Moving Minnesota Forward:

Challenges in Providing Safe, Efficient and Well-Maintained Roads, Highways and Bridges

TRIP
a national transportation research group

Founded in 1971, TRIP ® of Washington, DC, is a nonprofit organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

Executive Summary

A decade after the nation suffered a significant economic downturn, Minnesota's economy continues to rebound. The rate of economic growth, which is greatly impacted by the reliability and condition of the state's transportation system, has a significant impact on quality of life in the North Star State.

Minnesota's transportation system provides economic and social benefits by affording individuals access to employment, housing, healthcare, education, goods and services, recreation, entertainment, family, and social activities. It also provides businesses with access to suppliers, markets and employees, all critical to a business' level of productivity and ability to expand. Reduced accessibility and mobility - as a result of traffic congestion, a lack of adequate capacity, or deteriorated roads, highways, bridges and transit facilities - diminishes a region's quality of life by reducing economic productivity and limiting opportunities for economic, health or social transactions and activities.

The state faces a $2.8 billion shortfall in funds needed over the next four years to make needed improvements to its transportation system. The annual shortfall during this period is projected to more than double, leaving dozens of needed transportation projects throughout the state stranded on the drawing board and unable to proceed.

With population and employment growing steadily, Minnesota must continue to improve its transportation system to foster economic growth and maintain and attract business. In addition to economic growth, transportation improvements are needed to ensure safe, reliable mobility. Meeting Minnesota's need to further modernize its transportation system will require significant local, state and federal funding.

Achieving the state's goals for a modern, well-maintained and safe transportation system will require additional transportation investments and a commitment to providing roads and highways that are safe, smooth and efficient. While a sound transportation system is key to economic growth and quality of life, numerous transportation projects in the state -- which are needed to improve conditions, relieve traffic congestion, improve roadway safety and enhance economic development opportunities -- remain unfunded, threatening Minnesota's future progress in providing a safe, efficient, well-maintained transportation system.

POPULATION, TRAVEL AND ECONOMIC TRENDS IN MINNESOTA

The rate of population and economic growth in Minnesota has resulted in increased demands on the state's major roads and highways, leading to increased wear and tear on the transportation system.

- Minnesota's population reached approximately 5.5 million residents in 2016, a 12 percent increase since 2000. Minnesota had approximately 3.4 million licensed drivers in 2015.

- Vehicle miles traveled (VMT) in Minnesota increased by 13 percent from 2000 to 2016 – from 52.6 billion VMT in 2000 to 59.6 billion VMT in 2016. VMT in Minnesota increased five percent just in the last three years (2013 to 2016).

- By 2030, vehicle travel in Minnesota is projected to increase by another 15 percent.

- From 2000 to 2015, Minnesota's gross domestic product, a measure of the state's economic output, increased by 26 percent, when adjusted for inflation. U.S. GDP increased 27 percent during this time.

ROAD CONDITIONS IN MINNESOTA

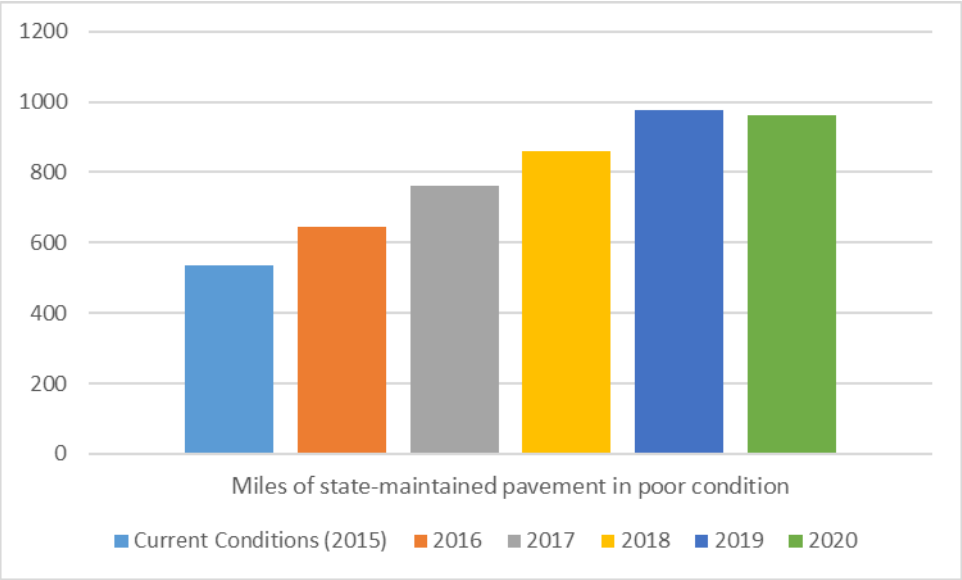
A lack of adequate funding has left more than a quarter of Minnesota's major urban roads and highways with pavement surfaces in poor condition. Based on current funding projections, the condition of state-maintained roads is expected to deteriorate significantly in the future.

- Overall, 15 percent of Minnesota's major locally and state-maintained roads and highways have pavements in poor condition and 17 percent are rated in mediocre condition. Fifteen percent of the state's major roads are rated in fair condition and the remaining 53 percent are rated in good condition.

- Twenty-eight percent of Minnesota's major locally and state-maintained urban roads and highways have pavements in poor condition and 21 percent are rated in mediocre condition. Sixteen percent of major urban roads are in fair condition and the remaining 35 percent are rated in good condition.

- Twelve percent of Minnesota's major locally and state-maintained rural roads and highways have pavements in poor condition and 17 percent are rated in mediocre condition. Fourteen percent of major rural roads are in fair condition and the remaining 57 percent are rated in good condition.

- Due to a lack of funding, the number of miles of state-maintained roads in poor condition is projected to increase by 80 percent from 2015 to 2020, from 535 miles in poor condition to 963 miles.



- Roads rated in poor condition may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed.

- The chart below details pavement conditions on major, locally and state-maintained roads and highways in the state's largest urban areas:

	Poor	Mediocre	Fair	Good
Duluth	47%	22%	7%	24%
Minneapolis-St. Paul	25%	19%	17%	39%
Rochester	27%	23%	26%	23%

BRIDGE CONDITIONS IN MINNESOTA

Six percent of locally and state-maintained bridges in Minnesota that are 20 feet or more in length show significant deterioration and are in need of repair. The share of state bridges that are deficient is expected to increase at current funding levels.

- Six percent of Minnesota's bridges are structurally deficient. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Structurally deficient bridges are often posted for lower weight or closed to traffic, restricting or redirecting large vehicles, including commercial trucks and emergency services vehicles.

- MnDOT estimates that, based on available funding, the number of state-maintained bridges rated in poor condition will increase by approximately 70 percent between 2016 and 2020, from 23 bridges to 39 bridges.

- Six percent (706 of 11,016) of Minnesota's rural bridges are structurally deficient, while four percent (94 of 2,339) of the state's urban bridges are structurally deficient.

- The chart below details the total number of bridges and the share of structurally deficient bridges statewide and in each of Minnesota's counties.

County	Total Bridges	Total Structurally Deficient	Share Structurally Deficient	County	Total Bridges	Total Structurally Deficient	Share Structurally Deficient
AITKIN	100	7	7%	MARSHALL	211	7	3%
ANOKA	143	3	2%	MARTIN	162	16	10%
BECKER	54	5	9%	MEEKER	62	2	3%
BELTRAMI	96	2	2%	MILLE LACS	107	3	3%
BENTON	118	4	3%	MORRISON	165	15	9%
BIG STONE	15	0	0%	MOWER	336	47	14%
BLUE EARTH	193	8	4%	MURRAY	131	8	6%
BROWN	109	6	6%	NICOLLET	49	2	4%
CARLTON	142	10	7%	NOBLES	302	5	2%
CARVER	118	17	14%	NORMAN	150	7	5%
CASS	83	5	6%	OLMSTED	357	10	3%
CHIPPEWA	119	19	16%	OTTER TAIL	148	9	6%
CHISAGO	63	4	6%	PENNINGT	48	1	2%
CLAY	222	14	6%	PINE	168	10	6%
CLEARWATER	49	0	0%	PIPESTONE	176	23	13%
COOK	54	5	9%	POLK	265	7	3%
COTTONWOOD	150	3	2%	POPE	46	1	2%
CROW WING	70	1	1%	RAMSEY	327	16	5%
DAKOTA	245	2	1%	RED LAKE	59	1	2%
DODGE	170	9	5%	REDWOOD	199	30	15%
DOUGLAS	40	5	13%	RENVILLE	138	25	18%
FARIBAULT	220	19	9%	RICE	138	3	2%
FILLMORE	339	33	10%	ROCK	260	14	5%
FREEBORN	142	4	3%	ROSEAU	143	8	6%
GOODHUE	324	10	3%	ST LOUIS	694	84	12%
GRANT	32	4	13%	SCOTT	121	2	2%
HENNEPIN	890	45	5%	SHERBURN	45	5	11%
HOUSTON	172	10	6%	SIBLEY	101	6	6%
HUBBARD	45	3	7%	STEARNS	231	4	2%
ISANTI	37	2	5%	STEELE	135	7	5%
ITASCA	168	14	8%	STEVENS	45	1	2%
JACKSON	190	12	6%	SWIFT	95	4	4%
KANABEC	80	0	0%	TODD	131	4	3%
KANDIYOHI	90	3	3%	TRAVERSE	121	3	2%
KITTSON	159	4	3%	WABASHA	145	4	3%
KOOCHICHING	96	3	3%	WADENA	76	2	3%
LAC QUI PARLE	172	7	4%	WASECA	84	7	8%
LAKE	86	6	7%	WASHINGT	107	3	3%
LAKE OF THE	61	0	0%	WATONWA	165	3	2%
LE SUEUR	69	2	3%	WILKIN	200	14	7%
LINCOLN	107	22	21%	WINONA	237	20	8%
LYON	233	9	4%	WRIGHT	71	0	0%
MCLEOD	77	3	4%	YELLOW	221	7	3%
MAHNOMEN	41	6	15%	**STATEWIDE**	**13,355**	**800**	**6%**

HIGHWAY SAFETY AND FATALITY RATES IN MINNESOTA

Improving safety features on Minnesota's roads and highways would likely result in a decrease in the state's traffic fatalities and serious crashes. Minnesota's rural roads have a fatality rate that is significantly higher than that on all other roads in the state. It is estimated that roadway features are likely a contributing factor in approximately one-third of all fatal and serious traffic crashes.

- A total of 1,922 people were killed in Minnesota traffic crashes from 2011 to 2015, an average of 384 fatalities per year.

- The fatality rate on Minnesota's non-interstate rural roads in 2015 was nearly three and a half times higher than on all other roads in the state (1.33 fatalities per 100 million vehicle miles of travel vs. 0.40).

- A disproportionate share of traffic fatalities take place on Minnesota's rural roads, compared to the amount of traffic they carry. While rural, non-Interstate routes accounted for 34 percent of all vehicle miles of travel in Minnesota in 2015, they accounted for 63 percent of fatalities.

- The higher traffic fatality rate found on rural, non-Interstate routes is a result of multiple factors, including a lack of desirable roadway safety features, longer emergency vehicle response times and the higher speeds traveled on rural roads compared to urban roads.

- Rural roads are more likely than urban roads to have roadway features that reduce safety, including narrow lanes, limited shoulders, sharp curves, exposed hazards, pavement drop-offs, steep slopes and limited clear zones along roadsides.

- Because many rural routes have been constructed over a period of years, they often have inconsistent design features for such things as lane widths, curves, shoulders and clearance zones along roadsides. Rural roads are more likely than urban roads to be two-lane routes with narrow lanes.

- Most head-on crashes on rural, non-Interstate roads are likely caused by a motorist making an unintentional maneuver as a result of driver fatigue, being distracted or driving too fast in a curve. While driver behavior is a significant factor in traffic crash rates, both safety belt usage and impaired driving rates are similar in their involvement rate as a factor in urban and rural traffic crashes.

- Many roadway safety improvements can be made to reduce serious crashes and traffic fatalities. These improvements are designed largely to keep vehicles from leaving the correct lane and to reduce the consequences of a vehicle leaving the roadway. The type of safety design improvements that are appropriate for a section of rural road will depend partly on the amount of funding available and the nature of the safety problem on that section of road.

    - ✓ **Low-cost** safety improvements include installing rumble strips along the centerline and sides of roads, improving signage and pavement/lane markings including higher levels of retroreflectivity, installing lighting, removing or

shielding roadside obstacles, using chevrons and post-mounted delineators to indicate roadway alignment along curves, adding skid resistant surfaces at curves, and upgrading or adding guardrails.

- ✓ **Moderate-cost** improvements include adding turn lanes at intersections, resurfacing pavements and adding median barriers.

- ✓ **Moderate to high-cost** improvements include improving roadway alignment, reducing the angle of curves, widening lanes, adding or paving shoulders, adding intermittent passing lanes, or adding a third or fourth lane.

- Systemic installation of cost effective safety solutions and devices in rural areas helps to improve safety not just by targeting individual safety problem points on a road, but also by making entire segments safer by improving those roadway segments that exhibit the characteristics that typically result in fatal or serious-injury crashes.

- Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails, other shielding devices, median barriers and intersection design. The cost of serious crashes includes lost productivity, lost earnings, medical costs and emergency services.

- Several factors are associated with vehicle crashes that result in fatalities, including driver behavior, vehicle characteristics and roadway features. TRIP estimates that roadway features are likely a contributing factor in approximately one-third of fatal traffic crashes.

- Where appropriate, highway improvements can reduce traffic fatalities and crashes while improving traffic flow to help relieve congestion. Such improvements include removing or shielding obstacles; adding or improving medians; improved lighting; adding rumble strips, wider lanes, wider and paved shoulders; upgrading roads from two lanes to four lanes; and, better road markings and traffic signals.

- Investments in rural traffic safety have been found to result in significant reductions in serious traffic crashes. A 2012 report by the Texas Transportation Institute (TTI) found that improvements completed recently by the Texas Department of Transportation that widened lanes, improved shoulders and made other safety improvements on 1,159 miles of rural state roadways resulted in 133 fewer fatalities on these roads in the first three years after the improvements were completed (as compared to the three years prior). TTI estimates that the improvements on these roads are likely to save 880 lives over 20 years.

MINNESOTA TRAFFIC CONGESTION

Increasing levels of traffic congestion cause significant delays in Minnesota, particularly in its larger urban areas, choking commuting and commerce. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to the consumer.

- The chart below details the number of hours lost to congestion by the average driver in the state's largest urban areas, as well as the annual cost of traffic congestion per driver in the form of lost time and wasted fuel.

	Hours Lost	Congestion Cost
Duluth	20 Hours	$541
Minneapolis-St. Paul	47 Hours	$1,035
Rochester	13 Hours	$282

- Increasing levels of congestion add significant costs to consumers, transportation companies, manufacturers, distributors and wholesalers and can reduce the attractiveness of a location to a company when considering expansion or where to locate a new facility. Congestion costs can also increase overall operating costs for trucking and shipping companies, leading to revenue losses, lower pay for drivers and employees, and higher consumer costs.

TRANSPORTATION FUNDING AND NEEDED TRANSPORTATION PROJECTS

Minnesota faces a significant and growing transportation funding shortfall. Due to inadequate transportation funding in the state, many needed projects that would improve conditions, expand capacity and enhance traffic safety will not move forward, at least for the next five years.

- MnDOT projections show that the amount of funding available for maintenance and improvements to roads and highways maintained by state, county and local municipalities will decrease by 16 percent from FY 2016 to FY 2021. The chart below details the declining funds available for roads and highways maintained by MnDOT, counties and municipalities from 2016 through 2021.

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
MnDOT State Highway Capital Investment	$ 1,089,664,000	$ 959,166,000	$ 894,800,000	$ 804,800,000	$ 735,600,000	$ 695,800,000
MnDOT Maintenance Investment	$ 288,405,000	$ 290,916,000	$ 292,140,000	$ 301,545,000	$ 301,545,000	$ 301,545,000
County State Aid Highways	$ 670,768,000	$ 698,495,000	$ 698,495,000	$ 698,495,000	$ 698,495,000	$ 698,495,000
Municipal State Aid Streets	$ 170,743,000	$ 178,141,000	$ 178,141,000	$ 178,141,000	$ 178,141,000	$ 178,141,000
Total funding for state transportation facilities and transportation funds provided for local governments	**$2,219,580,000**	**$2,126,718,000**	**$2,063,576,000**	**$1,982,981,000**	**$1,913,781,000**	**$1,873,981,000**

- MnDOT projects a $2.8 billion shortfall from fiscal year (FY) 2018 to FY 2021 in state transportation funding for state and locally maintained roads, highways and bridges in funding needed to maintain roads, highways and bridges; improve traffic safety; and, make further modernization and capacity improvements to support economic development and quality of life in Minnesota. By FY 2021, the shortfall is expected to more than double from FY 2018, reaching $835 million. The chart below details the additional amount of funding needed each year to improve road and bridge conditions, improve traffic safety, modernize the system, and provide additional capacity.

	FY 2018	FY 2019	FY 2020	FY 2021
MnDOT State Highway Capital Investment	$ 244,958,000	$ 493,946,000	$ 543,508,000	$ 531,945,000
MnDOT Maintenance Investment	$ 19,576,000	$ 33,804,000	$ 35,265,000	$ 38,031,000
County State Aid Highways	$ 108,184,000	$ 186,816,000	$ 194,890,000	$ 210,171,000
Municipal State Aid Highways	$ 28,417,000	$ 49,071,000	$ 51,192,000	$ 55,206,000
Needed funding for state transportation facilities and transportation funds provided for local governments	**$ 401,137,000**	**$ 763,639,000**	**$ 824,857,000**	**$ 835,354,000**

- The chart below details needed preservation or reconstruction projects in Duluth, Rochester, Minneapolis-St. Paul and statewide that currently lack adequate funding to start prior to 2022. These include $429-536 million in projects in Duluth, $1-1.4 billion in projects in the Twin Cities, $43-53 million in projects in Rochester and $289-383 million in projects elsewhere in the state.

Location	County	Project Type	Highway	Project Location	Work to be Completed	Cost Range - Low	Cost Range - High
Duluth	St. Louis	Pavement, Bridge, Mobility	Interstate 35	Twin Ports Interchange in Duluth	Significant roadway surface improvements and bridge	$219,600,000	$268,400,000
Duluth	St. Louis	Bridge	Interstate 535	Interstate 535 over St. Louis River - Blatnik Bridge	Repair/Replace	$166,950,000	$204,050,000
Duluth	St. Louis	Bridge	Interstate 35	Interstate 35 over Abandoned Street St Louis	Repair/Replace	$7,060,000	$10,590,000
Duluth	St. Louis	Bridge	US Highway 53	US Highway 53 over 1st Street and 21st Ave in St Louis County	Repair/Replace	$15,900,000	$23,860,000
Duluth	St. Louis	Bridge	Interstate 35	Interstate 35 over Railroad Line in St. Louis County - northbound	Repair/Replace	$4,830,000	$7,240,000
Duluth	St. Louis	Bridge	5th Avenue W	5th Ave W over Interstate 35 in St Louis County	Repair/Replace	$14,770,000	$22,150,000
Rochester	Olmsted	Pavement	US Highway 52	12 miles from Chatfield to I-90	Upgrade previously planned projects to a longer-life improvement	$36,490,000	$43,780,000
Rochester	Olmsted/ Goodhue	Pavement	US Highway 52	13 miles from County Highway 12/112 to County Highway 68	Upgrade previously planned projects to a longer-life improvement	$6,270,000	$9,400,000
Twin Cities	Hennepin/ Dakota	Pavement, Bridge	Interstate 35W	106th Street to Black Dog Road	Significant roadway surface improvements and bridge	$49,500,000	$60,500,000
Twin Cities	Ramsey/ Anoka	Pavement	Interstate 35W	12 miles from MN 280 to Lexington Ave	Upgrade previously planned projects to a longer-life improvement	$70,200,000	$85,800,000
Twin Cities	Hennepin/ Ramsey	Pavement, Bridge	Interstate 94	Pavement and bridge reconstruction between downtown Minneapolis and downtown St Paul	Significant roadway surface improvements and bridge repair/replace	$850,000,000	$1,150,000,000
Twin Cities	Ramsey	Bridge	MN Highway 280	MN Highway 280 over Robbins, Transitway and RR in Ramsey County	Preventative Maintenance	$21,970,000	$32,960,000
Twin Cities	Ramsey	Pavement	MN Highway 952A	2 miles from Annapolis St. to I-94 (Robert St.)	Upgrade previously planned projects to a longer-life improvement	$12,000,000	$20,000,000
Twin Cities	Hennepin	Pavement	MN Highway 7	5 miles from Christmas Lake Road to I-494	Upgrade previously planned projects to a longer-life improvement	$10,000,000	$11,000,000
Twin Cities	Hennepin	Pavement	MN Highway 55	4 miles from I-494 to General Mills Blvd	Upgrade previously planned projects to a longer-life improvement	$6,700,000	$7,200,000
Twin Cities	Dakota	Pavement	US Highway 61	10 miles from Goodhue-Dakota County Line to N Jct MN 316	Upgrade previously planned projects to a longer-life improvement	$7,000,000	$10,000,000
Twin Cities	Scott	Pavement, Bridge	US Highway 169	8 miles from County Highway 15 to MN Highway13	Significant roadway surface improvements and bridge	$7,500,000	$15,000,000
Twin Cities	Ramsey	Bridge	Interstate 35E	Interstate 35E over Jefferson Avenue in Ramsey County	Repair/Replace	$10,660,000	$15,990,000
Greater MN	Lake	Pavement	MN Highway 61	8 miles from Lake/Cok Co. line to Schroeder	Upgrade previously planned projects to a longer-life improvement	$13,240,000	$22,070,000
Greater MN	St. Louis	Pavement	US Highway 169	15 miles from Chisholm to Virginia - northbound	Upgrade previously planned projects to a longer-life improvement	$8,440,000	$14,070,000
Greater MN	St. Louis	Pavement	US Highway 169	13 miles from Chisholm to Virginia - southbound	Upgrade previously planned projects to a longer-life improvement	$7,020,000	$11,700,000
Greater MN	Beltrami	Pavement	MN Highway 197	2 miles from 23rd Street to US 71 in Bemidji	Significant roadway surface improvements	$10,200,000	$15,300,000
Greater MN	Polk	Pavement	US Highway 2	12 miles from MN 9 to MN 32	Upgrade previously planned projects to a longer-life improvement	$8,500,000	$12,750,000
Greater MN	Kittson	Pavement	US Highway 75	14 miles from Donaldson to Hallock	Upgrade previously planned projects to a longer-life improvement	$7,500,000	$11,250,000
Greater MN	Wright	Pavement	Interstate 94	14 miles from Clearwater to Monticello - westbound	Upgrade previously planned projects to a longer-life improvement	$16,560,000	$20,240,000
Greater MN	Aitkin	Pavement	MN Highway 210	7 miles from Aitkin to Hassman	Upgrade previously planned projects to a longer-life improvement	$9,000,000	$16,000,000
Greater MN	Sherburne	Pavement	US Highway 10	14 miles from Clear Lake to MN 25 (Big Lake) - eastbound	Upgrade previously planned projects to a longer-life improvement	$9,000,000	$13,000,000
Greater MN	Douglas	Pavement	Interstate 94	13 miles between MN 79 and MN 114 - westbound	Significant roadway surface improvements	$24,160,000	$28,990,000
Greater MN	Pope/ Stevens	Pavement	MN Highway 28	17 miles from Morris to Starbuck	Upgrade previously planned projects to a longer-life improvement	$9,250,000	$10,280,000
Greater MN	Wilkins	Pavement	MN Highway 55	23 miles from North Dakota Line to Grant County Line	Upgrade previously planned projects to a longer-life improvement	$7,200,000	$8,220,000
Greater MN	Big Stone/ Swift	Pavement	US Highway 12	26 miles from US 75 to US 59	Upgrade previously planned projects to a longer-life improvement	$8,740,000	$9,770,000
Greater MN	Freeborn	Pavement	Interstate 90	12 miles westbound from MN 13 to County Highway 46 near Petran	Upgrade previously planned projects to a longer-life improvement	$9,400,000	$11,280,000
Greater MN	Goodhue	Pavement	US Highway 52	14 miles from County Highway 7 to Cannon Falls - southbound	Upgrade previously planned projects to a longer-life improvement	$23,100,000	$27,730,000
Greater MN	Wabasha	Pavement	US Highway 61	5 miles from bridge over CP Railroad to Central Point Road in Lake City	Upgrade previously planned projects to a longer-life improvement	$10,000,000	$12,000,000
Greater MN	Rice	Bridge	MN Highway 3	MN Highway 3 over Cannon River in Rice County	Repair/Replace	$6,000,000	$8,990,000

Greater MN	Martin/ Faribault	Pavement	Interstate 90	12 miles from MN 15 (Fairmont) to Faribault County Highway 1 - eastbound	Upgrade previously planned projects to a longer-life improvement	$9,030,000	$10,840,000
Greater MN	Martin/ Faribault	Pavement	Interstate 90	12 miles from MN 15 (Fairmont) to Faribault County Highway 1 - westbound	Upgrade previously planned projects to a longer-life improvement	$9,030,000	$10,840,000
Greater MN	Sibley	Pavement	MN Highway 19	22 miles from MN 15 (Winthrop) to Gaylord (new end point 133.777)	Significant roadway surface improvements	$21,500,000	$29,500,000
Greater MN	Watonwan	Pavement	MN Highway 60	13 miles from MN 4 to MN 15	Upgrade previously planned projects to a longer-life improvement	$10,000,000	$15,000,000
Greater MN	Blue Earth	Bridge	US Highway 14	US Highway 14 over Minnesota River in Blue Earth County	Repair/Replace	$9,380,000	$11,460,000
Greater MN	McLeod/ Meeker	Pavement	MN Highway 15	12 miles from Hutchinson to Dassel	Significant roadway surface improvements	$15,580,000	$18,690,000
Greater MN	Meeker/ Stearns	Pavement	MN Highway 15	16 miles from Dassel to Kimball	Upgrade previously planned projects to a longer-life improvement	$11,610,000	$14,190,000
Greater MN	Murray	Pavement	MN Highway 91	10 miles from Nobles-Murray County Line to MN 30	Upgrade previously planned projects to a longer-life improvement	$15,470,000	$18,560,000

- The chart below details capacity expansion or safety projects in the Twin Cities and throughout the state that are needed but will not have adequate funding to start prior to 2022. These projects include $768 million - $1.1 billion in projects in the Twin Cities area and $490-648 million in projects in other areas of the state.

Location	County	Project Type	Highway	Project Location	Work to be Completed	Cost Range - Low	Cost Range- High
Twin Cities	Hennepin/ Ramsey	Twin Cities Mobility	Interstate 35W	MnPASS expansion from downtown Minneapolis to MN 36	MnPASS expansion	$173,490,000	$260,240,000
Twin Cities	Hennepin	Twin Cities Mobility	Interstate 494	MnPASS expansion from MSP Airport to MN 62	MnPASS expansion	$200,000,000	$250,000,000
Twin Cities	Hennepin	Twin Cities Mobility	Interstate 494/ Interstate 35W	Upgrades to I-494/I-35W interchange	Intersection/Interchange Improvements	$80,000,000	$120,000,000
Twin Cities	Ramsey	Twin Cities Mobility	MN Highway 36	MnPASS expansion from I 35 W and I 35 E, eastbound only	MnPASS expansion	$57,830,000	$86,750,000
Twin Cities	Hennepin/ Scott	Twin Cities Mobility	US Highway 169	MnPASS expansion from County Road 17 to somewhere between I 494 and I 394	MnPASS expansion	$96,390,000	$180,720,000
Various	Various	Greater Minnesota Mobility	Various	Install new intelligent transportation infrastructure at select locations and fund lower-cost spot-mobility projects; project selection subject to public involvement and transportation studies.	Mobility	$71,430,000	$87,300,000
Various	Various	Twin Cities Mobility	Various	Strategically add capacity through improvements to intersections, interchanges, and lane additions to improve continuity; project selection subject to public involvement and transportation studies. Potential locations include: US Highway 10/Thurston Ave, MN Highway 252/66th Avenue N	Mobility	$156,870,000	$205,060,000
Greater MN	Roseau	Greater Minnesota Mobility	MN Highway 11	Highway 11 operational flow improvements	Spot mobility	$9,900,000	$12,100,000
Greater MN	Wright	Greater Minnesota Mobility	Interstate 94	4 to 6 lane expansion from St Michael west to Albertville	Highway expansion	$54,000,000	$66,000,000
Greater MN	Stearns	Greater Minnesota Mobility	MN Highway 23	2 lane to 4 lane expansion from Richmond to Paynesville	Highway expansion	$74,000,000	$98,000,000
Greater MN	Dodge/ Steele	Greater Minnesota Mobility	US Highway 14	2 to 4 lane expansion from Owatonna to Dodge Center	Highway expansion	$162,000,000	$198,000,000
Greater MN	Nicollet	Greater Minnesota Mobility	US Highway 14	2 to 4 lane expansion from Nicollet to New Ulm	Highway expansion	$69,000,000	$117,000,000
Greater MN	Kandiyohi	Greater Minnesota Mobility	MN Highway 23	2 to 4 lane expansion from Paynesville west to New London	Highway expansion	$50,000,000	$70,000,000

FEDERAL TRANSPORTATION FUNDING IN MINNESOTA

Investment in Minnesota's roads, highways and bridges is funded by local, state and federal governments. Signed into law in December 2015, the five-year federal surface transportation program includes modest funding increases and provides states with greater funding certainty, but falls far short of providing the level of funding needed to meet the nation's highway and transit needs. The bill does not include a long-term and sustainable revenue source. The nation faces a significant shortfall in needed funding for road, highway and bridge improvements.

- Signed into law in December 2015, the Fixing America's Surface Transportation Act (FAST Act), provides modest increases in federal highway and transit spending, allows states greater long-term funding certainty and streamlines the federal project approval process. But the FAST Act does not provide adequate funding to meet the nation's need for highway and transit improvements and does not include a long-term and sustainable funding source.

- The five-year, $305 billion FAST Act will provide a boost of approximately 15 percent in national highway funding and 18 percent in national transit funding over the duration of the program, which expires in 2020.

- In addition to federal motor fuel tax revenues, the FAST Act will also be funded by $70 billion in U.S. general funds, which will rely on offsets from several unrelated federal programs including the Strategic Petroleum Reserve, the Federal Reserve and U.S. Customs.

- According to the 2015 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance report submitted by the United States Department of Transportation (USDOT) to Congress, the nation faces an $836 billion backlog in needed repairs and improvements to the nation's roads, highways and bridges.

- The USDOT report found that the nation's current $105 billion investment in roads, highways and bridges by all levels of government should be increased by 35 percent to $142.5 billion annually to improve the conditions of roads, highways and bridges, relieve traffic congestion and improve traffic safety.

TRANSPORTATION AND ECONOMIC GROWTH IN MINNESOTA

The efficiency of Minnesota's transportation system, particularly its highways, is critical to the health of the state's economy. Businesses rely on an efficient and dependable transportation system to move products and services. A key component in business efficiency and success is the level and ease of access to customers, markets, materials and workers.

- Annually, $519 billion in goods are shipped to and from sites in Minnesota, mostly by truck.

- Seventy-five percent of the goods shipped annually to and from sites in Minnesota are carried by trucks.

- Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient and more modern transportation system.

- Highway accessibility was ranked the number two site selection factor behind only the availability of skilled labor in a 2015 survey of corporate executives by Area Development Magazine.

- The Federal Highway Administration estimates that each dollar spent on road, highway and bridge improvements results in an average benefit of $5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.

Sources of information for this report include the Federal Highway Administration (FHWA), the Minnesota Department of Transportation (MnDOT), the Bureau of Transportation Statistics (BTS), the U. S. Census Bureau, the Congressional Budget Office (CBO),the Texas Transportation Institute (TTI) and the National Highway Traffic Safety Administration (NHTSA). All data used in the report are the most recent available.

Introduction

Minnesota's roads, highways and bridges form vital transportation links for the state's residents, visitors and businesses, providing daily access to homes, jobs, shopping, natural resources and recreation. Supporting quality of life and a robust economy in Minnesota requires that the state provide a safe, efficient and well-maintained transportation system. Inadequate transportation investment, which results in deteriorated transportation facilities and diminished access, negatively affects economic competitiveness and quality of life.

Minnesota faces a $2.8 billion shortfall over the next four years (fiscal years 2018 through 2021) in funds needed to make improvements to its transportation system. The annual shortfall is projected to more than double during this period, leaving dozens of needed transportation projects throughout the state stranded on the drawing board and unable to proceed or resulting in short-term repairs being implemented rather than preferred longer-lasting repairs.

To maintain its level of economic competitiveness and achieve further economic growth, Minnesota will need to maintain and modernize its roads, highways and bridges by improving the physical condition of its transportation network and enhancing the system's ability to provide efficient, reliable and safe mobility for residents, visitors and businesses. Making needed improvements to Minnesota's roads, highways, bridges and transit systems could also provide a significant boost to the state's economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access.

This report examines the condition, use and safety of Minnesota's roads, highways and bridges, funding needs, and the future mobility needs of the state. Sources of information for this report include the Minnesota Department of Transportation (MnDOT), the Federal Highway Administration (FHWA), the United States Department of Transportation (USDOT), the Bureau

of Labor Statistics (BLS), the American Association of State Highway and Transportation Officials (AASHTO), the Bureau of Transportation Statistics (BTS), the U.S. Census Bureau, the Texas Transportation Institute (TTI), and the National Highway Traffic Safety Administration (NHTSA).

Population, Travel and Economic Trends in Minnesota

Minnesota residents and businesses require a high level of personal and commercial mobility. Population and economic growth results in an increased demand for mobility and an increase in vehicle miles of travel. To foster quality of life and continued economic development in Minnesota, it will be critical that the state provide a safe and modern transportation system that can accommodate future growth in population, tourism, recreation and vehicle travel.

Minnesota's population grew to approximately 5.5 million in 2016, a 12 percent increase since 2000, when the state's population was approximately 4.9 million.[1] Minnesota had approximately 3.4 million licensed drivers in 2015.[2] From 2000 to 2015, Minnesota's gross domestic product, a measure of the state's economic output, increased by 26 percent, when adjusted for inflation, compared to a national increase of 27 percent.[3]

Population and economic growth in Minnesota have resulted in an increase in vehicle travel in the state. From 2000 to 2016, annual vehicle miles of travel in Minnesota increased by 13 percent, from 52.6 billion miles traveled annually to 59.6 billion miles traveled.[4] Vehicle miles traveled (VMT) in Minnesota increased five percent from 2013 to 2016.[5] Based on population and other lifestyle trends, TRIP estimates that travel on Minnesota's roads and highways will increase by another 15 percent by 2030.[6]

Condition of Minnesota's Roads

The life cycle of Minnesota's roads is greatly affected by state and local governments' ability to perform timely maintenance and upgrades to ensure that road and highway surfaces last as long as possible.

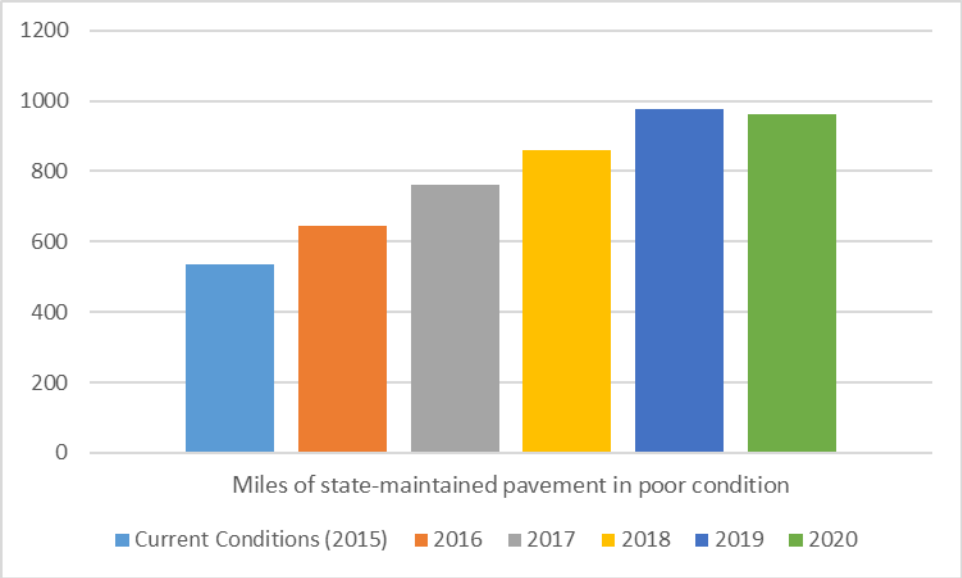
Overall, 15 percent of Minnesota's of the miles on major locally and state-maintained roads and highways have pavements in poor condition and 17 percent are rated in mediocre condition.[7] Fifteen percent of the state's major roads are rated in fair condition and the remaining 53 percent are rated in good condition.[8]

Twenty-eight percent of Minnesota's major locally and state-maintained urban roads and highways have pavements in poor condition and 21 percent are rated in mediocre condition.[9] Sixteen percent of major urban roads are in fair condition and the remaining 35 percent are rated in good condition.[10]

Twelve percent of Minnesota's major locally and state-maintained rural roads and highways have pavements in poor condition and 17 percent are rated in mediocre condition.[11] Fourteen percent of major rural roads are in fair condition and the remaining 57 percent are rated in good condition.[12]

Due to a lack of funding, the number of miles of state-maintained roads in poor condition is projected to increase by 80 percent from 2015 to 2020, from 535 miles in poor condition to 963 miles.[13] The chart below details the increase in the number of state-maintained miles of roadway in poor condition each year from 2015 through 2020.

Chart 1. Number of state-maintained miles of roadway in poor condition, 2015-2020.



Source: MnDOT response to TRIP survey.

The chart below details pavement conditions on major, locally and state-maintained roads and highways in the state's largest urban areas.

Chart 2. Condition of major roads in Minnesota's larges urban areas.

	Poor	Mediocre	Fair	Good
Duluth	47%	22%	7%	24%
Minneapolis-St. Paul	25%	19%	17%	39%
Rochester	27%	23%	26%	23%

Source: TRIP analysis of FHWA pavement condition data, 2015.

Roads rated in poor condition may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed.

Pavement failure is caused by a combination of traffic, moisture and climate. Moisture often works its way into road surfaces and the materials that form the road's foundation. Road surfaces at intersections are even more prone to deterioration because the slow-moving or standing loads occurring at these sites subject the pavement to higher levels of stress. It is critical that roads are fixed before they require major repairs because reconstructing roads costs

approximately four times more than resurfacing them.[14] As roads and highways continue to age, they will reach a point of deterioration where routine paving and maintenance will not be adequate to keep pavement surfaces in good condition and costly reconstruction of the roadway and its underlying surfaces will become necessary.

Bridge Conditions in Minnesota

Minnesota's bridges form key links in the state's highway system, providing communities and individuals access to employment, schools, shopping and medical facilities, and facilitating commerce and access for emergency vehicles.

Throughout the state, six percent (800 of 13,355) of Minnesota's locally and state-maintained bridges (20 feet or longer) are currently rated as structurally deficient.[15] Six percent (706 of 11,016) of Minnesota's rural bridges are structurally deficient and four percent (94 of 2,339) of the state's urban bridges are structurally deficient.[16]

A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. A bridge is considered structurally deficient if: 1) any of its significant load carrying elements are found to be in a poor condition due to deterioration and/or damage; 2) it has a low weight restriction; or 3) the adequacy of the waterway opening provided by the bridge is determined to be extremely insufficient to the point that roadway flooding causes intolerable traffic interruptions.

The structurally deficient rating, which is the result of an in-depth hands-on bridge inspection, is an early warning sign for engineers to use to prioritize funding and to initiate repairs or to begin the process to rehabilitate or replace the bridge. The rating applies to three main elements of a bridge: the deck (riding surface); the superstructure (main supporting element

of the deck, usually beams, girders, trusses, etc.); and the substructure (supports that hold up the superstructure and deck, usually abutments and piers). These elements are rated on a scale from zero (closed to traffic) to nine (relatively new). If any of the three elements is rated as a four or less, the bridge is categorized as structurally deficient by federal standards. Being categorized as structurally deficient does not mean that the bridge is unsafe. If a bridge becomes unsafe, it will be closed.

Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid posted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

MnDOT estimates that, based on available funding, the number of state-maintained bridges rated in poor condition will increase by approximately 70 percent between 2016 and 2020, from 23 bridges to 39 bridges.[17]

The service life of bridges can be extended by performing routine maintenance such as resurfacing decks, painting surfaces, insuring that a facility has good drainage and replacing deteriorating components. But, most bridges will eventually require more costly reconstruction or major rehabilitation to remain operable.

The chart below details the total number of bridges and the share of structurally deficient bridges statewide and in each of Minnesota's counties.

Chart 3. Total bridges and structurally deficient bridges statewide and in each Minnesota county.

County	Total Bridges	Total Structurally Deficient	Share Structurally Deficient	County	Total Bridges	Total Structurally Deficient	Share Structurally Deficient
AITKIN	100	7	7%	MARSHALL	211	7	3%
ANOKA	143	3	2%	MARTIN	162	16	10%
BECKER	54	5	9%	MEEKER	62	2	3%
BELTRAMI	96	2	2%	MILLE LACS	107	3	3%
BENTON	118	4	3%	MORRISON	165	15	9%
BIG STONE	15	0	0%	MOWER	336	47	14%
BLUE EARTH	193	8	4%	MURRAY	131	8	6%
BROWN	109	6	6%	NICOLLET	49	2	4%
CARLTON	142	10	7%	NOBLES	302	5	2%
CARVER	118	17	14%	NORMAN	150	7	5%
CASS	83	5	6%	OLMSTED	357	10	3%
CHIPPEWA	119	19	16%	OTTER TAIL	148	9	6%
CHISAGO	63	4	6%	PENNINGT	48	1	2%
CLAY	222	14	6%	PINE	168	10	6%
CLEARWATER	49	0	0%	PIPESTONE	176	23	13%
COOK	54	5	9%	POLK	265	7	3%
COTTONWOOD	150	3	2%	POPE	46	1	2%
CROW WING	70	1	1%	RAMSEY	327	16	5%
DAKOTA	245	2	1%	RED LAKE	59	1	2%
DODGE	170	9	5%	REDWOOD	199	30	15%
DOUGLAS	40	5	13%	RENVILLE	138	25	18%
FARIBAULT	220	19	9%	RICE	138	3	2%
FILLMORE	339	33	10%	ROCK	260	14	5%
FREEBORN	142	4	3%	ROSEAU	143	8	6%
GOODHUE	324	10	3%	ST LOUIS	694	84	12%
GRANT	32	4	13%	SCOTT	121	2	2%
HENNEPIN	890	45	5%	SHERBURN	45	5	11%
HOUSTON	172	10	6%	SIBLEY	101	6	6%
HUBBARD	45	3	7%	STEARNS	231	4	2%
ISANTI	37	2	5%	STEELE	135	7	5%
ITASCA	168	14	8%	STEVENS	45	1	2%
JACKSON	190	12	6%	SWIFT	95	4	4%
KANABEC	80	0	0%	TODD	131	4	3%
KANDIYOHI	90	3	3%	TRAVERSE	121	3	2%
KITTSON	159	4	3%	WABASHA	145	4	3%
KOOCHICHING	96	3	3%	WADENA	76	2	3%
LAC QUI PARLE	172	7	4%	WASECA	84	7	8%
LAKE	86	6	7%	WASHINGT	107	3	3%
LAKE OF THE	61	0	0%	WATONWA	165	3	2%
LE SUEUR	69	2	3%	WILKIN	200	14	7%
LINCOLN	107	22	21%	WINONA	237	20	8%
LYON	233	9	4%	WRIGHT	71	0	0%
MCLEOD	77	3	4%	YELLOW	221	7	3%
MAHNOMEN	41	6	15%	**STATEWIDE**	**13,355**	**800**	**6%**

Source: Federal Highway Administration National Bridge Inventory, 2016.

Traffic Safety in Minnesota

A total of 1,922 people were killed in motor vehicle crashes in Minnesota from 2011 through 2015, an average of 384 fatalities per year.[18]

Chart 4. Minnesota Traffic fatalities 2011 – 2015.

Year	*Fatalities*
2011	368
2012	395
2013	387
2014	361
2015	411
Total	**1,922**

Source: National Highway Traffic Safety Administration

Minnesota's overall traffic fatality rate of 0.72 fatalities per 100 million vehicle miles of travel in 2015 is lower than the national average of 1.13 fatalities per 100 million vehicle miles of travel.[19] The state's rural roads have a traffic fatality rate that is disproportionately higher than that on all other roads in the state. The traffic fatality rate on Minnesota's non-Interstate rural roads in 2015 was nearly three and a half times higher than on all other roads and highways in the state – 1.33 fatalities per 100 million vehicle miles of travel versus 0.40.[20]

Improving safety on Minnesota's roadways can be achieved through further improvements in vehicle safety; improvements in driver, pedestrian, and bicyclist behavior; and a variety of improvements in roadway safety features.

Key factors that contribute to fatal traffic crashes include human behavior, safety features of the vehicle, emergency response times, medical care of the victims, and the safety design of the roadway.[21] Human behavioral issues can include the use of safety belts, driver impairment due to alcohol or drugs, distracted or drowsy driving, and speeding.

The severity of serious traffic crashes could be reduced through roadway improvements, where appropriate, such as adding turn lanes, removing or shielding obstacles, adding or

improving medians, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals. Roads with poor geometry, with insufficient clear distances, without turn lanes, having inadequate shoulders for the posted speed limits, or poorly laid out intersections or interchanges, pose greater risks to motorists, pedestrians and bicyclists.

Making Minnesota's Rural Roads Safer

Because rural roads have fewer intersections than urban roads and are more likely to provide travel between urban areas, they often have higher speed limits than many urban routes. Because rural traffic crashes often occur in more remote locations than urban crashes, emergency medical care following a serious accident is often slower, contributing to a higher traffic fatality rate on rural roads. Traffic fatality rates on rural roads are also higher than on urban roads partly because rural roads are less likely to have adequate safety features and are more likely than urban roads to have two lanes.

Rural routes have often been constructed over a period of years and as a result may have inconsistent design features for such things as lane widths, curves, shoulders and clearance zones along roadways.[22] Many rural roads have been built with narrow lanes, limited shoulders, excessive curves and steep slopes alongside roadways.[23]

A report on rural road safety by the United States General Accounting Office (GAO) found that several factors hinder efforts to improve rural road safety. The GAO noted that these challenges include the large number of rural roads and the relatively low volume of traffic they carry, combined with the high cost of some desirable improvement. The GAO also found federal

highway funding cannot be used on many rural roads, most of which are the responsibility of local governments, which may have limited resources.[24]

A variety of design improvements can help improve rural road safety. The goal of these improvements is to keep vehicles in the correct lane and minimize the consequences of vehicles leaving the roadway. The type of safety design improvements that are appropriate for a section on rural road will depend partly on the amount of funding available and the nature of the safety problem on that section of road. Several studies have classified rural safety improvements by both their effectiveness and their cost. These improvements include:

LOW COST:

Rumble strips – Rumble strips are raised or grooved patterns constructed on the roadway's shoulder. They have been found to reduce run off the road crashes by between 25 to 43 percent.[25]

Centerline rumble strips –Centerline rumble strips alert drivers who may be encroaching or have strayed into an opposing lane.

Improved signage and pavement markings including higher levels of retroreflectivity – Traffic signs and pavement markings represent the first line of crucial information for drivers and can help improve night-time visibility. Signs with greater retroreflectivity, more visible pavement markings and raised, reflective lane makings can all assist drivers to stay on a roadway, particularly at night.

Lighting – A study of the addition of street lighting at 49 isolated rural intersections in Minnesota found that nighttime crashes decreased by 35 percent after the addition of lighting.[26]

Removing or shielding road-side obstacles – Trees, large rocks, utility poles, heavy mail boxes and other road-side objects can be shielded, moved or moved away from the road to reduce the likelihood of a vehicle leaving the roadway striking these objects.

Upgrade or add guardrails – Adding or improving guardrails has been found to reduce traffic fatality rates by between 50-58 percent.[27]

Chevrons and post-mounted delineators along curves – The use of chevrons or post-mounted delineators to indicate roadway alignment have been found to be effective in reducing crashes at curves by providing drivers with better visual cues about the presence and geometry of a curve.[28]

MODERATE COST:

Install median barriers – Median barriers have been found to reduce traffic fatality rates by 65 percent.[29]

Adding turn lanes at intersections – The addition of left turn lanes at rural intersections was found to reduce crashes by between 33 and 48 percent.[30] The addition of right turn lanes at intersections was found to reduce crashes by between eight and 26 percent.[31]

Resurfacing pavements - Resurfaced pavements have been found to result in a 25 percent reduction in fatal crashes. [32]

MODERATE TO HIGH COST:

Add or pave shoulders – Paving or widening shoulders has been found to reduce traffic fatality rates by 10 to 35 percent, depending on the width of the widening and the location.[33]

Improved roadway alignment – Realigning roadways has been found to average a 50 percent reduction in traffic fatality rates.[34]

Construct intermittent passing lanes or two-way left-turn lane – Adding passing lanes has been found to reduce traffic fatality rates by 20 percent and the addition of a two-way left-turn lane has been found to reduce traffic fatality rates by 30 percent.[35]

Widen lanes – Making lanes wider has been found to reduce traffic fatality rates by eight to 10 percent. [36]

Add lanes – A report on the likely safety benefit of converting two-lane rural roads into four-lanes routes, found that traffic accident rates would be reduced by between 40 and 60 percent.[37]

The use of Roadway Safety Assessments (RSA) is a proven approach that can improve safety on rural roads. Improved data collection on rural road safety can help to identify roadway segments with dangerous characteristics.

Systemic installation of cost effective safety solutions and devices in rural areas helps to improve safety not just by targeting problem points on a road, but also making entire segments safer by improving those roadway segments that exhibit the characteristics that typically result in fatal or serious-injury crashes.

Investments in rural traffic safety have been found to result in significant reductions in serious traffic crashes. A 2012 report by TTI found that improvements completed recently by TxDOT that widened lanes, improved shoulders and made other safety improvements on 1,159 miles of rural state roadways resulted in 133 fewer fatalities on these roads in the first three years after the improvements were completed (as compared to the three years prior).[38] TTI estimates that the improvements on these roads are likely to save 880 lives over 20 years.[39]

Traffic Congestion in Minnesota

Increasing levels of traffic congestion cause significant delays in Minnesota, particularly in its larger urban areas, choking commuting and commerce. Traffic congestion robs commuters of time and money and imposes increased costs on businesses, shippers and manufacturers, which are often passed along to the consumer.

The chart below details the number of hours lost annually for each driver in the state's largest urban areas, as well as the per-driver cost of lost time and wasted fuel due to congestion.

Chart 5. Annual hours lost to congestion and congestion costs per driver.

	Hours Lost	Congestion Cost
Duluth	20 Hours	$541
Minneapolis-St. Paul	47 Hours	$1,035
Rochester	13 Hours	$282

Source: Texas Transportation Institute Urban Mobility Report.

Increasing levels of congestion add significant costs to consumers, transportation companies, manufacturers, distributors and wholesalers. Increased levels of congestion can reduce the attractiveness of a location to a company when considering expansion or where to locate a new facility. Congestion costs can also increase overall operating costs for trucking and shipping companies, leading to revenue losses, lower pay for employees, and higher consumer costs.

Minnesota's Transportation Funding Shortfall and Needed Projects

Minnesota faces a significant and growing transportation funding shortfall. Due to inadequate transportation funding in the state, many needed projects that would improve conditions, expand capacity and enhance traffic safety will not move forward, at least for the next five years.

MnDOT projections show that the amount of funding available for maintenance and improvements to roads and highways maintained by state, county and local municipalities will decrease by 16 percent from FY 2016 to FY 2021.[40] The chart below details the declining funds available for roads and highways maintained by MnDOT, counties and municipalities from 2016 through 2021.

Chart 6. Funds available for roads and highways maintained by MnDOT, counties and municipalities from 2016 through 2021.

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
MnDOT State Highway Capital Investment	$ 1,089,664,000	$ 959,166,000	$ 894,800,000	$ 804,800,000	$ 735,600,000	$ 695,800,000
MnDOT Maintenance Investment	$ 288,405,000	$ 290,916,000	$ 292,140,000	$ 301,545,000	$ 301,545,000	$ 301,545,000
County State Aid Highways	$ 670,768,000	$ 698,495,000	$ 698,495,000	$ 698,495,000	$ 698,495,000	$ 698,495,000
Municipal State Aid Streets	$ 170,743,000	$ 178,141,000	$ 178,141,000	$ 178,141,000	$ 178,141,000	$ 178,141,000
Total funding for state transportation facilities and transportation funds provided for local governments	**$2,219,580,000**	**$2,126,718,000**	**$2,063,576,000**	**$1,982,981,000**	**$1,913,781,000**	**$1,873,981,000**

Source: MnDOT response to TRIP survey.

MnDOT projects a shortfall of $401 million in FY 2018 in state transportation funding and transportation funding to local governments to make further progress in road, highway and bridge conditions; improve traffic safety; and, make further modernization and capacity improvements to support economic development and quality of life.[41] By FY 2021, the shortfall is expected to more than double, reaching $835 million.[42] The chart below details the additional amount of funding needed each year to improve road and bridge conditions, improve traffic safety, modernize the system, and provide additional capacity.

Chart 7. Additional funding needed from FY 2018 through FY 2021.

	FY 2018	FY 2019	FY 2020	FY 2021
MnDOT State Highway Capital Investment	$ 244,958,000	$ 493,946,000	$ 543,508,000	$ 531,945,000
MnDOT Maintenance Investment	$ 19,576,000	$ 33,804,000	$ 35,265,000	$ 38,031,000
County State Aid Highways	$ 108,184,000	$ 186,816,000	$ 194,890,000	$ 210,171,000
Municipal State Aid Highways	$ 28,417,000	$ 49,071,000	$ 51,192,000	$ 55,206,000
Needed funding for state transportation facilities and transportation funds provided for local governments	**$ 401,137,000**	**$ 763,639,000**	**$ 824,857,000**	**$ 835,354,000**

Source; MnDOT response to TRIP survey.

The chart below details needed preservation or reconstruction projects in the Duluth, Rochester, Minneapolis-St. Paul urban areas and statewide that currently lack adequate funding to start prior to 2022. These include $429-536 million in projects in Duluth, $1-1.4 billion in projects in the Twin Cities, $43-53 million in projects in Rochester and $289-383 million in projects elsewhere in the state.

Chart 8. Needed preservation or reconstruction projects in Duluth, Rochester, Twin Cities and statewide that lack funding to start prior to 2022.

Location	County	Project Type	Highway	Project Location	Work to be Completed	Cost Range - Low	Cost Range - High
Duluth	St. Louis	Pavement, Bridge, Mobility	Interstate 35	Twin Ports Interchange in Duluth	Significant roadway surface improvements and bridge	$219,600,000	$268,400,000
Duluth	St. Louis	Bridge	Interstate 535	Interstate 535 over St. Louis River - Blatnik Bridge	Repair/Replace	$166,950,000	$204,050,000
Duluth	St. Louis	Bridge	Interstate 35	Interstate 35 over Abandoned Street St Louis	Repair/Replace	$7,060,000	$10,590,000
Duluth	St. Louis	Bridge	US Highway 53	US Highway 53 over 1st Street and 21st Ave in St Louis County	Repair/Replace	$15,900,000	$23,860,000
Duluth	St. Louis	Bridge	Interstate 35	Interstate 35 over Railroad Line in St. Louis County - northbound	Repair/Replace	$4,830,000	$7,240,000
Duluth	St. Louis	Bridge	5th Avenue W	5th Ave W over Interstate 35 in St Louis County	Repair/Replace	$14,770,000	$22,150,000
Rochester	Olmsted	Pavement	US Highway 52	12 miles from Chatfield to I-90	Upgrade previously planned projects to a longer-life improvement	$36,490,000	$43,780,000
Rochester	Olmsted/ Goodhue	Pavement	US Highway 52	13 miles from County Highway 12/112 to County Highway 68	Upgrade previously planned projects to a longer-life improvement	$6,270,000	$9,400,000
Twin Cities	Hennepin/ Dakota	Pavement, Bridge	Interstate 35W	106th Street to Black Dog Road	Significant roadway surface improvements and bridge	$49,500,000	$60,500,000
Twin Cities	Ramsey/ Anoka	Pavement	Interstate 35W	12 miles from MN 280 to Lexington Ave	Upgrade previously planned projects to a longer-life improvement	$70,200,000	$85,800,000
Twin Cities	Hennepin/ Ramsey	Pavement, Bridge	Interstate 94	Pavement and bridge reconstruction between downtown Minneapolis and downtown St Paul	Significant roadway surface improvements and bridge repair/replace	$850,000,000	$1,150,000,000
Twin Cities	Ramsey	Bridge	MN Highway 280	MN Highway 280 over Robbins, Transitway and RR in Ramsey County	Preventative Maintenance	$21,970,000	$32,960,000
Twin Cities	Ramsey	Pavement	MN Highway 952A	2 miles from Annapolis St. to I-94 (Robert St.)	Upgrade previously planned projects to a longer-life improvement	$12,000,000	$20,000,000
Twin Cities	Hennepin	Pavement	MN Highway 7	5 miles from Christmas Lake Road to I-494	Upgrade previously planned projects to a longer-life improvement	$10,000,000	$11,000,000
Twin Cities	Hennepin	Pavement	MN Highway 55	4 miles from I-494 to General Mills Blvd	Upgrade previously planned projects to a longer-life improvement	$6,700,000	$7,200,000
Twin Cities	Dakota	Pavement	US Highway 61	10 miles from Goodhue-Dakota County Line to N Jct MN 316	Upgrade previously planned projects to a longer-life improvement	$7,000,000	$10,000,000
Twin Cities	Scott	Pavement, Bridge	US Highway 169	8 miles from County Highway 15 to MN Highway13	Significant roadway surface improvements and bridge	$7,500,000	$15,000,000
Twin Cities	Ramsey	Bridge	Interstate 35E	Interstate 35E over Jefferson Avenue in Ramsey County	Repair/Replace	$10,660,000	$15,990,000
Greater MN	Lake	Pavement	MN Highway 61	8 miles from Lake/Cok Co. line to Schroeder	Upgrade previously planned projects to a longer-life improvement	$13,240,000	$22,070,000
Greater MN	St. Louis	Pavement	US Highway 169	15 miles from Chisholm to Virginia - northbound	Upgrade previously planned projects to a longer-life improvement	$8,440,000	$14,070,000
Greater MN	St. Louis	Pavement	US Highway 169	13 miles from Chisholm to Virginia - southbound	Upgrade previously planned projects to a longer-life improvement	$7,020,000	$11,700,000
Greater MN	Beltrami	Pavement	MN Highway 197	2 miles from 23rd Street to US 71 in Bemidji	Significant roadway surface improvements	$10,200,000	$15,300,000
Greater MN	Polk	Pavement	US Highway 2	12 miles from MN 9 to MN 32	Upgrade previously planned projects to a longer-life improvement	$8,500,000	$12,750,000
Greater MN	Kittson	Pavement	US Highway 75	14 miles from Donaldson to Hallock	Upgrade previously planned projects to a longer-life improvement	$7,500,000	$11,250,000
Greater MN	Wright	Pavement	Interstate 94	14 miles from Clearwater to Monticello - westbound	Upgrade previously planned projects to a longer-life improvement	$16,560,000	$20,240,000
Greater MN	Aitkin	Pavement	MN Highway 210	7 miles from Aitkin to Hassman	Upgrade previously planned projects to a longer-life improvement	$9,000,000	$16,000,000
Greater MN	Sherburne	Pavement	US Highway 10	14 miles from Clear Lake to MN 25 (Big Lake) - eastbound	Upgrade previously planned projects to a longer-life improvement	$9,000,000	$13,000,000
Greater MN	Douglas	Pavement	Interstate 94	13 miles between MN 79 and MN 114 - westbound	Significant roadway surface improvements	$24,160,000	$28,990,000
Greater MN	Pope/ Stevens	Pavement	MN Highway 28	17 miles from Morris to Starbuck	Upgrade previously planned projects to a longer-life improvement	$9,250,000	$10,280,000
Greater MN	Wilkins	Pavement	MN Highway 55	23 miles from North Dakota Line to Grant County Line	Upgrade previously planned projects to a longer-life improvement	$7,200,000	$8,220,000
Greater MN	Big Stone/ Swift	Pavement	US Highway 12	26 miles from US 75 to US 59	Upgrade previously planned projects to a longer-life improvement	$8,740,000	$9,770,000
Greater MN	Freeborn	Pavement	Interstate 90	12 miles westbound from MN 13 to County Highway 46 near Petran	Upgrade previously planned projects to a longer-life improvement	$9,400,000	$11,280,000
Greater MN	Goodhue	Pavement	US Highway 52	14 miles from County Highway 7 to Cannon Falls - southbound	Upgrade previously planned projects to a longer-life improvement	$23,100,000	$27,730,000
Greater MN	Wabasha	Pavement	US Highway 61	5 miles from bridge over CP Railroad to Central Point Road in Lake City	Upgrade previously planned projects to a longer-life improvement	$10,000,000	$12,000,000
Greater MN	Rice	Bridge	MN Highway 3	MN Highway 3 over Cannon River in Rice County	Repair/Replace	$6,000,000	$8,990,000

Greater MN	Martin/ Faribault	Pavement	Interstate 90	12 miles from MN 15 (Fairmont) to Faribault County Highway 1 - eastbound	Upgrade previously planned projects to a longer-life improvement	$9,030,000	$10,840,000
Greater MN	Martin/ Faribault	Pavement	Interstate 90	12 miles from MN 15 (Fairmont) to Faribault County Highway 1 - westbound	Upgrade previously planned projects to a longer-life improvement	$9,030,000	$10,840,000
Greater MN	Sibley	Pavement	MN Highway 19	22 miles from MN 15 (Winthrop) to Gaylord (new end point 133.777)	Significant roadway surface improvements	$21,500,000	$29,500,000
Greater MN	Watonwan	Pavement	MN Highway 60	13 miles from MN 4 to MN 15	Upgrade previously planned projects to a longer-life improvement	$10,000,000	$15,000,000
Greater MN	Blue Earth	Bridge	US Highway 14	US Highway 14 over Minnesota River in Blue Earth County	Repair/Replace	$9,380,000	$11,460,000
Greater MN	McLeod/ Meeker	Pavement	MN Highway 15	12 miles from Hutchinson to Dassel	Significant roadway surface improvements	$15,580,000	$18,690,000
Greater MN	Meeker/ Stearns	Pavement	MN Highway 15	16 miles from Dassel to Kimball	Upgrade previously planned projects to a longer-life improvement	$11,610,000	$14,190,000
Greater MN	Murray	Pavement	MN Highway 91	10 miles from Nobles-Murray County Line to MN 30	Upgrade previously planned projects to a longer-life improvement	$15,470,000	$18,560,000

Source: MnDOT response to TRIP survey.

The chart below details capacity expansion or safety projects in the Twin Cities and throughout the state that are needed but will not have adequate funding to start prior to 2022. These projects include $768 million - $1.1 billion in projects in the Twin Cities area and $490-648 million in projects in other areas of the state.

Chart 9. Needed capacity expansion or safety projects in the Twin Cities and throughout the state that lack adequate funding to start prior to 2022.

Location	County	Project Type	Highway	Project Location	Work to be Completed	Cost Range - Low	Cost Range- High
Twin Cities	Hennepin/ Ramsey	Twin Cities Mobility	Interstate 35W	MnPASS expansion from downtown Minneapolis to MN 36	MnPASS expansion	$173,490,000	$260,240,000
Twin Cities	Hennepin	Twin Cities Mobility	Interstate 494	MnPASS expansion from MSP Airport to MN 62	MnPASS expansion	$200,000,000	$250,000,000
Twin Cities	Hennepin	Twin Cities Mobility	Interstate 494/ Interstate 35W	Upgrades to I-494/I-35W interchange	Intersection/Interchange Improvements	$80,000,000	$120,000,000
Twin Cities	Ramsey	Twin Cities Mobility	MN Highway 36	MnPASS expansion from I 35 W and I 35 E, eastbound only	MnPASS expansion	$57,830,000	$86,750,000
Twin Cities	Hennepin/ Scott	Twin Cities Mobility	US Highway 169	MnPASS expansion from County Road 17 to somewhere between I 494 and I 394	MnPASS expansion	$96,390,000	$180,720,000
Various	Various	Greater Minnesota Mobility	Various	Install new intelligent transportation infrastructure at select locations and fund lower-cost spot-mobility projects; project selection subject to public involvement and transportation studies.	Mobility	$71,430,000	$87,300,000
Various	Various	Twin Cities Mobility	Various	Strategically add capacity through improvements to intersections, interchanges, and lane additions to improve continuity; project selection subject to public involvement and transportation studies. Potential locations include: US Highway 10/Thurston Ave, MN Highway 252/66th Avenue N	Mobility	$156,870,000	$205,060,000
Greater MN	Roseau	Greater Minnesota Mobility	MN Highway 11	Highway 11 operational flow improvements	Spot mobility	$9,900,000	$12,100,000
Greater MN	Wright	Greater Minnesota Mobility	Interstate 94	4 to 6 lane expansion from St Michael west to Albertville	Highway expansion	$54,000,000	$66,000,000
Greater MN	Stearns	Greater Minnesota Mobility	MN Highway 23	2 lane to 4 lane expansion from Richmond to Paynesville	Highway expansion	$74,000,000	$98,000,000
Greater MN	Dodge/ Steele	Greater Minnesota Mobility	US Highway 14	2 to 4 lane expansion from Owatonna to Dodge Center	Highway expansion	$162,000,000	$198,000,000
Greater MN	Nicollet	Greater Minnesota Mobility	US Highway 14	2 to 4 lane expansion from Nicollet to New Ulm	Highway expansion	$69,000,000	$117,000,000
Greater MN	Kandiyohi	Greater Minnesota Mobility	MN Highway 23	2 to 4 lane expansion from Paynesville west to New London	Highway expansion	$50,000,000	$70,000,000

Source: MnDOT response to TRIP survey.

Federal Transportation Funding in Minnesota

Investment in Minnesota's roads, highways and bridges is funded by local, state and federal governments. A lack of sufficient funding at all levels will make it difficult to adequately maintain and improve the state's existing transportation system.

The federal government is a critical source of funding for Minnesota's roads, highways, bridges and transit systems and provides a significant return to Minnesota in road and bridge funding based on the revenue generated in the state by the federal motor fuel tax.

Most federal funds for highway and transit improvements in Minnesota are provided by federal highway user fees, largely an 18.4 cents-per-gallon tax on gasoline and a 24.4 cents-per-gallon tax on diesel fuel. Since 2008 revenue into the federal Highway Trust Fund has been inadequate to support legislatively set funding levels so Congress has transferred approximately $53 billion in general funds and an additional $2 billion from a related trust fund into the federal Highway Trust Fund.[43]

Signed into law in December 2015, the Fixing America's Surface Transportation Act (FAST Act), provides modest increases in federal highway and transit spending. The five-year bill also provides states with greater funding certainty and streamlines the federal project approval process. But, the FAST Act does not provide adequate funding to meet the nation's need for highway and transit improvements and does not include a long-term and sustainable funding source.

The five-year, $305 billion FAST Act will provide a boost of approximately 15 percent in highway funding and 18 percent in transit funding over the duration of the program, which expires in 2020.[44] In addition to federal motor fuel tax revenues, the FAST Act will also be funded by $70 billion in U.S. general funds, which will rely on offsets from several unrelated

federal programs including the Strategic Petroleum Reserve, the Federal Reserve and U.S. Customs.

According to the 2015 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance report submitted by the United States Department of Transportation (USDOT) to Congress, the nation faces an $836 billion backlog in needed repairs and improvements to the nation's roads, highways and bridges.[45]

The USDOT report found that the nation's current $105 billion investment in roads, highways and bridges by all levels of government should be increased by 35 percent to $142.5 billion annually to improve the conditions of roads, highways and bridges, relieve traffic congestion and improve traffic safety.

Importance of Transportation to Economic Growth

Today's culture of business demands that an area have well-maintained and efficient roads, highways and bridges if it is to remain economically competitive. Global communications and the impact of free trade in North America and elsewhere have resulted in a significant increase in freight movement, making the quality of a region's transportation system a key component in a business's ability to compete locally, nationally and internationally.

Businesses have responded to improved communications and the need to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and e-commerce. The result of these changes has been a significant improvement in logistics efficiency as firms move from a push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system, which relies on smaller, more strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

Highways are vitally important to continued economic development in Minnesota, particularly to the state's manufacturing, agriculture and tourism industries. As the economy expands, creating more jobs and increasing consumer confidence, the demand for consumer and business products grows. In turn, manufacturers ship greater quantities of goods to market to meet this demand, a process that adds to truck traffic on the state's highways and major arterial roads.

Every year, $519 billion in goods are shipped to and from sites in Minnesota, mostly by trucks.[46] Seventy-five percent of the goods shipped annually to and from sites in Minnesota are carried by trucks.[47]

The cost of road and bridge improvements are more than offset by the reduction of user costs associated with driving on rough roads, the improvement in business productivity, the reduction in delays and the improvement in traffic safety. The Federal Highway Administration estimates that each dollar spent on road, highway and bridge improvements results in an average benefit of $5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.[48]

Local, regional and state economic performance is improved when a region's surface transportation system is expanded or repaired. This improvement comes as a result of the initial job creation and increased employment created over the long-term because of improved access, reduced transport costs and improved safety.

Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient and more modern transportation system. Highway accessibility was ranked the number two site selection factor

behind only the availability of skilled labor in a 2015 survey of corporate executives by Area Development Magazine.[49]

Conclusion

As Minnesota works to build a thriving, growing and dynamic state, it will be critical that it is able to address the state's most significant transportation issues by providing a well-maintained 21st century network of roads, highways, bridges and transit that can accommodate the mobility demands of a modern society.

Minnesota will need to modernize its surface transportation system by improving the physical condition of its transportation network and enhancing the system's ability to provide efficient, safe and reliable mobility for residents, visitors and businesses. Making needed improvements to the state's roads, highways, bridges and transit systems could provide a significant boost to the economy by creating jobs in the short term and stimulating long-term economic growth as a result of enhanced mobility and access.

Road and bridge conditions will continue to deteriorate and numerous projects to improve the condition and expand the capacity of Minnesota's roads, highways, bridges and transit systems will not be able to proceed without a substantial boost in state or local transportation funding. If Minnesota is unable to complete needed transportation projects it will hamper the state's ability to improve the condition and efficiency of its transportation system or enhance economic development opportunities and quality of life.

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ENDNOTES

[1] U.S. Census Bureau (2016). http://www.census.gov/popest/data/state/totals/2012/index.html
[2] Highway Statistics (2015). Federal Highway Administration. DL-1C
[3] TRIP analysis of Bureau of Economic Analysis data.

[4] U.S. Department of Transportation - Federal Highway Administration: Highway Statistics 2000 and analysis of FHWA monthly Traffic Volume Trends (2016).
https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm

[5] Ibid.
[6] TRIP estimate based on U.S. Census and Federal Highway Administration data.
[7] Federal Highway Administration (2016). Highway Statistics. Pavement condition data is for 2015.
[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Ibid.
[12] Ibid.
[13] MnDOT response to TRIP Survey, February 2017.
[14] Selecting a Preventative Maintenance Treatment for Flexible Pavements. R. Hicks, J. Moulthrop. Transportation Research Board. 1999. Figure 1.
[15] Federal Highway Administration National Bridge Inventory, 2016.
[16] Ibid.
[17] MnDOT response to TRIP survey, February 2017.
[18] TRIP analysis of National Highway Traffic Safety Administration data (2016).
[19] TRIP analysis of National Highway Traffic Safety Administration and Federal Highway Administration data (2016).
[20] Ibid.
[21] United States General Accounting Office. Highway Safety: Federal and state efforts to Address Rural Road Safety Challenges (2004). P. 2.
[22] Rural Road Safety: A Global Challenge. Public Roads September/October 1999. Federal Highway Administration. P. 4.
[23] County Engineers Adopt Rural Road Safety Program. Minnesota Local Technical Assistance Program. 200
[24] Federal and State Efforts to Address Rural Road Safety Challenges, May 2004. United States General Accounting Office. GAO-04-663. P. 25..
[25] Kentucky Transportation Center. Development of Procedures for Identifying High-Crash Locations and Prioritizing Safety Improvements. 2003. P. 23.
[26] Safety Impacts of Street Lighting at Isolated Rural Intersections. Isebrands, H., Hallmark, S., Hans, Z., McDonald, T., Iowa State/University/ Center for Transportation Research and Education.
[27] Kentucky Transportation Center. Development of Procedures for Identifying High-Crash Locations and Prioritizing Safety Improvements. 2003. P. 23.
[28] Volume 7: A Guide for Reducing Collisions on Horizontal Curves. National Cooperative Highway Research Program. Report 500. 2004. P. V-10.
[29] Ibid. P. 23.
[30] Safety Effectiveness of Intersection Left- and Right-Turn Lanes. Federal Highway Administration. 2002. Report No. FHWA-RD-02-103. P. 5.
[31] Ibid. P. 5.
[32] Ibid. P. 23.
[33] Ibid. 24.
[34] Ibid. P. 25.
[35] Ibid. P. 24.

[36] Ibid. P. 25.
[37] Kentucky Transportation Center. Development of Procedures for Identifying High-Crash Locations and Prioritizing Safety Improvements. 2003. P. 23.
[38] Adding Highway Shoulders, Width, Reduce Crash Numbers and Save Lives (August 9, 2012). Texas Transportation Institute.
[39] Ibid.
[40] MnDOT response to TRIP survey, February 2017.
[41] Ibid.
[42] Ibid.
[43] "Surface Transportation Reauthorization and the Solvency of the Highway Trust Fund," presentation by Jim Tymon, American Association of State Highway and Transportation Officials (2014).
[44] 2015 "Fixing America's Surface Transportation Act." (2015) American Road and Transportation Builders Association. http://www.artba.org/newsline/wp-content/uploads/2015/12/ANALYSIS-FINAL.pdf
[45] United States Department of Transportation (2015). 2015 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance. Executive Summary, Chapter 8. https://www.fhwa.dot.gov/policy/2015cpr/es.cfm#8h

[46] TRIP analysis of Bureau of Transportation Statistics, U.S. Department of Transportation. 2012 Commodity Flow Survey, State Summaries.
[47] Ibid.
[48] FHWA estimate based on its analysis of 2006 data. For more information on FHWA's cost-benefit analysis of highway investment, see the 2008 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance.
[49] Area Development Magazine (2016). 30th Annual Survey of Corporate Executives: Availability of Skilled Labor New Top Priority. http://www.areadevelopment.com/Corporate-Consultants-Survey-Results/Q1-2016/corporate-executive-site-selection-facility-plans-441729.shtml