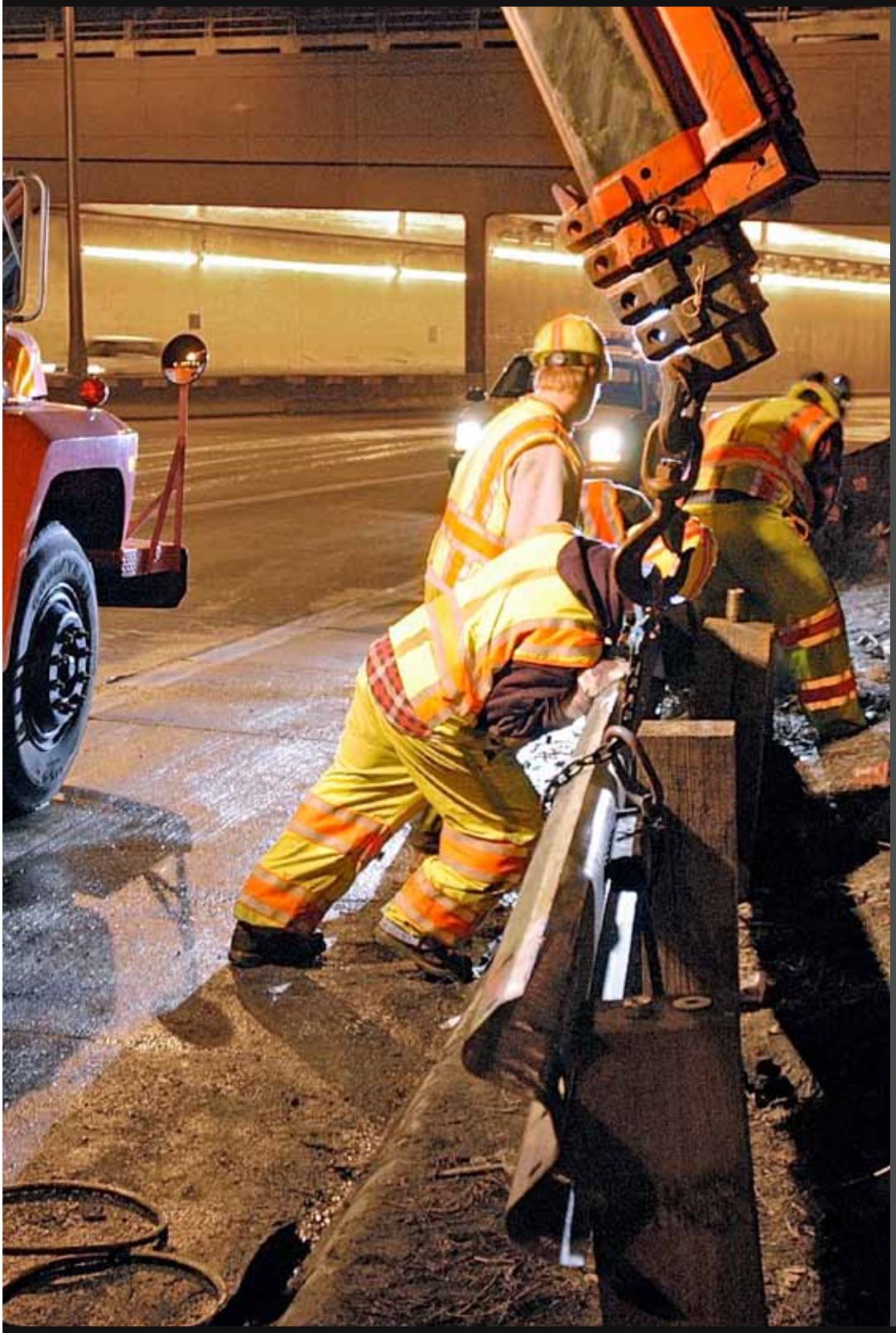

Annual Minnesota Transportation Performance Report

2011

Your Destination...Our Priority

Cover Photo: David Gonzalez, MnDOT

October 2012

Dear Citizens of Minnesota,

I am pleased to share the 2011 Minnesota Transportation Performance Report.

This is our fourth annual report. It describes the major elements of Minnesota's transportation system, the institutions that manage them, and the spending and investment flowing to each. We measure our performance, and for many areas, show whether we are meeting our targets.

The Association of Government Accountants honored MnDOT with its Gold Certificate of Achievement in Performance Reporting for the 2009 and 2010 reports. MnDOT is a national leader in performance measurement. We rely on data to guide and prioritize transportation investment decisions.

In 2011, traffic injuries and fatalities declined dramatically in Minnesota. Snow removal performance was excellent, reflecting a combination of good operations management and a milder than average winter. Freeway congestion in the Twin Cities metro area eased slightly and use of express buses improved. Clearance time for urban freeway incidents was quicker than in any year in the recent past. These improvements give the public a transportation system that is more dependable, safe and efficient.

State highway pavement condition declined in 2011 after improving in 2010. Major increases in state bonding and economic stimulus funds contributed to the temporary improvement. Pavement condition is predicted to continue to decline, although MnDOT's Better Roads program will slow the deterioration by improving more than 500 miles of poor roads.

MnDOT continues to deploy risk assessment and risk management to identify potential challenges and shortfalls. By identifying the likelihood and consequences of serious risks, MnDOT can better prioritize its spending and protect the public from the challenges of an uncertain future. We do know that the transportation system is a major contributor to your quality of life. How well we manage spending, assets, employees, customer relationships and risks will determine how well we meet your future transportation needs.

This report is designed to give you a clear, unvarnished picture of the state's transportation system. While we would prefer that all the news were good, we are committed to candor and objectivity. You, the customers we serve, deserve an accurate depiction of the state's transportation system, including its challenges and its needs. We hope the information in this report helps you participate more effectively in determining the transportation system we will share in the future.

Sincerely,

Thomas K. Sorel,
Commissioner

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Annual Minnesota Transportation Performance Report

2011

Minnesota Department of Transportation

Prepared by

The Office of Capital Programs and

Performance Measures

651-366-3798

October 2012

Minnesota Department of Transportation

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Source: MnDOT

Introduction

Good transportation systems are essential to Minnesota's economic competitiveness and quality of life—supporting thriving communities and successful businesses. This fourth annual Minnesota Transportation Performance Report describes trends in the condition and service levels provided by Minnesota's transportation systems. The report also summarizes the plans, investments, strategies and innovations MnDOT and its partners are using to optimize performance. Eighteen performance measures track progress on nine policy goals from the Minnesota Statewide Transportation Policy Plan 2009-2028.

MnDOT has used measurement tools to evaluate its services and to guide its plans, projects and investments since the 1990s. Performance information, citizen input and legislative direction are used to make investment choices and trade-off decisions within available resources.

MnDOT conducts an annual Omnibus survey to measure Minnesotan's satisfaction with MnDOT's major services (snow plowing, smooth roads, signage, etc.). This information helps MnDOT understand its customers, improve its services and make appropriate investment decisions. Over the past two years, MnDOT has studied what Quality of Life means to Minnesotans. This study identified transportation as one of the 11 major factors contributing to QOL and ranked specific transportation products and services that contribute to QOL and the satisfaction scores for each. This information is used to inform MnDOT's service delivery and future investment decisions.

MnDOT is committed to ongoing, open communication with citizens to meet expectations and build trust. Since 2009, MnDOT has measured citizens' trust and confidence with the agency. Citizens have shown high levels of confidence for the past three years—with 85% agreeing that "MnDOT can be relied upon to deliver Minnesota's transportation system." Nearly 8 in 10 agree that "MnDOT considers customer concerns and needs when developing transportation plans." These results are very important to MnDOT and the agency works to improve them.

Next year's Performance Report will reflect priorities identified in the Minnesota GO 50-Year Vision for Transportation and the 2012 Statewide Multimodal Transportation Plan. The Minnesota GO Vision establishes the following eight guiding principles for making future policy and investment decisions for all forms of transportation throughout the state:

- Leverage public investments to achieve multiple purposes
- Ensure accessibility
- Build to a maintainable scale
- Ensure regional connections
- Integrate safety
- Emphasize reliable and predictable options
- Strategically fix the system
- Use partnerships

The new federal transportation bill—*Moving Ahead for Progress in the 21st Century*—will change performance measurement and reporting at MnDOT. This bill establishes a National Highway Performance Program with goals and performance measures for the National Highway System. Minnesota can anticipate a smooth transition because the state has extensive experience measuring what matters and using data to make informed decisions.

Scope: Minnesota and MnDOT

The state transportation system is operated by MnDOT and partners including the Metropolitan Council, other metropolitan and regional planning organizations, the Metropolitan Airports Commission, the Department of Public Safety, railroads, port operators, the Federal Aviation Administration, U.S. Army Corps of Engineers, local government airports, port authorities, and transit operators. Minnesota's transportation system is summarized on page 52.

Portions of Minnesota's transportation systems are showing their age and need maintenance or replacement—putting pressure on limited state, local and federal financial resources. At the same time, expanded transportation options are being developed to relieve pressure on highways and to meet citizen demands. These options include light rail and commuter rail, express buses and bus rapid transit, MnPASS freeway lanes, bicycle facilities, accessible pedestrian facilities, and intercity passenger rail. The report provides available performance data for these options.

2011 Results Scorecard

The Minnesota 2011 Transportation Results Scorecard on pages 10-11 summarizes progress for nine policy goals. MnDOT has primary responsibility for the measures highlighted by the MnDOT logo in the far right column.

Measures with performance targets have a green, yellow or red symbol showing results. MnDOT uses performance targets to meet citizen expectations, stimulate innovation, and calculate needed investment levels for transportation services. MnDOT uses surveys and interviews with citizens to help set targets for snow removal and pavement smoothness. MnDOT uses national engineering and safety standards to set bridge condition targets.

Learn More

Statewide Multimodal Transportation Plan and individual modal plans

www.minnesotagoplan.org/index.html

www.dot.state.mn.us/planning/program/index

Source: MnDOT

Performance Highlights

Minnesota's transportation system showed some positive performance results in 2011:

- Fatalities fell to below 400 – the first time this has happened since 1944.
- State bridge condition remained good, exceeding or close to targets.
- Snow and ice removal on state roads met its on-time target the last three winters.
- Interregional highway travel connections performed well above target.
- Clearance time for Metro urban freeway incidents improved, meeting target for the first time since 2000.

At the same time there were also performance challenges:

- State pavement condition declined in 2011 after improving temporarily in 2010 due to major increases in investment. Pavement condition is predicted to continue to decline, although MnDOT's Better Roads program will slow the deterioration by improving nearly 700 miles of poor roads.
- Twin Cities metro area freeway congestion dropped slightly in 2011 from its 2010 level, but is expected to resume its long-term growth trend as economic activity grows.

The mixed trends in 2011 continue to reflect the trade-offs between growing challenges and limited resources.

2011 Strengths

Safety—Fatalities on Minnesota's state and local roads fell again in 2011 to 368 — the lowest number of fatalities in a generation. Fatalities have declined 44 percent from the 2002 peak. Minnesota had the 3rd lowest fatality rate among all states in 2010 (most recent data available)—35 percent below the national average. State, federal, local and private agencies along with supportive legislation have reduced fatalities for seven categories targeted by TZD—under 21, unbelted drivers, speeding-related, run-off-the road, alcohol-related, intersection crashes, and head-on and side-swipe crashes.

Bridges—85.4 percent of state bridges on principal arterials are in good or satisfactory condition—exceeding MnDOT's target of 84 percent. The share rated poor was 3.3 percent in 2011. Bridge improvement is expected to near the 2 percent target by 2015 as a result of the estimated $2.1 billion 2008-2018 state-funded bridge program. Minnesota had the 4th lowest share of bridges rated structurally deficient or functionally obsolete in 2011—less than half the U.S. average.

MnDOT expects to continue strong performance in bridge inspection and has set an aggressive inspection goal of 100 percent on-time inspection. All Minnesota bridges receive their required safety inspections and in 2011, 96 percent of inspections were completed on time. The delay in inspections in 2011 was due to a three-week government shutdown during the inspection season. Increased funding, staffing, and equipment has driven significant improvement in on-time inspections over the past five years. MnDOT is rolling out new measures to ensure that priority bridge repairs are completed on time.

Snow and Ice—MnDOT's snow and ice operation, covering more than 30,000 lane miles, met its performance targets for clearance time to bare lanes 88 percent of the time in the winter of 2011-2012, exceeding its annual target of 70 percent.

Statewide travel connections are strong—**Interregional Corridor travel speeds** exceed MnDOT targets. Ninety-eight percent trips on IRCs outside the Twin Cities metro area can be driven at average speeds near 55 or 60 miles per hour. The IRC system accounts for only 2 percent of all the roadway miles in the state but carries about 30 percent of statewide travel.

Local airports support passenger service, private and corporate aircraft, package delivery and freight, agriculture, medical, law enforcement and emergency services. There are 113 publicly owned airports with paved and lighted runways within 30 minute drive time of about 71 percent of Minnesotans. Eighty-six percent of local airport pavement is in good condition—exceeding MnDOT's target. As a result of special bond funds in 2010 for airport runway rehabilitation, 14 airport runways in poor condition will be improved within the next two years.

2011 Performance Gains

Clearance time for Twin Cities urban freeway incidents improved in 2011 to 33 minutes, coming in under the 35 minute target for the first time in 10 years. Clearing incidents quickly helps reduce congestion and secondary crashes—MnDOT works with the Minnesota State Patrol, local police, towing companies and other emergency responders to swiftly clear incidents.

Metro Area Transit—Trips on expanding rail and express bus lines increased almost 20 percent from 2006 to 2011 and constitute 26 percent of all transit trips. Counting all forms of public transit in the metro area, including regular route and dial-a-ride buses, 2011 ridership totaled 94 million trips. This represents a slow but sustained rebound from the 2009 decline due to the recession.

MnDOT continues performance gains in making state highway facilities accessible. MnDOT completed 52 accessible pedestrian signal installations at state highway intersections in 2011 and expects to complete an additional 75 in 2012. The 2011 installations brought the share of the system with APS to 21 percent of 1,179 locations, up from 16 percent in 2010. MnDOT expects to meet its long-range target of 100 percent by applying new road design ADA accessibility standards to all construction projects and investing $2.5 million per year in dedicated funds through 2015. New measures will track improvements to curb ramps, sidewalks, and rest areas.

2011 Weaknesses

Pavement—State highway pavement condition declined in 2011 after improving temporarily in 2010. Past gains were the result of major increases in state bonding and in federal economic stimulus funds—along with increased patching, which has a very short-term benefit.

Pavement condition is predicted to continue to deteriorate under the regular investment program for 2012-2015. MnDOT's Better Roads program is slowing the increase in poor pavements over the next four years by adding $357 million toward pavement preservation to improve close to 700 miles of roads. Also, in response to the new federal transportation bill, MnDOT plans to invest an additional $100 million in pavement projects in 2014-2016. This is predicted to result in 8.6 percent poor pavement overall in 2016, which falls within the 5-9 percent range that represents an acceptable risk.

2011 Challenges

Metro freeway congestion—Peak period congestion (speed below 45 mph) on Twin Cities metro area freeways dropped slightly in 2011, from 21.5 percent of the system in 2010 to 21 percent. A contributing factor in the decrease was the completion of the Crosstown project at I-35W and Highway 62. Even so, congestion in 2010 and 2011 represent the highest levels in the last 10 years and congestion is expected to increase as economic activity increases in the future.

To mitigate congestion and move more people, MnDOT and the Metropolitan Council have agreed to pursue an arsenal of strategies:

- A larger system of MnPASS priced lanes to provide a reliable, congestion-free alternative,
- Active traffic management with dynamic signing, variable speed limits and dynamic shoulder lanes to increase throughput, capacity and reliability on existing roads,
- Quick clearance legislation passed in 2010 to speed removal of crashes,
- Expanded express bus service and lightrail transit, and

- Lower-cost, high benefit road projects and selected major capacity expansions.

Greater Minnesota Bus Service—Greater Minnesota is projected to add nearly half a million residents by 2025. Meeting the need for transit service in rural areas and in growing urban areas like Rochester, Mankato and St. Cloud is a challenge for local public transit providers and MnDOT. Total hours of bus service in 78 counties have slowly trended upward since 2005 but are still well below the target level of service. With future projections of flat revenues and inflation, MnDOT expects a widening gap between the target and the level of service.

Transportation fuel use—Minnesota transportation fuel consumption has been relatively flat for the past three years after a long period of steady growth. Transportation fuel consumption and travel reflect broad economic conditions along with fuel efficient vehicles and other factors. To meet the goal set in the Next Generation Energy Act goal of reducing greenhouse gas emissions, transportation fuel use would need to decrease by 4% by 2015. In 2010 Minnesota ranked 23rd among the states in per capita gasoline use for transportation.

Minnesota relies on fuel taxes for a major share of transportation funding. State fuel tax revenue is expected to be flat from 2013 to 2015.

Economic Competitiveness

National and global connections—MnDOT's goals include supporting Minnesota's economy and quality of life. Citizens and the economy benefit when transportation assets are maintained in good physical condition: crashes are reduced, travel times are improved, and there is adequate capacity to move business travelers and freight. Minnesota has strong air, rail and waterway systems to support commerce, but any shifts in indicators should be watched closely.

Minnesota has nearly universal access to airports for private and commercial aviation, and scheduled air service to 138 nonstop destinations in the nation and the world from Minneapolis-St. Paul—ranking 10th among U.S. metro areas. Available seat miles (total available airline seats times miles flown) fell significantly during the last decade—MSP ranks 17th in the nation, down three places from 2001—but demand for air travel fell far less. Seat miles available in Duluth increased 80 percent from 2001 to 2010, and stayed nearly steady for Rochester.

Minnesota's water transportation system is vital to agriculture, energy and mining. After rebounding in 2010, annual shipments to and from Minnesota ports declined slightly in 2011. Taconite shipments on Lake Superior increased by about 25 percent from 2010 to 2011, but grain and coal shipments declined offsetting that increase. Lack of federal funds to dredge ports and rivers and aging undersized locks downstream from Minnesota limit the tonnage carried by Great Lakes ships and Mississippi River barges.

Minnesota freight rail shipments decreased by more than 10 percent from 2008 to 2009. While more recent data is not yet available, other indicators point to a slight increase in tonnage in 2010 and 2011 due to the end of the recession in the rail industry. 2012 volumes are projected to return to record 2006 levels. To maintain competitiveness, MnDOT's Statewide Freight and Passenger Rail Plan recommends addressing rail bottlenecks and upgrading deficient track to handle higher speeds and heavier rail cars.

Source: MnDOT

Minnesota 2011 Transportation Results Scorecard

Green: At or above target | Yellow: Moderately below target | Red: Seriously below target | MnDOT Primarily Responsible | Target

Measure	Score	Result	Target	Trend	Analysis
traveler safety					
Minnesota Traffic Fatalities: All state and local roads	Green	368 in 2011	400 by 2010	509, 454, 419, 408, 368 (2007–2011) Better	Final 2011 data indicate 368 fatalities—the lowest number of fatalities in a generation. Annual fatalities are down by 141 since 2007. **Comparison**—3rd lowest state in 2010, with fatality rate 35% below U.S. average.
infrastructure preservation					
Bridge Condition: % Good and Satisfactory, State principal arterials	Green	85.4% 2011	84%	88.9%, 88.5%, 87.4%, 86.9%, 85.4% (2007–2011) Better	In 2011 bridges on principal state roads in Good or Satisfactory condition fell to 85.4%, which is still meeting target. The percent rated Poor increased slightly to 3.3%, but is projected to improve and be close to the 2% target in 2015. **Comparison**—Minnesota has the 4th lowest percentage of bridges rated structurally deficient or functionally obsolete—less than half the national average—according to 2011 rankings by Better Roads magazine.
Bridge Condition: % Poor, State principal arterials	Yellow	3.3% 2011	2%	3.1%, 3.2%, 3.5%, 3.2%, 3.3% (2007–2011) Better	
Pavement: Ride Quality Poor, All state highways, % of miles	Green	6.6% 2011	5%-9% performance band	4.4%, 4.6%, 6.9%, 5.2%, 6.6% (2007–2011) Better	State pavement condition declined in 2011 after improving slightly in 2010. Overall, 6.6 percent of state highway miles were in poor condition in 2011. Both principal arterial pavement measures fell short of their targets. MnDOT's Better Roads program will slow the deterioration of pavements by improving nearly 700 miles of poor roads. Additionally, increased pavement investment in response to the new federal transportation bill is predicted to result in 8.6 percent poor in 2016. This falls within the 5-9 percent range for poor pavement that represents an acceptable risk. MnDOT is committed to keeping poor pavements within this acceptable range, though this will take significant investment in the years to come. Another pavement quality measure, appearing in the Minnesota Dashboard, is discussed in the Pavement section.
Pavement: Ride Quality Poor, State principal arterials, % of miles	Yellow	4.8% 2011	2%	2.6%, 3.4%, 5.5%, 3.7%, 4.8% (2007–2011) Better	
Pavement: Ride Quality Good: State principal arterials, % of miles	Yellow	67.3% 2011	70%	66.3%, 67.0%, 63.7%, 70.2%, 67.3% (2007–2011) Better	
maintenance					
Snow and Ice: Frequency of Achieving Bare Lane Within Target Hours, all storms and routes	Green	88% 2011-12	70%	75%, 68%, 79%, 79%, 88% (2007-8–2011-12) Better	During 2011-12 winter season, MnDOT achieved target clearance times 88% of the time, exceeding its 70% target. MnDOT has met its system-wide target in all but one of the last five years.
Bridge Safety Inspections: % Completed On Time, all state bridges	Yellow	96.2% 2011	100%	86.3%, 89.2%, 94.1%, 99.4%, 96.2% (2007–2011) Better	In 2011, 100% of bridges with safety inspections due received inspection, and 96.2% were inspected within the required time period (calendar due date + 30 days). The delay in inspections in 2011 was due to a three-week government shutdown.
Customer Satisfaction with State Highway Maintenance: on a scale from 1 to 10	Yellow	5.9 2011	7.0	6.2, 6.4, 6.0, 6.1, 5.9 (2006, 2008–2011) Better	Overall customer satisfaction with road maintenance fell in 2011 to its lowest rating ever measured. This result is correlated strongly with pavement ride quality. Note: there was no survey in 2007.

Measure	Score	Result	Target	Trend	Analysis
national and global connections					
Airline Annual Available Seat Miles from MSP on scheduled commercial flights	N/A	19.4 billion miles 2010	tracking indicator	20.9 21.2 20.6 19.5 19.4 2006 2010 ▲ Better	Annual available seat miles for Minneapolis-St. Paul Airport have fallen since 2007, reflecting the impact of a poor economy on air travel.
Port Shipments to and from MN Great Lakes & river ports: annual tonnage	N/A	70.4 million tons	tracking indicator	80.1 75.2 52.3 71.9 70.4 2007 2011 ▲ Better	Waterway tonnage declined slightly in 2011. Northbound shipments of cement and salt increased, southbound shipments of grain and coking coal fell and southbound shipments of asphalt grew significantly. **Comparison**—Minnesota ranked 23rd of the 50 states.
Shipments on Minnesota Railroads: annual tonnage from, to and through Minnesota	N/A	203 million tons 2009	tracking indicator	228 238 236 232 203 2005 2009 ▲ Better	Freight rail shipments decreased in 2009, the most recent year with data. **Comparison**, Minnesota ranked 13th of the 50 states by tons of freight carried by rail (2009 data).
statewide connections					
Interregional Corridors: Greater MN, % of Miles +/- 2 mph of Target Speed (55, 60 or 65 mph) or faster	●	98% 2011	95%	98% 98% 98% 98%* 98%* 2009 2010 2011 2015 2021 *projected ▲ Better	98% of major interregional routes in Greater Minnesota can be driven within 2 mph of the corridor target speed. This performance is predicted to continue through 2021.
Aviation Access: % of Minnesota population within 30 minute drive time of an airport with paved and lighted runway	N/A	71% 2010	tracking indicator	Prior to 2010, MnDOT measured the % of residents within 20 miles of an airport. The new measure is based on drive time.	113 local paved and lighted airports provide ready access to 71% of Minnesotans for shipping, recreation, medical services, law enforcement, agriculture, and fire fighting. Improved GIS technology has allowed a more precise, though significantly different measure from that used in 2006-2009.
twin cities mobility					
Twin Cities Urban Freeway System Congestion: % of miles below 45 mph in AM or PM peak	N/A	21.0% 2011	tracking indicator	20.9% 17.3% 18.2% 21.5% 21.0% 2007 2011 ▼ Better	Metro congestion fell in 2011 to 21.0%, from 21.5 % in 2010. A contributing factor was the completion of the Crosstown Project at I-35W and TH 62. Congestion is expected to grow as economic activity increases.
Clearance Time for Metro Urban Freeway incidents: 3 yr. average	●	33 minutes 2011	35.0 minutes	37.3 37.1 37.7 33.0 35.3 2007 2011 ▼ Better	2011 average clearance times decreased, coming in under the 35 minute target for the first time since 2000.
Annual Rail and Express Bus Transit Ridership: Express buses (all providers), light rail, commuter rail	N/A	24.4 million 2011	tracking indicator	21.5 23.9 22.7 24.0 24.4 2007 2011 ▲ Better	Twin Cities metro area rail and express transit ridership grew by more than 13% from 2007 to 2011, surpassing overall transit growth of 5.5%. Ridership growth was distributed equally between rail and express bus transit.
greater minnesota metropolitan and regional mobility					
Greater Minnesota Bus Service Hours: Public transportation	▲	1.08 million hours 2011	1.60 million hours 2015	1.6 in 2015; 1.04 1.01 1.03 1.03 1.08 2007 2011 ▲ Better	Apart from a small drop in 2008, Greater Minnesota bus service hours were between 1.04 and 1.08 million hours per year from 2007 to 2011. This trend of little or no growth is expected to continue, due primarily to flat revenue projections and inflation. With transit need projected to increase, MnDOT expects a widening gap between need and the level of service.
community development and transportation					
ADA: Accessible Pedestrian Signals, % of state highway intersections with APS	N/A	21% 2011	100% by 2030	10% 16% 21% 27%* 2009 *planned 2012 ▲ Better	Compliant signals increased in 2011 to 21%. Dedicated funds of $2.5M/yr and new road design guidelines will gradually increase the percentage of state road intersections with accessible signals, and improve curb ramps and sidewalks.
Bike, Walk and Transit Share of commuter trips: large Minnesota metro areas	TBD	7.5% share 2010	tracking indicator	7.0% 7.1% 7.6% 7.5% 7.5% 2006 2010 ▲ Better	In major metropolitan areas, bicycle commuting, walking and public transit combined grew from 7% to 7.5% from 2006 to 2010. Public transportation showed the most growth at nearly 18%.
energy and the environment					
Transportation Fuel Consumption: Billions of gallons sold in Minnesota	N/A	3.04 billion 2011	tracking indicator	3.25 3.16 3.05 3.08 3.04 2007 2011 ▼ Better	Fuel consumption fell slightly in 2011, but has been relatively flat the last three years. Overall, fuel consumption in 2011 was down 8.4% from a 2004 high of 3.32 billion gallons. **Comparison**—in 2010 Minnesota was 23rd in gasoline use for transportation.

Traffic Fatalities

Traveler Safety

Measure

Total traffic fatalities and serious injuries from vehicle crashes

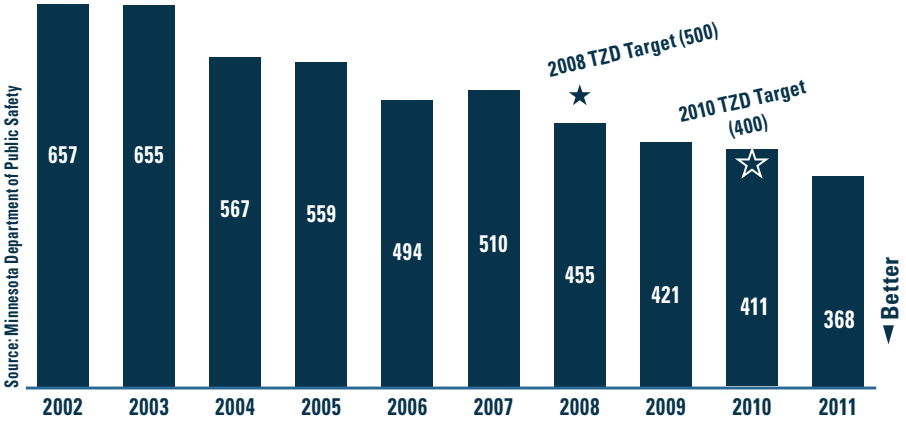
System

All state and local roads (141,000 miles)

Why this is important

Nationally, vehicle crashes are the leading cause of death for people younger than 35, and the fifth leading cause of death overall. On an average day in 2011, at least one person died on Minnesota highways and more than three were seriously injured. Serious injuries prevent walking, driving or continuing other activities of daily life, creating significant costs for families and for society. MnDOT and its partners have made reducing fatalities and associated severe injuries one of their highest priorities.

Minnesota traffic fatalities on all state and local roads



Traffic fatalities by category 2002-2011 (crashes can be counted in more than one category)

Category	2002 Total	Preliminary 2011 Total	10 Year Percentage Change
Single vehicle run-off-the-road	158	110	-30%
Unbelted	299	120	-60%
Under 21	160	60	-63%
Speed related	184	80	-57%
Alcohol related	239	136	-43%
Intersection related	255	133	-48%
Head-on/sideswipe	115	83	-28%

Source: MnDOT Office of Traffic, Safety and Technology

Our Progress

Fatalities from Minnesota traffic crashes decreased for the fourth straight year in 2011 to 368. This is the first time Minnesota had fewer than 400 traffic fatalities since 1944. This is substantial progress toward the target of fewer than 350 fatalities by 2014. Serious injuries have also been on the decline since 1999; there were 1,159 in 2011. Minnesota has set a target of fewer than 850 serious injury crashes by 2014. Minnesota has reduced fatalities caused by seven categories of crashes that have been identified for aggressive strategies in the state's highway safety plan and by recent laws passed by the Legislature. However, bicycle and pedestrian-related fatalities have not followed the same decreasing pattern.

Source: MnDOT

What We Are Doing

Minnesota's Toward Zero Deaths partnership and MnDOT's Strategic Highway Safety Plan establish goals and strategies for reducing fatal and serious crashes. March 2013 will mark the culmination of a three-year, $3.8 million dollar effort to provide each of the eight MnDOT Districts and 87 counties with their own safety plans. Minnesota's TZD partner organizations are aiming for targets of 350 or fewer fatalities and 850 or fewer serious injuries by 2014. The departments of Public Safety, Transportation, and Health lead the TZD initiatives. Other partners include the Federal Highway Administration, Minnesota county and city engineers, the Center for Transportation Studies at the University of Minnesota, and other traffic safety partners.

Strategies

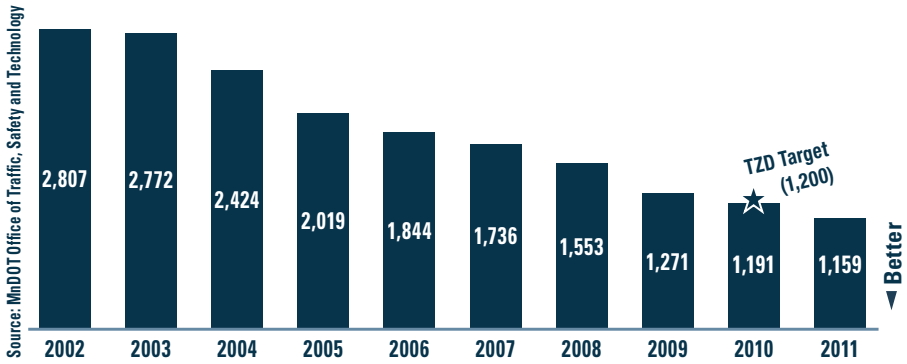
In order to promote projects that will introduce safety strategies across jurisdictions, all MnDOT districts will have a completed safety plan by the end of 2012, and all counties by March 2013. The plans will identify strategies based on local crash trends. In the past, the focus has been on reactive improvements to locations with a history of crashes. Current strategy, developed through the SHSP, takes a proactive approach to identify and improve road segments and intersections with a high risk of future crashes. The major TZD strategies can be summarized as the Four Es:

Engineering—Roadway safety enhancements with a high return on investment, such as rumble strips, intersection lighting, and improved signing, reduce highway injuries and deaths. To prevent deadly crossover crashes, cable median barriers have been installed statewide on 289 miles of vulnerable four-lane divided roadways, with an additional 77 miles planned. A primary focus is placed on engineering solutions for crash types that are most likely to result in fatal and serious injury crashes, such as angle crashes at intersections and run-off-the-road crashes in rural areas.

Enforcement—The State Patrol and local law enforcement are emphasizing enforcement of DWI, seat belts and speed laws. The High Enforcement of Aggressive Traffic program is a three-year effort to reduce the number of speed-related crashes. It will be evaluated in 2012. Enforcement has traditionally been considered an effort exclusive to police officers. However, others can assist in enforcing good driving behaviors. For example, employers can institute policies such as prohibiting cell phone use while driving a company vehicle.

Education—Helping drivers understand the risks associated with behaviors, such as not wearing seat belts and drinking and driving, can help reduce fatalities and injuries due to those factors. Recent practice has been to incorporate education and enforcement activities to heighten the awareness

Serious traffic injuries on all Minnesota state and local roads



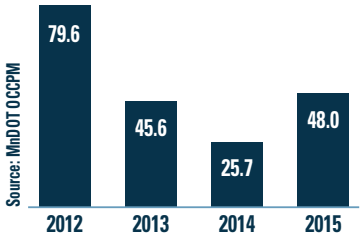
Funding by source for HSIP projects, state fiscal years 2005-2011

State fiscal year	HSIP funds (millions)	Total state and federal funds (millions)
2007	$14.0	$73.1
2008	$15.0	$56.6
2009	$25.1	$40.3
2010	$26.9	$36.6
2011*	$17.3	$19.0

* The definition of safety as an investment category was narrowed in 2011.

Source: MnDOT Office of Traffic, Safety and Technology

2012-15 STIP planned safety investments ($millions)



What We Are Doing (Continued)

of key messages. For example, an annual public safety announcement detailing the importance of seat belt use is paired with special enforcement activities focused on enforcing the seat belt laws.

Emergency medical and trauma services—The Minnesota Department of Health is working with Minnesota hospitals and health care providers on new services to transport crash victims rapidly to the right type of care facility to address their injuries. Additionally, the statewide trauma system will provide an opportunity to evaluate the effectiveness of the care people receive after a motor vehicle crash has occurred.

The Four Es are vital to moving Minnesota toward zero deaths. Recent efforts have focused on a combination of activities across each of the Four Es. This approach is expected to continue the reduction of fatal and serious injury crashes in the future.

Investment/Spending

There are four categories of Investments intended to reduce the number of traffic fatalities and serious injuries:

- **Roadway infrastructure with low-cost safety improvements** are typically part of a pavement preservation project. Some examples are: rumble strips, centerline stripes, safety edges, and pavement markings.
- **Lower cost, high benefit safety features** can be standalone HSIP projects, project originating from District Safety plans or standalone bicycle/pedestrian treatments. Of the $144M in identified safety treatments in the completed District Safety Plans, 75 percent ($108M) are lower-cost, high benefit safety solutions and 25 percent ($36M) are investments considered to be Roadway Infrastructure with low-cost safety improvements.
- **Sustained crash reduction treatments** address spot locations that show, through long-term historical crash data, significant infrastructure-based high crash totals. Typical engineering/infrastructure solutions provide benefits beyond solving the relevant safety issue.
- **HSIP investment in reduction of driver behavior-based crashes** are investments focused on the "Four E's" (engineering, education, enforcement & emergency medical and trauma services), to reduce crashes in which driver behavior is a contributing factor (93 percent of all crashes).

The Highway Safety Improvement Program was established as a core federal program in 2005. HSIP is intended to significantly reduce fatalities and serious injuries on all roads. HSIP funds are distributed across the MnDOT districts based on total fatalities and are divided between MnDOT and local agencies.

How We Decide

MnDOT's Office of Traffic, Safety and Technology coordinates planning, strategies, performance measures and decision-making criteria across the state. MnDOT district traffic safety engineers, planners and local road authorities play an integral role in the decision-making process. MnDOT's State Aid for Local Transportation Division provides outreach to local road authorities for safety projects. Many safety features are built on state and local roadways as part of larger construction projects. The funding for these safety features is included in overall construction costs.

MnDOT uses the State Highway Investment Plan to fund safety strategies. Since about half of fatalities occur on local roads, about half this money is targeted to counties and cities. MnDOT solicits local safety projects in greater Minnesota through regional Area Transportation Partnerships. Cities and counties submit proposals for projects that are competitively selected by an expert committee at MnDOT. The Metropolitan Council administers the process in the Twin Cities metro area.

High Return On Investment Safety Examples

MnDOT achieves significant safety benefits by installing rumble strips at a cost of $4,000 per mile allowing for hundreds of miles of safety improvements compared to the $15-$25 million per mile cost of a rural interchange. Similarly, MnDOT improves traveler safety by installing cable median barrier for $150,000 per mile compared to $4-$8 million per mile for four lane highway expansion.

For Comparison

In 2010, Minnesota's fatality rate per 100 million vehicle-miles traveled was 3rd lowest of the 50 states, according to USDOT. Minnesota's 2010 fatality rate was 0.73, 35% lower than the national rate of 1.13.

Learn More

MnDOT Office of Traffic, Safety and Technology
www.dot.state.mn.us/trafficeng/safety

Minnesota Department of Public Safety Office of Traffic Safety
www.dps.state.mn.us/ots

Toward Zero Deaths Initiative
www.minnesotatzd.org

Bridge Condition

Infrastructure Preservation

Measure

Structural condition of bridges

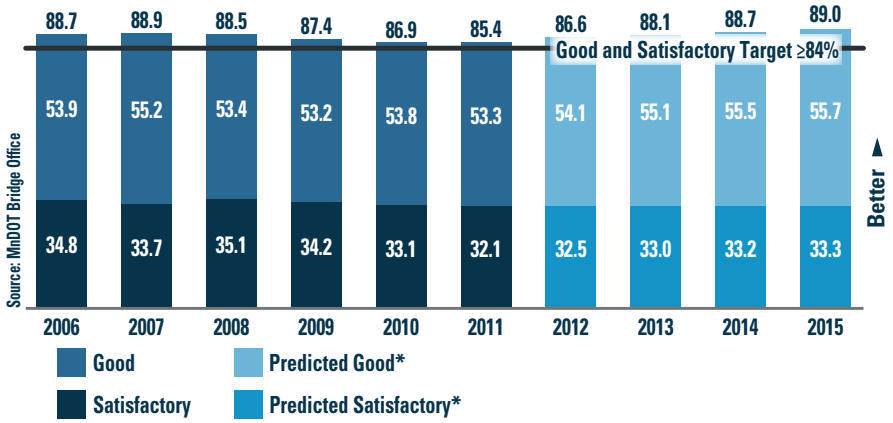
System

Bridges over 20 feet and on state highway principal arterials (2,530 bridges), which comprise 85 percent of all state bridges, measured by deck area

Why this is important

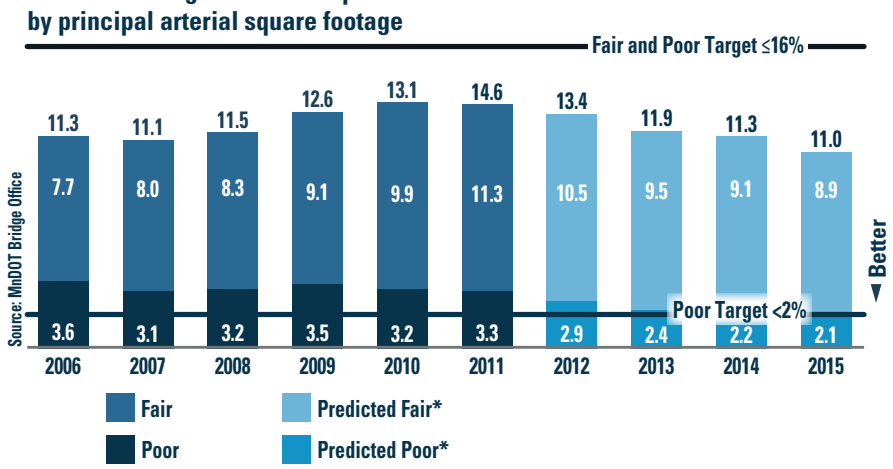
Bridges provide critical economic links across Minnesota. Timely maintenance and replacement of bridges reduce long-term costs and ensure safety. Preserving the structural integrity of Minnesota's bridges is a top priority for MnDOT. New directives and funding from the 2008 Legislature support this goal.

Percent of bridges in good and satisfactory condition by principal arterial square footage



*Predicted Condition based on the 2012-15 STIP

Percent of bridges in fair and poor condition by principal arterial square footage



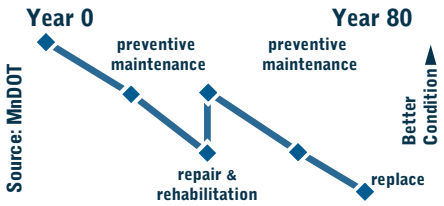
*Predicted Condition based on the 2012-15 STIP

Our Progress

In 2011, 85.4 percent of state principal arterial bridges were in good or satisfactory structural condition, exceeding the target of 84 percent. Another 14.6 percent were in fair or poor condition—well within the performance target of 16 percent or less.

MnDOT has set a goal that the share of principal arterial bridges in poor structural condition be 2 percent or less. The poor share improved to a new low of 3.1 percent in 2007, rose slightly to 3.5 percent in 2009, and then was reduced to 3.3 percent in 2011. Improvement to near the target level of 2 percent is predicted based on the aggressive 2012-15 construction program. Poor condition bridges are termed "structurally deficient" by the US Department of Transportation. They are safe to drive on, but are approaching the end of their useful lives. Unsafe bridges are closed promptly.

Bridge life cycle



What We Are Doing

MnDOT is carrying out a major bridge program to accelerate replacement and repair of a significant number of state bridges through 2018. The 2008 Legislature provided new funding through Chapter 152 allowing approximately 40 fracture critical bridges and 80 structurally deficient bridges to be replaced or repaired. Twenty other bridges not included in the count either already had work underway before the Chapter 152 program started, or are not required to be addressed by the program but have work planned by 2018. By the end of the 2012 construction season, 77 bridges in the program will be substantially complete.

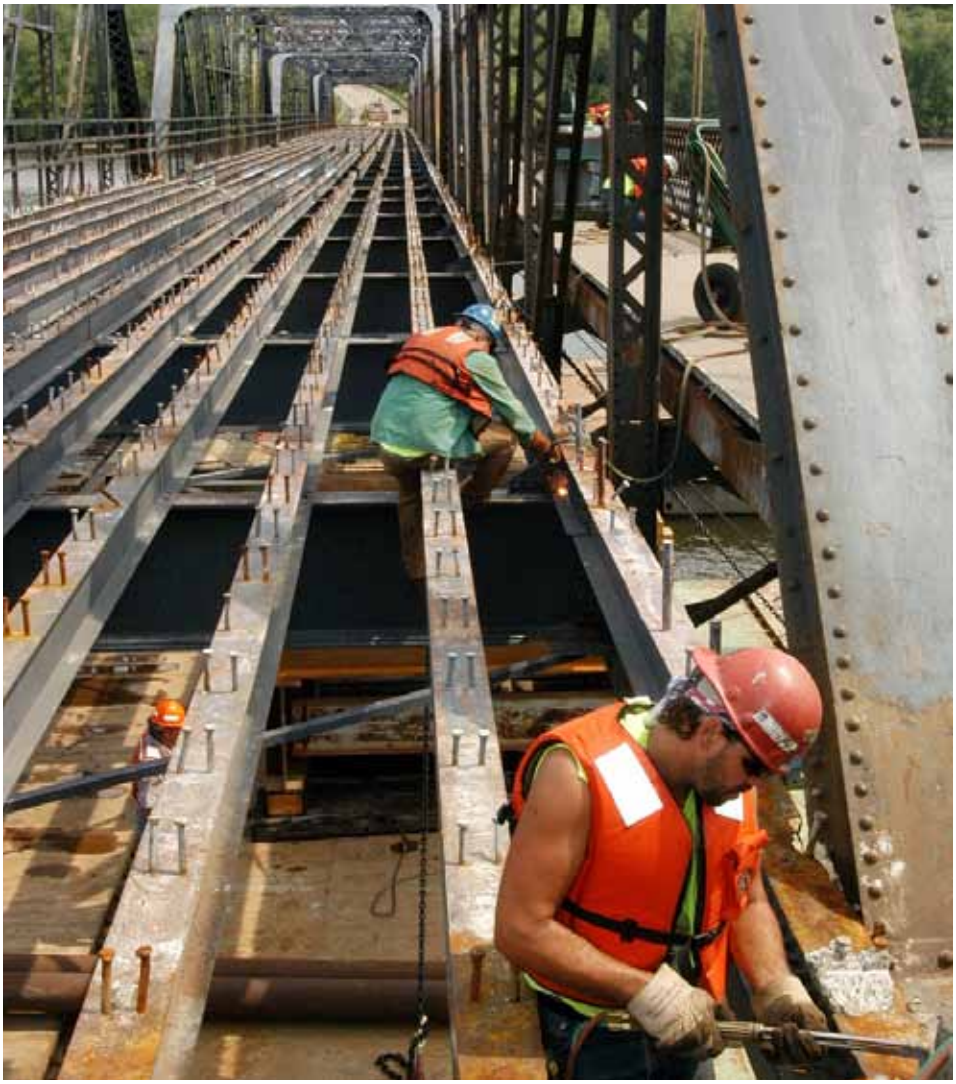
MnDOT, like other departments of transportation, has long used the national system of rating bridges good, satisfactory, fair or poor for their structural condition based on a numeric scale. However, on rare occasions, other factors could also put a bridge at risk, requiring closure for repairs—such as geometric factors, a bridge's fracture critical nature and other special vulnerabilities, or scouring from excessive river flows.

If it is a bridge with high traffic volumes, heavy truck traffic or long detours, the cost of closing it is higher for the public and MnDOT. Therefore, in 2010, with MnDOT's support, the Legislature added new criteria for prioritizing bridges that will be used to guide the selection and scheduling of bridges for repair or replacement.

Prioritization also will include input from MnDOT district bridge engineers and planners. Based on traditional structural ratings and the new risk-based criteria, MnDOT will use this new Bridge Replacement and Improvement Management model for planning and programming projects in the future.

Strategies

- Bridge preservation—MnDOT manages state bridges to meet performance targets, to ensure safety and to extend the life of bridges in good or satisfactory condition within the normal 70- to 80-year life cycle.
- Bridge improvement—MnDOT rehabilitates bridges to get full, efficient use during their



Source: MnDOT

What We Are Doing (Continued)

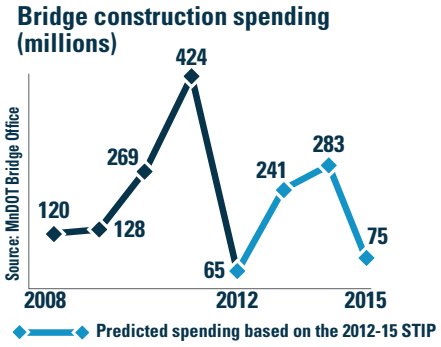
service life. The condition of a bridge will decline over its first 40 years of use until rehabilitation is needed. A rehabilitation project brings a bridge back into good condition until it gradually deteriorates over the years and replacement is necessary.

Sustainability

To best manage the state's available funds for bridges, MnDOT plans repair and rehabilitation projects to minimize costs over the life of the bridge while maximizing the safe and useful life of the bridge. Once a bridge reaches poor condition, based on federal rating definitions, replacement is most often the best solution. However, replacement is often scheduled to coincide with other projects in a highway corridor. Therefore, lower-cost improvements are often used to safely extend the life of the bridge.

Investment/Spending

MnDOT's investment in bridges has increased significantly in the last decade from less than $50 million in 2001. Under the Chapter 152 Bridge Program, MnDOT is investing an estimated $2.1 billion through 2018 for state bridges using about $1.2 billion in regular state and federal funds and $900 million in bonds sold by the state. In December 2009, an additional $30.3 million in bridge projects were funded through the American Recovery and Reinvestment Act, with the majority of work completed as of this date.



How We Decide

The MnDOT Bridge Office guides inspection, maintenance and construction of bridges, and oversees the design of new state highway bridges. Actual inspection, construction, reactive and preventive maintenance are carried out by MnDOT's eight districts. The Bridge Office collaborates with district bridge engineers, planners and maintenance engineers to identify both near-term and long-range bridge maintenance, repair and replacement needs, and cost-effective and safe solutions. Local communities may also participate in decisions affecting them.

The Bridge Office provides guidance to districts on whether a bridge should be replaced or repaired based on factors such as age, structural condition rating, repair and reconstruction history, and the traffic level affected by any construction activity. The districts use this guidance along with their own hands-on knowledge to formulate a strategy to address bridge needs across their district. Bridge, safety, pavement, mobility and other needs are considered and scheduled according to available funding. Projects are selected by the districts and ultimately are approved for funding by MnDOT's executive-level Transportation Program Investment Committee and the commissioner.

In 2008 the Legislature set strong priorities and guidelines in law for replacement or repair of bridges with fracture critical designs and bridges rated as structurally deficient. Legislative criteria require MnDOT to classify all bridges in the program into three tiers. In general, all bridge projects within a higher tier must be addressed before starting projects in a lower tier. Once the Bridge Replacement and Improvement Management tool is calibrated, the rankings will also be used for making investment decisions.

For comparison

Minnesota has the 4th lowest percentage of bridges classified as either structurally deficient or functionally obsolete—less than half the national average—according to a 2011 ranking published by Better Roads magazine.

Learn More

MnDOT Bridge Office
www.dot.state.mn.us/bridge
Nancy Daubenberger–nancy.daubenberger@state.mn.us

MnDOT Office of Capital Programs and Performance Measures
Trunk Highway Bridge Improvement Program
www.dot.state.mn.us/planning/program/pdf/CH152AnnualInventoryReport2012.pdf

Minnesota Office of the Legislative Auditor
2008 Legislative Auditor's Report, State Highways and Bridges:
www.auditor.leg.state.mn.us/ped/2008/trunkhwy.htm

Pavement Condition

Infrastructure Preservation

Measure

Percent of roadway miles in good and poor condition

System

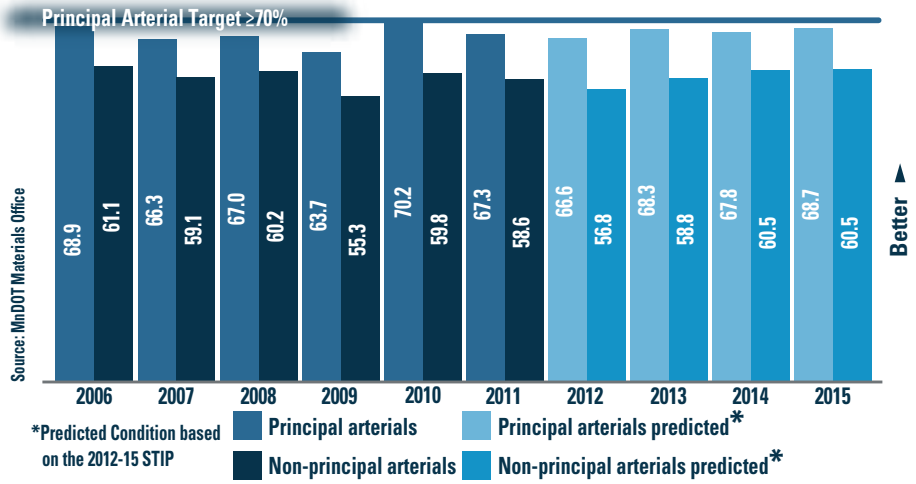
State highway principal arterials (7,570 roadway miles, 53 percent of total—the highest traffic volume roads)

State highway non-principal arterials (6,740 roadway miles, 47 percent of total) mostly in Greater Minnesota

Why this is important

Preserving the functional and structural integrity of Minnesota's highways is a priority for MnDOT. Timely repair and replacement reduce long-term costs. Also, MnDOT customer research has found that Minnesotans' satisfaction with overall state highway maintenance is greatly affected by highway smoothness.

Percent good pavement ride quality state principal and non-principal arterials



Source: MnDOT

Our Progress

The share of miles on state principal arterials (the highest traffic volume roads) with a good quality ride decreased from 70.2 percent in 2010 to 67.3 percent in 2011, falling below the target of 70 percent. The share of principal arterials rated poor increased from 3.7 percent in 2010 to 4.8 percent in 2011. Pavement condition on non-principal arterials also declined in 2011 compared to 2010.

Overall, 6.6 percent of state highway miles were in poor condition in 2011, compared to 5.2 percent in 2010. This falls within the range of 5 to 9 percent poor that MnDOT has determined represents an acceptable risk.

In 2011, the Better Roads program was developed in response to a risk assessment which found that deteriorating pavement is MnDOT's most serious problem. The program is slowing the increase in poor pavements over the next four years and improving nearly 700 miles of roads.

In response to changes in funding programs and additional performance requirements in the new federal transportation bill, MnDOT plans to add or upgrade $100 million of Interstate pavement projects in 2014-2016. This increased investment is predicted to result in 8.6 percent poor in 2016.

MnDOT is committed to keeping poor pavements in the 5-9 percent range, though this will take significant investment in the years beyond 2016.

To ensure alignment with our customers' expectations, market research was conducted in the fall of 2010 to test our technical classifications for pavement quality. Customers were driven over varying pavement sections and asked to evaluate each for smoothness and roughness. This research confirmed that customer ratings and technical measures yielded similar results.

Pavement quality targets will be reevaluated in the near future to reflect MnDOT's risk assessment results, customer expectations, the update to the 20-year State Highway Investment Plan, and the new federal transportation bill. This bill establishes a National Highway Performance Program that includes minimum standards for the condition of Interstate highway pavements.

The Minnesota Dashboard, which tracks how all state agencies are performing and identifies areas in need of improvement, includes a pavement performance indicator. The percent of pavement in good condition reported in this dashboard combines principal and non-principal arterials in good condition and scores moderately below target.

What We Are Doing

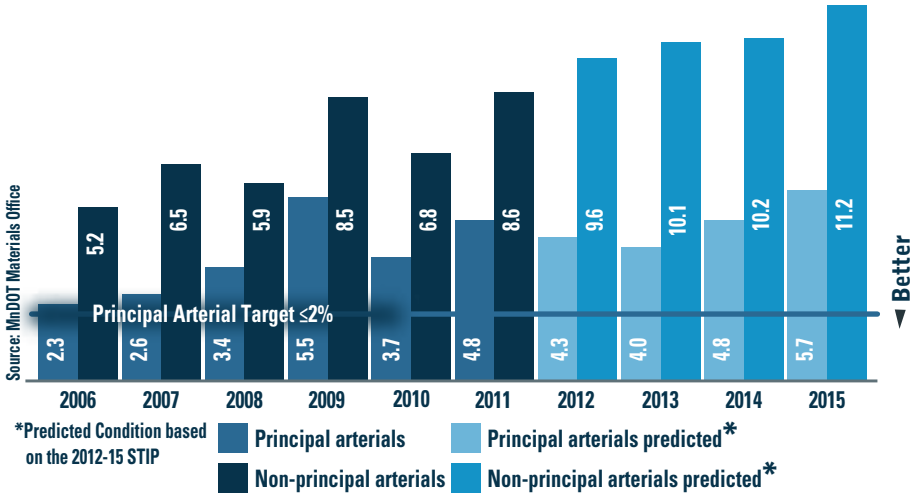
MnDOT's objective is to preserve the structural integrity of its pavements in good condition and minimize the share in poor condition by doing preventive maintenance, rehabilitation and replacement at the right times. Once pavements are in poor condition, the options for cost effective repair are limited. To minimize life-cycle costs, pavement engineers recommend the most cost-effective treatment for every segment of state road to help achieve the twin objectives of smooth ride and maximum service life.

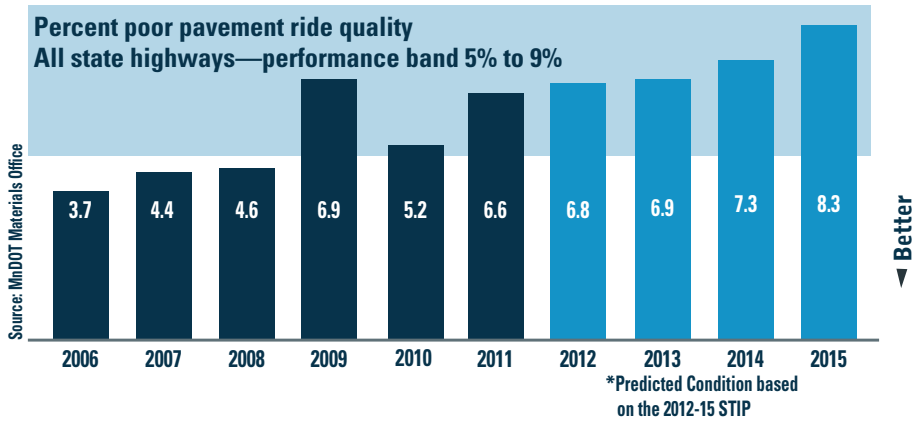
Strategies

MnDOT is continually pursuing better ways to get more value for each dollar invested in pavement and to build longer lasting pavements. Strategies include:

- **Low-cost maintenance and repair**—Using recycled materials, innovative pavement designs (such as thin concrete overlays and full-depth reclamation), or deploying low-cost preventive maintenance treatments (such as chip seals and micro-surfacing).

Percent poor pavement ride quality
state principal and non-principal arterials





What We Are Doing (Cont.)

- **Performance-based design**—Focusing projects to cost-effectively meet pavement and safety performance needs.
- **Alternate Bidding**—Providing two comparable repair strategies in the construction plan so the contractors can bid the most cost-effective solution, whether it is asphalt or concrete.
- **Research**—MnDOT is a lead partner in the MnROAD facility, located on I-94, near Albertville. MnROAD is a world-class research facility dedicated to testing new and innovative construction and pavement materials.

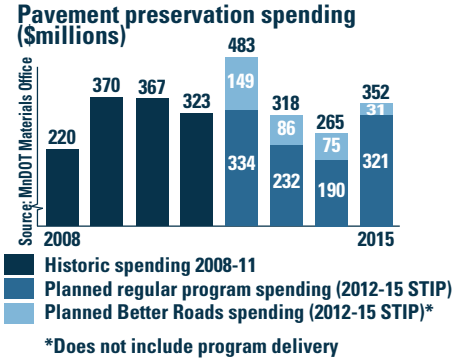
Sustainability

MnDOT is a leader in the use of recycled products. Specifications allow the use of recycled asphalt and concrete back into the roadbed and pavement. Manufactured scrap and tear-off shingles are allowed in the asphalt pavement specifications. Standards allow the use of warm mix asphalt construction, which decreases the amount of fuel used to prepare the mixture. Fly ash, a waste product generated from the combustion of coal, can be used in concrete to decrease the use of cement and to avoid sending the ash to landfills.

Investment/Spending

MnDOT invested an average of $247 million per year on pavement preservation between 2002 and 2011. Spending in the 2012-2015 STIP, which included the $357 million Better Roads program, averaged $355 million per year on pavement preservation. As of September 2012, in response to the new federal transportation bill, MnDOT plans to add or upgrade $100 million of interstate pavement projects in 2014-2016. Significant investment will be needed after the next four years to manage pavements and keep the percent poor in the 5-9 percent range in the future.

Pavement preservation spending ($millions)



How We Decide

Decisions to invest in state highway pavements are guided by a combination of each MnDOT district's hands-on knowledge, common statewide policies, performance measures and targets in the Statewide Transportation Plan and 20-year Highway Investment Plan and MnDOT executive level guidance.

MnDOT's Materials Office in Maplewood measures the physical condition of state roads every year and provides the data to districts. District pavement engineers and planners analyze the data, evaluate the percentage of highways in good and poor condition and recommend a pavement investment goal. Districts with a higher percentage of roadways failing to meet targets are expected to invest more if funds are available.

Districts annually update four-year construction programs. They identify potential pavement projects, perform field reviews and exercise engineering judgment to narrow options. They then select projects and scope them to establish a definitive cost. Other needs, such as safety, are added if consistent with the purpose of the project. When funds are limited, districts may choose short-term repairs over major rehabilitation of a roadway.

Source: MnDOT

Learn More

MnDOT Office of Materials and Road Research
www.dot.state.mn.us/materials/index.html
Keith Shannon—keith.shannon@state.mn.us

MnDOT Pavement Condition Information
www.dot.state.mn.us/materials/pvmtmgmt.html

Statewide 20-year Highway Investment Plan 2009-2028
www.dot.state.mn.us/planning/stateplan/downloadinvestmentplan.html

20-year State Highway Investment Plan 2013-2032 (under development)
www.dot.state.mn.us/planning/statehighwayinvestmentplan/index.html

Snow & Ice Management

Maintenance

Measure

Frequency of achieving bare lane within targeted number of hours

System

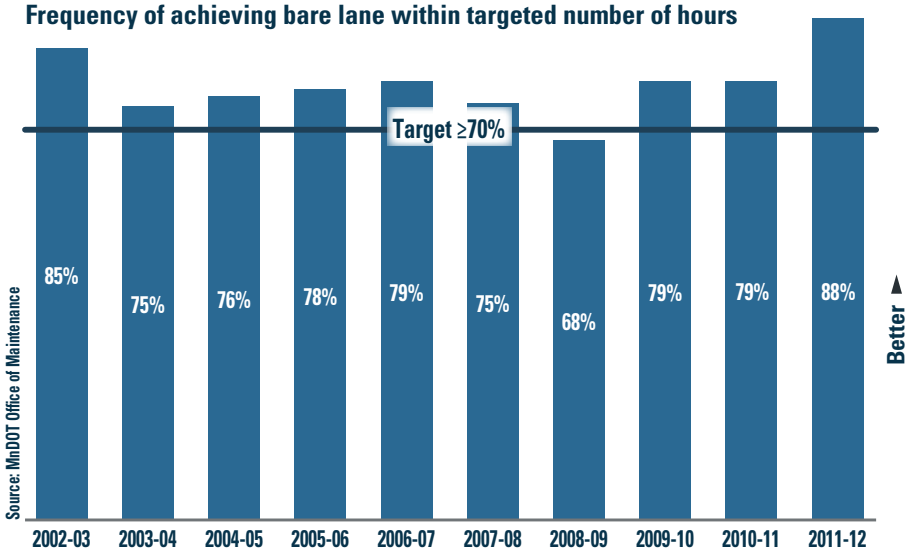
State highways (approximately 30,000 lane miles)

Why this is important

The safety of Minnesota's traveling public is the primary goal of MnDOT's snow and ice removal operations. Citizens expect to be able to carry out normal activities through most weather events and to have transportation facilities that safely accommodate travel shortly after the event has passed. Effective snow and ice management also reduces congestion caused by weather.

Source: MnDOT

Frequency of achieving bare lane within targeted number of hours



Source: MnDOT

Our Progress

In the 2011-2012 season MnDOT met its target range for snow and ice clearance time 88 percent of the time, exceeding its 70 percent target. This is the best performance since the department started recording data of this type. The chart above shows the frequency that MnDOT achieved bare lanes within the targeted number of hours, for all events and all routes from 2002-03 to 2011-12. MnDOT has met its target nine out of the last 10 seasons. Despite a lighter than normal winter, MnDOT districts deployed snowplows 28 times compared to the 31 times on average for the previous four winters.

MnDOT groups all state roads into one of five categories based on traffic volume and has a target clearance time for each. The Snow and Ice Route Classifications table shows each category, along with average daily traffic volumes, target clearance times and average clearance times for the 2011-12 winter season. MnDOT met all targets in the 2011-12 season, and historically has met targets for each roadway category as measured as an average regain time for all storms over the entire season. Temperatures, duration of snowfall, and other highly variable conditions mean that MnDOT may not meet targets for every storm.

Source: MnDOT

What We Are Doing

Snow and ice services are delivered on more than 30,000 lane miles of state highway by more than 1,700 snowfighters in eight districts. MnDOT puts a high priority on meeting snow and ice performance targets. To counteract rising fuel and material costs, MnDOT uses technology to increase efficiency. The department regularly tests and adopts innovative strategies to monitor road conditions, prevent ice build-up, and remove snow and ice. Additionally, MnDOT's maintenance research program continually brings forth new ways to improve maintenance operations.

Strategies

MnDOT uses three effective techniques to inhibit ice formation and improve the roadway surface for plowing:

- **Anti-icing**—Prevents frost and bonding between snow and ice and the pavement surface. Anti-icing chemicals are primarily liquids applied before or early in a snowfall.
- **Pre-wetting**—Adds salt brine or other commercial chemical solutions to the salt and sand mixture. This causes the mixture to stick to the road.
- **De-icing**—Uses chemical or mechanical means to break the bond that has formed between ice and the pavement surface.

MnDOT continues to advance the use of Automatic Vehicle Locating technologies in win-

Targets And Results By Roadway Category, 2011-12

Roadway Category	Average Daily Traffic	Target Clearance Time	2011-12 Average Clearance Time
Super Commuter	Over 30,000	0 to 3 hours	0.6 hours
Urban Commuter	10,000 to 30,000	2 to 5 hours	2.5 hours
Rural Commuter	2,000 to 10,000	4 to 9 hours	4.0 hours
Primary Collector	800 to 2,000	6 to 12 hours	5.5 hours
Secondary Collector	Under 800	9 to 36 hours	8.0 hours

Source: MnDOT Office of Maintenance

Source: MnDOT

What We Are Doing (Continued)

ter snow and ice services. AVL, a global positioning based system, allows tracking of resources, including chemical and material usage, as well as monitoring truck deployment. MnDOT is accelerating deployment of the Maintenance Decision Support System. MDSS is an in-cab expert computer system that provides AVL connectivity and real-time weather forecasts, and aids snowfighters in making decisions about chemical type and application rates.

Another technique MnDOT uses to control snow and ice on roadways is living snow fences, which are plantings of trees, shrubs and native grasses located along highways. Properly designed and placed, these living barriers trap snow as it blows across fields before it reaches the highway. There are approximately 245 living snow fences averaging one-fourth of a mile long adjacent to MnDOT maintained highways.

Sustainability

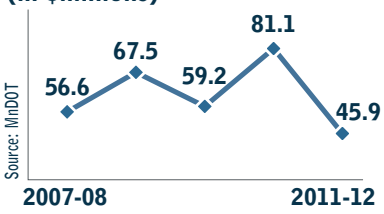
MnDOT is committed to the proper use of winter chemicals, providing extensive operator training, investments in new technology such as MDSS, and research of new chemical materials. This focus has resulted in a strong downward trend in the use of sand. Introducing less sand, salt and other chemicals into the environment controls costs and supports MnDOT's best practices for environmental stewardship.

Investment/Spending

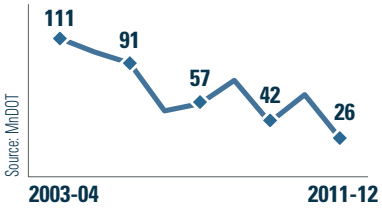
Funding for snow and ice is a top priority for all districts and fluctuates depending on the severity of the winter. Funding for winter services comes directly from each district's operating budget. In severe winters, districts may redirect summer maintenance dollars to winter snowplowing activities. Increasing prices for commodities, such as salt and diesel fuel, have also affected snow and ice expenditures. MnDOT spent $45.9 million on snow and ice control during the 2011-12 winter season, down from a record total of more than $81 million last year.

Due to the lighter than normal winter, the department was able to redirect some funding, that would typically have been spent on snow and ice services toward salt purchases for next year, and critical equipment purchases.

Snow and ice expenditures (in $millions)



MnDOT statewide sand use (thousands of tons)



How We Decide

Performance management tools are well established in MnDOT snow and ice services with a strong statewide structure of measures and targets. These targets were developed cooperatively by MnDOT's districts in the 1990s based on past experience and customer research conducted most recently in 2007.

District maintenance engineers and supervisors who understand local conditions make operations decisions such as scheduling plows and drivers. They, along with snowplow drivers, evaluate results after snow events. One evaluation tool is post-storm mapping, such as the map from District 1 to the left. MnDOT managers receive monthly district and statewide reports on results and expenditures throughout the winter season.

MnDOT supervisors and maintenance engineers work together to compare practices and implement technology, innovations, and best practices. Key to MnDOT's success at meeting its plowing targets is its extensive training, use of technology, and the commitment of its work force. MnDOT recently added simulation training as a way to keep snowfighters up-to-date on their skills. District staff receive technical assistance from MnDOT's Office of Maintenance, which also provides support services to districts for contracts for salt, chemicals and equipment; training for snowfighters; equipment purchasing; and snow plow fabrication.

Source: MnDOT

Learn More

MnDOT Office of Maintenance
www.dot.state.mn.us/maintenance/
Steven Lund—steven.lund@state.mn.us

Minnesota Department of Transportation
Snow and Ice Facts—
www.dot.state.mn.us/workzone/snowicefacts.html

Highway Systems Operations Plan
www.dot.state.mn.us/planning/program/hsop.html

Bridge Safety Inspections

Maintenance

Measure

Percent of bridge safety inspections completed on time

System

All state highway bridges over 20 feet in length (3,639 bridges)

Why This Is Important

Bridge inspections are a key component in maintaining a safe transportation system. They ensure the structural integrity of our bridges and keep the agency in compliance with state and federal laws. Bridge safety inspections also provide the condition assessment data that supports MnDOT decisions regarding bridge repair, rehabilitation and replacement. Careful monitoring of bridge conditions allows us to make the right investment at the right time to maintain safe and reliable highways for the traveling public.

Source: MnDOT

Our Progress

MnDOT has set an aggressive goal of 100 percent on-time inspections, which exceeds the target established by the National Bridge Inspection Standards. This reflects MnDOT's commitment to ensuring the safe condition of our bridges. As a result of this commitment, on-time bridge inspection performance has improved significantly during the past five years.

All bridges with safety inspections due received inspection, but the percentage on-time dropped slightly in 2011 due to a three-week government shutdown. The shutdown stopped bridge inspections for a significant portion of the inspection season. Consequently, the rescheduling of missed inspections affected personnel and resource availability for the remainder of the year. MnDOT expects to be consistently at or near the 100 percent target in future years, unless there are unavoidable delays, like the 2011 shutdown, .

All Minnesota bridges receive their required safety inspections on either a one- or two-year cycle. A bridge inspection is considered on time if it is completed within 30 days of its calendar due date.

What We Are Doing

There are three key elements to Minnesota's bridge management system: Assessment, Preservation, and Improvement. Assessment involves establishing and maintaining accurate and current information about the condition of our bridges. Preservation includes both preventive and reactive bridge maintenance activities. Improvement is the systematic planning and programming of major rehabilitations and bridge replacements projects. Decision-making in all three components of bridge management is supported by the condition data that is generated by our bridge inspection program.

Strategies

- **Staffing**—MnDOT maintains a statewide team of qualified and dedicated personnel to manage our bridge program. This includes certified inspectors, bridge maintenance workers and bridge engineers working together to gather data, to make decisions and to carry out the work.
- **Technology**—Bridge inspections in Minnesota are managed with the Structure Information Management System, which is a state-of-the-art software program developed and customized for Minnesota. SIMS serves as an "electronic bridge file," giving inspectors direct access to inspection history, photos, manuals, load rating information and other key documentation. Additionally, SIMS allows bridge owners to identify, prioritize and schedule bridge maintenance activities based on inspection findings.
- **Training**—MnDOT bridge inspectors are certified after attending a rigorous, two-week training class. They are also required to pass a field proficiency test.

Sustainability

A proactive regimen of condition assessment and preventive maintenance helps Minnesota bridges stay in good condition longer. Regular inspections and maintenance help to slow the deterioration rate of bridges and defer the necessity of major rehabilitation and replacement efforts for as long as possible. Extending the service life of a bridge ensures that Minnesota makes the most of its transportation

Source: MnDOT

What We Are Doing (Continued)

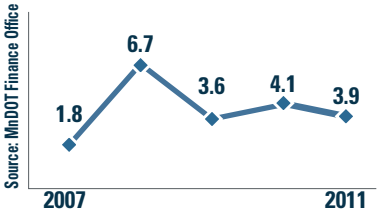
investments. Forestalling major bridge projects preserves materials and reduces economic and environmental disruption.

Investment/Spending

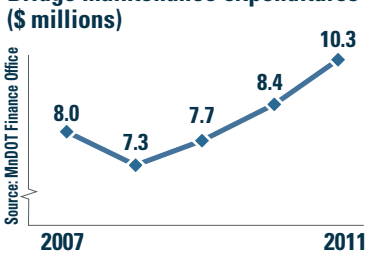
Expenditures for bridge inspections increased starting in state fiscal year 2006, coinciding with a change in federal regulations that increased the inspection frequency for fracture critical bridges. Expenditures for bridge inspection peaked in fiscal 2008 when the governor mandated accelerated inspections for all bridges. These expenditures have stabilized during the past two years and are expected to remain at that level for the foreseeable future.

Bridge maintenance expenditures have been relatively stable during the past four years. A recent study of bridge maintenance needs identified that additional expenditures in this area could produce a large benefit in preserving our bridge infrastructure. This recognizes that small investments in bridge maintenance activities can delay or eliminate the need for large future investments in bridge replacement and major rehabilitation.

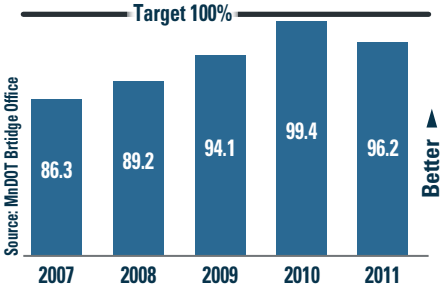
Bridge inspection expenditures ($ millions)



Bridge maintenance expenditures ($ millions)



Bridge safety inspection-percent completed on time*



*All bridges receive their required safety inspections. The chart shows the percentage completed within the required time period (calendar due date + 30 days).

How we decide

Decisions about managing MnDOT's bridge infrastructure are fundamentally based on bridge condition assessment data. Collecting this data generates a large volume of accurate information to guide our bridge investments.

Based on the bridge condition assessments, maintenance needs are identified, prioritized and entered into a work plan. District bridge workers perform the required preventive and reactive maintenance. At the end of each year, accomplishments are evaluated against established inspection and maintenance performance targets.

In each district, planning and prioritization are done by the district bridge engineer, in consultation with bridge maintenance supervisors and the Bridge Office. Any high priority maintenance needs that could affect the safe functioning of the bridge or cause it to deteriorate into a critical condition are addressed within one year. Those items categorized as low or medium priority are added to the district work plan and addressed in the appropriate time frame.

Bridge condition assessment also helps MnDOT's planners and investment managers establish short-, medium- and long-range plans for major rehabilitation and replacement of our state's bridges.

Preventive bridge maintenance:

- keeping good bridges in good condition

Reactive bridge maintenance:

- repairing bridges in response to emergencies or problems

Learn more

MnDOT—Minnesota Statewide Bridge Inspections

www.dot.state.mn.us/i35wbridge/statewide_inspections/inspections.html

Tom Styrbicki—tom.styrbicki@state.mn.us

Federal Highway Administration—National Bridge Inspection Standards

www.fhwa.dot.gov/Bridge/nbis.htm

Customer Satisfaction

Maintenance

Measure

Customer satisfaction with state highway maintenance on a scale from 1 to 10

System

State Highways (approximately 30,000 lane miles)

Why this is important

Maintaining the transportation system is critical to the safety and mobility of the traveling public. Maintenance activities keep the system operating in all weather and traffic conditions, and are also central to extending infrastructure life and lowering overall ownership costs. This is especially important as much of the highway system is aging and nearing the end of its design life.

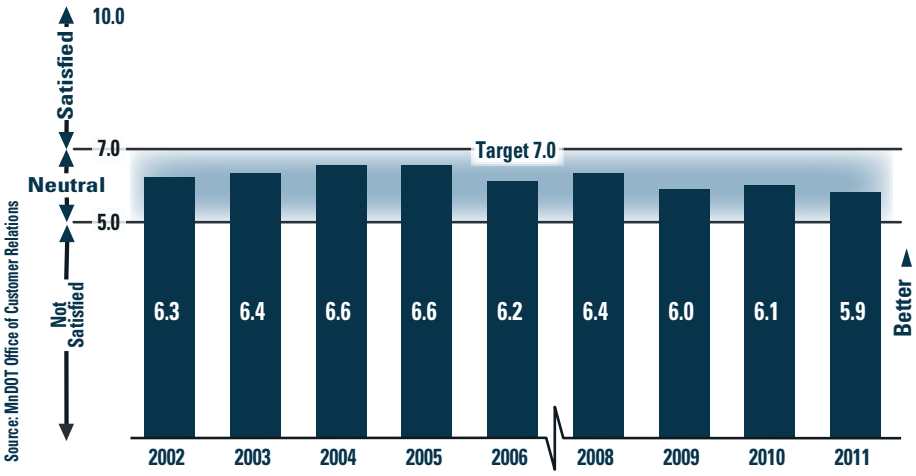
Our Progress

Overall customer satisfaction with state highway maintenance is down from a year ago to 5.9. The overall road maintenance measure has consistently been MnDOT's lowest scoring customer measure. The results are below the 7.0 performance target but within the neutral zone of the 1-10 scale. Survey data indicates MnDOT's overall maintenance score is heavily influenced by the smooth road surface rating. Notably, the number of miles of poor pavements increased from 2003 to 2009 and have been consistently below target.

Customer satisfaction survey data from 2004 to 2011 indicates that many individual maintenance services, such as snow and ice, have positive ratings above the 7.0 target and are generally stable. Customer ratings of smooth road surface also continues to rate as one of the lowest services at 6.0, close to the level of overall road maintenance customer satisfaction.

Source: MnDOT

Customer satisfaction with state highway maintenance (1-10 scale) Omnibus survey



Note: No omnibus survey conducted in 2007

Source: MnDOT

What We Are Doing

MnDOT is updating its Highway Systems Operation Plan which will guide management and non-capital highway investments for the next two bienniums. MnDOT will continue to monitor performance of its highway maintenance with ongoing district and statewide performance reports that include bridge inspection and maintenance, drainage, pavement patching, signs, striping and fleet management. Snow and ice removal performance is reported monthly during the winter season by roadway classification at the district and state levels.

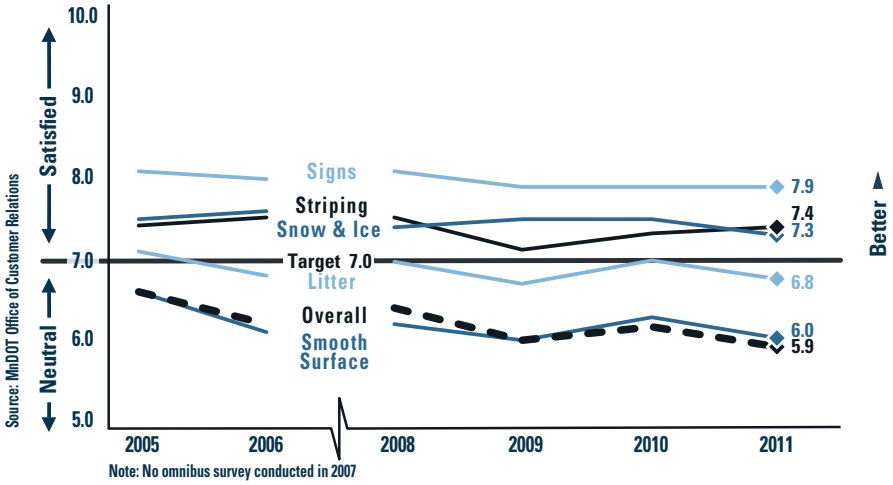
MnDOT's eight districts are responsible for the maintenance and operations of their state highways and bridges with all districts working toward common statewide performance targets.

Strategies

Strategies to improve MnDOT's maintenance performance include:

- Maintenance research/new technology—Maintenance performance is improved through MnDOT's maintenance research program and commitment to new technology. A recent example related to snow and ice is a mobile chemical "blending station" that mixes liquid chemical and salt which enables the de-icing material to work better in lower temperatures. Without this, salt is effective to only about 15 degrees Fahrenheit. An example of new technology making summer maintenance more efficient is the "road groom/shoulder reclaimer." It can maintain about 40 to 60 miles of shoulder per day using less fuel compared to a traditional motor grader which can cover about 20 miles per day.
- **Maintenance best practices**—Best practices are proven-effective processes or tools that are replicated across multiple MnDOT districts or offices. There are three fully deployed best practices in the maintenance area that have become standard MnDOT practice: automatic pothole patchers; pre-wetting of deicing winter materials; and snowplow underbody plows. Several other maintenance best practices are in various stages of deployment.
- **Training**—MnDOT has a strong commitment to maintenance training. Examples include MnDOT's annual snowfighter boot camp for new recruits, annual refresher

MnDOT road maintenance customer satisfaction ratings (1-10 scale) Omnibus survey



Source: MnDOT

What We Are Doing (Cont.)

training for all snowfighters, and yearly training in roadside vegetation management.

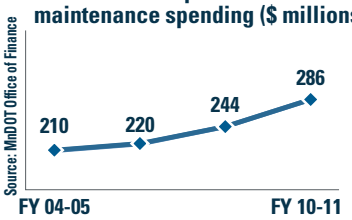
- **Customer research**—In addition to the yearly market research outlined above, more in-depth customer market research is completed on a periodic basis to better understand customer needs and expectations for specific services, including MnDOT's innovative Online Customer Community. Customer research has helped identify appropriate levels of service for winter plowing, driver tolerance for road surface roughness, and assisted with identifying funding trade-offs for non-safety services.

Investment/Spending

The chart shows MnDOT's overall Infrastructure Operations and Maintenance spending from FY 2004-11. This includes snow plowing and maintenance for pavement, roadsides and bridges, as well as traffic management and fleet and facilities maintenance. Average annual spending increased to $286 million in the FY 2010-11 biennium compared to $210 million in FY 2004-05. Though spending has increased since 2004, purchasing power has fallen because prices of salt, fuel and paving materials have increased more than the rate of general inflation.

Operations and Maintenance received some additional funding over the last decade to address high priority maintenance needs including snow and ice removal; bridge inspection and maintenance; pavement and drainage maintenance; and safety and traffic operations. In FY 2006 MnDOT requested and received approval to shift a portion of the State Road Construction funds to the Operations and Maintenance budget based on recommendations in the 2005 Highway Systems Operation Plan. In FY 2009, the Legislature added funding for Operations and Maintenance through Chapter 152.

Infrastructure operations and maintenance spending ($ millions)*



*Average annual by biennium

How We Decide

Maintenance decisions are guided by a combination of MnDOT district managers' experience and knowledge of their district along with statewide performance measures and targets, and recommendations from the Highway Systems Operations Plan. Each district prioritizes its maintenance needs, but district maintenance managers coordinate on issues of statewide concern to improve MnDOT's maintenance practices while working toward common statewide targets.

Generally, maintenance and operations needs are greater than the available dollars distributed to the districts, so services are provided based on statewide priorities, safety and needs in each district. For instance, snow and ice removal is a safety service for MnDOT and receives funding priority over other maintenance operations. This may affect summer maintenance services following a particularly harsh winter.

Past market research has measured the importance of many maintenance services. Customers consistently rate mowing and eliminating roadside weeds as significantly less important than maintenance of the road itself. Because of that finding, MnDOT reduced efforts in those areas and redirected resources where there is a higher perceived value, such as snow and ice removal, clearly visible roadway markings, and road surfaces.

Source: MnDOT

Learn More

MnDOT Office of Maintenance
www.dot.state.mn.us/maintenance/
Steven Lund—steven.lund@state.mn.us

Pothole information
www.dot.state.mn.us/information/potholes/index.html

MnDOT Market Research
Donna Koren—donna.koren@state.mn.us

Air Transportation

National and Global Connections

Measure

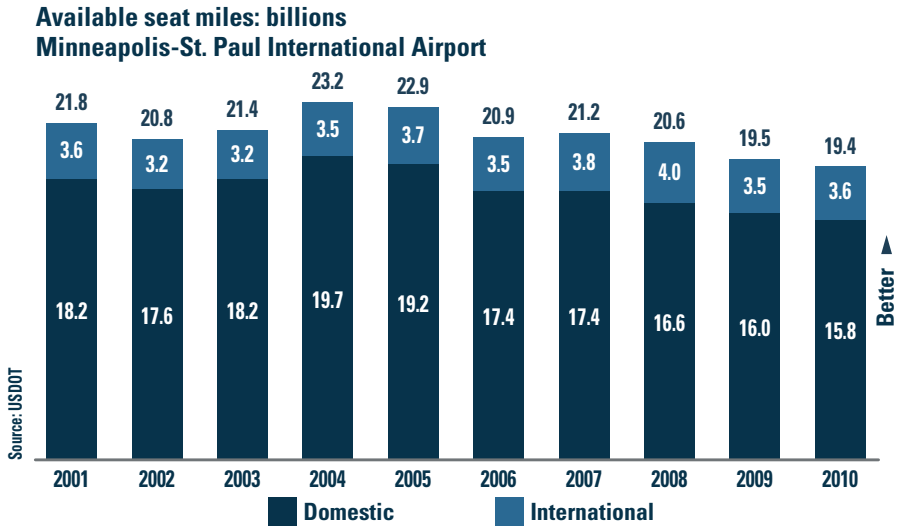
Number of available seat miles offered on scheduled service nonstop flights from Minnesota, as reported by the U.S. Department of Transportation. Analogous to vehicle miles traveled, one ASM is defined as one aircraft seat flown a distance of one mile. As an example, a regional jet with 44 seats covering the 268 miles from Rochester to Chicago would generate 11,792 ASMs per flight.

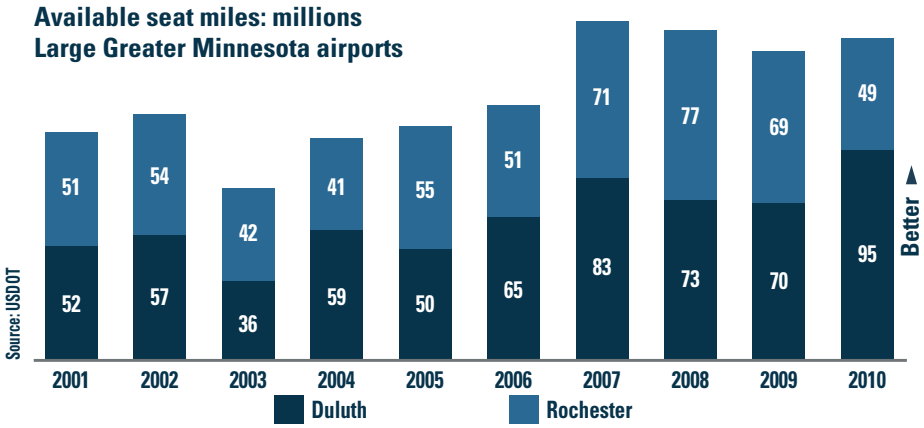
System

Eight Minnesota airports provide scheduled service: Minneapolis-St. Paul, Bemidji, Brainerd, Range Regional Airport at Hibbing, Duluth, International Falls, Rochester and Thief River Falls. Scheduled service was suspended by the airlines at St. Cloud in 2010 and at Grand Rapids in 2004. Minnesotans also are served by airports located in adjacent states.

Why this is important

Minnesota's economy depends on an air transportation system with the capacity to fly people and freight throughout the state, the nation and the world. Access to scheduled air service from Greater Minnesota cities is important to regional economic viability and quality of life.





Source: United Airlines

Our Progress

Available seat miles for travel fell significantly during the last decade, but demand for air travel, measured in revenue passenger miles, fell far less. On average, airlines used smaller planes and offered fewer flights, and planes had fewer empty seats.

The seven Greater Minnesota airports ASM capacity finished the 10-year period about where it started. ASMs hit a low in 2003 but mostly maintained their level during the recession.

Duluth and Rochester (the two largest Greater Minnesota airports) generated similar ASM statistics for much of the decade. However, additional scheduled flights in 2010 increased flying capacity from Duluth to nearly double the level at Rochester, where flight distances are shorter. The other five airports experienced significant year-to-year variability.

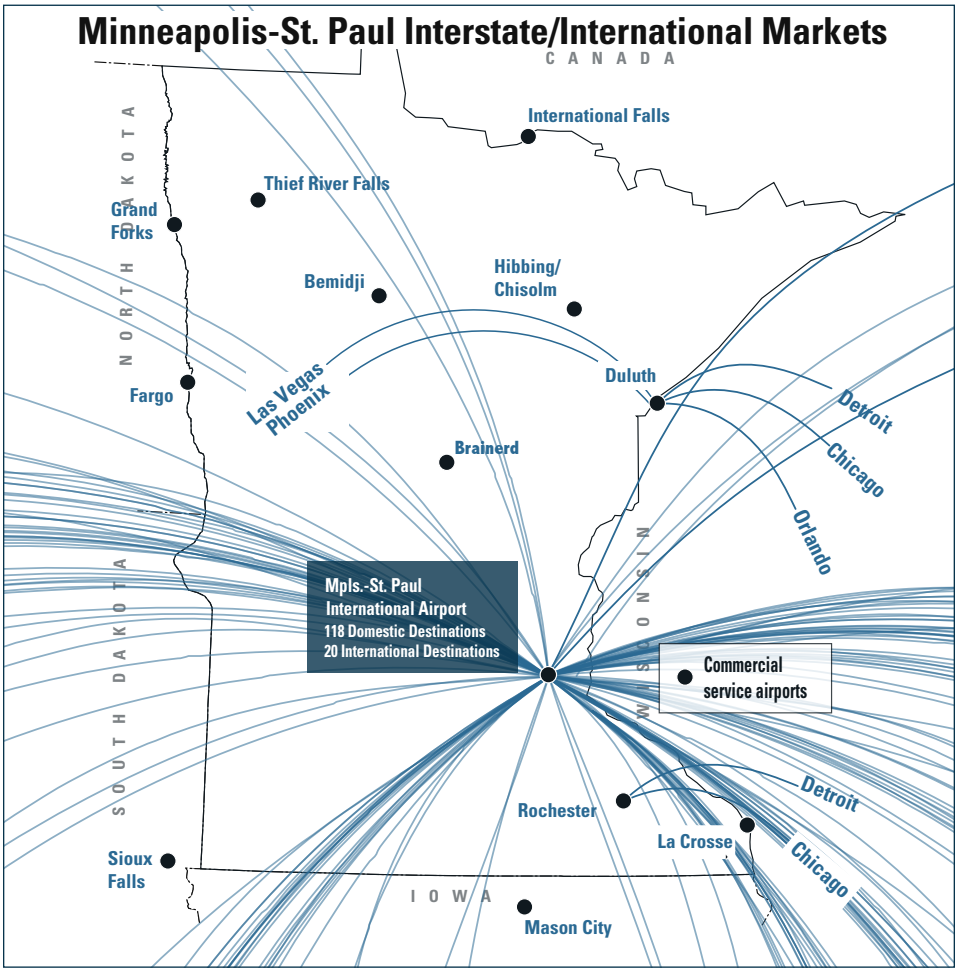
Aviation fuel prices are a primary factor in airline capacity decision-making. Fuel makes up 40 percent of operating expenses at current levels. Rising fuel prices work against additional service to accommodate demand as the economy recovers. At the same time, fuel surcharges and rising fares typically depress demand.

Three variables influence ASM totals: aircraft capacity, flight distance and frequency of flights. Isolating frequency, MSP offered 4 percent fewer flights in 2010 than in 2001, with an 11 percent ASM decrease, which implies smaller aircraft and/or shorter average flight lengths.

While ASM measures the supply of air service, a companion metric, revenue passenger miles, measures the demand for air service. RPMs at MSP held flat over the last decade. This is because flights were filled closer to capacity with fewer empty seats. This load factor at MSP rose from 72 percent in 2001 to 82 percent in 2010.

Market forces in the past decade have diminished the majority presence maintained by Northwest Airlines/Delta Air Lines at MSP. In 2001, the locally headquartered hub carrier and its now merged partner controlled 81 percent of the ASMs from MSP. By 2010, this share had been cut to 62 percent. This indicates growing competition at MSP which could result in a more competitive pricing environment.

Large areas of western and southern Minnesota lack scheduled service, although access is available across the border in Fargo and Grand Forks, ND, Sioux Falls, SD, and La Crosse, WI.



Source: Metropolitan Airports Commission

Source: MnDOT

What We Are Doing

MnDOT's Office of Aeronautics works with the Local Airline Service Action Committee, the Metropolitan Airports Commission, and other partners to maintain and improve air service in Minnesota by investing in airport infrastructure and by supporting legislation at both the state and federal levels. LASAC is made up of representatives of the cities in Minnesota that have air service.

Strategies

MnDOT works with its partners through the following strategies:

- Supporting cities' efforts to attract airline service
- Investing to create more secure and passenger friendly terminal buildings
- Developing the potential of Greater Minnesota airports
- Continuing the Air Service Marketing Program

Investment/Spending

Commercial service airports receive a larger share of both state investment and federal Airport Improvement Program funds than airports without commercial service. This funding allows airports to provide improved airfield and terminal designs so that airlines can operate more effectively. Greater Minnesota communities with air service also are eligible to apply for grants from the Air Service Marketing Program. Expenses eligible for reimbursement include air service advertising, marketing studies and route analysis. Funding for this program, with an FY 2012 annual budget of $250,000, comes from the State Airports Fund.

How We Decide

Decisions on air routes and markets served are made by the commercial airlines and shaped by a changing airline industry and economy. MnDOT and other agencies, such as MAC and local governments, can lobby, provide incentives and offer marketing information to strengthen the business case for service to be maintained or extended to more communities.

MnDOT supports airline or airport requests that add scheduled air service routes. The USDOT is responsible for approval of international airline route requests. Project- based decision-making is accomplished through the Capital Improvement Plan process for state funds and through the Airport Capital Improvement Plan process for federal funds.

The Minneapolis-St. Paul International Airport is owned and operated by the Metropolitan Airports Commission, and governed by a board largely appointed by the governor.

Brainerd Airport

Source: MnDOT Office of Aeronautics

For Comparison

In 2010, Minneapolis-St. Paul ranked 17th nationally in ASM, down three places from 2001.

MSP ranked 10th in total nonstop destinations among U.S. metro areas in 2011, according to MAC analysis. MSP added four domestic destinations in 2011 for a total of 118 and lost one international market, leaving 20 in the network.

Learn More

MnDOT Office of Aeronautics
aeroinfo@state.mn.us
Dick Theisen—dick.theisen@state.mn.us

2006 Minnesota Aviation System Plan
www.dot.state.mn.us/aero/avoffice/planning/sasp.html

Federal Aviation Administration
www.faa.gov

Metropolitan Airports Commission
www.mspairport.com/mac
www.metroairports.org/mac/appdocs/pubs/2009MSPLegislativeReport.pdf

Port Shipments

National and Global Connections

Measure

Annual shipments by weight to and from Great Lakes and river ports

System

4 ports on Lake Superior

5 ports on 222 miles of commercially navigable rivers: Mississippi (187 mi.), Minnesota (15 mi.) and St Croix (20 mi.)

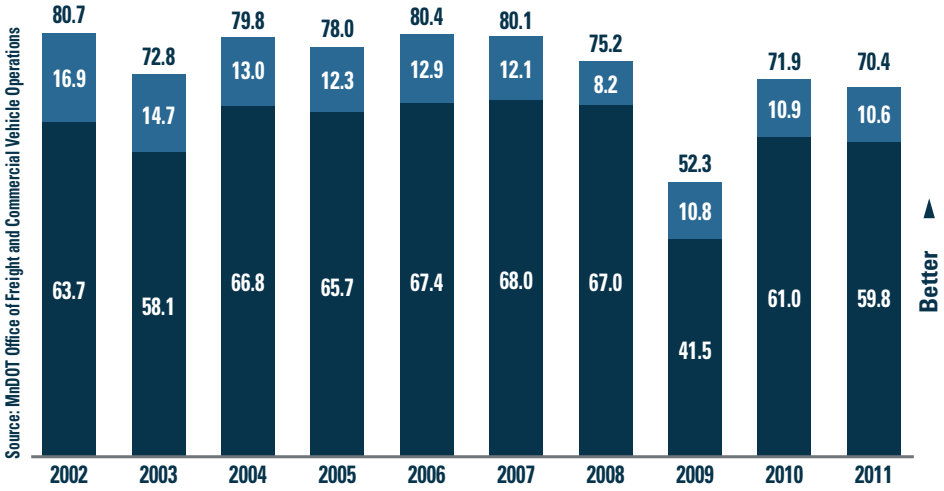
Why this is important

Commercial navigation transports millions of tons of freight into and out of the state. Without a system of commercial navigation, much of this heavy freight would be moved by rail or by truck, resulting in accelerated wear to highway pavements and in some cases contributing to congestion. Export via water transportation is important to resource-based industries such as taconite and grain that comprise significant portions of Greater Minnesota's economy now and into the future. Approximately 6 percent of freight tonnage in Minnesota is carried by water.

Waterway transportation is generally regarded as more fuel efficient than either rail or truck. According to information from the Texas Transportation Institute, one gallon of fuel will move one ton of freight 650 miles on the Great Lakes, 616 miles on the Mississippi River, 478 miles on the railway system and 150 miles by truck. Because of the fuel efficiency advantage, waterways produces fewer emissions, have a less social impact on society and have a better accident rate than either rail or truck.

Source: MnDOT

Annual port shipments (millions of tons)



Our Progress

In 2011, Lake Superior shipping levels of taconite jumped another four million tons to more than 38 million tons. However total grain tonnage dropped by 1.1 million tons and coal shipments also dropped by just under six million tons. These adjustments reflect current supply and demand changes in domestic and foreign markets. In 2012, foreign demand for our agricultural products is expected to improve.

Wind generator components stored at the Duluth Port Authority facilities have been trucked or shipped to their construction sites. This has cleared the way for the Port Authority to improve the storage area with the help of the State's Port Development Assistance Program.

On the Mississippi River, the 2011 season was plagued with floods up and down the system, which negatively affected the flow of goods on the waterway. Although the flow of exports through the Gulf was good, the Upper Mississippi River did not participate as much as in previous years because of the early floods and later dry conditions in the fields. Local ethanol production is still taking much of Minnesota's excess corn production away from foreign markets and will continue to do so in 2012. With increased foreign demand for agricultural products, Minnesota farmers are planting more land in corn and soybeans to take advantage of this market.

MnDOT has limited influence on shipping volume on the waterways, but does have an interest in reducing the impact of heavy trucks on our highway pavements.

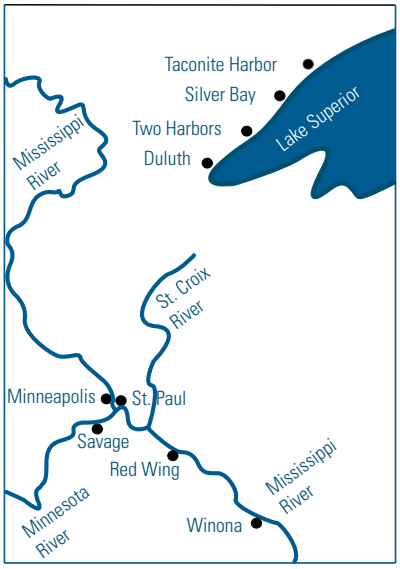
What We Are Doing

Minnesota sits at the upstream end of the Mississippi River system and at the western end of the Great Lakes and St. Lawrence Seaway. The capacity and condition of aging downstream locks on this system can limit shipping to and from Minnesota. Responsibility for improving commercial navigation infrastructure on this system is shared by the U.S. Army Corps of Engineers, the U.S. Coast Guard, local port authorities, and private operators. Port authorities own some of the terminal facilities, but the terminals are all managed by private operators.

Strategies

- **Federal role**—The commercial waterway channels on both the Great Lakes and the inland waterway systems are maintained by federal agencies. The U.S. Army Corps of Engineers operates locks and dredges navigation channels to maintain depths of nine feet on the river system and 28 feet on the Great Lakes. The U.S. Coast Guard maintains navigation markers on both systems. Shippers on the Great Lakes pay a freight value tax and river carriers pay a fuel user tax to offset some federal costs.
- **State role**—MnDOT administers the Port Development Assistance Program, which uses funds appropriated by the Minnesota Legislature to help port authorities improve efficiency at their waterway freight terminals. The goals of the program are to preserve Minnesota's waterway capacity, to expedite the movement of commodities and to promote economic development. With the help of these funds, port authorities have been able to rehabilitate dock walls and warehouses, purchase or overhaul product handling equipment, dredge mooring areas,

Minnesota lake and river ports



Source: MnDOT

What We Are Doing (cont.)

and improve rail and truck access to port facilities.

- **Port authorities**—The state's five public port authorities provide facilities for shipping, promote waterway transportation, lease shoreline for barge mooring, and work with the U.S. Army Corps of Engineers to designate areas for channel dredge disposal.

Sustainability

Operators are replacing engines and generators with more fuel-efficient models. On the Great Lakes, the Motor Vessel Edwin Gott is the fourth ship to replace its propulsion engines in the past few years. Two of these converted from steam to diesel, which reduces fuel use by 50 percent. On the Mississippi River, all eight towboats of St. Paul's harbor operator have had new engines and generators installed since 1993—increasing fuel efficiency by one-third. These fuel savings will cover the cost for replacement engines in a few years.

Investment/Spending

The Minnesota Legislature began funding the Port Development Assistance Program in 1996. Since then, Minnesota has committed $21 million for 33 projects to increase port efficiency and preserve infrastructure. Legislative appropriations must have at least a 20 percent match in funding from the benefiting port. Federal dollars have been added to some projects to enable larger improvements.

Value of Minnesota waterway shipments	
Great Lakes	$6.25 billion
Mississippi River	$1.96 billion
Total	$8.21 billion

Source: MnDOT

Freight moved by water, 2011

Type	Millions of tons	Largest commodities
Lake export	54.1	Taconite, coal
Lake import	5.7	Coal
River export	5.8	Grain, petroleum
River import	4.8	Salt, aggregate, fertilizer, cement

Source: MnDOT

National Issues

- **Great Lakes**—The new 1,200-foot lock at Sault St Marie, Mich. lacks funds for completion. This is the only gateway to Minnesota's Lake Superior ports. A larger problem is the lack of federal funds for the U.S. Army Corps of Engineers to dredge harbors and river channels to prescribed depths. This limits the tonnage carried by each ship. The Corps estimates that it needs $200 million from the harbor trust fund for dredging.

  Mississippi River—The lower five locks on the Mississippi River above St. Louis and the lower two locks on the Illinois Waterways need to be replaced with 1,200-foot chambers to optimize shipping access to Minnesota. The locks were built in the 1930s to handle tows of six barges; the average tow is more than twice as large today. Lock replacement will cost about $2 billion, with the carriers paying half.

How We Decide

The MnDOT Ports & Waterways Section meets regularly with port authorities to develop and update a priority list of projects that improve terminal efficiency and meet state safety standards. State funded projects must be capital improvements that will increase efficiency and capacity.

For Comparison

According to a 2010 U.S. Army Corps of Engineers report, Duluth-Superior ranked 18th of U.S. ports by tonnage; Two Harbors ranked 42nd; Silver Bay ranked 66th; and St. Paul ranked 75th. Minnesota ranked 23rd of the 50 states.

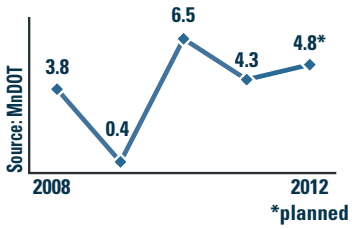
Source: MnDOT

Port development project spending 2009-12

Year	Project	Port Development Funds
2009	Duluth—Reroof transit shed	$ 258,809
2010	Duluth—Rehab 6,000 feet of dock wall	$1,050,000
2010	Lower MN River—Install culvert to dredge disposal area	$37,831
2010	Winona—Construct new municipal dock wall	$1,200,000
2011	St. Paul—Rehabilitate Barge Terminal #1 seawall	$250,000
2012	Duluth—Construct 900 feet of dock wall at C and D Docks	$2,000,000
	St. Paul—Rehab 790 feet of lower Barge Terminal Dock	$795,000
	Red Wing—Reface municipal dock wall	$233,040
	Winona—Resurface old municipal dock surface	$320,000

Source: MnDOT Office of Freight and Commercial Vehicle Operations

Federal, state and local expenditures on Minnesota ports ($ millions)



Learn More

MnDOT Ports and Waterways
www.dot.state.mn.us/ofrw/waterways.html
dick.lambert@state.mn.us

The Port of Duluth
www.duluthport.com

U.S. Army Corps of Engineers
www.usace.army.mil

Rail Shipments

National and Global Connections

Measure

Annual rail freight shipments by weight

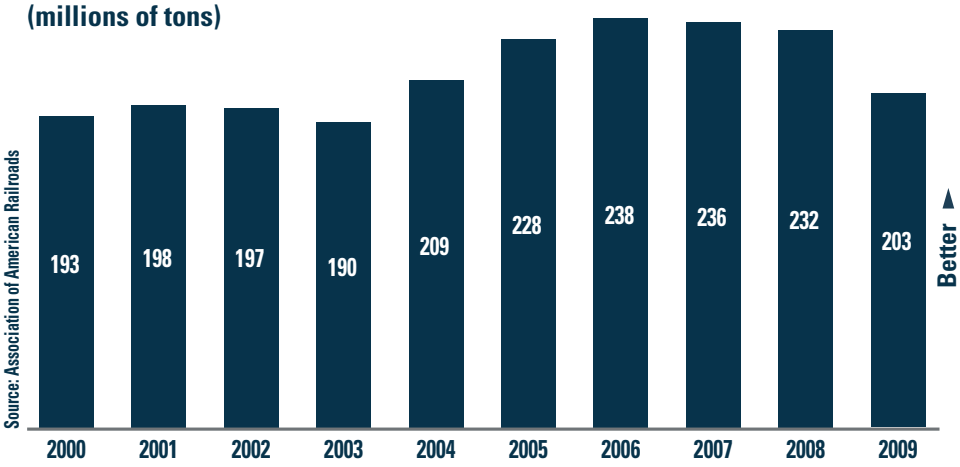
System

In 2011 there were 18 railroad companies operating on 4,458 miles of track. Four major railroads—BNSF, Canadian National, Canadian Pacific, and Union Pacific—operate more than 70 percent of the network. The remainder is operated by 16 short-line railroads.

Why this is important

Minnesota's railroads play a critical role in the state's economy, carrying 38 percent of all freight tonnage. Major Minnesota industries rely on the rail system for efficient delivery of goods to markets throughout North America and to the world through service to the Great Lakes and coastal seaports. Rail provides critical options to shippers in terms of market access, economics and service. It increases the state's attractiveness to business. Rail is more energy efficient than trucks and reduces the wear of heavy trucks on public highways.

Rail freight shipments in Minnesota (millions of tons)



Source: MnDOT

Our Progress

Freight rail shipments decreased in 2009, the most recent year for which these data are available from the American Association of Railroads. Other indicators point to a slight increase in tonnage in 2010 and 2011 due to the end of the recession in the rail industry. 2012 volumes are projected to return to record 2006 levels. This pattern reflects the broader economy. The amount of freight transported by rail versus other modes depends on the type of cargo, the regulatory environment, and other economic factors, like fuel prices.

For Comparison

Minnesota ranked 13th of the 50 states by tons of freight carried by rail and 18th by carloads carried, according to 2009 data from the AAR. In the same year, Minnesota had the eighth largest state rail network in the United States.

What We Are Doing

The Minnesota Comprehensive Statewide Freight and Passenger Rail Plan was completed in February 2010. The plan provides a vision for the use and development of the statewide rail system and guides rail initiatives and investments. Key strategies include maintaining short line services and expanding intermodal container access.

The plan identifies segments on the major railroads that have high potential for congestion. These segments will become more congested as shipping volumes increase in the future, especially on corridors where passenger service is introduced. Improvements to address these issues could include modernizing signals and upgrading weight-restricted tracks and bridges. None of the short-line railroads have congestion issues, but many are weight or speed restricted.

Strategies

The following strategies are identified in the Statewide Rail Plan as necessary to make progress toward the system vision.

- Maintain primary railroad arterials
- Address critical network bottlenecks
- Upgrade main line track to 25 mph minimum speed
- Improve track to support 286,000 pound railcars
- Modernize traffic control and safety systems
- Expand intermodal access

The freight railroads are expected to continue to fund most of their own improvements. There may be opportunities for public agencies to partner with the railroads for infrastructure improvements that have a clear public benefit.

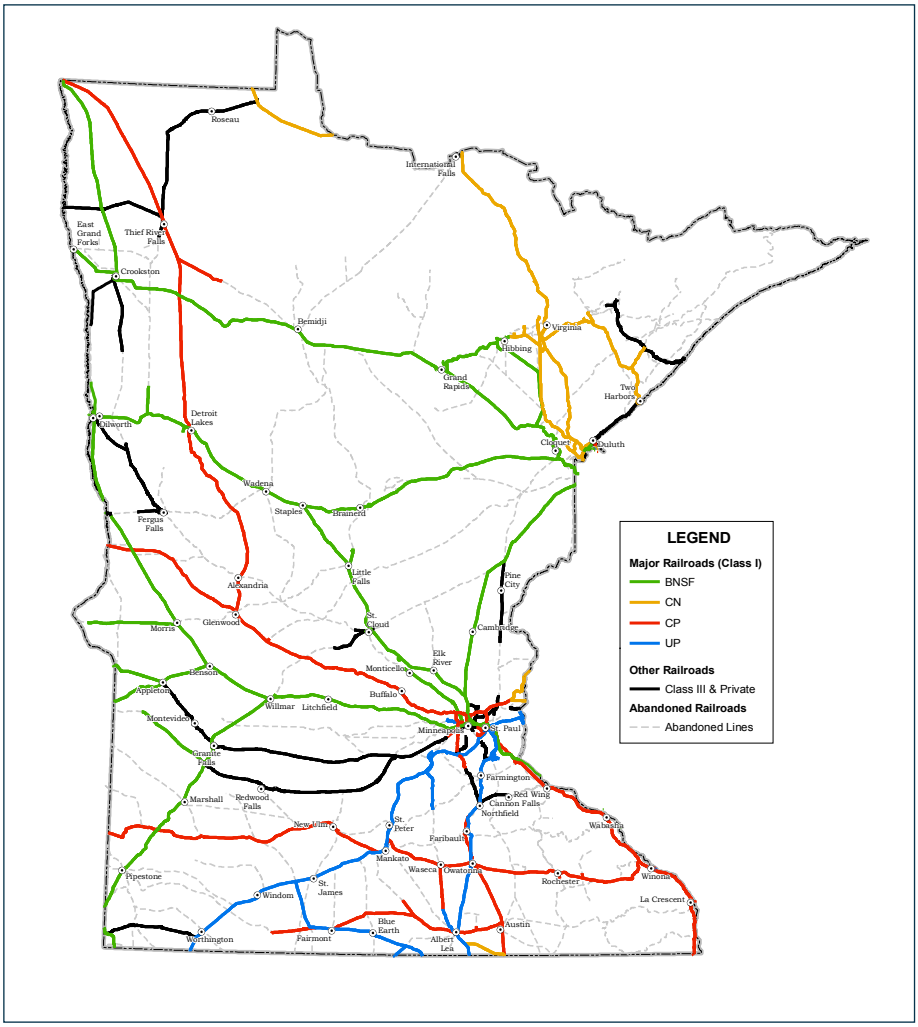
Sustainability

Rising fuel prices tend to drive a shift in freight shipments from truck to rail. According to the American Association of Railroads, rail is four times more fuel efficient than trucking. Major railroads are making efforts to become more efficient by using newer and better engines, higher-capacity and lighter-weight cars, and improved operations.

Investment/Spending

Funding to operate, maintain and improve freight

Minnesota Freight Railroads



Source: MnDOT

How We Decide

Rail carriers and rail users are eligible for Minnesota Rail Service Improvement program loans. Projects that are deemed economically viable and meet the MnDOT criteria established in the rules are funded on a priority basis as funds permit. The criteria include previous shipping levels from the facility, estimated future shipping levels from the facility, and benefits to the state. A single location can receive no more than two loans. All projects are evaluated to determine whether they have the financial capacity to repay their loans.

Source: MnDOT

What We Are Doing (Cont.)

railroads generally comes from private sources. Recently, major railroads have shown consistent profitability and have been investing in infrastructure capacity. Because of issues in the trucking industry, such as increasing operating costs and a potential driver shortage, railroads are in better position to take advantage of economic recovery. However, low volume rail corridors and short lines often lack the financial capacity to make infrastructure investments.

The Minnesota Rail Service Improvement program was created in 1976 to assist railroads with capital funding. Over the life of the program, MRSI received general fund appropriations totaling $9.6 million and general obligation bond appropriations totaling $27.0 million, which has leveraged more than $100 million in private, federal and local funds. MRSI funds are loaned to rail users and rail carriers for capital improvements to rehabilitate deteriorating lines and improve rail-shipping opportunities. The MRSI program also buys, preserves and maintains abandoned rail corridors for future transportation uses.

Source: MnDOT

Minnesota Rail Service Improvement Program 2007-2012 Spending in millions of $

Year	State	Federal	Total
2007	0.61	0.00	0.61
2008	2.20	0.50	2.70
2009	1.96	0.00	1.96
2010	3.17	2.50	5.67
2011	1.59	0.00	1.59
2012*	2.0	1.95	3.95
Total	11.53	4.95	16.48

Source: MnDOT Rail Office *2012 projected

Learn More

Statewide Freight and Passenger Rail Plan
www.dot.state.mn.us/planning/railplan

Minnesota Rail Service Improvement Program
www.dot.state.mn.us/ofrw/mrsi.html

American Association of Railroads
www.aar.org/

Minnesota Regional Railroad Association
www.minnesotarailroads.com

Interregional Corridors

Statewide Connections

Measure

Percent of interregional corridor miles in Greater Minnesota performing within 2 mph of average corridor travel speed target or faster

System

Greater Minnesota state highway interregional corridors (2,580 miles)

Why this is important

The interregional corridor system connects the largest regional trade centers in Minnesota with each other and with neighboring states and Canada. Safe and efficient connections provide access to markets and services and facilitate recreational travel, improving economic competitiveness and quality of life.

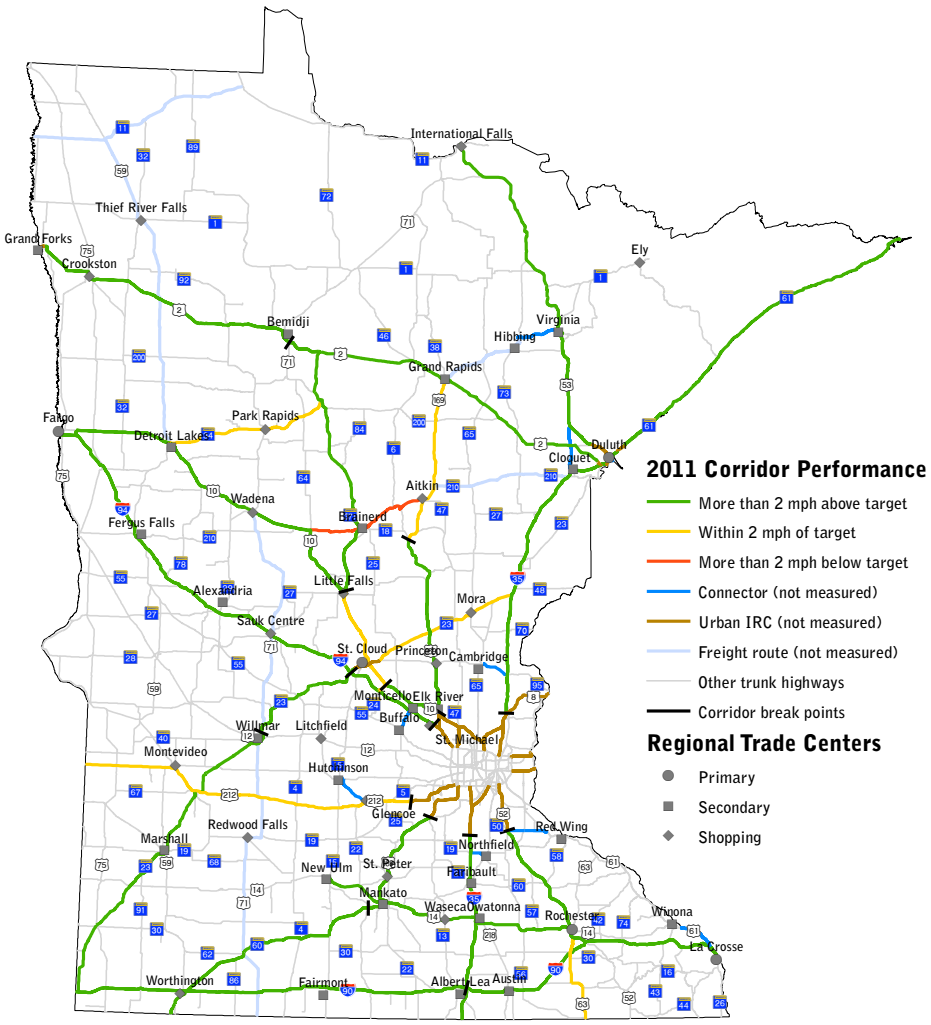
The IRC system consists of Greater Minnesota's most heavily traveled roads. Although the IRC system accounts for only 2 percent of all the roadway miles in the state, it carries about 30 percent of all statewide travel. IRCs serve as the backbone of the state highway system.

Our Progress

In 2011, 98 percent of the IRC system performed within 2 mph of its corridor target. Including the improvements MnDOT plans through 2021, performance is forecast to remain at 98 percent through 2021. Each corridor has a target of 55, 60 or 65 mph average travel speed from end to end. Highway 210 from Motley to Aitkin (shown in red on the maps) is the only corridor that performs at more than 2 mph below target.

Source: MnDOT

Greater Minnesota IRC Mobility: 2011



Source: MnDOT Office of Capital Programs and Performance Measures

What We Are Doing

The IRC system was adopted in 2000. Routes were selected to connect the major trade centers in Minnesota. By connecting the highest-level centers, the IRC corridors link people with jobs, manufacturers with markets, shoppers with stores, and tourists with recreational activities.

MnDOT conducted a review of the IRC system in 2010 and 2011, recommending some changes for adoption as part of the next 20-year Minnesota State Highway Investment Plan update. One of these is the inclusion of the supplemental freight routes (shown in blue on the maps). These routes were added to provide sufficient connectivity for freight movements in west-central and northwest Minnesota.

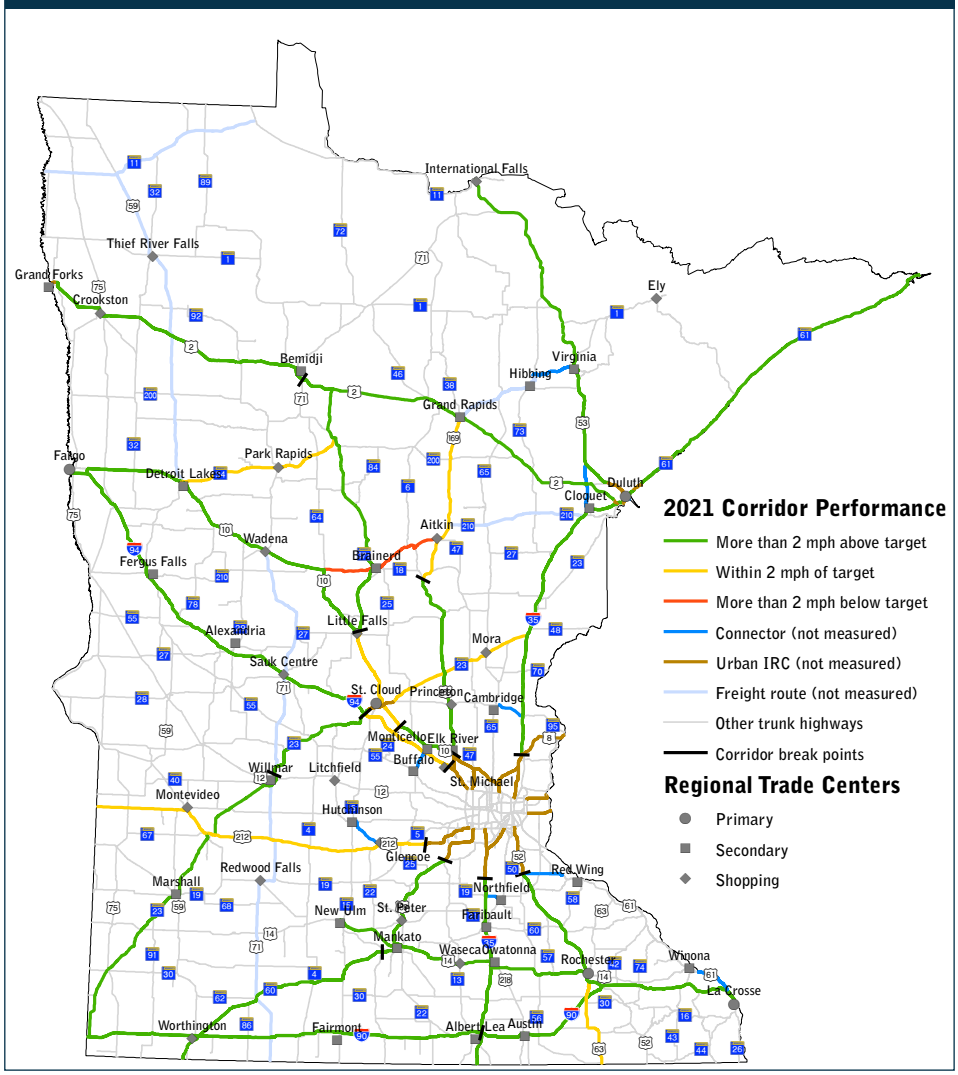
Strategies

MnDOT promotes IRC mobility though a variety of approaches, from low-cost solutions to major projects. Selective investments continue as funding allows. Projects to improve mobility on corridors performing below mobility targets can include signal timing or elimination, intersection modifications, access management changes, interchanges or capacity expansion.

In 2012, MnDOT introduced the Corridor Investment Management Strategy, which is an initiative that brings MnDOT together with its local, modal, and state partners to identify investment opportunities on IRCs and other important state highways. The CIMS initiative places strong emphasis on building and maintaining a sustainable transportation system through solutions that ensure a high return-on-investment, given constrained resources, and complement the unique social, natural and economic features of Minnesota.

Going forward, information obtained through CIMS outreach will be used to prioritize and respond to spot mobility, safety, accessibility and other issues along corridors that are meet-

Greater Minnesota IRC Mobility: 2021 Projection



Source: MnDOT Office of Capital Programs and Performance Measures—Based on planned 2012-2015 STIP and 2016-2021 HIP improvements.

What We Are Doing (cont.)

ing overall travel time targets. Opportunities identified through CIMS will also help MnDOT integrate a broad array of quality of life factors into its planning and programming process. These factors include employment, education, and housing considerations that inform how people use the transportation system.

Innovation

The Minnesota Transportation Economic Development program is a joint effort of MnDOT and the Minnesota Department of Employment and Economic Development to address the twin goals of better highways and job growth. Through the TED program, $35 million in bond proceeds and $4 million in DEED grants were set aside in 2010 to fund up to 70 percent of the transportation and other public infrastructure costs associated with economic development projects. Examples of projects approved for TED funds include a new interchange at US 10 and County Road 34 in Perham and a series of safety enhancements to the existing US 52/County Road 68 interchange in Zumbrota.

Investment/Spending

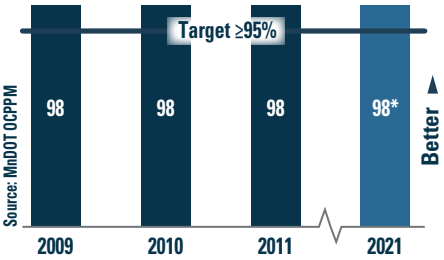
With 98 percent of Greater Minnesota IRC miles meeting targets for travel speed, MnDOT has put minimal funds into construction projects dedicated to improving IRC travel speed. Investment guidelines for 2009–2028 prioritize infrastructure preservation and traveler safety within a balanced program. Limited remaining funds are available for IRC mobility projects.

Other types of projects often benefit IRC mobility. For example, Highway 14 between Waseca and Owatonna has been upgraded from two-lanes to a four-lane divided expressway to improve safety. When complete, travel time will be shorter and motorists will no longer encounter traffic signals and reduced speed limits in Waseca.

How We Decide

Decisions to invest in IRCs are guided by MnDOT districts' expertise, policies and performance measures set forth in the Statewide Transportation Policy Plan, and the priorities set forth by MnDOT's executive-level Transportation Program Investment Committee. Communities also provide input through consultation with MnDOT district planners.

Percent of Greater Minnesota IRC miles performing within 2 mph of average speed target or faster



*Predicted performance based on the 2012-2015 STIP and 2016-2021 HIP improvements

Source: MnDOT

Learn More

MnDOT Office of Capital Programs and Performance Measures
www.dot.state.mn.us/planning/program/

Minnesota Statewide Transportation Plan 2009–2028
www.dot.state.mn.us/planning/stateplan

Aviation Access

Statewide Connections

Measure

Percent of Minnesota population within 30 minute surface drive time of an airport with a paved and lighted runway

System

Publicly owned airports (135 airports)

Why this is important

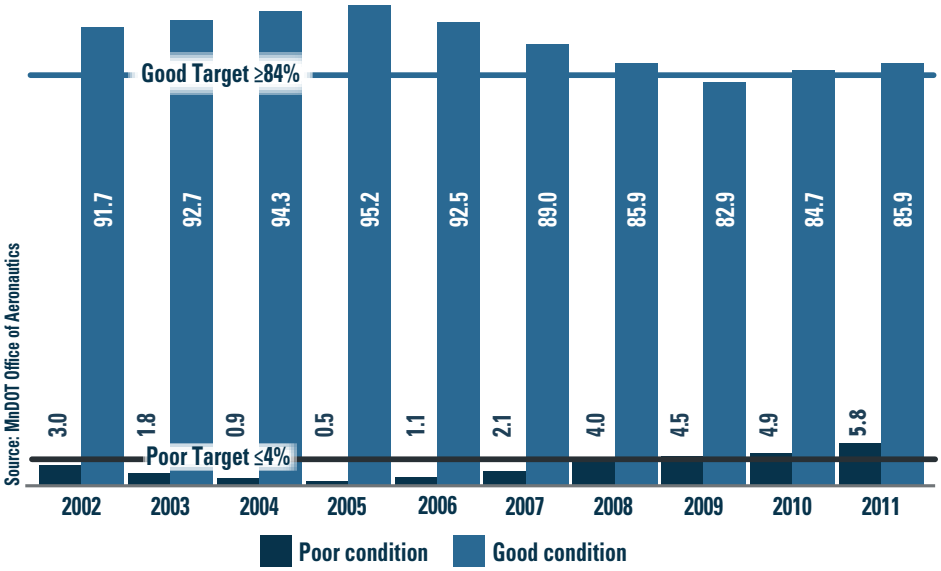
The statewide air transportation system serves Minnesotans who rely on aviation for personal travel, business, recreation and delivery of goods. This system provides access to passenger airlines, air charter providers, corporate aircraft and package delivery services that connect Minnesota to regional, national and international destinations. The air transportation system also supports agricultural needs in crop protection and the delivery of medical and emergency services such as the Minnesota State Patrol, aerial fire fighters, the Civil Air Patrol and local law enforcement.

A paved and lighted runway allows for a broader range of aircraft to use an airport, especially during periods of reduced visibility. During the spring melt, or in periods of exceptionally wet weather, unpaved runways may be too wet and soft for aircraft to use. If the airport does not have at least one paved runway, it is effectively closed to aircraft operations until it dries out.

"Little Airport"—Duluth

Source: MnDOT

Percentage of runway and taxiway pavements in good and poor condition



Our Progress

Of the 135 publicly owned airports in Minnesota, 113 have paved and lighted runways. Analysis done as part of the 2012 State Aviation System Plan found that 71 percent of Minnesota's population lives within 30 minutes surface drive time of these airports. High levels of access reflect sustained local government commitments. Drive time analysis was conducted using more advanced software and an updated methodology using the existing roadway network, neither of which was available when the analysis was conducted in 2006. The result of these changes in methodology is a more precise but significantly different result from the prior analysis.

What We Are Doing

Most Minnesota airports outside the Twin Cities are owned by a city, county or a locally established airport authority. The MnDOT Office of Aeronautics provides technical support and funding assistance to these entities to identify critical short-term needs, plan long-term maintenance and expansion, and bring about cost-effective investments that enhance the state's economic vitality and quality of life.

MnDOT also tracks the quality of Minnesota's air transportation system by measuring pavement condition at public airports. Minnesota airports have met the target for the percentage of airport pavements in good or better condition (greater than 84 percent) for the past two years, following just one year where the target was not met (2009). In 2011, the percent of airport pavements in good or better condition was 85.9 percent. However, since year 2009, the target for the percentage of airport pavements in poor or worse condition (less than 4 percent) has not been met. For 2011, the percentage of airport pavements in poor condition is 5.8 percent, exceeding the threshold by the largest margin since any time in the last 10 years.

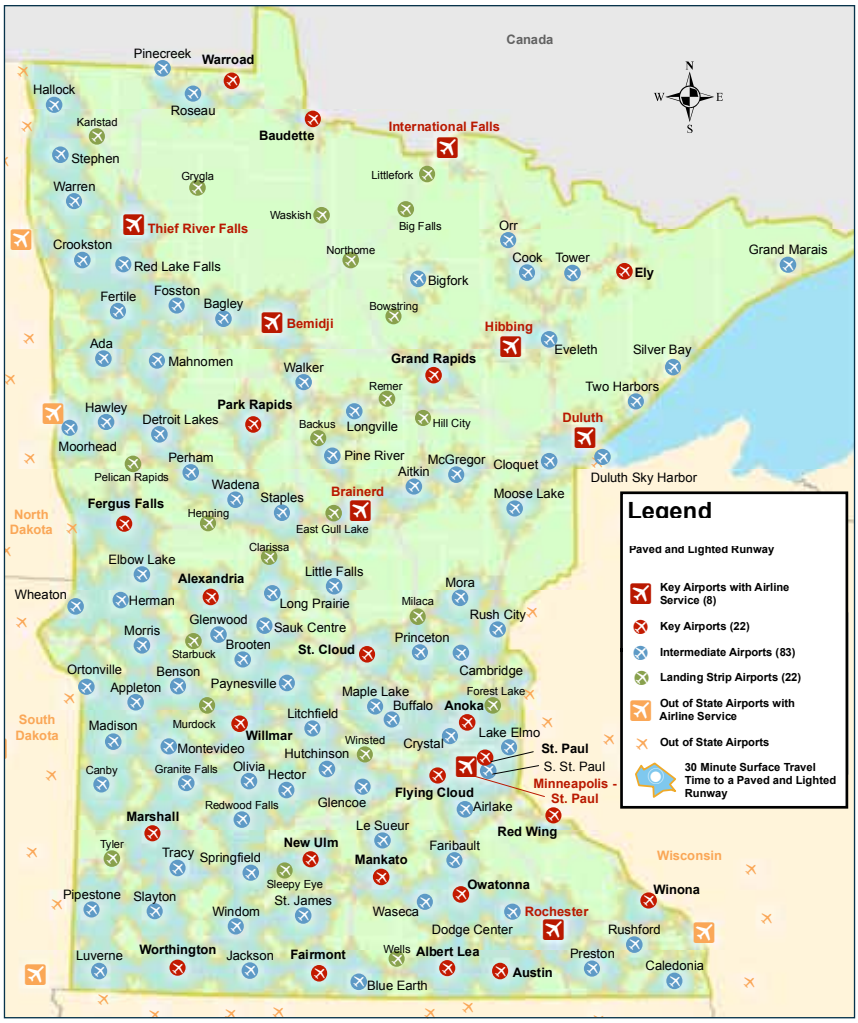
The increase in poor pavement condition may be attributed to airports whose local units of government are not eligible to receive federal funding and have limited local funds available. The 2010 Legislature provided special bond funds for airport runway rehabilitation. As a result, 14 airport runways across the state will be rehabilitated within the next two years, resulting in a dramatic decrease in the number of runways in poor condition.

Strategies

To support aviation in Minnesota, MnDOT:

- Provides State Airport Fund grants-in-aid for maintenance and improvements
- Facilitates applications for and receipt of federal Airport Improvement Program grants
- Monitors runway pavement condition and encourages timely investment to maintain pavements
- Performs safety inspections and pilot safety training

Population within 30 minutes of an airport with a paved and lighted runway



Source: MnDOT Office of Aeronautics

What We Are Doing (cont.)

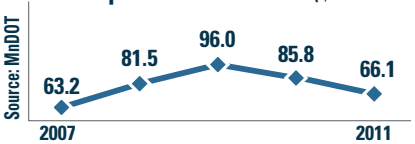
Innovation

The State Aviation System Plan is a comprehensive 20-year plan guiding the maintenance and development of airports and aviation systems in Minnesota. For the first time, a capital investment plan will be included in the 2012 SASP to provide further information about how the state's limited financial resources will be spent. The completed plan will be web based and include an online toolbox which will display airport specific information (e.g., runway lengths, navigation systems, operation forecasts and project needs) for each airport. These tools will be available to the communities that own airports and the public. A geographic information systems tool is being developed and will be available to MnDOT for use in scenario planning and performance measure reporting and monitoring.

Investment/Spending

Funding for local aviation in Minnesota is derived from federal, state and local taxes and fees on system users. Federal funding sources include collections related to passenger tickets, passenger flight segments, international arrivals/departures, cargo waybills, aviation fuels and frequent flyer mile awards from non-airline sources like credit cards. State funding sources include the Airline Flight Property Tax, the Aviation Fuel Tax and aircraft registration fees. Congress and the Minnesota Legislature appropriate funds that are delivered through grants to individual airports to develop, maintain and operate facilities. Local airports also receive funding from surrounding municipalities. Total federal and state funding to Minnesota airports is illustrated in the chart below. During the last six years, 83 percent of this money was from the Federal Aviation Administration.

State and federal grants to publicly owned airports in Minnesota ($ millions)



How We Decide

An airport project is initiated at the local government level since they own the facility and must provide a local funding share. Projects at airports included in the National Plan of Integrated Airport Systems qualify for federal funding up to 90 percent of eligible cost. To be eligible for state funding, a project must be part of the state's Capital Improvement Program, which is used to develop and preserve publicly owned airports in Minnesota. Each year, more projects are listed in the CIP than can be funded. Priority for state funding is given to projects that enhance safety or preserve the existing state airport system.

Case Study: Duluth

The Duluth Airport Authority owns and operates two airports in the city of Duluth, Minn. The "big airport" (Duluth International Airport or DLH) hosts three airlines and is home to the 148th Fighter Wing of the Minnesota Air National Guard. Companies with manufacturing facilities at the airport include Cirrus Design—manufacturer of personal aircraft with a built-in parachute recovery system, and Northstar Aerospace—creators of precision machined aircraft components, including seats, gears and helicopter transmissions. Monaco Air advertises a "quick stop" of less than 30 minutes for fueling and customs inspection services for flights arriving in the U.S. Lake Superior College provides pilot training and aircraft fire-fighting courses. Seaplanes use the little airport and offer "flightseeing rides" or trips to remote fishing lodges.

Source: Cirrus Aviation

Learn more

MnDOT Office of Aeronautics
aeroinfo@dot.state.mn.us
Kathy Vesely– kathy.vesely@state.mn.us

2012 Minnesota Aviation System Plan
www.dot.state.mn.us/aero/avoffice/planning/sasp.htm

Federal Aviation Administration
www.faa.gov

Metropolitan Airports Commission
www.mspairport.com/mac

Congestion

Twin Cities Mobility

Measure

Percent of congested urban freeway miles in the Twin City metropolitan area

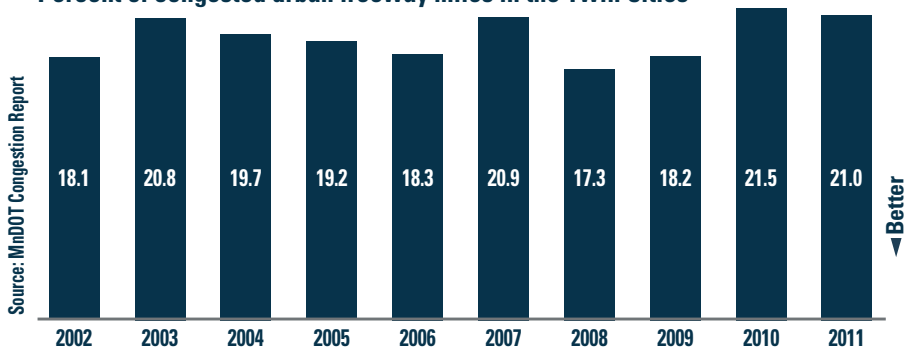
System

Twin Cities urban freeways (379 miles)

Why this is important

Congestion plays a major role in the daily lives of people in the Twin Cities area. Managing congestion improves quality of life, safety and air quality. Approximately half of roadway travel in the state occurs on the 12 percent of roadway miles in MnDOT's Metro District. The region's congestion delay compared to other major metropolitan areas can affect economic competitiveness. Given finite resources and the growth in the region's population, MnDOT's goals are to slow the growth of congestion while providing uncongested alternatives using MnPASS Express Lanes and rapid transit.

Percent of congested urban freeway miles in the Twin Cities



Our Progress

MnDOT defines congestion on the Twin Cities freeway system as traffic flowing below 45 mph for any length of time in weekday peak periods – from 5 a.m. to 10 a.m. and from 2 p.m. to 7 p.m.

In 2011, the Twin Cities freeways saw a slight drop in congestion, from 21.5 percent in 2010 to 21 percent in 2011. This represents a decrease from 326 to 319 of 1,516 peak directional miles. This improvement was due in part to the completion of the Crosstown project at I-35W and Highway 62. MnDOT expects congestion to increase as economic activity grows in the next few years.

The duration of congestion also decreased slightly. In the a.m. peak period, 26 miles of freeway were congested for more than two hours in 2011, down from 27.5 in 2010. In the afternoon, urban miles congested for more than two hours decreased from 54.5 in 2010 to 47 in 2011.

Performance data for individual corridors helps MnDOT analyze the relative severity of congestion and evaluate cost-effective options for improvement. The maps on the next page show congestion by corridor. The bar chart titled AM Peak Hour Throughput shows that up to 30 percent of travelers are moved by express transit on four major sample corridors. Person throughput—the number of people moved on individual corridors —is one "mode-neutral" measure used to compare the benefits of highway and express transit improvement alternatives.

What We Are Doing

In 2010, MnDOT completed an update to its Metro District 20-year Highway Investment Plan. This coincided with the updated Metropolitan Council Transportation Policy Plan. Due to constrained funding, both plans mark a shift away from relying heavily on major capacity expansion projects towards more cost-efficient strategies. They address a greater number of problem areas region–wide and increase reliance on innovation, technology and multi-modal options. While it is not realistic to eliminate congestion, it can and should be mitigated to the fullest extent possible.

Strategies

Strategies identified in the 20-year Highway Investment Plan include:

- **Active traffic management**—MnDOT currently uses an advanced system of cameras, loop detectors, ramp meters, FIRST incident response trucks, changeable message signs and other traveler information systems. Benefits include increases in average throughput, capacity and reliability, and decreases in incidents and travel time. Newer ATM tools to be deployed include dynamic signing and re-routing, dynamic shoulder lanes and variable speed limits.
- **High return on investment improvements**—These projects improve traffic flow by relieving bottlenecks on freeways and arterials, improving geometric design and addressing safety hazards. Some enhance capacity by adding short auxiliary lanes, and others focus on system management. In some cases, flexible design principles are used to optimize the use of available pavement and right of way. To preserve arterial performance, MnDOT and its local partners are using strategies such as access management and improving signal coordination on major expressway routes.
- **Priced managed lanes**—MnDOT operates two MnPASS Express Lanes on I-394 and I-35W. They provide a congestion-free travel option for those driving alone who are willing to pay, those who ride express transit, or who are in carpools. They can move people more reliably, reduce peak travel demand, improve the flow of traffic in adjacent free lanes, and enable greater speed and reliability for transit. MnDOT and the Metropolitan Council plan to add lanes to the MnPASS system in the Twin Cities metro area.
- **Strategic expansion**—In some locations, new general purpose lanes may be needed to provide lane continuity or to complete an unfinished segment of the highway system. An example is the extension of Highway 610 in Maple Grove.

Investment/Spending

MnDOT's Metro District has identified $198 million in investments dedicated to mobility improvements for the 2012-2015 State Transportation Improvement Program. Several projects ongoing or scheduled for 2012-2015 that will improve mobility are listed in the table below.

Project	Cost Estimate
Interchange at I-494 and Hwy 169	$170 M
Hwy 36 St. Croix River Crossing	$574-690 M
I-35E bridge reconstruction at Cayuga St	$190 M
I-694/Hwy 51/Hwy 10 interchange lane addition	$55 M

Source: MnDOT OCPPM

How We Decide

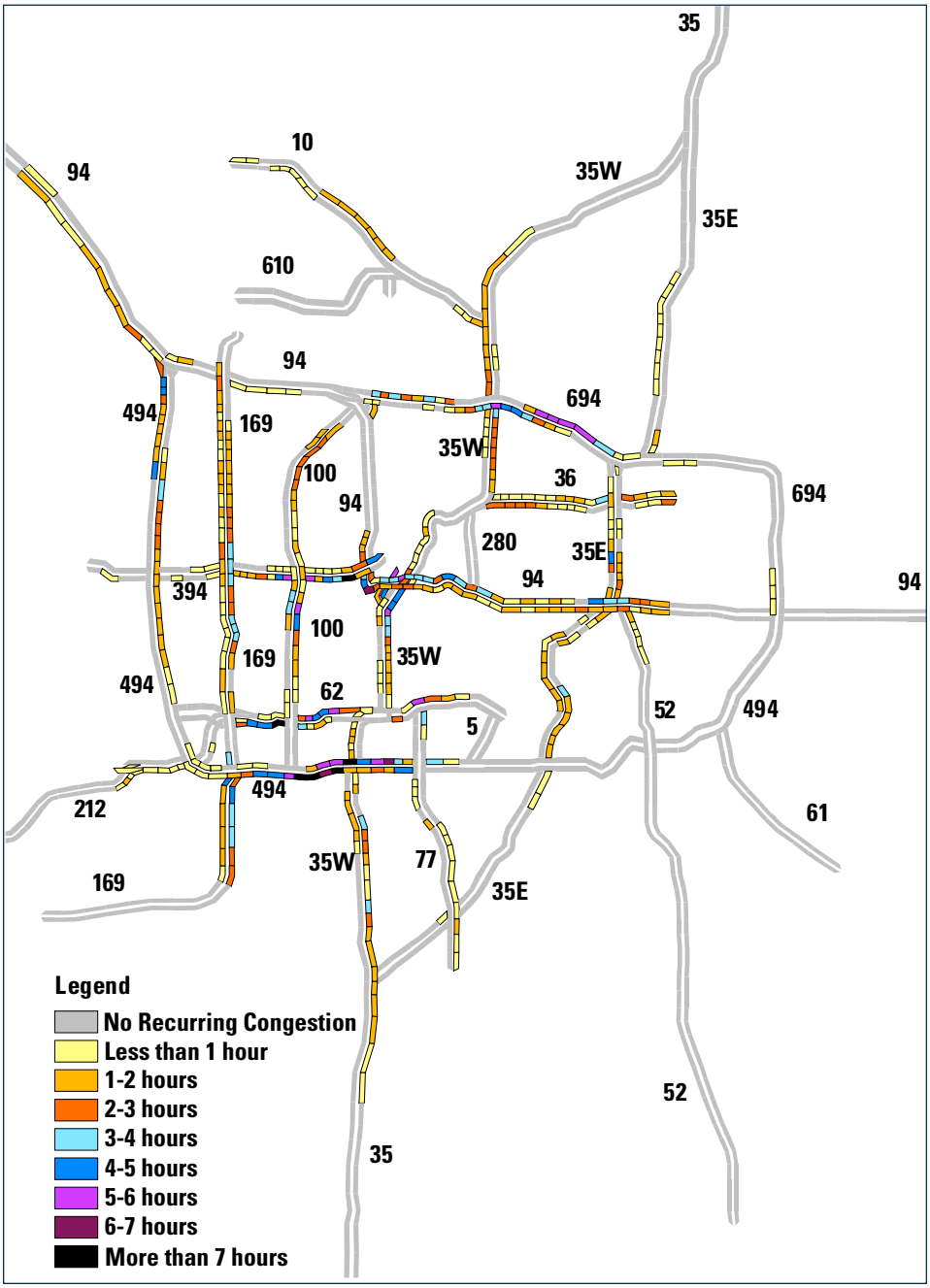
Decisions involving day-to-day management of area highways, such as incident clearance and timing of traffic signals are guided by MnDOT's Metro District, including its Regional Transportation Management Center in Roseville that works with counties and cities.

Long-term decisions on how to address congestion in the Twin Cities are made through a complex, collaborative process. MnDOT's Metro District develops alternatives and plans and makes decisions in partnership with the Metropolitan Council, cities, counties, and regional and county transit authorities. Public input is sought for both the Metropolitan Council's Transportation Policy Plan and MnDOT's Metro District Highway Investment Plan. These plans direct projects that go into MnDOT's annual four-year construction program.

Projects to improve mobility are balanced with projects to improve safety or preserve bridges and pavement.

Actual project decisions are affected by changing factors such as revenues, costs and community input. Corridor measurements of travel speed, congestion, throughput and crashes help identify needs and design options but do not alone determine which projects are built. Specific designs for highways or transit facilities are shaped by MnDOT planners and engineers and contracted engineering firms.

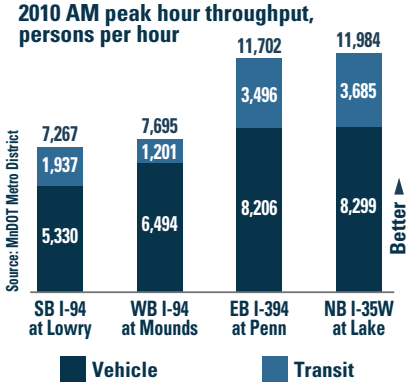
2011 Metro Freeway Congestion—Estimated speed less than 45 mph

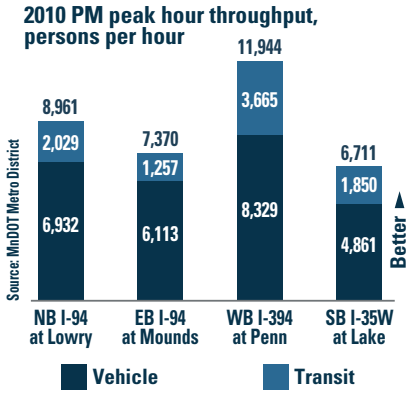


Source: MnDOT Congestion Report

For Comparison

Using a travel time index (the ratio of peak to free-flow travel time), the Twin Cities area is the 7th most congested of 32 metropolitan areas of similar size (16th of 101 overall), according to the 2011 Texas Transportation Institute Urban Mobility Report (data are from 2010).





High Return On Investment Example

The Interstate 494 and Highway 169 interchange project used a performance-based approach to include just six ramps instead of the eight usually required (minimal traffic from the west). The project also reduces the number of stoplights required. This approach saved $35 million while reducing congestion and satisfying the need. This cost savings over the traditional standards-based approach will be used to pay for other projects.

Learn More

MnDOT Metropolitan Freeway System 2011 Congestion Report
www.dot.state.mn.us/congestionreport/CongestionReport2011.pdf

MnDOT Metro District 20-year Highway Investment Plan 2011-2030
www.dot.state.mn.us/planning/stateplan/downloadinvestmentplan.html

MnDOT real-time traffic information
www.dot.state.mn.us/tmc/trafficinfo/traffic.html

Metropolitan Council Transportation Policy Plan
www.metrocouncil.org/planning/transportation/TPP/2010/index.htm

Texas Transportation Inst. Mobility Report
http://mobility.tamu.edu/ums/

Incident Clearance

Twin Cities Mobility

Measure

Clearance time for urban freeway incidents

System

Twin Cities urban freeways (400 miles)

Why this is important

Incidents are a major source of non-recurring congestion. As a rule of thumb, four minutes of congestion results from each minute one traffic lane is blocked by an incident. Among the objectives in the Metro District Highway Investment Plan is an increase in travel time reliability. Clearing incidents from the freeway system quickly helps reduce congestion and secondary crashes. The Freeway Incident Response Safety Team (FIRST) program has a benefit-cost ratio of about 16 to 1 based on reduced delay, crashes, fuel consumption and emissions.

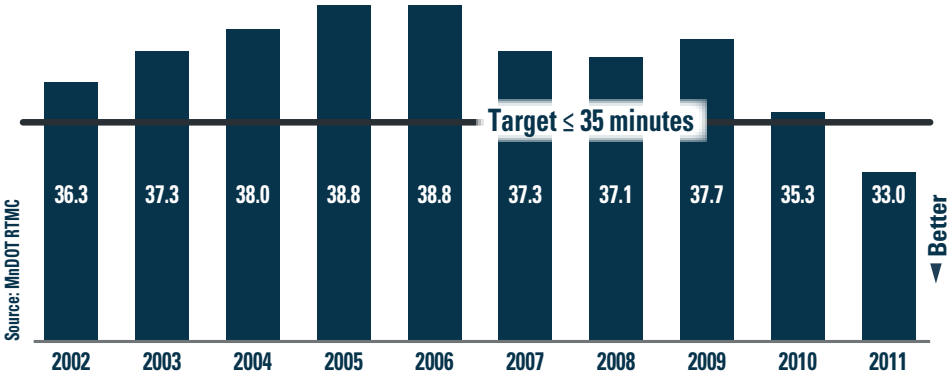
Our Progress

Average incident clearance time in 2011, based on a three-year average, was 33 minutes. This was faster than the 35-minute target and was the best time in 10 years.

Cameras allow the RTMC to monitor traffic in real time.

Source: MnDOT

Average clearance time for Twin Cities urban freeway incidents (minutes, 3-year average)



Source: MnDOT

What We Are Doing

MnDOT works with the Minnesota State Patrol, local police, towing companies and other emergency responders to improve speedy clearance of incidents from freeways. MnDOT and the State Patrol have signed an "Open Roads Policy" agreeing to expedite the removal of vehicles, cargo and debris from state highways to more quickly restore traffic flow following a crash or incident. MnDOT is able to respond to more incidents because FIRST coverage has approximately doubled since the program began.

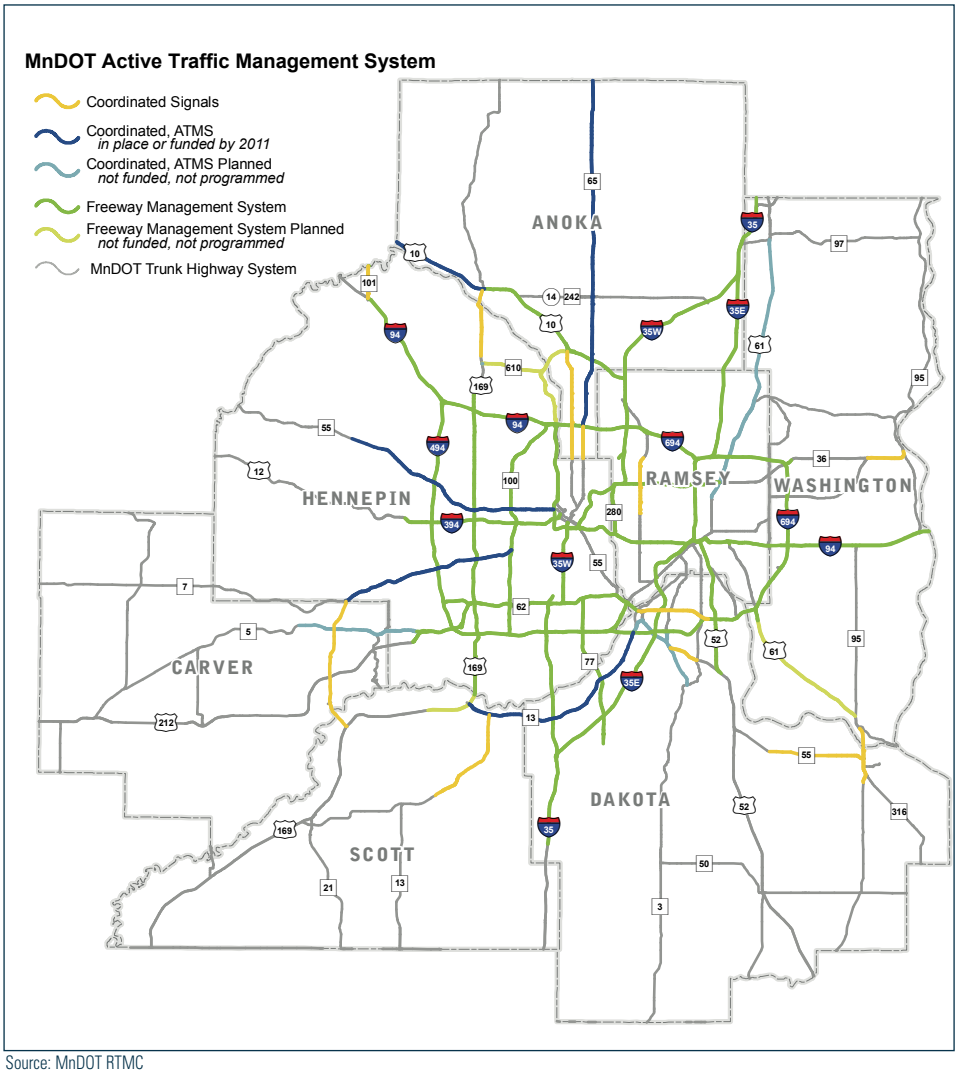
In 2010, the Minnesota Legislature passed a "quick clearance" law that allows MnDOT and the State Patrol to remove obstructions from roads without waiting for the owners to do so. This applies to vehicles involved in crashes or spilled loads that block the road or aggravate an emergency.

Strategies

MnDOT's Metro District 20-year Highway Investment Plan and the updated Metropolitan Council Transportation Policy Plan both emphasize management strategies to optimize the use of existing lanes. As facilities accommodate more traffic within existing capacity, operations such as incident clearance will become more important to ensure reliable travel. Other reliability strategies include providing MnPASS high-occupancy/toll lanes as a congestion-free alternative on freeways, and coordinating signals and limiting access points to reduce traffic flow disruptions on arterials.

Strategies to improve freeway incident clearance time include:

- Expanding FIRST coverage on Highway 10, I-35W and I-35E when funding becomes available



Source: MnDOT RTMC

How We Decide

MnDOT Metro District's Freeway Management team and maintenance staff, along with the State Patrol, are located at the Regional Transportation Management Center in Roseville. They monitor 400 miles of the Twin Cities urban freeway system with cameras and vehicle loop detectors buried in the roadways. When an incident is identified, RTMC personnel communicate with MnDOT field personnel and other emergency responders to decide the best method for responding to and clearing the incident. FIRST drivers work closely with troopers and maintenance to secure the scene, control traffic, and clear blocked lanes.

Source: MnDOT

What We Are Doing (cont.)

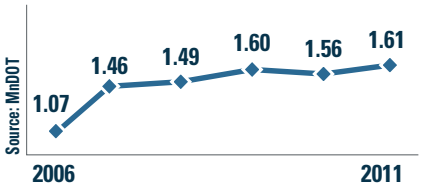
- Improving on-site efficiency with use of automated crash forms by the State Patrol and computer-aided State Patrol dispatching on laptops in FIRST trucks
- Conducting Emergency Responder Safety training that emphasizes keeping traffic moving while safely securing the scene; following guidelines developed with various partners
- Working with external partners, including towing associations on quick clearance, the State Patrol on Open Roads Policy and FHWA on meeting the National Unified Goal for Traffic Incident Management

Strategies such as lane control signals and dynamic message signs help warn motorists and manage traffic until clearance personnel arrive.

Investment/Spending

Incident management extends beyond the FIRST program at the Regional Transportation Management Center. MnDOT's supporting activities include maintenance crews and equipment that help clear major incidents, freeway system design and repair, cameras, dynamic message signs, and traveler information. Additional resources are committed by the State Patrol, local fire and rescue squads, local law enforcement, EMS/ambulance services and tow-truck operators. The following chart displays FIRST program expenditures from 2006 to 2011.

FIRST program spending: $million



For Comparison

The Twin Cities ranks first of 32 metropolitan areas of similar size (10th of 101 overall) in the amount of delay avoided because of operational treatments, according to the 2011 Texas Transportation Institute Urban Mobility Report 2010 data. Operational treatments included are incident management, ramp metering, signal coordination, access management, and HOV lanes.

Learn More

MnDOT Regional Transportation Management Center (RTMC)
brian.kary@state.mn.us
www.dot.state.mn.us/rtmc/index.html

MnDOT real-time traffic information
www.511mn.org

Federal Highway Administration Congestion Reduction Toolbox
www.fhwa.dot.gov/congestion/toolbox/service.htm.

Metro Area Transit

Twin Cities Mobility

Measure

Annual rail and express transit ridership in the Twin Cities metropolitan area: includes express buses (all providers), light rail transit and commuter rail

System

Includes transitways and supporting infrastructure within the Twin Cities metro area transit system. Transitways are corridors where a dedicated running way or other feature enables transit to move more quickly or reliably than personal vehicles. They include light rail transit, bus rapid transit, commuter rail, and express buses with transit advantages. Express bus services provide a premium over regular-route bus service in travel time or ride quality.

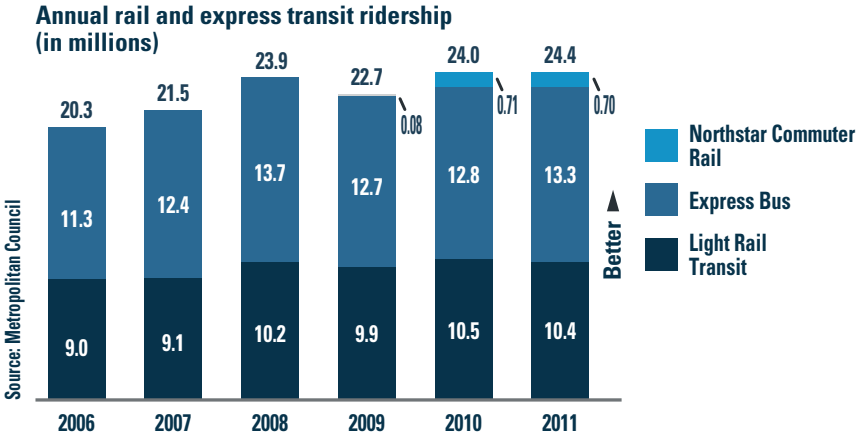
Transit features on highways that serve express transit include: 296 miles of bus-only shoulders, 12 miles of bus-only lanes on city streets, 7 miles of exclusive busways, 51 miles of HOV/HOT lanes, and 94 ramp meter bypasses. Supporting infrastructure for express transit includes 110 park-and-ride lots with more than 29,000 spaces and 32 Transit Centers with improved transfer facilities and waiting conditions.

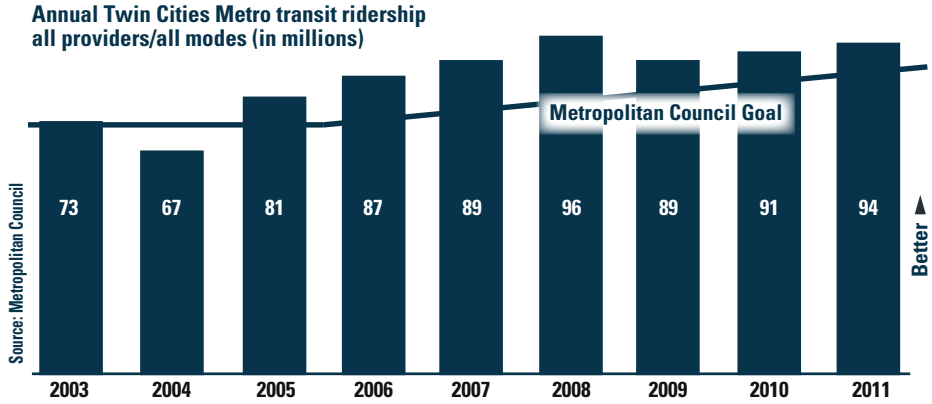
Why this is important

Transit connects people to jobs, family, schools, shopping, health care centers, sports and cultural events. Transit is an alternative to driving that can reduce congestion, fuel consumption and greenhouse emissions. Rail and express transit offers more reliable trips over longer distances during peak commute hours than regular transit.

For Comparison

According to the Office of the Legislative Auditor, in 2008 Metro Transit ranked fourth among 11 national peer agencies for having the lowest cost per passenger. Metro Transit also had the second highest fare recovery percentage, with 31 percent of its operating expenses covered by fare revenue.





Our Progress

Ridership on rail and express transit was 24.4 million trips in 2011, an increase of almost 20 percent from 2006. Most of the increase is explained by the rising use of express bus and LRT service. The rest of the increase reflects ridership on the Northstar Commuter Rail Line. Rail and express transit constituted 26 percent of all transit trips in 2011.

Counting all forms of public transit, including regular route and dial-a-ride buses, 2011 ridership in the metro area totaled 94 million trips. This represents a slow but sustained rebound from the 2009 decline produced by the recession. Total transit ridership has exceeded Metropolitan Council targets every year since 2005. The council's goal is to double 2003 ridership by the year 2030.

In 2011, the Central Corridor LRT project ended the year on schedule with 45 percent of heavy construction completed. The line is anticipated to open for service in 2014.

In 2011, the Southwest Light Rail Transit achieved an important milestone when it received permission from the Federal Transit Administration to enter into preliminary engineering. This line will stretch approximately 15 miles from downtown Minneapolis to Eden Prairie, with projected ridership of nearly 30,000 average weekday riders by 2030.

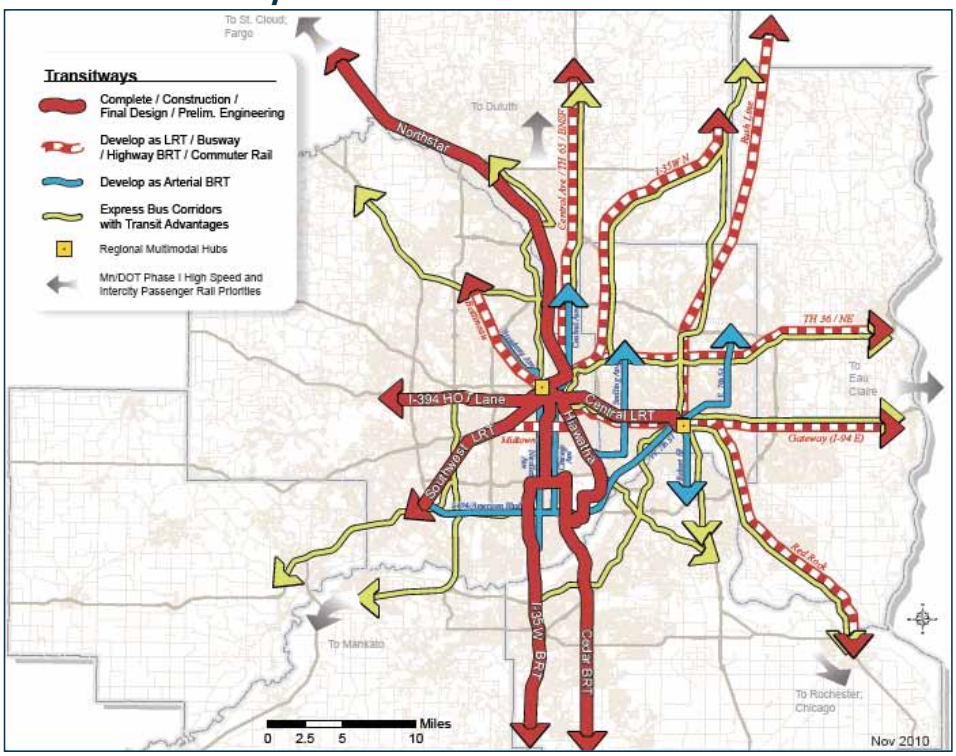
What We Are Doing

Metropolitan Council—The Council's 2030 Transportation Policy Plan outlines strategies to increase transit ridership in the Twin Cities, including developing a regional transitway system. The Met Council has primary responsibility for planning transitways. It also oversees Metro Transit which operates the largest fleet of express buses, the sole LRT line and the sole commuter rail line. The Met Council uses engineering, enforcement, education and emergency trauma systems to accomplish its goals.

Minnesota Department of Transportation—MnDOT contributes to transitways by providing transit advantages on state highway corridors. Transit advantages enable express buses to move more people faster along existing corridors by bypassing peak-hour congestion. MnDOT also assists the Met Council and county transit authorities in planning, designing, financing and constructing light rail and commuter rail lines.

Counties Transit Improvement Board—CTIB is a joint powers agreement among Anoka, Dakota, Hennepin, Ramsey and Washington counties. It receives and distributes a one-quarter percent transit sales tax for the development, construction and operation of transitways serving the five-county area. CTIB has committed 30 percent of the funding to construct the Central Corridor LRT line. It also committed

Metro area transit systems



Source: Metropolitan Council

How We Decide

Expansion and improvements of express bus transit advantages on highways have traditionally been made through a process guided by Team Transit, consisting of transit planners and engineers from the MnDOT Metro District, Met Council/Metro Transit, and other providers in the region. MnDOT examines each potential project for maximum impact on ridership and congestion.

Roles in light rail and commuter rail development vary by project. On the Hiawatha LRT Line, Hennepin County led initial planning, MnDOT provided design and construction services, and the Met Council administered financing and now operates the line. For the Central Corridor, Ramsey County led initial planning. The Met Council was the lead agency during design and construction, and will operate the line. MnDOT provides assistance with construction, property acquisition, utilities and environmental preservation.

Source: MnDOT

What We Are Doing (cont.)

operating funds for the Hiawatha LRT line, Northstar and the I-35W and Cedar Avenue BRT lines.

Strategies

The map above displays the current and planned Twin Cities area transitways system. The Central Corridor LRT line is under construction and the Southwest Corridor LRT line has applied to enter preliminary engineering. In the East Metro, the Met Council and CTIB are funding an express bus demonstration on the Rush Line corridor between St. Paul and Forest Lake. Other transitways being explored are the Red Rock corridor to Hastings, Highway 65 into Anoka County, and I-94 from St. Paul to the St. Croix River.
Many strategies to expand rail and express transit ridership have already been described. Chief among them is the expansion of system coverage and frequency, and the construction and maintenance of park-and-ride facilities throughout the region.

MnDOT helps make rail and express transit more competitive by building and maintaining the bus shoulder system; providing ramp meter bypasses for buses; planning and constructing special highway lanes such as MnPASS; and contributing to Bus Rapid Transit projects such as those on I-35W and TH77/Cedar Avenue.

Sustainability

MnDOT is a pioneer in the use of bus shoulders, which have environmental and fiscal benefits. They increase the productivity of existing highway rights of way by moving more people faster and reducing fuel use and emissions caused by idling in congestion. Today, the 296-mile system is the nation's largest. More than 130 express bus routes use bus-only shoulders, typically saving Twin Cities riders 5 to 15 minutes per trip.

Investment/Spending

Capital investment in transit infrastructure varies widely from year to year depending on projects under construction. The largest source of funding for the construction of rail projects is generally the Federal Transit Administration. Other major sources are the CTIB, state general funds and local governments. Additional partners have been the Metropolitan Airports Commission on the Hiawatha LRT Line and the Minnesota Twins on Northstar.

Major expenditures in 2011 included:

- Metropolitan Council: $ 302.7 million in capital investment, $379.4 million in operating expenditures
- CTIB: $151.1 million in capital and operating grants
- MnDOT: $7.2 million

Learn More

MnDOT Metro District –
www.dot.state.mn.us/metro
Bryan Dodds, Metro District Transit Director
bryan.dodds@state.mn.us

Metropolitan Council/Metro Transit
www.metrotransit.org

2030 Transportation Policy Plan—
www.metrocouncil.org/planning/transportation/TPP/2010/index.htm

Counties Transit Improvement Board
www.mnrides.org/

Urban Partnership Agreement Project
www.dot.state.mn.us/upa

Bus Service Hours

Greater Minnesota Metropolitan and Regional Mobility

Measure

Greater Minnesota public transportation bus service hours. A bus service hour (revenue hour) measures the time that a vehicle is available to the general public with the expectation of carrying passengers.

System

58 public transit systems serving 78 out of 80 Greater Minnesota Counties (as of 2011).

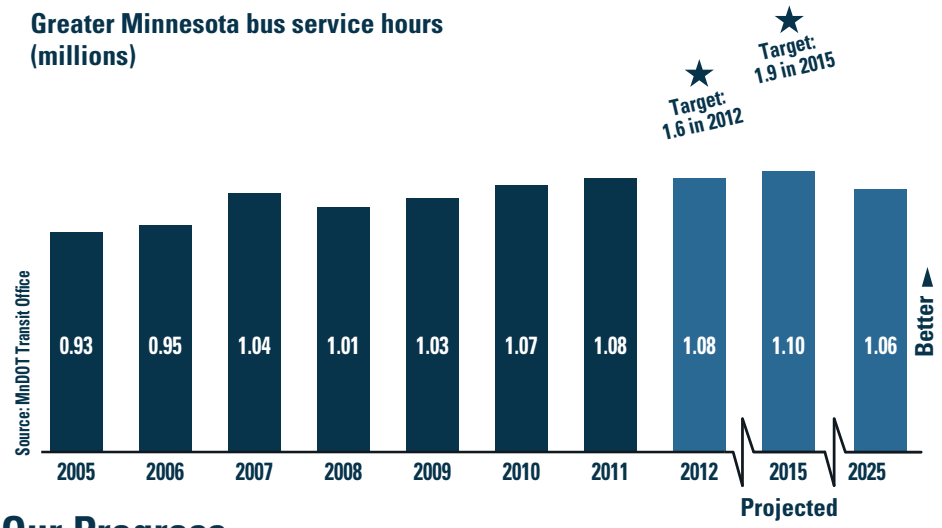
Why this is important

Greater Minnesota public transportation systems provide thousands of people with access to jobs, education, health care, shopping and recreation. These systems also enhance the mobility of the elderly and persons with disabilities in communities across the state.

Bus service hours are used to track the level of transit service provided in Greater Minnesota. Bus service hours also are used to calculate the service level necessary to meet transit need. To meet the transit service targets identified by the Legislature, the Greater Minnesota Transit Investment Plan estimates that 1.6 million service hours will be needed in 2015 and 1.9 million service hours in 2025.

Source: MnDOT

Greater Minnesota bus service hours (millions)



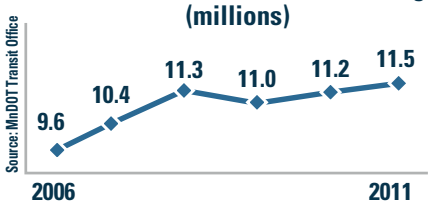
Our Progress

Other than a small spike in 2007, Greater Minnesota bus service hours have slowly trended upward since 2005. Service hours are projected to eventually flatten as inflation outpaces the combined total of federal, state and local funding sources for transit. Because transit need is projected to increase, the result will be a widening gap between need and the level of service provided.

MnDOT calculates transit need using annual service hour per capita target rates that vary with population density. The target rate for large urban centers (Duluth, Rochester and St. Cloud) is between 1.5 and 1.75 hours; the target rate for rural and small urban areas is between 0.5 and 0.75 hours.

Greater Minnesota transit ridership (boardings) has increased 20 percent since 2006, but most of that growth occurred between 2006 and 2008. In the last three years this measure has seen only very modest increases.

Greater Minnesota transit boardings (millions)



What We Are Doing

Greater Minnesota's 58 public transit systems are operated by local governments and non-profits. MnDOT manages state and federal transit assistance programs, directs planning and research, and provides technical assistance.

Strategies

The most effective way to grow the number of bus service hours in Greater Minnesota is to maintain and expand the statewide public transit network. The Greater Minnesota Transit Plan 2010 – 2030 delineates three strategies to achieve this goal (Policy 1, pg 7-2).

First, prioritize financial assistance to public transit services that meet performance targets. MnDOT recommends that local transit systems establish performance objectives for every kind of service, such as:

- Fixed routes in larger cities like Duluth and St. Cloud
- Demand-response routes
- Deviated routes.

Local operators with service segments that do not meet local objectives are encouraged to reassign service to other segments that are more productive.

Second, provide resources to start new transit services in areas without public transit.

Third, support the expansion of core service frequencies and the weekday/weekend service hours of existing transit providers.

Sustainability

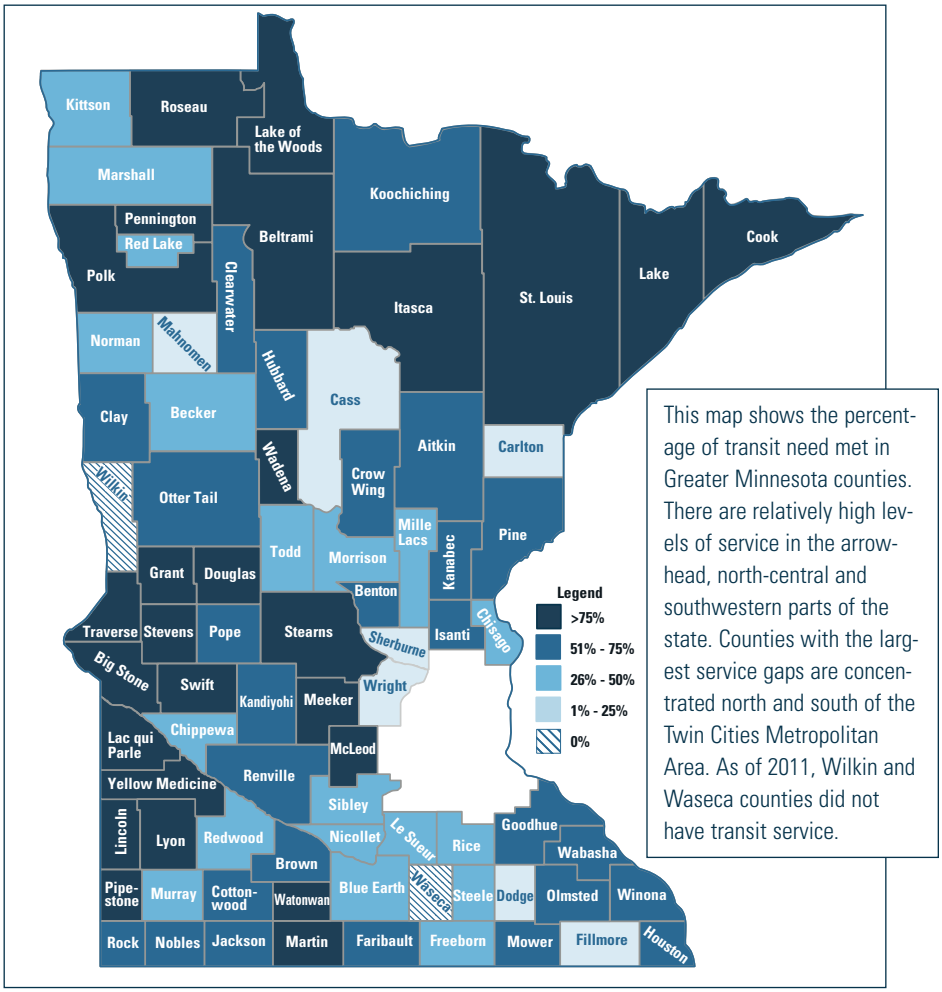
St. Peter Transit, serving the cities of Kasota and St. Peter, increased its ridership by 73 percent from 2006 to 2010. A big portion of this increase came from forging an agreement with Gustavus Adolphus College to transport its students.

Arrangements like this produce efficient transportation while forming a foundation for sustainable lifestyles for young adults.

Innovation

The Hubbard County Heartland Express developed a cooperative agreement with Paul Bunyan Transit, serving the city of Bemidji and Beltrami County, to have the buses from both systems dispatched from Paul Bunyan's operations center. This resulted in safer operation for Hubbard County Heartland Express, where drivers formerly had to pull over to receive calls for rides on their cell phones and jot

Percent of transit need met in Minnesota counties: 2011



This map shows the percentage of transit need met in Greater Minnesota counties. There are relatively high levels of service in the arrowhead, north-central and southwestern parts of the state. Counties with the largest service gaps are concentrated north and south of the Twin Cities Metropolitan Area. As of 2011, Wilkin and Waseca counties did not have transit service.

Source: MnDOT Office of Transit

What We Are Doing (cont.)

down the addresses of future stops. Now a dispatcher in Bemidji receives the ride request and transmits the rider's name and address to a small screen on a mobile data terminal in the Heartland Express bus. As a result of the more efficient operation, Heartland Express increased ridership by 17 percent from 2010 to 2011 without its buses driving significantly more miles, and also has expanded the radius of regular city service outside Park Rapids by two miles.

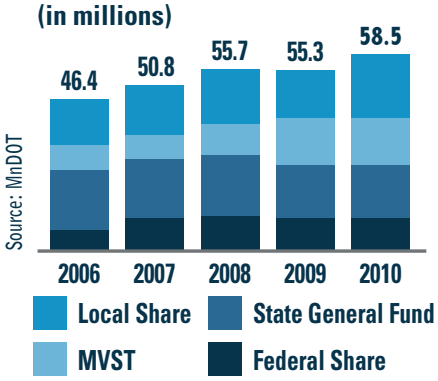
Investment/Spending

Public transportation programs in Minnesota are funded through a federal-state-local partnership. When state and federal funds are adequate, local sources pay a minimum share of the total operating costs, either 15 or 20 percent, depending on the type of service provided. When state and federal funds are not sufficient to fund service at the 80 and 85 percent targets, local systems have the option to make up the difference.

State funding of Greater Minnesota transit comes from General Fund appropriations and the Motor Vehicle Sales Tax. Greater Minnesota transit's share of MVST revenue is 4 percent. Federal funding for Greater Minnesota transit is set by the Federal Transit Administration's formula for distributing transit dollars to each state. Local contributions come primarily from passenger fares, contracts for services and property taxes.

Spending on Greater Minnesota transit operations increased fairly quickly from 2006 to 2008 due to increasing investments of federal and local funds. An increase in transit's share of the MVST largely offset reductions in the state general fund to drive small overall increases in spending on operations from 2008 to 2010.

Greater Minnesota transit operating expenditures (in millions)



How We Decide

Each year the transit systems submit transit grant applications to the Office of Transit for funding consideration. The application for funds includes a service plan that describes the hours of service, the routes or areas served, the number of buses and the frequency and span of service.

According to the Greater Minnesota Transit Investment Plan, the first priority is to preserve existing systems. To qualify for preservation, a system must demonstrate local fiscal capacity and meet performance standards as measured through an annual, three-step system review process.

Step 1: Conduct system-level performance reviews based on peer groups. Reviews use the following measures:

- Cost per passenger
- Cost per service hour
- Passengers per service hour
- System revenue to total operating cost ratio
- Service hours per capita
- Service frequency based on regional trade center level

Step 2: Check compliance with state and federal reporting requirements.

Step 3: Conduct follow-up operational analysis. If a system fails on either of the first two steps, MnDOT requires a follow-up analysis to identify causes of poor performance. MnDOT works with systems to improve performance.

Source: MnDOT

Learn More

MnDOT Office of Transit
www.dot.state.mn.us/transit
Mike Schadauer—mike.schadauer@state.mn.us

Greater Minnesota Transit Investment Plan and other reports
www.dot.state.mn.us/transit/reports/investment-plan/index.html

Federal Transit Administration Grant Program
www.fta.dot.gov/grants.html

Access

Community Development & Transportation

Measure

Percent of signalized intersections with accessible pedestrian signals (APS) installed.

Percent of Greater Minnesota curb ramps that comply with the Americans with Disabilities Act.

System

ADA applies to all public rights of way, facilities, buildings, meetings, hearings and documents. The APS measure applies to 1,179 state highway intersections. The curb ramp measure applies to all curb ramps at state highway intersections.

Why this is important

The goals of MnDOT's ADA strategic initiative are to ensure that:

- Minnesota transportation systems are accessible to all users, including people with disabilities
- MnDOT's facilities, activities and programs are accessible to all
- Minnesota complies with national ADA laws prohibiting state and local government agencies from discriminating based on disability
- MnDOT builds public trust with users of accessible public services

Our Progress

The 52 APS installations in the 2011 construction season brought the system total to 246 of 1,179 locations where APS is required in state highway intersections. The construction program for 2012 includes an additional 75 intersections. MnDOT's target is that all state highway intersections with pedestrian push buttons will have APS by 2030. Based on normal signal replacement intervals for aging signals, and special dollars being invested, MnDOT expects to meet its target. APS is also required for all new signals, whether replacing existing signals or installing new signals.

MnDOT has completed its curb ramp inventory and will complete its sidewalk inventory by fall 2012. The policy is to replace ramps that are structurally deficient before addressing those that are functionally substandard or obstructed.

ADA curb ramp compliance: 2011-12

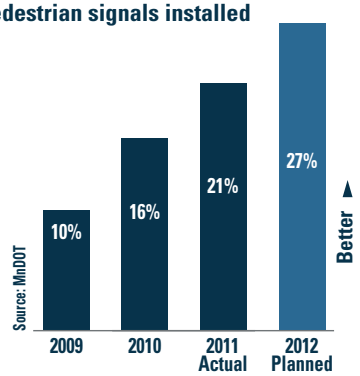
District	Total curb ramps inventoried	# Completely compliant	# Compliant slope and landing
1 - Duluth	1,698	4	11
2 - Bemidji	806	70	190
3 - Baxter	1,754	141	217
4 – Detroit Lakes	1,308	49	151
6 - Rochester	2,587	179	920
7 - Mankato	601	17	71
8 - Willmar	1,798	60	229
Metro*	2,412	419	602
Total	7,878	1,201	3,844

Source: MnDOT Office of Policy Analysis, Research and Innovation

* Metro District has completed approximately 25% of its inventory.

Source: MnDOT

Percent of intersections with accessible pedestrian signals installed



Source: MnDOT

What We Are Doing

MnDOT's ADA Transition Plan prioritizing departmental policies and infrastructure improvements was published in April 2010 and will be updated again in 2012. ADA is one of 12 flagship initiatives in the department's strategic plan. Internal and external advisory groups were consulted in the development of the transition plan, and continue to guide efforts to make the transportation system accessible. One of MnDOT's responses to the disability community's recommendations has been to adopt the national Public Right of Way Accessibility Guidelines as a basis for updates to facility design standards and policies. MnDOT has dedicated additional staff to ensure that construction projects are designed for proper accessibility, to manage the ADA investment program, and to provide leadership on accessibility to external partners.

Strategies

- **Continue APS installations** for signal replacements and additions. APS provides directions in multiple formats including verbal messages, audible tones and vibrating surfaces.

Source: MnDOT

Source: MnDOT

What We Are Doing (cont.)

- Use **Standard Design Guidance** for sidewalks and curb ramps. MnDOT's design guidance is being updated to reflect accessibility needs. Design issues include the width and slope of sidewalks and the presence of any barriers.
- Continue **Rest Area improvements** including signing, sidewalk repairs and modifications to drinking fountains and restroom fixtures.
- Use **citizen input processes** for MnDOT to respond to user concerns about the accessibility of its facilities.

Innovations

- MnDOT is exploring alternative contracting methods that will allow the bundling of accessibility improvements to provide more cost-effective, higher quality projects.
- MnDOT's Complete Streets policy places additional emphasis on providing transportation facilities that are accessible to users of all abilities.
- Context Sensitive Design encourages broader consideration of the environment affected by a project and is another area where progress toward greater accessibility is being made.

Investment/Spending

Most accessibility improvements are made as parts of larger projects. The accessibility components can range from including curb ramps in an intersection reconstruction to adding major elements such as the pedestrian facilities planned for the river bridge at Hastings. As a rough estimate, 1 to 2 percent of a project's cost goes toward pedestrian accommodations. In addition to the regular construction program, MnDOT has dedicated $2.5 million per year from 2010 to 2015 specifically for ADA improvements.

Curb ramp accessibility is lower than anticipated, therefore routine projects may not suffice to correct deficiencies in a timely fashion. The investment needed to correct sidewalk deficiencies will be known when the sidewalk inventory is complete, but a similarly low level of compliance is expected. To accelerate progress, MnDOT will need to explore additional dedicated funding sources.

How We Decide

Stakeholder input is provided through three committees and gathered by the MnDOT ADA implementation coordinator. The MnDOT ADA Accessibility Advisory Committee includes individuals with various disabilities, representatives from the Minnesota State Council on Disability, and the Metropolitan Council. Within MnDOT, the ADA Advisory Committee provides direction on the integration of ADA policy and practice into project delivery and operations. The ADA Implementation Committee includes engineers from each district who provide technical support, track requests for improvements, and serve as points of contact.

The ADA Transition Plan includes guidance on prioritizing necessary improvements. Intersections are selected for conversion to APS using a rating tool. Considerations also include:

- Pedestrian use
- Surrounding properties, such as schools or medical facilities
- Transit presence
- Citizen requests

For curb ramps and sidewalks, the inventory data will help identify barriers within the system and prioritize needs. Construction project managers in each MnDOT district are responsible for determining what is necessary for their projects to meet ADA requirements. MnDOT is developing statewide design guidance for accessibility, and working on including it earlier in the design and right of way acquisition phases of project development.

Source: MnDOT

Learn More

Accessibility and MnDOT
Kristie Billiar—kristie.billiar@state.mn.us
www.dot.state.mn.us/ada/

U.S. Department of Justice ADA Home Page
www.ada.gov/

Complete Streets
www.dot.state.mn.us/planning/completestreets/

Biking, Walking & Public Transit

Community Development & Transportation

Measure

Bike, walk and public transit share of commuter trips in larger Minnesota cities.*

System

Transit infrastructure, bikeways and pedestrian facilities in Minnesota metropolitan areas with population over 65,000 people.

Why this is important

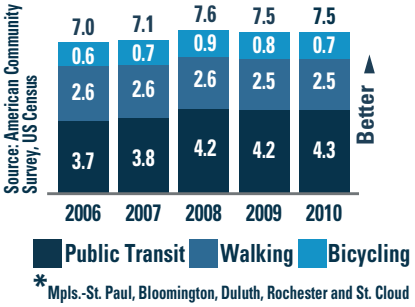
The benefits of riding a bicycle, walking, or using public transportation include improved environmental and personal health, reduced traffic congestion, enhanced quality of life and economic rewards.

MnDOT provides an integrated multimodal transportation system by "promoting and increasing bicycling and walking as a percentage of all trips as energy-efficient, non polluting, and healthy forms of transportation; and by increasing the use of transit as a percentage of all trips giving the highest priority to the transportation modes with the greatest people-moving capacity and lowest long-term economic and environmental cost" (Minnesota Statutes 2010 Section 174.01).

*Mpls.-St. Paul, Bloomington, Duluth, Rochester, and St. Cloud

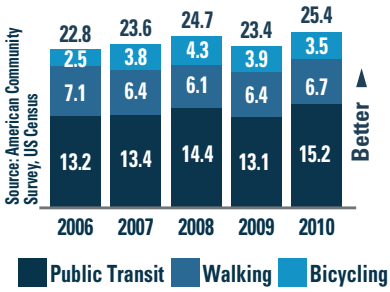
Source: MnDOT

Commuting to work in selected Mn cities* (percent biking, walking and public transit)



*Mpls.-St. Paul, Bloomington, Duluth, Rochester and St. Cloud

Commuting to work in Minneapolis (percent biking, walking and public transit)



Commuting to work in selected Minnesota cities*

Mode Share of Commuter Trips in Selected Metro Areas	% change 2006-10
Bicycling	2.2%
Walking	-4.8%
Public Transportation	17.9%
Total Share	7.8%

*Mpls.-St. Paul, Bloomington, Duluth, Rochester, and St. Cloud
Source: American Community Survey, US Census

Commuting to work in Minneapolis

Mode Share of Commuter Trips in Minneapolis	% change 2006-10
Bicycling	38.9%
Walking	-5.6%
Public Transportation	15.1%
Total Share	11.3%

Source: American Community Survey, US Census

Our progress

In Minnesota's largest urban centers (Mpls.-St. Paul, Bloomington, Duluth, Rochester, and St. Cloud), the total share of bicycling, walking and transit use has been relatively constant for the past five years.

From 2006 to 2010, biking increased 2.2 percent, public transit increased 17.9 percent, and walking decreased 4.8 percent.

From 2006 to 2010, Minneapolis biking increased 38.9 percent, public transit use increased 15.1 percent, and walking decreased 5.6 percent.

Minneapolis has made significant improvements in order to keep its place as one of the top cities in the country for bicycling. The city's improvements include investing in bikeway network infrastructure, using educating to increase ridership, and planning and evaluation to measure results and accelerate improvements.

Source: MnDOT

What we are doing

MnDOT and its partners are designing, building and operating a safer and more livable road network for all users—bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities.

Because bicycling and walking are critical components of Minnesota's multimodal transportation system, MnDOT is expanding its efforts in the five Es and Complete Streets:

- **Enforcement**
- **Engineering**
- **Education**
- **Encouragement**
- **Evaluation**

Strategies

Enforcement—MnDOT provides materials to law enforcement officers. They regularly use Share the Road materials when giving out warnings and citations to motorists and bicyclists.

Engineering—MnDOT provides technical assistance to cities, counties, Metropolitan Planning Organizations, and Regional Development Commissions to accommodate bicyclists and pedestrians in construction projects and in developing bicycle and pedestrian plans.

Education—MnDOT's Share the Road campaign gives motorists and bicyclists safety information that addresses common crash scenarios.

Encouragement—MnDOT works with partners throughout the state to encourage active transportation. The Minnesota Department of

Source: MnDOT

What we are doing (cont.)

Health's Statewide Health Improvement Program encourages biking and walking, including walking and biking to school.

Evaluation and Planning—MnDOT develops and implements the Minnesota Statewide Bicycle Policy Plan. The goal of the plan is to improve conditions for bicycling on Minnesota roads.

Complete Streets—Minnesota has adopted a Complete Streets law. MnDOT's Complete Streets activities include:

- Developing a balanced transportation system that integrates all modes
- Including transportation users of all types, ages and abilities

The law also encourages local agencies to adopt their own policies. Ten cities, one county and one Metropolitan Planning Organization have enacted Complete Streets resolutions, policies or plans.

Innovation

MnDOT supports research and innovation for the Statewide Multimodal Cyclopath—a free online web-based application developed by the University of MInnesota that allows users to create, edit and rate their own bike routes on a regional basemap.

Sustainability

Encouraging drivers to bike, walk and use public transportation meets environmental, civic engagement and economic goals of sustainability. Ridesharing Services provided by the Metropolitan Council offer additional transportation choices for commuters currently driving alone. Metro Transit works with individuals and business to develop alternatives to solo driving.

Ridesharing services accomplishments

Year	Trips (000's)	Miles (000's)	CO_2 tons	Fuel Savings gal
2009	52	376	179	18,775
2010	197	2,193	667	106,000
2011	202	2,450	700	114,000

Source: Metropolitan Council Performance Evaluation Reports 2009-2010

Investment/Spending

In 2011, MnDOT provided $6.9 million for 54 non-motorized transportation projects across the state and $3.4 million for Safe Routes to School projects.

Minneapolis and its surrounding cities received a federal pilot grant of nearly $25 million to implement the Nonmotorized Transportation Pilot Program until 2010. The NTPP consisted of infrastructure and operational improvements as well as education and promotion programs aimed at demonstrating how improved walking and bicycling networks can increase rates of walking and bicycling.

How we decide

When making decisions about bicycling, walking and public transportation, MnDOT uses the Context Sensitive Solutions approach to involve all stakeholders in designing solutions that fit their settings and enhance scenic, aesthetic, historic, community and environmental resources, while improving safety, mobility and infrastructure.

Selected biking and walking improvements in Greater Minnesota: 2011

Mn-DOT Dist.	Project Description	Agency	Cost
1	Mn146: Munger Trail extension, Duluth, Pulaski to Recycle Way	City	$2,300,000
2	Safe Routes to School Program: sidewalk construction along East Grand Forks' Bygland Road	County	$170,000
3	Mn251 and Mn260: Construct bike/pedestrian bridge over Th 65 in Isanti	County	$950,000
4	Geneva Road from Mckay Avenue to Douglas Co Rd 73: bike and ped lanes	City	$645,000
7	Safe Routes To School Program: Safety Education Program	County	$27,000

Source: MnDOT OCPPM

For Comparison

In the 2011 League of American Bicyclist U.S. rankings, Minnesota is 4th among the states, holding its 4th place from 2010 rankings. Source: League of American Bicyclists.

In 2010 Minneapolis was ranked #4 among the nation's 70 largest cities for its share of bicycle commuters and # 23 among 375 communities sampled by the ACS. Source: US Census–2010 ACS Data

Source: MnDOT

Learn more

Bicycle Alliance of Minnesota (BikeMN)
www.bikemn.org/

Share the Road – Minnesota's Bicycle Safety Education Program
www.sharetheroadmn.org/

Complete Streets in Minnesota
www.dot.state.mn.us/planning/completestreets/

Parks and Trails Legacy Grant Program
www.dnr.state.mn.us/grants/recreation/pt_legacy.html

Bicycling in Minnesota
www.dot.state.mn.us/bike/

Cyclopath
www.cyclopath.org

Pedal Minnesota
pedalmn.com

Fuel Use

Energy and the Environment

Measure

Gallons of transportation fuel consumed in Minnesota

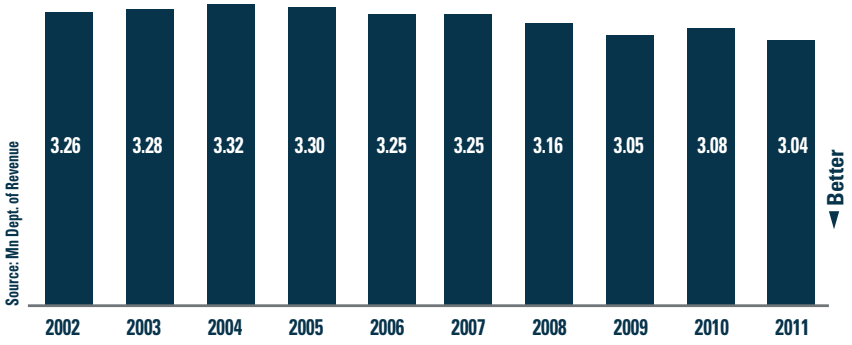
System

All taxable sales of gasoline and diesel fuel, including fuel sold for off-road use except aviation

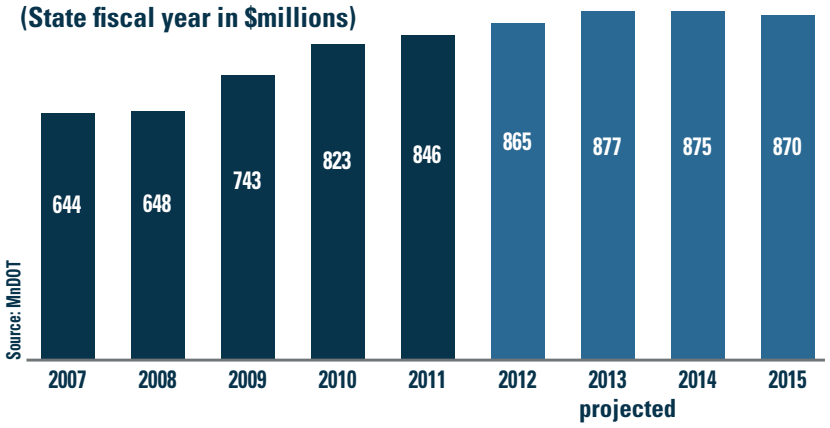
Why this is important

The 2007 Minnesota Next Generation Energy Act established greenhouse gas reduction goals of 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050 compared with 2005. These goals apply to all sectors of the economy, as well as cities, counties and state agencies. In Minnesota, transportation is responsible for about 24 percent of greenhouse gas emissions. Reducing petroleum fuel consumption along with other strategies can help the state achieve these goals.

Transportation fuel consumption in Minnesota (calendar year, billions of gallons)



Motor fuel tax revenue (State fiscal year in $millions)



Our Progress

Minnesota transportation fuel use fell slightly in 2011 compared to 2010. Transportation fuel consumption had declined from 2004 to 2009 after a long period of steady growth. At about the same time, the state saw a slowing and leveling off in annual vehicle miles traveled (VMT) which had increased consistently until 2004.

Transportation fuel consumption and travel reflect broad economic conditions. Other factors reducing fuel consumption include more efficient vehicles and peaking in the number of vehicles owned per driver. To meet the goal set in the Next Generation Act, transportation fuel use would decrease to 2.92 billion gallons by 2015.

State and federal fuel taxes are major sources of transportation funding. Revenue from the Minnesota state fuel tax is increasing because the tax increase passed in 2008 is still being phased in. After the increase is fully phased in on July 1, 2012 (state fiscal year 2013), state fuel tax revenue is expected to decline in 2014 and in future years. Federal fuel tax revenue also is affected, as VMT is one of the factors used to apportion the funds among states.

What We Are Doing

The legislation that created MnDOT was amended in 2008 and again in 2010 to add environmental goals for the transportation system. These include increasing the use of high-occupancy and low-emission vehicles, promoting bicycling and walking as energy efficient, non-polluting forms of transportation, and reducing greenhouse gas emissions from the transportation sector.

Strategies

In a 2008 report titled "A Smaller Carbon Footprint," the University of Minnesota Center for Transportation Studies suggested three broad strategies for reducing transportation's contribution to greenhouse gas emissions. Reducing emissions requires broad participation by the traveling public, the private sector and public agencies.

- **Reducing fuel consumption** per mile by improving vehicle fuel efficiency and creating regulations and incentives that lead consumers to purchase more efficient vehicles.
- **Reducing fuel carbon content** by developing new technologies for electric vehicles or biomass fuels, economic incentives, and legislation.
- **Reducing vehicle miles** traveled by increasing development density, increasing non-auto mode share and facilitating land use patterns that reduce the number or length of necessary trips.

Additional strategies include:

- **Making the transportation system more efficient** by reducing congestion, delay, fuel consumption and emissions.
- **Changing personal driving habits to maximize fuel economy,** for example, by reducing idling time and accelerating and braking less aggressively.

Sustainability

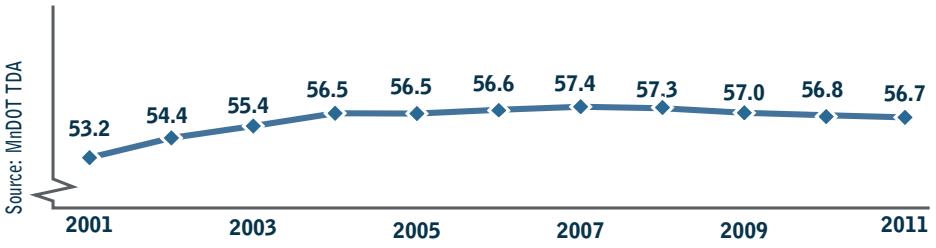
MnDOT has limited influence on statewide transportation fuel consumption, but is pursuing approaches to make its own large fleet more fuel efficient. MnDOT is increasing its use of cleaner fuels along with other strategies to reduce emissions and improve energy efficiency in its fleet and facilities. However, in any given year, the total amount of fuel MnDOT uses depends largely on weather conditions and the size of the construction program.

MnDOT has increased its use of E85 from 29 gallons in 2002 to more than 400,000 gallons in 2011, and increased its use of B20 biodiesel from 1,260 gallons in 2007 to 169,000 gallons in 2011.

How we decide

While MnDOT does not have any authority over individual travel choices or local land use decisions, it does plan, facilitate and promote the use of transportation alternatives. The Statewide Transportation Policy Plan 2009-2028 sets forth key components of this vision. Citizens, local officials, regulators, planners, developers and fleet operators all make decisions that influence fuel consumption and emissions.

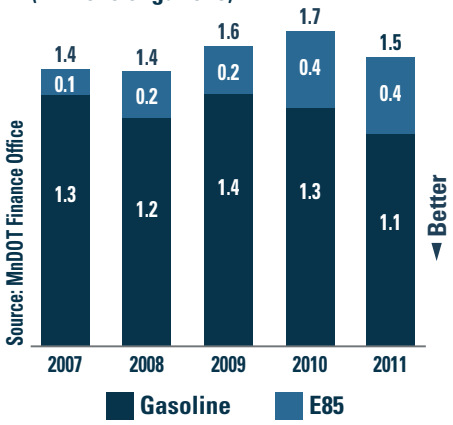
Minnesota vehicle miles traveled 2001-2010 (billions)



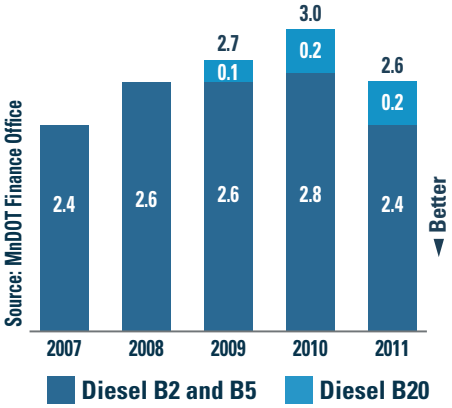
For comparison

In 2010, Minnesota ranked 23rd of the 50 states by per capita gasoline use in the transportation sector, according to MnDOT analysis of data from the U.S. Energy Information Administration and the U.S. Census.

MnDOT fleet gasoline use (millions of gallons)



MnDOT fleet diesel use (millions of gallons)



What We Are Doing (cont.)

MnDOT has 1,597 light-duty vehicles in its fleet. Of these, 946, or 59 percent, are flex-fuel and can run on ethanol blends of up to 85 percent. When vehicles that can run on biodiesel are included, 62 percent are capable of running on cleaner fuels.

The types of vehicles and fuels used by MnDOT and other state fleets are guided by Minnesota law (Minn. Stat. Sec. 16C.135 and Sec. 16C.137). Agencies are directed to purchase cleaner fuels, such as ethanol blends of 70 percent or greater and biodiesel blends of 20 percent or greater, whenever they are reasonably available. Subject to department needs, new on-road vehicles are to have fuel efficiency ratings of at least 30 miles per gallon and be able to run on cleaner fuels.

Source: MnDOT

Investment/Spending

Congestion is a large and visible source of emissions. Projects that reduce congestion have a direct environmental benefit. The 2012-2015 State Transportation Improvement Program includes $181 million in federal congestion mitigation/air quality grant projects. Typical uses of grant funds include signal coordination, bus purchases, and park & ride facility construction.

MnDOT light-duty vehicle purchases

State Fiscal Yr	Light-Duty E-85	Light-Duty Total	% E-85
2006	71	106	67.0%
2007	118	136	86.8%
2008	46	53	86.8%
2009	192	219	87.7%
2010	162	178	91.0%
2011	204	229	89.1%

Source: MnDOT Maintenance Office

Learn More

MnDOT Office of Environmental Stewardship
www.dot.state.mn.us/environment/

University of Minnesota Center for Transportation Studies: A Smaller Carbon Footprint, June 2008
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=1628

USDOT Transportation and Climate Change Clearinghouse
www.climate.dot.gov

MnDOT Office of Transportation Data and Analysis – Traffic volume reports
www.dot.state.mn.us/traffic/data/

Measure explanations and system definitions

Measure	Explanation	System Definition
traveler safety		
Minnesota traffic Fatalities	This measure counts the annual number of deaths on all state and local roads resulting from crashes, usually involving a vehicle colliding with another vehicle, another road user, or a stationary object.	All state and local roads (141,000 miles) 58% state, 42% local (includes CSAH & MSAS) by vehicle-miles traveled
infrastructure preservation		
Bridge condition	This measure is compiled from inspection ratings done for all state highway bridges at least every 24 months, as required by the U.S. Department of Transportation. The combined numeric rating includes the deck, superstructure and substructure. It uses the National Bridge Inspection Standards (NBIS) 0 to 9 scale. Bridges rated 7 to 9 are counted as "Good," and those rated 4 or lower are counted as "Poor," also termed "Structurally Deficient." Bridges rated Structurally Deficient are safe to drive on, but are approaching the end of their useful life. To arrive at the statewide percent measure, results are weighted based on each bridge's deck area, so that larger bridges are fully accounted for.	Bridges 20 feet and longer on State Highway Principal Arterials (2,530 bridges). Principal Arterial bridges are 85% of all state bridges by deck area. Non-Principal Arterial Bridges make up only 15% of deck area; they are measured but not reported here due to the small share.
Pavement ride quality	The Ride Quality Index measures smoothness and pavement condition. It uses a 0 to 5 scale with 5 being the best. Pavements with an RQI above 3.0 are classified as Good. Pavements with an RQI of 2.0 or lower are classified as Poor. Pavements rated "Poor" have deteriorated to the point where they may affect the speed of free-flow traffic. The pavement measures are broken into two sub-sets of state highways - one for Principal Arterials (the 53% of roadways with the highest traffic), and one for Non-Principal Arterials (the other 47% of state highways). Combined "Good" and "Poor" measures calculated for the full state highway system are also included in this report and in the Minnesota Dashboard.	Of the 14,310 miles of state highways, 7,570 miles or 53% are principal arterials. The remaining 6,740 miles (47%) of minor arterials and collectors are grouped together as non-principal arterials.
maintenance		
Snow and ice—frequency of achieving bare pavement within target time	Target times for removing all snow and ice to bare pavement vary for five traffic volume categories: super commuter (0-3 hours), urban commuter (2-5 hours), rural commuter (4-9 hours), primary collector (6-12 hours), and secondary collector (9-36 hours). This measure tracks the frequency at which targets are met. Targets are based on research with Minnesotans and on historical results.	State highways (approximately 30,000 lane miles). All storms and snowplow routes are included.
Bridge Safety Inspections—% completed on time	This measure is compiled from the inspection dates in the Pontis bridge database, which are recorded upon completion. All bridges over 20 feet in length that either carry or cross over a state highway are included. An inspection is considered "on-time" if it occurs no later than 30 days past its due date. This 30-day grace period accounts for variable conditions such as weather and scheduling.	All bridges 20 feet and longer that carry or cross over a state highway (3,657 bridges)
Customer Satisfaction with State Highway Maintenance	The MnDOT Omnibus Survey polls a statewide sample of 800 citizens annually by telephone. Participants are asked to rate performance in several maintenance categories and overall state road maintenance on a 10-point performance scale, 1 being low and 10 high.	Overall state highway system.
national and global connections		
Airline annual available seat miles from msp—on scheduled commercial flights	This indicator tracks changes in the number of available seat miles—defined as one aircraft seat flown a distance of one mile—offered on scheduled service nonstop flights from Minnesota. Three variables influence available seat mile totals: service frequency, aircraft capacity and flight distance.	Eight Minnesota airports provide scheduled service: Minneapolis-St. Paul, Bemidji, Brainerd, Chisholm/Hibbing, Duluth, International Falls, Rochester and Thief River Falls.
Ports—Annual shipments by weight	Annual shipments to and from Minnesota's river and Great Lakes ports are measured by weight. Waterway shipments are affected by international and domestic demand, competition from other modes and weather conditions. MnDOT has minimal control over this measure, but helps fund improvements and coordinate policy.	Minnesota has four ports on Lake Superior (Duluth, Two Harbors, Silver Bay and Taconite Harbor) and five ports on the Mississippi River system (Minneapolis, St. Paul, Savage, Red Wing and Winona).
Railroads—Annual shipments by weight	Annual rail shipments originating, terminating and passing through Minnesota, are measured by weight. Shipments are affected by international and domestic demand, competition from other modes and other economic factors such as fuel prices. MnDOT has minimal control over this measure, but helps fund improvements and coordinate policy.	All railroads in Minnesota are included (20 operators on 4,458 track miles)

Measure	Explanation	System Definition
statewide connections		
Interregional corridors in greater mn—% of miles meeting or within 2 mph of target speed	Average travel speeds between regional centers and to the edge of the Twin Cities Metro Area are estimated. Corridor target speed is a length-weighted average of segment targets, which are 55 or 60 mph. The model is based on traffic volume, congestion severity and the number of stops along the corridor.	2,580 miles of state highways are designated interregional corridors. Routes within the Twin Cities area (249 miles) are tracked by the Twin Cities mobility measures.
Airport access—% of population within 30 minute drive time of an airport with paved and lighted runway	A paved and lighted runway allows a broader range of aircraft to use an airport, especially during periods of reduced visibility. General aviation access is vital for business and agriculture, recreation and delivery of goods. This measure includes public airports across Greater Minnesota and in the Twin Cities area.	The measure includes all 135 publicly owned airports in Minnesota, 113 of which currently have paved and lighted runways.
twin cities mobility		
Twin cities freeway congestion: percent of miles below 45 mph in AM or PM peak	Freeway miles operating below 45 mph for five minutes or more during weekday AM or PM peak periods are counted. The system measured has increased from 320 miles in 2003, decreasing the average congestion level with the addition of uncongested suburban freeway miles.	The instrumented system includes 379 centerline miles of freeway in the Twin Cities metropolitan area.
Clearance time for metro urban freeway incidents—3-year average	This measure tracks the time it takes MnDOT and partners to clear incidents on the Metro Area freeway system, such as stalled cars, crashes and other disruptions to normal traffic flow. Time is counted from lane blockage to lane opening.	The Freeway Incident Response Safety Team operates on about 400 miles of Twin Cities area freeways.
Metro area transit: rail and express bus	This measure tracks annual ridership of rail and express transit service in the Twin Cities Metro Area. Services included are express bus, bus rapid transit, light rail and commuter rail. Express bus services are those that provide a premium over regular-route bus service in travel time or ride quality.	All providers are counted. Metro Transit is the largest provider. Others include Southwest Transit, Minnesota Valley Transit, Maple Grove, Shakopee, Minnetonka, Plymouth and Prior Lake.
greater minnesota mobility		
Greater minnesota bus service hours	This measure tracks the extent to which transit needs are met in Greater Minnesota. It measures bus service hours against the number of bus service hours needed to meet transit demand. A bus service hour measures the time that a vehicle is available to the general public with the expectation of carrying passengers (often referred to as a "revenue hour" in the transit industry).	Greater Minnesota transit systems (58 providers serving 78 of 80 counties). Local transit operators sponsored by cities, counties, or regional authorities provide regularly scheduled bus service or dial-a-ride services.
community development and transportation		
Ada-accessible pedestrian signals—% of state highway intersections with APS	This measure is expressed as a percentage of signalized intersections that meet ADA requirements for accessibility to people with disabilities. Accessible Pedestrian Signals include such components as audible signals, reachable push-button detectors and curb ramps oriented toward the crosswalk.	ADA applies to all pedestrian and public right of way facilities, and also to public hearings, meetings, buildings and documents. In addition, MnDOT is responsible for assisting local governments with compliance of streets, highways and pedestrian facilities. The measure tracks 1,179 intersections on the state highway system.
Bike, walk and public transit share of commuter trips—selected metropolitan areas in Minnesota	Percent of people 16 or older who commute to work by bicycle, walking and/or public transportation as their primary mode in Minneapolis-St. Paul-Bloomington, Duluth, Rochester and St. Cloud. Source: American Community Survey, US Census.	American Community Survey data only available for larger Minnesota municipalities.
energy and the environment		
Transportation fuel consumption—billions of gallons sold in Minnesota	Fuel sold for transportation is assumed to indicate fuel burned, causing emissions attributable to transportation. To be consistent with other reports, the DNR share of fuel tax receipts (for boats, ATVs, dirt bikes, snowmobiles) is not subtracted. This share amounts to about 2.2% of total fuel use.	All taxable sales of gasoline and diesel fuel are counted, including fuel sold for off-road use but not including aviation fuel.

Revenue & Investment Overview

Transportation is the third largest state program in Minnesota after Human Services and Education.

Sources

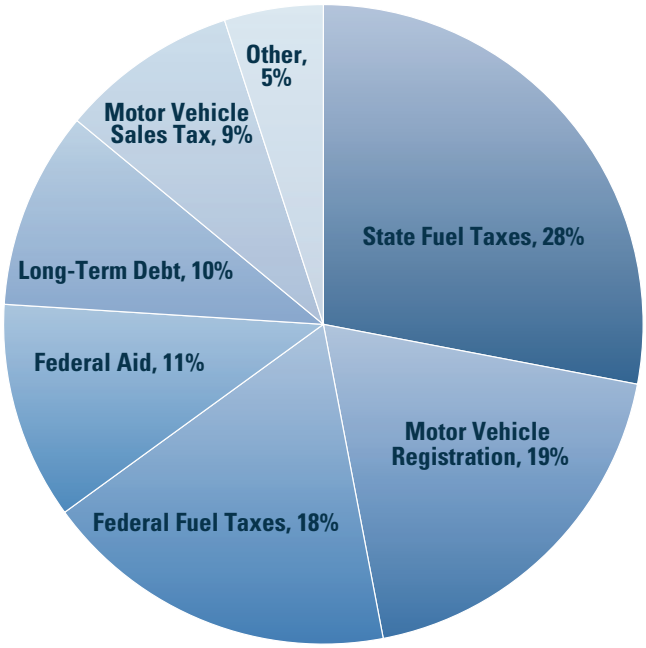
Each mode of transportation is funded in its own way. The largest sources of state highway funds are the motor fuel tax, motor vehicle sales tax, and vehicle registration fees. Federal fuel taxes and earmarks are also major sources of highway funding. Transit also receives federal funds and a portion of motor vehicle sales tax proceeds, along with fares and other local sources. The state general fund is also an important source of transit dollars, especially in Greater Minnesota. Other modes such as ports, railroads and aeronautics are funded by various combinations of federal, state, local and private sources. The limited ability to distribute funds across modes presents a challenge for multimodal transportation system planning.

Uses

The largest share of transportation investment is devoted to roads and bridges. In state fiscal year 2011, state and local roads and bridges accounted for 68 percent of Minnesota state transportation funds. The state contribution to local road funding is only a portion of the total. Local governments collect additional funds from sources such as property taxes that are not included in these charts. Large individual projects can cause expenditures to vary significantly from year to year.

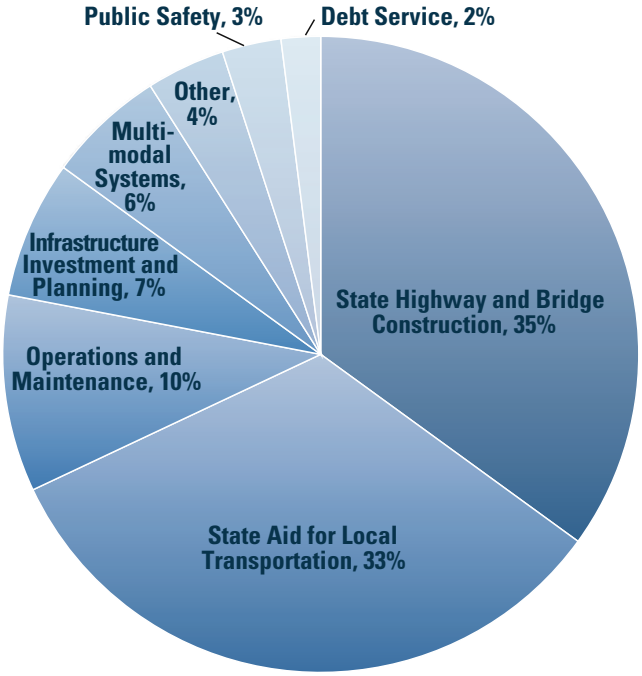
Funding: FY 2011

Sources



Source: MnDOT Finance Office

Uses



Source: MnDOT Finance Office

Statewide Highway Investment Plan

Minnesota's Statewide 20-year Highway Investment Plan 2009-2028 identifies capital investments required to achieve and maintain highway system performance targets and priorities for available funding. An update to this plan is underway and will be completed in early 2013. The goal of MnDOT's highway investment process is to balance performance-based investments in the strategic priority areas of traveler safety, infrastructure preservation and mobility with projects to benefit regional and community economic development. The 10-year Highway Investment Plan is updated each year to incorporate new revenue projections, current construction costs and changing investment priorities.

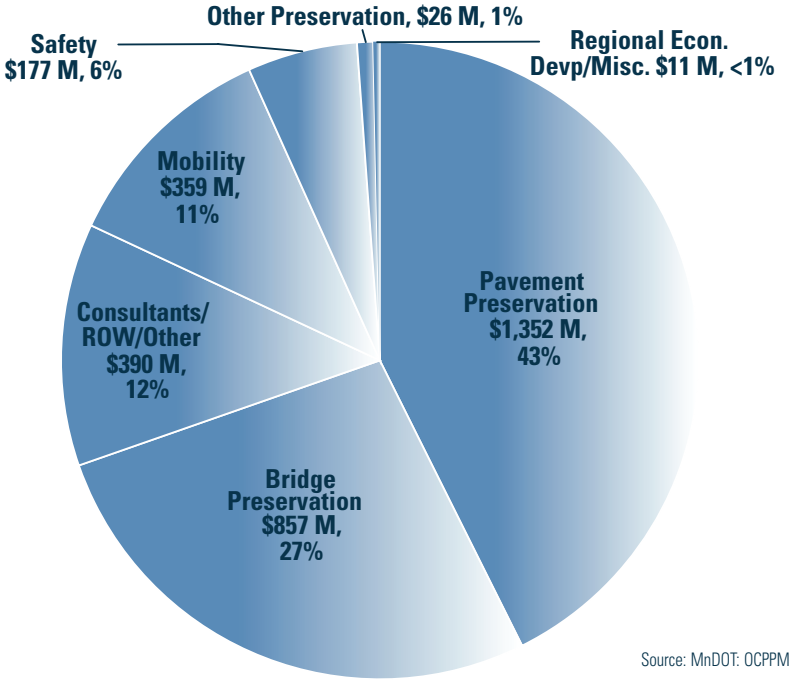
Since the identified needs far exceed projected funding, districts are directed to prioritize in the following order:

1. Legislative and agency directives, such as the Chapter 152 Bridge Program, interchange programs and other directed investments should be fully funded.
2. Approximately 85 percent of bridge preservation needs should be met.
3. Traveler safety should be funded at about three times each district's Highway Safety Improvement Program goal.
4. 70 percent of the remaining funds should be directed to pavement preservation.
5. Appropriate investment should be made to maintain other infrastructure, such as drainage and ADA improvements.
6. Remaining funds are allocated among capacity improvements for mobility, and regional and community priorities.

Investments included in the 2012-2015 State Transportation Improvement Program are shown at right. The combined preservation investments for bridges, pavement and other highway infrastructure make up the largest portion of capital highway investment and exceed 70 percent.

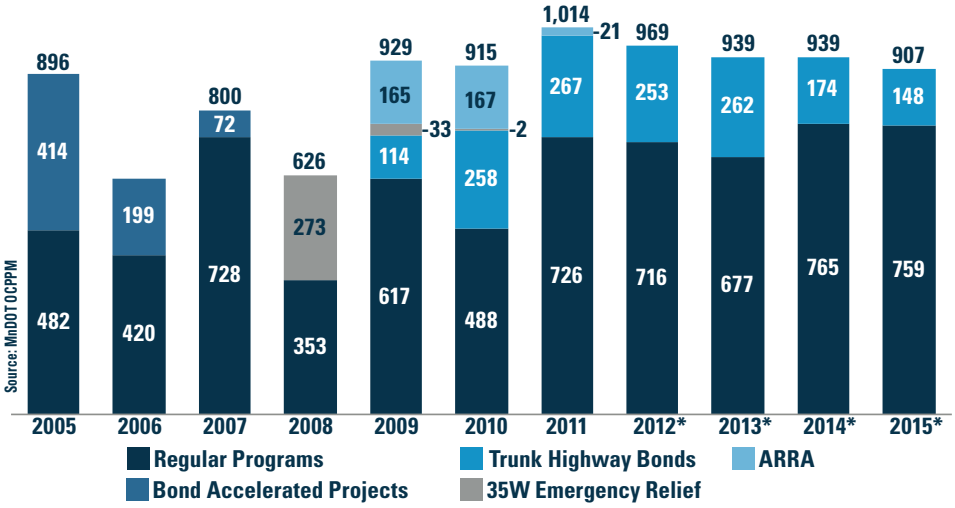
The trend in total construction program funding is shown in the chart to the right. Trunk Highway bonding and the American Recovery and Reinvestment Act provided an increase in funding starting in 2009. Outside of these temporary sources, MnDOT's regular program funding level and bond proceeds are forecast to remain substantially level, averaging about $930 million per year.

2012-15 STIP: $3.2 Billion



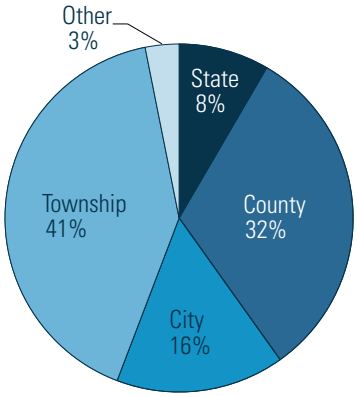
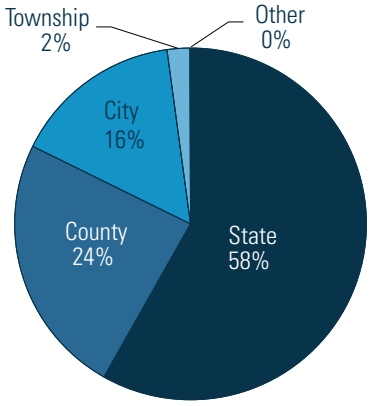
Source: MnDOT: OCPPM

MnDOT construction program: fiscal years 2005-2015 ($millions)



*Based on the 2012-15 STIP, Bonding Plan and other pertinent facts for bonds in addition to actual construction contracts. All dollars assigned to year of award.

Transportation Systems in Minnesota

System		Extent	Ownership	Funding source	MnDOT role
Streets, roads and highways	State Trunk Highways	11,878 miles	By share of centerline miles:  By share of vehicle-miles traveled: 	State fuel tax, motor vehicle sales tax, registration fees, federal funds	Construction, operation, maintenance, management
	County State Aid Highways (CSAH)	30,588 miles		State fuel tax, motor vehicle sales tax, registration fees, federal funds, local funds	Coordination of projects that impact state trunk highways, administration of state and federal funding (68% of county roads are eligible for state aid funds)
	Other County Roads	14,321 miles			
	Municipal State Aid Streets (MSAS)	3,321 miles		State fuel tax, motor vehicle sales tax, registration fees, federal funds, local funds	Coordination of projects that impact state trunk highways, administration of state and federal funding (15% of city streets are eligible for state aid funds)
	Other City Streets	18,739 miles			
	Township	58,443 miles		State and local funds	Coordination of projects that impact state trunk highways
	Other	5,154 miles			
	Total	142,485 miles			
Transit	Twin Cities area	212 bus routes, 1 light rail route, 1 commuter rail line	Metro Transit, Suburban Transit Providers and contracted operators on public right of way	Federal funds, state general funds, MVST, local funds, fares	Construct and maintain transit infrastructure
	Greater Minnesota	58 public transit systems serving 78 of 80 counties	City and county transit authorities		Planning and administration of funding
Rail	Freight	4,458 track-miles	18 railroads operate and own track: 4 Class I (70% of network) and 14 Class III (30%)	Private funds for operations, state and private funds for track	Planning and policy, support for infrastructure improvements
	Passenger	Amtrak Empire Builder (Chicago to Seattle)	Federally operated on privately owned track	Federal funds, fares	Planning, policy, research, federal and state program administration
Air	Passenger and cargo	135 airports, 8 with commercial service	Metropolitan Airport Commission owns 9 metro airports; others are owned by Greater Minnesota cities and counties	Aircraft registration tax, airline flight property tax, aviation fuel tax, federal funds	Airport development, planning, research, navigational systems
Waterways	Great Lakes	Four ports on Lake Superior	Local port authorities and private companies provide port operations. Channels (9 ft. draft on rivers, 29 ft. on Great Lakes) are maintained by the U.S. Army Corps of Engineers.	Local port authority receipts, state general funds, federal funds	Planning and policy, support for infrastructure improvements
	Rivers	Five ports on 222 miles of the Mississippi River system			

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