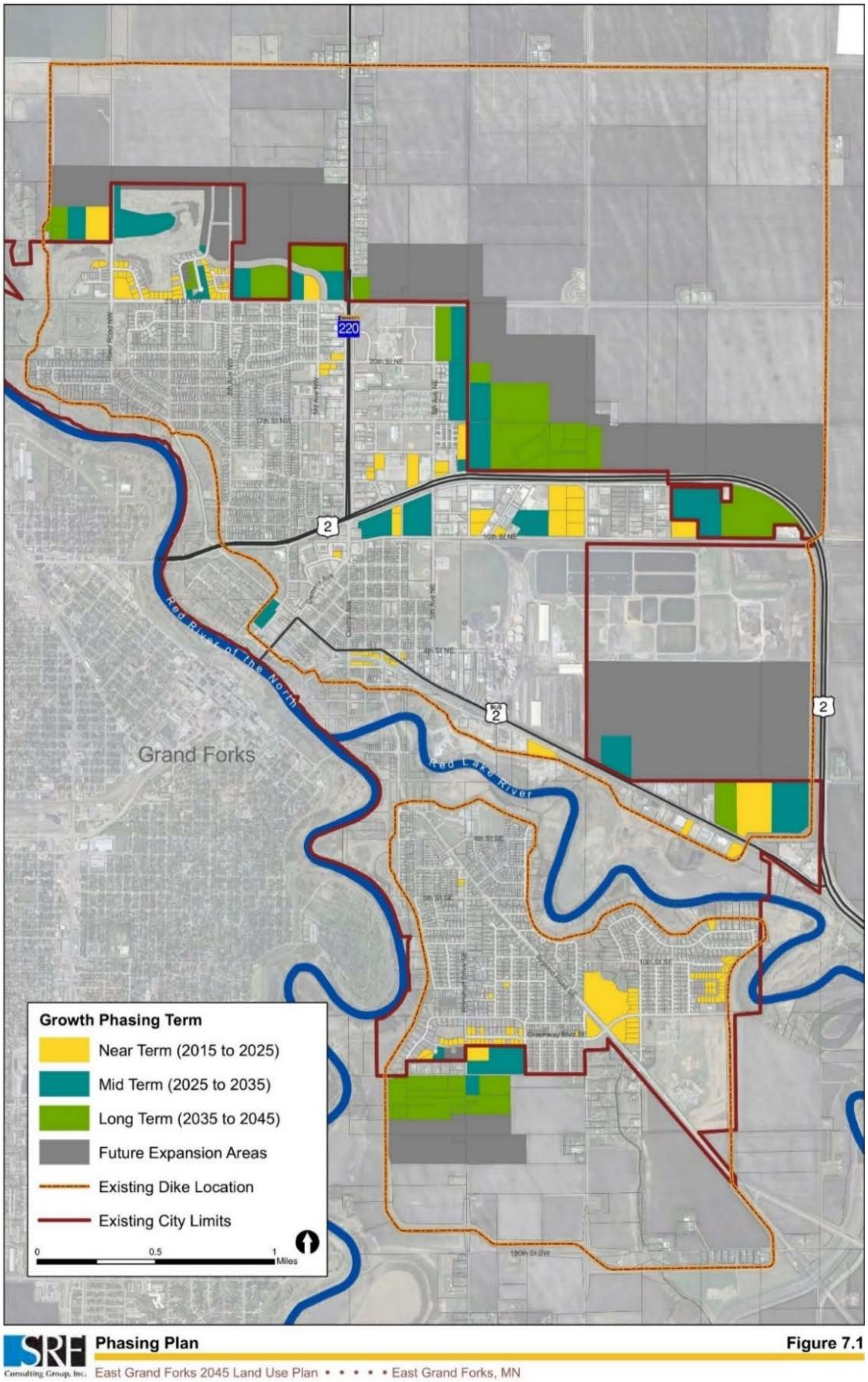
Source: 2045 Grand Forks Land Use Plan

Figure 3-6: 2045 Grand Forks Future Land Use New Growth Areas



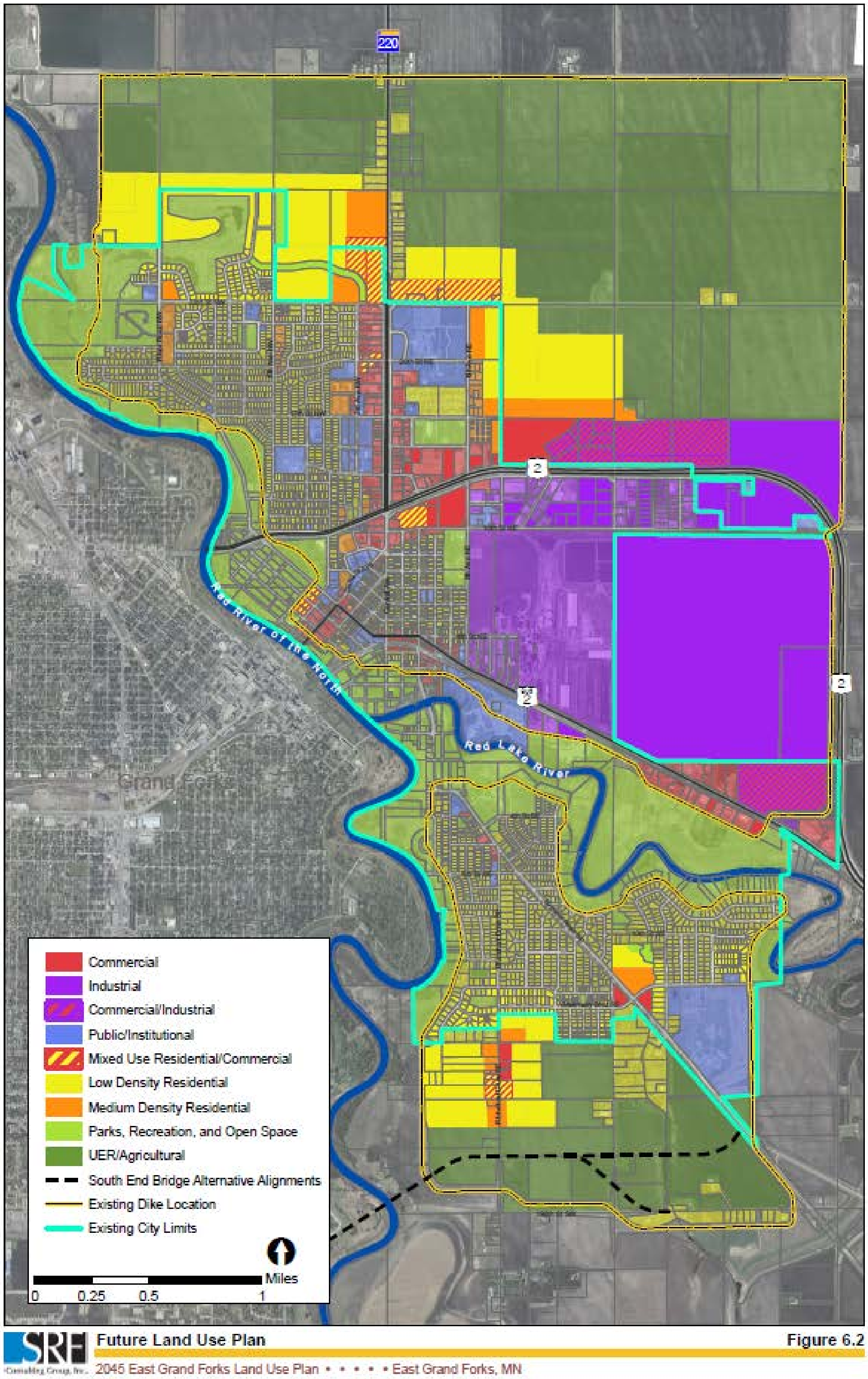
Source: 2045 Grand Forks Land Use Plan

Figure 3-7: East Grand Forks 2045 Future Land Use Growth Phasing



Source: East Grand Forks 2045 Land Use Plan

Figure 3-8: East Grand Forks 2045 Future Land Use



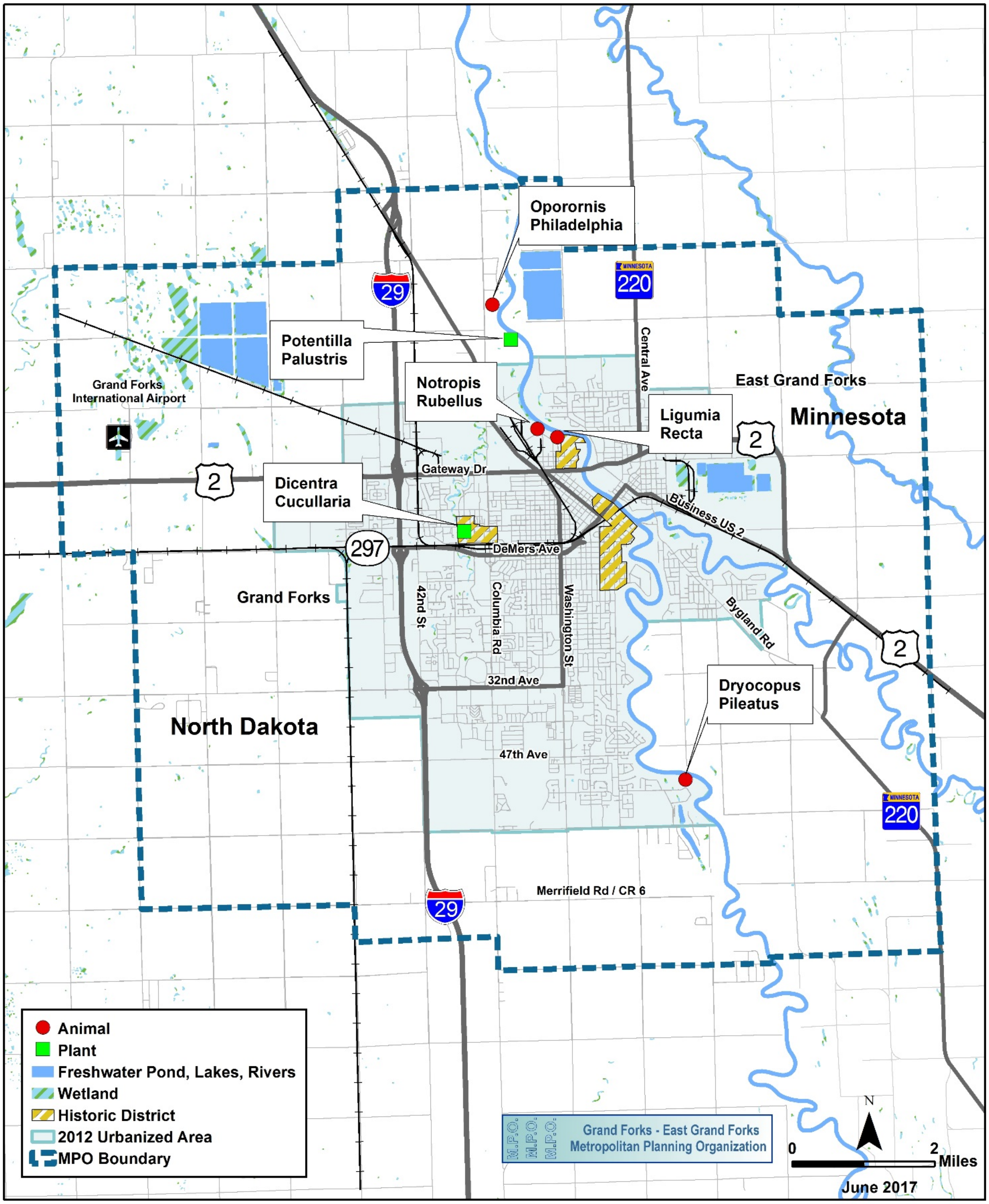
Source: East Grand Forks 2045 Land Use Plan

Natural and Environmental Resources

There are numerous environmentally-sensitive areas found throughout the Grand Forks-East Grand Forks region. An overview of some of the identified sensitive areas, including wetlands, species of concern, and identified cultural sites, is provided in Figure 3-9.

Many of these sensitive areas are too small or too numerous to map at a metropolitan-level and can only be clearly identified through a project-level analysis. Some areas are yet to be identified and will only become known once a project-level analysis is completed. When a programmed project is ready to move into the design and engineering phase, the project sponsor will be responsible for conducting the necessary analyses as required by state and federal regulations to determine the type, location, and impact to environmentally sensitive areas within the project study area.

Figure 3-9: Environmental Constraints



Source: Grand Forks-East Grand Forks MPO

Carbon Footprint

A pound of carbon dioxide (CO_2) emitted today from a gas powered motorized vehicle may still be in the atmosphere decades to hundreds of years from now. Therefore, measuring greenhouse gases associated with transportation systems is closely linked to CO_2. However, this level of assessment is difficult to measure, considering data availability and scale. To evaluate change over time in the metropolitan area's carbon footprint from a transportation perspective, the analysis from the 2040 Street and Highway Plan was updated to compare the number of vehicle miles traveled (VMT) for passenger cars and light trucks.

The assessment looked at 2015 and 2010 VMT data. VMT was extrapolated out to determine an estimate for GHG emissions (see Table 3-4). The results document an increase in VMT between 2015 and 2010. VMT had been leveling off nationwide since the economic recession in 2008. However, low gas prices and an improved economy have led to increases in VMT. Long-term trends are uncertain due to changes in energy production, improved gas mileage and increased electrification/hybrid technologies in new vehicles, and the potential impact of ride sharing and automated technologies. Therefore, VMT should be continually monitored to determine if travel behaviors are changing within the region.

Table 3-4: Carbon Footprint for Vehicle Miles Traveled

	Total Vehicle-Miles Traveled by Year by Passenger Cars and Light Trucks[2]	Average Miles of Travel per Gallon of Fuel Consumed[3]	Gallons of Fuel Consumed by Year by Passenger Cars and Light Trucks	Metric Tons of Carbon Dioxide or CO_2 Equivalent
2006	269,698,500	20.04	13,458,009	119,642
2010	265,428,000	20.04	13,244,910	117,747
2015	294,365,293	22.0	13,380,241	118,950
2006-2010 Difference	**(-4,270,500)**	**(no change)**	**(-213,009)**	**(-1,895)**
2010-2015 Difference	**(+28,937,293)**	**(+1.96)**	**(-135,331)**	**(+1,203)**

Source: FHWA Highway Statistics for Urbanized Areas 2015 and 2010
https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references

In the region, the increase in VMT resulted in an increase in carbon emissions over the five-year period. This increase is quantified into measurable outcomes by using the Environmental Protection Agency's (EPA) Greenhouse Gas Equivalent Calculator (see Table 3-5). For example, the increase in VMT and CO_2 equated to the 258 additional passenger vehicles on the transportation network annually. The increase in CO_2 emissions results in an increase in the metropolitan area's carbon footprint from an environmental perspective.

[2] Assumes Passenger cars and light trucks account for approximately 90% of vehicles on Grand Forks-East Grand Forks roads.
[3] In 2007, the weighted average combined fuel economy of cars and light trucks combined was 20.4 miles per gallon (FHWA 2008). In 2015, the weighted average combined fuel economy of cars and light trucks combined was 22.0 miles per gallon (FHWA 2017).

Table 3-5: Carbon Footprint Equivalence

	Carbon Footprint Equivalence for VMT from Passenger Cars and Light Trucks of Value Increase from 2015 to 2010
258	Annual CO_2 emissions from the number of passenger vehicles
135,366	CO_2 emissions from the number of gallons of gasoline consumed
2,785	CO_2 emissions from the number of barrels of oil consumed
15.9	CO_2 from the number of tanker trucks worth of gasoline
6.6	CO_2 emissions from burning of the number of railcars worth of coal

Source: Based on EPAs Greenhouse Gas Equivalencies Calculator
https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Street/Highway System

There are several ways to evaluate and characterize roadway networks. As a summary of the existing street/highway system characteristics for the Grand Forks-East Grand Forks MPO area, the following topics are discussed in this section:

- Jurisdiction
- Number of Roadway Lanes
- Functional Classification
- Federal Aid Roadways
- Pavement Condition
- Bridge Condition

Jurisdiction

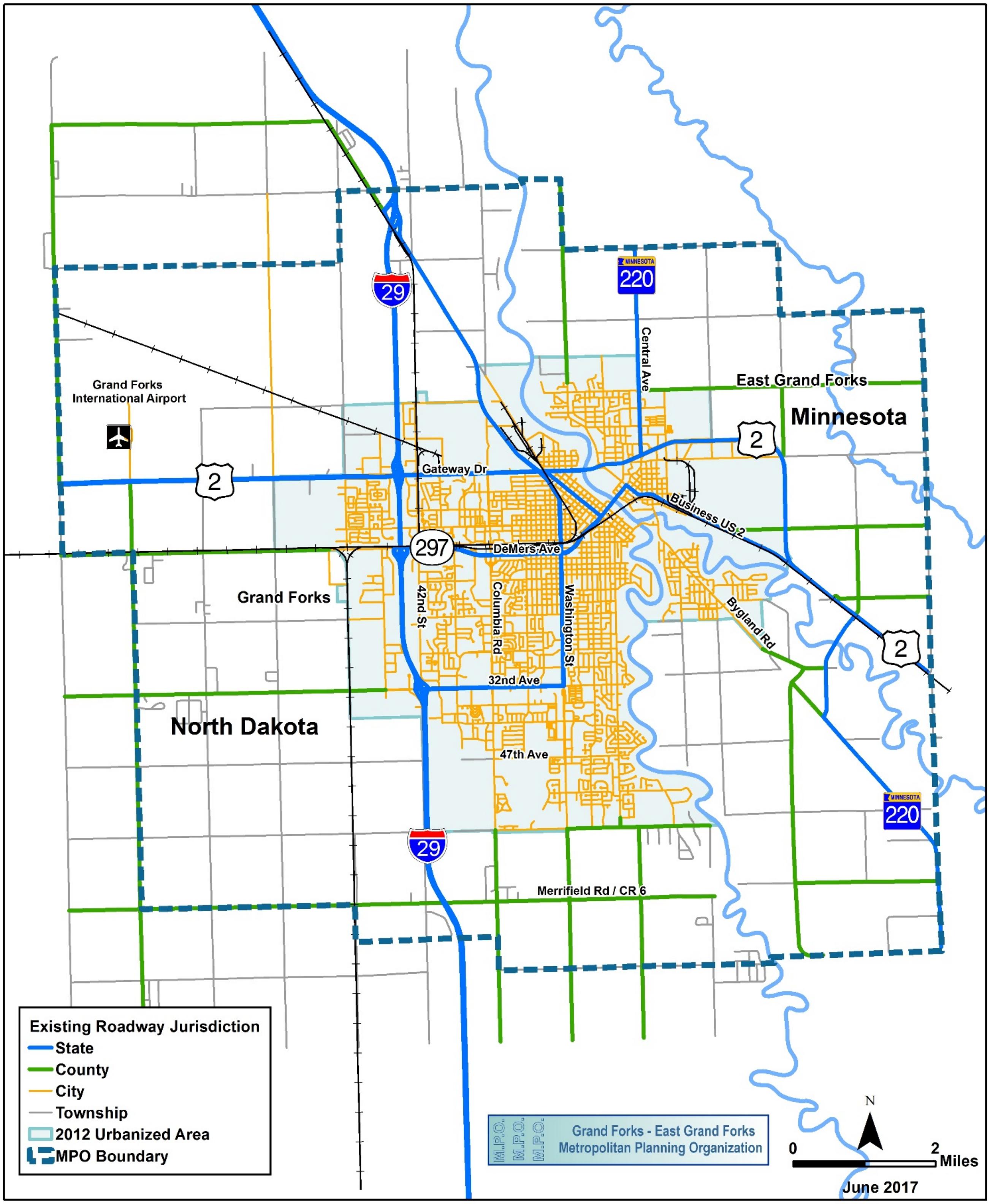
Roadway jurisdiction refers to the agency responsible for owning and maintaining a roadway. Roadway jurisdiction often closely corresponds with roadway functional classification to ensure that the system adequately distributes traffic to the appropriate roadway. For example, state owned roads (interstates and trunk highways) typically accommodate higher traffic volumes and longer-distance trips between population centers. County owned roads accommodate moderate traffic volumes and serve regional trips, while city and township provide lower traffic volumes to serve localized trips.

Figure 3-10 shows the breakdown of roadways by jurisdiction for the region and Table 3-6 summarizes roadway mileage by jurisdiction. The following agencies own and maintain the region's public roadways.

- State
  - North Dakota Department of Transportation
  - Minnesota Department of Transportation
- County
  - Grand Forks (ND)
  - Polk (MN)
- City
  - Grand Forks (ND)
  - East Grand Forks (MN)
- Township
  - Brenna (ND)
  - Falconer (ND)
  - Grand Forks (ND)
  - Rye (ND)

- Walle (ND)
- Bygland (MN)
- Grand Forks (MN)
- Huntsville (MN)
- Rhinehart (MN)
- Sullivan (MN)

Figure 3-10: Existing Roadway Jurisdiction



Source: Grand Forks-East Grand Forks MPO

Table 3-6: System Mileage by Roadway Jurisdiction

Jurisdiction	State		County		Township		City		Total	
	Miles (mi)	Percent (%)	Miles (mi)	Percent (%)	Miles (mi)	Percent (%)	Miles (mi)	Percent (%)	Miles (mi)	Percent (%)
North Dakota	37.6	10.8%	23.3	6.7%	58.0	16.6%	230.4	66.0%	349.3	100%
Minnesota	18.1	12.7%	21.3	15.0%	42.2	29.7%	60.6	42.6%	142.2	100%
MPO Study Area	55.7	11.3%	44.6	9.1%	100.2	20.4%	291.0	59.2%	491.5	100%

Source: Grand Forks-East Grand Forks MPO

North Dakota state statutes limit the state highway system mileage to not exceed seven percent all public roads in the state. County highways eligible for federal aid funds are also limited to 22,500 miles statewide by statute. These rules impact the ability to change the roadway jurisdiction and designation of roadways as they change in function due to growing cities and changing traffic patterns.

Number of Roadway Lanes

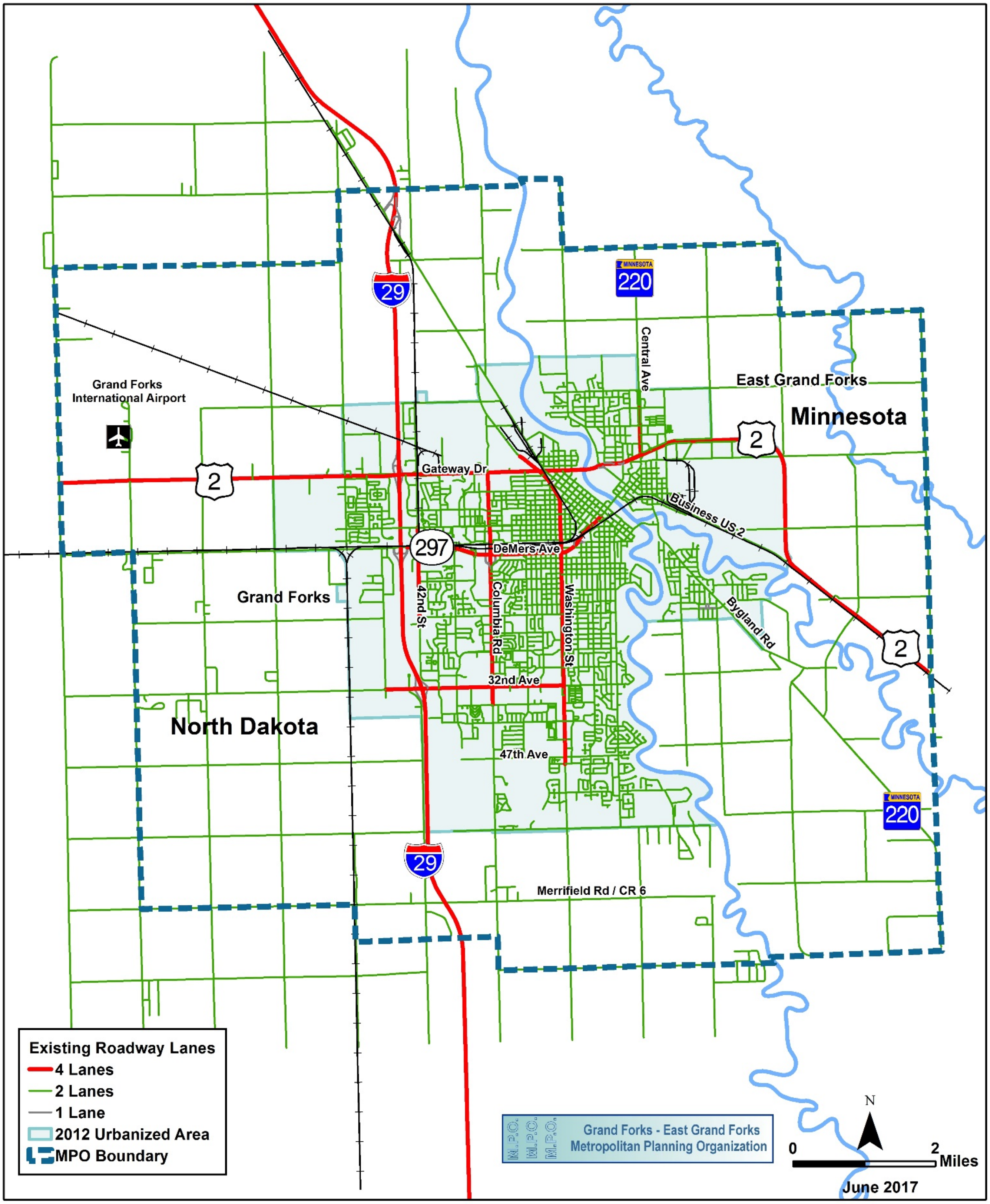
A summary of the number of lanes by centerline lane-miles are described in Table 3-7 and displayed in Figure 3-11. Four lane roadways include the major north-south arterials (I-29, Columbia Road, Washington Street) and east-west arterials (US 2, DeMers Avenue, 32nd Avenue). Over 90 percent of roadways within the region have two-lanes.

Table 3-7: Centerline Lane Miles

Roadway Type	Four Lanes	All Others	Total
North Dakota	32.7	316.6	349.3
Minnesota	7.6	134.6	142.2
MPO Study Area	40.3	451.2	491.5

Source: Grand Forks-East Grand Forks MPO

Figure 3-11: Existing Number of Roadway Lanes



Source: Grand Forks-East Grand Forks MPO

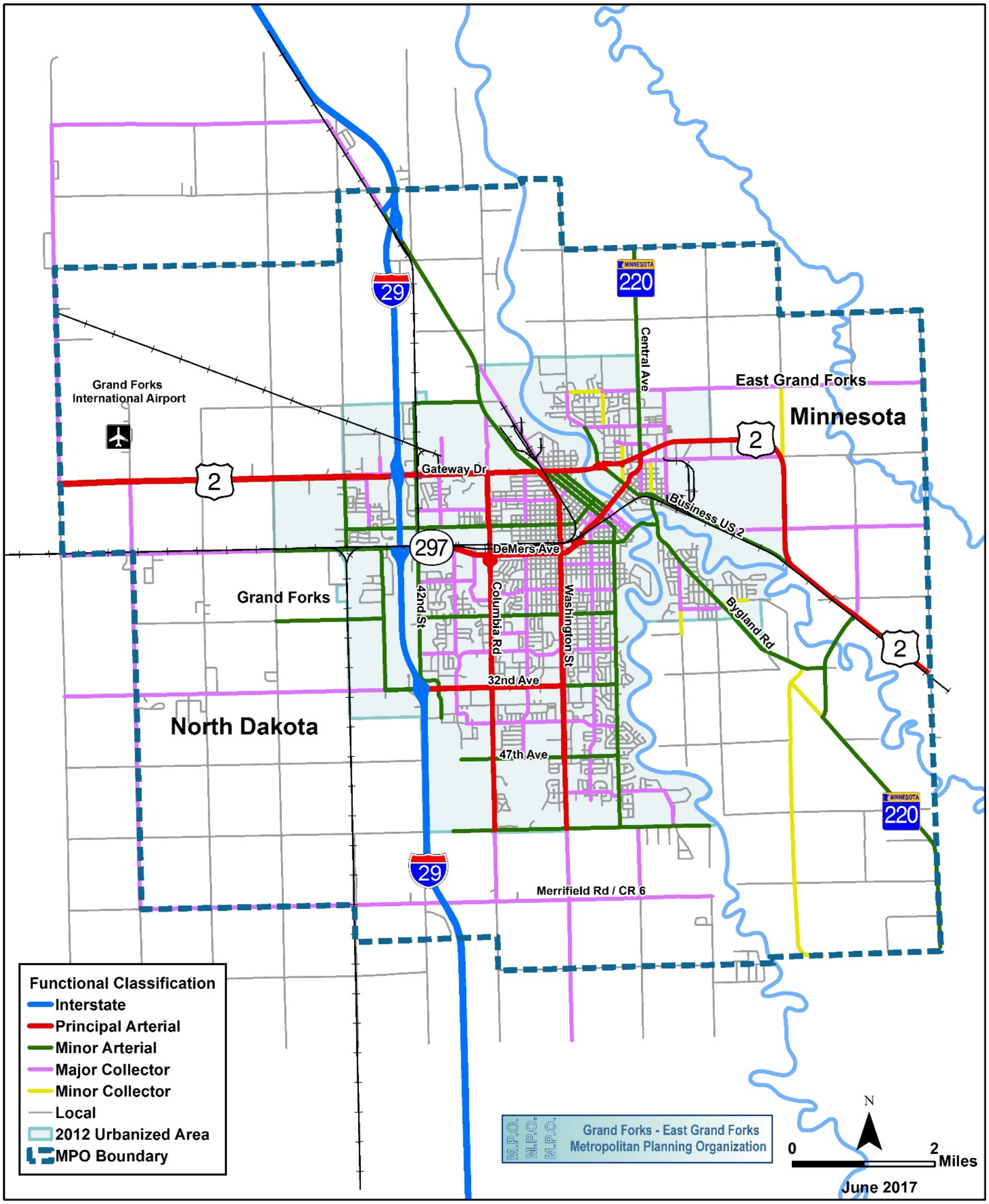
Functional Classification

The functional classification system groups roadways into classes based on roadway function and purpose. Functional classification is based on both transportation and land use characteristics, including roadway speeds, access to adjacent land, connection to important land uses, and the length of trips taken on the roadway. The functional classification system organizes a roadway and street network that distributes traffic from local neighborhood streets to collector roadways, then to minor arterials and ultimately the principal arterial system. Roads are placed into categories based on the degree to which they provide access to adjacent land and mobility for through traffic. Functional classification gives an indication of the relative hierarchy of roadways in the transportation network.

The MPO has grouped roadways into six classes of roadways: interstate, principal arterial, minor arterial, major collector, minor collector, and local. Figure 3-12 shows the functional classification system for the region. Table 3-8 provides the total centerline miles for each functional classification category.

The MPO works in partnership with each state transportation agency (NDDOT and MnDOT) to periodically review the statewide Functional Classification System. Comprehensive reviews are undertaken approximately every 10 years. MnDOT recently updated its Functional Classification System for greater Minnesota (including the MPO area) in 2015 to reflect guidance revisions made by FHWA in 2013.

Figure 3-12: Roadway Functional Classification



Source: Grand Forks-East Grand Forks MPO

Table 3-8: System Mileage by Functional Classification

Totals by State	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	All Roads
North Dakota side	16.2	24.4	38.5	52.2	4.0	213.9	349.3
Minnesota side	-	8.2	15.9	16.3	8.8	92.9	142.2
Total Miles	16.2	32.6	54.4	68.5	12.8	306.8	491.5

Source: Grand Forks-East Grand Forks MPO

Guidelines have been established by the FHWA for an approximate mix of roadway functional classifications within an urban area. Table 3-9 presents these federal guidelines and compares them to the functional classification mileage totals for the metropolitan area. System ratios of functional classification mileage are consistent with FHWA guidance.

Table 3-9: Functional System Summary Compared to FHWA Guidelines

Facility Type	MPO Area	FHWA Urban Guidance*
Principal Arterials (including Interstates)	10%	5 - 14%
Principal Arterials plus Minor Arterials	21%	12 - 28%
Collectors	17%	6 - 32%
Local Streets	62%	62 - 74%

*Source: FHWA Highway Functional Classification Concepts, Criteria and Procedures, 2013 Edition – Rural States and Urban System Ranges Used (Rural States are Defined as Having 75% of Their Population in Urban Centers)

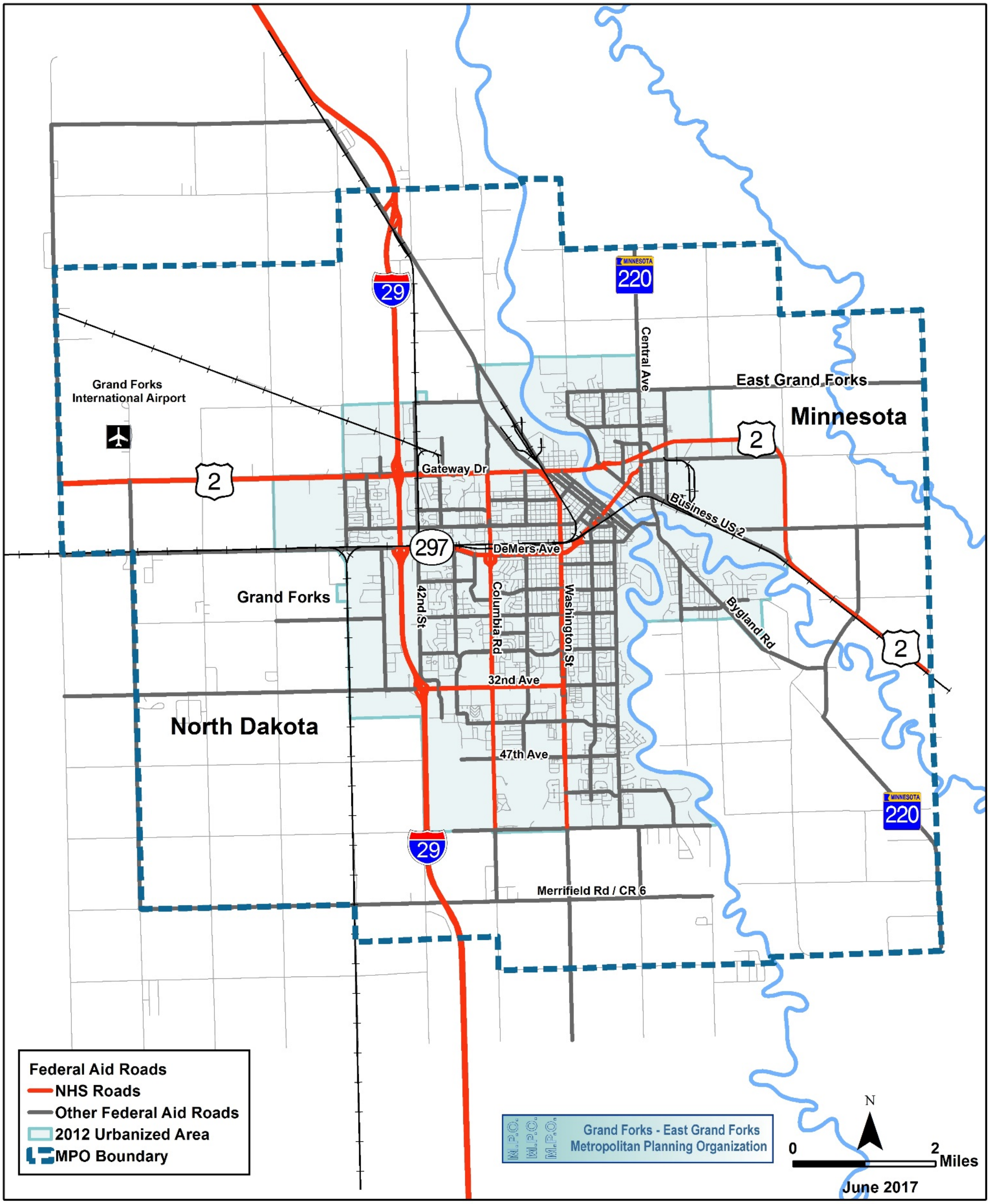
https://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section03.cfm

Federal Aid Roadways

The National Highway System (NHS) includes the interstate highway system as well as other arterial roadways important to the nation's economy, defense, and mobility. The NHS was developed in the 1990s by the U.S. Department of Transportation in cooperation with the states, local officials, and metropolitan planning organizations (MPOs). MAP-21 legislation converted existing principal arterials to be part of the National Highway System and limited the total system to a defined mileage. This limits the ability to expand the number of Principal Arterial mileage within the MPO area.

Figure 3-13 shows the NHS system and other federal aid eligible roadways within the MPO area. "NHS Roads" include roads with the Interstate and Principal Arterial functional classification. "Other Federal Aid Roadways" include Minor Arterials, Major Collectors, and Minor Collectors within the urbanized area. Per updated FHWA guidance in 2015, Minor Collectors in rural areas are no longer federal aid eligible. Local roads are not eligible for federal aid.

Figure 3-13: Federal Aid Roads



Source: Grand Forks-East Grand Forks MPO

Pavement Condition

Pavement condition data is collected periodically to assist in monitoring the quality of the street and highway system and to help determine the appropriate level of rehabilitation needed for particular segments. The most recent pavement condition data were available for Grand Forks roadway segments in 2013 and East Grand Forks segments in 2015. Table 3-10 and Figure 3-12 present estimated average pavement condition index (PCI) values for each city based on the available data. The average system wide pavement condition has decreased from 2008 levels in Grand Forks. Pavement condition within East Grand Forks has increased on average since 2008.

Table 3-10: Pavement Trends by Pavement Condition Index (PCI)

Year	Grand Forks Average PCI	East Grand Forks Average PCI	Grand Forks Weighted Average PCI	East Grand Forks Weighted Average PCI
1999	63.9	67.2	n/a	n/a
2003	86.3	87.0	78.1	74.9
2008	76.7	76.8	82.0	79.9
Current	72.7 (2013)	79.2 (2015)	69.9 (2013)	82.0 (2015)

Source: Grand Forks-East Grand Forks MPO

Table 3-11 summarizes the percentage of current pavement condition for the GF/EGF MPO area by general pavement condition categories (good, satisfactory, fair, poor, very poor).

Table 3-11: Current MPO Pavement Condition Index (PCI)

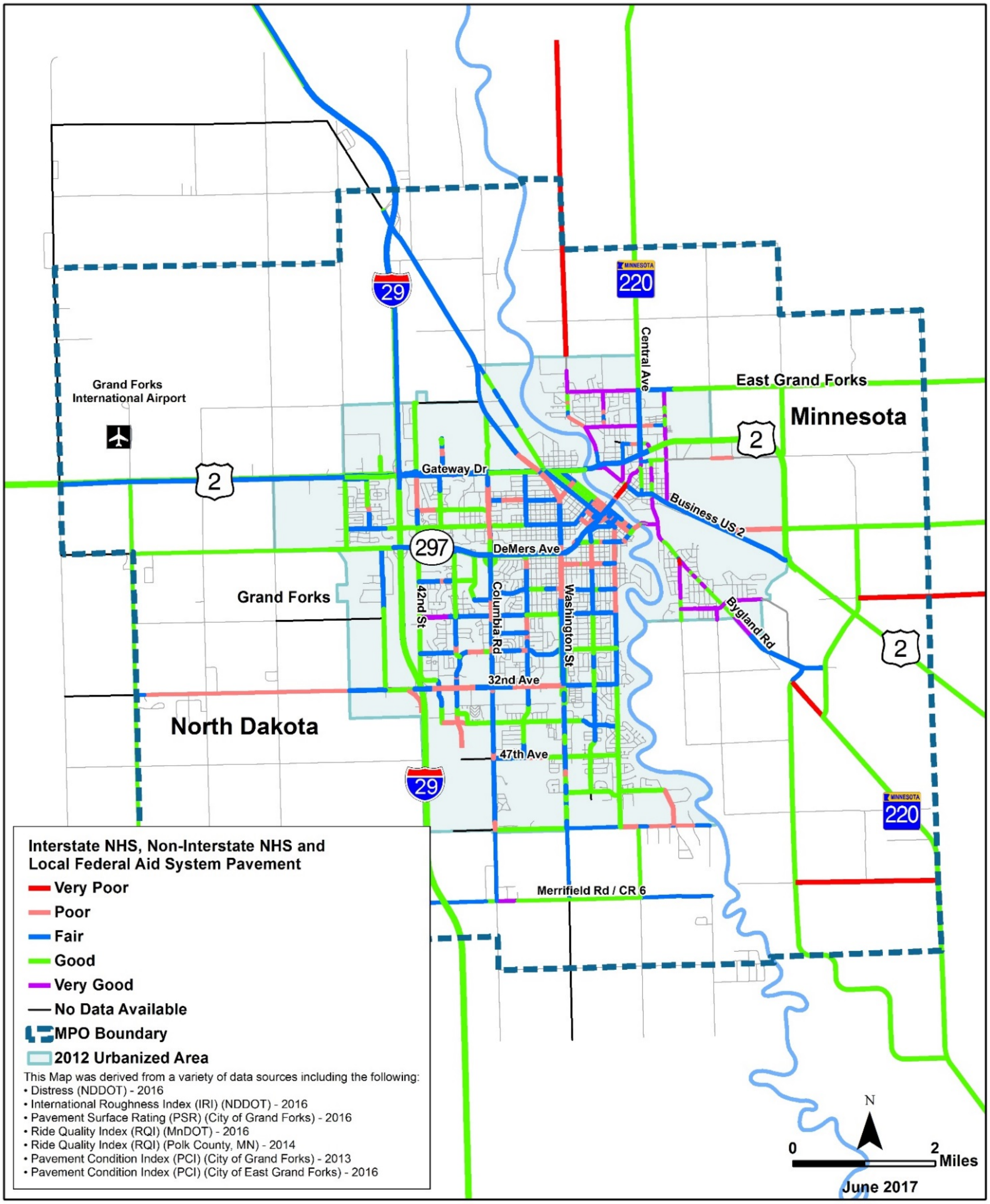
Pavement Condition	GF/EGF MPO Area		MN-Side		ND-Side	
	Local Roads	State Roads	Local Roads	State Roads	Local Roads	State Roads
Good	35%	7%	24%	9%	40%	<1%
Satisfactory	21%	7%	7%	4%	27%	13%
Fair	17%	21%	2%	0%	24%	72%
Poor	7%	0%	2%	0%	9%	0%
Very Poor	<1%	0%	<1%	0%	<1%	0%
No Data	21%	66%	64%	87%	0%	14%

Source: Grand Forks-East Grand Forks MPO

The above referenced table represents PCI data provided by the Ctiy of Grand Forks (2013) and the City of East Grand Forks (2016) and is incomplete. After considerable research with MnDOT, NDDOT, the City of Grand Forks, the City of East Grand Forks, Grand Forks County and Polk County, it was determined that pavement condition data derived from a consistent methodology with consistent metrics of meaure does not currently exist for the GF/EGF MPO planning area.

Figure 3-14 on the following page combines 7 different pavement condition data sets with different collection methodologies and condition rating metrics. This map provides a visual generalization of pavement condition for the entire GF/EGF MPO planning area.

Figure 3-14: Pavement Condition



Source: Grand Forks-East Grand Forks MPO

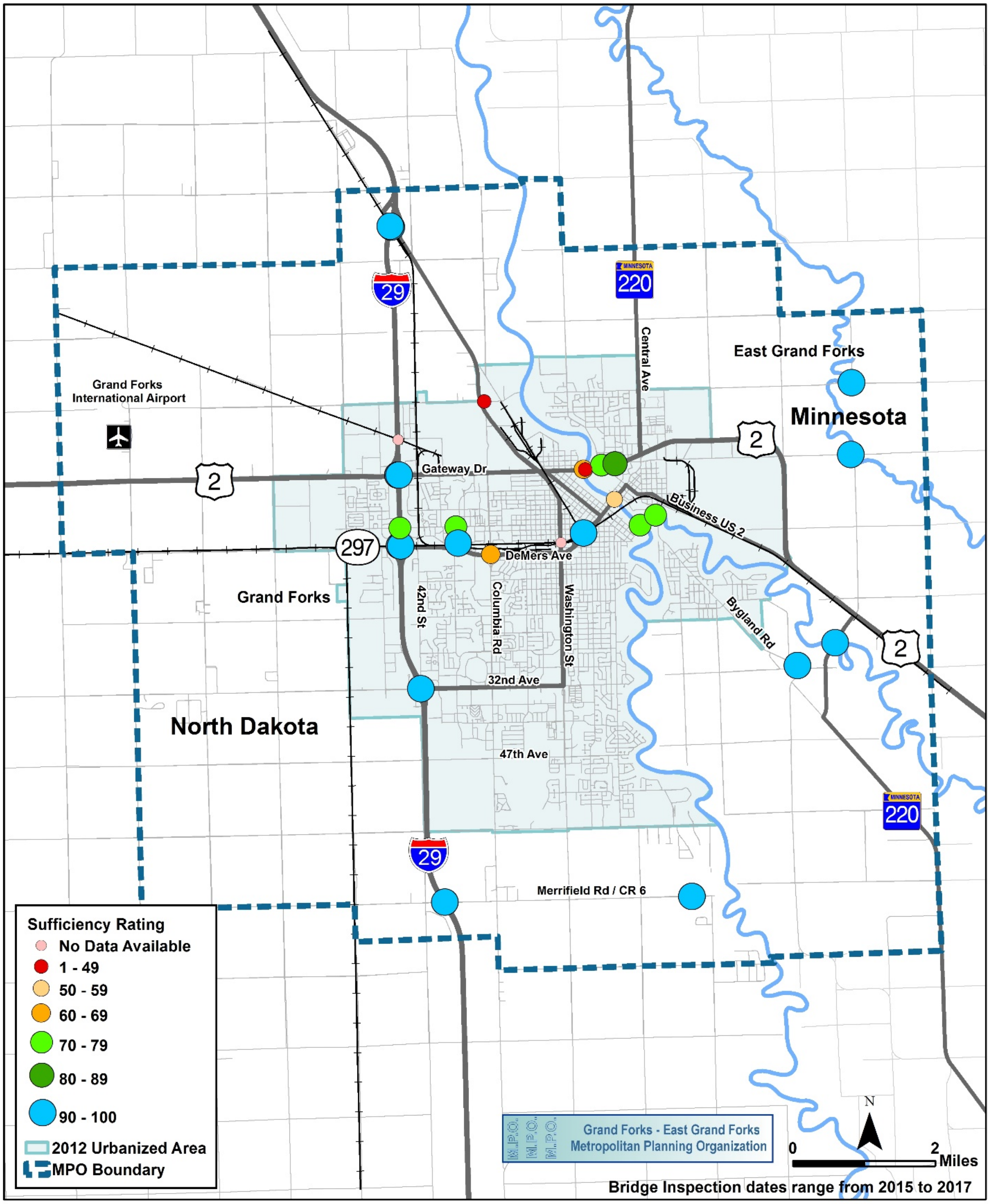
Existing Bridge Conditions

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

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

Figure 3-15 and Table 3-12 show the sufficiency ratings and locations of the bridges in the MPO area. Of the 49 bridges in the area, 35 have sufficiency ratings greater than 80, 10 have sufficiency ratings between 80 and 50, and 4 have sufficiency ratings less than 50.

Figure 3-15: Bridge Sufficiency Ratings



Source: Grand Forks-East Grand Forks MPO, MnDOT, NDDOT

Table 3-12: Bridge Sufficiency Ratings

Facility	Feature	Location	City/ County	Year Built	Most Recent Year Inspected	Operating/ Load Rating**	Sufficiency Rating**	NHS/ Non-NHS
Interstate 29	Railroad	North of US 2 Interchange	City of GF	1967	2013	NA	**NA**	NHS
Washington St.	Railroad	North of DeMers Ave.	City of GF	1937	2015	NA	**NA**	NHS
27th Avenue North	English Coulee	27th Ave. North	City of GF	1947	2015	0	**20.7**	Non-NHS
Kennedy Bridge	Red River	US 2	City of GF/EGF	1963	2015	74.7	**48.2**	NHS
Sorlie Bridge	Red River	DeMers Ave.	City of GF/EGF	1929	2015	36.9	**52.3**	NHS
Columbia Road	Railroad	DeMers Ave.	City of GF	1984	2015	39.0	**65.1**	NHS
Kennedy Bridge	Red River	East of US 81	City of GF/EGF	1963	2015	74.7	**67.4**	NHS
Louis Murray Bridge	Red Lake River	2nd Ave.	City of EGF	NA	2016	39	**75.3**	Non-NHS
University Avenue	Underpass	Interstate 29	City of GF	1968	2015	74.7	**78.4**	Non-NHS
University Avenue	English Coulee	University Ave.	City of GF	1985	2015	99.9	**79**	Non-NHS
4th Street NW	Underpass	US 2	City of EGF	NA	2016	40.6	**79.5**	Non-NHS
Point Bridge	Red River	Minnesota Ave.	City of GF/EGF	1967	2016	76.5	**79.9**	Non-NHS
US Highway 2	Bike Tunnel	6th Avenue NW	City of EGF	NA	2017	42	**82.6**	NHS
Interstate 29	Underpass	Demers Ave.	City of GF	1968	2015	60.3	**91.1**	NHS
Merrifield Road	Cole Creek	Golf Course	City of GF	1990	2015	99.9	**92.4**	Non-NHS
Campus Road	English Coulee	UND Campus	City of GF	2013	2015	56.3	**92.6**	Non-NHS
DeMers Avenue	Skyway Bridge	4th Avenue S.	City of GF	1972	2015	80.7	**93.4**	NHS
Interstate 29	Underpass	Demers Ave.	City of GF	1968	2015	60.3	**94.1**	NHS
TH 220	Red Lake River	TH 220	Polk County	NA	2017	32.6	**94.5**	Non-NHS
Interstate 29	Underpass	32nd Ave.	City of GF	1967	2015	72.3	**95.3**	NHS
Interstate 29	Underpass	Washington St.	City of GF	1968	2015	99.9	**95.6**	NHS
Interstate 29	Underpass	US 2	City of GF	1968	2015	76.5	**96**	NHS

Facility	Feature	Location	City/ County	Year Built	Most Recent Year Inspected	Operating/ Load Rating**	Sufficiency Rating**	NHS/ Non-NHS
Interstate 29	Underpass	Washington St.	City of GF	1968	2015	99.9	**96.6**	NHS
Interstate 29	Underpass	US 2	City of GF	1968	2015	76.5	**97**	NHS
CSAH 19	Grand Marais Creek	CSAH 19	Polk County	NA	2015	24	**98.1**	Non-NHS
Interstate 29	Underpass	Merrifield Rd.	Polk County	1968	2015	55.8	**98.7**	NHS
Bygland Rd. SE	Diversion Channel	Bygland Rd. SE	Polk County	NA	2016	62.4	**100**	Non-NHS
Township Rd 300	Grand Marais Creek	Township Rd 300	Polk County	NA	2016	36	**100**	Non-NHS

Existing Traffic Conditions

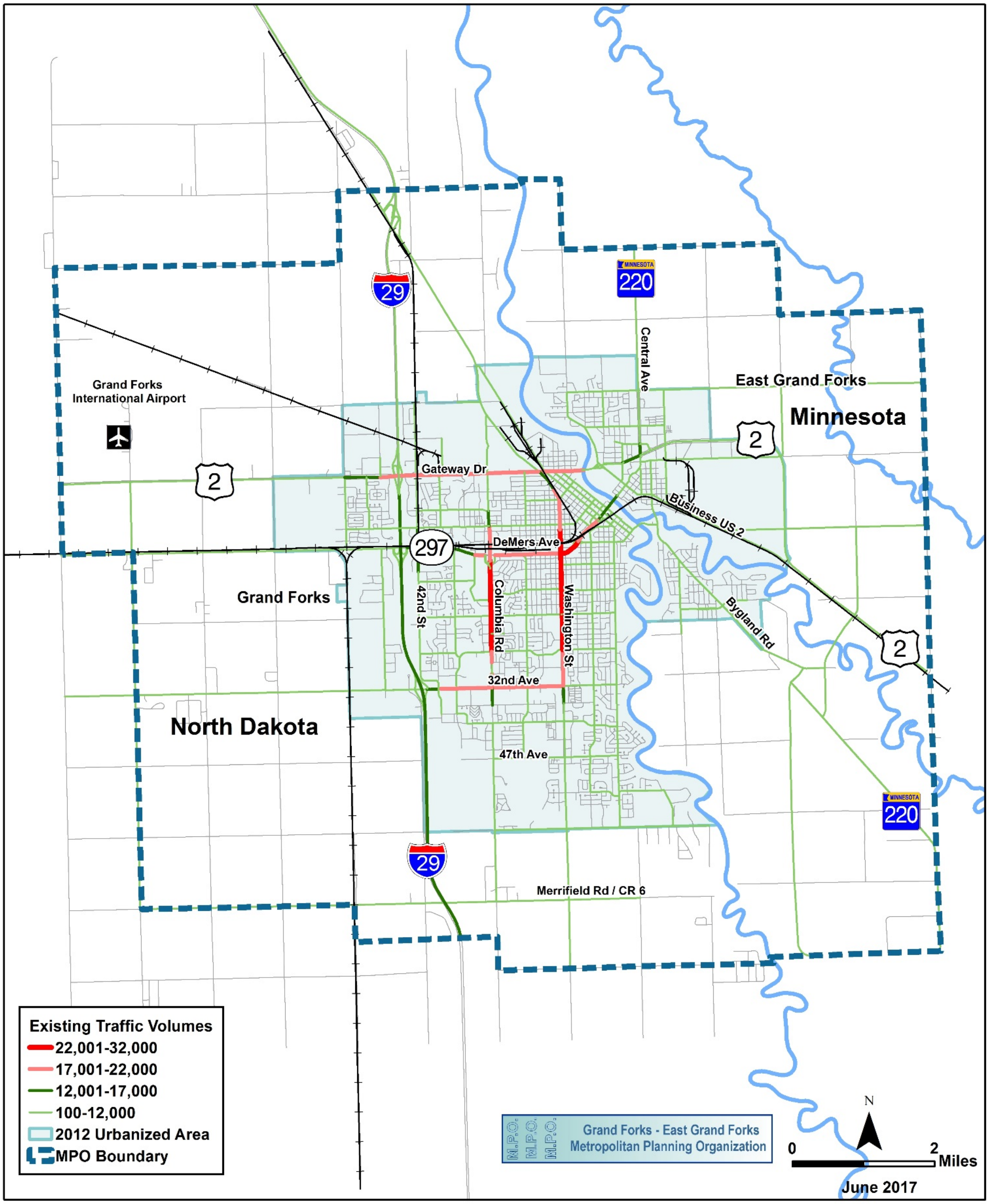
Current traffic patterns and the operations of the street and highway network are summarized in the following sections.

Traffic Volumes

Figure 3-16 shows the range of year 2015 average daily traffic volumes for the roadway system. Arterial roadways that provide connections across Grand Forks and along commercial centers experienced the highest traffic volumes. These arterials include Interstate 29, US 2/Gateway Drive, DeMers Avenue, 32nd Avenue, Columbia Road, and Washington Street. These roadways have four lanes and are intended to carry higher traffic volumes to serve regional trips.

Since 2005, South Washington Street, South Columbia Road, and 32nd Avenue South have experienced increases in traffic volumes as Grand Forks has continued developing south of 32nd Avenue South. On South Washington Street, 2015 traffic volumes range from around 22,000 vehicles per day near 32nd Avenue South to around 30,000 vehicles per day near DeMers Avenue. South Columbia Road experiences around 26,000 vehicles per day between 24th Avenue South and DeMers Avenue. Between South 42nd Street and South Washington Street, 32nd Avenue South experiences around 20,000 vehicles per day.

Figure 3-16: Existing Traffic Volumes



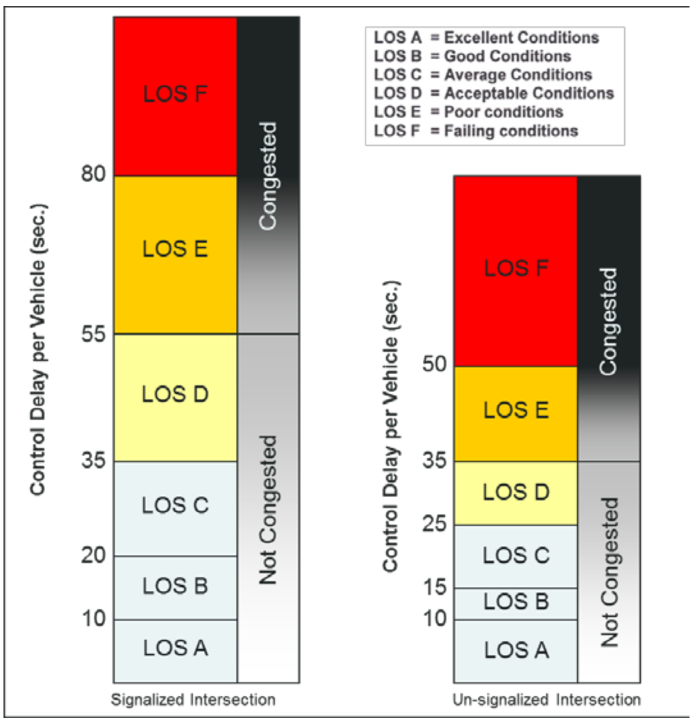
Source: Grand Forks-East Grand Forks MPO. Note: Ranges reflect planning-level roadway capacity volumes for two-lane (up to 12,000), three-lane divided (up to 17,000), four-lane undivided (up to 22,000), and four-lane divided (up to 32,000) roadways

Existing Intersection Level of Service

The ability of an intersection to accommodate traffic is affected by the number and type of vehicles, desired turning movements, intersection geometrics, and traffic control devices. Intersection Level of Service (LOS) is defined as the delay to vehicles caused by the intersection's traffic control. Intersection LOS typically focuses on operations during the peak periods of the day that experience the highest traffic volumes. Thus, the intersection LOS analysis gives a "worst case" result for each intersection and more clearly identifies operational problems at the intersections.

The intersection operational analysis process includes determining the LOS for the key intersections under the existing peak hour traffic conditions. Many jurisdictions consider LOS D as the lowest acceptable LOS for urban intersections. NDDOT had not historically, but now does also consider LOS D as acceptable at urban intersections. Figure 3-17 presents the intersection LOS thresholds, in terms of seconds of vehicle delay, as defined in the Highway Capacity Manual.

Figure 3-17: Level of Service



Source: Highway Capacity Manual

To evaluate intersection level of service (LOS) along important regional corridors, 50 intersections were identified by MPO staff. In addition, previous studies were reviewed to document the results of 11 recent intersection LOS analyses. The evening (p.m.) peak period was selected for evaluation as this timeframe generally experiences the highest traffic volumes. The 61 evaluated intersections and LOS results are listed in Table 3-13 and mapped in Figure 3-18. Overall, the system's intersections generally operate within LOS A-C conditions. There are four intersections where a LOS D was recorded (S. Columbia Road & 17th Avenue S., S. Columbia Road & 32nd Avenue S., S. Washington Street & DeMers Avenue, and N. 42nd Street & University Avenue when trains are present). No intersections were recorded with a LOS E or F.

Three intersections that were recorded at LOS D in the 2040 Street/Highway Plan Update have seen a decrease to LOS C or B. They are S. Washington Street & 17th Avenue S., S. Washington Street & 32nd Avenue S., and Central Avenue NE (TH 220) & Gateway Drive.

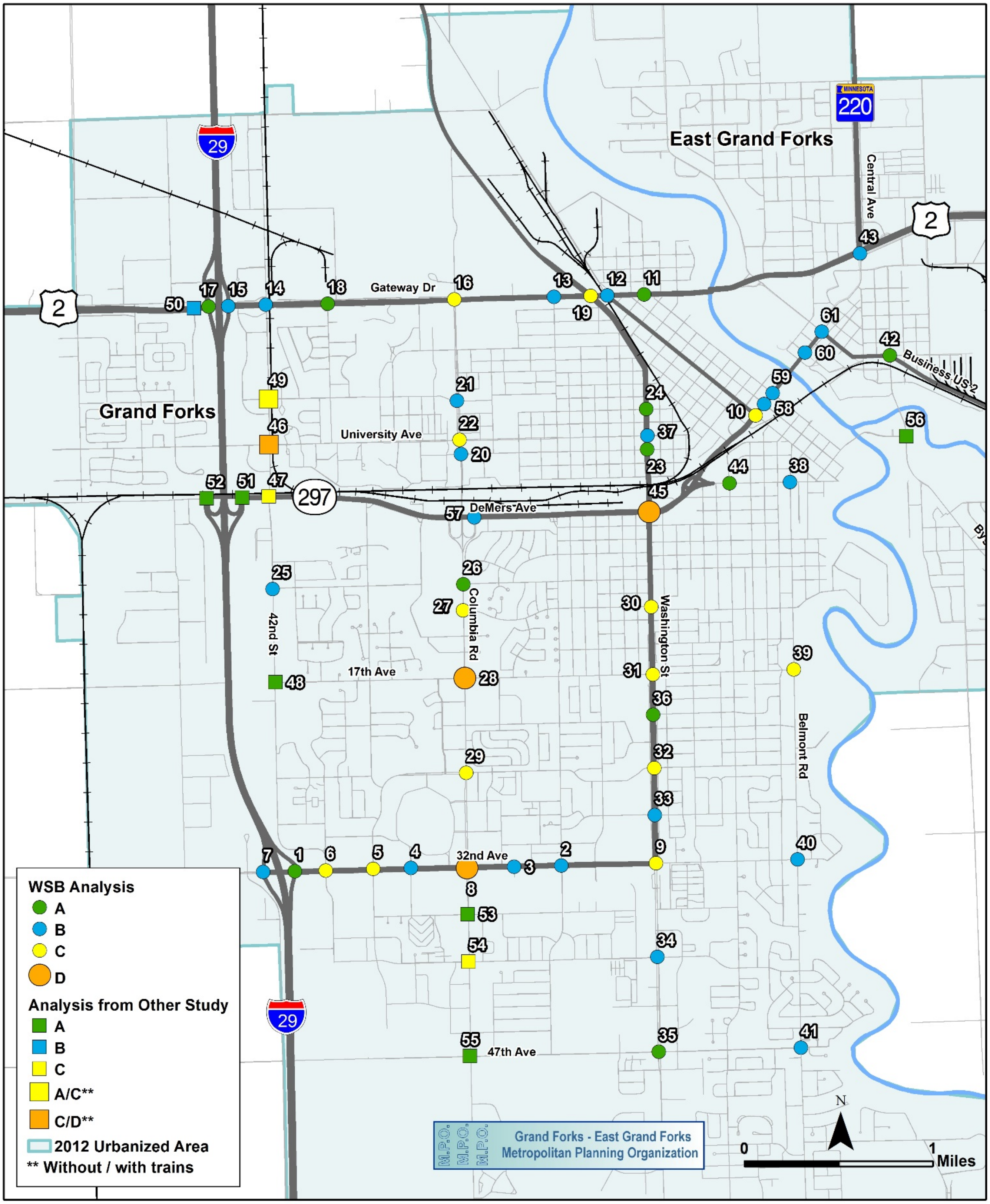
Table 3-13: Intersection Level of Service

Map ID	Intersection	PM Peak LOS		Map ID	Intersection	PM Peak LOS
1	I-29 East Ramp & 32nd Avenue S.	A		32	S. Washington Street & 24th Avenue S.	C
2	S. 20th Street & 32nd Avenue S.	B		33	S. Washington Street & 28th Avenue S.	B
3	S. 24th Street & 32nd Avenue S.	B		34	S. Washington Street & 40th Avenue S.	B
4	S. 31st Street & 32nd Avenue S.	B		35	S. Washington Street & 47th Avenue S.	A
5	S. 34th Street & 32nd Avenue S.	C		36	S. Washington Street & Campbell Drive	A
6	S. 38th Street & 32nd Avenue S.	C		37	N. Washington Street & University Avenue	B
7	I-29 West Ramp & 32nd Avenue S.	B		38	Belmont Road & 4th Avenue S.	B
8	S. Columbia Road & 32nd Avenue S.	D		39	Belmont Road & 17th Avenue S.	C
9	S. Washington Street & 32nd Avenue S.	C		40	Belmont Road & 32nd Avenue S.	B
10	N. 5th Street & DeMers Avenue	C		41	Belmont Road & 47th Avenue S.	B
11	Gateway Drive & N. 3rd Street	A		42	4th Street NE & 2nd Avenue NE	A
12	N. 5th Street & Gateway Drive	B		43	Central Avenue NE (TH 220) & Gateway Drive	B
13	N. 20th Street & Gateway Drive	B		44	Cherry Street & 4th Avenue S.	A
14	N. 42nd Street & Gateway Drive	B		45	S. Washington Street & DeMers Avenue	D
15	I-29 East Ramp & Gateway Drive	B		46*	N. 42nd Street & University Avenue	C/D**
16	N. Columbia Road & Gateway Drive	C		47*	N. 42nd Street & DeMers Avenue	C
17	I-29 West Ramp & Gateway Drive	A		48*	S. 42nd Street & 17th Avenue S.	A
18	Stanford Road & Gateway Drive	A		49*	N. 42nd Street & 6th Avenue N.	A/C**
19	N. Washington Street & Gateway Drive	C		50*	N. 47th Street & Gateway Drive	B
20	N. Columbia Road & 2nd Avenue N.	B		51*	East I-29 Ramp & DeMers Avenue	A
21	N. Columbia Road & 6th Avenue N.	B		52*	West I-29 Ramp & DeMers Avenue	A
22	N. Columbia Road & University Avenue	C		53*	S. Columbia Road & 36th Avenue S.	A
23	N. Washington Street & 2nd Avenue N.	A		54*	S. Columbia Road & 40th Avenue S.	C
24	N. Washington Street & 5th Avenue N.	A		55*	S. Columbia Road & 47th Avenue S.	A
25	S. 42nd Street & 11th Avenue S.	B		56*	1st Street SE & 3rd Avenue SE	A
26	S. Columbia Road & 11th Avenue S.	A		57	S. Columbia Road & DeMers Avenue	B
27	S. Columbia Road & 13th Avenue S.	C		58	S. 4th Street & DeMers Avenue	B
28	S. Columbia Road & 17th Avenue S.	D		59	S. 3rd Street & DeMers Avenue	B
29	S. Columbia Road & 24th Avenue S.	C		60	2nd Street NW & DeMers Avenue	B
30	S. Washington Street & 13th Avenue S.	C		61	4th Street NW & DeMers Avenue	B
31	S. Washington Street & 17th Avenue S.	C				

* Intersection LOS as documented from recent studies

** Without/with trains

Figure 3-18: Intersection Level of Service



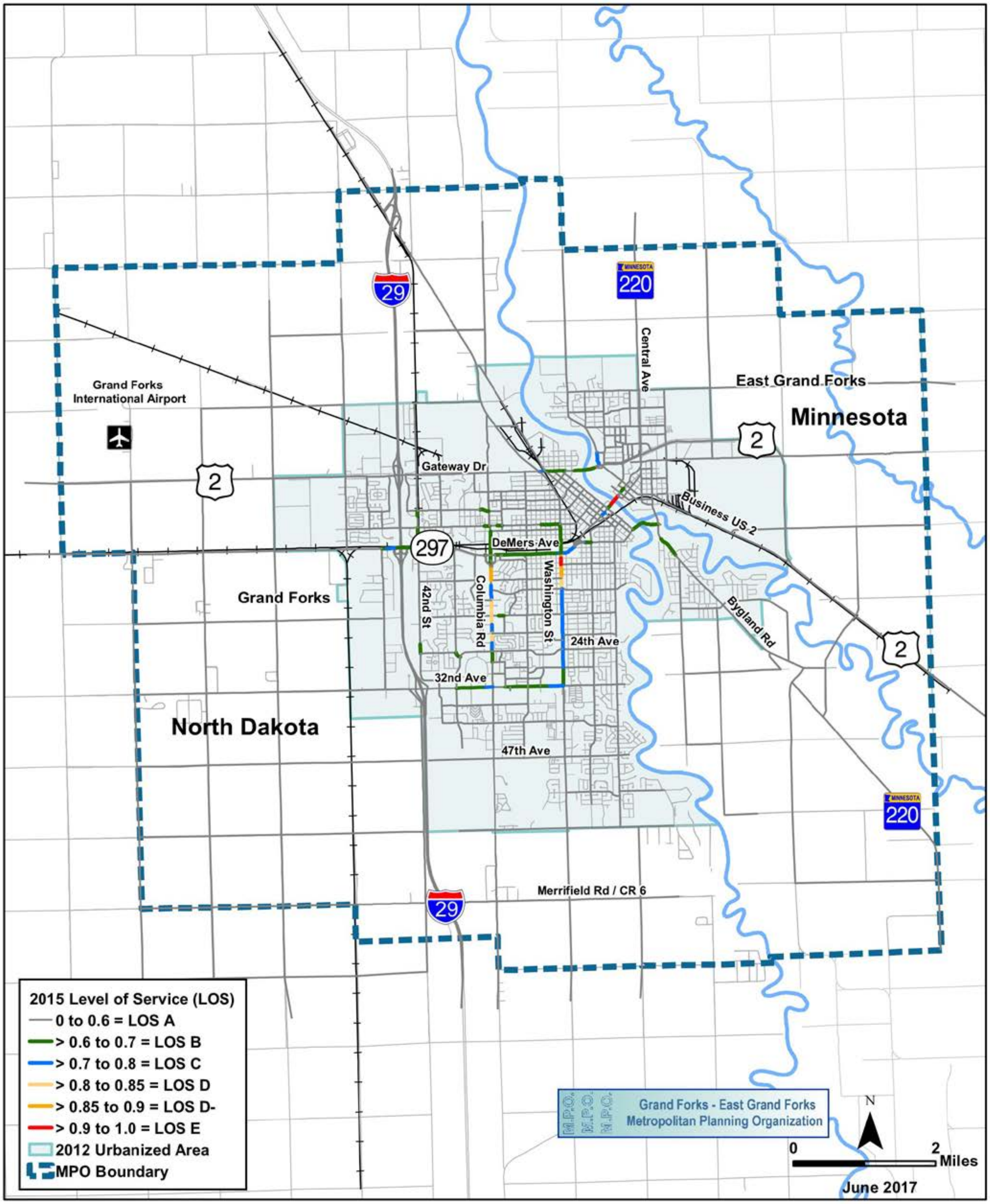
Existing Roadway Segment Level of Service

The regional travel demand forecast model prepared by the Advanced Traffic Analysis Center (ATAC) for the Street and Highway Plan identified existing LOS for key roadway segments within the MPO area. The model utilized roadway characteristics and 2015 average daily traffic volumes to determine LOS via a volume to capacity ratio. This analysis identified three road segments experiencing LOS D:

- South Columbia Road between 11th Avenue South and DeMers Avenue
- South Columbia Road between 17th Avenue South and Knight Drive
- South Washington Street between 8th Avenue South and DeMers Avenue

There were no segments that were identified as a LOS E or F as part of this analysis. See Figure 3-19 for a map of LOS by roadway segment.

Figure 3-19: 2015 Level of Service by Road Segment



Safety/Crash Analysis

When Moving Ahead for Progress in the 21st Century Act (MAP-21) was passed in 2012, the law regarding the connection between safety planning and long range transportation planning changed from “should be consistent with” to “shall integrate.” With this new requirement, the relationship between statewide Highway Safety Improvement Programs and Strategic Highway Safety Programs strengthened, and all levels of transportation planning have now taken steps towards integrating strategic safety planning into plans.

Traditionally, safety improvement locations were determined by using a site-specific approach: a safety analysis that identified high-crash locations (also known as dark spots) based off historical crash trends. Safety funding would then be utilized to improve those specific areas.

Recently, a systemic approach to safety has been emphasized in transportation planning. The systemic safety approach is a technique that supplements the site-specific approach by identifying roadway characteristics that lead to severe and fatal crashes. Instead of solely taking a reactive approach to safety by improving areas where crashes have already occurred, the systemic approach introduced a proactive approach by improving high-risk roadways before crashes occur. Planning bodies in both Minnesota and North Dakota have already begun the integration process on a statewide level and are currently updating their safety plans. For more information regarding safety planning, please refer to these plans.

The passage of MAP-21introduced two changes from programs in the past: increased safety-specific funding and the use of penalties. Previously, safety funds within the state of North Dakota had been apportioned from the Urban Roads Program fund pool, but safety is now funded by a stand-alone program. The state of Minnesota also funds transportation safety through a stand-alone program. MAP-21 also introduced a financial penalty for states that do not make significant progress in improving safety.

In the late 1990’s, the American Association of State Highway and Transportation Officials (AASHTO) developed a recommended safety program development process that sorted crash data into twenty-two emphasis areas. Those emphasis areas were further divided up into six categories: drivers, special users, vehicles, highways, emergency service, or management. By utilizing the systemic approach, transportation agencies identify projects that specifically cater to one or more emphasis area.

Site-Specific Crash Analysis

The existing site-specific traffic safety analysis for the Grand Forks-East Grand Forks MPO area was based on evaluation of crash data available from the NDDOT and MnDOT. Due to current limitations in accessing 2016 or later crash data for Minnesota communities, crash data for the four-year period from January 1, 2012 to December 31, 2015 was used for the analysis.

A total of 48 intersections were identified that experienced 12 or more crashes during the four-year analysis period. The average crash rate for these intersections was approximately 0.7 crashes per million entering vehicles (MEV), and was consistent between Grand Forks and East Grand Forks. The 48 identified intersections with 12 or more crashes are shown in Figure 3-20.

Spatial aggregation processing was performed to collect crashes associated with intersections. Total traffic passing through the intersection was then computed using NDDOT and MnDOT AADT (Annual Average Daily Traffic) data, and then an intersection crash rate was computed for each location.

To evaluate the performance and condition of intersections, grounded on computed crash rates, Expected Crash Rate tables from MnDOT Green Sheets were used. The expected crash rates for similar intersections from the MnDOT Green Sheets were applied to crashes occurring in both North Dakota and Minnesota to ensure consistency in the safety analysis and since NDDOT does not offer similar crash analysis tools. MnDOT Expected Crash Rate tables classify state-wide averages of crash rates and other parameters for different classes of intersections and segments. These parameters are computed separately for three years, five years, and ten years of historic crash data. Since this analysis was based on four years of crash data, an average of three-year and five-year tables were used to compare results. Based on the AADT and segments information for the intersections, expected crash rates were calculated and compared for each intersection. A total of 26 intersections were found to have crash rates above the expected crash rates. The attached tables summarize the types of crashes occurring at each of these 26 locations and how expected crash rates compare to actual crash rates.

Based on the information in Table 3-14, two types of crashes are more frequent than other types:

- Angle or Turn Crashes: Angle and turn crashes accounted for approximate 54 percent of total crashes in the metropolitan area.
- Rear End Crashes: Rear end crashes accounted for approximately 32 percent of total crashes in the metropolitan area.

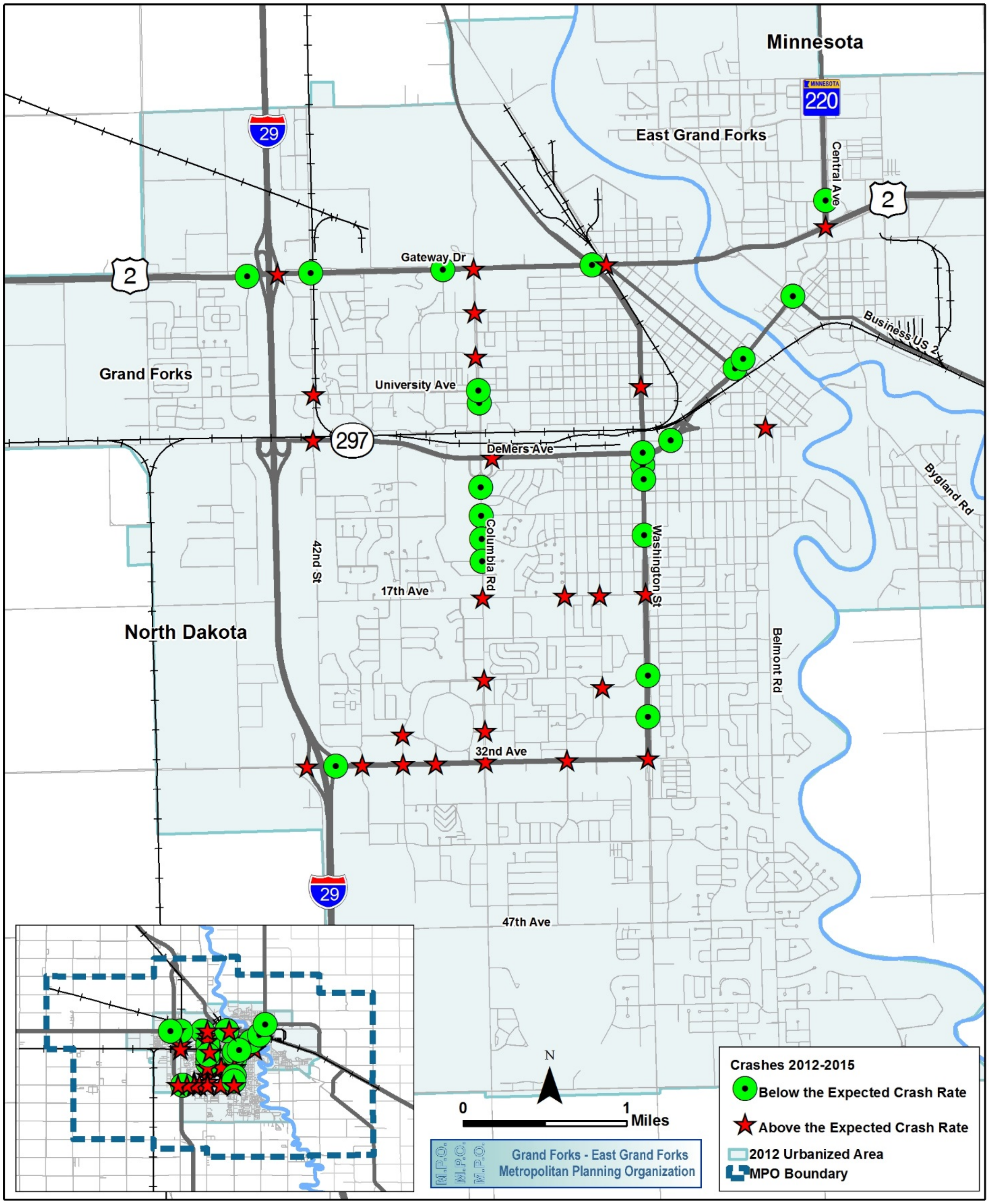
The number of severe crashes for the intersections that have higher than expected crash rates are listed in Table 3-15. Based on this analysis, it was found that:

- Three intersections experienced over 50 crashes during this timeframe. They were: S. 34th Street & 32rd Avenue S. (64), N. 42nd Street North & DeMers Avenue (60), and S. 31st Street & 32nd Avenue S (52).
- There were no fatal incidents reported in any of the high crash rate intersections from 2012-2015.
- 31 percent of the total crashes that occurred at the high crash rate intersections involved injury related crashes.

In June 2017, NDDOT provided results of a statewide Highway Safety Improvement Program (HSIP) crash analysis for urban intersection crash locations using updated 2014-2016 crash data. Nine intersections were identified in Grand Forks in the top 50 statewide intersections for most crashes. These intersections and rankings include: S. Columbia Road & 17th Avenue S. (10), S. 34th Street & 32nd Avenue S. (11), S. Washington Street & 17th Avenue S. (14), Washington Street & DeMers Avenue (24), S. 20th Street and 32nd Avenue S. (26), S. Columbia Road & 32nd Avenue S. (31), S. 31st Street & 32nd Avenue S. (40), S. Washington Street & 32nd Avenue S. (44), and DeMers Avenue & N. 42nd Street (46).

Both state DOT agencies develop strategic statewide highway safety plans with recommended strategies to improve roadway safety. Incorporating these plans and strategy approaches into the future projects and performance measurements will help address current safety issues in the MPO area.

Figure 3-20: Intersection Crash Rates



Source: NDDOT and MnDOT

Table 3-14: 2012-2015 Crash Types at Key Intersections (above expected crash rate)

Intersection	Angle/ Turn	Head On	Rear End	Side Swipe	Other
S. 31st Street & 32nd Avenue S.	45	0	6	0	1
S. Columbia Road & 24th Avenue S.	28	0	7	3	0
N. Columbia Road & 10th Avenue N.	16	0	3	0	0
S. Columbia Road & 32nd Avenue S.	11	0	21	9	1
S. 17th Street & 17th Avenue S.	13	0	3	0	0
S. 20th Street & 17th Avenue S.	9	1	2	0	0
S. Washington Street & 17th Avenue S.	17	1	16	2	4
S. Columbia Road & 17th Avenue S.	12	3	10	4	3
S. 17th Street & 24th Avenue S.	8	0	4	0	1
S. 20th Street & 32nd Avenue S.	38	0	4	0	2
S. Columbia Road & 27th Avenue S.	14	1	5	1	3
I-29 & Gateway Drive	7	0	8	1	0
I-29 & 32nd Avenue S.	11	0	2	2	0
N. 42nd Street & DeMers Avenue	33	1	17	3	6
S. Columbia Road & DeMers Avenue	6	0	20	0	0
Mill Road & Gateway Drive	12	0	10	1	3
N. Columbia Road & Gateway Drive	18	0	15	2	4
S. 34th Street & 30th Avenue S.	10	0	1	1	1
S. Washington Street & 32nd Avenue S.	9	1	31	1	4
S. 34th Street & 32nd Avenue S.	38	1	19	4	2
S. 38th Street S. & 32nd Avenue S.	23	1	9	1	1
N. 42nd Street & University Avenue	7	1	6	1	2
Belmont Road & 4th Avenue S.	9	0	3	0	0
N. Columbia Road & 6th Avenue N.	3	0	6	3	0
N. Washington Street & University Avenue	19	2	9	0	1
Gateway Drive & Central Avenue NW	11	2	18	4	1

Source: NDDOT and MnDOT

Table 3-15: 2012-2015 Crash Rates and Number of Crashes at Key Intersections (above expected crash rate)

Intersection	Actual Crash Rate	Expected Crash Rate	Total Crashes	Fatal Crashes	Injury Crashes
S. 31st Street & 32nd Avenue S.	1.54	0.71	52	0	22
S. Columbia Road & 24th Avenue S.	0.97	0.71	38	0	8
N. Columbia Road & 10th Avenue N.	1.24	0.52	19	0	8
S. Columbia Road & 32nd Avenue S.	0.88	0.71	42	0	16
S. 17th Street & 17th Avenue S.	0.97	0.52	16	0	7
S. 20th Street & 17th Avenue S.	0.69	0.52	12	0	2
S. Washington Street & 17th Avenue S.	0.88	0.71	40	0	16
S. Columbia Road & 17th Avenue S.	0.76	0.71	32	0	10
S. 17th Street & 24th Avenue S.	0.88	0.52	13	0	4
S. 20th Street & 32nd Avenue S.	1.17	0.71	44	0	22
S. Columbia Road & 27th Avenue S.	0.76	0.71	24	0	8
I-29 & Gateway Drive	0.82	0.52	16	0	4
I-29 & 32nd Avenue S.	0.91	0.52	15	0	2
N. 42nd Street & DeMers Avenue	1.48	0.71	60	0	16
S. Columbia Road & DeMers Avenue	0.97	0.71	26	0	11
Mill Road & Gateway Drive	0.77	0.71	26	0	7
N. Columbia Road & Gateway Drive	0.98	0.71	39	0	12
S. 34th Street & 30th Avenue S.	0.92	0.52	13	0	3
S. Washington Street & 32nd Avenue S.	1.38	0.71	46	0	8
S. 34th Street & 32nd Avenue S.	1.37	0.71	64	0	24
S. 38th Street S. & 32nd Avenue S.	1.02	0.71	35	0	11
N. 42nd Street & University Avenue	0.75	0.71	17	0	4
Belmont Road & 4th Avenue S.	1.00	0.52	12	0	5
N. Columbia Road & 6th Avenue N.	0.84	0.52	12	0	0
N. Washington Street & University Avenue	0.87	0.71	31	0	9
Gateway Drive & Central Avenue NW	1.14	0.71	36	0	9

Source: NDDOT and MnDOT

System-Wide Crash Analysis

An additional safety analysis was performed as the MPO developed its targets for the safety performance measures as the region works toward no fatalities by 2045. The analysis identified findings and trends for number of traffic fatalities, fatality rate, number of serious injuries, serious injury rate, and number of non-motorized fatalities and serious injuries throughout the system.

Number of Traffic Fatalities

The annual number of fatalities ranged from 0 to 4 between 2007 and 2015. Over this time period, the region experienced a declining trend in the number of fatalities. The five-year rolling average ranged from 1.8 to 2.6 with a declining trend of 0.04 per year. For 2018, the region established a target of 3 or fewer traffic fatalities with no change in the declining trend, as described in Chapter 2.

Traffic Fatality Rate

The traffic fatality rate per 100 million vehicle miles traveled (mvmt) is also declining for the region. Between 2007 and 2015, the five-year rolling average ranged from 0.550/mvmt to 0.795/mvmt with a declining trend of 0.0122 per year. For 2018, the region established a target of 0.673/mvmt or lower with no change in the declining trend.

Number of Crash-Related Serious Injuries

The annual number of traffic crash-related and life-altering serious injuries ranged from 8 to 24 between 2007 and 2015. Over this time period, the region experienced a rising trend in the number of serious injuries. The five-year rolling average ranged from 15 to 19.4 with a rising trend of 1.2 per year. For 2018, the region established a target of 18 or fewer serious injuries with a decline in the trend.

Serious Injury Rate

The traffic crash-related serious injury rate per 100 million vehicle miles traveled (mvmt) is rising for the region. Between 2007 and 2015, the five-year rolling average ranged from 4.587/mvmt to 5.933/mvmt with a rising trend of 0.367 per year. For 2018, the region established a target of 5.933/mvmt or lower with no change in the declining trend.

Number of Non-Motorized Fatalities and Serious Injuries

The annual number of non-motorized fatalities and serious injuries ranged from 0 to 5 between 2007 and 2015. Over this time period, the region experienced a rising trend in the number of non-motorized fatalities and serious injuries. The five-year rolling average ranged from 2.4 to 3.4 with a rising trend of 0.18 per year. For 2018, the region established a target of 3 or fewer non-motorized fatalities and serious injuries with a decline in the trend.

Systemic Safety Approach

In keeping with MAP-21's requirement to integrate the systemic safety approach into transportation plans, the Grand Forks – East Grand Forks MPO incorporated crash data and performance measures from safety plans and programs in North Dakota and Minnesota. A common criticism of the site-specific/black spot safety approach found earlier in this section is that once all crashes are taken into account, locations with high traffic volumes tend to be over-represented. The systemic approach seeks to alleviate that problem by focusing on risk factors that may not have already caused – but have the potential to cause –severe or fatal traffic crashes. Together, the two safety approaches are complementary to developing a safety plan that is both reactive and proactive in reducing crashes. Adding systemic improvements is a low-cost process that yields high benefits in the long run.

The Federal Highway Administration recommends four steps in the systemic safety planning process. After selecting the focus crash type, it is necessary to answer the question "where are the crashes occurring?" The FHWA recommends utilizing a crash tree diagram to approach this question. (http://safety.fhwa.dot.gov/systemic/fhwasa13019/element1.cfm)

Figure 3-21: FHWA System Safety Planning Process

Source: Federal Highway Administration

For the systemic-based crash assessment, crash trees were utilized from both North Dakota and Minnesota plans. Most applicably, the North Dakota Local Road Safety Program specific to Grand Forks, the Polk County Safety Plan, and the Minnesota DOT District 2 Highway Safety Plan provided crash trees that further the understanding of crashes that have not been identified by the site-specific approach. Although the data accounts for more than just the MPO area, the crash trees still remain relevant in identifying roadway characteristics that can be alleviated by the systemic approach to highway safety.

The crash trees highlighted below signify the dynamics of crashes that occurred in Grand Forks County and Polk County from 2008-2012. Unlike the dark spot approach described above – which has been criticized for overemphasizing intersection crashes – these trees represent the types and severities of crashes in addition to intersection crashes.

After creating region-specific crash trees, NDDOT and MnDOT identified the most common roadway characteristics that present a potential risks for each of these crashes. From there, a list of countermeasures were identified and applied to specific roadway segments that exhibited those characteristics. The project applications in both North Dakota and Minnesota reflect those identified roadway segments, and have been incorporated into Chapter 8 to determine appropriate performance measures for the LRTP.

Crash Trees

For the Grand Forks County crash tree analysis, data was taken from 5,041 crashes that occurred in a 5-year period from 2008 to 2012. The Polk County crash tree analysis utilized data from 1,535 crashes that occurred between 2007 and 2011. The District 2 (Minnesota) crash tree analysis used data from 3,975 crashes between 2006 and 2010. For each of these crash data sets, five years of data was examined to prevent the possibility of examining an abnormal year, as well as reduce the chance for significant changes in roadway conditions such as reconstructed roads or changed speed limits. The Grand Forks County and Polk County crash trees below reflect the crashes by road type, area, and crash type category, while the District 2 crash trees reflect the crashes by area and then crash type.

Figure 3-22: Grand Forks Region Crash Data Overview – Rural and Urban Local Road Systems (2008 to 2012)

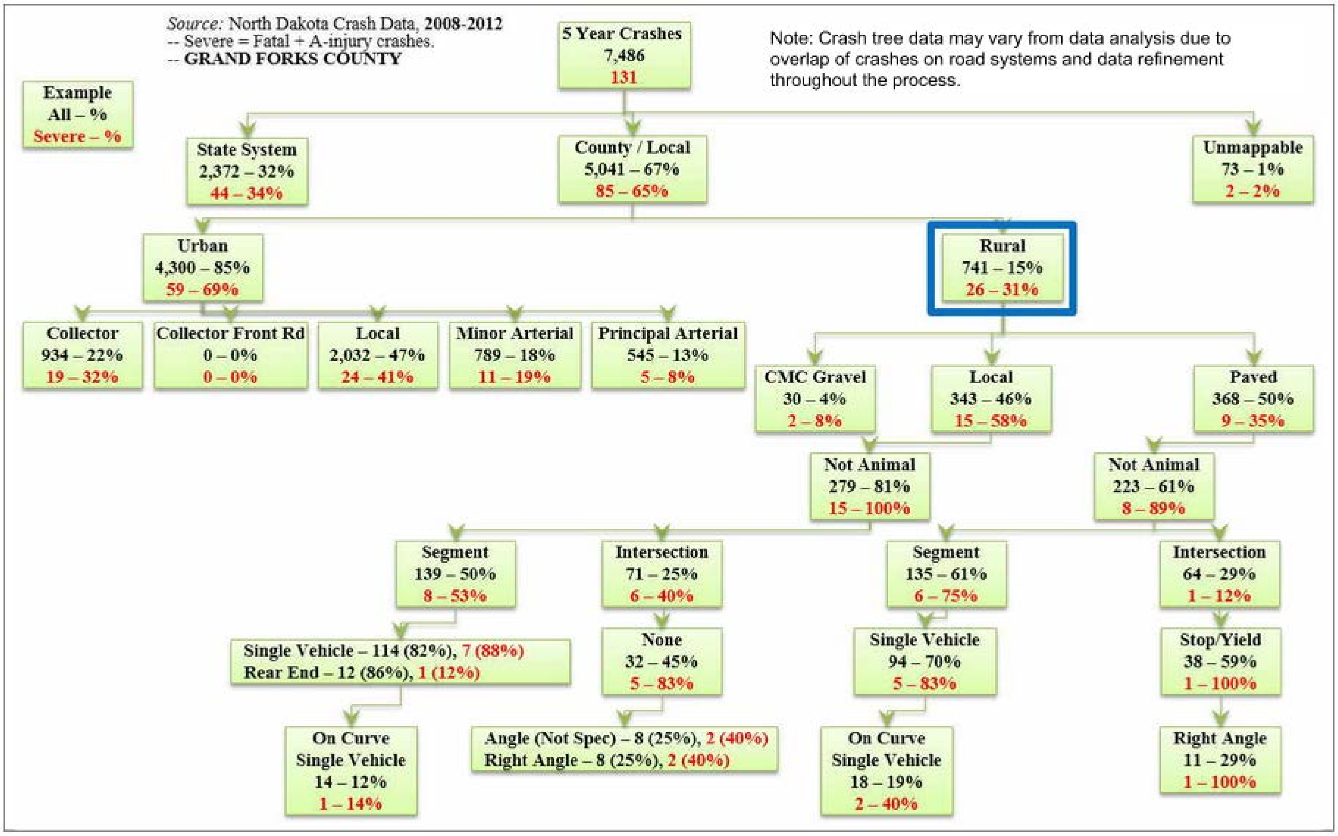


FIGURE 2-1
Grand Forks Region Crash Data Overview – Rural and Urban Local Road Systems (2008 to 2012)

Source: North Dakota Local Road Safety Program: Grand Forks

Figure 3-23: Grand Forks Region Crash Data Overview – Rural and Urban Local Road Systems (2008 to 2012)

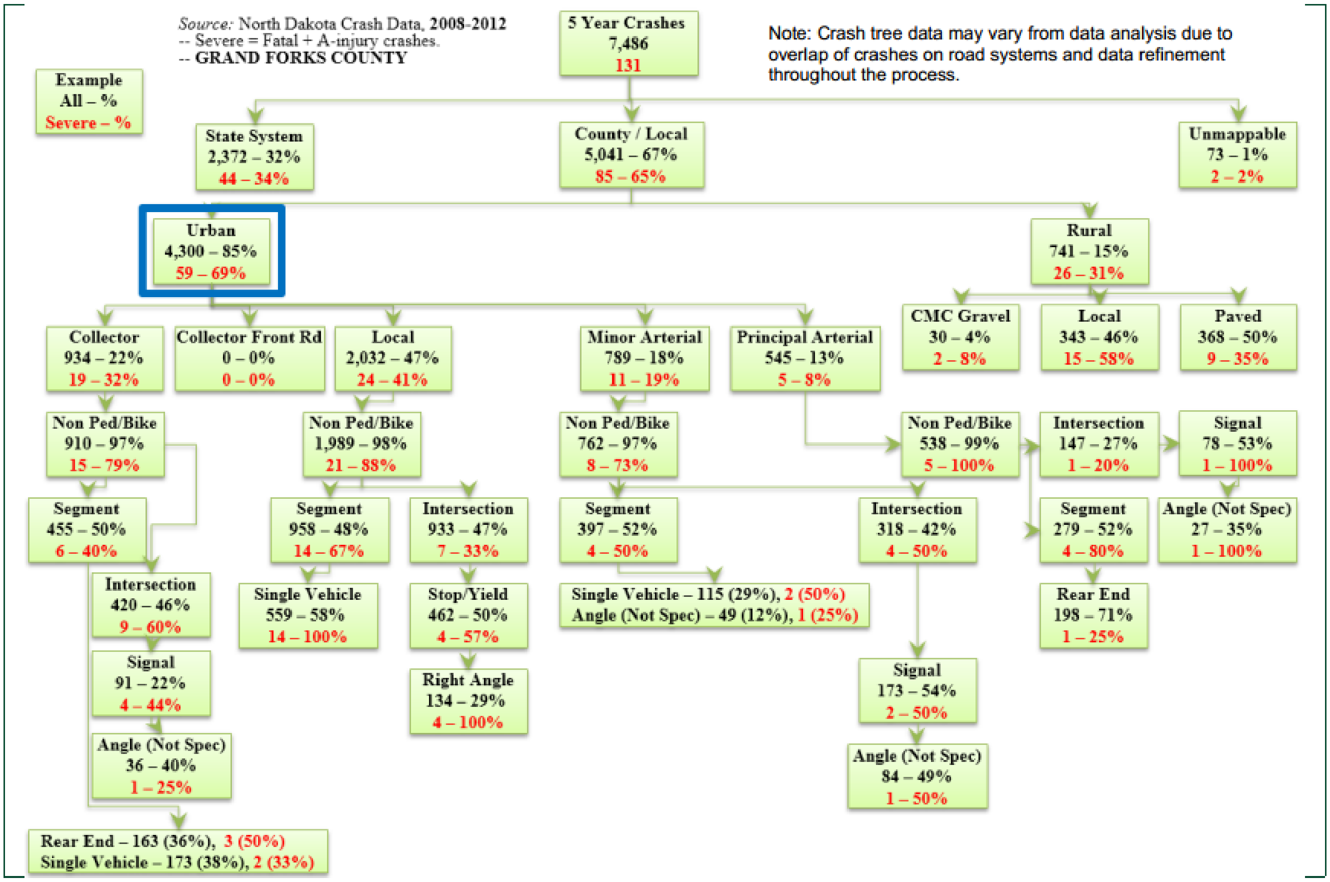


FIGURE 2-1 (Continued)
Grand Forks Region Crash Data Overview – Rural and Urban Local Road Systems (2008 to 2012)

Source: North Dakota Local Road Safety Program: Grand Forks

Figure 3-24: Polk County Crash Data Overview

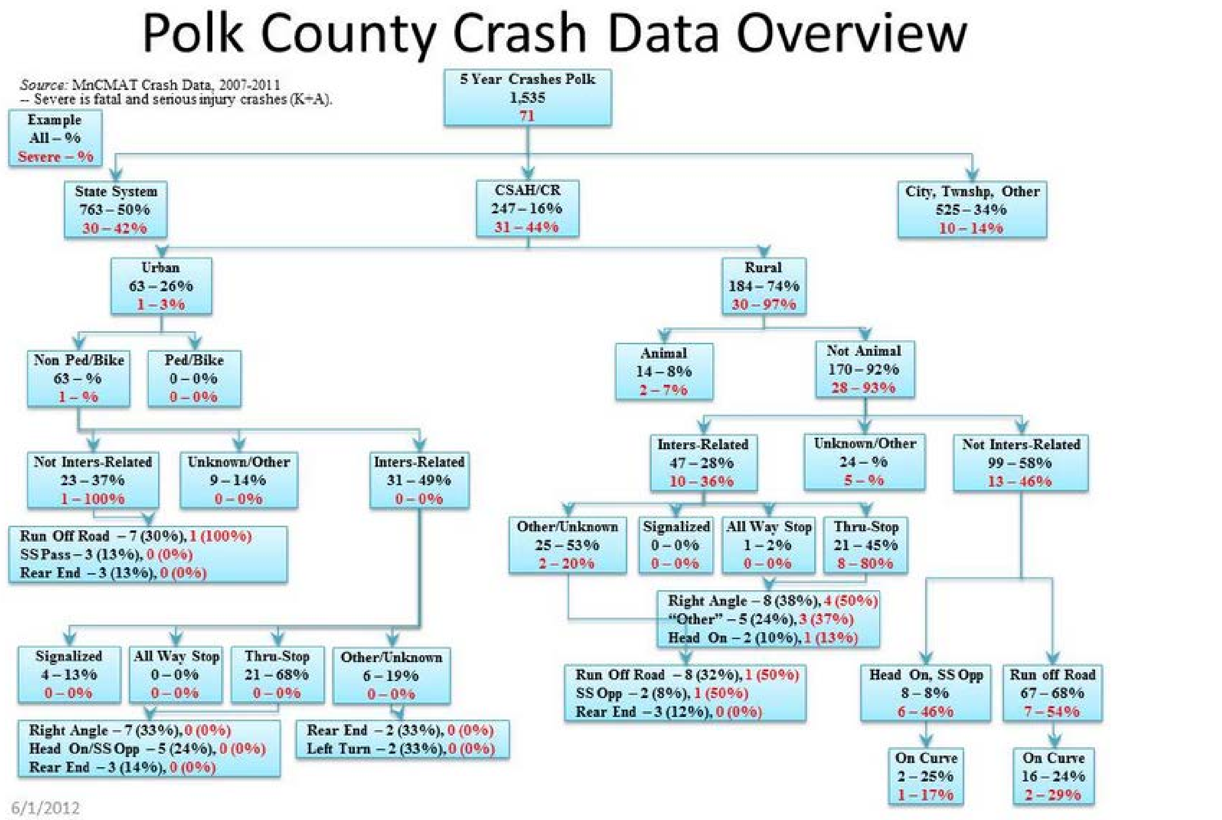


Figure 3-2
Polk County Crash Data Overview

Source: Polk County Safety Plan

Figure 3-25: MnDOT District 2 Crash Disaggregation

MnDOT DISTRICT 2 HIGHWAY SAFETY PLAN

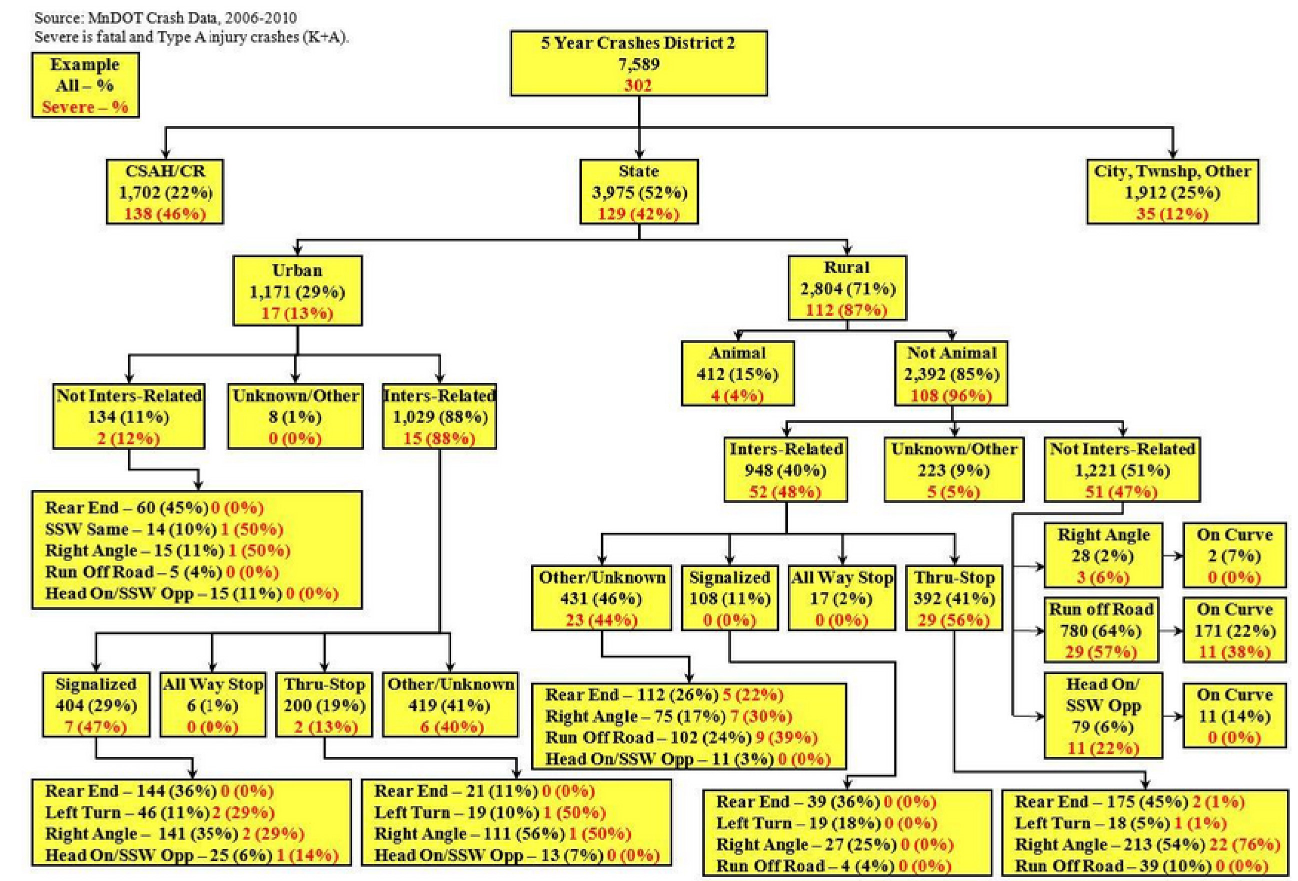


Figure 2.1 District 2 Crash Disaggregation

Source: MnDOT Crash Data, 2006-2010. Severe is fatal plus Type A injury crashes

Source: MnDOT District 2 Highway Safety Plan

Based on the data found in each of these crash trees, the states of North Dakota and Minnesota have identified projects that focus on crucial AASHTO emphasis areas. Primarily, roadway agencies have the most control in reducing crashes that related to infrastructure-based emphasis areas such as lane-departure crashes and intersection crashes. As a result, the projects strictly adhere to improvements that relate to roadway conditions.

There are two criteria that are examined to identify candidates for safety investments: high-crash locations and at-risk locations. A crash analysis identifies locations with serious crashes, and then evaluates basic roadway characteristics of locations with serious crashes. Those characteristics – also called risk factors – are then used to determine the risk of future crashes. Rather than wait for a location to become a “dark spot,” the systemic approach addresses those risk factors to reduce the potential for serious and fatal crashes.

The maps below detail the results from identifying low-cost, safety-related infrastructure projects focused on safety emphasis areas. Specifically, projects were developed based off high priority rural and urban improvements.

- In Grand Forks County, high-priority rural roadway projects addressed the most common type of serious segment-related crash: a single-vehicle, lane departure crash. High-priority rural curve projects focused on enhancing curve delineation, reducing rear-end and head-one crashes, and reducing right-angle crashes.
- In Polk County, high priority rural roadway projects were developed that specifically targeted edge improvements and enhanced delineation. In both rural and urban areas, there was an effort to develop projects that upgraded signs and pavement markings, installed street lights, and improved visibility at unsignalized intersections.
- In Minnesota District 2, projects were developed that targeted the most practical solutions to rural areas: improvements to the edges and centerlines of rural highways, enhanced delineation of horizontal curves in rural areas, realignment of intersections to reduce skew, upgrading signs and pavement marking, installing street lights, clearing sight triangles, and providing ITS warning systems at rural STOP controlled intersections.

Figure 3-26: Grand Forks County Projects Location Map – Roadway Segments and Intersection Projects

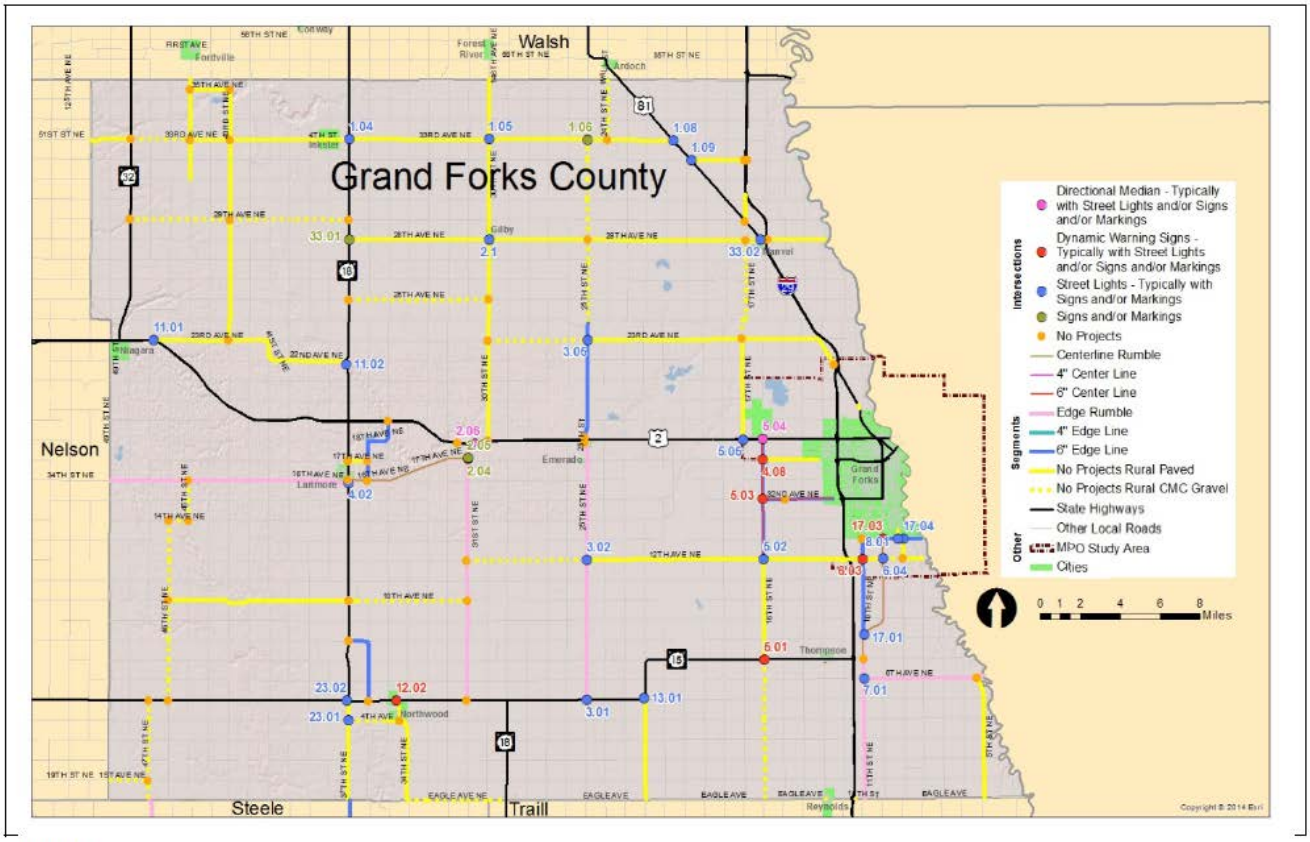
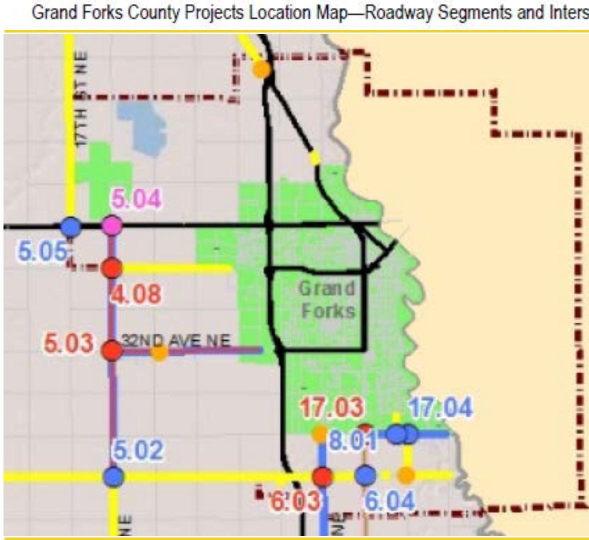


FIGURE 4-8
Grand Forks County Projects Location Map—Roadway Segments and Intersection Projects



Source: North Dakota Local Road Safety Program: Grand Forks

Figure 3-27: Grand Forks County Projects Location Map – Roadway Segments and Curve Projects

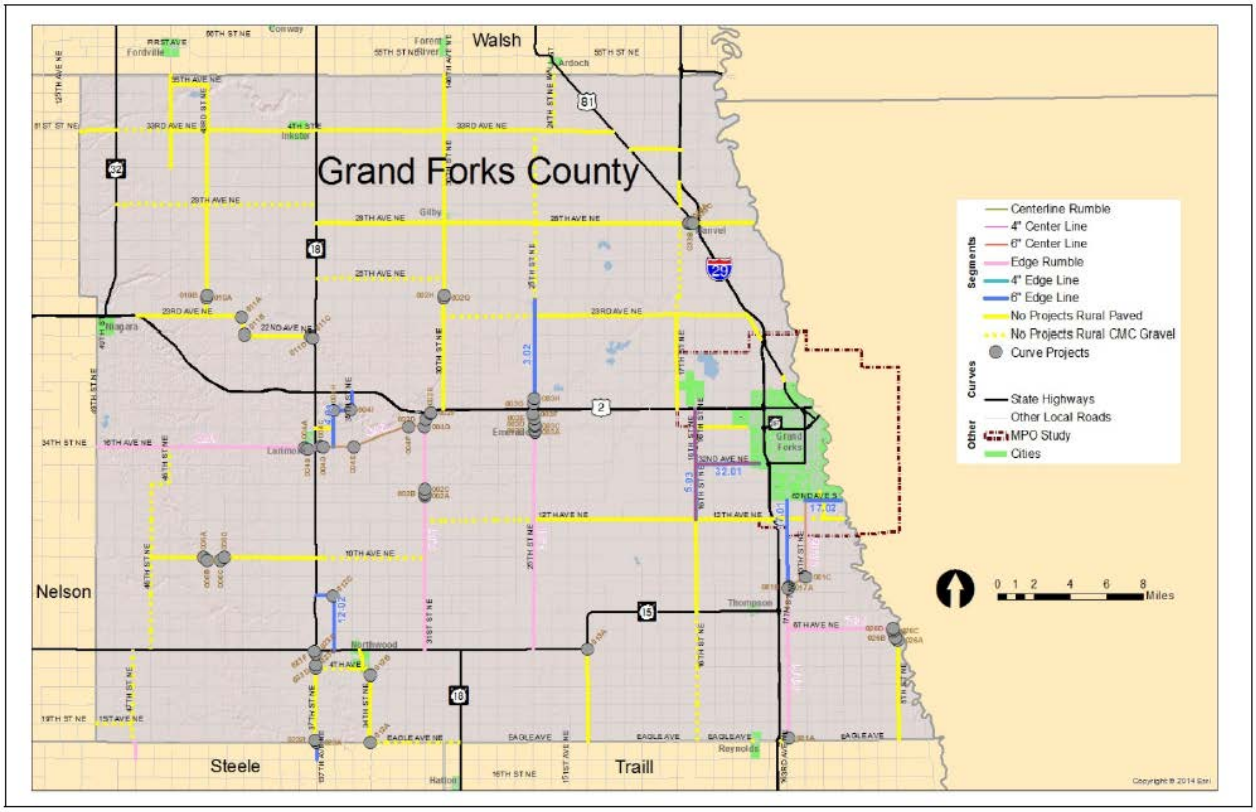


FIGURE 4-9
Grand Forks County Projects Location Map—Roadway Segments and Curve Projects

Source: North Dakota Local Road Safety Program: Grand Forks

Figure 3-28: City of Grand Forks Projects Location Map – Roadway Segments and Pedestrian and Bicycle Projects

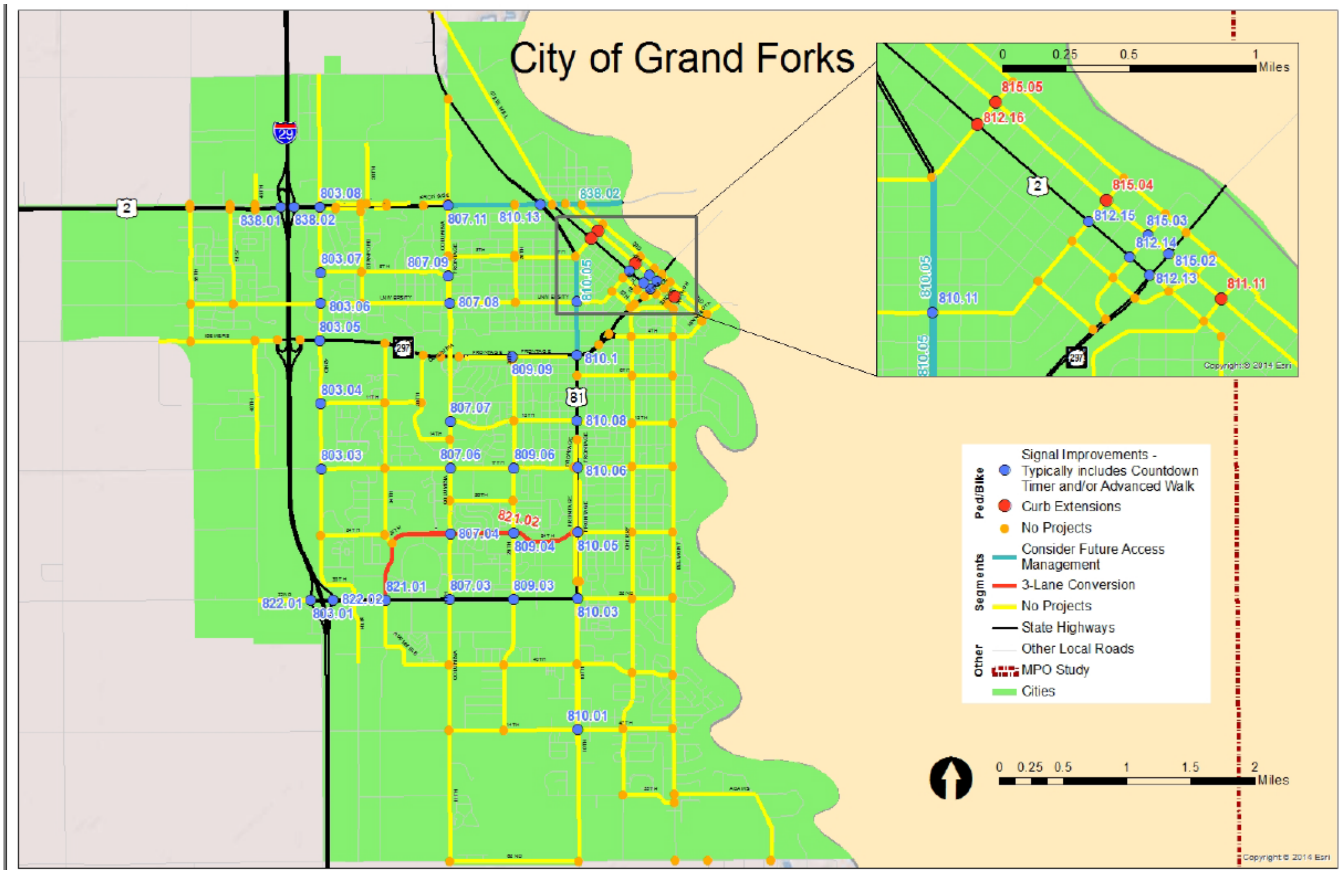


FIGURE 4-10
City of Grand Forks Projects Location Map—Roadway Segments and Pedestrian and Bicycle Projects

Source: North Dakota Local Road Safety Program: Grand Forks

Figure 3-29: City of Grand Forks Projects Location Map – Right Angle Intersection Projects

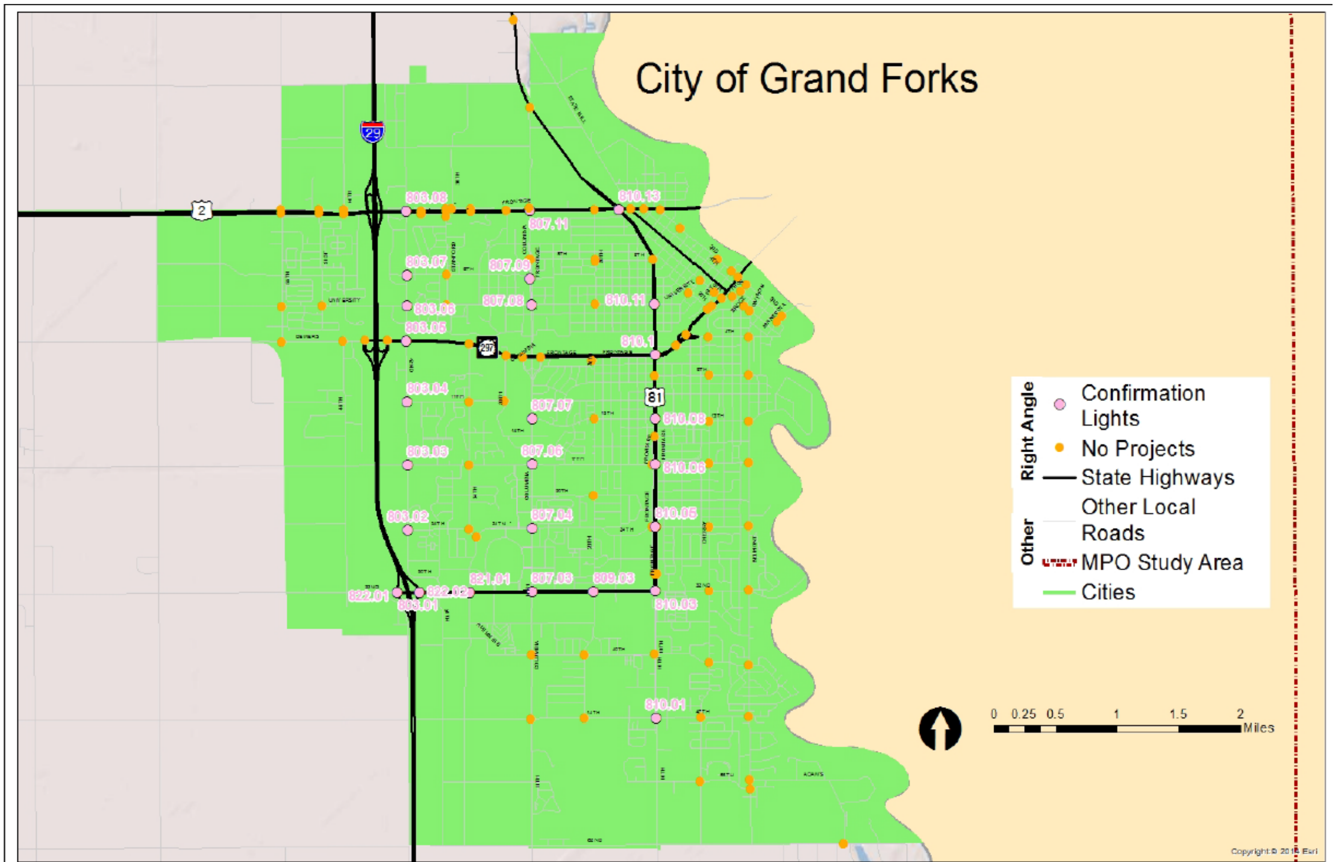


FIGURE 4-11
City of Grand Forks Projects Location Map—Right Angle Intersection Projects

Source: North Dakota Local Road Safety Program: Grand Forks

Figure 3-30: Polk County High Priority Segments

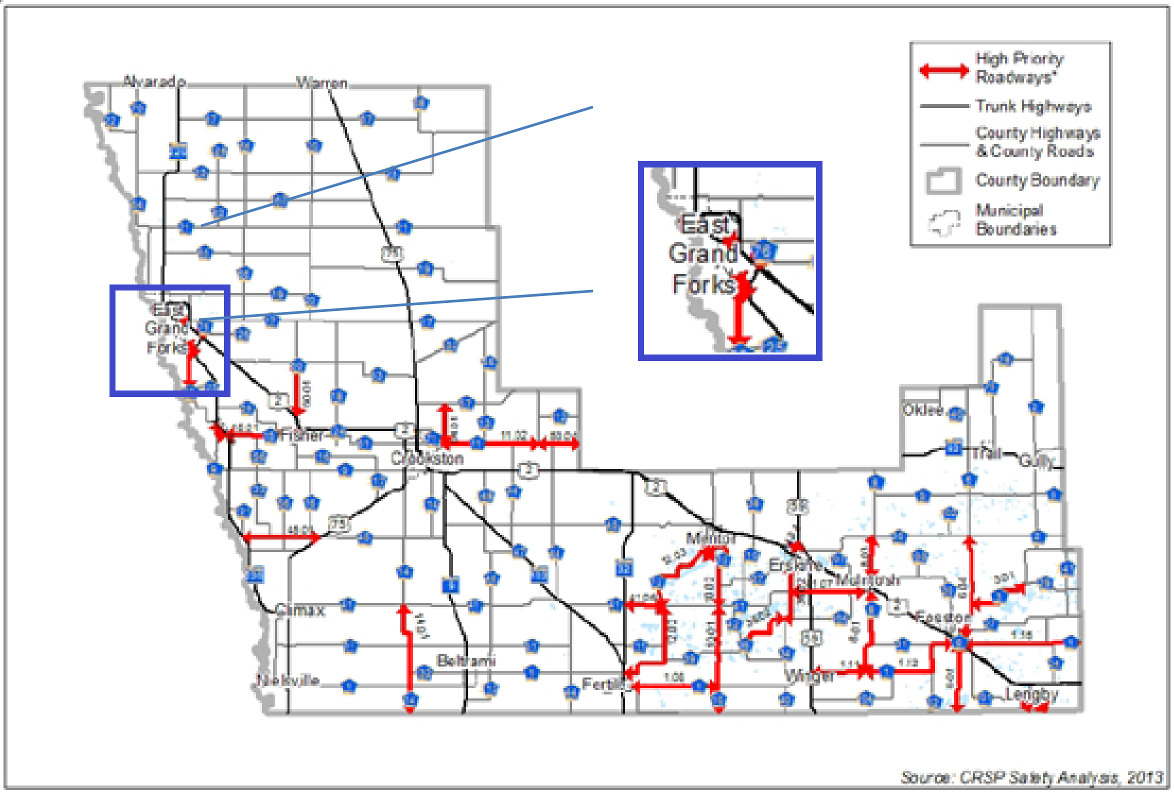


Figure 3-9
Polk County High Priority Segments

Source: Polk County Safety Plan

Figure 3-31: Polk County Curve Project Map

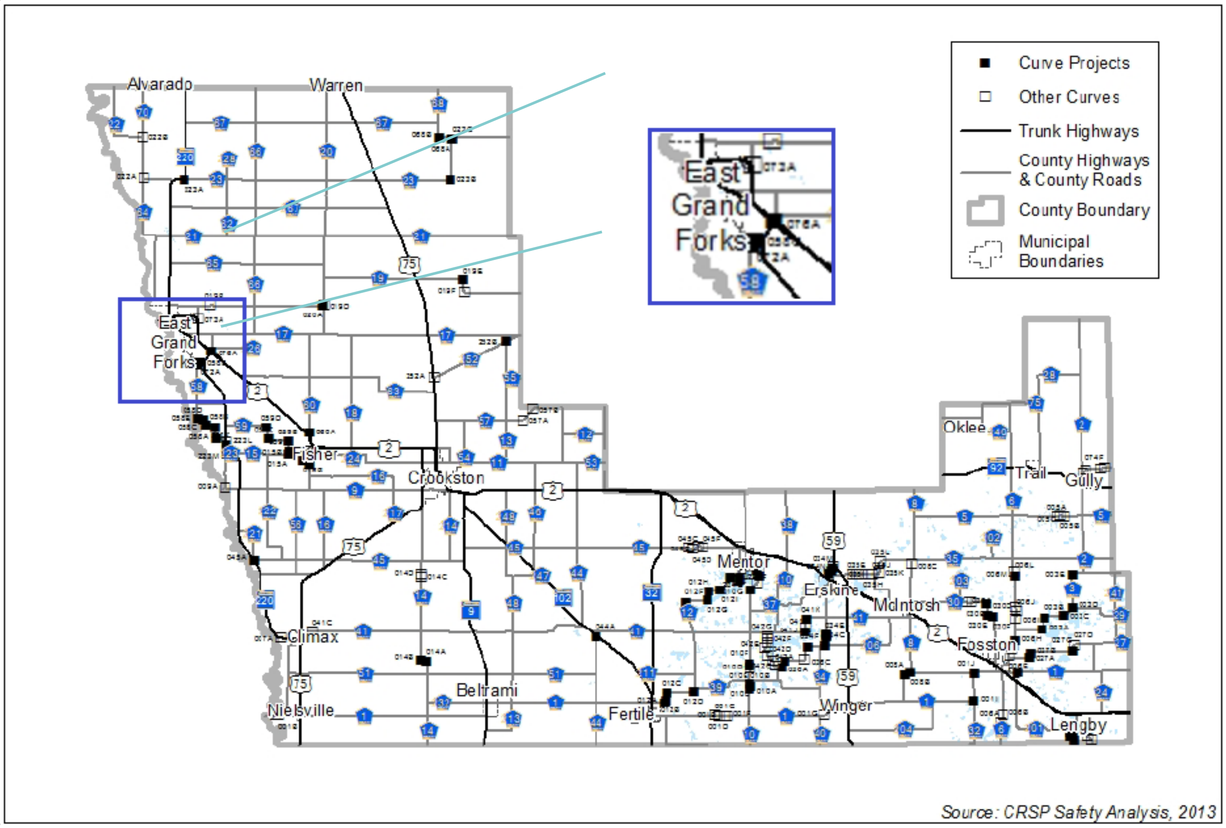


Figure 3-13
Polk County Curve Project Map

Source: Polk County Safety Plan

Figure 3-32: Polk County High Priority Intersection Map

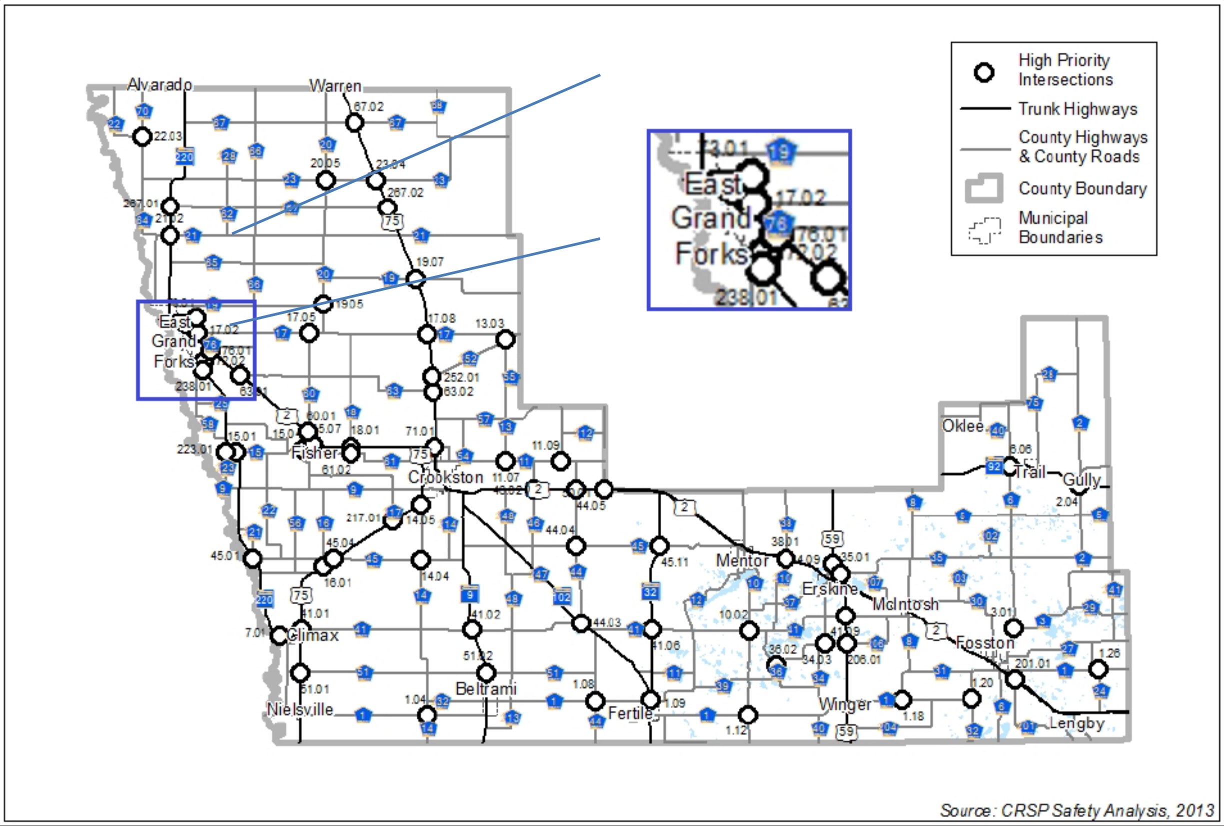


Figure 3-15
Polk County High Priority Intersection Map

Source: Polk County Safety Plan

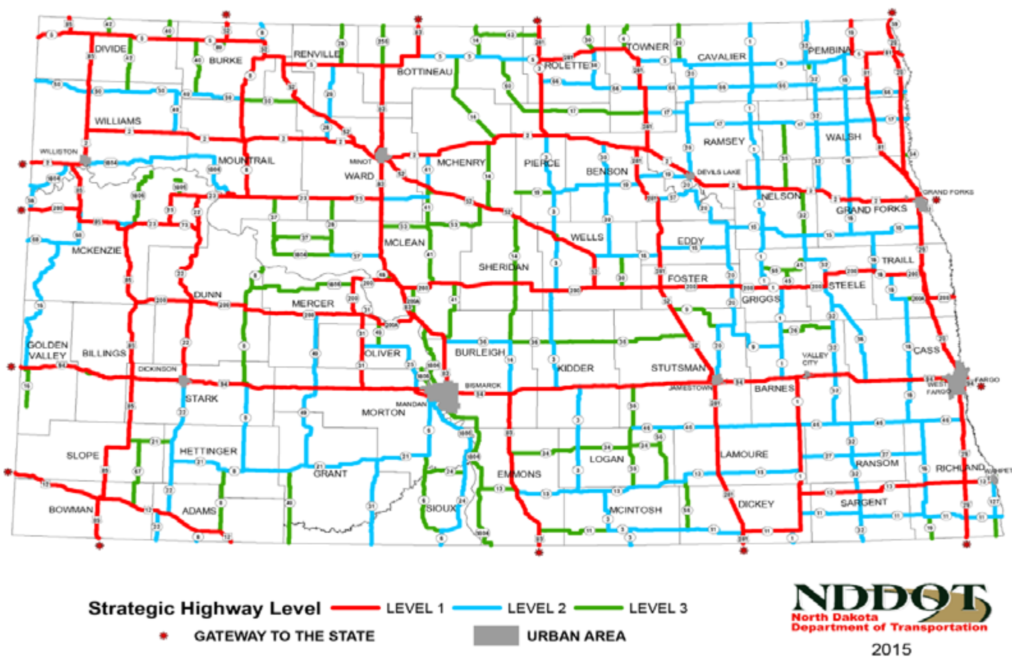
Freight

The Grand Forks-East Grand Forks MPO area includes multi-modal infrastructure for transporting goods. The street and highway network along with the Grand Forks International Airport and multiple railroad corridors connect the region to national and international transportation systems.

Key Freight Routes

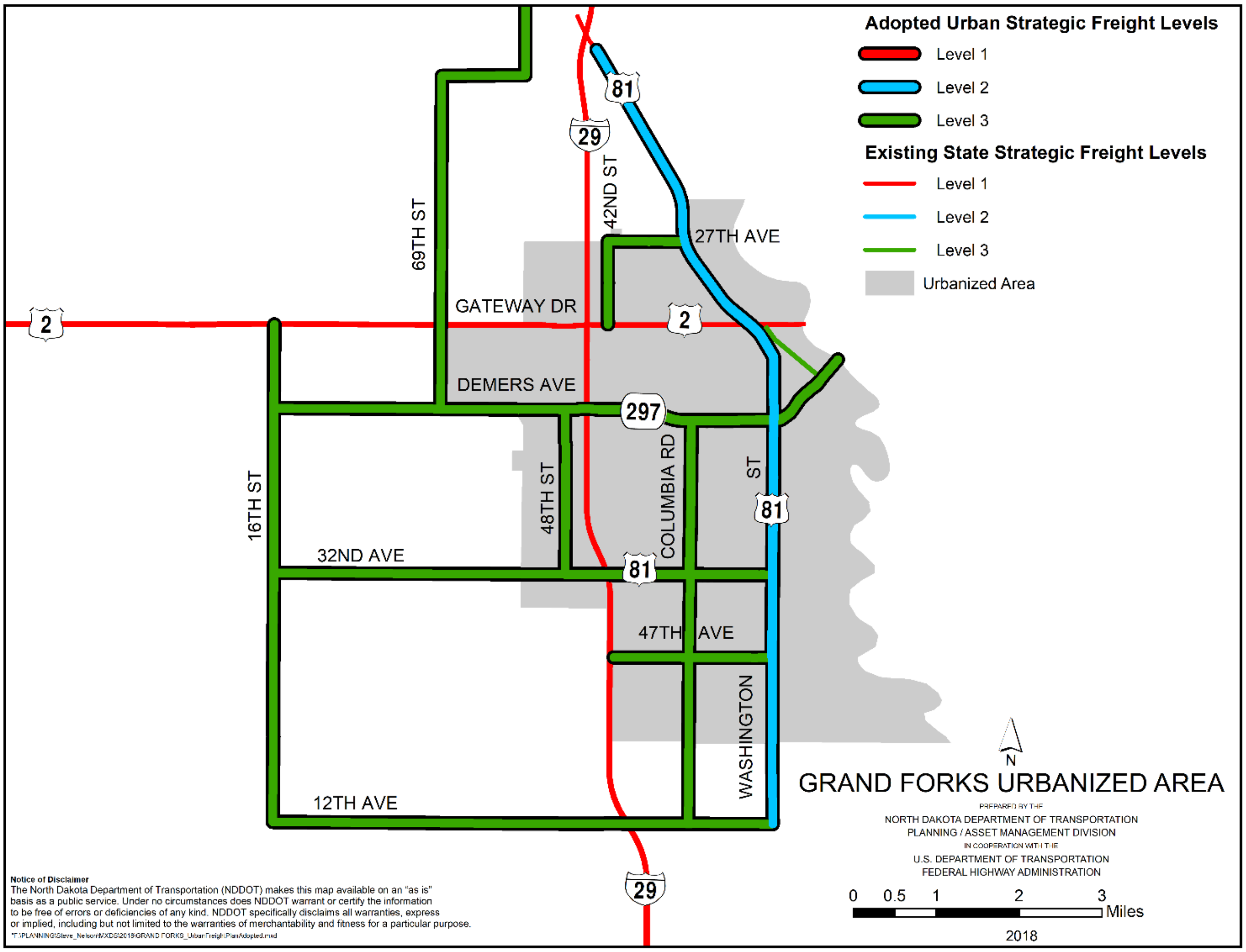
NDDOT adopted its North Dakota State Freight Transportation Plan in 2015. On the North Dakota side of the GF/EGF MPO, there are a number of roadways that serve as part of critical state and national freight routes for the movements of goods. Figure 3-33 and Figure 3-34 below illustrates NDDOT's State Strategic Freight System of Highways. As illustrated, in the Grand Forks area, Interstate I-29 and US Highway 2 are both identified as Level 1 Strategic Highways. These highways are also part of the National Freight Network and connect North Dakota with domestic and foreign markets. An extension of the National Freight Network for urban areas are Urban Critical Freight Corridors. Figure 3-35 on the following page illustrates critical urban freight corridors in the Grand Forks area including Gateway Drive, DeMers Avenue, Washington Street, Columbia Road, 32nd Avenue South, among others.

Figure 3-33: NDDOT Strategic Freight System - Highways



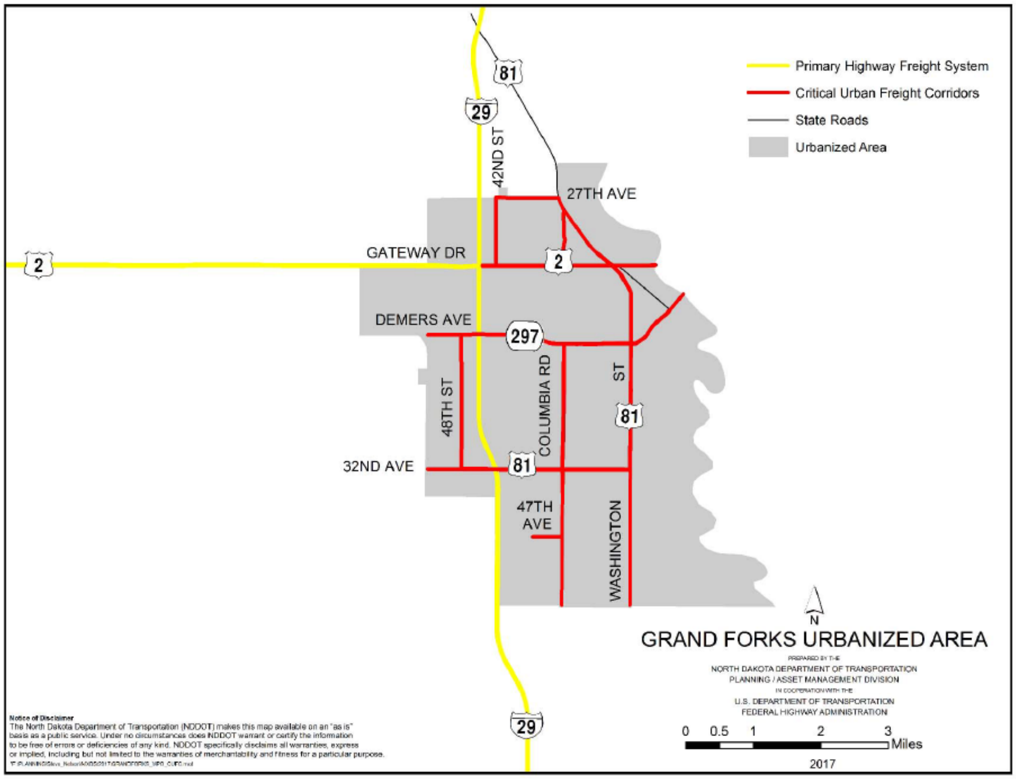
Source: NDDOT

Figure 3-34: NDDOT Strategic Freight System – Highways – Grand Forks Urbanized Area



Source: NDDOT

Figure 3-35: Critical Urban Freight Corridors - Grand Forks Urbanized Area

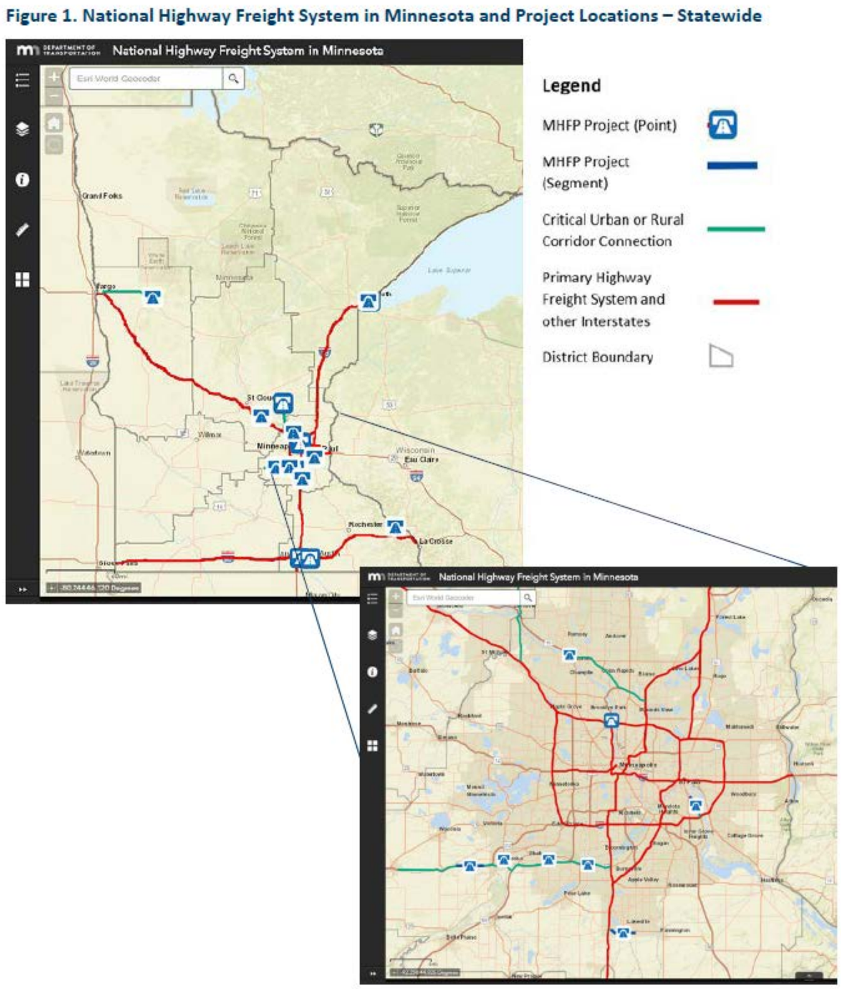


Source: NDDOT

MnDOT has developed a 2017 Minnesota State Freight Investment Plan that identifies Critical Urban Freight Corridors and Critical Rural Freight Corridors. This investment plan identifies $100 million of FAST-Act federal freight funds that will be programmed for freight projects from FY 2019 thru FY 2022. None of these funds are programmed for the GF/EGF MPO planning area. In 2018, a Minnesota Statewide Freight System Plan was also developed. Figure 3-36 on the following page illustrates the National Highway Freight System in Minnesota from the 2017 Minnesota State Freight Investment Plan. As illustrated, there are no currently designated National Freight System roadways in the East Grand Forks area. Also, MnDOT has not identified any Critical Urban Freight Corridors or Critical Rural Freight Corridors in the East Grand Forks area.

It should be noted that unlike Minnesota where there is a federal set-a-side and statewide competition for federal freight projects using FAST-Act freight funds, in North Dakota, there is not a separate federal freight project solicitation and funding process. In North Dakota, freight projects identified as part of the NDDOT Strategic Freight System or the Urban Critical Freight System must compete for and be funded through the standard state and federal funding programs available to other projects.

Figure 3-36: National Highway Freight System in Minnesota



Source: 2017 Minnesota State Freight Investment Plan

Metro Truck Routes

The movement of goods and services by truck is facilitated by designated truck routes within the metro area (see Figure 3-37). However, truck routes are designated differently between the States of North Dakota and Minnesota. In Minnesota, truck routes include any roadway designated as a Municipal State Aid (MSA) route. In North Dakota, State law allows specific designation of truck routes. In Grand Forks these special designations have been assigned to Gateway Drive, DeMers Avenue, Washington Street, 32nd Avenue South, and Mill Road. Trucks may travel on any road off the designated truck route only when they are at the intersection to their destination and then must follow the reverse route back to that intersection on the designated truck route. Grand Forks also has prohibited trucks over a certain weight from traveling on the Columbia Road overpass and the Point Bridge. For the Columbia Road overpass, the weight limit is 20,000 pounds gross weight and for the Point Bridge the weight limit is 40,000 pounds gross weight.

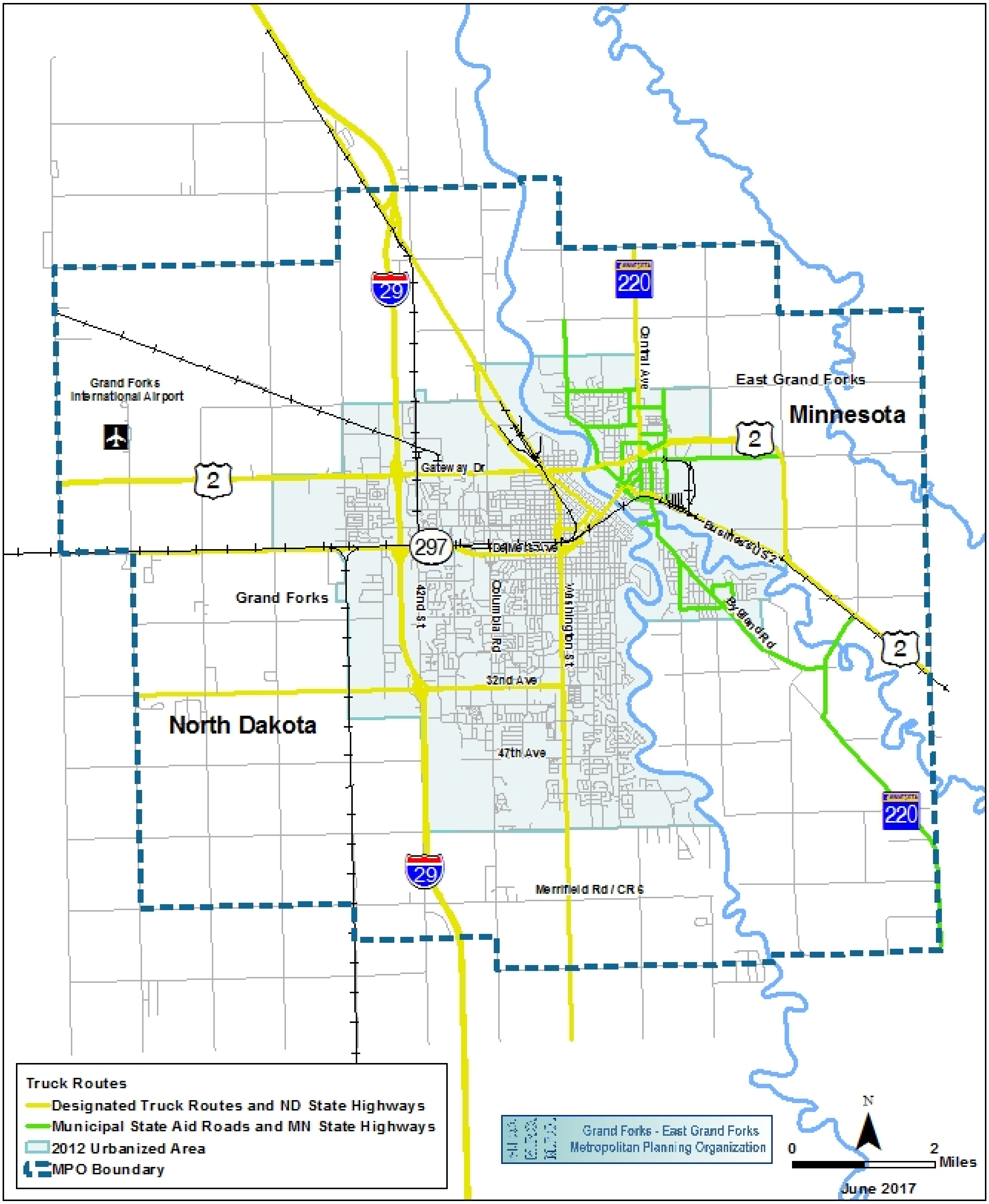
Metro Truck Volumes

Figure 3-38 represents year 2015 truck traffic counts taken in Grand Forks by NDDOT on certain roadways and 2012 truck traffic counts taken in East Grand Forks by MnDOT (state highways only). Truck trips are significant during harvest season in the Grand Forks-East Grand Forks region. In 2012, for example, harvest truck trips were documented as part of turning movement counts collected along South Washington Street. This count documented a total of 316 trucks along South Washington Street and 119 of the 316, or approximately 38 percent, were beet trucks.

Metro Truck Safety

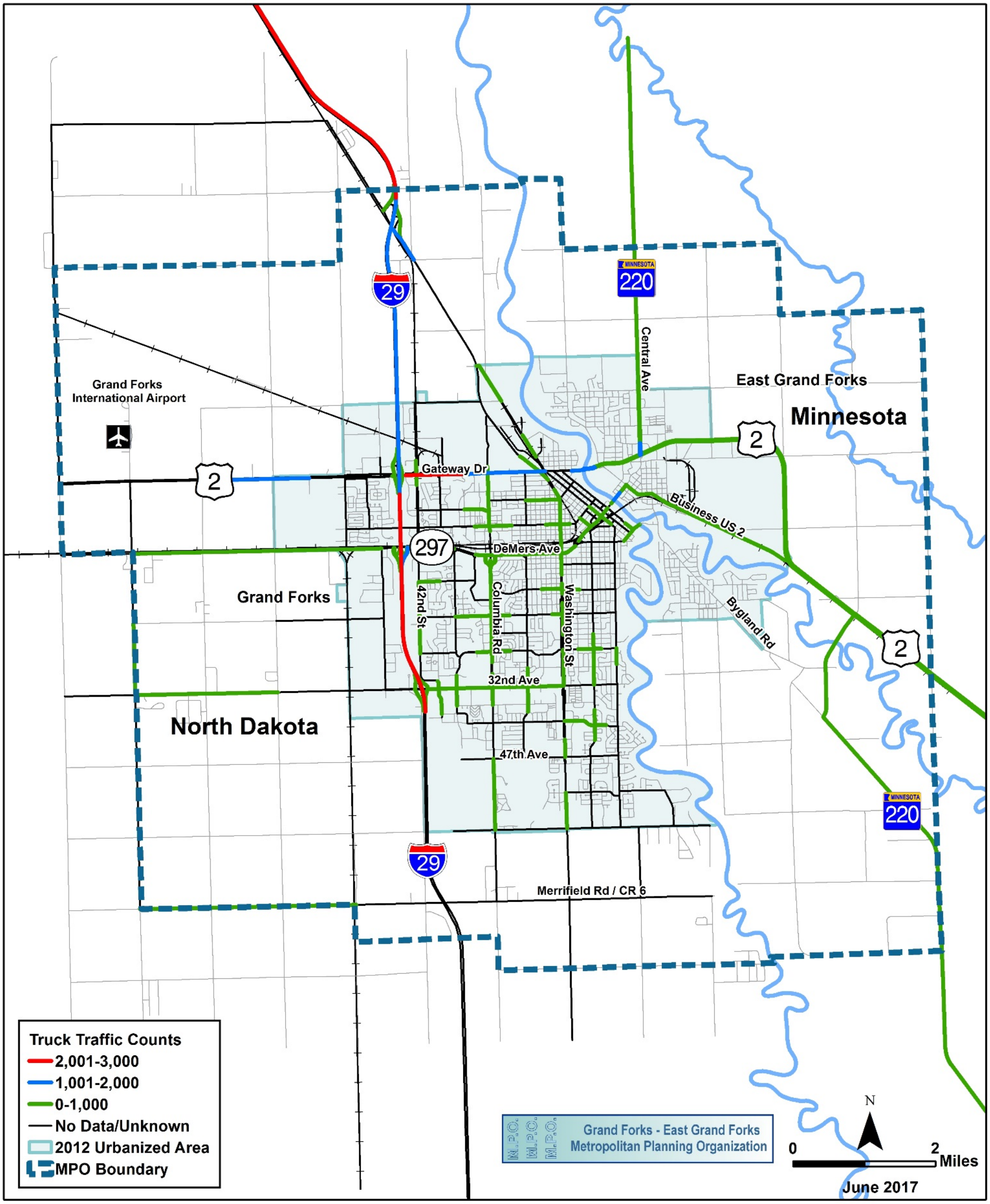
According to the US DOT, approximately 12 percent of all motor vehicle crashes in the United States involve large trucks. Comparatively, large trucks were involved in 116 of 5,425 total crashes in the Grand Forks-East Grand Forks metro area from 2012 to 2015, or approximately 2 percent of all crashes. The density and total number of truck related crashes is summarized in Figure 3-39 and Table 3-16. Most truck related crashes occurred along US Highway 2/Gateway Drive over this period-of-time.

Figure 3-37: Truck Routes



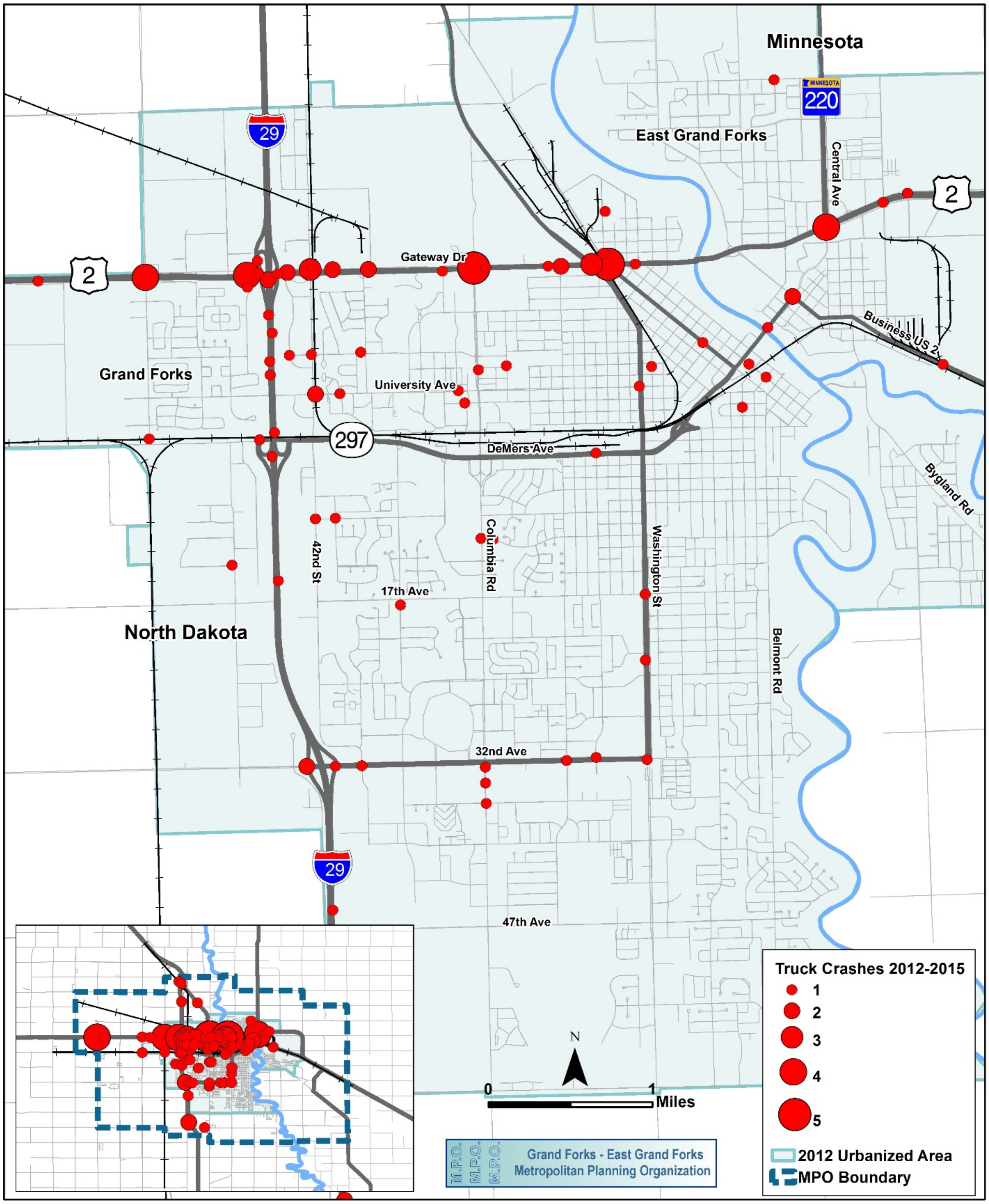
Source: Grand Forks-East Grand Forks MPO

Figure 3-38: Truck Traffic Volumes



Source: Grand Forks-East Grand Forks MPO

Figure 3-39: Truck Related Crashes



Source: NDDOT and MnDOT

Table 3-16: 2012-2015 Truck Related Crashes by Type and Severity

Truck Type	2012	2013	2014	2015	Total
Double Axle	6	1	6	2	15
Triple Axle or Greater	7	8	7	9	31
Truck Tractor with 0-3 Trailers	17	22	10	15	64
Unknown Heavy Truck	1	1	0	4	6
Total	**31**	**32**	**23**	**30**	**116**
Truck Severity Crashes					
Fatality	0	0	1	0	1
Injury	3	5	2	6	16
Property Damage Only	27	28	20	24	99

Source: NDDOT and MnDOT

Metro Rail Lines

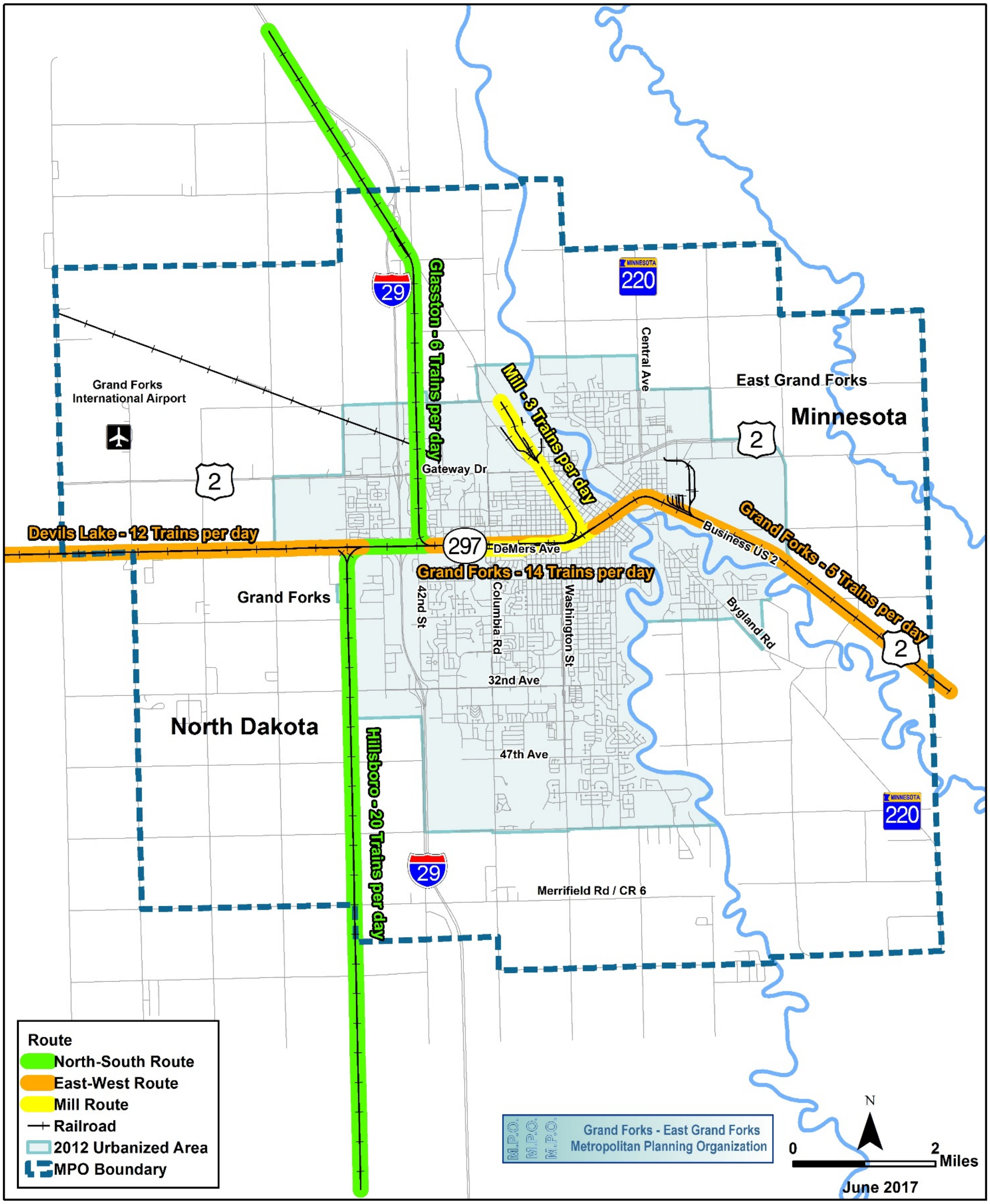
The majority of railroad tracks in the region are owned and operated by the BNSF Railway Company (BNSF). These routes provide access through North Dakota to the west coast, through Minnesota to Chicago, and south to the Gulf of Mexico. BNSF also owns and operates the DeMers railyard just north of DeMers Avenue and south of the University of North Dakota campus. It is one of the main rail yards in North Dakota. At the yard, empty cars are dropped off, and cars full of commodities are staged in sections along multiple lines of track before being heading to their destination. Additionally, the Mill Spur and other minor spur connections provide industrial rail access and link the region's industrial land uses to BNSF's national railroad network. The region's railroad network is shown in Figure 3-40. Amtrak also operates its Empire Builder line on the BNSF lines, providing daily rail passenger service to Chicago and Seattle.

Minimizing the traffic delay at rail crossings is important, especially for truck freight movement in the metro area and across the nation. FHWA reports that unexpected delays (by train blockages) can drive up the cost of freight transport by 50 to 250 percent, hindering the ability of a region's transportation system to effectively meet freight demands. The movement of various agricultural products, especially sugar beets, via trucks from field processing or transshipment points can also be disrupted by train traffic. Balancing the movement of goods and services between multiple modes of transportation is a challenging task and requires coordination and collaboration between public and private sectors. Two problematic at-grade rail crossings for truck traffic delays associated with unit train traffic and train blockages are the Glasston Subdivision crossing at US Highway 2 and the Grand Forks Subdivision crossing near the intersection of DeMers Avenue and North 42nd Street.

Metro Rail Crossings

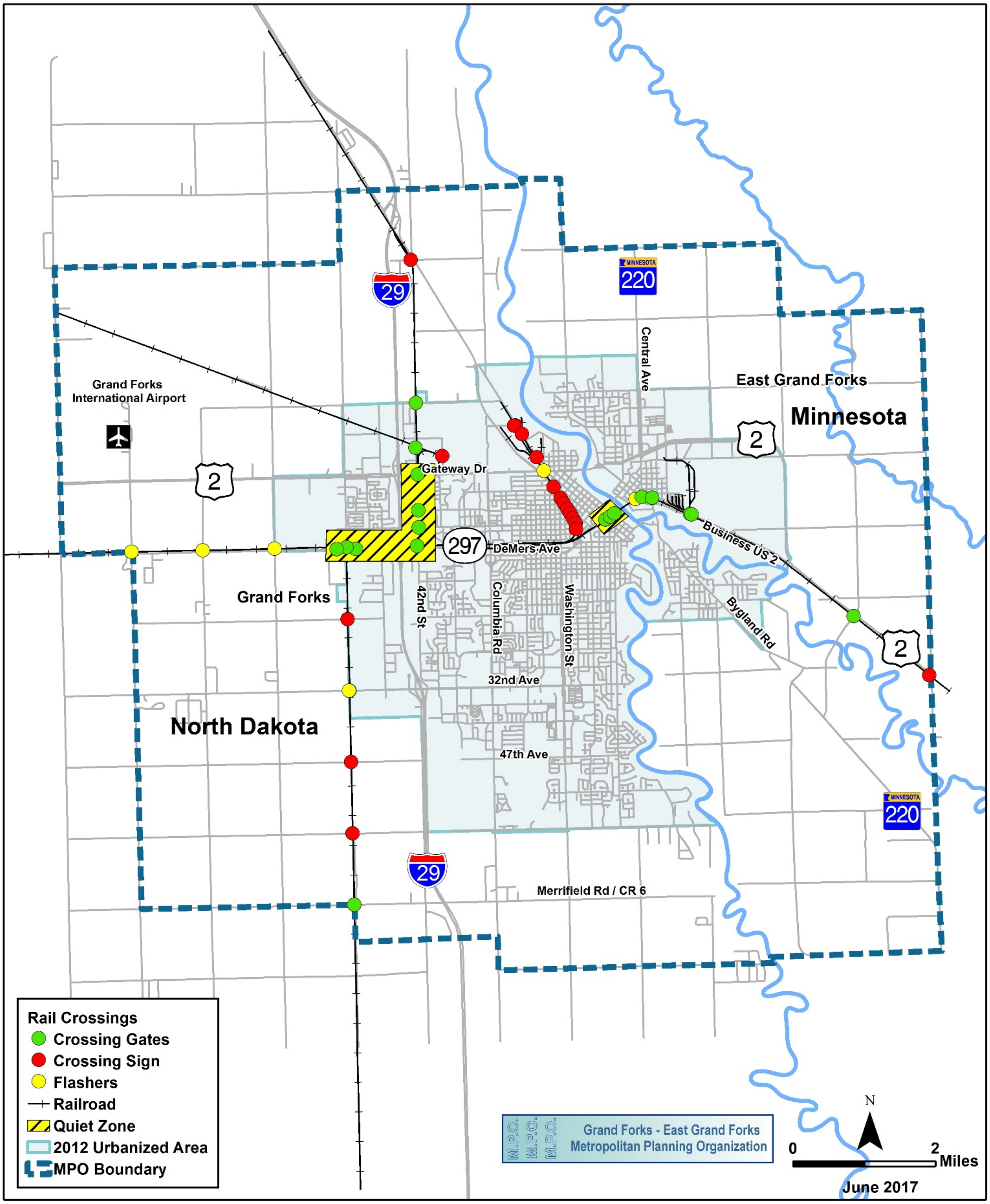
Regarding traffic operations, rail movement plays a significant role in the overall transportation system of the Grand Forks-East Grand Forks region. Currently, there are 45 at-grade railroad crossings, 20 of which have crossing signs only; 9 crossings have signs and flashers; and 16 have crossing signs flashers and gates (see Figure 3-41). In 2010, the Grand Forks-East Grand Forks MPO conducted a quiet zone assessment for the metropolitan area, which led to a recommended crossing improvement plan for 4 at-grade crossings in East Grand Forks and 11 at-grade crossings in Grand Forks. The MPO and respective cities continue to work toward implementing these quiet zones throughout the metropolitan area.

Figure 3-40: BNSF Railway Subdivisions



Source: Grand Forks-East Grand Forks MPO

Figure 3-41: Existing Railroad Crossings



Source: Grand Forks-East Grand Forks MPO

Freight Businesses

The region's economy consists of several industries, regional shopping centers, and manufacturing facilities that rely on the freight system to move goods within and out of the region. In addition, the region serves as a hub collecting agricultural commodities from northeast North Dakota and northwest Minnesota. Several large freight users are identified in Figure 3-42. Among these, the largest freight generators include American Crystal Sugar, North Dakota State Mill, and BNSF Railway.

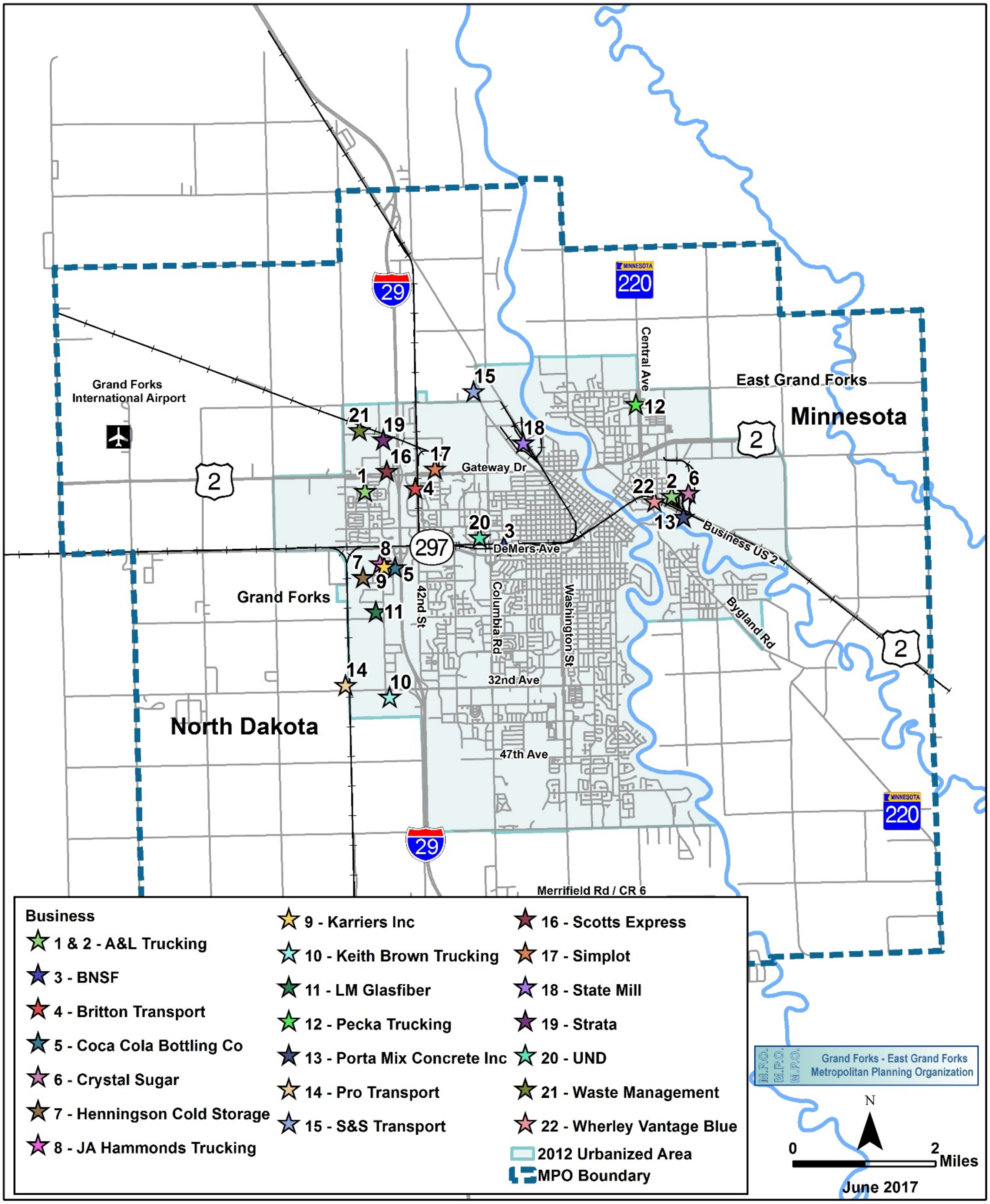
Heavy commercial vehicles are highly dependent on the US Highway 2 corridor with the unrestricted load crossing of the Red River, via Kennedy Bridge, and connections to the American Crystal Sugar plant. During the annual beet harvest, daily heavy commercial volumes can exceed 1,500 trucks per day at the intersection of US Highway 2/US Business 2 and US Highway 2/County Road 17. The geometrics of the corridor intersections need to support these vital movements to support the economics of East Grand Forks and the region. American Crystal Sugar, Bert's Truck Equipment, Todd's Trailer Sales and Lumber Mart are a few of the businesses along the US Business 2 corridor that depend on heavy commercial traffic movement.

The regional sugar beet harvest stretches from September to October of each year, generating over 4,500 heavy commercial traffic movements per day destined for the American Crystal Sugar plant. Beet deliveries are strategically timed during all hours of the day to reduce impacts to peak hour travel. The origin of these heavy commercial movements is estimated to be evenly split into thirds, with 1/3 of the trucks coming east on US Highway 2, 1/3 from the north on US Highway 2 or the east on County Road 17, and the remaining third from the south via US Highway 2. Aside from the increase in harvest season heavy commercial traffic volumes, year-round heavy commercial traffic volumes for the corridor averages nearly 10 percent of the overall traffic.

Another key freight generator is LM Wind Power, a company that produces and ships fiberglass blades for large scale wind turbines. The size of the blades being produced have recently expanded up to 184 feet, 26 feet longer than previous versions. The length of these blades impacts the delivery and shipment of these products via trucks, requiring large turning movements along key freight corridors including I-29, DeMers Avenue, and 32nd Avenue South.

The North Dakota State Mill (NDSM) is a major generator truck and for train activity in the region. Grain trucks bring commodities to the Mill and after processing much of the outputs are shipped out via rail. While there are anticipated increases in grain received at the NDSM, the most significant increase in activity is associated with a planned unit grain unloading facility with access to the Glasston Subdivision. Plans for improvements on the NDSM property are being pursued. With additional rail car storage at the North Dakota State Mill there will be the opportunity for an increase in grain received via the Mill Spur rail line. This is expected to have an impact on rail traffic to both the Mill Spur and Glasston Subdivision due to a potential rail connection, as well as the roadway network due to the increased truck traffic and additional activity at railroad crossings.

Figure 3-42: Major Freight Businesses



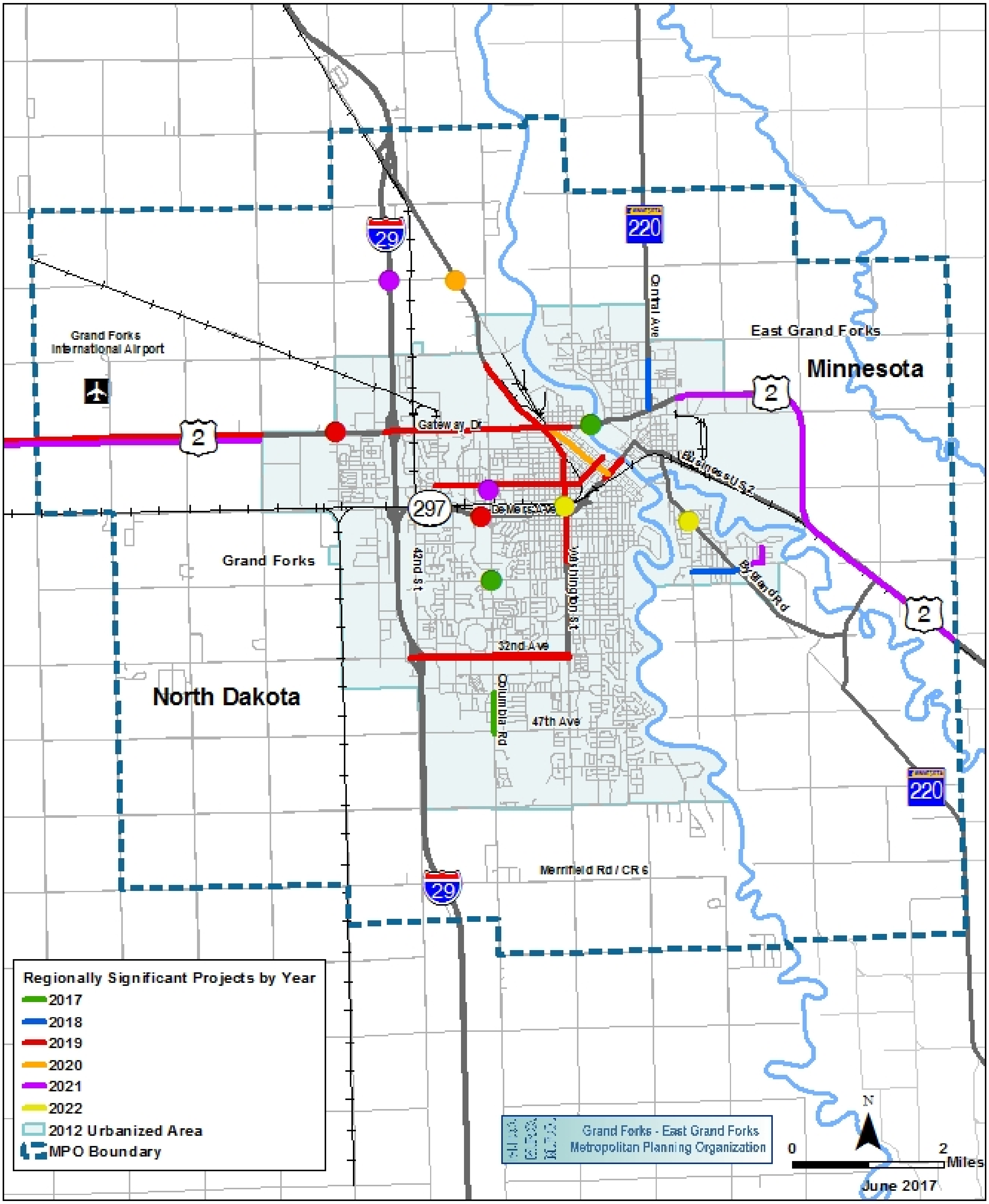
Source: Grand Forks-East Grand Forks MPO

Recent and Programmed Regionally Significant Improvements

The previous Street/Highway Plan along with state and local transportation improvement programs identify projects to be implemented and that are in the project development phase or are already prioritized for investment. These upcoming projects along with the existing conditions described in this chapter will influence future travel patterns in the region. The following includes a list of regionally significant improvements that were recently constructed or identified in the 2019-2022 Transportation Improvement Program, as further shown in Figure 3-43.

- Kennedy Bridge Rehabilitation (2017)
- South Columbia Road 2 to 5 Lane Expansion and New Signal (2017)
- South Columbia Road Turn Lanes at 17th Avenue South (2017)
- Central Avenue Multi-Use Trail (2018)
- Greenway Boulevard Reconstruction and Sidewalk (2018)
- 32nd Avenue Corridor Safety Improvements (2019)
- DeMers Avenue (Columbia Rd/30th St.) Traffic Signal/Turn Lanes (2019)
- DeMers Avenue Reconstruction/Expansion (2019)
- Gateway Drive/55th Street Traffic Signal/Turn Lanes (2020)
- US 2 Resurfacing in Grand Forks (2021)
- North Columbia Road Reconstruction (2021)
- I-29 Bridge Maintenance north of US 2 Interchange (2021)
- US 2 Resurfacing in East Grand Forks (2021)
- North Washington Street Railroad Underpass Reconstruction (2022)
- Bygland Road and Rhinehart Drive Intersection Reconstruction (2022)

Figure 3-43: Recent and Programmed Regionally Significant Projects by Year



Source: Grand Forks-East Grand Forks MPO

Recent Studies

Since the 2040 Street/Highway Element was adopted, several corridor studies were completed providing new recommendations that, if implemented, would affect the functionality of the overall roadway network. The recent studies and key findings are summarized below:

I-29 Traffic Operations Study (2017, Grand Forks)

The I-29 Traffic Operations Study examined the current and future needs and opportunities for this important regional corridor. The study provided several recommendations and implementation strategies as summarized below and in Figure 3-44.

The study found that without improvements, existing interchanges at Gateway Drive/US 2, DeMers Avenue, and 32nd Avenue South will experience significant delays and backups onto I-29 based on 2040 forecasts. New Red River crossings at 32nd Avenue South and Merrifield Road were found to provide great benefit to the region but did little to improve forecasted congestion on I-29. Grade separations (over/underpasses) were studied at 17th Avenue South, 47th Avenue South, and 62nd Avenue South; however, the cost of these improvements outweighed the benefits in the near term and were not carried forward.

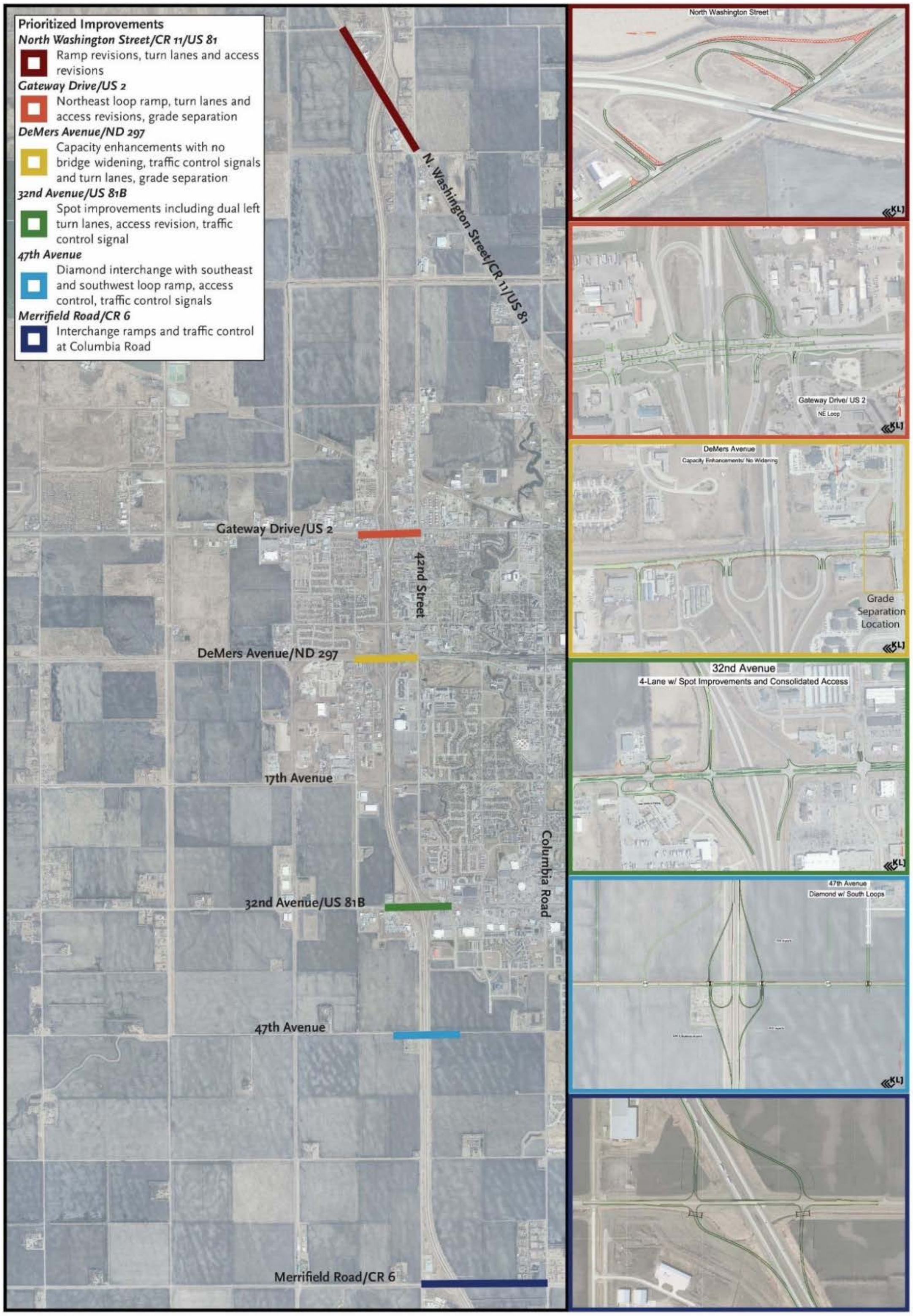
Other findings include:

- Based on 2040 forecasts, the 32nd Avenue South interchange traffic operations cannot be satisfactorily improved without an interchange at 47th Avenue South
- The Gateway Drive/US 2 interchange would benefit from the Northeast Loop Alternative, as recommended from the US 2 Study, and also grade separation of the Glasston Railroad east of 42nd Street along Gateway Drive/US 2
- The DeMers Avenue interchange would benefit from traffic control and lane configuration improvements. Also, DeMers Avenue would benefit from the 42nd Street railroad grade separation just north of DeMers Avenue. This railroad grade separation would also mitigate additional significant infrastructure improvements along I-29.
- New interchanges at 47th Avenue South and Merrifield Road/County Road 6 were found to provide significant improvement and value to the region
- A 47th Avenue South interchange with an additional travel lane on I-29 between 32nd Avenue South and 47th Avenue South was found to reduce congestion along 32nd Avenue South to the point of mitigating $16 million worth of improvements at the existing 32nd Avenue South interchange
- A Merrifield Road interchange provided a major reduction to regional vehicle miles of traveled. This interchange could be implemented with only adding ramps to the existing bridge.
- No significant problems were identified along I-29 after bottlenecks at the key interchanges of Gateway Drive, DeMers Avenue and 32nd Avenue South were relieved

I-29 Interchange Implementation Plan and Project Costs:

- I-29/North Washington Street Interchange improvements estimated at $5.98 million, no immediate need, improvements could be incorporated into 2030 NDDOT I-29 concrete pavement repair project
- I-29/Gateway Drive (US 2) Interchange improvements estimated at $6.62 million (northeast loop 2031-2040+) and US 2 railroad grade separation estimated at $28.3 million (planning evaluation 2026-2030)
- I-29/DeMers Avenue (ND 297) Interchange improvements estimated at $7.4 million (planning evaluation before 2025) and 42nd Street railroad grade separation estimated at $40 million (planning evaluation before 2025)
- I-29/32nd Avenue South Interchange improvements estimated at $915,000 (2017-2030) and 47th Avenue South Interchange estimated at $28.5 million (mid-term planning horizon, 2026-2030)
- I-29/Merrifield Road Interchange Ramps and traffic control at South Columbia Road ($16.8 to $18.1 million)

Figure 3-44: I-29 Study - Prioritized Improvements



Source: Grand Forks-East Grand Forks MPO I-29 Traffic Operations Study, 2017

US 2 and US 2 Business Study (2017, East Grand Forks)

The primary goal of this study was to evaluate alternatives for improvements to the US Highway 2 and US Business 2 intersection to ensure safe and efficient operation for all modes of transportation. There is a long history of discussed improvements to the US Highway 2 and US Business 2 intersection based on historic crashes, heavy commercial truck movements, truck storage, and roadway grades, among others. MnDOT has scheduled a resurfacing project for the westbound lanes of US Highway 2 in 2021 and has allotted safety funding that may be utilized for improvements to this intersection. As a result of this potential funding, the intersection, along with five others in the area, were reviewed to quantify issues and identify potential opportunities.

Several intersection alternatives were evaluated based on 31 criteria. Three alternatives (Alternatives 2A turn lane improvements, 3A modified R-Cut and acceleration lane, and 3B modified R-Cut) received the highest cumulative score, and are all recommended solutions for improvements for the US Highway 2 and US Business 2 intersection. This recommendation is a result of the alternative evaluation and input received from the public and corridor stakeholders throughout the process. Further analysis during project development and NEPA evaluation should be used to determine a preferred solution for the intersection to be included in the 2021 resurfacing project.

Bygland Road Study (2016, East Grand Forks)

This study evaluated the 2.5-mile segment of Bygland Road from the Red Lake River to the southeastern East Grand Forks city limits. The goals of this study were to: evaluate feasibility, design options and desire to provide an on street bike facility along Bygland Road; examine traffic operations at key intersections, specifically 5th Avenue, Rhinehart Drive, and 13th Street and potential options to improve mobility, access, and safety; improve pedestrian crossing opportunities and safety at key locations along the corridor; and examine Cities Area Transit (CAT) and school bus stops and routes within the study area and potential to improve the modal connections.

The outcomes of the study included a recommended transportation plan showing future infrastructure improvements, capital improvement programming costs and an implementation plan. Recommendations included:

- Pedestrian and bicycle improvements from 1st Street Southeast to 13th Street Southeast (south East Grand Forks City limits), estimated costs of $215,000-$543,000 (2016-2020)
- Reroute “Route 11” to Bygland Road and Rhinehart Drive concurrent with roundabout construction currently programmed for 2022
- Pedestrian school crossing improvements programmed for 2018
- Roundabout construction at Bygland Road and 13th Street, estimated costs of $3.5 million (long-term improvements 2026-2040)
- Roundabout construction at Bygland Road and 5th Avenue, estimated costs of $1.875 million (long-term improvements 2026-2040)

Glasston Railroad Crossing Study (2016, Grand Forks)

The purpose of the study was to develop strategies to minimize at-grade conflicts of train traffic in northern Grand Forks. The north-south BNSF Railway Glasston Subdivision currently has six trains per day at a maximum speed of 25 MPH and is forecasted to increase to twelve trains per day by 2040. Gateway Drive/US 2 is an NHS/Super Haul/Expanded Envelop Corridor[4] serving international trade from Canada. Gateway Drive/US 2 is currently congested and expected to become increasingly congested in the future. Operations along the Glasston Subdivision can result in trains currently blocking traffic on Gateway Drive/US 2 for 5 minutes at a time.

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[4] For the purposes of permitting over-sized, over-weight loads on Trunk Highways in Minnesota, MnDOT has explored identifying super haul corridors. Superload Corridors can accommodate a loaded vehicle with a 14- foot height limit, a 10-foot width limit, a 110-foot length limit, and an 80,000 pound weight limit. Expanded Envelope Corridors are routes that can be permitted for a loaded vehicle that is 16-feet high, 16-feet wide, and 130-feet long with a weight of 235,000 pounds.

The Mill Spur Rail Line is east of the Glasston Subdivision, just west of the Red River and the Grand Forks Downtown, currently has a total of thirteen at-grade crossings, including University Avenue, 8th Avenue, and Gateway Drive/US 2. The Mill Spur does not currently connect to the Glasston Subdivision.

The study recommends rerouting the Mill Spur north of Grand Forks near 27th Avenue and continuing west to the Glasston Subdivision to remove thirteen existing at-grade railroad crossings just west of the downtown area. The study also recommends grade separation of Glasston Subdivision at Gateway Drive/US 2.

In June 2017, it was announced that ND State Mill is seeking City approval to receive unit trains using the Mill Spur Line.

North 42nd Street Traffic Operations Study (2016, Grand Forks)

The existing three-lane corridor has adequate capacity for existing and forecasted traffic. An upgraded signal, driveway consolidation, right and left-turn lane improvements, and bicycle facility improvements are recommended in the study. The reconstruction of North 42nd Street from University Avenue to Gateway Drive is programmed for 2018 at an estimated cost of $6.9 million. The proposed project will include reconstructing the roadway into a four-lane urban roadway south of 6th Avenue and a three-lane urban roadway north of 6th Avenue. In addition this project would also include a 10-foot wide shared use path connecting with the existing path along Gateway Drive and the path along University Avenue.

32nd Avenue Safety Audit Review / 32nd Avenue Signal Coordination Plan Update (2016, Grand Forks)

This study was prepared by NDDOT. The study recommends a variety of turn lane, signal, and pedestrian related improvements along 32nd Avenue from the Interstate 29 interchange to Washington Street. Turn lane, signal, and pedestrian related improvements are also recommended along Columbia Road, 20th Street, and Washington Street, near 32nd Avenue. Also, signal timing and operational improvements along 32nd Avenue from I-29 to Washington Street and along Columbia Road from 6th Avenue North to 40th Avenue South were recommended. Improvements are currently programmed for 2019.

US 2 Access Study (2015, Grand Forks)

US 2 is a designated truck route and carries over half of North Dakota's 85 million tons of freight. The study highlighted improvements to six major focus areas: Airport Drive intersection, I-29 interchange area, traffic control, access management, the proposed Northern Plains Nitrogen (NPN) Plant site, turn lanes, and bicyclist/pedestrian facilities. Recommended improvements included:

- A staggered T-Intersection configuration and ITS improvements at Airport Drive
- A new northeast quadrant loop ramp along with turn lane improvements and new access restrictions at the I-29 interchange
- New signals at 55th Street and 69th Street
- NDDOT prefers 1 mile spacing of signals in rural areas and ½ mile spacing is acceptable in urban areas
- Future turn lanes at 51st Street, 55th Street, 58th Street and 69th Street
- The corridor was divided into built-out urban, urbanizing, and rural areas for access management purposes
- No access management improvements were recommended for the build-out urban area
- A frontage and backage road system was developed for the urbanizing area. The urbanizing area also includes design plans for future ½ mile full access signalized intersections with intervening ¾ access intersections.
- The rural area did not include specific plans for a frontage/backage road system, but is envisioned to accommodate a similar access spacing plan to the urbanizing area once developed

South Columbia Road Traffic Operations Study (2015, Grand Forks)

A traffic study was completed for the proposed South Columbia Road expansion project programmed for 2017. The traffic study project limits were between 36th Avenue South and 47th Avenue South. The analysis provided the following conclusions:

- The intersections along South Columbia Road at 36th Avenue South, 40th Avenue South, and 47th Avenue South and the segment from 36th Avenue South to 40th Avenue South have a crash rate higher than typical for intersections or segments with similar characteristics. 36th Avenue South and 40th Avenue South intersections have a crash rate above the critical crash rates, indicating a crash issue.
- Traffic forecasts were developed for future year 2040 conditions for two scenarios based on the ATAC travel demand model:
  - Year 2040 with an interchange at I-29/47th Avenue South
  - Year 2040 no interchange at I-29/47th Avenue South
- With the at I-29/47th Avenue South interchange, traffic volumes along South Columbia Road north of 47th Avenue South decrease approximately 6,000 to 7,000 vehicles per day and traffic volumes along 47th Avenue increase approximately 9,000 vehicles per day west of South Columbia Road
- Year 2040 traffic forecasts indicate that South Columbia Road will be significantly over capacity for a two-lane rural section for conditions with and without the I-29/47th Avenue South interchange. Planning level roadway capacities suggest that a five-lane (four-lane divided with turn lanes) will be needed along South Columbia Road to meet the traffic demand.
- It was recommended that South Columbia Road be expanded to a four-lane facility south of 36th Avenue South to 47th Avenue South.
- Construction will be complete in Fall 2017.

42nd Street Railroad Grade Separation Study (2014, Grand Forks)

42nd Street is a primary access north-south corridor to North Dakota State University and Alerus Center, and carries 15,000 vehicles per day. An at-grade railroad crossing currently exists on 42nd Street just north of DeMers Avenue. Train volumes are expected to increase 70 percent by 2040 and vehicle volumes expected to increase to 90 percent by 2040. It is estimated that by 2040, 41 percent of traffic would be diverted to I-29 and the railroad crossing would be blocked for ten percent of the day.

To address traffic issues, the City of Grand Forks is recommending grade separation of the railroad at this location with an estimated cost of $24 to $30 million. The project would have a benefit-cost of 1.5 and would save 500,000 hours of train delay through 2040. This project is beyond funding available over the long-term planning horizon. Additional funding opportunities including federal grants are being pursued. The recent announcement of golf course closure in southeast quadrant of DeMers Avenue/42nd Street intersection may open up discussion of alternatives previously eliminated that utilize the golf course property

Grand Forks-East Grand Forks Freight Rail Access Study (2014, Grand Forks)

This study undertook a broad stakeholder outreach effort and site viability analysis to identify properties in the GF/EGF area that are available and best suited for providing industrial/commercial access to rail services on the BNSF Railway. The study also analyzed the local street network and developed conceptual designs for rail access for a several sizes of property developments. This is the first step toward the greater inclusion of freight in the MPO planning process as well as the deliberate inclusion of freight in the broadly defining the future vision of the region. The study provided a list of recommendations for next steps in increasing rail freight access to the region.

Grand Sky Traffic Study (2013, Grand Forks)

Grand Sky is a proposal for private use of the Grand Forks Air Force Base runway for drone use/development. The development was proposed in the southwest portion of the existing Grand Forks Air Force Base along the north side of US 2, near 27th Street, is expected to employ 3,000 people when fully developed with 70 percent of travel to and from Grand Forks/East Grand Forks. Recommended improvements to accommodate this development include:

- Construct four lane expansion of 27th Street
- Construct turn lanes and install a traffic signal at US 2 and 27th Street

The recommendations from this study have since been completed. This location is not within the MPO planning area.