Minnesota Statewide Transportation Plan

Moving People and Freight from 2003 to 2023

August 2003

Minnesota Department of Transportation

Office of the Commissioner
395 John Ireland Blvd.
St. Paul, MN 55155

Office Telephone: (651) 297-2930
Fax: (651) 296-3587

July 31, 2003

Dear Citizens of Minnesota:

I am pleased to adopt the *Minnesota Statewide Transportation Plan: Moving People and Freight from 2003 to 2023*. The plan establishes the Minnesota Department of Transportation's (Mn/DOT's) framework for making transportation investment decisions. The policies and performance measures established in this plan create a vision for a transportation future that will meet Minnesotan's expectations for a transportation system that helps Minnesotans to travel safer, smarter, and more efficiently.

This *Minnesota Statewide Transportation Plan*:

- Strengthens one of the first performance-based state transportation plans in the nation, setting performance targets for each policy to ensure that investments are achieving specific outcomes for Minnesota's citizens and businesses.

- Establishes a cost-effectiveness framework for evaluating Mn/DOT's major investment decisions to ensure that resources are managed in ways that provide the best-value for taxpayers' dollars.

- Affirms the focus of Mn/DOT's strategic directions to "Safeguard what exists," "Make the transportation network operate better," and "Make Mn/DOT work better."

- Provides performance objectives and long-range planning direction for integrated transportation systems for highways; transit; roadway, waterway, and rail freight; aeronautics; and for bicycle, pedestrian, and other non-motorized travel choices.

Through a comprehensive public involvement process, the plan has received the endorsement of the public and of our transportation partners. It is a significant accomplishment for Minnesota.

Sincerely,

Carol Molnau
Lt. Governor/Commissioner

Minnesota Statewide Transportation Plan

Moving People and Freight from 2003 to 2023

Minnesota Department of Transportation

Plan Development Consultant:
SRF Consulting Group, Inc.

Assisted by:
Cambridge Systematics

August 2003

Minnesota Department of Transportation
MS 440
395 John Ireland Boulevard
Saint Paul, Minnesota 55155
General Phone: 651-296-3000
Toll Free: 1-800-657-3774
TTY: 1-800-657-3994
Web site: www.dot.state.mn

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Chapter 1

Introduction

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Chapter 1: Introduction

Welcome to the ***Minnesota Statewide Transportation Plan*** *(Plan)*. This *Plan* has been prepared by the Minnesota Department of Transportation (Mn/DOT) to comply with federal planning requirements (TEA-21, PL 105-178) that require a long range transportation plan of each state as well as state planning requirements (MN Statutes Chapter 174), which require Mn/DOT's commissioner to "develop, adopt, revise, and monitor a statewide transportation plan." Appendix B contains additional information on both federal and state plan requirements.

Objectives for the Plan

Mn/DOT has three objectives for this *2003 long range Minnesota Statewide Transportation Plan*:

1. Develop a policy framework that carries forward the implementation and achievement of Mn/DOT's *Strategic Plan*;
2. Establish performance measures for tracking Mn/DOT's progress toward achieving the policies of this *Plan* and the Strategic Directions identified in Mn/DOT's *Strategic Plan*;
3. Provide implementation guidance to Mn/DOT Districts and Offices and to other transportation partners, to ensure the effective and consistent implementation of the *Plan's* policies and measurement of performance.

Strategic Plan

While the *Minnesota Statewide Transportation Plan* provides the 20-year policy-based transportation plan called for by state and federal law, it is shaped by Mn/DOT's *Strategic Plan* which was first developed in 1997 and updated in 2000 and 2003. The *Strategic Plan* outlines the Department's Vision and Mission.

Vision

Mn/DOT's vision describes what citizens want for Minnesota's transportation:

> A coordinated transportation network that meets the needs of Minnesota's citizens and businesses for safe, timely and predictable travel.

Mission

Mn/DOT's mission–its function–is to:

> Improve access to markets, jobs, goods, and services and improve mobility for Minnesotans by focusing on priority transportation improvements and investments that help Minnesotans travel safer, smarter, and more efficiently.

Strategic Directions

In addition to the Vision and Mission, Mn/DOT's *Strategic Plan* defines three Strategic Directions that provide the structure around which to develop the long range Plan's transportation policies and performance framework.

Safeguard What Exists

Mn/DOT's most important priority is to operate, maintain and preserve Minnesota's existing transportation systems and infrastructure by:

- Maintaining the state's physical transportation assets – highways, bridges, airports, water ports, bikeways and freight, bus, rail and intermodal facilities – in sound and safe condition.
- Protecting system performance through effective design, access management, financial support and coordination with local transportation partners.
- Minimizing system downtime due to incidents, construction activities and other disruptions.
- Safeguarding the security of Minnesota's transportation infrastructure.

Make the Transportation Network Operate Better

Mn/DOT will implement a balanced cost-effective statewide strategy to make our transportation systems operate better by:

- Advancing investments that improve the safety of the traveling public
- Investing in and improving the system of interregional highway corridors that connect the state's regional trade centers.
- Addressing traffic congestion by improving bottlenecks on the trunk highway system in the Twin Cities metro area or Greater Minnesota.
- Improving mobility within highly traveled corridors through investments in transit advantages on trunk highways, incident management, and intelligent transportation systems technology.
- Expanding innovative partnerships in construction, delivery and operation of transportation infrastructure and services.

Make Mn/DOT Work Better

Mn/DOT will continuously improve service and efficiency in order to give citizens the best value for their tax dollars by:

- Encouraging innovation, competition, privatization, out-sourcing, e-government services and other creative, cost-saving solutions.
- Listening well and being responsive to customers, stakeholders and employees.
- Managing for results and being accountable for our decisions and actions. Investments will be driven by current priorities.

- Recognizing and celebrating innovation, responsible risk-taking and measurable success.
- Streamlining decision making and right-sizing the organization.

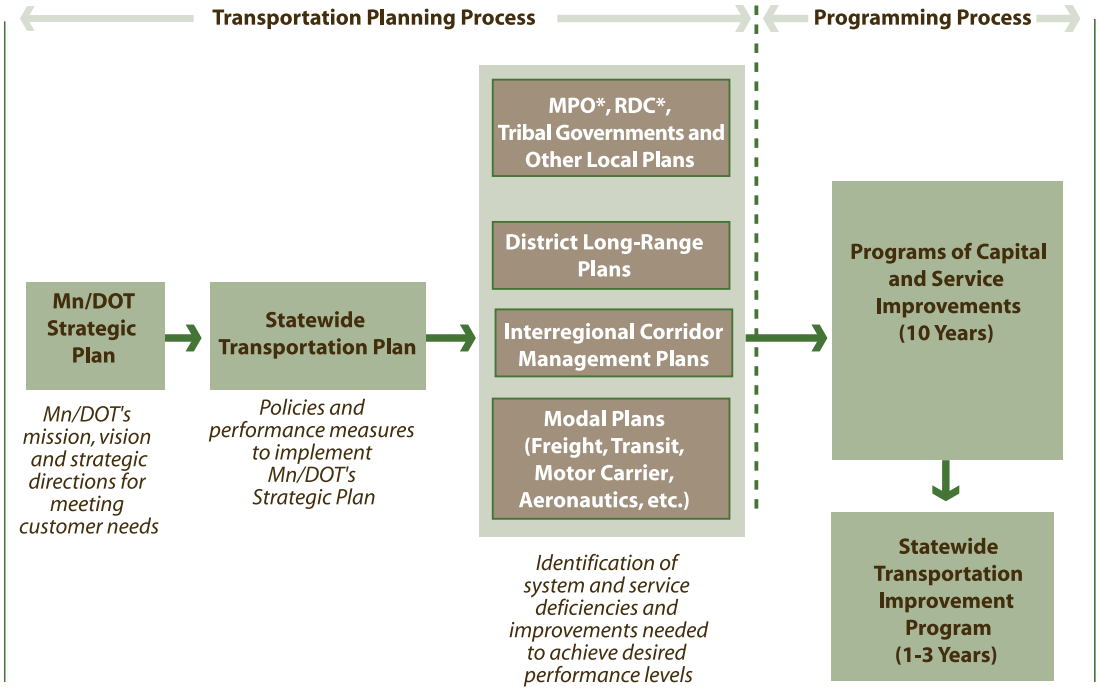
Transportation Policies

The *Plan* provides a framework which directly links Mn/DOT's *Strategic Plan* (vision, mission, and strategic directions) with policies, performance measures and implementation guidance. These policies, measures, and guidance will assist Mn/DOT and its partners in focusing investments and services to achieve desired performance levels and outcomes.

Planning Process

The Plan is the second step in Mn/DOT's transportation planning process. Figure 1-1, illustrates how Mn/DOT's *Strategic Plan* guides the long range *Plan*. In turn, the *Plan* provides the policy framework for implementing the *Strategic Plan*. The *Plan* also provides direction to Mn/DOT Districts, Offices and, transportation partners as they prepare their long-range plans and identify investment priorities based on policies established in the *Plan*. Specific transportation projects arise out of these plans and are ultimately programmed for funding and construction.

Figure 1-1 Mn/DOT's Planning & Programming Process



* MPO = Metropolitan Planning Organization
* RDC = Regional Development Commission

Upcoming Chapters

This Plan is intended to offer citizens and transportation providers policies, performance measures and strategies to achieve a shared vision for transportation in Minnesota. This Plan serves as a guide for planning, management and investment decisions for all modes.

The rest of the Plan is organized as follows:

Chapter 2: Transportation Planning Context
Chapter 3: Transportation Systems Description
Chapter 4: Major Trends and Transportation Implications
Chapter 5: Framework for Transportation Policies & Measures
Chapter 6: Target-Setting Framework, Performance Measures, Targets, and Policy Guidance
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A. Acronyms and Definitions
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C. Public Involvement
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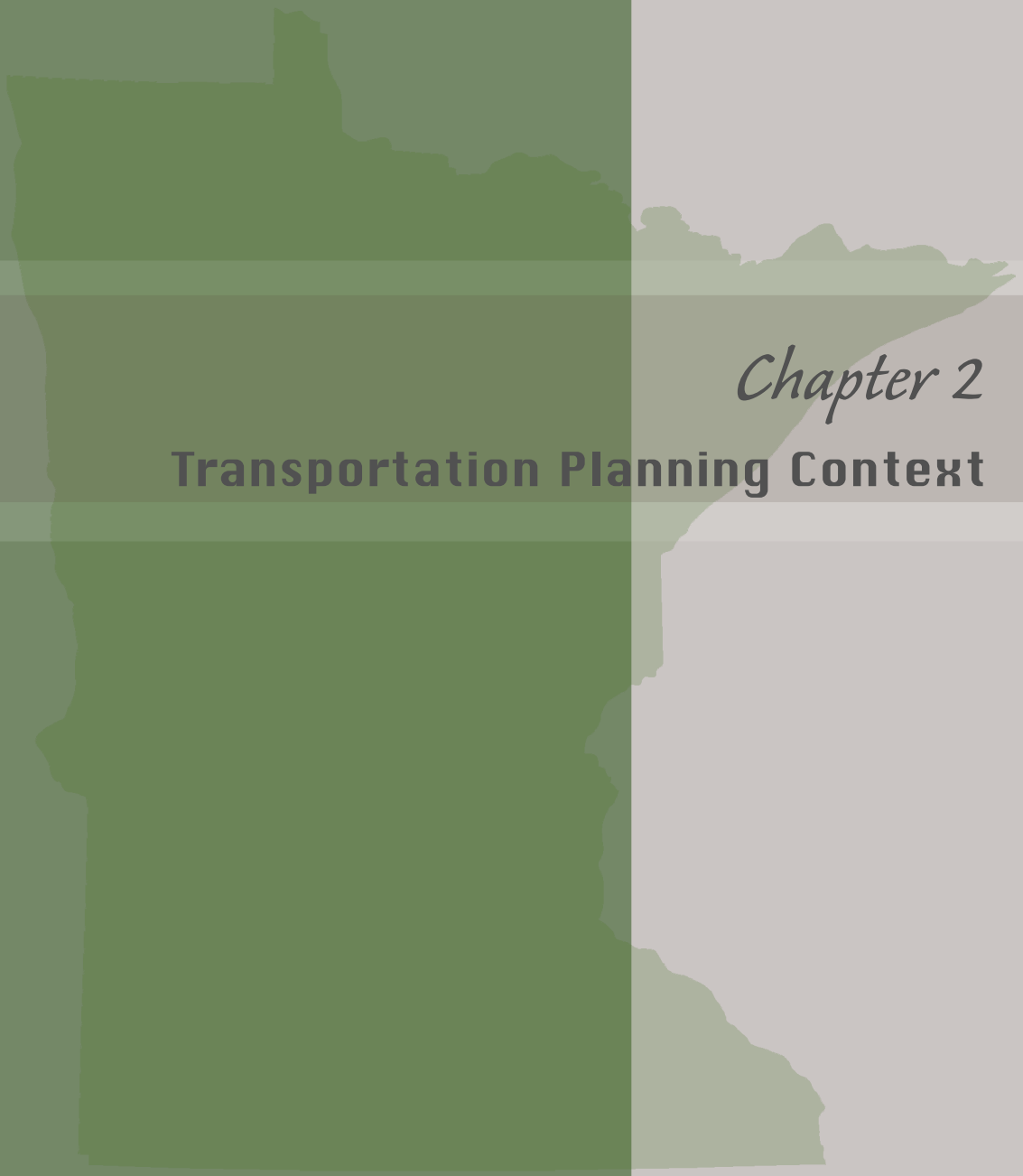
F. Managed Corridors
G. Travel Time Reliability



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Transportation Planning Context

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Chapter 2:
Transportation Planning Context

This chapter reviews market research and major documents setting statewide policy in a variety of areas affecting transportation. A review of this information suggests that citizens want a safe, efficient and balanced transportation system that supports a growing economy and healthy communities. Mn/DOT is challenged to be a good steward of its resources and to deliver services in a manner that respects Minnesota's natural resources in order to protect these assets for future generations of Minnesotans.

Involving the Public Using Market Research

The Minnesota Department of Transportation, through its transportation planning process, strives to integrate public views into the long-term vision for Minnesota's transportation system. Mn/DOT's vision for involving the public is:

> **To proactively seek early and continuous public input and involvement so that Mn/DOT is responsive and accountable to its traditional and non-traditional stakeholders, communicates effectively with the public, and makes the best possible transportation decisions promoting safety and enhancing the quality of life of Minnesota's citizens. (Hear Every Voice: A Guide to Public Involvement at Mn/DOT, June 1999).**

One method for soliciting public input is through market research. Market research is a customer-based technique to reduce risks when making decisions and is a tool to increase understanding of the target market. Through the market research process, data is used to create useful information to guide decisions. Data is collected through such methods as telephone surveys, mail surveys, and focus groups. Following are examples of market research projects that have been conducted by Mn/DOT. (Detailed information about these market research projects is available from Mn/DOT's Market Research Unit of the Office of Investment Management.)

Omnibus Survey

Since 1987, Mn/DOT has annually sought public opinion about transportation through an omnibus survey with other government organizations. In 1999 and again in 2001, Mn/DOT sponsored its own survey using the omnibus questions and adding questions submitted by various offices within the department.

Each year, a minimum of 800 telephone interviews are conducted with households throughout Minnesota – 400 in the eight-county Twin Cities metropolitan area and 400 in Greater Minnesota. Questions in the survey are designed to obtain information on the characteristics, attitudes and behaviors of Minnesota's transportation users.

Historical data exist for issues such as satisfaction with transportation services and safety perceptions. Although wording of questions has changed slightly, results can be used to discern broad trends.

- Feelings of safety while driving on Minnesota roadways has generally remained high. The question was asked in 1999, 2000 and 2001. Results for those years, in order, are 92 percent, 84 percent and 94 percent. Additionally, when customers were asked how

satisfied they are with the safety of Minnesota roads, a significant increase was seen from 1988 (86 percent) to 2001 (96 percent).

- The 2001 survey results noted that 85 percent of the respondents felt either very or somewhat safe when driving through highway construction areas. The response was 76 percent in 2000 and 81 percent in 1999.
- Snow and ice removal gains the highest and most consistent satisfaction levels of any of the measures tracked by Mn/DOT. The question about satisfaction with snow and ice removal along major highway routes has been asked five times between 1990 and 1999, with levels varying from 89 percent to 93 percent. These numbers represent no statistical change.
- A majority of Minnesotans are very or somewhat satisfied with the condition of Minnesota highways. A question regarding roadway condition has been asked five times between 1988 and 1997, with results ranging from 78 percent to 84 percent for four of the five years, with one year showing 68 percent. While the trend is not linear and has fluctuated somewhat over the years, at least two-thirds of Mn/DOT customers express satisfaction with the condition of the state's highways.
- Satisfaction with the availability of public transit in the community receives lower marks. This question has been asked three times between 1996 and 2001, with results ranging from a low of 46 percent to a high of 57 percent in 2001.

In 1997, Mn/DOT decided that the Omnibus Survey would be a good vehicle for asking the public to estimate how predictable their trip to work is. The question was asked again in 1999 and 2000, with results ranging from 42 percent to 45 percent of the respondents saying their trip times are predictable 91 to 100 percent of the time (the variation from 42 to 45 percent is not statistically significant).

Because the Omnibus Survey is Mn/DOT's primary source of historical data about consumer perspectives, results can be used to track trends about how the views of Minnesota's transportation users may be changing. The results help Mn/DOT to make decisions about delivering services most valued by the public.

Segmentation Study

In 2000, a segmentation study was commissioned by Mn/DOT senior management to identify which services provided by Mn/DOT have the highest value among key customer segments. These segments include:

- Commuters – people who regularly commute to work or school using a state highway or freeway
- Carriers – people who currently drive a commercial vehicle to haul goods or freight
- Shippers – companies who ship goods or freight
- Emergency vehicle operators – people who currently drive an emergency vehicle
- Farmers – people for whom farming is their primary occupation
- Personal travelers – people who drive 20 miles or more in a typical week

- Community and neighborhood groups-individuals that gather for issue-specific reasons or for specific causes (This segment was added after the study was completed and is considered one of Mn/DOT's segments going forward.)

Research consisted of 24 focus groups and random telephone interviews of 2,350 people statewide.

The most important finding from the study was that customers value a combination of long-term services that focus on the future, as well as near-term services relating to roadway operations. The types of long-term services that had the highest investment support included:

- Improving heavily traveled routes between cities
- Providing funds for local governments
- Developing 20-year plans
- Educating the public about safety-related issues

For near-term services, the highest importance was placed on services with the broadest impact on large number of users. These services, listed in order of importance, were:

- Plowing, sanding and salting
- Maintaining roads and bridges
- Building roads and bridges
- Removing debris from roadways
- Posting signs
- Lighting, guard rails and pavement striping
- Communicating road and traffic conditions

Public Transit Studies

The Department of Transportation is committed to promoting transportation alternatives. Mn/DOT has conducted a number of transit market research projects to identify potential users, to determine unmet needs, and to develop strategies with the greatest likelihood of changing commuting behavior.

Multi-modal Alternative Transportation Study

In 2001, Mn/DOT conducted telephone interviews with 400 residents of the I-394 corridor. Some key findings were:

- Twenty-four percent of those who drive alone to work said they would ride the bus or carpool at least once a week if the services and facilities were available to them. These are potential candidates to ride the bus or carpool.
- Top scoring incentives among the respondents include: (1) express bus service that provides faster, more direct service; (2) express bus service extended past 5:30 p.m.; (3) employer programs that allow time working on the bus to count toward the work day; and (4) deeply discounted bus passes provided through employers.

- When respondents were asked their awareness of various Mn/DOT and Metropolitan Council programs, 54 percent were aware of the carpool/vanpool matching program, 40 percent were aware of deeply discounted parking for carpools, 39 percent were aware of deeply discounted bus passes provided through employers, and 35 percent were aware of the Guaranteed Ride Home program.

The information learned from this study can be used to develop a marketing strategy, with Metro Transit as a partner, to attract travelers who indicate interest in using alternative modes of transportation.

Greater Minnesota Transit Market Research Study

In 2000, Mn/DOT sponsored a study to identify current and potential transit riders, to determine unmet needs and satisfaction with current transportation services, and to develop strategies to expand the base of possible users of public transportation. A random telephone survey of 810 residents was conducted in Greater Minnesota, and over 4,000 transit riders in Greater Minnesota completed on-board questionnaires.

Some key findings from this study are:

- Forty-four percent of respondents to the telephone survey were aware that local bus service is available in their community, while only 6 percent have used some form of local bus service in the past year.
- The largest share of respondents (53 percent) prefers bus service to cover several counties.

Results from the on-board survey of bus riders include:

- Riders from urban areas use transit to save money, save time, and protect the environment. Small urban and county transit riders used transit because they don't or can't drive, convenience, and cars were not available.
- The majority (84 to 97 percent) of users in urban, small urban, and county groups were very or somewhat satisfied with their public transit system.

These results can be used by Mn/DOT to improve service and determine needs in counties without transit service.

Maintenance Business Planning Survey

Minnesotans rank highway maintenance as among the most important services provided by Mn/DOT. In 1994, Mn/DOT sponsored a survey to obtain customers' opinions about maintenance services being provided and about their priorities for these services. Second and third waves of this survey were conducted in 1996 and 2000. Each wave consisted of more than 1000 random telephone interviews of Minnesota residents statewide.

In 1994, respondents thought that Mn/DOT did a good job keeping roads clear of snow and ice, but could do a better job at maintaining the road surface. They also placed lower importance on maintaining roadside appearance. In 1996, maintaining road surface continued to be more important than the roadsides. Based on the 1994 results, several efforts were made to reduce the

emphasis placed on roadside maintenance. These efforts did not change the overall driver impression of roadside maintenance, but did allow Mn/DOT to shift resources to areas with greater needs.

The most recent wave of the survey was conducted in 2000. Minnesota residents continued to rate safety as most important followed by roadway conditions, with roadside maintenance as least important. The most important individual maintenance services continued to be "stop lights visible and working" and "keeping roads clear of ice and snow." In all three waves, Minnesotans rated Mn/DOT's overall performance as good. Mn/DOT studies the results to see where performance can be improved and incorporates needed changes into its two-year business plan.

Market Research and the Statewide Transportation Plan

Market research is a useful tool in defining products and services important to Minnesotans and in tracking how well Mn/DOT delivers them. In addition to the key areas of safety, maintenance, highway investments, and public transit described in this section, Mn/DOT has conducted research focusing on information use and reliability and has conducted studies applicable to specific Mn/DOT districts and offices. Information obtained from these market research activities has influenced the policies and performance measures developed for this plan update.

In addition, market research and other techniques for involving the public were used in the process of developing this *Plan*. Eight transportation dialogue meetings were held in each of Mn/DOT's districts throughout the state; seven focus groups were conducted with immigrant and minority populations throughout the state, as well as special outreach efforts to the American Indian community; two focus groups were conducted with general citizen participants; a straw poll of 1,000 citizens was completed with visitors to Mn/DOT's exhibit at the Minnesota State Fair; and an online survey was completed by 200 citizens who visited Mn/DOT's Web site. A summary of the public involvement techniques used to gain input for this *Plan* is located in Appendix D.

Major State Policy Themes

The preceding section of this chapter reviewed Mn/DOT's market research program, which is one method used by the department to solicit public input. Once input has been collected, Mn/DOT integrates the public views into a long-term vision for Minnesota's transportation system. Since Minnesota's vision for transportation should match its social, economic, and environmental goals for the future, it is also important to seek input from other state agencies charged with developing such goals. This section reviews some of the key documents developed by other Minnesota agencies.

Smart Growth

In 1999, Mn/DOT adopted an Interregional Corridor (IRC) System of key transportation corridors in Minnesota. In order to define and provide consistent policies and strategies for these corridors, Mn/DOT used four Smart Growth Principles to define the core transportation philosophy for the IRC System. Mn/DOT's four Smart Growth Principles are:

- **Land Use Stewardship:** Promote responsible and integrated environmental, land use, access, and transportation planning decisions along transportation corridors. (See Policies 2 and 5 in Chapter 6)
- **Efficiency:** Maximize the use of existing transportation facilities and services. Focus resources to enhance the state's economic vitality and provide the greatest long-term benefits at the lowest long-term costs, while maintaining a commitment to the statewide transportation network. (See Policies 1-3 in Chapter 6)
- **Choice:** Provide customers with transportation options and modal access choices. Maintain flexibility to account for variations in local conditions. Ensure early, continuous, and meaningful involvement of citizens and stakeholders in the transportation decision-making process. (See Policy 4 in Chapter 6)
- **Accountability:** Hold both the public and private sectors accountable for the impacts of their land use and access decisions. Link transportation investments to responsible land use and access planning. Encourage shared investments and responsibilities to achieve desired transportation outcomes that fit within the broad community and regional context. (See Policies 2, 9 and 10 in Chapter 6)

Policies, goals, and strategies were developed based on Mn/DOT's Smart Growth Principles. Implementation of the policies has begun with development of corridor management plans for seven Interregional Corridors.

(Source: *Interregional Corridors: A Guide for Plan Development and Corridor Management*, Mn/DOT, September 2000)

Minnesota Milestones

Minnesota Milestones has been published since the early 1990's. In 1991, as a first step, people throughout the state were asked to describe what they wanted Minnesota to be like in 30 years. The purpose was to develop a shared vision, clear goals, and measurement of results that would lead to a better future for Minnesota.

The vision that was developed describes the qualities Minnesotans want for their people, communities, government, economy, and environment. Nineteen goals grouped around four broad areas describe the vision. Seventy progress indicators measure progress toward these goals. The four areas are:

- People
- Community and Democracy

- Economy
- Environment

Minnesota Milestones has been published four times (in 1993, 1996, 1998 and 2002) to report progress in meeting the goals set during the Milestones meetings. In 2002, *Minnesota Milestones* reported the following results:

- Goals showing progress:
  - Academic achievement
  - Inclusive communities
  - Safe, caring communities
  - Health
  - Responsive, efficient government
  - Sustainable economic growth
  - Skilled workforce
- Goals with inadequate data:
  - Decent, affordable housing
  - Child poverty
- Goals with stable or mixed results:
  - Stable, supportive families
  - School readiness
  - Support for independent living
  - Participation in democracy
  - Standard of living
  - Viable rural and natural resources
  - Quality of the environment
  - Healthy ecosystems
  - Outdoor recreation

Minnesota Milestones is important because it was one of the earliest state efforts to promote accountability for results. *Minnesota Milestones* is characterized as "a catalyst in the growing movement toward performance measurement and quality measurement in government." Mn/DOT is one of the agencies using performance measurement to measure the effectiveness of its programs and policies. A major objective of the *Statewide Transportation Plan* is to develop a long-term, multimodal performance measurement framework for the state transportation system. (See Chapters 5 and 6)

(The complete text of *Minnesota Milestones 2002* is available at: http://www.mnplan.state.mn.us/mm)

Economic Report to the Governor

The *Economic Report to the Governor* is a report on issues of importance to the Minnesota economy. The first seven editions were published annually from 1986 through 1992. Subsequent editions were published in 1994, 1998 and 2002.

The reports are produced by the Economic Resource Group, which is an organization of state research managers formed in 1985 for the purpose of improving economic analysis through interagency cooperation. Each of the reports contain a number of chapters on current issues written by experts in those areas.

The *1998 Economic Report to the Governor* focused on the future of Minnesota's labor market. When this report was written, the economy continued to be very strong and unemployment rates were very low. Even though the economy has weakened, the theme that economic growth in Minnesota will continue to depend on the quality of the labor force remains true.

Productivity is the theme of the *2002 Economic Report to the Governor*. One chapter entitled "On the Productivity of Minnesota's Roadway Capital," was written by David Anderson, Gerard McCullough, and James West. The authors state that their goal is to determine how much investments in Minnesota roadway capital contribute to productivity increases. "Roadway Capital" means all state and local highways and streets.

The paper focuses on the benefits of roadway capital through its effects on the productivity of Minnesota firms. By examining the way the levels of inputs (labor, private capital, and roadway capital) change over time and the effects of these changes on output (gross state product or GSP), the authors can estimate the contribution of each input to productivity. The measure of roadway capital is "replacement value," which is the cost in current dollars of purchasing the capital, adjusting for the condition of the capital.

From their research, the authors conclude that the productivity of roadway capital in Minnesota appears to be very high. Their main finding is that a one percent increase in the amount of roadway capital will lead to a significant increase in the value of goods and services produced in Minnesota. However, due to data limitations, they do not attempt to determine an optimum level of roadway investment.

The authors state that they offer their research as a basis of discussion. They suggest that investments in roadway capital contribute significantly to productivity growth. They also note that all new investments in roadways will not necessarily lead to productivity gains. They remind transportation agencies, such as Mn/DOT, that evaluating individual projects is critical, and that only by investing in the best projects available can high returns be maintained.

This *Statewide Transportation Plan* identifies investments needed to continue improving the Minnesota Economy. (See Chapter 6)

(The *1998 and 2002 Economic Report to the Governor* are available at: http://www.minnstats.state.mn.us)

Directions 2000

Directions 2000 is the latest in a series of Department of Natural Resources (DNR) strategic plans started in the 1980s and updated about every two years. The purpose of the strategic plan is to identify the goals, objectives, and strategies for the natural resources managed by the DNR. These natural resources are grouped into five systems:

- Water resources
- Forest resources
- Agricultural areas
- Urban and developing areas
- Recreation systems

Directions 2000 focuses on a five-year timeframe from 2000 through the end of 2004. The goals and objectives are long-term, and most may not be reached in five years. The DNR has developed performance measures to track progress being made in the five-year timeframe towards reaching the long-term goals.

For each of the five natural resource systems, the *plan* describes goals and objectives, as well as management strategies to achieve the goals and objectives. To measure progress toward the goals, the plan lists examples of performance measures under each goal.

The DNR reports that stating goals and objectives as outcomes that can be measured represents an important change in its approach. By using outcome-based planning, the DNR is able to measure its progress and report the results to the public.

Directions 2000 emphasizes three resource priorities that guide the strategies developed for each of the five natural resource systems. They are:

Smart Growth

Using Smart Growth to create healthy, vital communities is one of the three resource priorities for the DNR. The DNR has been a lead state agency in developing approaches for managing growth. The focus includes growth throughout Minnesota in urban, suburban, and rural areas, including shoreland development.

Conservation Connections

Conservation Connections is a statewide network of natural areas, wildlife habitat, working forests, and other open spaces connected by land and water corridors. This statewide system of corridors provides a framework to coordinate resource preservation and sustainable land use. Relying on partnerships among public and private landowners, all levels of government, non-profit organizations, and concerned citizens, Conservation Connections will help guide development in a way that balances environmental, economic, and social concerns. The partnerships ensure that individual property rights are respected while providing a cost-effective approach to conservation.

Sustainable Forests

The purpose of the DNR's Sustainable Forest Initiative is to support a thriving timber industry, protect diverse habitats for plant and animal species, maintain water quality, and provide recreation opportunities. Strategies to accomplish this initiative include:

- Improving management to increase forest productivity.
- Managing older forests.
- Implementing the Minnesota Forest Research Council's site-level guidelines.
- Developing tools to assess changes in forest habitats.
- Integrating timber production and biodiversity goals through landscape-level planning and coordination.

The DNR's strategic planning process provides the tool to focus its stewardship and management activities. By developing goals, objectives, and strategies, it has identified agency priorities. Along with other state agencies, including Mn/DOT, the DNR is adopting performance measures to monitor its progress toward achieving its goals and demonstrating its commitment to the public.

The *2003 Statewide Transportation Plan* supports the smart growth principles as described on pages 2-6.

(The complete text of *Directions 2000*, including proposed performance measures, is available at: http://www.dnr.state.mn.us)

Metropolitan Council: Regional Development Framework and Transportation Policy Plan

The Metropolitan Council is the metropolitan planning agency serving the seven-county Twin Cities area. The Council is directed by Minnesota Statutes to prepare and adopt a comprehensive development guide for the metropolitan area that consists of the *Regional Development Framework* and four "chapters" dealing with (surface) transportation, aviation, wastewater, and regional recreation. The Council's *Transportation Policy Plan* is its Framework-derived plan for the region's transportation system. The most recent *Transportation Policy Plan* was adopted January 24, 2001, for the planning period through 2025.

Regional Development Framework

The Twin Cities area is faced with the issues of how to grow in ways that make the region more economically competitive while maintaining the region's high quality of life. The Development Framework is the Council's primary articulation of the region's policies and strategies to achieve those goals. Currently under review, the *Development Framework* has traditionally sought to balance regional growth with preservation of agricultural, environmental, and other open space resources–a focus that reflects the resources' intrinsic value and that pragmatically seeks to manage the infrastructure investment that provides for regional growth.

As part of its long-range planning, the Metropolitan Council provides forecasts of the region's population, household, and employment growth. Regional growth policies provide a framework for investment decisions. The *Regional Development Framework* presents the overall priorities for regional facilities and services in the Twin Cities seven-county area.

Consistent with the Council's general regional development framework, the *2003 Statewide Transportation Plan* encourages local land use planning, investing in important IRCs, and improving regional mobility. (See Policies 2, 5, and 6 in Chapter 6.)

(General information about the Metropolitan Council and about the *Regional Development Framework* is available at: http://www.metrocouncil.org)

Transportation Policy Plan

The Council's *Transportation Policy Plan* supports the *Regional Development Framework's* growth strategy to enhance economic growth and development, support reinvestment, strengthen environmental protection, and build vital local and regional communities.

The *Transportation Policy Plan* reports that, according to preliminary Council forecasts, the region will gain approximately 635,000 more people, 320,000 more households, and 312,000 more jobs between 2000 and 2025. These statistics highlight the challenge of keeping the region mobile and livable in future years.

The purpose stated in the *Transportation Policy Plan* is to develop an integrated, regional, multimodal transportation system plan that advances regional land use and growth management goals. The focus of the plan is to implement the *Regional Development Framework* and to guide growth by:

- Expanding mobility options;
- Improving environmental quality;
- Advancing economic competitiveness; and
- Enhancing community and neighborhood livability.

The *Transportation Policy Plan* includes 17 policies and 84 strategies associated with these policies to guide implementation of the plan. The plan also states that achieving its goals will require additional resources because historical funding sources are no longer adequate to meet the growing and changing needs of the region. The Metropolitan Council makes the commitment to actively pursue an adequate level of funding to implement the *Transportation Policy Plan* and address unmet investment needs identified in the plan.

The entire text of the *Transportation Policy Plan* is available at:

http://www.metrocouncil.org/planning/transportation/TPP/tppindex.htm

Aviation System Plan

The Council is responsible for preparing and maintaining the Twin Cities regional aviation system plan. It also coordinates aviation planning and development activities with local, state, and federal governmental units, airport users and citizens.

Federal Planning Context

In addition to influence from the public and other state agencies, the Department of Transportation relies upon direction from the Federal Government in the development of the statewide transportation plan. There are two major federal directions in regard to statewide transportation, the Federal Planning Factors and Environmental Justice.

Federal Planning Factors

The ***Minnesota Statewide Transportation Plan*** is consistent with federal planning requirements for surface transportation. Federal requirements outlined in the Transportation Equity Act for the 21st Century include seven planning factors that must be addressed by the states in developing, updating, and implementing long-range surface transportation plans. These are:

- Support the economic vitality of the United States, and states, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency.
- Increase the safety and security of the transportation system for motorized and non-motorized users.
- Increase the accessibility and mobility options available to people and for freight.
- Protect and enhance the environment, promote energy conservation and improve quality of life.
- Enhance the integration and connectivity of the transportation system, across and between modes throughout the state, for people and for freight.
- Promote efficient system management and operation.
- Emphasize the preservation of the existing transportation system.

Through its planning activities, including strategic, statewide and, district planning, Mn/DOT consciously addresses these planning factors. Along with the seven planning factors, federal regulations mandate incorporation of environmental justice. In addition to federal planning factors, state law requires Mn/DOT to achieve certain state requirements. Appendix C contains information on both federal and state planning factors.

Environmental Justice

Presidential Executive Order 12898, issued in 1994, directed every Federal agency or one using Federal funds to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies, and activities on minority populations and low-income populations.

Based on the USDOT Order on Environmental Justice there are three fundamental principles of environmental justice, as cited in *An Overview of Transportation and Environmental Justice*, USDOT:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects on minority populations and low-income populations.

- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Environmental Justice and Title VI

Title VI of the Civil Rights Act prohibits discrimination on the basis of color, race or national origin. Environmental Justice Executive Order continues to protect these groups but expands its umbrella to include low-income populations.

In 1998, Mn/DOT's Committee on Environmental Justice developed a draft guidance to implement environmental justice. It provides a summary of the US DOT Order on Environmental Justice, which translates the Environmental Justice Executive Order into key points and guidance for state DOTs. The guidance also highlights Mn/DOT's environmental justice principles and implementation guidelines, with directions for planning and project development. Mn/DOT's *Environmental Justice Draft Guidance*, has been incorporated into Mn/DOT's public involvement document "Hear Every Voice".

Minority and Low-Income Populations

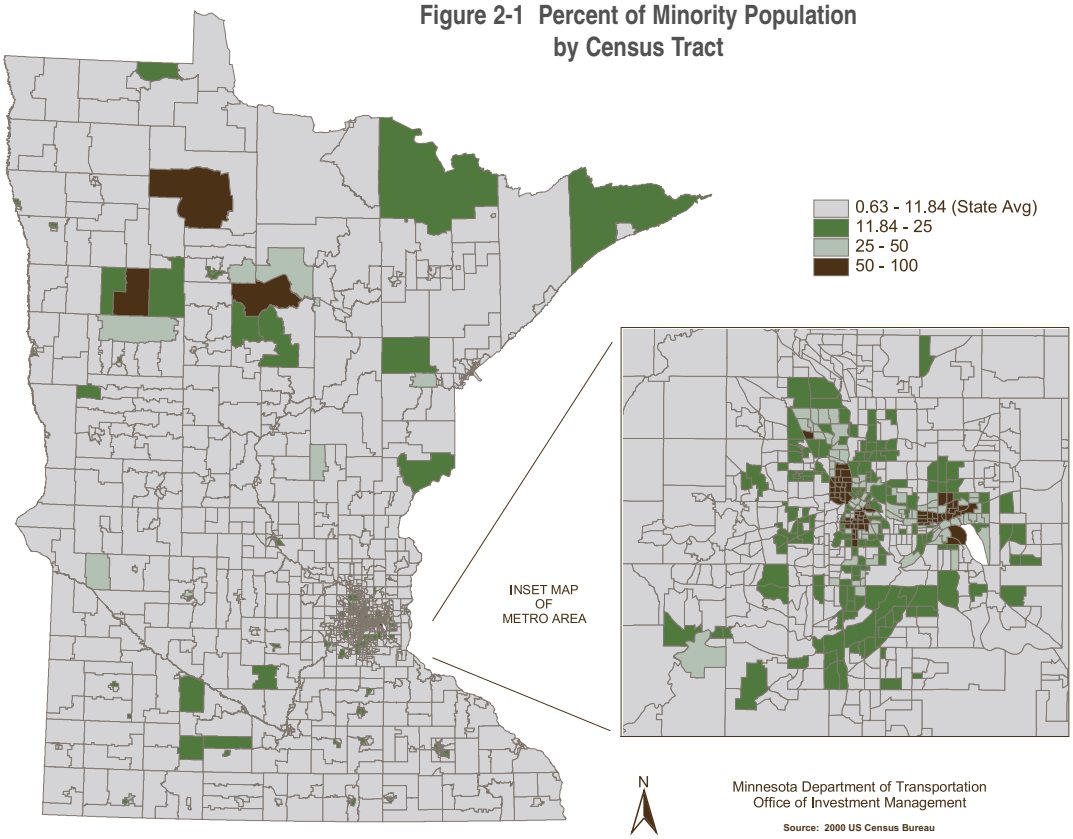
To assess the impacts of Mn/DOT policies on the minority and the low-income populations, the existence of a population needs to be identified. The United States Department of Transportation order on Environmental Justice defines a population as:

> **"… any readily identifiable group of minority persons or low-income persons who live in geographic proximity; or geographically dispersed persons, such as migrant workers or Native Americans who will be similarly affected by a proposed DOT program, policy or activity."**

The 2000 Census tract level data was used to map the two environmental justice populations. Two methods of mapping were used to understand the location and concentration of the populations: the number of persons per square mile and the percent of the population. Using both maps together gives a better understanding of the concentration and location of the environmental populations in Minnesota. There are many areas in Minnesota that have a high percent of environmental justice populations, but due to the sparse population in the area, do not show up as having high numbers of environmental justice persons per square mile. Similarly, there are areas with large numbers of environmental justice persons, but as a percent of the total population they are a small number due to the high population density in the area. For statewide policy analysis, the percent of environmental justice population is the most appropriate measure to use because it allows us to compare the relative impacts of the policies on the environmental justice population.

Figures 2-1 and 2-2 show the minority and low-income populations as a percent of the total Minnesota population per tract. The state average is used as the baseline.

Figure 2-1 Percent of Minority Population by Census Tract



Minority Populations

The 2000 census data shows that:

- Minority population was 11.8 percent of the total population in Minnesota;
- In the Twin Cities metropolitan area, the percent of minority population was 16.8 percent;
- Out of the total minority population in Minnesota 76.3 percent lived in the Twin Cities metropolitan area;
- People of African, Asian and Hispanic descent alone reside mostly in the Twin Cities metropolitan area, 90, 84, and 60 percent respectively;
- The majority of the American Indian population (64 percent) lives outside the Twin Cities metropolitan area. Many live on reservations and other historically American Indian areas in northern Minnesota (Duluth, Bemidji and Cloquet). In 2000, there were 16,927 American Indians alone living on the reservations.

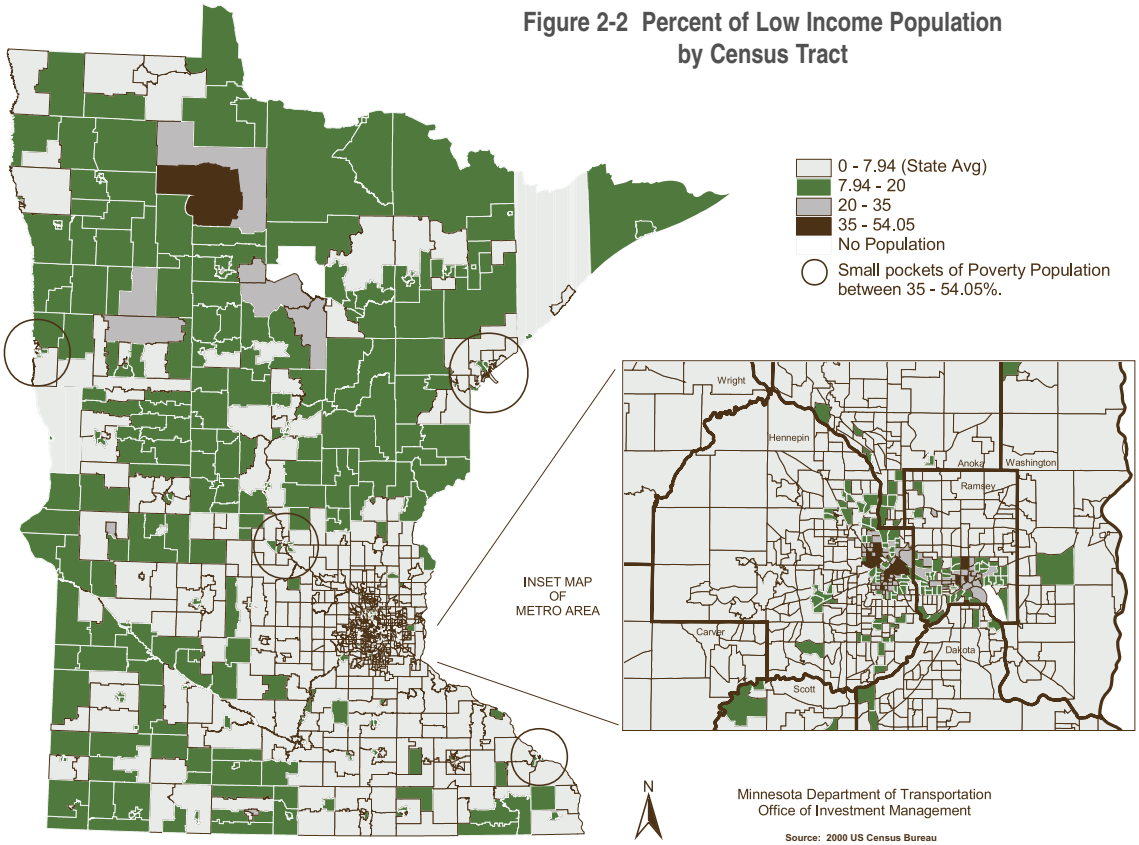


Figure 2-2 Percent of Low Income Population by Census Tract

Low-Income Populations

Using the 'persons in poverty' as a measure for low-income populations, the 2000 Census shows that:

- 7.9 percent of the population were low-income in 1999;
- In the Twin Cities metropolitan area, the poverty rate was 6.9 percent compared to 9.1 percent for Greater Minnesota;
- More than half the people in poverty live outside the seven county metro area, 53 percent; and
- Minneapolis and St. Paul have some of the highest rates of poverty in the state, 16.9 percent and 15.6 percent, respectively.

Table 2-1
Distribution of Present Serviceability Rating and the Environmental Justice Populations

PSR Index	Roads in Census Tracts with Minority Population >11.8%	Roads in Census Tracts with Low Income Population	All Mn/DOT Roads
Good/Very Good	64.0%	71.6%	70.6%
Fair	32.4%	26.4%	26.5%
Poor	3.6%	2.0%	2.8%

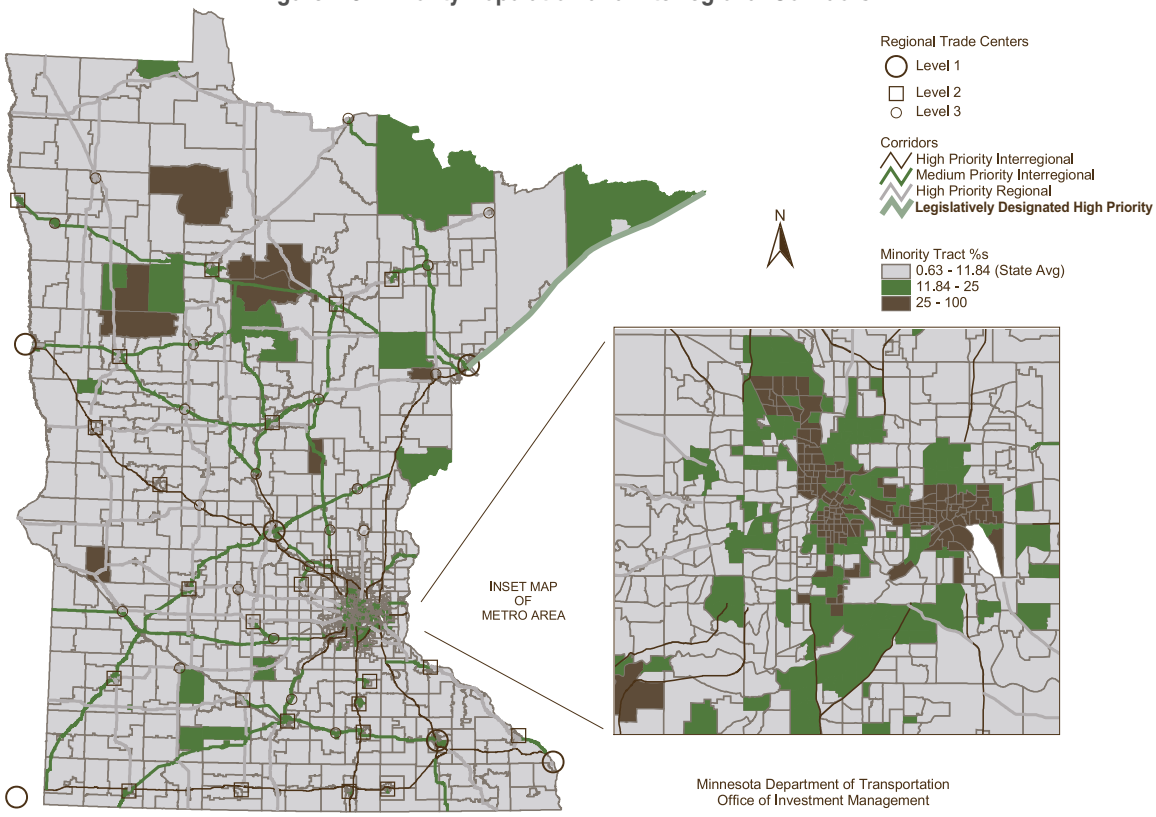
Mn/DOT Policies and the Environmental Justice Populations

Using the Census data, an assessment is made of the implications of Mn/DOT policies for the environmental justice populations.

Preserve the System

One of Mn/DOT's goals is to preserve essential elements of the existing transportation system. A measure used to assess the performance of the highway system is the customer ride quality.

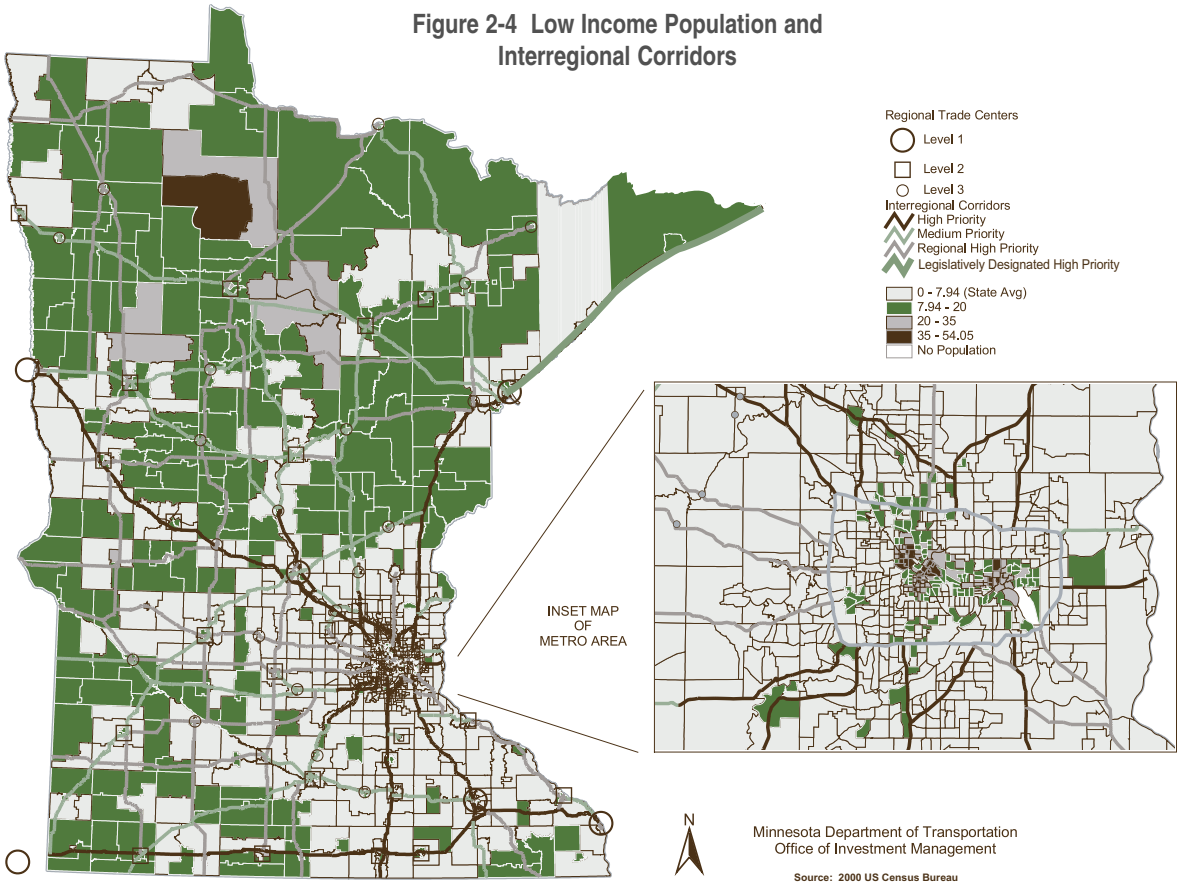
Figure 2-3 Minority Population and Interregional Corridors



Customer ride quality is measured by the Present Serviceability rating (PSR). Chapter 6, Policy 1, defines and outlines the policy regarding the target set for Present Serviceability Rating.

Table 2-1 compares the distribution of PSR Statewide for all Mn/DOT roads and the roads located in areas with higher than state average environmental justice populations.

Figure 2-4 Low Income Population and Interregional Corridors



Of all the Mn/DOT roads, 2.8 percent are classified as poor in condition. Of the roads located in areas with above average minority population, the percent of poor quality roads was 3.6 percent in 2000. For areas with low-income populations the difference is not significant. However, Mn/DOT roads are collectors and arterials, serving the long trips, not just the local populations where they are located.

Interregional Corridors

Figures 2-3 and 2-4 show Interregional Corridors (IRC) in relation to minority and low-income populations. The goal of the IRC policy is to improve the travel speed and travel time reliability between Regional Trade Centers (RTCs). For this analysis, the population in the largest city of

the RTC is used to represent the RTC, since the RTC boundaries do not correspond to city limits or census tracts. However, for the Twin Cities the seven county metro area is used to represent the level 0 RTC.

- 88 percent of Minnesota's minority population lives in the 0-3 level RTCs.
- Of the total population in the RTCs, 15 percent is minority population, which is higher than the state average of 11.8 percent.
- 69 percent of the low-income population lives in the RTCs, which is similar to the percent of the total population in the 0-3 level RTCs, so the percent of people in poverty is similar to the statewide average.

Regional Trade Centers

Another one of Mn/DOT's goals is to sustain mobility within the major (0 and 1 level) Regional Trade Centers.

- The percent of the minority population living in the major RTCs is 81 percent.
- Of the total population in the major RTCs 16.2 percent is minority.
- The percent of the persons in poverty living in the major RTCs is just below the percent of total population living in the major RTCs, 55 percent compared to 59 percent.

The policy of sustaining mobility within the RTCs will have a significant impact on minority populations. Improved or non-deteriorating mobility will be good for all groups. The poverty rates are somewhat higher in Greater Minnesota than in the RTCs.

Provide Cost-effective Transportation Options

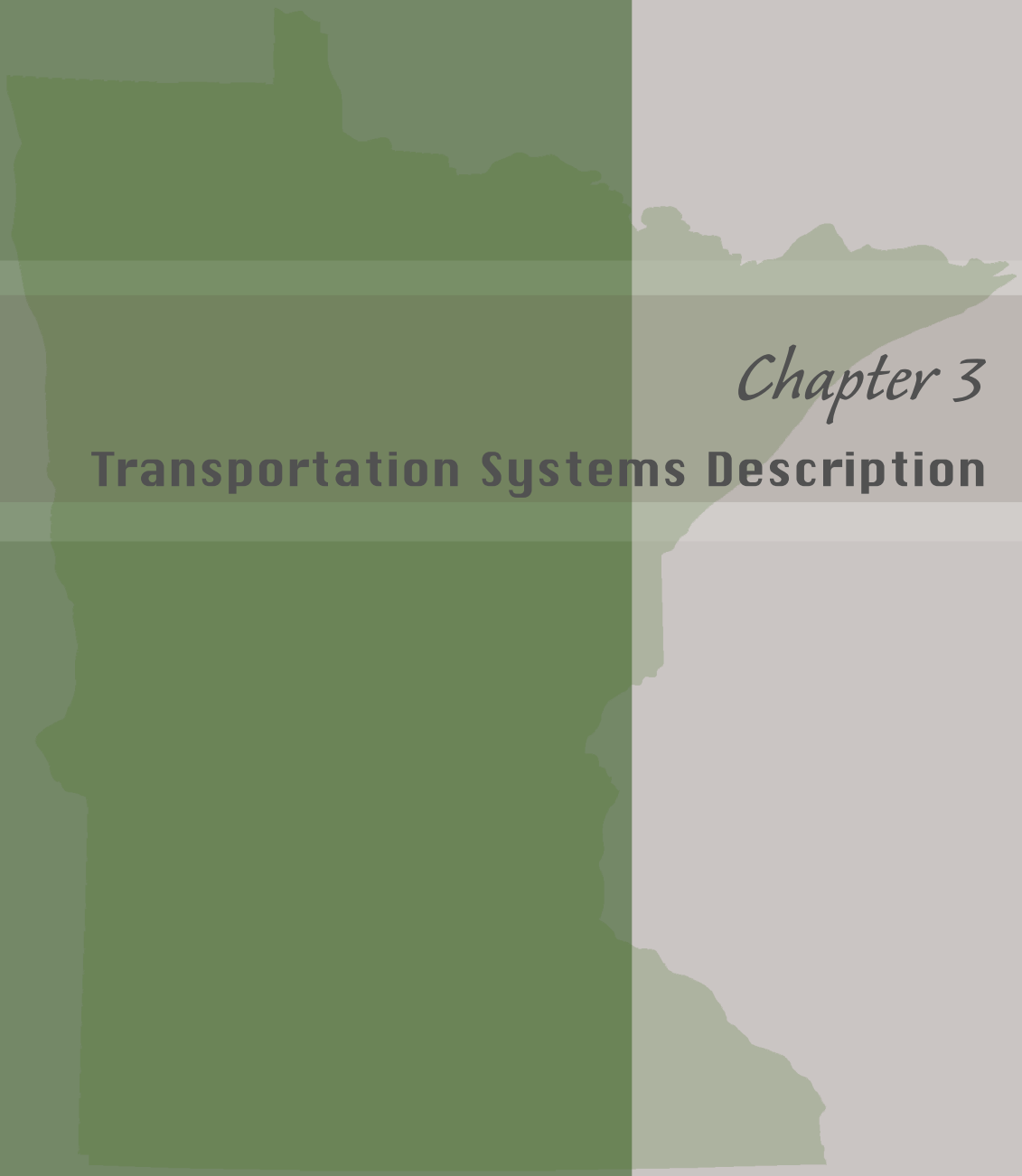
The objective of this policy is to provide more travel options for people and freight. The level of transit service provided by Mn/DOT in Greater Minnesota, as measured by total vehicle hours, increased by 2.9 percent from 1998 to 2001. A larger percent of the persons in poverty live in Greater Minnesota than in the Twin Cities metropolitan area. The goal is to make cost-effective services available where they are needed.

In the Twin Cities metropolitan area, where a large percent of minority populations reside, the number of revenue service hours has increased by 2.9 percent per year between 1999 and 2001. Mn/DOT works cooperatively with the Metropolitan Council, which is the lead agency responsible for the provision of transit services in the Twin Cities metropolitan area.

Whether specific projects will burden minorities or persons in poverty relatively more is not known at this stage. The Mn/DOT *Draft Guidance on Environmental Justice* was created to ensure that environmental justice issues are addressed at the project level.

Public Involvement and Environmental Justice Populations

Mn/DOT provided special opportunities for environmental justice populations to review this *Plan* separately from meetings held for the general population. Seven focus group meetings around the state were held based on ethnicity. The 2000 Census data was reviewed and analyzed to ensure that the seven outreach events targeted the state's most populous racial/ethnic minority groups. The focus groups were held in Mn/DOT Districts with the highest racial/ethnic minority populations. Special outreach was also conducted for American Indian populations through Mn/DOT's Tribal Liaison. Two separate meetings with leaders of Minnesota's 11 tribes focused on the *Statewide Transportation Plan*.



Chapter 3

Transportation Systems Description

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Chapter 3:
Transportation Systems Description

Highway System

There are a number of transportation systems that make up the state's transportation network. The first section of this chapter describes the state's highway system. The second section highlights other modes of transportation, such as transit, passenger and freight rail, passenger aviation, air cargo and waterway transportation.

The Minnesota Department of Transportation is directly charged with constructing, operating, maintaining and managing the state's trunk highway system (Interstates, US Highways, and Trunk Highways).

Minnesota has nearly 132,000 miles of streets and highways and 19,600 bridges. The state's 3.65 million licensed drivers own approximately 4.2 million registered vehicles.

Minnesota's roadway network includes state trunk highways, county roads and highways and city and township streets and roads. State trunk highways account for 9 percent of all roadway miles and carry 61 percent of all traffic. Table 3-1 shows how roadway mileage and travel are distributed among jurisdictions in Minnesota.

Table 3-1
Minnesota Roadways
2000 Mile Share and Vehicle Miles of Travel Share

	Percent Share of Miles	Percent Share of Daily VMT
State Trunk Highways	9%	61%
County State-Aid Highways	23%	22%
Municipal State-Aid Streets	2%	8%
County Roads	11%	2%
Township Roads	40%	2%
City Streets	12%	5%
Other Highways	2%	0%*
Total (approximately 132,000 miles)	100%	100%

Source: Mn/DOT Office of Investment Management

*Calculated as 0% due to rounding

The state trunk highway system consists of approximately 12,000 miles of roadways and 4,668 bridges. Table 3-2 shows the mileage and travel on the state trunk highways by functional class. The Highway Functional Class System is a means of classifying roads and distinguishing among them by the service function they provide.

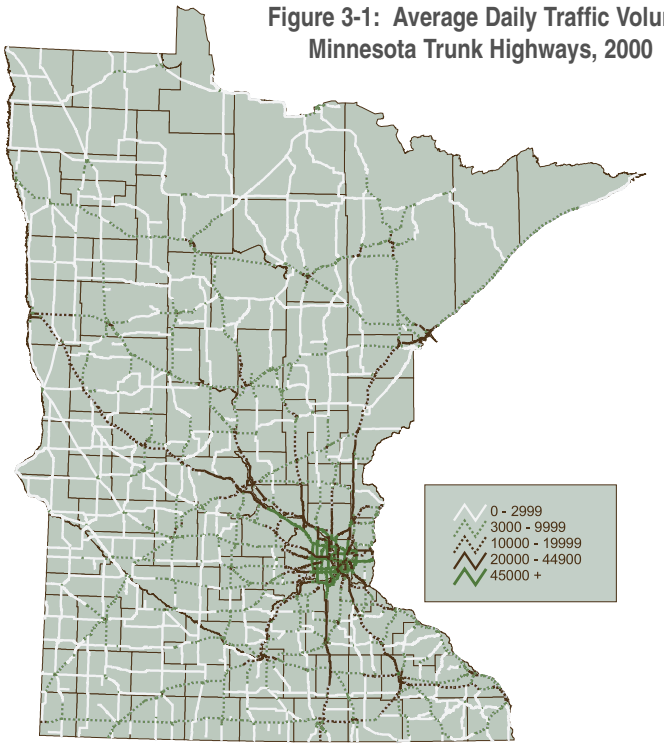
Table 3-2
State Trunk Highway System
Miles and Travel by Functional Class, 2000

	Miles	Percent Share of Miles	Daily VMT	Percent Share of Daily VMT
Principal Arterials	5,150	43%	68,886,607	81%
Minor Arterials	5,565	47%	15,303,226	18%
Collectors	1,205	10%	1,197,216	1.4%
Local	13	0.1%	15,452	0.02%
Total	11,933	100%	85,402,501	100%

Source: Mn/DOT Office of Investment Management

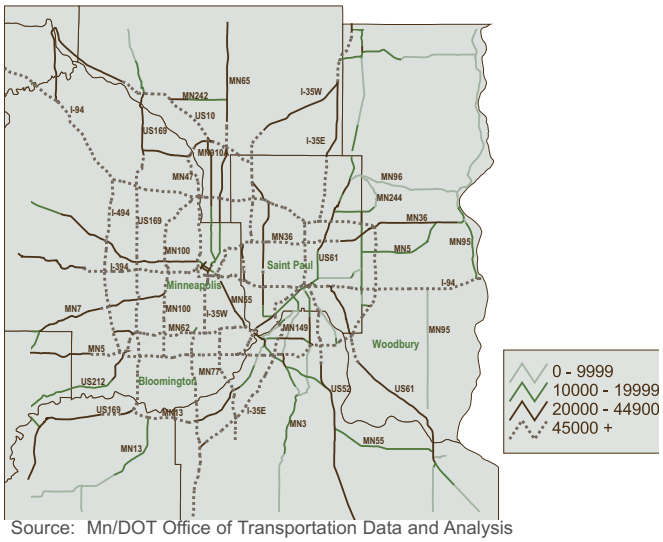
Figures 3-1 and 3-2 illustrate how travel was distributed on the 12,000 miles of state trunk highways. Heavy commercial vehicle travel made up nearly 8 percent of total VMT in 2000, compared to 7.6 percent in 1990. From 1990 to 2000, VMT for all vehicles on the state highway system increased by 35 percent. Over the same period, heavy commercial VMT increased by 40 percent.

Figure 3-1: Average Daily Traffic Volume
Minnesota Trunk Highways, 2000



Source: Mn/DOT Office of Transportation Data and Analysis

Figure 3-2: Average Daily Traffic Volume
Twin Cities Trunk Highways, 2000

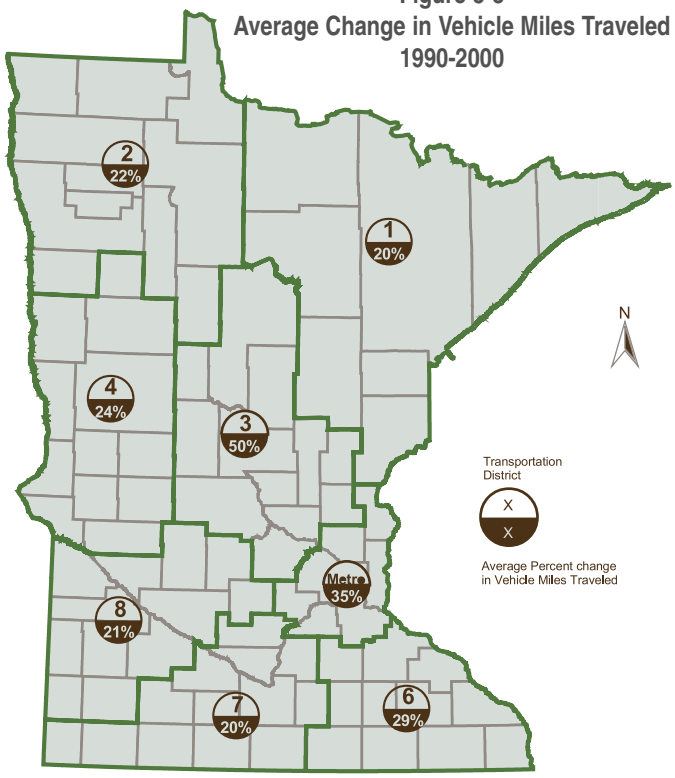


Source: Mn/DOT Office of Transportation Data and Analysis

Figure 3-3 shows the percent change in VMT on all streets and highways by transportation district for the period 1990-2000. Most notable are the large increases in District 3 (50 percent) and the Metro District (35 percent), where correspondingly high levels of population and employment growth have increased demands on the transportation system.

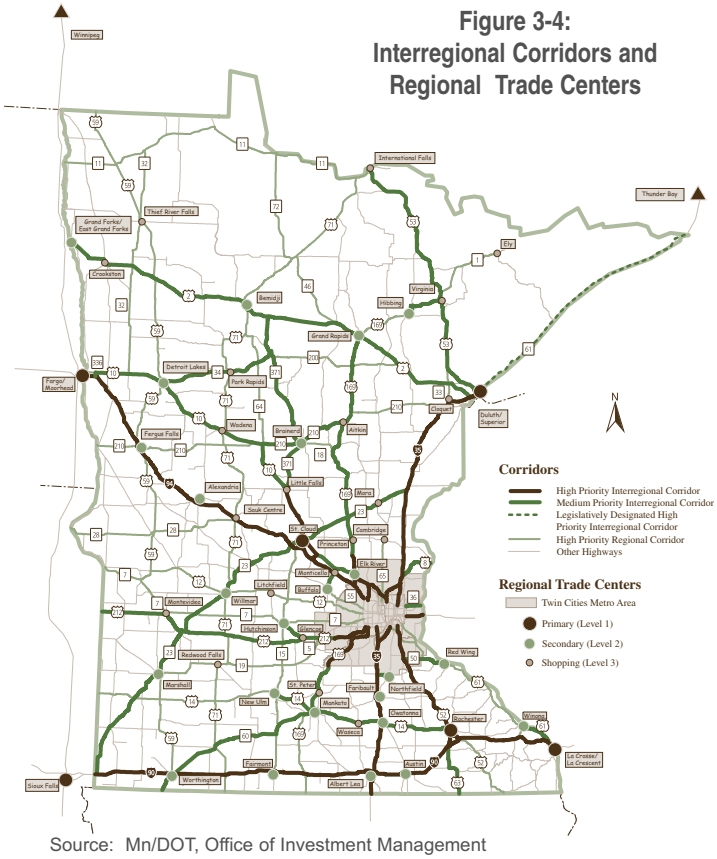
Figure 3-4 and Appendix E show Minnesota's Interregional Corridor System and Regional Trade Centers (RTCs). The goal of the Interregional Corridor System is to maintain safe, timely and efficient transportation services between regional centers. (The Interregional Corridor designation terminates at the Twin Cities' Beltway.)

Figure 3-3
Average Change in Vehicle Miles Traveled
1990-2000



Source: MnDOT

Figure 3-4:
Interregional Corridors and Regional Trade Centers



Source: Mn/DOT, Office of Investment Management

Regional Trade Centers were defined in a study conducted by the University of Minnesota Center for Urban and Regional Affairs (CURA). The study developed a model for ranking RTCs in an eight-level hierarchy that uses population and the number and diversity of businesses in an area to determine each ranking. Mn/DOT's Interregional Corridor System was developed to connect higher order trade centers serving relatively large geographic areas. Mn/DOT defines Regional Trade Centers as cities in levels 0-3 of the hierarchy. These communities provide specialized businesses and services to trade area markets beyond the immediate community.

The Interregional Corridor system shown in Figure 3-4 consists of two categories: (1) Interregional Corridors that provide statewide and interstate transportation service, and (2) regional corridors that provide transportation services to communities of regional significance. Interregional Corridors have been divided into high priority and medium priority corridors. Table 3-3 shows the mileage included in the Interregional Corridor System. Interregional Corridors consist of 2,926 miles of roadway, or approximately 53 percent, of Mn/DOT's existing principal arterials. High priority regional corridors consist of 2,639 miles of roadway, or approximately 47 percent, of Mn/DOT's existing principal arterials.

Table 3-3
Interregional and Regional Corridor System Mileage*

INTERREGIONAL CORRIDORS	
High Priority Interregional Corridors** (includes 7 miles of minor arterials)	**1,157 miles**
Medium Priority Interregional Corridors (includes 67 miles of minor arterials)	**1,769 miles**
Subtotal (includes 74 miles of minor arterials)	**2,926 miles (53%)**
REGIONAL CORRIDORS	
High Priority Regional Corridors (includes 673 miles of minor arterials)	**2,639 miles (47%)**
Total (includes 747 miles of minor arterials)	**5,565 miles**

* Existing statewide principal arterial system is 5,250 miles (260 miles are in the Twin Cities metropolitan area.)

** Includes the changes in Minnesota Law 2002, Chapter 364, Section 34s

In addition to Mn/DOT's role constructing and operating the state highway system, Mn/DOT is responsible for enforcing Minnesota laws and federal regulations governing the for-hire and private motor carrier industry in Minnesota. There are 2,353 registered active carriers based in Minnesota that use the roadway system to haul freight.

Transportation service provided by commercial vehicles is vital to the efficient delivery of goods in Minnesota. Nearly 85 percent of all freight (by value) is shipped by truck, using the state's roadway system. The trucking industry moves 45 million tons of freight and hazardous materials, valued at more than 60 billion dollars, in and through Minnesota each year. The administration and enforcement of safety and economic regulations on carriers is fundamental to ensuring goods reach their destination in a timely, efficient and safe manner.

Multimodal Transportation

While the highway system described in the preceding section serves, to a large degree, private automobile users, roadways are also the primary transportation infrastructure support system for bus transit, motor carriers and bicycles. In addition, roadways are the primary means of access to water ports, airports, and railroad transfer facilities and terminals. Other transportation modes meet specialized passenger and freight needs for heavy loads, time-sensitive transport, and long distance national and international trips.

Highways are critical for ensuring continued access and mobility for travelers, and for maintaining the state's economic vitality. However, efficient and effective movement of people and goods requires a balanced transportation system offering a variety of transportation modes. For example, many commodities like grain and coal are most efficiently transported over long distances by rail or water; people who do not or cannot drive a car are dependent on transit options; and many commuters choose transit service to make their trips to work. This chapter describes those and other transportation options, the markets they serve and Mn/DOT's role in providing these services.

Multimodal Transportation Defined

Modes are forms of transportation of people and freight. Transport modes for people include automobiles/vans (single and multiple occupants), bus transit, passenger rail transit (light rail, commuter rail), air passenger service, bicycle and walking. Freight modes include motor carriers, rail freight, water modes (ships and barges), air freight and pipelines. When more than one mode of transportation is available for moving people or freight between multiple trip origins and destinations, this is referred to as a multimodal transportation system. When the movement of people or freight involves more than one mode for a given trip, this is referred to as intermodal transportation. Intermodal transportation involves transfers between different modes.

Transportation planning and policy-making have traditionally focused on single transportation modes. In a multimodal transportation system, modes are provided and operated in a seamless system that is more efficient and flexible, more environmentally sound, and meets the needs of the travelers and shippers alike. A multimodal planning approach ensures that transportation alternatives are addressed at the same time, and evaluated on the basis of overall needs and investment strategies. The multimodal approach also allows comparative environmental effects to be considered in the planning process.

According to the United States Department of Transportation, a multimodal and intermodal approach offers the promise of:

1. Lowering overall transportation costs by allowing each mode to be used for the portion of trips to which it is most cost-effective;
2. Increasing economic productivity and efficiency, thereby enhancing the nation's global competitiveness;
3. Reducing congestion and the burden on overstressed infrastructure components;

4. Generating higher returns from public and private infrastructure investments;
5. Improving mobility for the elderly, disabled, isolated, and economically disadvantaged; and
6. Reducing energy consumption and contributing to improved air quality and environmental conditions.

An extensive system of highways, railways, waterways, and airports supports people and goods movement within the state, as well as to and from other states and countries. As global competition increases, maintaining the quality and capacity of this system is crucial to the economy of Minnesota. Improving the system to include transportation alternatives to passengers is equally important to ensure the mobility and quality of life Minnesota's citizens deserve and have come to expect.

Freight Service

Minnesota's transportation network plays an integral role in maintaining the state's competitive economic advantages. Whether it is a bulk cargo ship of grain traveling on the Great Lakes, a trainload of coal bound for St. Cloud, packaged cereals traveling by truck to supermarkets in the midwest, or medical and computer equipment flying out of Rochester to the east coast, or imports arriving from Europe and Asia – Minnesota's economy is linked to the state's ability to move goods.

As stated in Mn/DOT's *2000 Statewide Freight Flows Study*, Minnesota's economy requires a multimodal approach to freight transportation, focusing on:

- Highways, because trucks move most consumer products and account for the majority of freight movements by value;
- Railways, because the largest share of freight movements by weight, representing the state's major export commodities, are carried by the rail network;
- Waterways, because important bulk shipments of coal, iron ore, and grain move through the state's ports and waterways; and
- Airways, because the highest-value freight shipments move on airplanes.

In an era of just-in-time manufacturing and delivery, and increased emphasis on customer service and e-commerce, businesses and industries are experiencing greater pressure to remain competitive, leading them to utilize modes that provide timely, efficient and cost-effective ways to move their products.

In Minnesota, approximately 400 million tons of goods are moved each year generating an estimated $350 billion, with exports 50 percent more than imports. The following is a breakdown of freight movement by mode:

Table 3-4
Freight Movement by Mode in Minnesota

Freight moved	By weight	By value
Rail	47%	12%
Truck	32%	85%
Water	21%	3%
Air	<1%	<1%

Taconite mining, agriculture and coal shipments are responsible for nearly two-thirds of the tonnage of all goods moved in Minnesota. The logistics of moving these goods requires a strong multimodal freight system for local trucks, short- and long-haul rail, and long-haul waterborne moves. Products used by Minnesota's cities constitute over half of the total value of goods moved requiring fast and efficient truck, rail and air cargo service, as well as supporting intermodal facilities.

Aviation

The economic competitiveness and quality of life in Minnesota relies heavily on the state's airport system to move both people and goods. Airports in Minnesota provide a unique benefit to the state's transportation system by serving as a direct link to other economic hubs and trade centers throughout the United States and the world. There are 141 public use airports (6 are privately owned but open to the public) and 19 seaplane bases in the state aviation system serving general aviation, military, commercial air service and air cargo activities.

The aviation system in Minnesota is the preferred mode to move goods of high-value or time-sensitive nature over long distances. In 1999, there were approximately 295,000 tons of air cargo handled by all-cargo aircraft in Minnesota. This annual cargo activity is expected to grow to over 1.3 million tons by 2020.

A Minnesota Statewide Air Cargo Study conducted in 1999 found 24 airports, including Minneapolis-St. Paul International Airport (MSP), with measurable air cargo activity. The airports are classified into three categories: major, local/regional and on-demand air cargo service airports. Nine of those airports have dedicated air cargo facilities. Ninety percent of air cargo moving out of the state moves through MSP. Together, MSP and Rochester move 95 percent of the state's air cargo traffic.

General projections of air cargo activity:

- Air cargo market is anticipated to grow significantly over the next 20 years, particularly the overseas market.
- Landside congestion at MSP is becoming severe.
- Revenue ton-miles in air cargo activities by US carriers are expected to grow at a rate of 5.8 percent annually until 2012.

Air freight, though constituting a relatively small share of total volume (particularly by weight), is a rapidly growing mode that is critical to the emerging high-technology sector of the economy. Air freight is intricately linked to truck transportation, since almost all air freight is ultimately picked up or delivered by a truck. Minnesota has reacted well to business demands with new and planned air cargo facilities; however, demand and congestion are already undermining these improvements.

Another study regarding air cargo conducted by SITA Logistics Solutions in 2001 provided findings and recommendations to guide the state in providing greater air cargo efficiencies. The findings from the study include:

- International air cargo access is essential for Minnesota and the Upper Midwest Region to maintain economic vitality and to generate economic growth in the global marketplace.
- Ninety percent of Minnesota's air freight, equivalent to approximately 200 trucks per week, is trucked to/from Chicago.
- There are no direct international air cargo routes. Therefore, international destinations are limited to passenger routes.
- MSP's contribution to the state's freight distribution needs is declining.

Recommendations from the study were to develop a public/private partnership to create a Midwest Gateway regional distribution center for international air cargo and, in the meantime, to maintain and grow freight services at MSP in conjunction with passenger flights, and support growth of FedEx and UPS at MSP.

A Minnesota Cargo Project Development Steering Committee, consisting of representatives from the Twin Cities Airports Task Force, the Metropolitan Airports Commission and Mn/DOT has been formed to provide leadership in developing the recommendations and to begin identifying the remaining project development needs.

Mn/DOT's Role in Aviation

Mn/DOT's Office of Aeronautics promotes general and commercial aviation throughout the state consistant with federal law (AIR 21) and state legislation and goals. Several of its services include:

- Airport development–providing technical and financial assistance to municipalities for development and maintenance of existing and planned airports.
- Aviation education–forming liaisons with industry, government, and education institutions to identify and meet education and training needs.
- Navigational systems–establish, operate and maintain electronic navigation aids to augment the federal system in Minnesota.

- Planning, research, and information regarding statewide and regional strategic, system, intermodal and master planning for aviation; develop forecasts of aviation activity and revenue needs; assist airport owners in meeting federal and state environmental requirements; and monitor aviation issues and legislation.
- Air transportation in Mn/DOT-owned aircraft for Mn/DOT and other state employees, the Legislature, and constitutional officers when conducting official business.
- Other functions include airport licensing, aircraft registration, and safety training.

Rail and Waterways

Freight movement plays a major role in the economic prosperity of the state of Minnesota, particularly considering that the extensive rail network carries the largest share of freight, by weight, representing the state's major export commodities. Minnesota railroads and waterway ports serve many markets and continue to grow nationally and globally. Examples include midwest markets, domestic markets, utility markets such as energy plants, and international markets and ports. Major commodities include:

- Chemicals
- Agricultural/Farm
- Food
- Nonmetallic Minerals
- Lumber & Wood
- Pulp & Paper Products
- Glass & Stone Products
- Coal
- Metallic Ores
- Rubber & Plastics
- Electric Machinery
- Furniture

Minnesota's freight system oriented toward railroads and waterways can be characterized as follows:

- 8,505 manufacturing establishments
- 39,299 retail and wholesale trade establishments
- 26 railroad companies
- 4,671 public railroad grade crossings
- 3,081 private railroad grade crossings
- 4,559 railroad miles
- Five public ports (Duluth, Minneapolis, St. Paul, Red Wing, Winona)
- Private ports/terminals on the Minnesota, Mississippi, and St. Croix Rivers and on Lake Superior

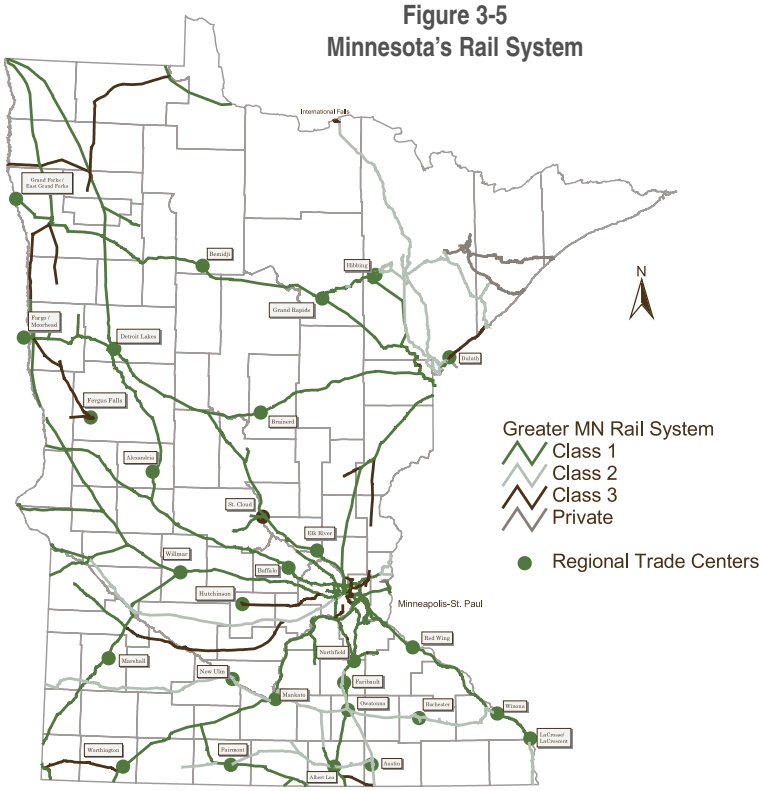
Rail

Low-cost rail transport makes Minnesota competitive. Approximately 47 percent (by weight) of all freight is shipped by rail, totaling $35 billion in revenue. It would require 1.4 million trucks per year to transport the ore tonnage handled by the Duluth, Missabe & Iron Range Railway. If moved by truck it would require millions of dollars in highway investments and would likely drive up the cost of Minnesota ore.

Minnesota's rail system, as shown in Figure 3-5 consists of four major carriers known as Class I, which operate on 2,857 miles of rail lines in Minnesota. The Class I railroads generate over $256.4 million in annual gross operating revenue. These railroads include:

- Burlington Northern Santa Fe (1,605 miles)
- CP Rail System (705 miles)
- Union Pacific Railroad (503 miles)
- Canadian National Railways (44 miles)

Figure 3-5
Minnesota's Rail System



There are also six Class II carriers that total 865 miles. The Class II railroads generate between $20.5-$256.4 million in annual gross operating revenue. These railroads include:

- Dakota, Minnesota & Eastern Railroad (277 miles)
- Duluth, Missabe & Iron Range Railway (212 miles)
- I & M Rail Link (196 miles)
- Duluth, Winnipeg & Pacific Railroad, owned by Canadian National (155 miles)
- Wisconsin Central (23 miles)
- Red River Valley & Western Railroad Co. (2 miles)

In addition, there are 13 Class III carriers that operate over 764 miles of rail lines in Minnesota with less than $20.5 million in annual gross operating revenue.

As of January 1, 2002, a total of 26 railroads, including three private lines that do not provide commercial freight service, operate on 4,559 miles of rail line in Minnesota. In 2000, Minnesota's railroads carried 192.5 million tons of freight to and from the state (approximately 10 percent of the US total) in approximately 3 million carloads (about 10 percent of the US total).

Table 3-5
US Freight Tons by Rail-Top Commodities

Originating in the state	Millions of Tons	Percent of State's Total
Metallic ores	39.2	55%
Farm products	14.1	20%
Food products	5.8	8%
Nonmetallic minerals	3.3	5%
Pulp and paper products	1.7	2%
All other	7.6	11%
Total (6th in the nation)	**71.8**	
Terminating in the state		
Metallic ores	21.4	33%
Coal	20.0	31%
Farm products	5.0	8%
Chemicals	4.6	7%
Glass and stone	2.2	3%
All other	10.8	17%
Total (11th in the nation)	**63.9**	

Source: Association of American Railroads for 2002

The railroads provide a vital pathway for the movement of taconite pellets from plants on the Mesabi Iron Range to Lake Superior ports and inland steel mills, enabling Minnesota's mining industry to remain competitive in world markets.

Railroads carry more freight over greater distances, often in intermodal partnerships. The freight railroad industry's share of the ton-miles of intercity freight has increased from less than 38 percent in 1990 to more than 40 percent today. The demands on this system are continuously growing, and changing technologies provide the opportunity to improve system effectiveness and efficiency.

Each year, Minnesota's railroads move thousands of containers of freight that otherwise would move by truck. These containers are shipped by rail when it is lower cost and more efficient to do so. However, rail transport has other benefits as well. Railroads are fuel-efficient, which helps conserve energy and reduce pollution. According to the United States Department of Energy, railroads are three times more fuel efficient than trucks and roughly equal to waterborne freight. Emissions from railroad locomotives are one-third that of trucks hauling equivalent quantity, according to the United States Environmental Protection Agency.

Trucking companies, long viewed as competitors of railroads, are now among the railroads' largest customers, contracting with railroads for the long-haul transport of containers and trailers. The trucking companies and their shippers are placing greater demands on railroads for speed and delivery reliability of intermodal shipments.

In addition, railroads provide important commercial links for Minnesota farmers, the taconite industry, manufacturers, and other businesses. Since railroads are able to move goods at competitive rates, they are able to hold down costs for shippers, which helps promote stability and economic growth in greater Minnesota. For example, the cost of shipping agricultural products by rail is much less than the cost of shipping by truck, which helps farmers earn higher profits and lowers the costs of products for consumers.

With the emergence of additional rail traffic entering Wyoming's Powder River Basin coal mine, coal traffic is expected to increase. In response to the expanding utility market demand locally and globally, growth is expected in the intermodal coal movements from rail to barge. Future service characteristics include an increase in the movement of low sulfur coal by rail, and an expected rise in export grain in years to come from what is now considered an "unsettled" grain market.

Additional impacts on the rail system in Minnesota include structural changes in the railroad industry occurring as the market for railroad freight transportation continues to reach record levels.

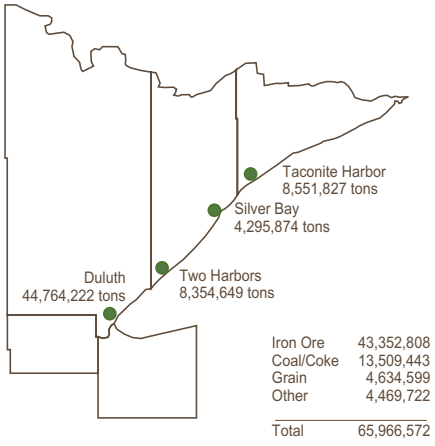
Waterways

The national waterway system provides a low-cost, effective means of transporting bulk products over long distances. An estimated 21 percent (by weight) of all freight is shipped by water totaling $7.6 billion in revenue. River commodity shipping has been stable even with the loss of northbound coal shipping due to the nation switching to low sulfur coal from Montana and Wyoming.

Minnesota's geographic location provides it the opportunity to access the national waterway system via the Mississippi River and Lake Superior, offering a low-cost, effective means of transporting bulk products over long distances. Major components of Minnesota's waterway system include 183 miles of a commercially navigable channel along the Mississippi River, 22 miles on the Minnesota River, 25 miles on the St. Croix River and a total of 60 terminals. Access to the Great Lakes is provided through 43 terminals located on Lake Superior.

Lake Port locations illustrated in Figure 3-6 include facilities in the cities of Duluth-Superior, Two Harbors, Silver Bay and Taconite Harbor.

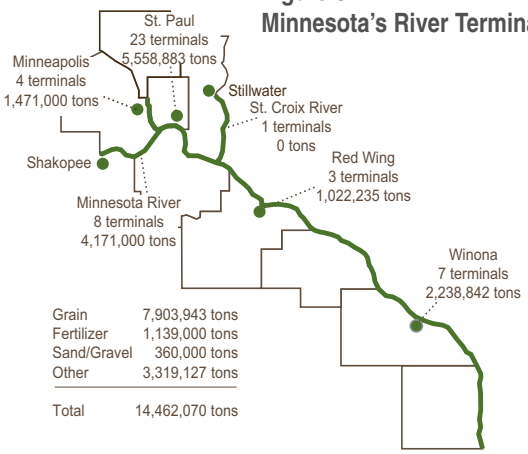
Figure 3-6
Minnesota's Lake Ports



Commodity shipping through Minnesota's river terminals has reached volumes in excess of 20 million tons in a single eight-month season. In 2001, approximately 14.2 million tons of freight were moved on Minnesota's rivers with roughly 52 percent of the annual tonnage being grain moving south to export terminals in New Orleans. The export grain market has been unsettled due to other nations being hesitant to accept GMO (genetically modified organism) grains grown in the United States. More than 60 percent of all the grain grown for export in Minnesota is shipped via the Mississippi River.

Figure 3-7 identifies Minnesota's River Terminals.

Figure 3-7
Minnesota's River Terminals



The waterway infrastructure, locks and dams largely constructed during the 1930's, is now experiencing heavy user demands and increased maintenance and upgrade costs.

While its original use was primarily commercial, the waterway system today has a rich mix of users and an equally rich mix of priorities. Recreational users now share the waterways with agricultural and other commercial users.

Mn/DOT's Role in Rail and Waterways

Mn/DOT's Office of Freight and Commercial Vehicle Operations (OFCVO) develops statewide railroad and waterway plans that guide investment and policy decisions. It helps to deliver infrastructure improvements, develop agreements and provide loans or grants to public port authorities, regional railroad authorities, railroads and shippers. OFCVO represents the state's interest in the movement of freight by railroads, administers highway/railroad construction projects and manages investment in rail service improvements. The Office also plays an active role in the development of freight-related data sources and tools to facilitate greater incorporation of freight issues and needs into statewide, modal and district plans.

Passenger Service

People and communities throughout the state depend on transportation services to meet their mobility needs. Aviation, rail service, bus transit, and bicycle and pedestrian ways all serve as alternatives for individuals who either cannot or choose not to drive a personal automobile. As the population and demographics in Minnesota continue to change, the need for these services becomes an increasingly important link for individuals traveling to work, school, medical appointments and social activities.

AVIATION

Ten Minnesota airports, including MSP, provided commercial airline service to over 33.5 million passengers in 2001. MSP serves as a major hub for Northwest Airlines and is the 13th busiest airport in the world in terms of number of passengers served. The other nine Minnesota commercial service airports providing commercial air service connect to MSP using Mesaba Air. Rochester (RST) and Duluth (DLH) are also served by American Eagle. Figure 3-8 identifies Minnesota's commercial service airports.

While MSP handles the majority of annual enplanements (the number of passengers departing from an airport) in the state, airports throughout Greater Minnesota serve a crucial role in connecting regional trade centers. In 1991, enplanements in Greater Minnesota airports totaled nearly 340,000; by 2001, enplanements increased by 20 percent to nearly 407,000.

Figure 3-8
Minnesota's Commercial Service Airports

The devastating events of September 11, 2001 had an immediate effect on the aviation industry in terms of enplanements. Although passenger numbers are projected to rebound, there may be long-term consequences on ticket prices, reduction in service amenities, and delays due to security clearance. These consequences, primarily security-based, have not been entirely realized as yet.

Components of air travel are a combination of time in the air, time at the airport, and time on the ground spent getting to and from a location. The US DOT "Intermodal Ground Access to Airports; A Planning Guide" reports the following facts found in a survey of small to large hub airports, conducted in 1994, which are still applicable today:

- The growth potential of airport facilities will be limited as access to airports becomes more difficult and time-consuming.
- Accessibility to the airport is becoming more of a determining factor in a traveler's airport preference.
- Important factors in the use of an airport are quality of service, cost of a ticket, travel time to the airport and parking costs.
- The preference by passengers for automobile-based airport access and the increased demands for facilities to accommodate those automobiles will continue to put pressure on access facilities.
- To remain competitive, access facilities will need to improve the way that automobiles are accommodated at airports and increase the availability of comparable high-occupancy-mode alternatives that decrease reliance on the private automobile.

Coordination between the roadway system and the airside of an airport is imperative to ensure adequate height clearance (for roadway lights and signs in the approach slope of a runway), adequate access, capacity, and signing.

Mn/DOT's Role in Passenger Aviation

Mn/DOT's Office of Aeronautics promotes general and commercial aviation throughout the state (See page 3-8).

The Metropolitan Airports Commission (MAC) is an independent agency that owns and operates MSP and six reliever airports throughout the Twin Cities metropolitan area. The MAC's mission is to serve the community by ensuring the safety of airport users and to provide efficient services and facilities for air travelers. In this role, the MAC has been a fundamental contributor in making the Twin Cities region a strong force in the global economy.

The Metropolitan Airports Commission also operates the third-largest reliever airports system in the nation. Nearly 830,000 takeoffs and landings a year occur at the commission's six reliever airports - about 300,000 more than at MSP. The airports are strategically positioned throughout the region to address special aviation needs such as flight training, military operations and medical evacuations. More than half of all registered aircraft in Minnesota are based at reliever airports, which generate an estimated $1.4 billion annually for the Twin Cities metropolitan area economy.

Passenger Rail Transit

Minnesota's multimodal transportation system provides choices for Minnesota travelers that include intercity rail service, light rail transit (LRT) and that may include future commuter rail services.

In the right circumstance, passenger rail can provide cost-effective transportation services for travelers. Once a rail line is in place, the addition of capacity to commuter, LRT, or inter-city rail generally entails adding passenger cars to existing trains. Additional train frequencies also add capacity, enabling more passengers to travel with greater flexibility. Passenger rail projects offer the additional benefits of reduced emissions, reduced parking demand in central business districts, and improved accessibility for those who cannot drive.

Passenger rail is still an evolving transportation mode in Minnesota. What follows is a brief description of these developmental efforts.

Light Rail Transit (LRT)

Light rail transit is generally defined as electric rail cars that operate in short trains. Powered from an overhead wire, LRT can run on exclusive, semi-exclusive or shared alignments, with or without grade crossings, or even in traffic lanes on city streets. In the United States, stations typically are 0.5-1.5 miles apart and rail service operates nearly 24 hours a day. LRT corridors are usually 10-20 miles long.

Hiawatha LRT

Minnesota is currently constructing its first LRT line along the Hiawatha Avenue Corridor. The 11.6-mile corridor will connect downtown Minneapolis, Minneapolis/St. Paul International

Airport and the Mall of America in Bloomington. Overall design/build project completion was about 70 percent as of early winter 2003.

The Hiawatha line will open in two stages: revenue service from Minneapolis's Warehouse District to Fort Snelling will begin in the spring of 2004, followed by service to the airport and the Mall of America in the winter of 2004. Hiawatha's ridership projection is expected to be 19,300 trips per day after phases I and II and 24,800 trips per day by the year 2020.

Central Corridor
The Central Corridor is an 11-mile corridor between downtown Minneapolis and downtown St. Paul that has been studied for several years. LRT has been identified as the preferred alternative for this potential line along University Avenue.

Commuter Rail

Commuter rail passenger service is generally defined as passenger train service that operates on existing freight railroad tracks. Commuter rail service primarily operates during "peak" travel times, usually the hours of 6:00 a.m. to 9:00 a.m. and again from 3:00p.m. to 6:00 p.m. Trains run inbound to the city center in the morning and run outbound service to suburban areas in the evening. In the U.S. the average trip length on commuter rail is 22 miles, with stations generally 5 miles apart.

During the 1997 Minnesota Legislative session, the Legislature instructed Mn/DOT to conduct a feasibility study to determine if the Twin Cities metropolitan area could support commuter rail service. The primary goal of this study was to determine if the use of existing freight railroad lines could provide a transportation alternative to the automobile.

Nineteen rail corridors were studied. The study concluded that six corridors were potentially feasible of supporting commuter services. The primary goal of the study was to determine if the use of existing freight railroad lines could provide a viable transportation alternative.

The six potentially feasible lines were divided into two tiers. Originally, tier one included the Northstar Corridor, the Red Rock Corridor, and the Dan Patch Corridor. Tier two included the Bethel Corridor, the Rush Line Corridor and the Norwood-Young America Corridor. The Northstar and Red Rock corridors have been included in the Metropolitan Council's *Transit 2020 Master Plan*.

In January 1999, Mn/DOT presented the results of the *Twin Cities Metropolitan Commuter Rail Feasibility Study* to the Minnesota Legislature. Subsequently, the legislature passed M.S. 174.80 to 174.90, which gave the Commissioner of Mn/DOT the authority to plan, design, construct, and operate commuter rail in the state of Minnesota. Further, the Commissioner was given the responsibility of ensuring that if commuter rail facilities are acquired, developed, constructed, owned, and operated in Minnesota, that these activities would be done in an efficient, cost effective manner and in coordination with buses and other transportation modes.

The *Commuter Rail System Plan*, published in February of 2000, was developed as a prescriptive tool to ensure commuter rail development would be accomplished in a cooperative and consistent manner that provides, to the maximum extent possible, coordination among stakeholders.

Northstar Corridor Rail Line
The proposed Northstar Corridor Rail Project contains two components: 1) an 82-mile commuter rail line from St. Cloud/Rice to downtown Minneapolis along Trunk Highways 10 and 47 and 2) a four-block extension of the Hiawatha LRT line from Minneapolis's Warehouse District to the downtown Minneapolis commuter rail terminus. The commuter rail line would use existing tracks owned by the Burlington Northern Santa Fe (BNSF) Railway and include 11 stations. It has been projected to carry nearly 11,000 passengers per day by the year 2020. The rail line would have intermodal connections to bus transit at all stations and to the Hiawatha LRT line in downtown. With the exception of the downtown and Northeast Minneapolis stations, all stations would have park-and-ride facilities. Preliminary engineering for Northstar, including the final environmental impact statement, is complete.

The downtown Minneapolis commuter rail station, which would be the terminus for Northstar and Hiawatha LRT, is also the proposed terminus for four other potential commuter rail corridors identified in the *Commuter Rail System Plan*.

Red Rock Corridor Rail Line
The potential Red Rock Corridor Rail Line is a 30-mile corridor from Hastings to downtown Minneapolis, through downtown St. Paul along Trunk Highways 10 and 61. The Red Rock Corridor would use existing rail tracks owned by Burlington Northern Santa Fe Railway and Canadian Pacific and include nine to 10 possible stations, including one at the St. Paul Union Depot.

The *Red Rock Corridor Commuter Rail Feasibility Study* evaluated the constraints and opportunities of operating commuter rail transportation service in the Red Rock Corridor on shared right-of-way with freight railroads. This study was completed in July of 2001 and concluded that commuter rail service is potentially a viable and feasible option to meet the transportation needs in this corridor.

Intercity High Speed Rail

High-speed rail is a generic name for a family of technologies, both steel-wheel on rail and magnetic levitation (maglev) systems involving trains traveling at top speeds of 90 to 300 mph for steel-wheel and maglev, respectively.

Amtrak Service
Minnesota is a recipient of Amtrak service with the Empire Builder, a long-distance train from Seattle/Portland to Chicago. Stations in Minnesota include Detroit Lakes, Staples, St. Cloud, Minneapolis/St. Paul, Red Wing and Winona. Currently, one train serves these cities going eastbound and a second train travels westbound, daily. Amtrak has identified potential service expansion of an additional train in each direction.

Four other rail service expansion investigations apply to Minnesota:

- **Midwest Regional Rail Initiative**

  The Midwest Regional Rail Initiative (MWRRI), which is supported by nine Midwest states (Indiana, Illinois, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio and Wisconsin), Amtrak, and the Federal Railroad Administration has worked to address 21st century regional passenger rail potential. Since 1996, the MWRRI has progressed through

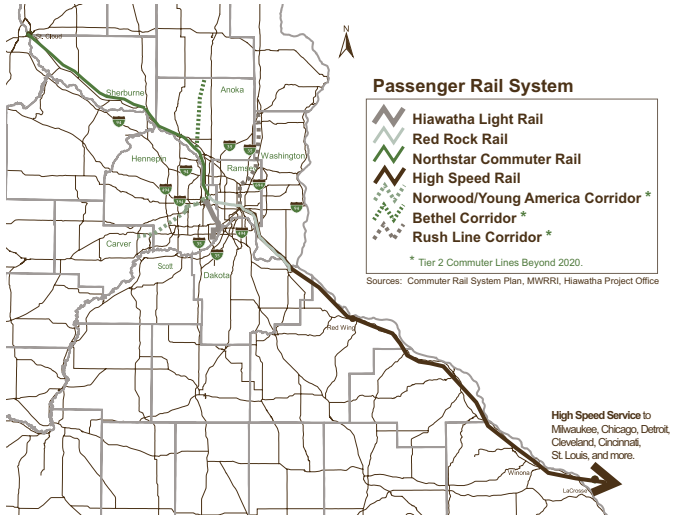
assessments of a series of service concepts, including increased operating speeds, train frequencies, system connectivity, and high service reliability consolidated into the *Midwest Regional Rail System Plan*. The primary purpose of the MWRRI is to meet future regional travel need through significant improvements to the level and quality of regional passenger rail service.

For Minnesota, the benefits of improved rail services in line with the MWRRI *plan* could mean the addition of up to six trains daily to Chicago with a reduction of rail travel time from eight and a half hours to five hours when the system is implemented. Stations in Minnesota would include St. Paul Union Depot, Red Wing and Winona.

- **Tri-State High Speed Rail Feasibility Study**

  This study evaluated the potential for various high-speed rail options in the Chicago-Milwaukee-Twin Cities corridor, looking beyond the Midwest Regional Rail Initiative (MWRRI) implementation, which was presented as the base case for this study. This study considered incremental improvements from one speed threshold to another for long-range (five to fifteen-year) planning and implementation. It was designed to provide policymakers with the information needed to evaluate and choose among route/technology alternatives, including the financial and institutional arrangements needed and a realistic timetable for successful implementation.

Figure 3-9: Potential Passenger Rail System



- **Duluth Passenger Rail Study**

  A preliminary study conducted by Mn/DOT assessed the potential to restore passenger train service between the Twin Cities metropolitan area and Duluth. Previously served by Amtrak, the 160-mile route was re-examined at the request of the Legislature.

- **Rochester Rail Link Study**

  This study has addressed the feasibility of connecting the Minneapolis- St. Paul International Airport to Rochester International Airport with a high-speed rail line to move passengers and cargo.

Mn/DOT's Role in Passenger Rail Transit

Mn/DOT administers the state and federal programs for passenger rail transit. Mn/DOT has statutory responsibility for overseeing the delivery and construction of commuter rail and light rail projects and for production of the state commuter rail plan.

Bus Transit

Many people and communities throughout the state depend on bus transit services to meet their mobility needs. Public transportation can provide an efficient, cost-effective alternative for individuals in metropolitan areas, suburbs, small towns and rural communities alike. As the population and demographics in Minnesota continue to change, the need for transit services becomes an even more important link for individuals traveling to work, school, medical appointments and social activities.

Twin Cities Metropolitan Area

Regional fixed-route bus services provide almost 98 percent of all passenger trips made on the regional transit system. The Metropolitan Council, Office of Transportation, is responsible for distribution of state and federal transit assistance funds to public transit systems within the Twin Cities metropolitan area. They are also responsible for the majority of transit planning and operations for the Twin Cities.

Thirty-five public transit systems serve the Twin Cities metropolitan area. These include Metro Transit, Metro-Mobility, opt-out systems, small urban and rural systems and private operators. These systems provide fixed route and demand response services. In 2000, metropolitan bus transit systems carried over 80 million passengers.

Table 3-6
Twin Cities Metropolitan Area Public Transit Systems, 1994-2000

Transit Funding Category (Number of Systems 2000)	Type of Service	1994 Passengers	2000 Passengers
Metropolitan Council Transit Operations (MCTO) (1)	Regular Fixed Route	65,467,000	73,478,000
Metro Mobility (1)	Demand Responsive	1,080,118	1,015,152
Private Operators (13)	Regular Fixed Route	1,090,906	1,589,476
Small Urban (5)	Demand Responsive	110,454	130,608
Rural (11)	Demand Responsive	407,700	447,059
OPT-Out (5)	Regular Fixed Route	1,970,964	3,382,868
Total Systems (36)	**Total**	**70,127,124**	**80,043,163**

Transit use in the Twin Cities metropolitan area has increased over the six-year period from 1994 to 2000 through a combination of service expansion, transit-promotion partnerships with business, liberalizing transfer policies and launching media campaigns. The *Transit 2020 Master Plan* prepared by the Metropolitan Council in 2000 lays out the future direction for transit in the Twin Cities metropolitan area. The *Plan* recommends that over the next 10 years the bus fleet, garages and support facilities be doubled so that, by 2020, the system can carry twice the ridership it does today. The operating cost to support system doubling would increase by $70 million per year in 2010. The capital cost of increasing system capacity is estimated to be $440 million by 2010.

Facing rapid growth, increasing congestion and limited prospects for major new freeways, the Twin Cities metropolitan area will need a strong transit system to meet the mobility needs of all its residents and to help manage growing highway congestion.

Responding to future transit needs in the region requires strengthening the current bus system and supporting facilities while assessing the potential for a network of dedicated transit corridors.

Exclusive Busways

Exclusive busways may play an important role in the region's transit system effectiveness in the next 25 years. As congestion grows, keeping the Twin Cities metropolitan area mobile will become more and more difficult. Busways typically provide faster service than traditional on-street bus service and maybe less expensive to build and operate than light rail.

Experience elsewhere in the U.S. shows that busways emphasize speed and frequency, with a minimal number of stations at timed transfer points. Busways need to be designed and operated in ways that minimize noise and pollution through appropriate vehicle technology, and reduce visual impacts through landscaping and roadway configuration.

There is an existing busway serving the University of Minnesota. One other corridor is currently being planned for busway development.

Northwest Corridor

A future busway in the Northwest Corridor has been proposed that will connect Minneapolis with Rogers, running parallel to County Road 81. The Metropolitan Council wants to integrate planned highway reconstruction with any development of a major transit facility in this corridor. Hennepin County has committed $27 million toward the Northwest Corridor project. The county, along with partners from the public and private sectors, is completing a market study for redevelopment sites.

Commuter Coach

Commuter coach services are designed to offer individuals traveling from outer ring suburbs and Greater Minnesota the opportunity to utilize express bus service to their destination in the Twin Cities downtown centers.

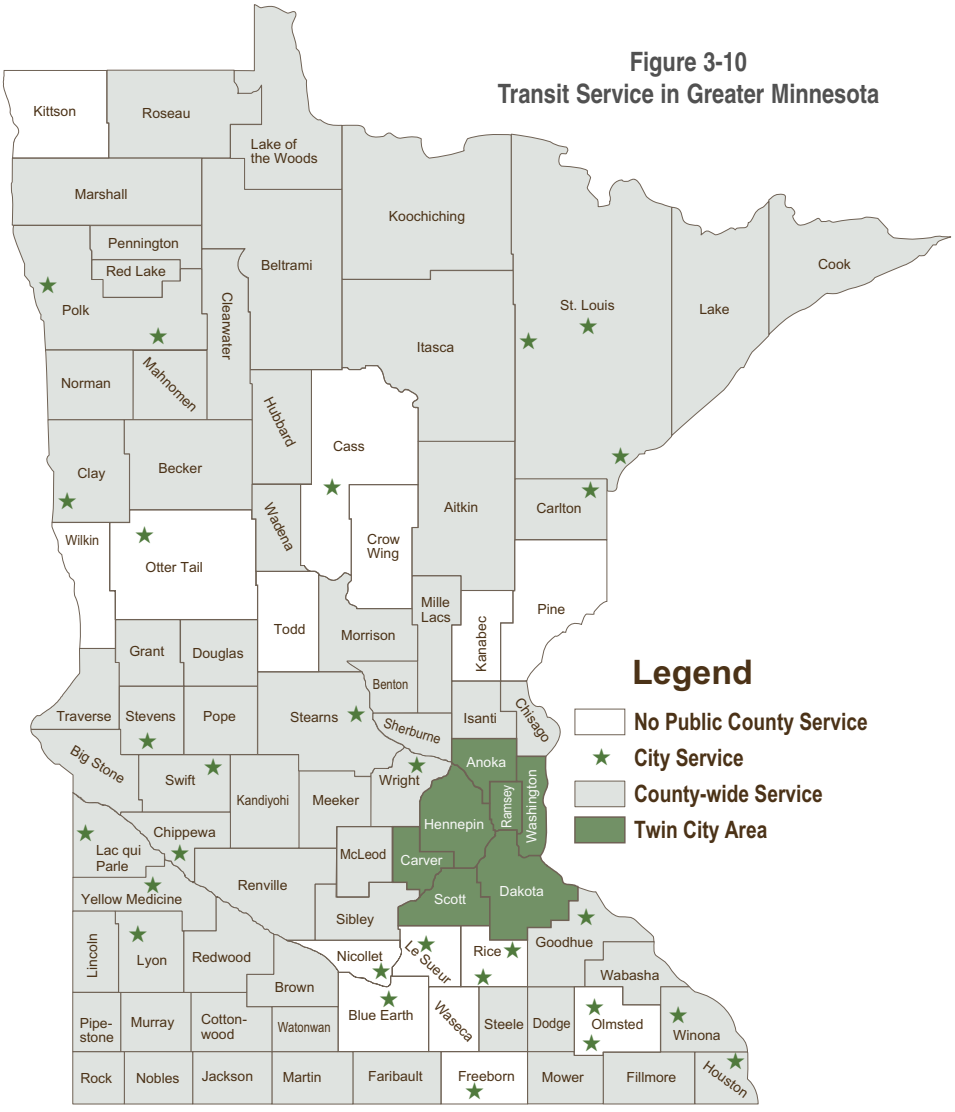
The first Mn/DOT-sponsored commuter coach service is the NorthStar Commuter Coach which began service in October 2001 between Elk River and downtown Minneapolis. The service operates in the southern portion of the Northstar Corridor, an 80-mile transportation passage

running along the Mississippi River and within the corridors for Minnesota Trunk Highway 10 and Trunk Highway 47 between downtown Minneapolis and St. Cloud. The vehicles are quiet, smooth, and well-appointed to provide a comfortable and relaxing alternative to driving personal automobiles in this congested corridor. The service provides eight trips to and from downtown Minneapolis during peak hours, picking up and dropping off at two new park-and-ride lots in Elk River and Coon Rapids.

Greater Minnesota Transit

Transit service is provided in many communities throughout Greater Minnesota to serve people who do not own or drive a vehicle, or who need an auto alternative. Many of the Greater Minnesota communities with large numbers of older persons, families with limited incomes, school-age children, or one-car families often have substantial unmet transportation needs.

Figure 3-10
Transit Service in Greater Minnesota



The 67 public transit systems operating in Greater Minnesota provide transportation services designed to meet the needs of Greater Minnesotans. They range in size from Pelican Rapids' small community system and Roseau Counties' single-county system, to Duluth's large urban system and the Arrowheads' multi-county system. The services they provide include fixed route, route deviation and demand responsive. In 2000, Greater Minnesota public transit systems carried over 8.9 million passengers. Figure 3-10 depicts transit service in Greater Minnesota.

The period between 1990 and2000 was a time of significant growth and expansion of public transit service in Greater Minnesota. During this period, countywide public transit service expanded from 36 to 64 counties and there was a reduction from 23 counties with municipal service only, and from 21 to seven counties with no public transit service.

Table 3-7 summarizes the changes that have occurred in Greater Minnesota public systems and in transit use during this the 10-year period.

Table 3-7
Greater Minnesota Public Transit Systems, 1990-2000

Transit Funding Categories	Type of Service	Number of Systems (1990)	Number of Passengers (1990)	Number of Systems (2000)	Number of Passengers (2000)
Urbanized: 50,000+ Population	Regular Fixed Route	4 systems (East Grand Forks, Moorhead, Rochester, St. Cloud)	2,728,483	5 (East Grand Forks, LaCrescent, St. Cloud, Rochester, Moorhead)	2,872,785
Small Urban: 2,500+ Population	Route Deviation, Demand Responsive	24 systems	1,274,015	18 systems	1,025,538
Rural: Countywide and Cities with less than 2,500 Population	Route Deviation, Demand Responsive	25 systems	714,808	43 systems	1,824,557
Urbanized Elderly and Disabled	Demand Responsive	4 systems (Duluth, Moorhead, Rochester, St. Cloud)	130,113	4 (Duluth, Moorhead, Rochester, St. Cloud)	192,637
Large Urban: 1,000,000+ Population	Regular Fixed Route	1 system (Duluth)	3,662,230	1 (Duluth)	3,016,336
Total Systems		**58 systems**	**8,509,649**	**71**	**8,931,853**

Examples of transit services operating in urban centers are briefly described next.

Duluth Transit

For more than a century, public transportation has been provided along Duluth's hilly terrain and 30-mile configuration on the shores of Lake Superior. The Twin Ports (Duluth and Superior, Wisconsin) have depended on public transportation from the days of the horse-drawn rail service of the 1800s and the electric trolleys of the early 1900s to today's fleet of modern buses. Duluth Transit Authority (DTA) currently operates 22 regular routes in Duluth, Proctor and Superior, Wisconsin, and operates school transportation services for urban secondary students in Duluth. The DTA also operates special services for tourists. During the busy summer months the Port Town Trolley circulates between downtown Duluth and Canal Park waterfront, bringing tourists to the many shops and restaurants in the area.

St. Cloud Transit

The St. Cloud Metropolitan Transit Commission (MTC) operates regular route transit service in the cities of St Cloud, Sauk Rapids, Waite Park and Sartell. The MTC operates sixteen routes with 30-minute peak and 60-minute off-peak headways, with eleven routes hubbing out of the MTC's downtown Transit Center, four out of the St. Cloud State University, and one out of the Crossroads Shopping Center. In addition, the Metro Express provides employee transportation to St. Cloud's Industrial Park West and the Senior Rider provides weekday service to senior citizens 60 and over. In 2002, the MTC began transit service to the City of Sartell.

Rochester Transit

The City of Rochester contracts with Rochester City Lines (RCL), a privately owned and operated company, to provide regular route transit service. Routes are designed to meet a variety of community needs, ranging from social trips to school-oriented to commuter service. Commuters can use a system of park-and-ride facilities to get to destinations utilizing the bus . The RCL buses are equipped with bicycle racks to make it possible for riders to bike and ride the bus. The RCL holds the city-granted franchise to operate regular route service in Rochester. The company is responsible for daily management and operation of the system. The City of Rochester owns 29 buses with additional buses provided under the RCL contract.

Transit Market Research

In 2000, Mn/DOT conducted a Market Research Study of existing and potential riders in Greater Minnesota. As part of the market research, a random phone survey was conducted. The results indicated that the best candidates for utilizing transit service in Greater Minnesota were:

- More likely to live in a city over 5,000 population
- Expect local bus service to operate at least 5 days per week and 16 hours per day
- Believe that money should be spent on bus service in their community
- Represents 40 to 50 percent of all respondents

As part of the research, an on-board survey was conducted by the Greater Minnesota transit systems. Response to the survey indicated the following rider characteristics:

- Female (72%)
- Under age 64 (59%)
- Earned less than $35,000/year (84%)
- Use bus-lift device (8%)
- Have physical limitations (39%)

Mn/DOT's Role in Bus Transit

Mn/DOT's Office of Transit is responsible for administering state and federal transit assistance funds to public transit systems in the 80 Greater Minnesota counties. In addition, Mn/DOT has statewide responsibility (including the Twin Cities metropolitan area) for the administration of the following Federal Transit Administration's programs: 5309 Capital, Section 5303 Metropolitan Planning, Section 5310 Elderly and Persons with Disabilities Program and Section 5313 State Planning and Research programs.

Rideshare

Since 1977, Metro Commuter Services, which is part of the Metropolitan Council's efforts, promotes the planning, development and implementation of options to commuters who live or work in the Twin Cities metropolitan area. They offer direct assistance to individuals, employers, schools, government planning agencies and transportation management organizations, and are a one-stop resource for commuter transportation information options to telecommute, walk, bike, bus, carpool or vanpool to work or school. They also offer free ride-matching services for all commuters.

The Federal Highway Administration (FHWA) funds Mn/DOT's Greater Minnesota Rideshare Program, which offers technical assistance to employers and employees in Greater Minnesota. Promotional car and vanpool programs are offered to employers/employees. Mn/DOT's Rideshare Coordinator helps employers develop, market and promote rideshare options. Rideshare options are not limited to car and vanpools; other options include biking, walking and telecommuting.

Mn/DOT's Role in Rideshare Activities

Mn/DOT's Greater Minnesota Rideshare Coordinator coordinates Bike, Bus or Pool (B-BOP) activities throughout the state. B-BOP is a year-round effort that helps to coordinate and provides information about alternative transportation use. It is promoted through a B-BOP Web page that is used statewide.

Transit Advantages

Transit advantages are improvements or modifications made to the highway system that provide a service advantage or benefit to transit. Examples of these improvements include the following:

High-Occupancy Vehicle Lanes (HOV)

An HOV lane is a lane reserved, at least during peak periods, for the exclusive use of high occupancy vehicles such as buses, vanpools, and carpools. The Twin Cities' HOV system operates in two separate corridors, I-35W and I-394.

The I-394 HOV lanes operate eastbound and westbound over a distance of approximately eight to 10 miles depending on direction of travel. There are two distinct operational sections. One section operates similar to the lanes on I-35 W as non-barrier-separated, concurrent diamond lanes; the second section operates as reversible, barrier-separated lanes. In this section, HOV operation hours are extended over longer periods of time and general-purpose traffic is not allowed in the barrier-separated lanes.

In February 2001, the Minnesota Legislature passed a bill mandating Mn/DOT to conduct a study to examine how opening the HOV lanes on I-394 to general-purpose traffic would impact traffic flow and safety. The FHWA concluded that a real-time test that would open the lanes for the study would violate U.S. laws and regulations regarding the funding and operation of HOV lanes. Subsequently, Mn/DOT has developed several strategies for improving utilization of the HOV facilities and is pursuing modifications to the existing HOV lanes on I 394 that would allow single occupancy vehicles to pay for use of the lane.

Signal Preemption

Traffic control signals may be designed and operated to respond to certain classes of approaching vehicles by altering the normal signal timing and phasing as the vehicle(s) approach. Options may be as simple as extending a currently displayed green light or as complex as replacing the entire set of signal phases and timing.

Preemption control and priority control are two different types of traffic controls. Preemption control is typically given to emergency vehicles and to vehicles such as boats (at lift-bridges) and trains. Examples include a prompt green signal at signalized intersections for fire vehicles, police cars, ambulances, and other official emergency vehicles; and special signal phases and timing to allow additional clearance time for vehicles to clear railroad tracks prior to an oncoming train.

When priority control is utilized, it is typically given to non-emergency vehicles such as buses to gain an early or extended green signal at an intersection. Priority control helps public transit vehicles to remain on schedule or improve their travel time, and to use special phasing to allow public transit vehicles to enter the travel stream ahead of the platoon of traffic.

Bus-only Shoulders

Bus-only shoulders are transit advantages designed to provide faster and more reliable transit commutes in congested corridors. Bus-only shoulders look and operate like any other shoulder with the exception that certain buses are permitted to use the shoulders in designated areas in order to bypass slow-moving traffic. There are approximately 200 miles of bus-only shoulders in the Twin Cities metropolitan area. Usage varies by location (6 to 250 buses per day). Locations with more than 50 buses using the shoulder per day are primarily along portions of I-94 and I-35W.

Authorized transit vehicle operators are allowed to use bus-only shoulders only when mainline traffic is moving at speeds less than 35 mph. The maximum allowable speed is 35 mph, and vehicles may not exceed the speed of the adjacent traffic by more than 15 mph.

MN/DOT'S ROLE IN TRANSIT ADVANTAGES

Transit advantages are investments that Mn/DOT makes to roadway infrastructure in order to make transit a more attractive, efficient, and cost-effective alternative in congested corridors.

Bicycle and Pedestrian

In addition to the availability of a roadway system that serves bicyclists and pedestrians, Minnesota leads the country in miles of off-road bicycle and pedestrian trails. Bicycling and walking serve as alternative modes of transportation for many Minnesotans that commute, shop and travel relatively short distances to their destinations.

Bicycle

Nearly two out of three Minnesotans are bicyclists, many riding on the approximately 1,300 miles of trail available throughout the state. The bicycle's primary role in a multi-modal transportation system is that of providing mobility for short to medium distance trips.

Figure 3-11: Bicycle Facilities in the Twin Cities Metropolitan Area

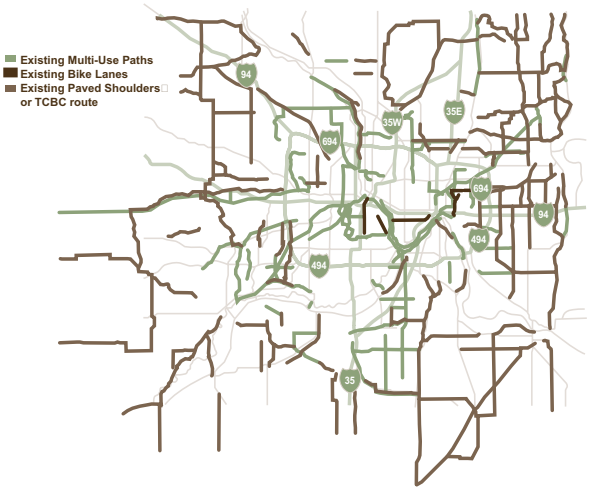


Figure 3-11 shows bicycle facilities in the Twin Cities metropolitan area. Notably, the city of Minneapolis ranked third among the 67 largest cities in the country for percent of commuters bicycling to work, with a 1.9 percent mode share in 2000, bested only by San Francisco and Tucson. This market tends to exist largely in cities and towns, simply because of shorter trip lengths. Statewide, commuters bicycling to work remained unchanged from 1990 to 2000 at 0.04 percent. When appropriately combined with well-developed express bus transit, the two modes together are suitable for longer trips.

Bicycling is an important form of recreation source in Minnesota. Stateswide, 73 percent of paved rural roads are rated good or fair for bicycling. In addition to this system, there are approximately 225 miles of long distance state and similar bicycle trails through Greater Minnesota.

Pedestrian

Particularly in metropolitan and urban areas of the state, walking is a primary mode of transportation. Whether an individual walks several times a day, uses a wheelchair to get from an office to the bus stop, rides a skateboard through the park, or walks across the parking lot

from a car to the grocery store entrance, there is a strong need for well designed and properly functioning pedestrian facilities.

The highest level of pedestrian activity is currently found in urban areas, class one regional trade centers and some first ring suburbs. It is estimated that pedestrian-based trips reflect approximately 5.4 percent of total trips taken. The 2000 US Census reported that the percent of workers 16 years and over who walked to work was 3.3 percent, down from 3.9 percent in the 1990 census.

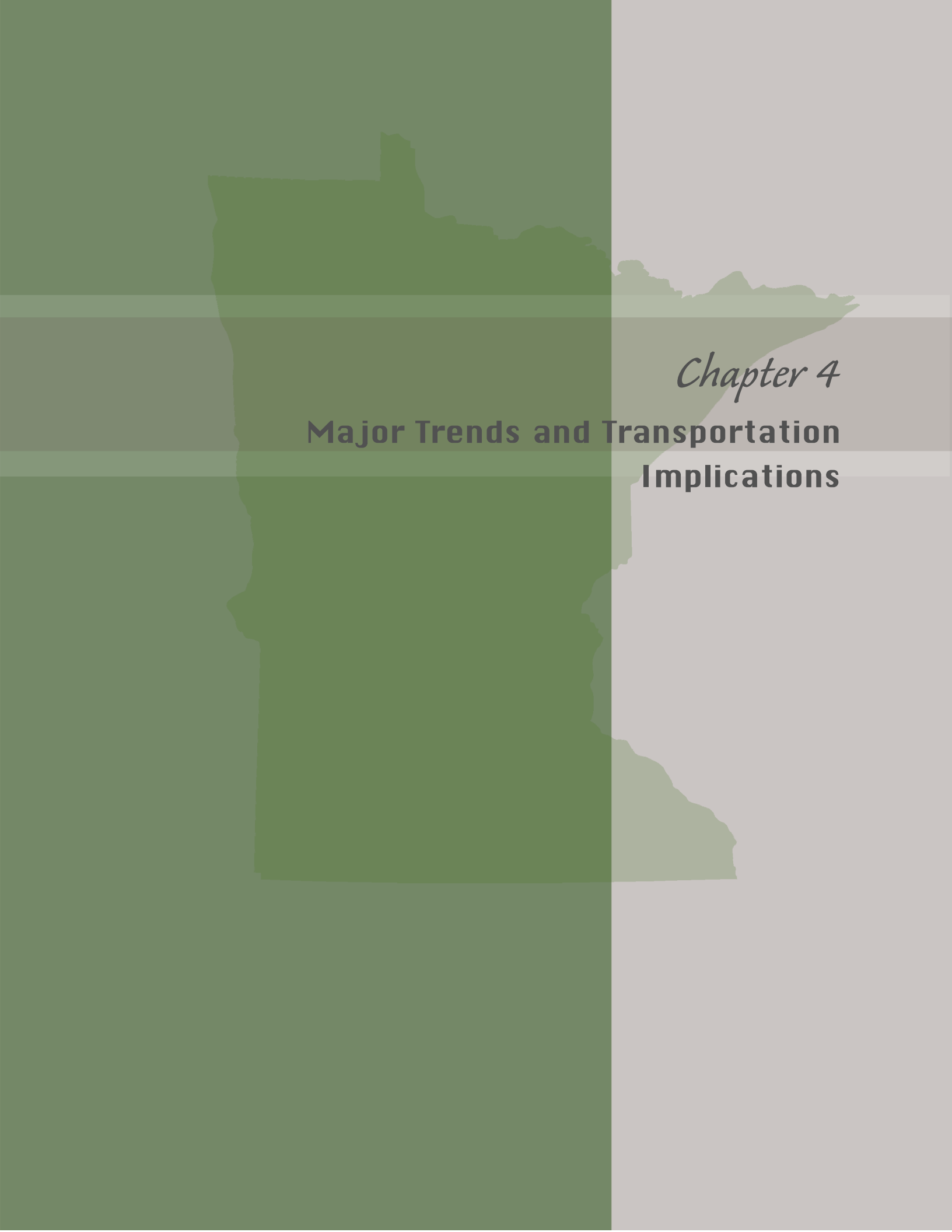
State and regional trails, especially in urban and some ex-urban areas, have become a key feature of the pedestrian infrastructure. Mn/DOT provides crosswalk and signal accommodation at Trunk Highway intersections that meet warrants, but builds very few sidewalks into its projects as a matter of course. The main exception at this time is bridges.

The density of the pedestrian network degrades as one moves from the urban to the suburban environment.

Mn/DOT's Role in Bicycle and Pedestrian Activities

Most of the pedestrian facilities in Minnesota are built and maintained by municipalities. However, Mn/DOT plays a key role in the development of biking and walking as a mode of transportation. Mn/DOT's role is focused on helping to provide safe crossing of and, where appropriate, safe use along Trunk Highways. Mn/DOT also actively seeks to make the journey to school a safe one for Minnesota's students, and this program has a bicycle- and pedestrian-safety focus. Primary among those roles is to provide leadership and support for bicycle and pedestrian accommodation efforts in Minnesota communities. This is performed through a variety of functions, including:

- Ensuring that these modes are appropriately planned for and accommodated within the context of Mn/DOT plans, policies, standards, and projects.
- Participating in community dialogues on the impact of land use on transportation, and vice versa.
- Developing research efforts to determine transportation needs and satisfaction levels.
- Developing a long-range plan specific to the needs of the bicycle, pedestrian, and telework modes.
- Preparing policies and standards for bike and pedestrian facility development, and making training available for Mn/DOT planners and engineers and staff from Minnesota's local governments.



Chapter 4

Major Trends and Transportation Implications

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Chapter 4:
Major Trends and Transportation Implications

Across Minnesota's 84,000 square miles are homes and businesses that dot the landscape from remote rural areas, to small towns and cities, to suburban communities and the densely settled urban neighborhoods of major metropolitan areas. Minnesota's transportation system is an essential resource that provides residents and businesses access to markets, jobs, goods and services within the state, to the nation, and throughout the world.

The demand for transportation services in Minnesota is primarily influenced by demographic and economic trends. The aging of the population; the changing roles of women; strong regional economies; competition in global markets; and advances in computer technology and telecommunications have all influenced demographic and economic trends in recent history.

This chapter examines the trends that influence travel in Minnesota. Knowledge of past, present, and future trends is essential in planning a balanced and efficient transportation system over the next 20 years.

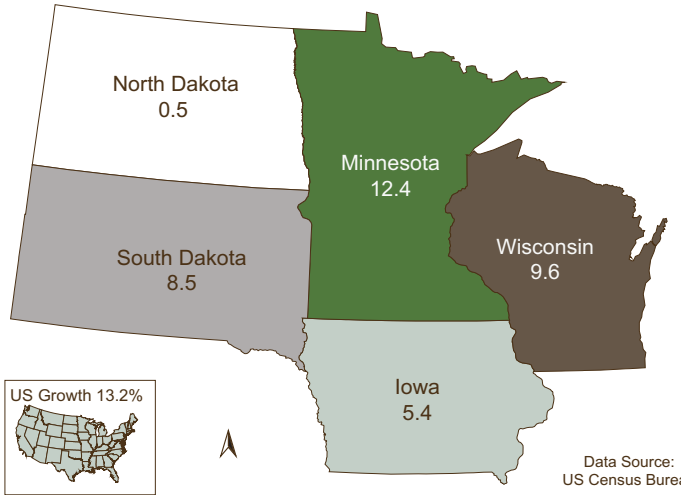
Demographic Trends

The predominant social changes that have altered Minnesota's demographic profile occurred in families and households. For decades the Census has reported more couples without children, more female-headed households, and increased longevity among the elderly. These trends have resulted in smaller families and fewer persons per household. It is likely that these social changes will continue to affect Minnesota's population profile. The most important demographic trends of the next 20 years, however, are likely to be the aging of the population; Minnesota's role as a center of population growth in the Upper Midwest; and continuing concentrations of population and employment in the Twin Cities metropolitan area and Regional Trade Centers in Greater Minnesota.

Trend: Minnesota's population is growing – it leads population growth in the Midwest.

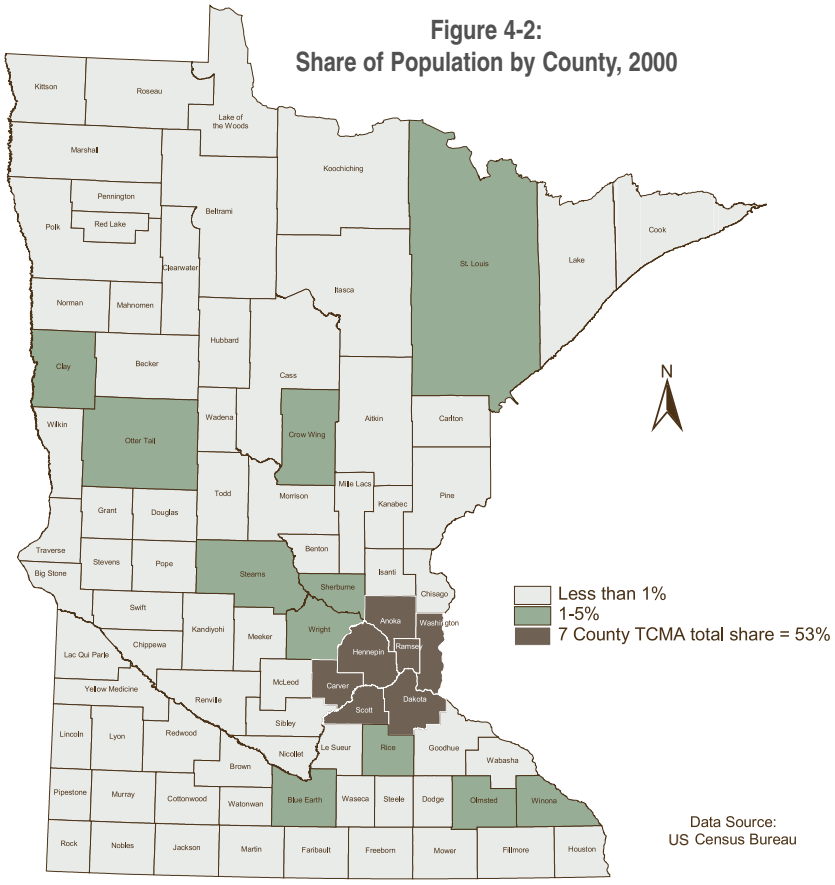
The 2000 Census showed that the population of Minnesota was 4,919,479 in 2000, compared to 4,375,099 in 1990. This increase of 12.4 percent just slightly lags behind the US rate of 13.2 percent. Minnesota was the fastest growing state in the Midwest and Northeast regions of the nation. Minnesota's growing population will increase the number of transportation system users and vehicle-miles of travel. Figure 4-1 shows growth rates for Minnesota, its border states, and the nation. Wisconsin's growth rate was the next highest at 9.6 percent. North Dakota had the lowest at 0.5 percent. This is the third straight decade that Minnesota has been the fastest growing state in the Midwest. Minnesota also had the largest absolute population growth in the

Figure 4-1: Population Growth: Minnesota, Border States and US, 1990-2000



Upper Midwest with an increase of 544,380 people. Wisconsin was second with an increase of 471,906. Increases in the remaining border states range from a low of 3,400 in North Dakota to 149,569 in Iowa.

Figure 4-2:
Share of Population by County, 2000



Trend: The Twin Cities metropolitan area's share of population continues to grow.

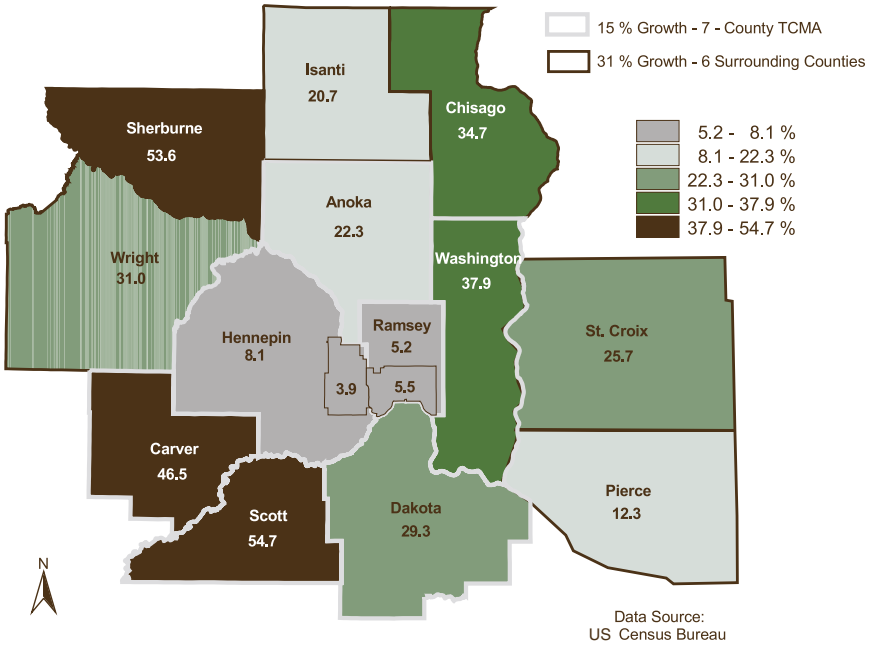
The 2000 Census revealed that nearly 54 percent of Minnesota's population resides in the seven-county Twin Cities metropolitan area (TCMA) compared to 52 percent in 1990. The population of the TCMA increased 15.4 percent since 1990 compared to a 9.2 percent increase in Greater Minnesota. Significant population gains in the TCMA has resulted in the Twin Cities experiencing the second fastest growth rate in congestion of large U.S.metropolitan areas (Texas Transportation Institute). Figure 4-2 shows that 11 counties in Greater Minnesota contribute between one and five percent of Minnesota's population. The remaining Greater Minnesota counties contribute less than one percent.

Trend: Population growth in the counties surrounding the TCMA has outpaced growth in the TCMA.

Six counties surrounding the TCMA (Wright, Sherburne, Isanti, Chisago Counties in Minnesota and St. Croix and Pierce Counties in Wisconsin) experienced a 30.6 percent increase in population from 1990 to 2000, going from 250,113 to 326,750 people. The TCMA, with a much larger population, grew by just 15.4 percent during the same period, going from 2,288,721 to 2,642,056 people. The core cities of Minneapolis and St. Paul grew by 3.9 percent and 5.5 percent respectively. The growth in the TCMA excluding the core cites of Minneapolis and St. Paul was 19.7 percent. Scott and Sherburne Counties were the fastest growing counties in the state from 1990 to 2000 with population growth rates of 54.7 percent and 53.6 percent respectively. While these growth rates are high, the actual numbers are low compared to large

counties like Hennepin and Ramsey. The populations of Scott and Sherburne Counties were 89,498 and 64,417 respectively in 2000 compared to Hennepin and Ramsey with 1,116,200 and 511,035. Figure 4-3 shows the population growth in the TCMA and six surrounding counties. Areas that are experiencing significant population growth are also experiencing significant growth in transportation demands.

Figure 4-3: Population Growth – Twin Cities Metropolitan Area and Surrounding Counties, 1990-2000

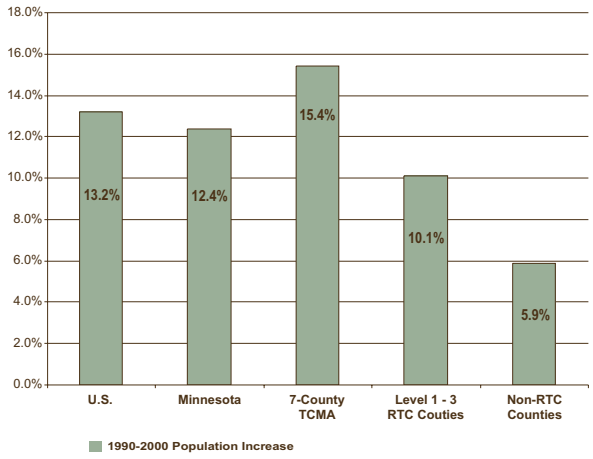


Trend: In Greater Minnesota, population concentrations are occurring in Regional Trade Center counties.

A Regional Trade Center (RTC) is a city that serves as the trade and service center for a surrounding area. In 1999, the University of Minnesota's Center for Urban and Regional Affairs (CURA) identified 50 Minnesota cities as *"Metro (level 0), Primary Retail (level 1), Secondary Retail (level 2), or Complete Shopping Centers (level 3)"* based on population and the number and diversity of business establishments. In this hierarchy, the TCMA is Minnesota's only *Metro Center*. The remaining cities are classified as *Primary Retail Centers* (3 cities), *Secondary Retail Centers* (24 cities), or *Complete Shopping Centers* (22 cities).

Population growth in Greater Minnesota has been concentrating in counties with Level 1, 2 and 3 Regional Trade Centers. These counties with level 1-3 Regional Trade Centers had a growth rate of 10.1 percent between 1990 and 2000, compared to the remaining counties in Greater Minnesota (non-RTC Counties) with a growth rate of 5.9 percent. Figure 4-4 compares population growth rates for the United States, Minnesota, the TCMA, RTC Counties and non-RTC Counties.

Figure 4-4:
Minnesota and US Population Growth, 1990-2000



Source: US Census Bureau

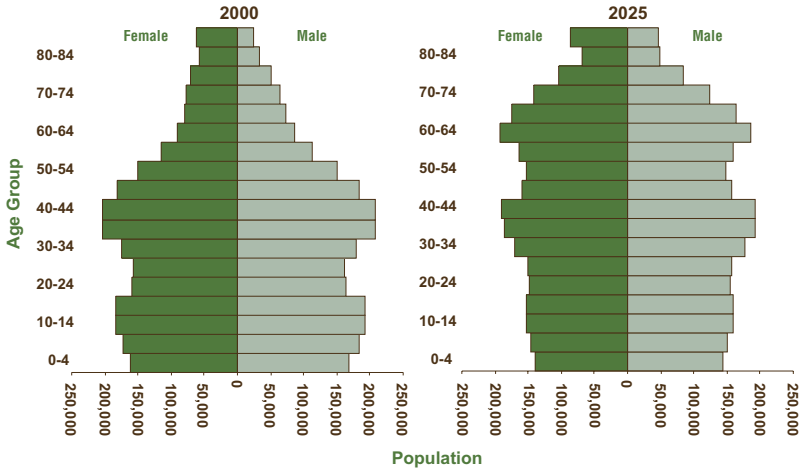
Trend: Minnesota's population is aging.

Population age distribution directly affects demand for and use of transportation systems. For example, the number of children of school age will influence the number of school buses; the number of persons turning age 16 will influence the number of licensed drivers and potential new workers; and the number of persons age 20-24 is a strong indicator of the number of new households that will be formed. Additionally, the number of persons over age 65 indicates the share of the population whose driving may be impaired by physical limitations, while the number over 85 may indicate the need for access to transportation options other than automobiles.

The median age in Minnesota increased three years between 1990 and 2000, from 32.4 to 35.4. In 1980 the median age in the state was 29.2. It is expected to exceed 41 in 2025. (The median age is the point at which half of the people are older and half are younger.)

Changes at the bottom and the top of the age distribution ensure the continued rise in Minnesota's median age. At the bottom of the age distribution, the number of persons under age 20 is projected to decline from 29.2 percent of the state population in 2000 to 22.8 percent in 2025. This age group includes Minnesota's school age population and the group from which new drivers and workers will be added in the next 30 years. At the other end of the distribution, the 65 and older age group is projected to grow from 12.1 percent of the population in 2000 to nearly 20 percent in 2025. Figure 4-5 displays these changes graphically.

Figure 4-5: Age Distribution for Males and Females Minnesota, 2000 and 2025



Source: Census Bureau and Minnesota State Demographer
Note: 2025 projections are based on 1995 population estimates, not the 2000 Census data.

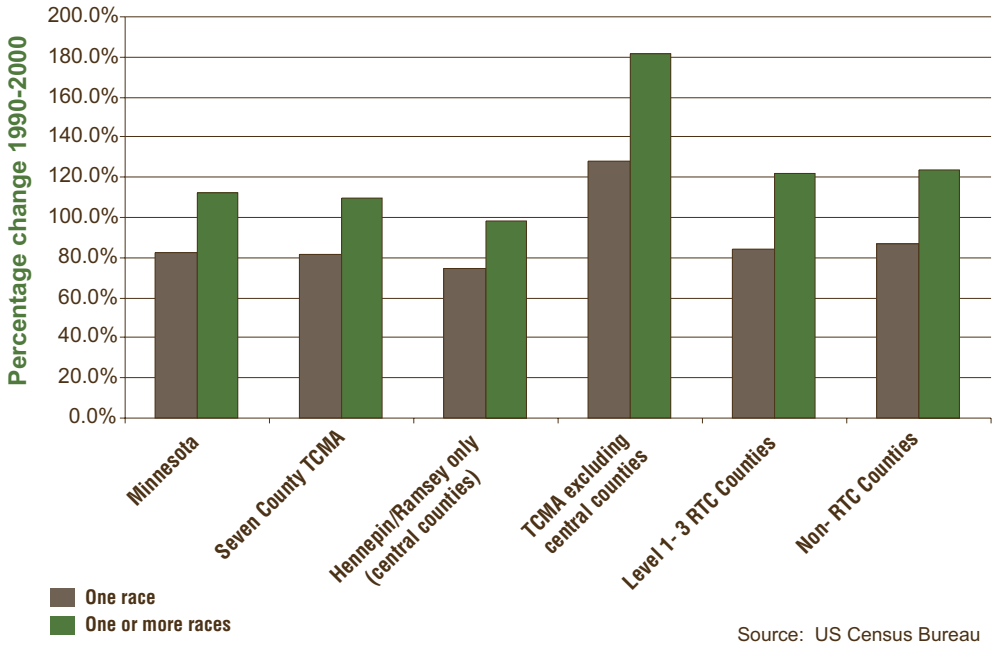
Trend: Minnesota is becoming more racially diverse.

In the 2000 Census, 11.8 percent of Minnesotans identified themselves as nonwhite or Hispanic or both (minority). In Minnesota, minority populations are concentrated in the TCMA, with 77.1 percent of the minority population residing there. Within the TCMA, minority populations are concentrated in Hennepin and Ramsey Counties, with 81 percent (62 percent of state total) residing there. Minority populations have grown rapidly in Minnesota, though the state remains much less diverse than the United States as a whole, which is 30.9 percent minority.

In 1990, 6.3 percent of the state's population identified themselves as nonwhite or Hispanic, or both. In 2000, 11.8 percent of the state population was nonwhite (either alone or in combination with white) or Hispanic or both. The 1990 and 2000 numbers are not directly comparable since in 2000 people were able, for the first time, to identify themselves as more than one race. It is clear however, that the nonwhite population grew dramatically during the past decade.

Figure 4-6 shows the growth in minority populations between 1990 and 2000. Growth is presented in a range. The low number represents those who chose one nonwhite race; the high number represents those who chose one or more nonwhite races. Minority population growth in the TCMA was between 82 percent and 110 percent, just about the same growth as the state as a whole. The two central counties of Hennepin and Ramsey had between 72 and 98 percent growth in minorities since 1990. Higher growth occurred in the TCMA outside of the central counties of Hennepin and Ramsey. Excluding the two central counties, the minority population growth in the remainder of the TCMA (Anoka, Carver, Dakota, Scott and Washington Counties) was between 128 and 182 percent since 1990. Minority growth in RTC Counties and non-RTC Counties was about equal between 1990 and 2000.

Figure 4-6: Minority Population Growth, Minnesota, 1990-2000



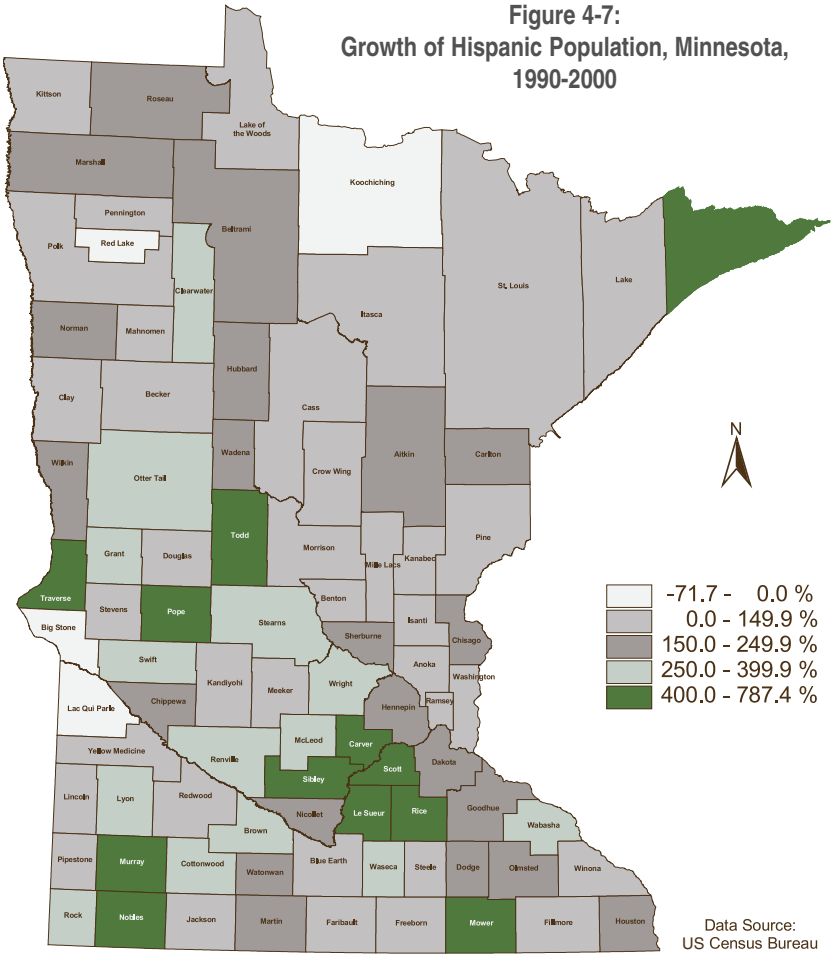
Source: US Census Bureau

Trend: Minnesota's growth in Hispanic population is unprecedented for the state.

From the 1990 to the 2000 Census, the Hispanic population in Minnesota grew by 166 percent compared to a 58 percent for the US as a whole. The increase ranged from a loss in a few counties to a 787 percent increase in Nobles County. Unlike race data, the data on Hispanic origin can be directly compared to the 1990 numbers. Figure 4-7 shows growth in Hispanic population by county from 1990 to 2000. Several counties in southern and western Minnesota saw enormous gains in Hispanic population from 1990-2000. Growth in Hispanic populations in RTC counties since 1990 was 169 percent, just about equal to the state average. However, the growth rate in Non-RTC counties was much higher, at 208 percent. It should be noted that while the growth rates are high, the numbers are on a very small base. Nobles County went from just 262 Hispanics in 1990 to 2,325 in 2000. Growth such as this, though small in numbers, can strain educational and social services in small communities.

Despite growth, the percent of Hispanics as a share of the total state population is still well below the national number: just under 3 percent in Minnesota vs. 12.5 percent in the US as a whole. Hennepin and Ramsey Counties have the largest Hispanic populations, but substantial populations also live in Willmar, Rochester, Worthington and Faribault.

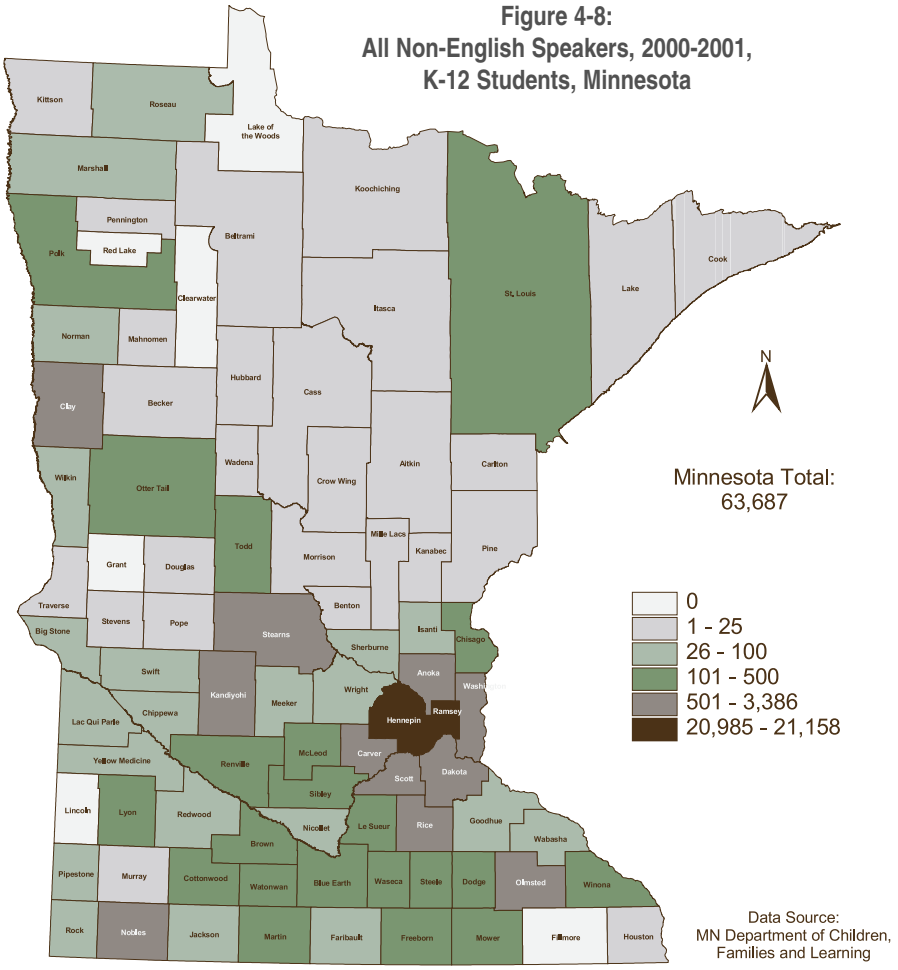
Figure 4-7:
Growth of Hispanic Population, Minnesota, 1990-2000



Trend: Minnesota's immigrant population is growing.

Minnesota's immigrant (foreign-born) population is also growing considerably. The 2000 Census indicates Minnesota's foreign-born population has more than doubled in the last decade, growing from 113,039 in 1990 to 260,463 in 2000, an increase of 130 percent. Nationwide the foreign-born population increased 57 percent from 1990 to 2000. Most immigrants are concentrated in the TCMA and Olmsted County (Rochester). However, many Hispanic immigrants work at food processing plants and live in Greater Minnesota. Another indication that many immigrants and their children are coming to Minnesota is the number of children who do not speak English at home. The Department of Children, Families and Learning reported the number of children who did not speak English at home in the 2000-2001 school year increased by 39 percent since the 1997-1998 school year. Figure 4-8 shows the number of K-12 students who did not speak English at home.

Figure 4-8:
All Non-English Speakers, 2000-2001,
K-12 Students, Minnesota



TRANSPORTATION IMPLICATIONS OF MINNESOTA'S DEMOGRAPHIC TRENDS:

- Minnesota's growing population will increase the number of transportation system users.
- Concentrations of population in the TCMA and in Regional Trade Centers will increase congestion on roadways and demand for transit in and around these centers.
- Population growth in all areas of the state will increase vehicle miles of travel.
- The aging of the population and increasing share of residents over 65 may necessitate changes in highway design and traffic engineering, and retraining.
- The growth in elderly population will increase the demand for travel alternatives as these individuals discontinue driving.
- Environmental justice will continue to be important when planning transportation projects due to the growth in low income and minority populations in the state. (See Chapter 2 for details on environmental justice.)

Economic Trends

Economic growth in Minnesota will result in increased travel and goods shipments. Minnesota's economy is growing. Along with the United States, Minnesota's economy has had an outstanding period of growth in the last two decades. From 1990 to 1999, Minnesota's Real Gross State Product (GSP) increased by 43 percent compared to a 32 percent increase in US Real Gross Domestic Product (GDP) over the same period. Total employment in Minnesota increased by 17 percent from 1990 to 2000 compared to a 14 percent increase nationwide.

Minnesota also fared better than the nation as a whole through the recession of 1991. However,the economic downturn in 2001 hit Minnesota harder than the nation as a whole. According to the Minnesota Department of Finance, between April 2001 and January 2002, employment and wages declined more rapidly in Minnesota than they did nationally. Even after the recession is over, a full recovery will require time. However, continued economic and employment growth, along with a tight labor market, is expected.

Trend: Minnesota has a diversified economy.

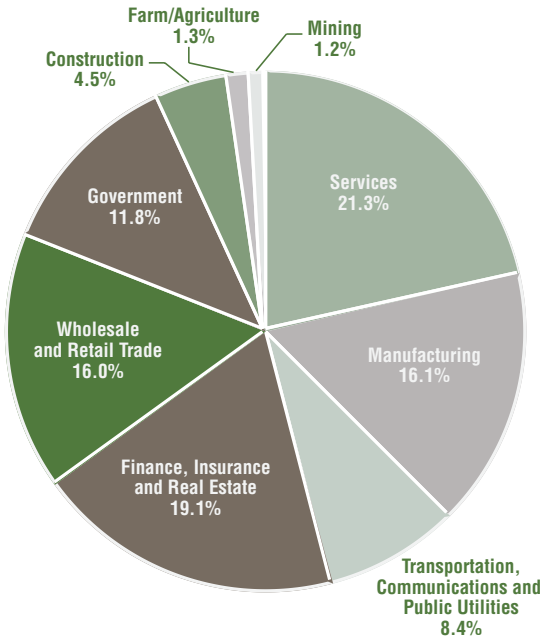
Early in the 20th Century, Minnesota's economy was based on agriculture and natural resource extraction. Over the last 40 or 50 years, however, structural changes have reduced the direct contributions of farming, mining, and logging to employment and earnings. Some of these structural changes continue. In agriculture, for example, the number of farms declined by 14 percent between 1988 and 2000, and farming now employs only about 3 percent of Minnesota's labor force. Similar changes have occurred in mining and logging, which together now account for less than 1 percent of total employment in the state. However, processing of farm and forest products continues to contribute significantly to the state's economy (see page 4-10).

Minnesota's economy has become diversified, very similar to the diversity of the US economy. Figures 4-9 and 4-10 show the relative importance of industrial sectors to the nation and Minnesota. In 1999, manufacturing and services accounted for 37.4 percent of US Gross Domestic Product (GDP) compared to 38.9 percent of Minnesota's Gross State Product (GSP). Finance, Insurance and Real Estate (FIRE) accounted for 19.1 percent of both US GDP and Minnesota's GSP.

Trend: Minnesota's economy is growing in several sectors.

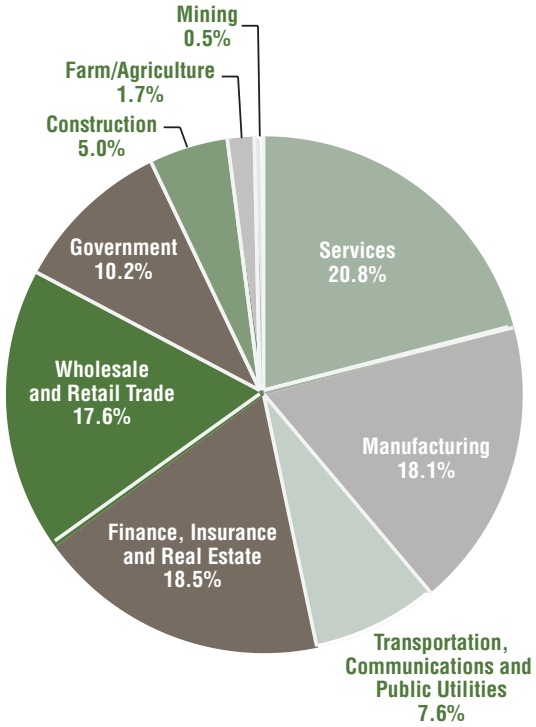
Employment growth has been occurring in several industrial sectors. From 1990 to 2000, Minnesota employment in manufacturing increased by over 10 percent compared to a three percent decline nationwide in the same period. Figure 4-11 shows graphically the percent change in employment for both the United States and Minnesota from 1990 to 2000 for three industrial sectors.

Figure 4-9:
US Gross Domestic Product by Industrial Sector, 1999



Source: Bureau of Economic Analysis

Figure 4-10
Minnesota Gross State Product by Industrial Sector, 1999

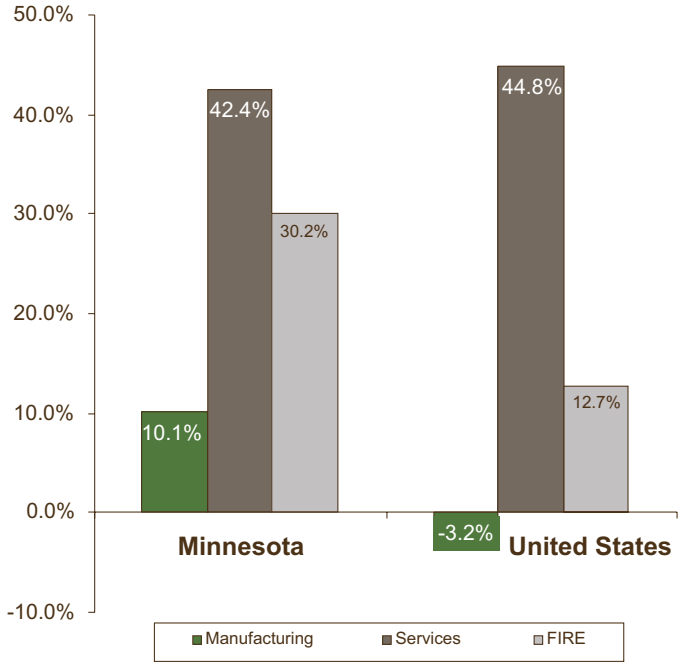


Source: Bureau of Economic Analysis

In 1999, three industrial sectors accounted for more than 40 percent of Minnesota's manufacturing employment: Industrial Machinery/Equipment (16.8 percent); Printing and Publishing (12.5 percent); and Food and Kindred Products (12.2 percent). Minnesota employment in Industrial Machinery/Equipment declined between 1990 and 2000, but employment in Printing/Publishing and Food Kindred Products grew substantially faster than national employment in these industries. The vitality of Minnesota's Food/Kindred Products industry is certainly related to the proximity of grain and livestock producers, whose crops and herds become raw materials for major national manufacturers such as General Mills, Hormel, and Schwan's.

The services sector, Minnesota's largest industry sector in terms of total employment, grew 42.4 percent from 1990 to 2000, slightly less than the 44.8 percent growth nationwide. Services also increased its share of total employment between 1990 and 2000 - from 25.8 percent to 29.2 percent. The principal contributors to employment in Minnesota's service sector are health services (28.5 percent), business services (22.9 percent) followed by social services (9.6 percent).

Figure 4-11:
Change in Employment Manufacturing, Services & FIRE
Minnesota and US, 1990-2000



Source: US Bureau of Labor Statistics

Employment growth in the finance, insurance and real estate (FIRE) sector and the construction sector, have also been impressive since 1990. FIRE and construction represent a much smaller portion of Minnesota's total employment; however, employment growth in these industry sectors has been at a much faster pace than the nation as a whole since 1990. Minnesota employment in FIRE increased 30.2 percent between 1990 and 2000 compared to a 12.7 percent increase nationwide. Employment growth in the construction sector was 49.7 percent between 1990 and 2000 compared to 30.8 percent nationwide. Minnesota's economic growth will result in increased travel and goods shipments.

Trend: International trade is increasing in importance in Minnesota.

International trade is becoming a more significant sector of the US economy. In 2000, exports accounted for 9.1 percent of the United States Gross Domestic Product (GDP), compared to 5.9 percent in 1990. International trade is also becoming more significant in Minnesota. According to the Minnesota Department of Trade and Economic Development (DTED), the

value of Minnesota's manufactured exports (adjusted for inflation) increased by 49 percent from 1990 to 2000. DTED also reports that exports as a share of production, measured by manufacturing shipments, increased from 10.7 percent in 1990 to 11.5 percent in 1998. Connections to ports, air, rail and roadways will increase in importance as international trade continues to increase.

Trend: Tourism is increasing in Minnesota.

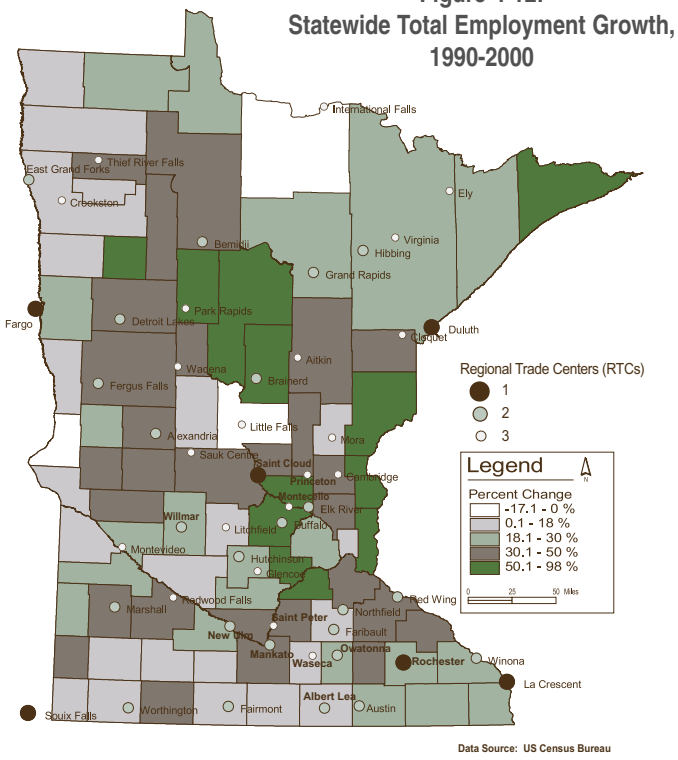
Travel and tourism are increasing in Minnesota. According to the Minnesota Office of Tourism, gross sales (adjusted for inflation) generated by the tourism industry grew by almost 18 percent between 1995 and 2000. During the same period, the number of visitor days per year by national and international visitors increased by almost 11 percent. In 2000, a total of 25.8 million national and international visits occurred in Minnesota. Forty-six percent of visits were to the TCMA with the remainder spread throughout the state. The majority of travelers in Minnesota (over 80 percent) are pleasure (non-business) travelers. Tourism is an important component of Minnesota's economy and is unique in that it is a business where the customer must be transported to the product. The primary mode of transportation for these pleasure travelers to Minnesota in 2000 was by car or truck, with about 78 percent traveling this way. Transportation facilities and corridors that serve Minnesota's recreational areas will experience increased travel demands.

Trend: The bulk of Minnesota's economic activity and employment is in the Twin Cities metro area.

Data from a survey of employers (Covered Employment and Wages) revealed that over 546,000 new jobs were created in Minnesota from 1990 to 2000. Of these new jobs, 58 percent were located in the TCMA in 2000. The TCMA share of total employment in the state was nearly 61 percent in 2000.

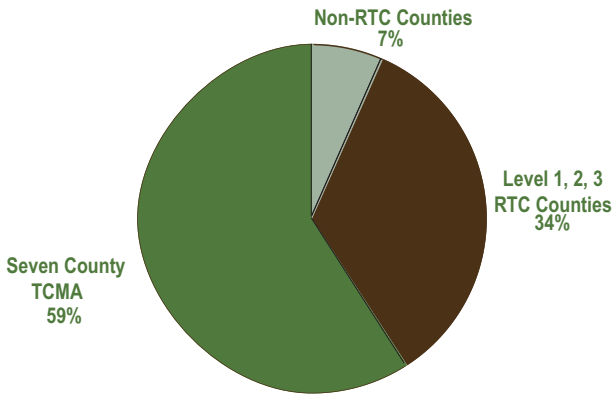
The central counties of Hennepin and Ramsey lead the Twin Cities metropolitan area in total jobs, with 75 percent of all employment in the TCMA located in one of these counties. However, this share is down from 80 percent in 1990. Job growth in the five non-central counties was almost 53 percent from 1990 to 2000, increasing from 256,484 to 392,750, compared to

Figure 4-12:
Statewide Total Employment Growth, 1990-2000



nearly 18 percent job growth in Hennepin and Ramsey counties, going from 1,026,039 in 1990 to 1,207,164 in 2000. Counties surrounding the TCMA had very high job growth from 1990 to 2000, though on smaller base numbers. Sherburne County went from 9,931 to 19,089 jobs, an increase of 92 percent. Wright and Chisago counties experienced 64 percent and 51 percent increases over the same period. The concentration of employment and economic activity in and around the TCMA will increase vehicle miles of travel congestion and demand for transit on metro area roadways. Figure 4-12 shows total employment growth by county from 1990-2000.

Figure 4-13:
Minnesota Employment Growth, 1990-2000

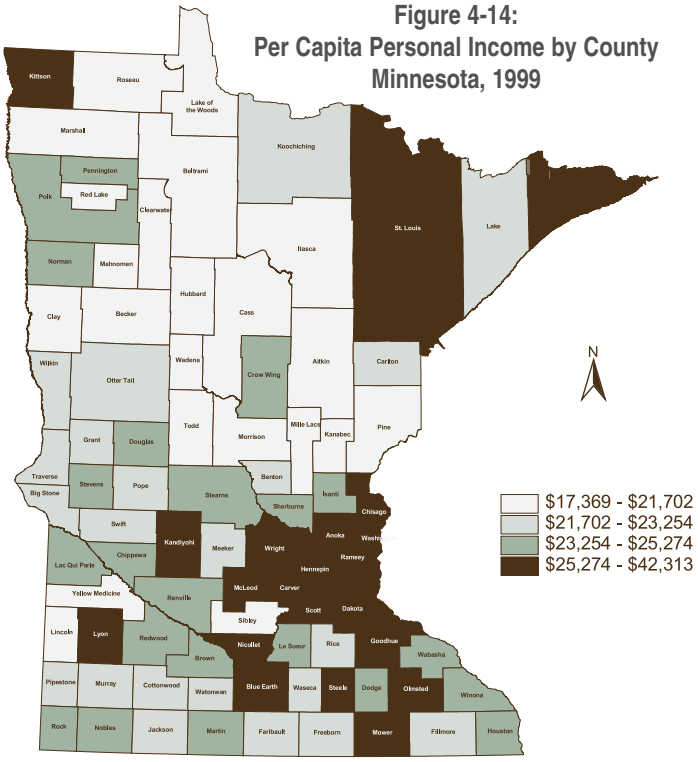


Source: Bureau of Labor Statistics

Trend: Economic and employment activity in Greater Minnesota is primarily in Regional Trade Centers.

In 2000, 78 percent of Greater Minnesota's population and nearly 83 percent of Greater Minnesota's total employment were in counties that have a level 1, 2, or 3 Regional Trade Center (RTC). Changes in employment in Greater Minnesota Counties with and without an RTC confirm the importance of RTCs to surrounding communities. Figure 4-13 shows the share of employment growth from 1990-2000 in Greater Minnesota and the TCMA. Total employment grew by over 183,000 between 1990 and 2000 in Greater Minnesota counties with an RTC compared to growth of 36,500 in non-RTC counties. The concentration of employment and economic activity in Regional Trade Centers will increase vehicle miles of travel and demand for transit in and around these centers and on Interregional Corridors.

Figure 4-14:
Per Capita Personal Income by County Minnesota, 1999



Source: US Dept. of Commerce – Bureau of Economic Affairs

Trend: Personal income continues to rise in Minnesota.

Personal income includes income derived from wages and salaries; asset income (e.g. dividends, interest, and rent); and transfer payments (such as Social Security). Personal income is used as an indicator of general well-

being of the local economy. Per capita income is the total personal income of an area divided by the total population of that area.

Minnesota's 2000 per capita income of $31,900 was higher than the $29,450 per capita income of the United States as a whole, according to data from the Bureau of Economic Analysis. Growth in per capita personal income in Minnesota also outpaced that of the United States. Between 1990 and 2000, Minnesota's per capita income grew 18 percent faster than the per capita income nationally. Minnesota also improved its ranking among the states and District of Columbia from 17th in 1990 to 10th in 2000. Rising incomes may increase disposable income and the number of vehicles, contributing to increasing vehicles miles of travel.

At the county level, 1999 per capita income was highest in Hennepin County with $42,310, followed by Ramsey ($34,360), Carver ($34,250), Dakota ($33,225) and Washington ($32,550). In Greater Minnesota, the highest per capita personal income is Olmstead County with $32,360, which follows right after Washington County. Figure 4-14 shows per capita personal income by county.

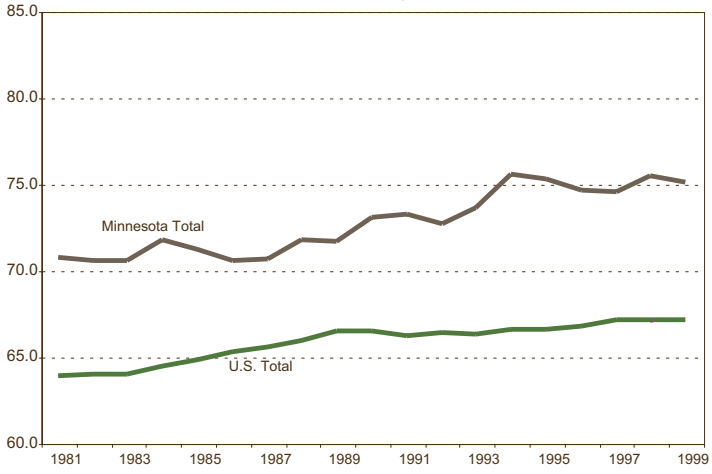
Trend: Minnesota's economy may be constrained by labor shortages.

The labor force is defined as those persons age 16 or older, excluding self-employed persons, who are either employed or unemployed, but actively looking for work. In a September 2000 document, the Minnesota Department of Economic Security reported that between 1998 and 2008, the Minnesota workforce is projected to grow by 12 percent, while the projected job growth is 16 percent during the period. This combination could lead to a tighter labor market and unmet demand for workers that may constrain Minnesota's future economic growth. Labor shortages statewide may force some employers to relocate, altering the distribution of vehicle-miles of travel.

At the time of this writing we are in an economic recession. However, the underlying demographic trends have been toward a tighter labor market in the long-term. Three demographic trends are likely to determine the tightness of the labor market in the future.

- Changes in the age distribution – The age distributions discussed earlier show the projected decline in the number of persons under age 25, from 35.7 percent of the state population in 2000 to 28.5 percent in 2025. This is the age group from which employers recruit entry-level workers. The projected retirement of the "Baby Boom" generation poses even more workforce demand stress. It is projected that by 2025, 32.9 percent of Minnesota's population will be over 55, compared to 20.3 percent in 2000. This is the age group who has traditionally been considered the retired or near retired.

Figure 4-15:
Labor Force Participation Rates
Minnesota and US, 1981-1999



Source: Minnesota Planning State Demographer's Office

- Labor force participation rates – Minnesota Planning reports that since 1990, more than three-quarters of the growth in Minnesota's labor force has been due to rising participation. In 1999, about 75 percent of Minnesota's potential workers age 16 and older were already employed or looking for work, nearly 8 percent above the national rate. Disparities between participation rates in Minnesota and the United States are even greater among women and teens. The labor force cannot grow as much in the future from increases in participation rates because most working-age people in Minnesota are already working.
- In-migration/immigration into Minnesota – Between 1990 and 2000 Minnesota's population grew 12.4 percent, the fastest growth of any state in the Upper Midwest. Census Bureau estimates show that about one-third of Minnesota's population growth during the decade was attributable to in-migration (people moving into the state) and two-thirds to natural increase (an excess of births over deaths). Between 1995 and 1999, there was a net in-migration (from other states and abroad) of more than 65,000 people according to Census Bureau estimates.

Transportation Implications of Minnesota's Economic Trends:

- Minnesota's economic growth will result in increased travel and good shipments.
- Concentrations of employment and economic activity in the TCMA will increase vehicle miles of travel congestion and demand for cost-effective transit to serve major employment concentrations.
- Concentrations of employment and economic activity in Regional Trade Centers will increase vehicle miles of travel and transit demand in and around these centers and on Interregional Corridors.
- Rising incomes may increase disposable income and the number of vehicles, contributing to increasing vehicle miles of travel.
- Labor shortages statewide may force some employers to relocate, altering the distribution of vehicle miles of travel.

Transportation Trends

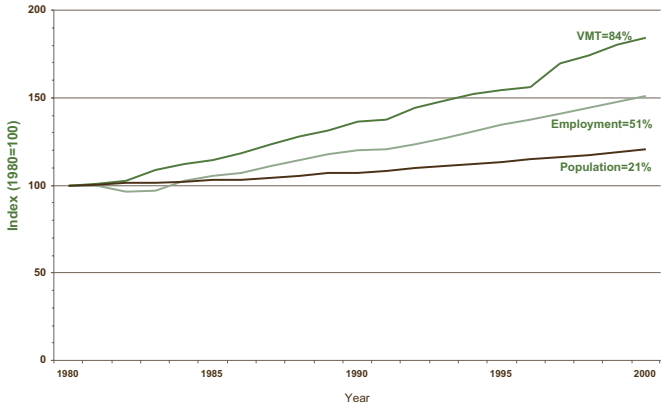
People rely on transportation to connect them with jobs, shopping, family, health care, government services, and recreational opportunities. Businesses rely on transportation to connect them to regional, national and international markets. This section profiles transportation trends in Minnesota, both for personal travel and for freight movements.

Trend: Travel is increasing on Minnesota's roadways.

Travel on Minnesota's roadways has been increasing steadily. Between 1970 and 1980, total vehicle miles of travel (VMT) increased 27.4 percent. Between 1980 and 1990 total VMT increased 36.6 percent. Between 1990 and 2000 total VMT increased 35.1 percent. Figure 4-16 shows the increase in VMT between 1970 and 2000. Total VMT grew faster in the last half of the 1990s than in the first half. The average annual increase in total VMT between 1990 and

1995 was 2.5 percent per year compared to 3.6 percent per year between 1995 and 2000. Increased travel on Minnesota's transportation system will continue to exacerbate congestion and other service problems.

Figure 4-16:
Vehicle Miles of Travel (all roads)
Minnesota, 1970-2000



Source: Federal Highway Administration Highway Statistics

Trend: Highway travel is becoming more concentrated on principal arterials.

Vehicle Miles of Travel (VMT) are increasing on all types of roadways. However, growth rates on major highway arterials are higher than for other roadways. From 1990 to 2000, VMT on the Interstate System increased by 54 percent, increased 40 percent on all other principal arterials over the same period, and on the remainder of Minnesota's roadways VMT grew by 23 percent. This trend has resulted in a higher proportion of total travel on interstates and other principal arterials. Interstates and other principal arterials represent 4 percent of all road miles in the state, but carry close to 50 percent of the state's VMT. Figure 4-17 shows the change in percent share of VMT by functional classification from 1980-2000. Concentration of increased travel on Minnesota's principal arterial system will result in greater congestion on these facilities which serve as economic links to regional and national trade centers.

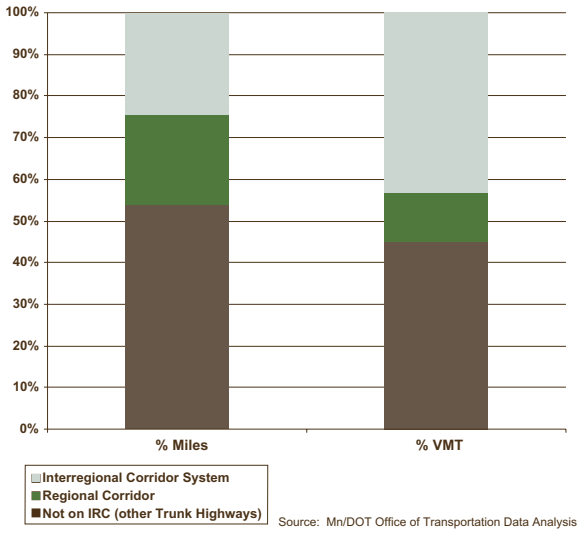
Figure 4-17
Percent Share Miles of Roadway versus Vehicle Miles of Travel
Travel by Functional Classification, Minnesota, 1980-2000

	share miles	% share VMT		
	2000	1980	1990	2000
Principal Arterials	4%	41%	45%	50%
Minor Arterials	7%	24%	22%	24%
Collectors	22%	20%	19%	14%
Local	67%	15%	13%	12%

Source: Mn/DOT Office of Investment Management

Trend: The Interregional Corridor System carries a high proportion of trunk highway VMT.

Figure 4-18:
Miles of Roadway vs. Vehicle Miles Traveled, Interregional Corridor System and other Highways, Minnesota, 2000



Source: Mn/DOT Office of Transportation Data Analysis

Minnesota's Interregional Corridor (IRC) System includes 2,926 miles of roadways that provide statewide and interstate transportation services, and connect Minnesota's Regional Trade Centers. This system makes up 24.5 percent of all trunk highway miles but carries 43 percent of all trunk highway travel. The Regional Corridor System is 2,639 miles of roadways that provide regional transportation services to communities. These roadways make up 21.6 percent of all trunk highway miles and carry just 12 percent of trunk highway travel. The remainder of the trunk highway system is 6,431 miles or 53.8 percent of trunk highway miles, and carries approximately 45 percent of the trunk highway traffic. Figure 4-18 presents the percent share information in a table.

Trend: Congestion is increasing in the Twin Cities Metropolitan Area.

The TCMA is the 15th most congested metro area out of 68 urban areas in the United States according to the 2001 Urban Mobility Report (based on 1999 data) from the Texas Transportation Institute (TTI). The TCMA was ranked 34th in 1990 and 38th in 1982. The ranking is based on the value of a travel rate index, which was 1.31 for the TCMA. The travel rate index is a peak-period time penalty that measures the amount of additional time needed to make a trip during the peak travel period (e.g., 7 a.m. to 9 a.m.) rather than at other times of the day. This means it takes TCMA commuters 31 percent longer to make a trip during the peak period than in the off-peak period. The TCMA ranks second in the nation after Atlanta in the rate of growth for the travel rate index in the short-term from 1992-1999. During that period, the travel rate index in the TCMA added 18 points, which equates to almost five and a half minutes additional travel time to a 30–minute peak period trip.

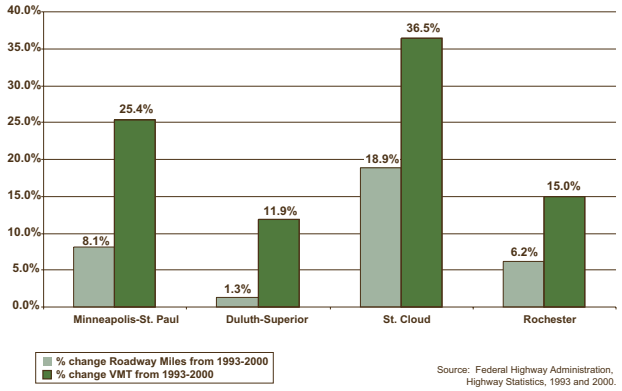
TTI estimates that the average annual delay per person in the TCMA is 38 hours, which is just under 45 minutes per week. The average annual delay per person in the TCMA was just 15 hours in 1990 and 3 hours in 1982. The 68 metro area average for this measure is 36 hours a year, and 34 hours a year for other metro areas similar in size to the TCMA.

Based on another TTI measure, the percent of daily travel in congestion (moving at less than free flow speeds), the TCMA ties Atlanta for the highest increase in the short-term (1992-1999). From 1992 to 1999, the percent of daily travel in congestion has gone from 18 percent to 33 percent. The TCMA ranks second in this measure for the long-term (1982-1999) behind Portland, Oregon, going from 7 percent to 33 percent.

Trend: Travel is increasing in Minnesota's large urbanized areas faster than the addition of miles of roadway.

For Minnesota's largest urbanized areas, Vehicle Miles of Travel (VMT) has increased much faster than the addition of roadway miles. This has resulted in more congestion in larger urban centers. From 1993 to 2000, VMT grew by 25.4 percent in the Minneapolis-St. Paul urbanized area while roadway miles grew by just 8.1 percent. In Duluth-Superior, VMT increased 11.9 percent while roadway miles grew by merely 1.3 percent. VMT in St. Cloud grew by 36.5 percent between 1993 and 2000 while roadway miles grew 18.9 percent. For Rochester, the increase in VMT was 15 percent compared to a 6.2 percent increase in roadway miles. Figure 4-19 displays this information graphically.

Figure 4-19:
Percent Change in Roadway Miles vs. Change in Vehicle Miles of Travel, 1993-2000, Minnesota Large Urbanized Areas



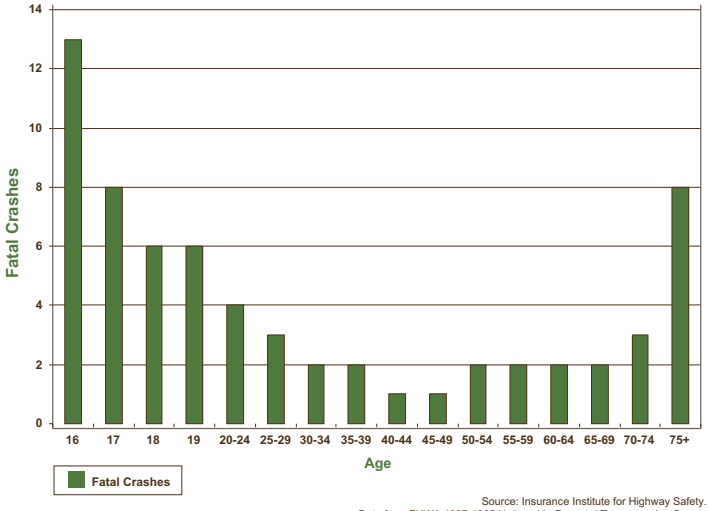
Source: Federal Highway Administration, Highway Statistics, 1993 and 2000.

Trend: Traffic fatality rates have declined, but the number of fatalities has increased.

In Minnesota, the number of licensed drivers, the number of registered motor vehicles, and the number of vehicle miles traveled have increased every year. However, fatality rates for motor vehicle crashes have declined. The fatality rate (deaths per hundred million miles traveled) dropped from 1.47 in 1990 to 1.19 in 2000. In 1980 the rate was 3.03.

Although fatality rates are declining, the number of actual fatalities has increased over time. In 2000 there were 625 fatalities. There is variability from year-to-year on the number of fatalities, but the trend seems to be increasing at about 0.75 percent per year. The pain and suffering associated with these fatalities is enormous, and the economic costs associated with these fatalities are substantial.

Figure 4-20:
Fatal Crash Involvement by Driver Age, Per 100 Million Miles, 1995-1996



Source: Insurance Institute for Highway Safety.
Data from FHWA 1997-1995 Nationwide Personal Transportation Survey

The Minnesota Department of Public Safety estimates that the economic loss from traffic crashes in Minnesota in 2000 was $1.68 billion.

Another issue concerning traffic fatality rates is the aging of Minnesota's population. The Insurance Institute for Highway Safety reports that although overall crash involvement decreases with age and driving experience, involvement in fatal crashes is higher per mile driven for the elderly (75+) than for all but the youngest drivers. Figure 4-20 displays the fatal crash involvement per 100 million miles by driver age.

Trend: Transportation is increasingly dependent on petroleum.

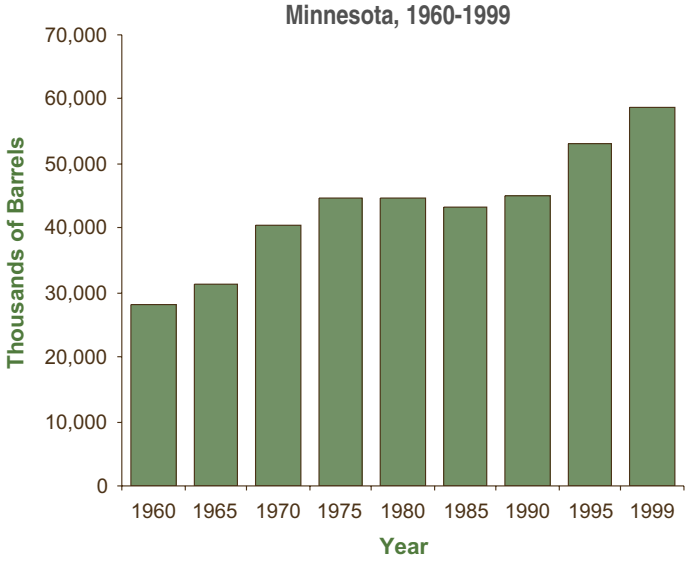
Petroleum consumption for transportation purposes has been increasing steadily over the past decades (see Figure 4-21). The decade with the largest growth in motor fuel consumption was 1960-1970 with a growth rate of nearly 43 percent, or 3.6 percent annually. Total growth from 1970 to 1980 was just over 10 percent. During the 1980s consumption was stable with just 1.2 percent growth over the whole decade. Increasing vehicle fuel efficiency during the 1980s helped consumption stay flat while Vehicle Miles of Travel (VMT) was steadily increasing at 3.2 percent annually. Fuel consumption started increasing again in the 1990s. From 1990 to 1999 fuel consumption increased a total of 30.5 percent over 9 years, or 3 percent annually. This is proportional to the increase in VMT in the last 10 years on roads in Minnesota, which has also increased an average of 3 percent annually. In addition, the country's dependence on imported oil has also increased. From 1990 to 2000, the percent of oil that is imported grew from 42.2 percent to 52.9 percent. In the early 1980s, this number was as low as 28.1 percent, after a previous high of 46.5 percent in 1977. This dependence may result in significant economic impacts if world markets become unstable.

Trend: The average commute time has increased in Minnesota.

The 2000 Census indicates the average commute time in Minnesota is increasing faster than that of the US as a whole. The average commute time in Minnesota was 21.9 minutes compared to 19.1 minutes in 1990. This represents a 14.6 percent increase. The Census indicates the mean commute time for the US was 25.5 minutes in 2000 compared to 22.4 minutes in 1990, an increase of 13.8 percent.

Results of the 2000 Census indicate that the percent of commuters in Minnesota with a 40 minute or longer

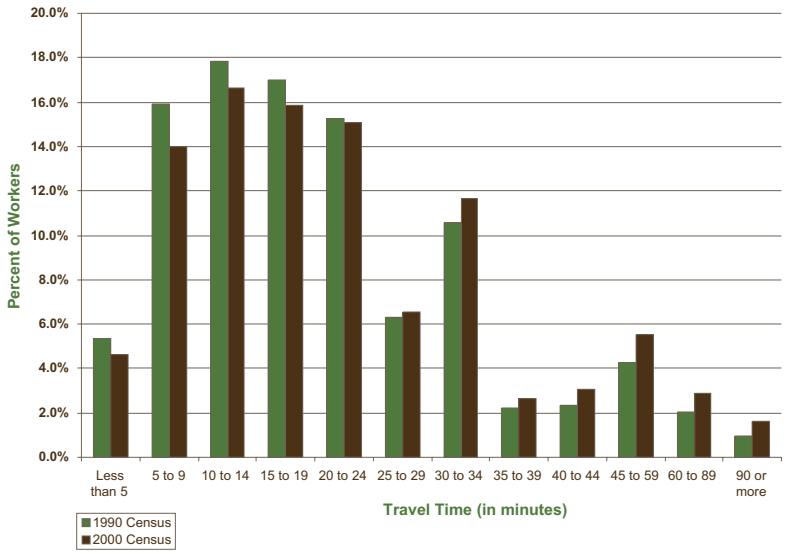
Figure 4-21:
Motor Fuel Consumption
Minnesota, 1960-1999



Source: US Department of Energy – Energy Information Administration

commute rose by 35 percent between 1990 and 2000. In contrast, the share with a commute of 20 minutes or less dropped by nearly 9 percent. Increasing commuter times translate to more fuel usage, congestion, environmental and air quality issues, as well as lost productivity. See Figure 4-22 for a graphic representation of the travel time distribution for 1990 and 2000.

Figure 4-22:
Travel Time Distribution, Minnesota, 1990-2000



Universe: Workers – All Workers 16 years and older who did not work at home.

Data Sources: US Census Bureau

Trend: The percent of Minnesota households with no vehicle has decreased.

A smaller percentage of Minnesota households today have no vehicle available compared to 1990. The Census indicates that 7.7 percent of Minnesota households had no vehicle in 2000. Household vehicle ownership in 2000 was at 1.79 vehicles per household in Minnesota compared to 1.76 in 1990. Meanwhile, household size (number of persons per household) has decreased since 1990. The Census Bureau reports that the average household size was 2.52 persons in 2000 compared to 2.58 persons in 1990, a 2 percent decrease.

The Minnesota Department of Public Safety reports that in 2000 there were 4.2 million registered motor vehicles in the state compared to 3.52 million in 1990. This is a 19.3 percent increase, compared to a 12.4 percent increase in population since 1990.

Trend: The number and percent of Minnesota commuters driving alone has increased. The number of commuters using public transit and carpooling has also increased.

In 1990, 73.8 percent, or approximately 1,593,000 people, drove alone to work. Results of the 2000 Census indicate that number had increased to 77.6 percent, or 1,971,670 people. Though the percent of commuters carpooling decreased from 1990 to 2000, falling from 11.4 to 10.4 percent, the number of commuters carpooling increased from 246,546 to 264,690. The number of commuters who used public transit also increased from 1990 to 2000, from 77,722 to 81,276 though this represents a decrease in percent share from 3.6 to 3.2 percent. The percent of commuters statewide bicycling to work remained unchanged from 1990 to 2000 at 0.4 percent, though the number increased from 8,450 to 10,096. The city of Minneapolis ranked third among the 67 largest cities in the country for percent of commuters bicycling to work with a 1.9 percent mode share in 2000.

Trend: Air travel is increasing statewide.

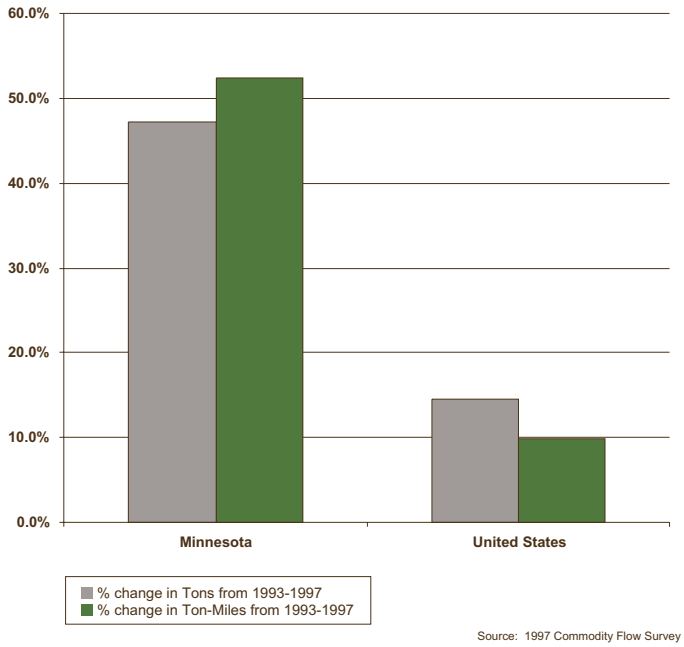
Air travel is increasing in Minnesota. According to Airports Council International, in 2002, the Minneapolis-St. Paul International Airport (MSP) ranked seventh in the world by operations volume, which include take-offs and landings. MSP had more than 523,000 operations, an increase of 7.8 percent since 1996. MSP's rank was 11th in the world by operations volume in 1996.

MSP was ranked the 13th busiest airport in the world by total passenger volume in 2000. Total passengers are defined as arriving passengers plus departing passengers, with passengers on connecting flights counted only once. MSP was the eighth busiest nationwide in 2000 by this measure. In 1996 MSP's rank was 19th in the world, or 13th nationally by total passenger volume.

MSP accommodated more than 36.7 million passengers in 2000. This is an increase of 37 percent since 1995, or 6.5 percent annually. Passenger volume declined slightly in 2001 due to the economic recession and the September 11 terrorist attacks. This decline affected airlines nationwide. Despite this decline in 2001, the long-term trend is upward.

Air travel is also increasing in Greater Minnesota. In 2000, nine Greater Minnesota airports offered scheduled passenger service: Bemidji, Brainerd, Duluth, Grand Rapids, Hibbing, International Falls, Rochester, St. Cloud, and Thief River Falls. Total enplanements at these airports in 2000 were 420,513. Enplaned passengers are those originating and connecting at a particular airport. This represents an increase of 18.1 percent since 1995.

Figure 4-23: Percent Change in Shipment Weight and Ton-Miles for all Modes of Transportation, Minnesota and U.S., 1993-1997



Source: 1997 Commodity Flow Survey

Trend: Freight traffic and volume continue to rise.

The Minnesota Statewide Freight Flows Study reported that nearly 400 million tons of goods moved to, from, within and across the state in 1997. Minnesota is a key production state that exports more than it imports and ranks ninth nationally for outbound domestic tons, according to the 1997 Commodity Flows Survey (CFS). Between 1993 and 1997, shipments originating in Minnesota increased by 47 percent in total weight, and increased 52 percent in ton-miles. In the United States as a whole, shipments increased by 14.5 percent in total weight and by 10 percent in ton-miles during the same period. Figure 4-23 displays the increases in total weight and ton-miles between 1993 and 1997 for Minnesota and the United States. Between 1993 and

1997, the growth in the value of shipments originating in Minnesota outpaced growth nationally by more than double. Minnesota ships much more freight by weight than it receives; however, the Freight Flows Study indicates the value of outbound freight and inbound freight are about equal (in 1997) at $86 billion each.

The Federal Highway Administration (FHWA) reports that US domestic freight is projected to increase 87 percent from 1998-2020. International freight is projected to increase 107 percent during the same period. This represents nearly a doubling of freight volumes nationally by 2020 with higher growth in some corridors and gateways.

Trend: Truck travel is increasing with traffic growth greatest for smaller shipments.

Truck travel is increasing in Minnesota. Recent estimates indicate that between 1994 and 2000, total truck Vehicle Miles of Travel (VMT) (excluding pick-ups and vans) on the Trunk Highway System increased an average of 2 percent per year. Increases in truck travel on some roadways have been even higher. In Minnesota, data indicate that between 1994 and 2000, truck traffic on TH 2 in Bemidji increased by 3.5 percent annually. During the same period, truck traffic on I-94 in central Minnesota increased over 8 percent per year. Increased truck volumes reduce the operational efficiency of the highway system as well as reduce pavement life.

There is a continued trend toward smaller and more frequent shipments. Just-in-time delivery has resulted from lean manufacturing methods that demand small factory inventories, short delivery windows, and more frequent shipments of smaller quantities. Electronic commerce, via the Internet and other means, has increased the demand for consumer based package delivery. This in turn has resulted in more delivery trucks on the highways.

Trend: Railroad systems are moving more freight by heavier carloads.

The 1997 Commodity Flows Survey reported that from 1993 to 1997, the total tonnage for rail shipments originating in Minnesota increased by 75 percent. Railroads move 185 million tons of freight in the state annually. Major railroads are moving toward the use of heavier carloads with 286,000 pound gross weight being the new standard (up from 263,000 pounds) and heavy-haul handling carloads of 315,000 pound gross weight.

Minnesota railroads currently move approximately 45 million tons of coal into/through the state. This tonnage could triple as the Dakota, Minnesota and Eastern (DM&E) Railroad is developing a new rail line that connects the river port in Winona, Minnesota with the Powder River Basin coalfield in Wyoming. DM&E hopes to haul as much as 100 million tons of coal annually on 35-40 trains per day after the project is complete in 2003. Upon completion of the Powder River project, all main line trackage will be able to handle 315,000-pound carloads. After the main line project is completed, DM&E expects to upgrade various branch lines to the 286,000 pound standard.

In grain transport, railroads are offering low rates for very high volume moves using 286,000 pound, 100 car unit trains. This is driving the consolidation of rural grain elevators, which in turn has required that farmers truck commodities further to market. The average distance for grain to travel on the road system has increased from approximately seven miles to 40 miles in the last 30 years.

However, there is an emerging trend toward grain identity preservation resulting from the specific demands of the grain consumers for grains with or without specific characteristics. For example, approximately 5 percent of the corn crop comes from hybrids that are not approved for export to the European Union (EU). This has the potential to change logistical patterns away from large bulk carload shipment toward intermodal containerized or truck-only shipments. Elevators and terminals are now being categorized as willing or unwilling to accept non-EU approved grain. Identity preservation means that grain will be handled in smaller lots. As railroads respond to this demand trend, costs and rates will increase, which will drive market share to motor carriers and result in an increase in truck Vehicle Miles of Travel (VMT) on rural highways.

Trend: Air cargo shipments have remained steady for the last several years in Minnesota.

The Federal Highway Administration (FHWA) reports that nationally, air cargo is the fastest growing segment of freight travel. In Minnesota, air cargo has ranged between 360,000 and 380,000 metric tons annually since 1994. Recommendations from the recently completed Minneapolis-St. Paul Air Cargo Study suggest forming a public/private partnership to create a Midwest Gateway Regional Distribution Center for traditional air cargo.

Implications of Minnesota's Transportation Trends:

The state's transportation system is a significant resource that provides Minnesotans with access to their neighbors and the nation. Demographic and economic trends directly affect transportation demand, and likewise, transportation can affect the economic vitality of the state. The trends and implications mentioned in this chapter promise continuing challenges as the state moves forward to meet the travel needs of people and goods. Minnesota's transportation systems will have to respond to growing travel demands especially on Interregional Corridors and the principal arterial system; the special travel needs of an older, more diverse population; the growing importance for reliability and predictability in transportation services, and expanding international markets.

Technology Trends

Intelligent Transportation Systems

Technology has always played a large role in transportation. However, the past decade has seen significant progress in the development and application of advanced technology aimed at improving transportation system safety and security, increasing its efficiency and cost-effectiveness and reducing adverse impacts of ITS on the environment. One reason for this progress has been the advancements made in communications technology. It is anticipated that advanced transportation technology systems, referred to as Intelligent Transportation Systems (ITS), will experience an accelerated growth in the next two decades.

Based on past deployment experience and current industry trends, ITS will continue to have a positive influence on the future quality of transportation. Examples of how much ITS technology affects transportation are presented next.

Saving Lives

- ITS applications utilizing lane-keeping and collision-avoidance technologies reduce the number of crashes significantly. Data from Minnesota indicates that 60 percent of rural freeway crashes can be reduced using this technology. A reduction of 40 percent of run-off-the-road crashes (drivers leaving the driving lane into the ditch or across oncoming traffic into the ditch) leads to an annual reduction of 19,000 crashes nationally, as well as a reduction of 190 fatalities nationally.
- According to the Minnesota Department of Transportation, crashes on I-35W numbered over 420 annually in 1994. After ITS technologies were implemented along the corridor, crashes dropped to fewer than 310 in 1996. Thus, a 27 percent reduction in crashes was achieved in fewer than two-years.

Saving Time

- Optimized signal timing yields a 12 percent reduction in travel time, which in some cases can reach a 22 percent reduction.
- Cameras used to monitor the highway system enable traffic monitors to more easily dispatch incident management teams to crash and/or stall sites. These teams reduce the duration of a stall by eight minutes. That reduction decreases the amount of overall delay by over 30 minutes (each minute of delay due to a crash or stall results in 4 to 5 minutes of overall delay for motorists).

Saving Money

- Implementation of commercial vehicle operation (CVO) technologies resulted in a savings of over $10,000 a month for a Minneapolis firm. Prior to the installation of the CVO systems, drivers previously lost about 15 minutes each day waiting to talk with dispatchers.
- Automatic vehicle location technology reduced San Jose paratransit expenses from $4.88 to $3.72 per passenger.
- The Smart Card System in Ventura County, California, resulted in a cost saving of $9.5 million in reduced fare evasion, $5 million in reduced data collection costs and almost $1 million in cost savings by eliminating transfer slips.

Protecting the Environment

- The Automated Traffic Surveillance and Control program in Los Angeles, California, has reported a 13 percent decrease in fuel consumption and a 14 percent decrease in emissions.
- The Automated Traffic Surveillance and Control program in Abilene, Texas, has reported a 6 percent decrease in fuel consumption, a 10 percent decrease in hydrocarbons, a 13 percent decrease in carbon monoxide and a 4 percent decrease in nitrogen oxide.

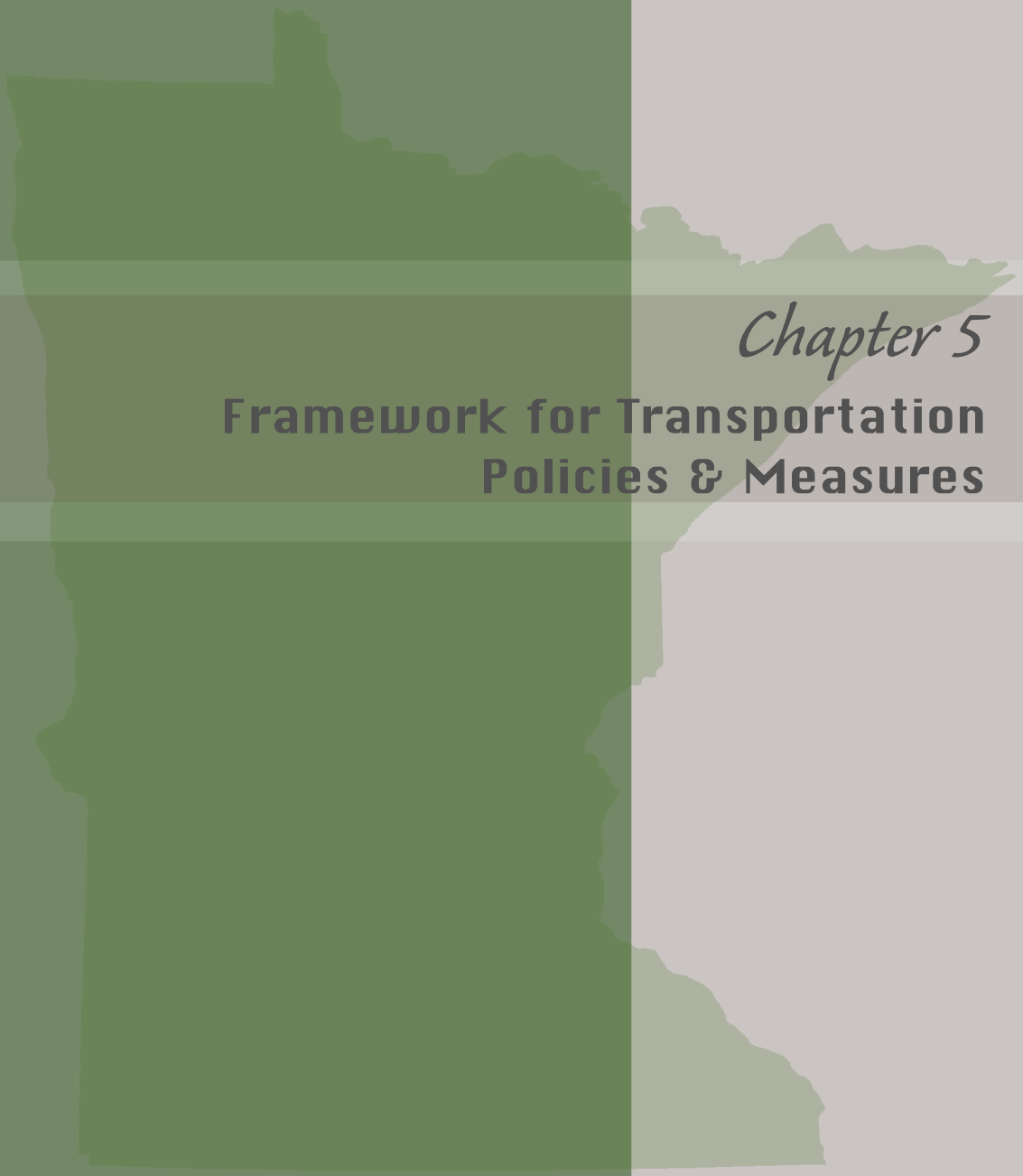
Enhancing Security

The widespread application of advanced technology and information systems for security purposes (at airports, banks and nuclear power plants, for example), is familiar to most. In the wake of recent events, the US Department of Transportation, Federal Highway Administration, American Association of State Highway Transportation Officials, Mn/DOT and many others are exploring the multiple ways in which advanced technology and real-time information systems currently in use in transportation can also be used to monitor, track, report and react to natural and man-made disasters as well as to terrorist activities. The benefits resulting from these types of ITS applications, while difficult to quantify, can be easily conveyed and grasped.

Environmental Trends

Environmental trends are identified as performance measures and indicators in Chapter 6, Policy 10. Please refer to page 6-72 which identifies measures for:

- Air pollutants (Federal Standards)
- Carbon dioxide emissions
- Cleaner fuels
- Erosion control
- Wetlands affected
- Success of replaced wetlands
- Native species
- Conversion of undeveloped land
- Streamlining Environmental processes



Chapter 5

Framework for Transportation Policies & Measures

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Chapter 5:
Framework for Transportation Policies & Measures

Transportation Policies Framework

The **Minnesota Statewide Transportation Plan** articulates a set of policies that are aligned with Mn/DOT's Strategic Directions. In addition, these policies consider the entire network of transportation systems, including:

- System infrastructure and services
- System management and operations
- System preservation and expansion
- Movement of people and freight
- Cost-effective accommodation of each travel mode
- Urban and rural areas

The policies also address the major transportation goals of safety, mobility, accessibility, security, protection of the environment and respect for community values.

Alignment of Policies with Strategic Directions

Ten policies and their desired outcomes have been developed to carry out Mn/DOT's three Strategic Directions. In developing these policies, Mn/DOT understands that it does not have full jurisdiction to control some outcomes (e.g., land use, safety, etc.). Nevertheless, the department has included these policies because it believes that it can indirectly affect outcomes through funding and partnership formation. Mn/DOT's Strategic Directions, the policies developed for each, and desired policy outcomes are presented below.

Outcome statements describe the desired result or end-state condition that would exist if the policies were fully achieved. They provide a basis for defining appropriate performance measures.

Mn/DOT Strategic Direction: Safeguard What Exists

Mn/DOT is strongly committed to optimizing the performance of existing transportation systems for customers and stakeholders. By safeguarding the condition of existing infrastructure, the need for costly major repairs in the future is reduced. By making the most of the services provided by existing transportation systems, the need for system expansion is reduced.

Policy 1: Preserve Essential Elements of Existing Transportation Systems.

Outcomes:

a. Design, construction, maintenance and system management decisions will optimize the years of life and customer utility of existing facilities and minimize life-cycle costs.

b. The condition of all elements of Mn/DOT-funded infrastructure will be maintained to the appropriate level for the function and use of facilities and to meet customer expectations.

Policy 2: Support Land Use Decisions that Preserve Mobility and Enhance the Safety of Transportation Systems.

Outcomes:

a. State and local planning and development decisions will sustain mobility and safety for travelers and freight. Transportation system decisions will also support land use planning and orderly development.

b. Right-of-way and land needed to sustain performance in corridors, Regional Trade Centers and major ports and terminals will be protected to minimize life-cycle costs and reduce community conflicts.

Policy 3: Effectively Manage the Operation of Existing Transportation Systems to Provide Maximum Service to Customers.

Outcomes:

a. The number of hours and days that the service levels of facilities fall below performance targets due to maintenance, construction or regulatory procedures will be reduced.

b. The number of hours and days that facilities do not carry their full capacity or achieve their target speeds due to weather, incidents or other obstructions will be reduced.

c. Transportation systems will use transit advantages, traveler information, travel demand management and advanced technology to maintain facility throughput and minimize downtime.

Mn/DOT Strategic Direction: Make the Network Operate Better

Mn/DOT is committed to providing transportation systems to meet the needs of the 21st Century. The availability of integrated transportation infrastructure and services for moving people and freight efficiently is essential to the state's economic vitality and competitiveness. Continued growth of the state's economy will further strain the adequacy of existing systems.

Policy 4: Provide Cost-Effective Transportation Options for People and Freight.

Outcomes:

a. Competitive transit options will be available to transit-dependent and transit-choice customers where they are efficient, cost-effective, and have local support.

b. Transit advantages on trunk highways will be provided in at-risk and congested corridors during peak periods.

c. Competitive and integrated options for shipping freight will be available.

d. Travelers and freight will have access to important national and international destinations at competitive costs and predictable travel times.

Policy 5: Enhance Mobility in Interregional Transportation Corridors Linking Regional Trade Centers.

Outcome:

a. Travel times for people and freight between Regional Trade Centers will be reasonable and reliable, based on customer expectations.

Policy 6: Enhance Mobility Within Major Regional Trade Centers.

Outcome:

a. Travel times for people and freight within major Regional Trade Centers (levels 0 and 1) will be reasonable and reliable, based on customer expectations.

Policy 7: Increase the Safety and Security of the Transportation Systems and Their Users.

Outcomes:

a. Crash rates, fatalities and personal injuries will be continually reduced for all modes of transportation.

b. The security of travelers, freight and transportation systems will be maintained.

Mn/DOT Strategic Direction: Make Mn/DOT Work Better

Mn/DOT is committed to continuously improving the management of its resources and processes in order to deliver quality services to customers and stakeholders.

Policy 8: Continually Improve Mn/DOT's Internal Management and Program Delivery.

Outcomes:

a. The delivery of transportation projects and services will be streamlined, resulting in reduced project development time, while improving cost effectiveness and maintaining quality.

b. Transportation projects will be completed on the schedule promised to the public, contractors, and affected communities.

c. Mn/DOT will achieve the best value from tax dollars by optimizing the cost effectiveness of administrative and program delivery expenditures throughout the department.

Policy 9: Inform, Involve and Educate all Potentially Affected Stakeholders in Transportation Plans and Investment Decision Processes.

Outcomes:

a. Mn/DOT will proactively seek early and continuous public input and involvement so as to be responsive and accountable to its stakeholders.

b. Mn/DOT will listen to its customers and respond with accurate, timely information upon which they can rely. Mn/DOT will be a trusted source of information.

c. Customers will understand Mn/DOT's roles, processes and priorities, and will have access to information about Mn/DOT projects and activities.

Policy 10: Protect the Environment and Respect Community Values.

Outcomes:

a. Minimize impacts to the natural and human environment when building, operating and maintaining Mn/DOT's transportation system. Work with the Minnesota Pollution Control Agency, the lead agency, to achieve its mission to:

   - Ensure clean and clear air that protects human health and the environment.
   - Maintain, restore, or improve the quality of Minnesota's waters.

b. Maintain, restore or improve the quality of Minnesota's waters.

Performance Measures Framework

Beginning with the **Minnesota Statewide Transportation Plan**, the Minnesota Department of Transportation is implementing a performance-based planning approach in its investment decision-making process. To this end, Mn/DOT will monitor, evaluate and consider performance-based transportation system needs when making investment decisions. This approach is expected to more clearly communicate both current transportation trends and desired outcomes. The goal is to direct investment solutions to identified transportation performance problems that provide benefits to Mn/DOT's customers.

By considering a full set of performance measures, and by measuring and monitoring all aspects of the multimodal transportation system, Mn/DOT will be able to track progress towards achieving the policies set out in this plan.

Performance measures support trade-off analysis in the policy, planning and programming context. They help set appropriate targets for a policy or system plan where trade-offs involve different system elements (e.g., highway versus transit), or different objectives (e.g., safety versus system preservation), given varying assumptions about resources available in a given timeframe. For example, if Mn/DOT is meeting its performance targets for system preservation, but falling short on safety targets, resources can be shifted from system preservation to safety improvements.

The broad, comprehensive, multimodal approach to performance measures introduced in this plan is ambitious in scope. A number of qualifiers are necessary to provide some context:

- This Plan identifies a number of performance measures whose outcomes are not fully controlled by Mn/DOT. A notable example is total number of roadway fatalities, which include those occurring on county, township and local roads that are outside the jurisdiction of the department. Furthermore, many of the factors involved in roadway fatalities are beyond the control of the department (e.g., personal behavior such as driver inattention and intoxication, speed limit enforcement, etc.).

Mn/DOT has included these measures because it believes that they are worth measuring and because their outcome can be directly or indirectly influenced by the department through funding participation, technical assistance, partnership formation, and public outreach and involvement activities.

- Many of the performance measures identified are "developmental," meaning that baseline data is not available and, because of this, acceptable levels of performance have not been defined previously. An example of this type of measure is travel time reliability. Several years of data will be required for this measure to be better understood.
- Many of the performance measures identified are "emerging," meaning that baseline data is available, but levels of acceptable performance have not been identified previously. For this reason, whenever levels of performance are set for these measures, they should be considered interim and subject to review and refinement as more experience is gained with the measure.
- In principle, performance measures rely on previously adopted plans, guidelines and policies. Examples of these are Interregional Corridor performance as defined in the Interregional Corridor Plan, or conformance of local plans with access spacing guidelines as defined in Mn/DOT's Access Management Guidelines. In cases where a performance measure is desirable, but a policy-making body such as Mn/DOT's Statewide Planning Steering Committee has not adopted the relevant plan, application of the measure will wait until the plan is updated and adopted. (For example, guidelines identifying bicycle-route crossings of Interregional Corridors will be completed and adopted before a scope for the measure is defined.)

A summary for all performance measures for all polices is provided in Table 5-1. Performance measure categories are defined, as are four major modal groups: highway/bridges, passenger service/bicycle-pedestrian, freight (motor carriers, railroad, waterways), and aeronautics.

In this summary, specific measures have been assigned to the Mn/DOT modal group that is responsible for the measure. Since many mode-specific measures benefit other modes (e.g., providing good highway ride quality benefits freight/motor carriers), the measure is cross-referenced under the beneficiary modal group.

This framework approach yields 40 unique performance measures, four performance indicators in 25 performance categories.

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Table 5-1: Performance Framework and Measures

	Policy	Performance Measure Categories	Performance Measures by Modal Group			
			Highway/Bridges	Passenger Service/Bicycle-Pedestrian	Freight (Motor Carrier, Railroad, Waterways)	Aeronautics
1	Preserve Essential Elements of Existing Transportation Systems.	1.1 Customer Ride Quality	1.1H Percent of miles that meet good and poor ride quality targets.	Transit: See Highway Measure 1.1H	Motor Carrier: See Highway Measure 1.1H	
		1.2 Physical Condition of the Infrastrucuture	1.2H1 Remaining service life of pavement. 1.2H2 Percent of bridges that meet good and poor structural condition targets.	1.2T Percent of transit fleet whose remaining life is within the minimum normal service life.	Motor Carrier: See Highway Measures 1.2H	1.2A Percent of airport runways that meet good and poor pavement condition targets
2	Support Land Use Decisions that Preserve Mobility and Enhance the Safety of Transportation Systems.	2.1 Consistancy of Local Plans and Ordinances with Access Management Guidelines	2.1H Percent of townships, counties and municipalities along IRCs whose adopted local plans and ordinances support with IRC Management Plans and Partnership studies.	Transit: See Highway Measure 2.1H	Motor Carrier: See Highway Measure 2.1H	
		2.2 Airpace or Right-of-Way that is Protected to Meet Future Demand	2.2H Percent of IRC and bottleneck removal projects identified in the 10-Year Program for which right-of-way needs have been protected.	2.2T Percent of Transit Advantage projects in 10-Year Program for which right-of-way has been protected.	Motor Carrier: See Highway Measure 2.2H	2.2A Percent of airports for which land or airspace has been protected to meet requirements of Master Plans or Airport Layout Plans.
3	Effectively Manage the Operation of Existing Transportation Systems to Provide Maximum Service to Customers.	3.1 Travel Time Reliability	3.1H1 Clearance time for incidents, accidents or Hazmats (metro). 3.1H2 Snow and ice removal clearance time.	Transit: See Highway Measures 3.1H and 6.2H	Motor Carrier: See Highway Measures 3.1H and 6.2H	
		3.2 Travel and Flow Management	3.2H Percent of miles of Principal Arterial corridors in RTCs 0 and 1 that are managed.	Transit: See Highway Measure 3.2H	Motor Carrier: See Highway Measure 3.2H	
4	Provide Cost-Effective Transportation Options for People and Freight.	4.1 Amount of Facilities/Services Provided		4.1T Greater MN passenger bus service hours - Percent of need met. 4.1T2 Miles of TH bus-only shoulders in theTwin Cities area constructed or rebuilt. 4.1PR Completion of dedicated alignment transitway cost-effectiveness evaluations. 4.1 P Percent of IRC crossings in RTCs with adequate bike/ped accommendations.		4.1A Percent of population within one hour of scheduled air service.
		4.2 Amount of Travel		4.2T1 Number of non-auto commuter trips trips in RTCs 0 and 1. 4.2T2 Average auto occupancy in RTCs 0 & 1 during peak periods.		
		4.3 Access between Ports/Terminals/Major Generators and Transportation Corridors	See Freight Measure - 4.3F and 4.3		4.3F Percent of major generators (ports/terminals/other major generators) with appropriate access to IRCs or water and/or rail corridors.	4.3A Percent of airports with appropriate access to IRCs.
5	Enhance Mobility in Interregional Transportation Corridors Linking Regional Trade Centers (RTCs). (1)	5.1 Travel Speed	5.1H Percent of IRC miles meeting speed targets.	Transit: See Highway Measure 5.1H	Motor Carrier: See Highway Measure 5.1H	
		5.2 Travel Time Reliability	5.2H Peak period travel time reliability.	Transit: See Highway Measure 5.2H	Motor Carrier: See Highway Measure 5.2H	
6	Enhance Mobility Within Major Regional Trade Centers. (2)	6.1 Travel Time	6.1H Ratio of peak to off-peak travel time (Travel Rate Index) (Metro)		Motor Carrier: See Highway Measure 6.1H	
		6.2 Travel Time Reliability	6.2H Peak period travel time reliability.	Transit: See Highway Measure 6.2H	Motor Carrier: See Highway Measure 6.2H	
		6.3 Duration and Extent of Congestion	6.3H Miles of peak period congestion per day (RTCs 0 and 1)	Transit: See Highway Measure 6.3H	Motor Carrier: See Highway Measure 6.3H	
7	Increase the Safety and Security of Transportation Systems and their Users.	7.1 Crash Rate or Crashes	7.1 Crash Rate		7.1F Total crashes at at-grade railroad crossings (3-yr av.)	7.1A Total general aviation crashes. (3-year average)
		7.2 Total Fatalities	Fatalities per year (3-year average).			7.2A Total general aviation fatalities (3-year average).
		7.3 Security Measures	(To be completed once US DOT provides direction)			

(1) For additional information on regional trade centers, please refer to, "Trade Centers of the Upper Midwest 1999 Update," by William Casey, June, 1999. Center for Urban and Regional Affairs, University of Minnesota.
(2) Major Regional Trade Centers are Levels 0 and 1. These centers include the following cities: Twin Cities metropolitan area, Duluth, Fargo/Moorhead, LaCrosse/LaCrescent, Rochester and St. Cloud.

Table 5-1: Performance Framework and Measures (continued)

Policy		Performance Measure Categories	Internal Mn/DOT Performance Measure or Indicator
8	Continually Improve Mn/DOT's Internal Management and Program Delivery.	**8.1 Construction Project Timeliness**	8.1 Percent of Mn/DOT projects in the first year of the STIP that are let for construction in their planned year.
		8.2 Construction Project Cost	8.2 Preconstruction. Percent variation in major projects' cost from estimates when they enter the STIP to actual cost when let for construction.
		8.3 Cost Effective Administration	8.3 General administrative expenditures as a percent of total expenditures.
9	Inform, Involve and Educate All Potentially Affected Stakeholders in Transportation Plans and Investment Decision Processes.	**9.1 Perceived Reliability of Mn/DOT Information**	9.1 Percent of customers satisfied with the reliability of Mn/DOT communications.
10	Protect the Environment and Respect Community Values.	**10.1 Air Quality**	10.1AQ1 Federal Compliance Standards: Outdoor levels of ozone, nitrogen dioxide, carbon monoxide and particulate matter. 10.1AQ2 Estimated carbon dioxide emissions from motor vehicles in Minnesota. 10.1AQ3 Percent of Mn/DOT fuel consumption defined as cleaner fuels.
		10.2 Water Quality	10.2W1 Percent of NPDES permits that have violations. 10.2W2 Ratio of acres replaced by Mn/DOT to acres affected. 10.2W3 Percent of replaced wetlands where types are as planned.
		10.3 Land Management	10.3L1 Number of acres replanted with native species. 10.3L2 Number of undeveloped acres converted to another land use..
		10.4 Streamlining of Environmental Process	10.4ES Time to complete EIS, Environmental Assessment, and EAW per project.

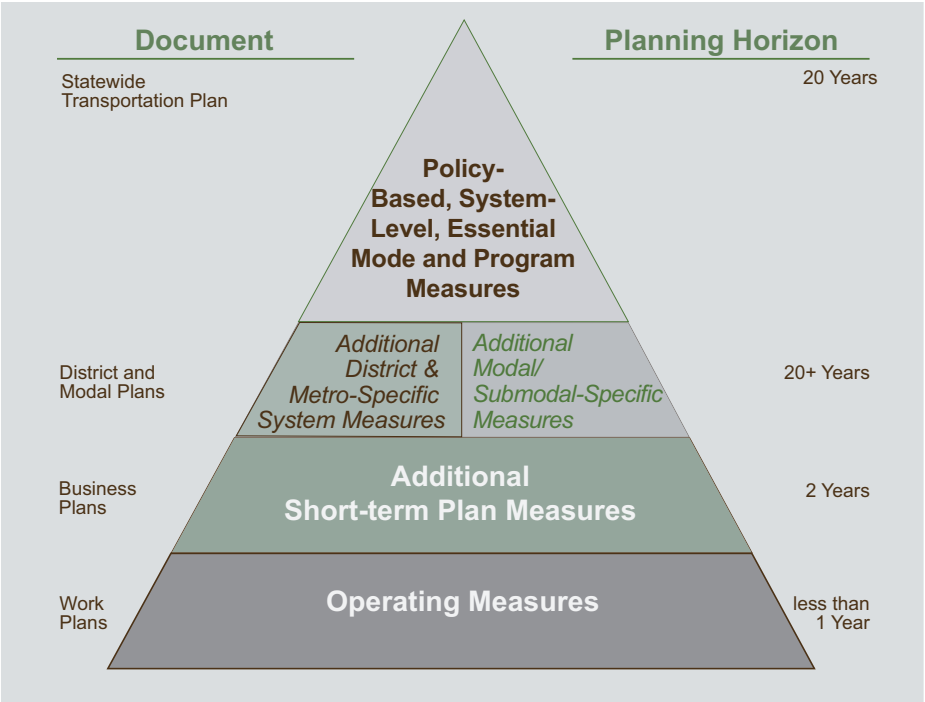
Selection Criteria for Performance Measures

The **Minnesota Statewide Transportation Plan** is Mn/DOT's long-range planning document that provides policy direction to other long-range plans such as district plans and modal plans, as well as to short-term business and operating plans. Performance measures established for long-range transportation planning set broad policy-based direction for the department. Figure 5-1, shows the hierarchy of performance measures that are relevant to the various long-range and short-range planning documents.

The following criteria were used to select the set of performance measures for this Plan:

- They must have statewide significance, measuring either a systemwide attribute or an essential element of a mode or department function.
- They must meaningfully measure a key outcome of the Statewide Plan Policy Framework.
- Together they must represent all major functions, modes and customer segments for which Mn/DOT delivers a transportation service.
- They should cover outcomes over which Mn/DOT has direct or indirect influence, so that Mn/DOT can manage them.
- They should measure or influence an attribute that is important to customers and stakeholders.

Figure 5-1: Performance Measures Pyramid



The **Minnesota Statewide Transportation Plan** measures apply to other long-range plans such as district and modal plans. However, the scope of these measures may apply more broadly in district plans. For example, the customer ride quality measure in this Plan is limited to Interregional Corridors and other Principal Arterials, but it extends to Minor Arterials and Collectors in district plans. Similarly, the scope of several aeronautics measures in this Plan is limited to airports in Regional Trade Centers 1-3, but the modal plan may extend these measures to all airports in the system.

In addition to containing scope extensions of the **Minnesota Statewide Transportation Plan**, district plans, and modal plans may also contain a limited number of additional measures that are considered necessary to more fully capture policy goals, customer needs and expectations for the transportation system.

Performance measures that relate to the biennial budget cycle or operating plans (less than one year), tend to be narrower in scope, and tailored to tracking short-term trends and goals for the Department. While, occasionally, these measures can be the same as long-term planning measures, they are often different. Nevertheless, these short-term measures must be closely linked to long-term performance measures. Specifically, they should provide short-term objectives or tactics necessary to achieve the long-term outcomes measured in this Plan. For example, the **Minnesota Statewide Transportation Plan** establishes a long-term performance measure to reduce crash rates and fatalities. In contrast, Mn/DOT's short term measures focus not on crash rates and fatalities per se, but on identifying high-crash locations to be targeted for correction in the next two years. By addressing problems at these high-crash sites in the short term, the expectation is that the crash rate and fatalities should decline in the long term.

Chapter 6

Target-Setting Framework, Performance Measures, Targets and Policy Guidance

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Chapter 6:
Target-Setting Framework, Performance Measures, Targets and Policy Guidance

The first section of this chapter describes the process that was used to develop the targets for each of the performance measures that are described in detail later in the chapter. The second section of this chapter restates the policy statements and their expected outcomes, as well as identifies the modal performance measures and associated performance targets for each policy. In addition, policy guidance is provided for each policy.

Target-Setting Framework

Performance targets allow Mn/DOT to track system performance and to know whether Mn/DOT is achieving the performance objectives. Targets should be realistic. Setting targets too high can lead to over-investment and non-attainment. Setting targets too low can lead to under-investment and a system that does not meet customer expectations.

Three time horizons were selected for establishing performance targets: a six-year, mid-term target (2009), corresponding to three state budget cycles; a 10-year, mid-term target (2013), corresponding to Mn/DOT's 10-year Work Plan; and a 20-year, long-term target (2023), corresponding to the time horizon of the Statewide Transportation Plan.

In setting performance targets, trend-based projections are used to estimate levels of performance, based on an extrapolation of recent trends. Policy-based targets are set to achieve desired performance levels, based on policy or customer expectations. These long-term targets are not constrained by current funding levels, but should be attainable under some reasonably achievable, increased future funding scenario.

In combination, the targets establish a vision for the transportation goals that Mn/DOT would like to achieve over the long-term, based on its understanding of system condition and of customer preferences and expectations. While redistribution of existing resources will improve performance in some areas, all these targets cannot be reached with current funding levels. Over time, performance will generally decline, at least slightly, even if current funding levels are maintained.

The methodology for setting performance targets consisted of the following steps:

1. Measures were first classified in one of three categories:
   - **Mature Measures:** These are measures for which baseline data exists and policy targets have been in use previously.
   - **Emerging Measures:** These are measures for which data exists, but targets have not been set previously.
   - **Developmental Measures:** These are measures for which neither data nor targets were previously developed.
2. Whenever available, historical data was collected to better understand levels of performance and investment in the recent past. In some cases, a long history of data exists; in others only four to six years of data is available, while in others data does not exist, but will begin to be recorded under this Plan.

3. If data was available, a best-fitting curve (usually a straight line) was drawn through the baseline data to generate "trend-based projections" to the year 2023.

4. Policy-based targets were then developed using the trend-based projections as reference. More importantly, targets were set using policy considerations, customer market research and Mn/DOT's ability to influence the performance measure. In some cases, targets already existed.

5. For policy-based targets for which there was no existing data, no performance target was set as the plan was developed, however it is anticipated that as the plan is implemented, targets will be identified to represent reasonable, cost-effective future levels of achievement.

Four important cautions about the target-setting methodology. First, when only a limited number of baseline points are available, trend-based projections are used more as a reference than as a predictive tool. Over time, as more data is collected and as more experience is gained with specific performance measures, better predictive tools should be developed.

Second, policy-based targets can be adjusted over time, especially for developmental or emerging measures. It will be important to track actual levels of performance in the short- and mid-term and to compare them to targets to determine if targets are achievable. This is particularly relevant for measures over which Mn/DOT only has indirect influence.

Third, the performance targets are 20-year targets that the department would like to achieve based on analysis of system conditions,customer expectations, and Mn/DOT's policies. In most instances, the targets are not fully achievable under current levels of funding. However, the targets are not set at unrealistic levels. In all cases, every effort is made to develop targets that can be achieved under a reasonable, but nonetheless increased, funding scenario.

Fourth, there is a varying degree of control or influence that the department has over individual performance measures. For instance, Mn/DOT has direct control over the quality of pavement, but it can only influence transit service provided in Greater Minnesota through funding. In all instances, the level of influence that the department had over a particular measure affected the target that was eventually set.

The following figures illustrate three conditions encountered in setting targets. In Case 1, baseline data shows that performance levels have been increasing, but the desired policy-based targets are higher than the trend-based projection levels. Case 2 indicates that the desired performance levels have already been exceeded and, thus, policy-based targets are set at a lower level than current performance. Case 3 shows that performance levels are fast declining and policy-based targets are set so as to reverse or slow this trend.

Figure 6-1: Performance Target Levels
Case 1: Performance is improving

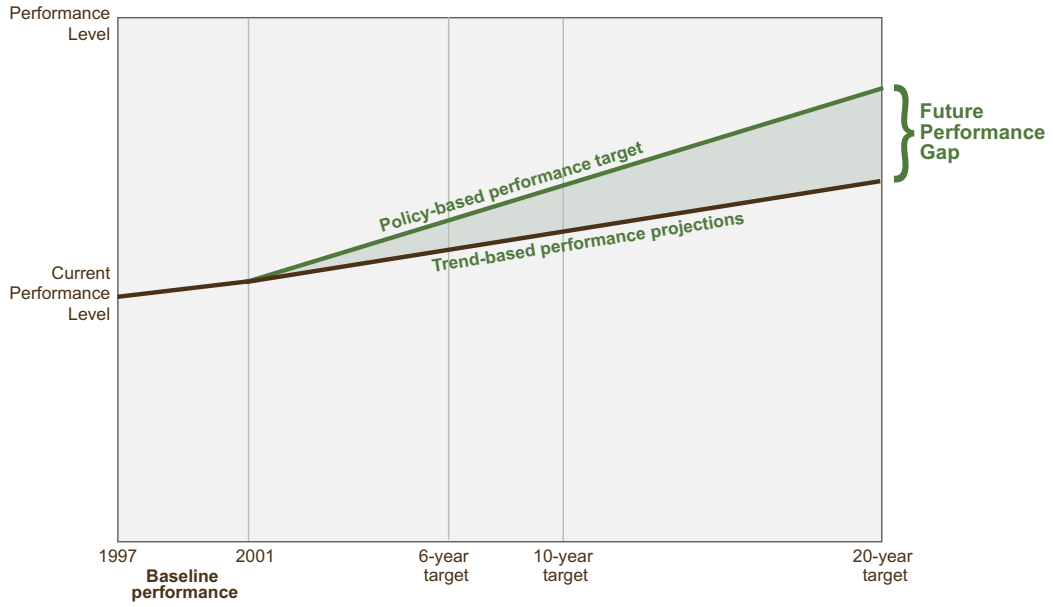


Figure 6-2: Performance Target Levels
Case 2: Desired performance level has been exceeded

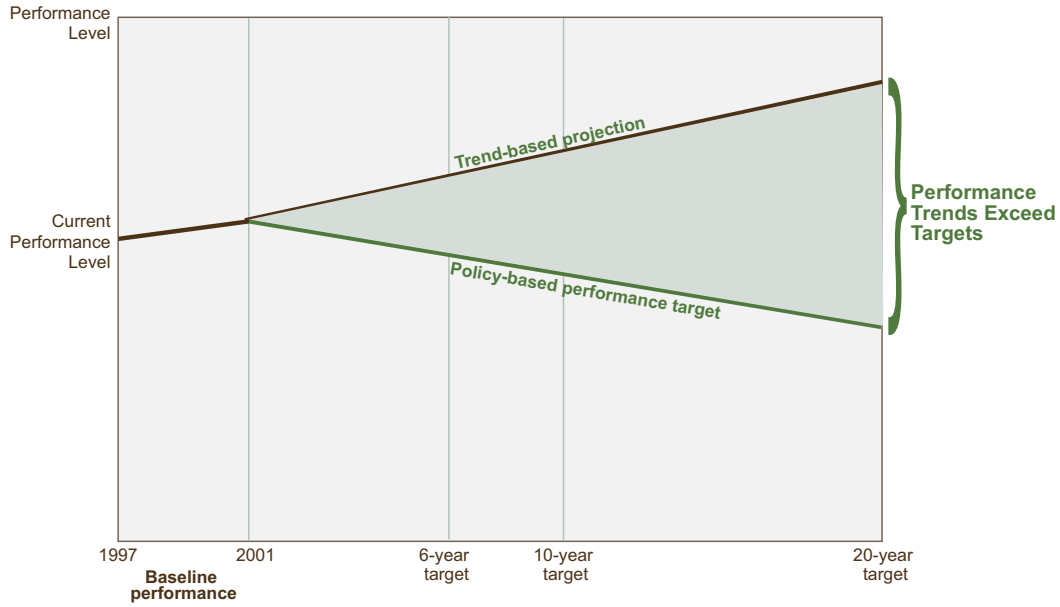
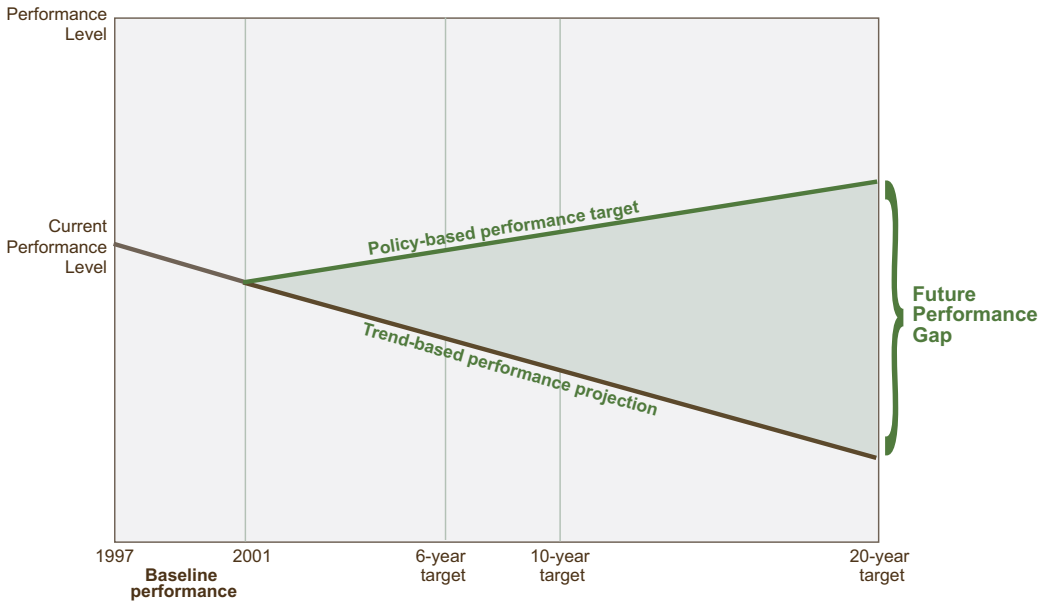


Figure 6-3: Performance Target Levels
Case 3: Performance is worsening



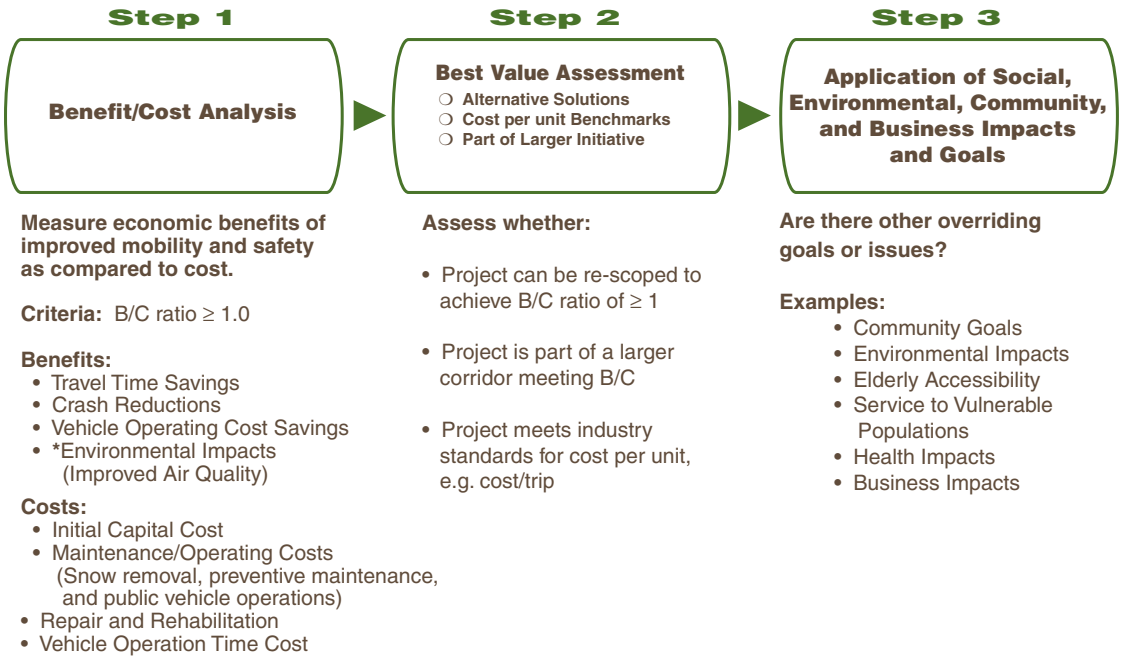
Cost-Effectiveness Framework

Ultimately Mn/DOT's progress toward achievement of its goals and performance targets is a reflection of the projects and programs it chooses to implement. Decisions as to which projects and strategies will be implemented are based on their value toward meeting performance targets, as compared to each investment's potential cost. This concept of "cost-effectiveness" is described in more detail below. Figure 6.31 illustrates the cost-effectiveness framework that Mn/DOT uses in evaluation of its substantial (all modes) investments and in making tradeoffs among competing choices.

STEP 1: Investments can first be assessed for cost-effectiveness using benefit cost analysis (Mn/DOT uses the AASHTO methodology for assessing highways and the Transit Cooperative Research Program methodology for assessing transit projects). This analysis contrasts the estimated cost of implementing, maintaining, or operating a project with the total economic benefits of three key transportation goals: reducing1) crashes, 2) travelers' travel time, and 3) vehicle operating cost. Typically, projects are considered to be cost-effective if the calculated benefits outweigh costs, i.e., the B/C ratio is greater than or equal to 1.0.

STEP 2: However, a positive B/C is not the sole basis for selection, best value may also be considered. Some investments are amenable to modification so that an initial B/C that is less than 1.0 will become favorable after revisions. One example would be a design modification that did not impair safety, but would deliver project benefits at a lower cost. Another project may be essential to a larger corridor improvement program. Although its individual B/C may be unfavorable, it is a necessary component in a larger program that has demonstrated benefits that exceed costs.

Figure 6-3.1: Assessing Cost Effectiveness



*Not always included in analysis. When included, typically included only in Metro area projects.

For projects or programs where the chief goals are not included in benefit-cost analysis, an investment may be considered cost-effective if unit costs, such as cost per trip for bus programs, are lowest among alternatives or if they compare favorably with benchmarks identified by the federal government, other states' experience, professional associations' guidance, etc. For example, if a deteriorating bridge is essential to local access and community cohesiveness, B/C analysis will help to identify the most cost-effective alternative, even if all alternatives have a B/C ratio of less than 1.0.

STEP 3: However, there are also investment goals that are not incorporated into traditional benefit/cost analysis or other cost-effectiveness computations. Examples include social benefits – for instance, programs which provide transportation for senior citizens help those individuals remain independent and active in their communities. Another example is projects that have substantial air or water quality benefits. Other projects' effectiveness is strengthened because partnerships are forged between the state and local governments that help to significantly expedite projects' construction. These goals and issues should be clearly documented to have compelling importance to the project, program and constituents.

While it is desirable to meet cost-effectiveness standards in STEPS 1 or 2, attaining these goals is also considered in assessing cost-effectiveness. Ultimately decision makers evaluate how well an investment meets the three tests described in the diagram above. Those investments best achieving both the quantitative cost-effectiveness evaluation and qualitative goals will be implemented.

Performance Measures, Targets and Policy Guidance

This section of the chapter restates the policy statements and their expected outcomes. In addition, under each policy are the performance measures specific to that policy and, for each of these, the associated performance targets. Finally, at the end of the discussion for each policy there is a short section (Policy Guidance) that outlines the actions that Mn/DOT will take (policy direction) and the tactics (policy strategies) that the department can employ to achieve policy outcomes.

To differentiate mode-specific measures, or multiple measures within a given performance category, the following convention, illustrated by examples, is used:

1.2H1: Policy 1; Performance Measure Category 2 (Physical Condition of Infrastructure); Highway Mode; Measure 1 (Remaining service life of pavement).

1.2H2: Policy 1; Performance Measure Category 2 (Physical Condition of Infrastructure); Highway mode; bridges; Measure 2 (Percent of bridges that meet good and poor structural conditions).

1.2T: Policy 1; Performance Measure Category 2 (Physical Condition of Infrastructure); Transit Mode; Measure (Percent of transit fleet whose remaining life is within the minimum normal service life).

1.2A: Policy 1; Performance Measure Category 2 (Physical Condition of Infrastructure); Aeronautics Mode; Measure (Percent of airport runways that meet good and poor pavement condition targets).

The following abbreviations are used for Policies 1 through 10:

A: Aeronautics; AQ: Air Quality; F: Freight; H: Highway; L: Land Management; P: Pedestrian and/or Bicycle; PR: Passenger Rail; T: Transit; W: Water Quality.

Appendix E contains a map that identifies the Interregional Corridor System and highlights level 0-3 Regional Trade Centers. This map will be a useful reference for understanding the applicability of some performance measures and targets.

Policy 1: Preserve Essential Elements of Existing Transportation Systems

Outcome Statements:

a. Design, construction, maintenance and system management decisions will optimize the years of life and customer utility of existing facilities and minimize life-cycle costs.

b. The condition of all elements of Mn/DOT-funded infrastructure will be maintained to the appropriate level for the function and use of facilities and to meet customer expectations.

The next section (Performance Measures and Targets) explains the measures that will be used to achieve the outcomes for Policy 1. Measures and targets include the following:

1.1H Customer Ride Quality (Highway Pavement)
Lane-miles of highway pavement that have good and poor ride quality as measured statewide by Present Serviceability Rating (PSR).

1.2A Physical Condition (Airport Pavements)
Percent of airport runways that meet good and poor Pavement Condition Index (PCI) targets.

1.2H1 Physical Condition (Highway Pavement)
Percent of roadway miles that have high and low Remaining Service Life (RSL).

1.2H2 Physical Condition (Bridges)
Percent of bridge area on trunk highway bridges 20 feet or longer that meet structural condition targets for good and poor, based on the National Bridge Inventory (NBI) rating system established by Mn/DOT in 1997 and updated in 2001.

1.2T Physical Condition (Transit Fleet Life)
Percent of transit fleet whose remaining life is within the minimum normal service life.

1.1H Customer Ride Quality (Highway Pavement)

Lane-miles of highway pavement that have good and poor ride quality as measured statewide by Present Serviceability Rating (PSR).

Smooth ride of pavements are important to Mn/DOT customers. Present Serviceability Rating (PSR) has long been used to measure pavement ride quality in the state. The measure is based both on a quantitative measure of ride quality (roughness) and a qualitative assessment or correlation of this measurement to public expectations. The smoothness of ride is measured on a scale from 0 to 5. Good ratings are represented by values from 3.1 to 5.0. Poor values are represented by values of 2.0 or less. For the purposes of reporting in the State Plan, this measure will be applied to all Interregional Corridors and Principal Arterial routes. Other state trunk highways will be addressed in District or Metro Plans.

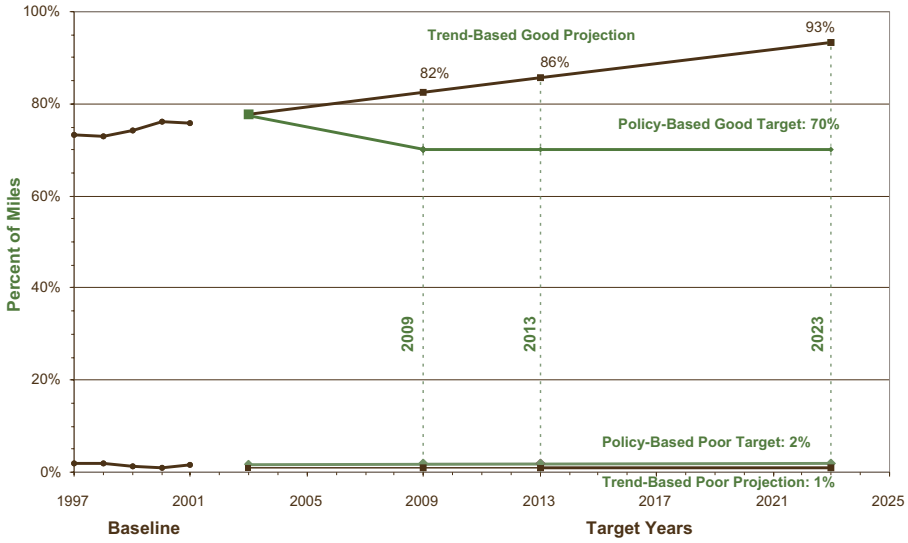
Performance Targets

Historic trends (during the last five years) indicate that the percent of Principal Arterial miles in the "good" ride category has been growing and the percent in the "poor" category has been constant. Market research indicates that customer are satisfied with the condition of highway pavements, and customer expectations are not likely to change significantly. As a result, the target for this measure is to maintain the system so that the percent of miles of "good" is above 70 percent and that the percent of miles rated "poor" is no more than 2 percent .

Targets	2009	2013	2023
Percent Good	70	70	70
Percent Poor	2	2	2

The following figure shows the baseline data and targets for this measure.

Figure 6-4: Highway Pavement Ride Quality
Percent of Miles Meeting Good and Poor Targets



Source of Data: Mn/DOT Office of Materials and Road Research

1.2A Physical Condition (Airport Pavements)

Percent of airport runways that meet good and poor Pavement Condition Index (PCI) targets.

The physical condition of airport runways, taxiways and aprons is important for assessing the quality and safety of air service facilities throughout the state. The Pavement Condition Index (PCI), developed by the Army Corps of Engineers, is used by the Federal Aviation Administration and Mn/DOT to determine runway, taxiway and apron pavement conditions. The PCI measures the pavement's structural integrity and surface operational condition. PCI is determined by measuring pavement distress. This method has been field-tested and has proven to be a useful device for determining investment needs and priorities

This information is compiled for paved airports on a rotating basis every three years. The rating is based on a scale of 0 to 100. Pavements in "good" condition have ratings of 56 and greater, while pavements in "poor" condition have ratings of 40 or less. The measure is computed based on the percent of total runway, taxiway and aprons that meet "good" and "poor" condition ratings. The targets apply to general aviation airports in levels 1-3 Regional Trade Centers.

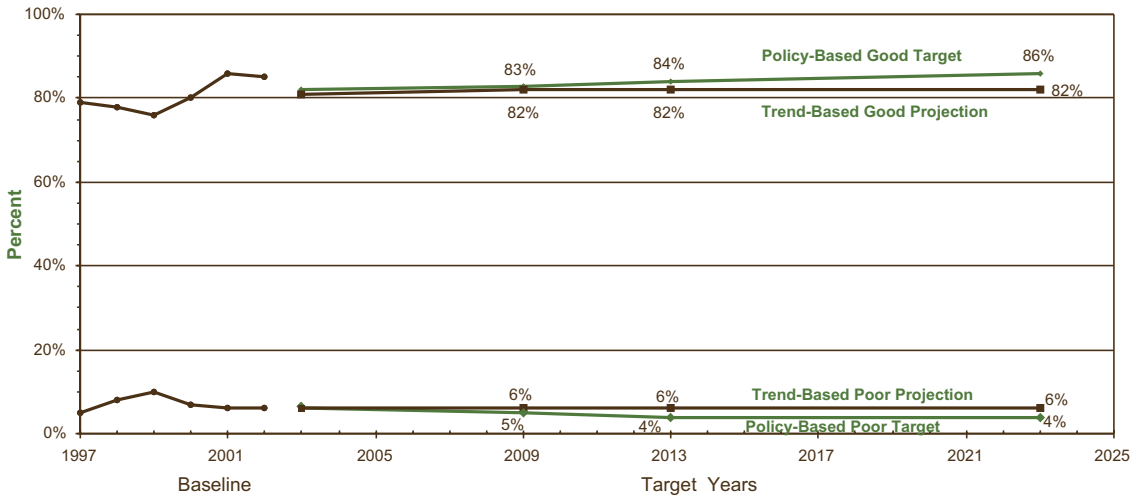
Performance Targets

Based on data from 1997 to 2000, the performance targets are currently being achieved for the percent of "good" pavements, and are just above the target for "poor" pavements. The trendline for "good" pavements has increased over the past four years and in 2001 was 86 percent (above the short-term target of 83 percent and at the long-term target of 86 percent). The trend for "poor" pavements is slightly increasing and just over the long-term target of 4 percent. Performance targets for this measure were based on current performance and the need to maintain high-quality pavement for safe takeoffs and landings.

Targets	2009	2013	2023
Percent Good	83	84	86
Percent Poor	5	4	4

The following figure shows the baseline data and targets for this measure.

Figure 6-5: Percent of Airport Runways, Taxiways, and Aprons that Meet Good and Poor Pavement Conditions Targets



Source: Mn/DOT Office of Aeronautics

1.2H1 Physical Condition (Highway Pavement)

Percent of roadway miles that have high and low Remaining Service Life (RSL).

Remaining Service Life (RSL) targets are set to minimize life cycle costs of pavement preservation efforts. The RSL of a pavement is the amount of time, in years, until the pavement reaches a PSR of 2.5, generally considered to be near the end of a pavement's service (design) life. This is the critical decision point at which a pavement either needs near-term rehabilitation action or is left for extensive reconstruction at a later date.

Based on historical data, current and recent levels of investments have yielded an average RSL of approximately 12 years. Furthermore, the data shows a higher incremental cost of maintaining pavements at a lower average RSL, while there is no incremental cost advantage of increasing the RSL of pavements beyond 13 years. Maintaining an RSL of approximately 12 years minimizes the total life-cycle cost of maintaining pavements.

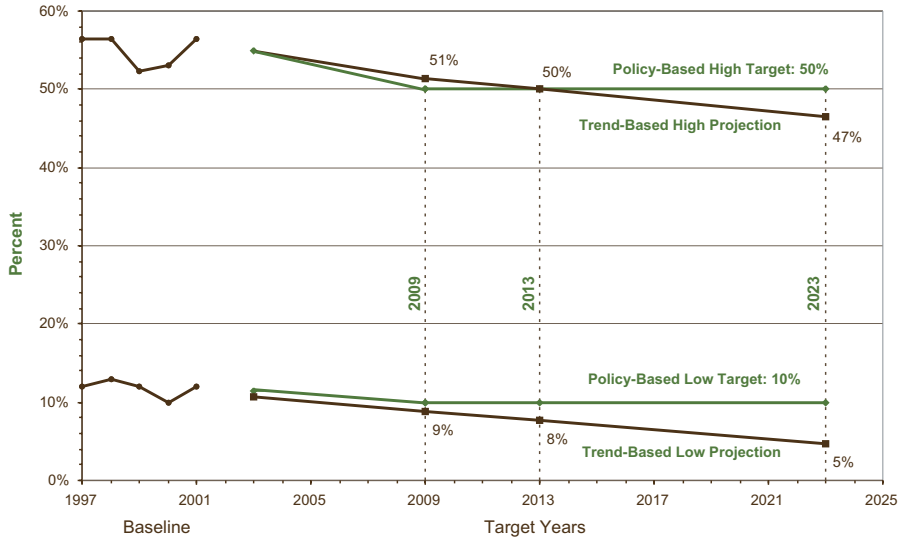
Performance Targets

The average RSL for Interregional Corridors and other Principal Arterial mileage should fall in the 12 to 13-year range in order to minimize expenditures. In addition, no more than ten percent of the miles should be in the low RSL category (RSL = 0-3 years), and 50 percent or more should be in the high RSL category (RSL = 12 or more years). Maintaining an RSL distribution with these parameters is expected to minimize long-term life-cycle costs under the present cost structure.

Targets	2009	2013	2023
Percent High RSL	50	50	50
Percent Low RSL	10	10	10
Average RSL	12-13	12-13	12-13

The following figure shows the baseline data and targets for this measure.

Figure 6-6: Highway Pavement Remaining Service Life
Percent of Miles Meeting High and Low Targets



Source of Data: Mn/DOT Office of Materials and Road Research

1.2H2 Physical Condition (Bridges)

Percent of bridge area on trunk highway bridges 20 feet or longer that meet structural condition targets for good and poor, based on the National Bridge Inventory (NBI) rating system established by Mn/DOT in 1997 and updated in 2001.

The National Bridge Inventory structural condition rating is the measure that best assesses the physical condition of Minnesota's bridges (bridges and culverts 20 feet and over in length). It measures the integrity of critical structural bridge elements. The NBI ratings are compiled and reported on an annual basis from field inspections. To be categorized as good, all structural components must have a structural condition code of seven or greater, and an appraisal rating of six or greater. To be categorized as poor, the structure must have a structural condition code of four or less for any structural component, or it must have an appraisal rating of two or less for structural rating or waterway adequacy. The total bridge area in good and poor categories is summed for all bridges and structures on Interregional Corridors and other Principal Arterials. The percent of square footage in each of these categories is calculated and compared to the performance targets.

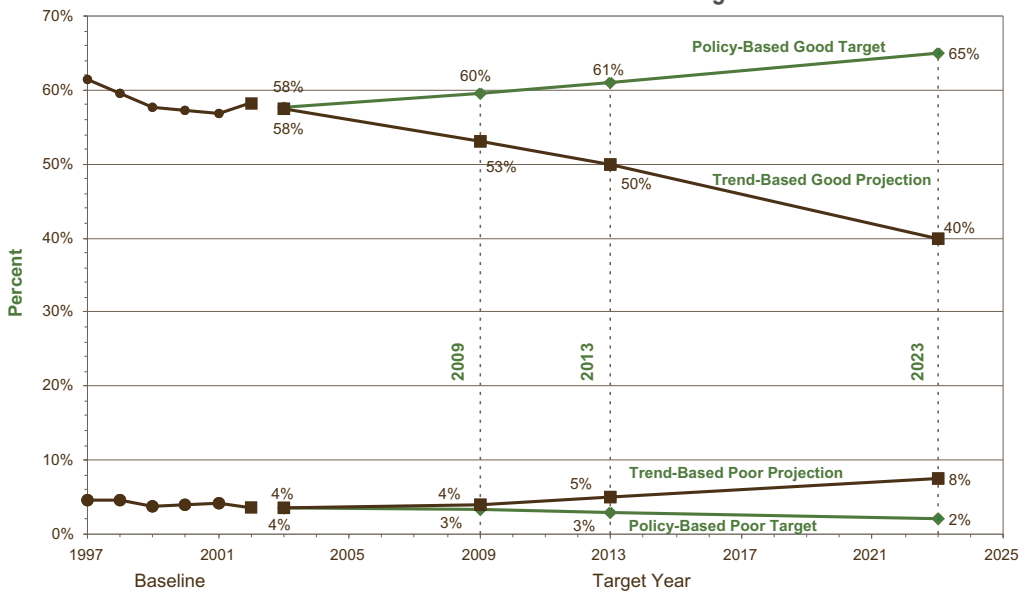
Performance Targets

Based on data from 1997 to 2002, the previous performance targets are not being achieved. The trendline for the percent of good has generally declined since 1997 and in 2002 was approximately 58 percent (compared to the previous target of 65 percent). The trendline for percent of poor has also declined (from 4.5 to 4.1 percent), moving towards the target of 2 percent. The long-term targets are to increase the percent of bridges (total bridge area) with good structural ratings to 65 percent and continue to decrease the bridges (bridge area) with poor structural ratings to 2 percent. Future targets are based on the need to keep the bridge system in good condition to ensure the integrity of the roadway. Poor targets are set to avoid expensive bridge repairs, to avoid the possibility of catastrophic bridge failures, and to reduce the cost to users of the system resulting from detours when bridges are "posted."

Targets	2009	2013	2023
Percent Good Condition	60	61	65
Percent Poor Condition	4	3	2

The following figure shows the baseline data and targets for this measure.

Figure 6-7: Percent of Area of TH Bridges that Meet Good and Poor Structural Condition Targets



Source: Mn/DOT Office of Bridges and Structures

1.2T Physical Condition (Transit Fleet Life)

Percent of transit fleet whose remaining life is within the minimum normal service life.

Transit fleet vehicles are an important component of the infrastructure necessary to deliver transit passenger services. When vehicles get older, there are increased issues with maintenance and availability that need to be monitored closely to ensure that regular services can be provided to customers. This measure evaluates the transit fleet that is available to customers in Greater Minnesota; the Metropolitan Council is responsible for the service life of transit vehicles in the Twin Cities metropolitan area. Currently, 83 percent of the transit fleet is within the minimum normal service life.

Performance Targets

This is a new measure for Mn/DOT. Targets have not been identified to date, however, it is expected that data will be collected and targets will be identified in 2004.

Policy 1 Guidance: Preserve Essential Elements of Existing Transportation Systems

Existing transportation systems represent a resource that supports all aspects of our economy and society. These systems face constant deterioration due to use, age, and exposure to the environment. As a result, transportation officials must constantly evaluate these systems to determine if they are meeting the public's expectations as well as being maintained at their lowest life-cycle cost.

Policy 1 Direction

1. Mn/DOT's top priority is to maintain its transportation assets in sound physical condition and to meet system preservation targets. Resources will be directed to meeting other performance objectives (such as Interregional Corridor performance and bottleneck removal) after the physical condition of the system has been considered.
2. Mn/DOT will expand the use of cost-effective preventive maintenance as a strategy to extend service life and reduce life-cycle costs.

Policy 1 Strategies

This section contains strategies that Mn/DOT will use, in partnership with other agencies and organizations, to achieve Policy 1. The specific mix of strategies employed will be different from region to region based on the specific conditions and circumstances.

a. Monitor the condition of the transportation infrastructure (roadway and runway pavement, bridges, transit vehicle fleet and pavement ride quality).

b. Evaluate management systems used for tracking infrastructure conditions, and for organizing and presenting current and trend-based information. As measures and targets evolve, consideration should be given to automating the reporting process.

c. Consult customers and stakeholders to gauge how well infrastructure performance levels match customer and stakeholder expectations.

d. Use warranties to reduce preservation costs, extend service life and increase preservation quality.

e. Incorporate user costs (e.g., due to delays) when calculating preservation costs and selecting preservation strategies.

f. Select lowest life-cycle cost strategies for facility preservation, including replacement, where it is the lowest life-cycle cost.

g. Identify elements of the state highway system, including rest areas, that are more appropriately owned or managed by local jurisdictions or other public or private partners. Where it is cost-effective to do so, Mn/DOT will work with its local partners to transfer, share management or operations, or turnback those elements.

h. Promote enforcement of and compliance with highway weight restrictions to reduce and avoid damage caused by overweight vehicles.

Other Policy 1 Strategies

Strategies have been developed for other Statewide Transportation Plan policies that complement or support the outcomes identified for Policy 1. Strategies developed for Policy 2 (Support Land Use Decisions) and Policy 3 (Effectively Manage Operations) also address getting the most out of the systems through good land use and transportation decisions, and by effectively managing the operations of existing systems.

Coordination and Partnerships

Close coordination will be required between key Mn/DOT staff. Transit fleet systems will require close coordination between Mn/DOT and transit providers. Airport system will require close coordination between Mn/DOT and local airport authorities.

The Federal Highway Administration's Office of Asset Management has resources available for system preservation that should be consulted.

Policy 2: Support Land Use Decisions that Preserve Mobility and Enhance the Safety of Transportation Systems

Outcome Statements:

a. State and local planning and development decisions will sustain mobility and safety for travelers and freight. Likewise, transportation system decisions will support land use planning and orderly development.

b. Right-of-way and land needed to sustain performance in corridors, Regional Trade Centers and major ports and terminals will be protected to minimize life-cycle costs and community conflicts.

The next section (Performance Measures and Targets) explains the measures that will be used to achieve the outcomes for Policy 2. Measures and targets include the following:

2.1H Consistency of Local Plans and Ordinances with Access Management Guidelines (Highways)

Percent of local governmental units (LGUs: townships, municipalities, counties) whose plans and ordinances support Interregional Corridor Management Plans or Partnership Studies by addressing access management. Support will be measured in two categories: substantial and limited. The percent of LGUs in each category will be reported at a statewide level; however, corridors will be tracked individually.

2.2A Airspace or Land that is Protected (Airports)

Percent of airports for which airspace or land have been protected to meet safety, noise, and height clearance requirements and expansion plans as identified in Master Plans or Airport Layout Plans.

2.2H Right-of-Way that is Protected (Highways)

Percent of Interregional Corridor and bottleneck removal projects that have been identified in the 10-Year Work Plan for which rights-of-way have been protected, either through purchase, official mapping or zoning.

2.2T Right-of-Way that is Protected (Transit Infrastructure)

Percent of Transit Advantages projects that have been identified in the 10-year construction program for which rights-of-way have been protected, either through purchase, official mapping or zoning.

2.1H Consistency of Local Plans and Ordinances with Access Management Guidelines (Highways)

Percent of local governmental units (LGUs: townships, municipalities, counties) whose plans and ordinances support Interregional Corridor Management Plans or Partnership Studies by addressing access management. Support will be measured in two categories: substantial and limited. (The percent of LGUs in each category will be reported at a statewide level; however, corridors will be tracked individually).

Counties, cities and/or townships typically control land use along trunk highway corridors. As part of developing Corridor Management Plans and/or Partnership Studies for Interregional Corridors (IRCs), local units of government participate in establishing a long-term corridor vision and a Corridor Management Plan. Upon completion of the plan, local communities are expected to endorse the plan and work towards refining land use plans and subdivision ordinances to support the vision outlined in the plan or partnership study. To monitor local efforts and their effectiveness, Mn/DOT will track the percent of LGUs whose plans and ordinances support the IRC Corridor Management Plans or Partnership Studies. The support will be categorized by the type of actions taken by each LGU along corridors for which plans or studies have been completed. The level of support will be assessed in two categories: substantial and limited. The percent of LGUs in each category will be reported at a statewide level; however, corridors will be tracked individually.

Substantial Actions: Include but are not limited to the following:

- Land use regulations such as subdivision, zoning, and conditional use ordinances that support the Corridor Management Plans and/or Partnership Studies.
- Development of local supporting street networks that promote the corridor access strategies.
- Adopted low-density zoning and/or official maps to protect areas needed for future right-of-way.

Limited Actions: LGUs have adopted one or more of the following:

- Comprehensive plan updates with goals and policies to manage access along IRC corridors.
- Resolutions endorsing the IRC Corridor Management Plan or Partnership Studies.

Performance Targets

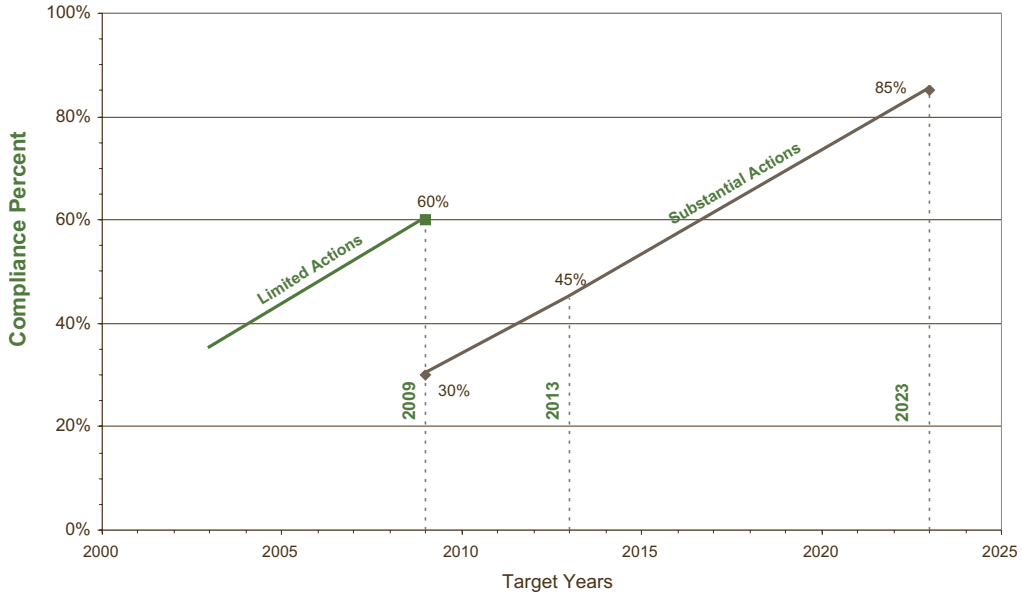
This is a new performance measure and there has not been sufficient time to implement study recommendations for Interregional Corridors that have completed a Corridor Management Plan. Therefore, there is no historical data or context to

evaluate targets. Nevertheless, performance targets have been established. These targets should be reviewed in one to two years of experience with completed Interregional Corridor Management Plans. The targets reflect the expectation that most communities will endorse the Corridor Management Plans initially and work towards the substantial actions over time.

Targets	2009	2013	2023
Percent Implementing Substantial Actions	30	45	85
Percent Implementing Limited Actions	60	–	–

The following figure shows the baseline data and targets for this measure.

Figure 6-8: Percent of LGUs Along IRCs Whose Plans and Ordinances are in Conformance with IRC Management Plans or Partnership Studies



2.2A Airspace or Land that is Protected (Airports)

Percent of airports for which airspace or land have been protected to meet safety, noise, and height clearance requirements and expansion plans as identified in airport master plans or airport layout plans.

As airport use has increased, so have associated impacts and airport expansion needs. Compatibility of land use around airports will reduce problems as use of airport facilities increases, and expansion of these facilities is contemplated. The purpose of this measure is to encourage local communities and airport operators to ensure that airport master plans are consistent with adjacent land uses and to actively protect needed space identified in master plans or airport layout plans.

The measure will identify the percent of land protected for airports in airport master plans or airport layout plans that have identified safety, noise, and height requirements as well as any expansion needs. This measure applies to the 40 airports in level 1-3 Regional Trade Centers.

Performance Targets

This is a new performance measure. Information is not available to set targets presently. Mn/DOT will develop the data and set targets prior to the end of 2004.

2.2H Right-of-Way that is Protected (Highways)

Percent of Interregional Corridor and bottleneck removal projects that have been identified in the 10-Year Work Plan for which rights-of-way have been protected, either through purchase, official mapping or zoning.

Historically, Mn/DOT has focused on right-of-way (ROW) acquisition for projects that are being actively developed for construction in the near-term. However, growth and development in some areas have outpaced the ability to develop projects. As a result, many opportunities are being lost to preserve ROW that is needed for longer-term projects. The failure to acquire or protect ROW before development occurs results in much higher costs, as well as greater impacts and disruption to communities, businesses and property owners. In order to minimize long-term costs and avoid significant impacts and disruption, early right-of-way protection through acquisition, zoning and official mapping is needed.

As a starting point, this measure has been created to track the protection of right-of-way on Interregional Corridors for which management plans or partnership studies have been completed. In addition, this measure also tracks the protection of right-of-way for bottleneck removal projects identified in the Bottleneck Removal Plan. The measure quantifies the percentage of projects in the 10-Year Work Plan for which right-of-way has been protected. Protection may consist of direct purchase, official mapping and/or zoning designations.

Performance Targets

This is a new performance measure and performance targets have not been established. Mn/DOT is in the process of collecting baseline data. Targets will be available prior to the end of 2004.

2.2T Right-of-Way that is Protected (Transit Infrastructure)

Percent of Transit Advantages projects that have been identified in the 10–year construction program for which rights-of-way have been protected, either through purchase, official mapping or zoning.

Historically, Mn/DOT has focused on right-of-way (ROW) acquisition for projects that are actively being developed for construction in the near-term. However, growth and development in some areas have outpaced the ability to develop projects and, as a result, many opportunities are being lost to preserve ROW that is needed for longer-term projects. The failure to acquire or protect the needed ROW results in higher costs and greater impacts and disruption to communities, businesses and property owners. In order to minimize long-term costs and avoid significant impacts and disruption, early ROW protection through acquisition, zoning and official mapping is needed.

As a starting point, this measure has been created to track the protection of ROW for major passenger service projects (e.g., commuter rail, light rail transit, park and ride facilities, park and pool facilities, etc.) identified by Mn/DOT for development. The measure quantifies the percent of projects in the 10-year construction program for which ROW has been protected. Protection may consist of direct purchase, official mapping and/or zoning designations.

Performance Targets

This is a new performance measure and performance targets have not been established. Targets will be set prior to the end of 2004.

Policy 2 Guidance: Support Land Use Decisions that Preserve Mobility and Enhance the Safety of Transportation Systems

Coordination between land use and all transportation facilities is important because it provides opportunities to more effectively influence decisions in the early stages of development. Early coordination results in better access management plans and transportation systems that complement and serve adjacent land uses.

Policy 2 Direction

1. Mn/DOT will encourage its local government partners to fully consider the transportation system implications of land use plans and development decisions. To improve the long-term compatibility of local government development decisions with state transportation plans, Mn/DOT will provide technical support to local units of government for local land use and transportation planning development, regulation and future right-of-way preservation.
2. Mn/DOT's Access Management Guidelines will be followed in all planning, design and management activities that involve access issues. These guidelines emphasize providing good local supporting street networks and discourage direct private access in urban and/or urbanizing areas. They encourage maintaining low-density land uses in rural areas while allowing access that have very low volumes and meet safety requirements.
3. Mn/DOT, in cooperation with its partners, will protect right-of-way and space in advance of project development, after the need for the project has been demonstrated, the project is included in a fiscally-constrained Mn/DOT plan or 10-year Work Plan, and where it is cost-effective to do so.

Policy 2 Strategies

This section contains strategies that Mn/DOT will use, in partnership with other agencies and organizations, to achieve Policy 2. The specific mix of strategies employed will be different from region to region based on the specific conditions and circumstances.

a. Encourage local agencies to adopt land use ordinances and access policies that are consistent with adopted long-range plans and Mn/DOT's access management guidelines (e.g., Interregional Corridor plans, transit development plans, or station plans).

b. Work with local jurisdictions near port facilities to address zoning issues and space protection near airports and ports as master plans are updated.

c. Develop materials to assist local agencies in land use and access decisions (e.g., testimonials, model ordinances, best practices and case studies).

d. Continue to partner with local transportation and/or land use planning agencies to improve coordination between jurisdictions and resolve specific transportation, access and/or land use issues that would benefit all parties.

e. Give priority for technical support to those communities with land use jurisdiction along Interregional Corridors as well as around air and water ports.

f. Utilize Mn/DOT cost participation policy allowing Mn/DOT to invest in local road improvement. When doing so, it would bring a direct benefit to the highway system.

g. Review right-of-way acquisition processes, internal procedures, statutory and environmental requirements; develop right-of-way guidance for districts, metro division, and local agencies that provides direction for protecting and preserving right-of-way for long-term plans, the 10-year Work Plan, and the three year State Transportation Improvement Program (e.g., official mapping, zoning, direct purchase, hardship purchase).

h. Develop proper environmental documentation on Interregional Corridor (IRC), bottleneck and transit projects so that right-of-way can be acquired and/or protected as the project moves into the 10-year Work Plan. Monitor and track right-of-way acquisition on IRC, bottleneck and transit projects.

i. Include a full statement of purpose and need for planned improvements and right-of-way protection needs in all corridor plans.

j. Commence traditional right-of-way acquisition when improvements are programmed in the three-year State Transportation Improvement Program. In situations where land costs are increasing at a rapid rate and development is threatening the corridor, commence right-of-way acquisition once projects are included in the 10-year Work Plan and environmental review is complete.

k. Use local land use controls, such as maintaining existing agricultural zoning or providing for interim uses, wherever possible, to protect right-of-way.

l. Use strategies such as official mapping and advanced right-of-way acquisition once a project is in the 10-year Work Plan. In situations where land costs are increasing at a rapid rate and development is threatening the corridor, official mapping and advanced right-of-way acquisition may be used when the project is identified in a 20-year fiscally-constrained plan.

m. Investigate establishing a financial account (e.g., RALF — right-of-way acquisition loan fund) to assist local agencies outside the Twin Cities metropolitan area with advance purchasing of right-of-way or for access management. This account should focus on protection of parcels that are at risk for development, but cannot be protected through other means except direct purchase.

Other Policy 2 Strategies

Strategies have been developed for other Statewide Transportation Plan policies that complement or support the outcomes identified in Policy 2. Strategies developed for Policy 5 (Interregional Corridor Mobility), and 3 (Effectively Manage Operations) also deal with organizing the transportation and land use decisions so that they complement each other.

Coordination and Partnerships

Land use planning and regulation as well as local road networks are the responsibility of local units of governments. Mn/DOT has limited zoning authority and no official mapping authority. Therefore, in order to achieve the outcomes for this policy, the department will need to coordinate with, and have the support of numerous agencies and governmental jurisdictions (e.g., cities, counties, townships, metropolitan planning organizations, regional development commissions, State Planning, the Department of Natural Resources, Met Council, and airport authorities). Additional coordination will be needed with right-of-way staff, and project development staff.

Policy 3: Effectively Manage the Operation of Existing Transportation Systems to Provide Maximum Service to Customers

Outcome Statements:

a. The number of hours and days that the service levels of facilities fall below performance targets due to maintenance, construction or regulatory procedures will be reduced.

b. The number of hours and days that facilities do not carry their full capacity or achieve their target speeds due to weather, incidents or other obstructions will be reduced.

c. Transportation systems will use transit advantages, traveler information, travel demand management and advanced technology to maintain facility throughput and minimize downtime.

The next section (Performance Measures and Targets) explains the measures that will be used to achieve the outcomes for Policy 3. Measures and targets include the following:

3.1H1 Travel Time Reliability (Incident Clearance Time on Urban Freeways)
Average clearance time, from detection to total clearance, for incidents on the instrumented portion of the Twin Cities metropolitan area urban freeway system that occur between 6:00 a.m. and 7:00 p.m. on weekdays.

3.1H2 Travel Time Reliability (Ice and Snow Removal)
Number of hours it takes to achieve bare lanes after a weather event ends.

3.2H Travel and Flow Management (Highways)
Percent of Principal Arterial corridor-miles in Regional Trade Centers 0 and 1 that are highly, moderately or minimally managed.

Performance Measures and Targets

3.1H1 Travel Time Reliability (Incident Clearance Time on Urban Freeways)

Average clearance time, from detection to total clearance, for incidents on the instrumented portion of the Twin Cities metropolitan area urban freeway system that occur between 6:00 a.m. and 7:00 p.m. on weekdays.

During peak flows, incident removal and/or clearance time is critical to minimizing backups and delays for highway users. Unplanned delays that result from these occurrences affect the reliability of the system and add to traveler frustration. Based on previous studies of urban freeways that operate near capacity, each minute of

clearance time equals four to five minutes of traffic backups. As a result, clearing incidents as quickly as possible improves the overall reliability and function of the system. The proposed measure will monitor and track average clearance time for all incidents on the instrumented portion of the Twin Cities metropolitan area urban freeway system between the weekday hours of 6:00 a.m. and 7:00 p.m.

Although Mn/DOT does not have direct control over incident clearance time, it operates a traffic management center that dispatches incident management teams and notifies other agencies involved in incidence clearance.

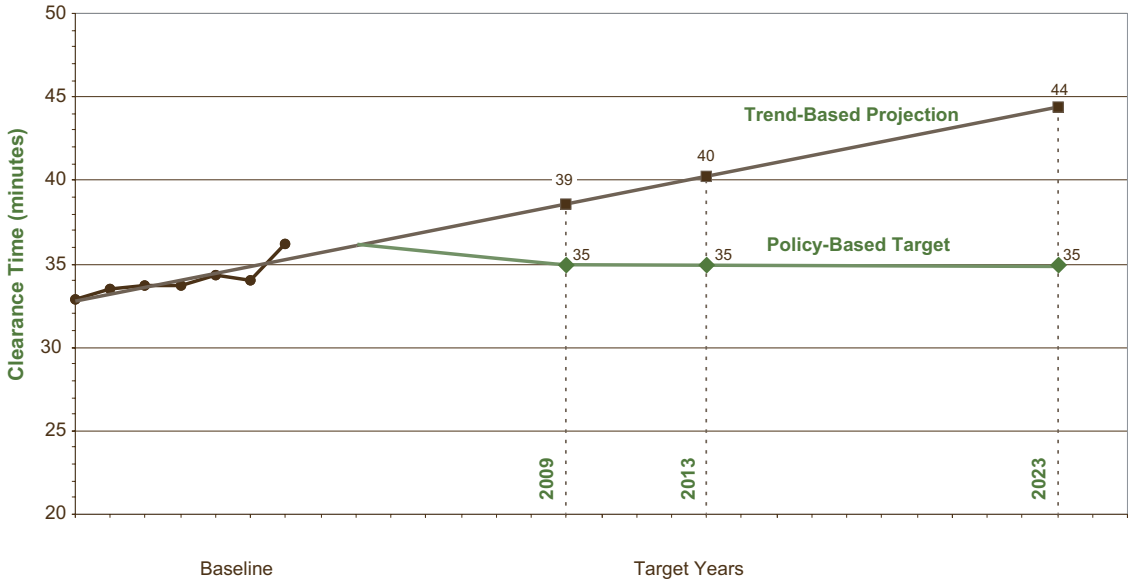
Performance Targets

Data for this measure has been collected since 1993. Since then, the average clearance time has increased from 32 minutes to 36 minutes. The target established reflects the expectation to hold the clearance time near existing levels in order to reduce as much non-reoccurring delay due to incidents as possible.

Targets	2009	2013	2023
Clearance Time (minutes)	35	35	35

The following figure shows the baseline data and targets for this measure.

Figure 6-9: Average Clearance Time for Freeway Incidents (Three-Year Moving Average)



Source of Data: Mn/DOT Metro Division

3.1H2 Travel Time Reliability (Ice and Snow Removal)

Number of hours it takes to achieve bare lanes after a weather event ends.

Minnesota has one of the coldest climates in the United States. Snow, ice and freezing rain can occur seven out of the twelve months (October through April). As a result, Minnesotans expect to be able to carry out normal activities through most of weather events, and to have transportation facilities that can safely accommodate travel shortly after the event has passed. State trunk highway routes have been classified by volume into five groups. The top three classifications are addressed by this statewide measure and include: super-commuter, urban-commuter, and rural-commuter routes. The measure identifies a goal for the number of hours after a weather event ends before bare pavement is provided in the "wheel track" portion of the driving lanes. Salt, sand, deicer and brine are applied for snow and ice removal and to achieve bare pavement conditions.

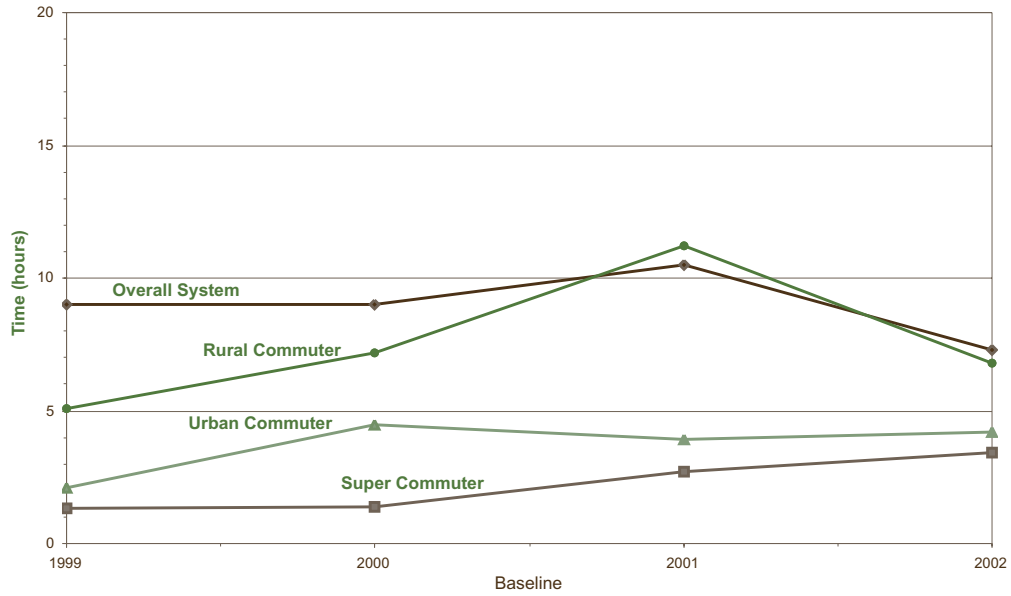
Performance Targets

This is a mature performance measure. Historical trends indicate that average snow removal times generally increased between 1999 and 2001. Rural commuter routes and overall system clearance time improved in 2002. The targets reflect customer expectations, Mn/DOT's commitment to provide reasonable service to highway users, and historical snow and ice removal times. Snow removal time is a function of manpower, chemical usage, time of day and type of weather/storm. A trendline was not created for this measure because the data does not provide a good basis for projections.

Targets	2009	2013	2023
Super Commuter (hours) 30,000+ vehicles/day	1-3	1-3	1-3
Urban Commuter (hours) 10-30,000 vehicles/day	2-5	2-5	2-5
Rural Commuter (hours) 2-10,000 vehicles/day	4-9	4-9	4-9
Overall System (hours)	10	10	10

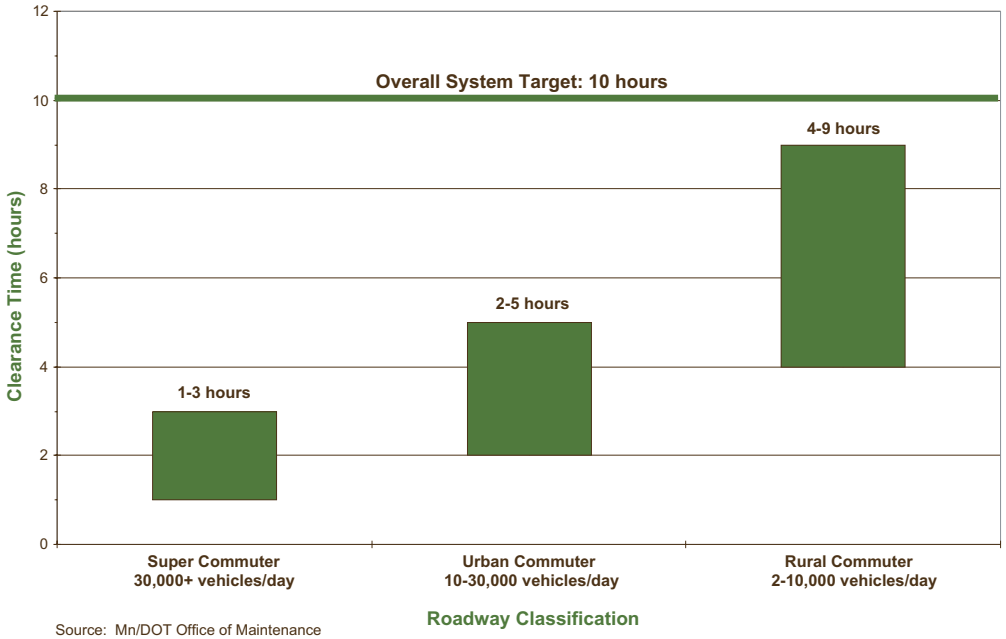
The following figures show the baseline data and targets for this measure.

Figure 6-10: Time to Clear Highways Following Weather Events: Historical Data



Source: Mn/DOT Office of Maintenance

Figure 6-11: Clearance Time Targets for Snow and Ice Removal (Years 2009, 2013 and 2023)



Source: Mn/DOT Office of Maintenance

3.2H Travel and Flow Management (Highways)

Percent of Principal Arterial corridor-miles in Regional Trade Centers 0 and 1 that are highly, moderately or minimally managed.

As traffic volumes increase and corridors become congested, corridor management becomes critical to help them function at peak levels. Management systems are used to get the most out of the transportation systems by reducing clearance times, monitoring signal controls, metering freeway entrance rates, implementing Intelligent Transportation System technologies, providing alternatives to single occupancy vehicles, and providing infrastructure to support alternatives to single occupancy vehicles. In areas where congestion is severe, corridors should be highly managed in order to get the most out of the system. Corridors that have moderate congestion should be at least moderately, if not highly managed. In cases where management is no longer feasible or cost effective, the system could be expanded. (For more information on managed corridors, refer to Appendix F.)

Performance Targets

Miles of managed corridors is a new performance measure and baseline data is not available. Once data is collected, targets will be established as part of the Metro Division's 2003 Transportation System Plan update.

Policy 3 Guidance: Effectively Manage the Operation of Existing Transportation Systems to Provide Maximum Service to Customers

During the past 20 years, growth in travel on Minnesota's highway system has far exceeded increases in highway capacity. This is one of the main reasons why congestion has become a critical problem. (In 2001, the Texas Transportation Institute ranked the TCMA as the metropolitan area with the second fastest growth in congestion.) Incidents are another major contribution to congestion, but are also affected by capacity-related congestion. Non-recurring incidents, including crashes, snow, rain, construction and maintenance activities, have been identified as the cause of more than half of all delays, according to Federal Highway Administration estimates. Unanticipated delay is especially frustrating for motorists because they cannot plan for it unless they have access to timely and accurate information.

It is estimated that every minute that an incident is in place results in four to five minutes of additional user delay. Travel management strategies can reduce delay and improve the reliability of transportation systems by ensuring clear and safe roadways and bridges.

Policy 3 Direction

1. Mn/DOT will efficiently manage the existing transportation system to maximize travel reliability and minimize user delay. The person- and vehicle-carrying capacity of existing transportation systems will be increased to the extent possible, by reducing delay and congestion caused by weather events and incidents and by implementing travel demand and flow management systems.

2. Mn/DOT will manage lane closures during construction and maintenance activities to reduce traffic impacts and motorist delays while promoting safety for work crews and the traveling public throughout the state.

Policy 3 Strategies

This section contains strategies that Mn/DOT will use, in partnership with other agencies and organizations, to achieve Policy 3. The specific mix of strategies employed will be different from region to region based on the specific conditions and circumstances.

1. Response to Weather Events, Incidents and Crashes
   a. Monitor and evaluate snow and ice clearance procedures, as well as equipment and staffing, and review chemical application techniques to meet snow removal targets and minimize impacts on the environment.
   b. Implement procedures for responding to events such as flooding, tornado/wind damage, mudslides, etc.
   c. Monitor incident clearance times and work with agencies to allocate appropriate responder units (e.g., incident response teams, motor carrier response team, state patrol, emergency services) and to develop better strategies for responding to incidents. Assemble a multi-agency team to regularly review incident clearance issues and identify appropriate strategies to improve response and clearance times.
   d. Improve procedures and protocols that define roles and responsibilities for incident and emergency response agencies once at the scene of an incident.
   e. Promote deployment of technology to aid incident clearance (e.g., scene mapping, crash measurement technology, crash reconstruction software, air support, cameras and mobile data computer deployment).
2. Management of Construction/Maintenance Activities
   a. Provide contract incentives for on-time or early completion of construction and/or maintenance projects to reduce congestion and user delays (e.g., design-build, A+B Contracting). At the same time, use penalties for late completion.
   b. Balance impacts of construction and/or major maintenance activities that affect traffic flow so as to minimize impacts to the public during peak travel periods. In addition, construction work should minimize, as much as possible, road closures, detour lengths and total construction time.
   c. Develop and implement early weather detection systems so that maintenance activities can effectively respond to weather events (e.g., road/weather information systems, bridge deicing systems, pavement sensors, and weather information).
3. Congestion Management
   a. Assess corridor level of congestion and manage corridors accordingly. Severely congested corridors should be highly managed, moderately congested corridors should be at least moderately managed, and minimally congested corridors should be minimally managed. Identify, for these corridors, level of congestion and potential travel flow

management techniques that would address specific travel flow and reliability issues (see Appendix F). Examples of management strategies to consider are:

- Transit advantages (e.g., ramp meter by passes, bus-only shoulders, exclusive bus/carpool lanes, transfer points/hubs).
- Intelligent Transportation Systems (e.g., closed-circuit television, loop detectors, ramp metering, advanced traveler information systems, variable messaging and arterial signal coordination and signal preemption for buses).
- Other management strategies (e.g., travel demand management, incident management, road pricing, use of contra-flow lanes, and use of shoulders during peak or recreational periods).

b. Develop consistent definitions of congestion as well as applicable management strategies in Regional Trade Centers 0 and 1.

c. Enhance communication dissemination methods (e.g., radio, TV, Web sites, personal digital assistants, cellular phones) to reach the public with up-to-date information on transportation systems, traffic, weather, and incident and roadway conditions (Advanced Traveler Information Systems).

d. Continue to work with planning organizations, local agencies and the private sector on travel demand management options.

e. Periodically assess customer expectations with respect to snow removal, incident response and congestion management to ensure that performance levels reflect customer expectations.

f. Pursue use of road pricing as a means to utilize excess highway capacity and to moderate overall roadway demand.

g. Investigate non-traditional management strategies to reduce delays, improve system efficiency and reduce peak traffic demand (e.g., use of strengthened shoulders for peak period traffic or peak recreational travel, use of contraflow lanes, and use of high-occupancy vehicle lanes by general traffic during off-peak periods).

Other Policy 3 Strategies

Strategies have been developed for other Statewide Transportation Plan policies that complement or support the outcomes identified for Policy 3. Strategies developed for Policy 5 (Interregional Corridor Mobility) and 6 (Mobility within Regional Trade Centers) focus on travel time reliability and congestion reduction. Policy 7 (Increase Safety and Security) focuses on safety and reducing the number of crashes. Strategies that reduce number of crashes also help reduce overall incident clearance time because there are fewer crashes to clear.

Coordination and Partnerships

Partners with whom Mn/DOT will continue to work to implement the guidance policy strategies include the Department of Public Safety, the Metropolitan Council and Metro Transit, and various transportation management authorities around the Twin Cities metropolitan area.

Policy 4: Provide Cost-Effective Transportation Options for People and Freight

Outcome Statements:

a. Competitive transit options will be available to transit-dependent and transit-choice customers where they are efficient, cost-effective, and have local support.

b. Transit advantages on trunk highways will be provided in at-risk and congested corridors during peak periods.

c. Competitive and integrated options for shipping freight will be available.

d. Travelers and freight will have access to important national and international destinations at competitive costs and predictable travel times.

The next section (Performance Measures and Targets) explains the measures that will be used to achieve the outcomes for Policy 4. Measures and targets include the following:

4.1A Amount of Facilities/Services Provided (Scheduled Air Service)
Percent of population within one hour's driving time of airports with scheduled service.

4.1P Amount of Facilities/Services Provided (Pedestrian and Bicycle Facilities on IRC Crossings)
Percent of crossings of Interregional Corridors with appropriate bicycle and pedestrian accommodations.

4.1PR Amount of Facilities/Services Provided (Dedicated Alignment Transitways)
Completion of evaluations of cost-effectiveness for designated potential local passenger service corridors.

4.1T1 Amount of Facilities/Services Provided (Greater Minnesota Passenger Bus Service Hours)
Percent of bus service hours required to meet transit needs targets identified in the Transit Plan for Greater Minnesota.

4.1T2 Transit Advantages on Trunk Highways (Bus-only Shoulders)
Miles of bus-only shoulders along trunk highways in the Twin Cities area.

4.2T1 Amount of Travel (Non-Auto Trips)
Number of commuter person trips in Regional Trade Centers 0 and 1 that use modes other than auto.

4.2T2 Amount of Travel (Auto Occupancy)
Average auto occupancy in Regional Trade Centers 0 and 1 during peak periods.

4.3A Access between Ports/Terminals/Major Generators and Transportation Corridors (Airport)

Percent of airports with scheduled service that have appropriately designed access to Interregional Corridors.

4.3F Access between Ports/Terminals/Major Generators and Transportation Corridors (Ports and Terminals)

Percent of major freight generators with appropriately designed roadway connections to Interregional Corridors and other major rail and water corridors. Major freight generators include commercial water ports and terminals, rail terminals, truck terminals, intermodal facilities, and other major freight generating facilities and transfer points.

Performance Measures and Targets

4.1A Amount of Facilities/Services Provided (Scheduled Air Service)

Percent of population within one hour's driving time of airports with scheduled service.

The availability of transportation options is important for the State of Minnesota. One option that is particularly important is scheduled air service. Scheduled air service is used by Minnesotans to access national and international recreational and business destinations. Scheduled air service is also important for Minnesota businesses to reach their national and international customer base.

Although Mn/DOT does not have direct control over airports in the state, it can influence investments in many of the regional airports with the exception of the Minneapolis - St. Paul International Airport, which is controlled by the Metropolitan Airports Commission. Investments in runways and terminals in regional airports provide opportunities for commercial carriers and providers of scheduled service to establish service in areas outside of the Twin Cities metropolitan area.

Since 1991, Mn/DOT has been measuring the proximity of Minnesota's population to regional airport facilities that provide scheduled service. Mn/DOT considers it reasonable for individuals to travel up to one hour to get to a facility that provides scheduled air service. Travel up to one hour is comparable to other states in the region.

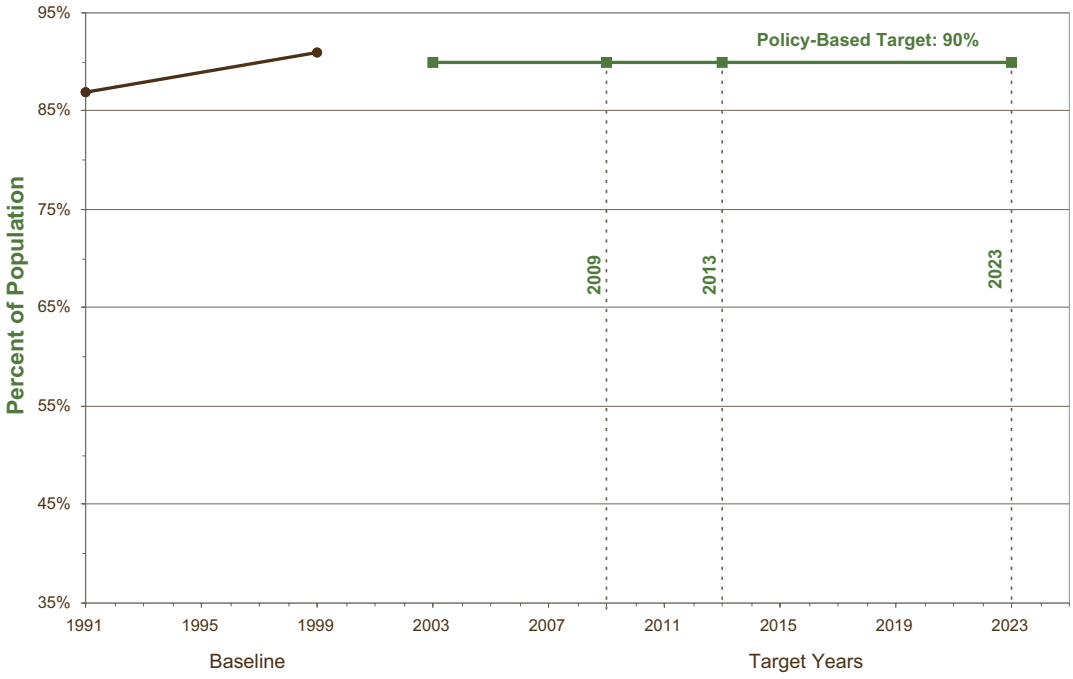
Performance Targets

Population near scheduled air service is a mature performance measure. Data for this measure has been collected since 1991. Historical data indicates that approximately 90 percent of the population is within an hour of scheduled air service. The target established reflects the expectation to hold the population within one hour at 90 percent. It is likely that the percent of Minnesotans within one hour of an airport with scheduled service will increase as the population continues to concentrate in larger regional trade centers.

Target	2009	2013	2023
Percent of Population Within One Hour	90	90	90

The following figure shows the baseline data and targets for this measure.

Figure 6-12: Population Within One Hour of Scheduled Commercial Service



Source: Mn/DOT Office of Aeronautics

4.1P Amount of Facilities/Services Provided (Pedestrian and Bicycle Facilities on Interregional Corridor Crossings)

Percent of crossings of Interregional Corridors with appropriate bicycle and pedestrian accommodations.

Pedestrians and bicyclists are becoming more visible users of the transportation system. The needs of these users can be in conflict with other users of the highway system, especially when major roadways such as Interregional Corridors become barriers to pedestrian and bicyclist mobility.

To address the roadway crossing needs of bicyclists and pedestrians, a new measure is proposed. The new measure evaluates the percent of roadway crossings of Interregional Corridors (IRCs) that have appropriate bicycle and pedestrian accommodations. Crossings of IRCs include, grade-separated facilities, existing signalized intersections, off-road paved paths or trails, and facilities with low traffic volumes.

Mn/DOT will develop guidance for bicycle and pedestrian crossings of Interregional Corridors. A multidisciplinary team that balances safety, design, and user needs should develop the guidance. When completed, the guidance should reflect the consensus of the team on defining what crossings are applicable and what constitutes "appropriate" crossings.

Performance Targets

Because this measure requires developing guidance for pedestrian and bicycle crossing of Interregional Corridors, targets will be identified by the end of 2004.

4.1PR Amount of Facilities/Services Provided (Dedicated Alignment Transitways)

Completion of evaluations of cost-effectiveness for designated potential local passenger service corridors.

Commuter rail, light rail transit (LRT) and other emerging passenger rail or dedicated alignment transit options are generally not available for Minnesotans. However, these options will become available starting in 2004 when the Hiawatha Light Rail Transit Line begins operation. This LRT line will provide another transit option for Twin Cities travelers as well as for tourists wishing to travel between downtown Minneapolis, the Mall of America, the Minneapolis - Saint Paul International Airport and other intermediate destinations.

Previous studies have identified and prioritized potential local rail passenger corridors in and around the Twin Cities. Evaluations that focus on the practicability of implementation of these routes are needed, especially to gauge their cost-effectiveness in comparison to other travel choices.

Performance Targets

In addition to an operating Hiawatha LRT line, previous regional and state long range transportation plans have presumed the need for passenger transit service in the Northstar, Red Rock, and Central corridors as well as one additional corridor yet to be determined. In addition, the Metropolitan Council is pursing a dedicated busway in the Northwest Corrirdor, from Rogers to Minneapolis. Evaluations are needed that weigh the social-economic and environmental impacts of these concepts and that focus on whether they can be brought into service in ways that can be demonstrated to be cost effective and that demonstrate local support to their development.

Targets	2004	2006	2010
Completion of Cost-Effectiveness Evaluations	Northstar Corridor	Central Corridor	Red Rock Corridor

4.1T Amount of Facilities/Services Provided (Greater Minnesota Passenger Bus Service Hours)

Percent of bus service hours required to meet transit needs targets identified in the Transit Plan for Greater Minnesota.

Local agencies (cities, counties, regional authorities, etc.) provide regularly scheduled bus service or dial-a-ride services (where customers call to arrange for a small bus or van to pick them up and take them to their local destination). Mn/DOT contributes funds to local agencies for development and operation of these systems. Additional service is needed to adequately meet transit demands in Greater Minnesota. The aging population and growing immigrant populations will increase demand for transit services in Greater Minnesota.

Mn/DOT has estimated transit service hours required to adequately meet passenger demand. Bus transit needs in the Twin Cities metropolitan area are under the purview of the Metropolitan Council and selected communities within the area.

Performance Targets

Mn/DOT has completed an update to its long-term Greater Minnesota Transit Plan, which includes targets for the amount of passenger service required to meet needs. The targets are expected to meet 80 percent of the state's transit needs by 2009; 85 percent of the needs by 2013; and 90 percent by 2023. By way of comparison, approximately 72 percent of the needs were met in 2000.

Targets	2009	2013	2023
Percent of Transit Needs Met	80	85	90
Millions of Bus Service Hours	1.35	1.55	2.05

The following figure shows the baseline data and targets for this measure.

Figure 6-15: Percent of Bus Service Hours Required to Meet Needs Targets (Greater Minnesota)

Source: Mn/DOT Office of Transit

4.1T2 Transit Advantages on Trunk Highways (Bus-only Shoulders)

Miles of bus-only shoulders along trunk highways in the Twin Cities area.

Bus-only shoulders on trunk highways, help to moderate congestion by helping to make transit an efficient alternative to travel in single occupant vehicles. By allowing busses to travel on the shoulder, as needed to by-pass congested highway segments, bus service can maintain performance and minimize travel time, even on routes that typically experience severe congestion during peak periods.

Performance Targets

The performance target over the coming 20 years is to complete construction, where feasible, of bus-only shoulders on the trunk highway facilities that are part of the Twin Cities area urban freeway system and to maintain those transit advantage investments. There are currently 195 lane-miles of bus-only shoulder on the system, and up to 125 additional miles are planned for. The oldest bus-only shoulder segments are over 10 years old and require reconstruction as will other segments as they age. Over the past decade, roughly 20 miles of bus-only shoulder have been built annually. The performance target for this measure will build or re-build an average of 20 miles of this system each year.

4.2T1 Amount of Travel (Non-Auto Trips)

Number of commuter person trips in Regional Trade Centers 0 and 1 that use modes other than auto.

The number and percentage of users that use transportation options other than the automobile indicate whether the services provided are competitive, and whether commuters view these services as reasonable alternatives to auto travel.

The United States Census Bureau reports non-auto journey-to-work trips every 10 years. The number of non-auto trips is calculated by totaling the number of individuals that work at home, use the bus, walk or bicycle to work. In the future, when new transit options such as light rail and possibly commuter rail transit options are available, these categories will also be included. Because congestion is primarily an issue in the Twin Cities metropolitan area and the level 1 Regional Trade Centers, this measure only applies to trips in these areas.

Performance Targets

Data from the 1980, 1990, and 2000 United States Census indicate that the number of non-auto trips has fluctuated. In 1980, 186,397 non-auto trips were made in the Twin Cities metropolitan area and level 1 Regional Trade Centers. In 1990, this number dropped to 161,564 trips, while data from the 2000 Census indicates that the number of non-auto trips has increased to 213,561 trips.

A 2023 target for this measure was set to reflect a continuing increase of non-auto trips above the 2000 level.

Target	2009	2013	2020	2023
Number of Non-Auto Commuter Trips	244,000	259,000	288,000	300,000

4.2T2 Amount of Travel (Auto Occupancy)

Average auto occupancy in Regional Trade Centers 0 and 1 during peak periods.

Average work trip auto occupancy is an important measure to track as congestion increases in the Twin Cities metropolitan area and in level 1 Regional Trade Centers (Duluth, Fargo/Moorhead, La Crosse/ La Crescent, Rochester, and St. Cloud). In parts of the Twin Cities metropolitan area there are high-occupancy vehicle (HOV) facilities that offer timesaving advantages for those who carpool to work. These advantages will likely take on added importance as congestion increases.

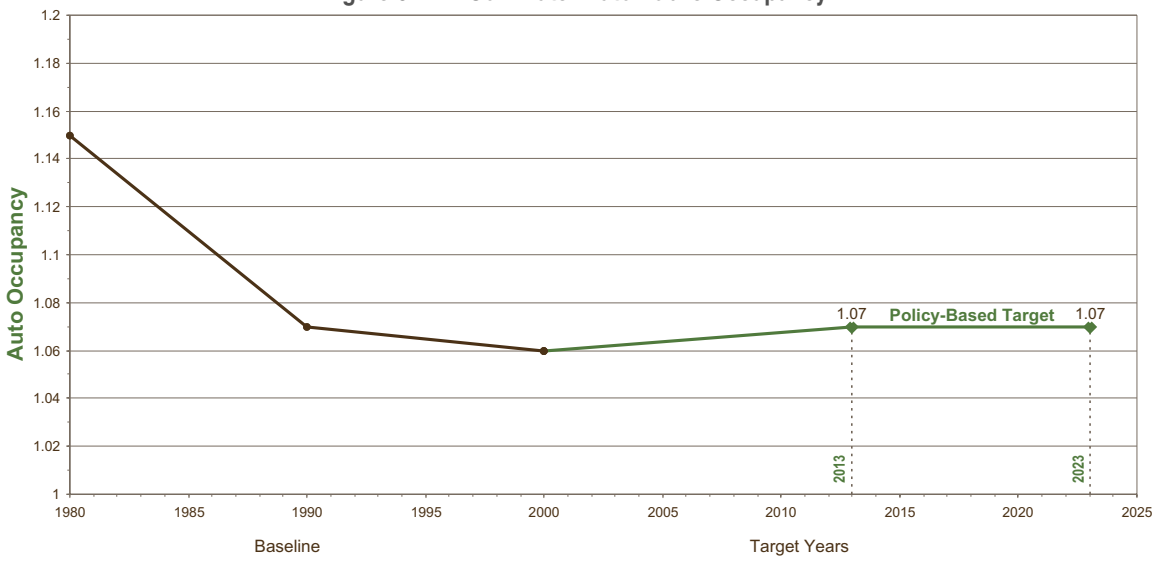
Performance Targets

Historic data from 1980, 1990, and 2000 was obtained from Census data. The data indicates that commuter auto occupancy has been decreasing. In 1980, the average auto occupancy was 1.15 for the Twin Cities metropolitan area and level 1 Regional Trade Centers. By 1990, this number had dropped to 1.07. Data from the 2000 Census indicates that commuter auto occupancy has remained fairly close to the 1990 level of 1.07. Targets for this measure were set to hold auto occupancy at the 1990 level. A target was not set for 2009 due to unavailability of census data.

Target	2013	2023
Commuter auto occupancy	1.07	1.07

The following figure shows the baseline data and targets for this measure.

Figure 6-17: Commuter Automobile Occupancy



Source of Data: US Census Bureau

4.3A Access between Ports/Terminals/Major Generators and Transportation Corridors (Airport)

Percent of airports with scheduled service that have appropriately designed access to Interregional Corridors.

Minnesota's businesses need access to air transportation in order to reach national and international markets and to access resources required to function in today's economy. While Measure 4.1A addresses the proximity of airports to population, this measure evaluates the adequacy of roadway connections between these airports and the Interregional Corridors that serve businesses.

Roadway connections from airports with scheduled service to Interregional Corridors will be evaluated based on their adequacy to accommodate truck movements. Significant impediments to truck movements potentially include: insufficient cross-section to carry the daily vehicular traffic; lack of truck-climbing lanes on steep hills; lack of passing lanes on narrow two-lane roads with limited passing opportunities; shoulders that are unable to support a heavy truck; insufficient shoulder width to accommodate a truck; spring weight restrictions; bridge weight restrictions; low-clearance bridges or tunnels; substandard/unsafe at-grade railroad crossings; poor PSR level; and three or fewer years remaining service life.

This is a new measure for Mn/DOT which is in the process of evaluating the adequacy of roadway connections between Interregional Corridors and airports with scheduled service.

Performance Targets

Because this is a new measure, and the study evaluating the connections between the airports and the Interregional Corridor System is not yet complete, targets for this measure will not be available until the end of 2004.

4.3F Access between Ports/Terminals/Major Generators and Transportation Corridors (Ports and Terminals)

Percent of major freight generators with appropriately designed roadway connections to Interregional Corridors and other major rail and water corridors. Major freight generators include commercial water ports and terminals, rail terminals, truck terminals, intermodal facilities, and other major freight generating facilities and transfer points.

In order to stay competitive in today's economy, Minnesota's businesses need good connections between ports, terminals and freight generators, and Interregional Corridors and water/rail corridors. This measure looks at major freight generators with appropriately designed connections to these corridors.

This is a new measure for the department, and data is not yet available. However, Mn/DOT is undertaking a study to evaluate connections between major freight facilities and generators in the state and Interregional Corridors. Mn/DOT is currently developing a measure that looks at the adequacy of connections between rail

terminals/water ports and major rail and water corridors as part of its Business Plan. Eventually, as the Business Plan measure matures, it will be incorporated into this Statewide Transportation Plan measure.

Performance Targets

As indicated above, data is not yet available for this measure. Targets will be developed by the end of 2004.

Policy 4 Guidance: Provide Transportation Options for People and Freight

The availability of competitive transportation options for moving people and freight efficiently is essential to the state's economic vitality and competitiveness. Furthermore, competitive options also help reduce congestion and improve safety.

Policy 4 Direction

1. Mn/DOT will provide access to transportation services for transit-dependent populations; provide competitive transportation options to single-occupant vehicles for transit-choice users; and encourage competitive options for freight users.
2. Mn/DOT will identify and prioritize corridors where transportation alternatives are needed to help relieve congestion and meet customer demand and where there is an identified market.
3. Mn/DOT will establish a park-and-ride policy to promote transit, bicycle and carpool use.
4. Mn/DOT will evaluate the adequacy of routes connecting airports and freight generators to Interregional Corridors as well as the adequacy of modal connections between freight facilities and rail/water corridors.

Policy 4 Strategies

This section contains strategies that Mn/DOT will use, in partnership with other agencies and organizations, to achieve Policy 4. The specific mix of strategies employed will be different from region to region based on the specific conditions and circumstances.

a. Promote transit programs that provide access to transit-dependent populations.

b. When evaluating transit service options for choice users, balance the type and amount of service with the level of demand and cost-effectiveness of the service.

c. Provide advantages to transit to increase its competitiveness.

d. Design and/or encourage feeder service to regional and interregional passenger service. This could include bus to rail and to air, feeder bus to bus and rail, auto, and bicycle to all modes, etc.

e. Develop a statewide park-and-ride plan to coordinate and promote transit and carpool use.

f. Encourage ridesharing programs by supporting metropolitan transportation management organizations' efforts, as well as the efforts of private businesses and other organizations that seek to increase peak-period vehicle occupancy.

g. Support telework programs to encourage employers to allow employees the option of working from home or from a satellite sites, whenever feasible.

h. Review the adequacy of routes connecting airports and freight generators to Interregional corridors as well as the adequacy of modal connections between freight facilities and rail/water corridors. The goal is to improve the efficiency and reliability of freight travel.

i. Identify and promote competitive freight options that provide access to important national and international markets.

j. Consult customers and stakeholders to ensure that appropriate transportation options are provided to meet the needs of transit-dependent populations and the demand of transit-choice users.

k. Develop guidance for identifying what constitutes appropriate pedestrian and bicycle crossings of Interregional Corridors. This guidance should be developed in coordination with local partners, and reviewed and approved by the Statewide Planning Steering Committee.

Other Policy 4 Strategies

Strategies have been developed for other Statewide Transportation Plan policies that complement or support the outcomes identified for Policy 4. Strategies developed for Policy 1 (Preserve Essential Elements) and Policy 3 (Effectively Manage Operations) also serve to enhance the availability of services and options. Policy 5 (Interregional Corridor Mobility) also serves to enhance intermodal and multimodal connectivity.

Coordination and Partnerships

Mn/DOT can work with a large number of partners to achieve the strategies for this policy. In major metropolitan areas, Mn/DOT should coordinate with metropolitan planning organizations, local transit providers and transportation management organizations for passenger service, and with local port authorities and railroad authorities for freight options. Other partners include interest groups dealing with bicycle and pedestrian issues, and shippers and carriers.

Policy 5: Enhance Mobility in Interregional Transportation Corridors Linking Regional Trade Centers (RTCs)

Outcome Statement:

a. Travel times for people and freight between Regional Trade Centers will be reasonable and reliable, based on customer expectations.

The next section (Performance Measures and Targets) explains the measures that will be used to achieve the outcomes for Policy 5. Measures and targets include the following:

5.1H Travel Speed (Highways – Interregional Corridors)
Percent of Interregional Corridor miles that meet minimum speed targets.

5.2H Travel Time Reliability (Highways – Peak Period)
Percent of peak period travel that takes no longer than an acceptable travel time. That is, no longer than an "expected" travel time plus some additional buffer.

Performance Measures and Targets

5.1H Travel Speed (Highways – Interregional Corridors)

Percent of Interregional Corridor miles that meet minimum target speeds.

A major challenge for transportation officials is improving mobility or preventing the loss of mobility on Interregional Corridors (IRCs). These corridors connect regional trade centers (RTCs) throughout the state (See Appendix E for map of IRCs and RTCs). Traffic volumes on IRCs have risen by 50 percent in the last 10 years, and are anticipated to double over the next 20 years. Increasing traffic volumes, crashes and development have contributed to capacity problems and longer travel times (slower speeds). The proposed measure identifies the percent of the Interregional Corridor System that functions at or above minimum target levels.

Performance Targets

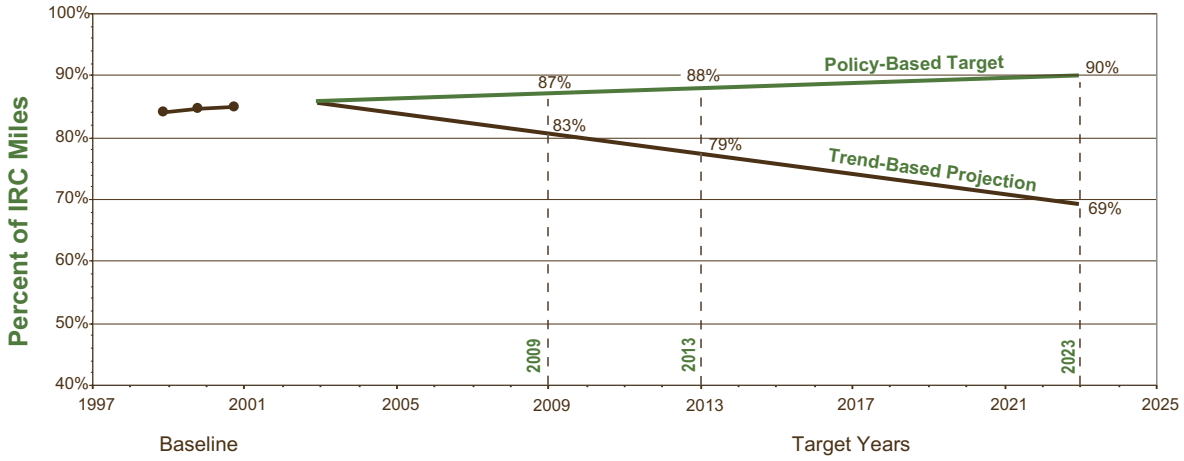
Performance targets were developed by the Interregional Corridor Study and adopted as part of Moving Minnesota 2000. Currently, 86 percent of the Interregional Corridor System meets performance targets. This is projected to decline as growth and traffic volumes increase. Assuming no major capacity improvements nor substantial increase in signal installations, Interregional Corridor performance is expected to decline to 69 percent by 2023. The 20-year performance target is to have

90 percent of the Interregional Corridor system meeting the performance target speeds. This target relies on additional funding to make identified improvements to the system as identified in Corridor Management Plans.

Target	2009	2013	2023
Percent of IRCs Meeting Performance Targets	87	88	90

The following figure shows the baseline data and targets for this measure.

Figure 6-18: Percent of IRC System Meeting Minimum Speed Targets



Source of Data: Mn/DOT Office of Investment Management

5.2H Travel Time Reliability (Highways – Peak Period)

Percent of peak period travel that takes no longer than an acceptable travel time. That is, no longer than an "expected" travel time plus some additional buffer.

While it is important to have acceptable travel times between centers, it is also important that the travel times be reliable. Businesses and other travelers regularly move between regional trade centers, and it is important for them to have some assurance that they will arrive within an acceptable range of travel times. The reliability measure identifies the percent of peak period travel on Interregional Corridors that takes no longer than an acceptable travel time. That is, no longer than an "expected" travel time plus some additional buffer time.

Performance Targets

This measure is considered developmental, and targets have not been established. When data collection is completed, targets will be identified.

Policy 5 Guidance: Enhance Mobility in Interregional Transportation Corridors Linking Regional Trade Centers

People and economic activities are locating in greater numbers in and around Regional Trade Centers. Providing safe and efficient transportation connections between Minnesota's regional centers will ensure competitive access to markets and services and good connections to tourist and recreational areas. Policy 5 focuses on enhancing connections between regional centers by providing reasonable and reliable travel times.

In order for the IRC system to properly function, there must be an adequate supporting roadway system. Mn/DOT's district and metro division planning process will develop performance measures and identify investment needed for the rest of the state highway system to adequately support the IRC system.

To achieve the desired outcomes, the following policy direction and strategies have been identified.

Policy 5 Direction

Connecting Regional Trade Centers through the Interregional Corridor system is one of the key areas where Mn/DOT is focusing its planning and investment efforts. Policies adopted as part of the Interregional Corridor Plan are outlined below. These policies provide direction to local, regional and state agencies.

1. Mn/DOT will work with state and local partners to develop corridor visions and management plans for the Interregional Corridor System. Development of the plans will be based on performance.
2. Mn/DOT will encourage the integrated development of local land use, transportation, and access plans that increase or preserve the mobility on IRC routes. In the absence of a corridor management plan, Mn/DOT will review and approve access changes based on adopted access management guidelines.
3. Mn/DOT will review and refine a process for identifying right-of-way requirements to ensure timely protection and acquisitions so as to preserve Interregional Corridor performance.
4. Investment in Interregional Corridors will be prioritized based on cost-effectiveness and performance criteria for safety, speed and reliability. Interregional Corridor projects will be identified in approved corridor management plans as these plans are completed.

Policy 5 Strategies

This section contains strategies that Mn/DOT will use, in partnership with other agencies and organizations, to achieve Policy 5. The specific mix of strategies employed will be different from region to region based on the specific conditions and circumstances.

a. Develop corridor management plans for all at-risk corridors over the next 20 years. Plans should be developed in accordance with the *Interregional Corridors: A Guide for Plan Development and Corridor Management*.

b. When corridor management plans are prepared, work with the modal offices to ensure that modal plan elements that affect the corridor are incorporated in the analysis. Also identify modal opportunities and issues.

c. To achieve Interregional Corridor targets, evaluate and implement all available system management and travel management strategies if they are cost effective.

d. Give primary consideration to improvements identified in completed corridor management plans.

e. Identify improvements that help achieve reliability targets.

f. Test technological enhancements to existing signalized intersections to assess benefits of providing higher priority to freight movements (e.g., truck priority) on higher-speed, higher-volume roadways (IRCs), thereby improving safety, and minimizing delays and user costs.

g. Balance impacts of construction and/or major maintenance activities that affect traffic flow minimize impacts to the public during peak travel periods. In addition, construction work should minimize, as much as possible, road closures, detour lengths and total construction time.

h. Encourage development of local supporting roadway systems to relieve major routes of shorter trips and provide transportation options during peak travel times.

i. Consult customers and stakeholders to ensure that travel time expectations with regard to speed and reliability are being met.

j. Coordinate corridor management plans and identify implementation strategies where two or more IRCs intersect. Where IRCs connect into the metro area beltway or other major facilities, there should be an evaluation to ensure consistency between IRC plans and metro area plans in terms of implementation strategy and vision. Mn/DOT districts will have compatible plans and implementation schedules for improvements on interregional and other trunk highway corridors that make connections between districts.

k. Work with metropolitan planning organizations, cities, counties, other local government units and state agencies to incorporate Interregional Corridor plans into local, regional and statewide plans.

l. Investigate non-traditional management strategies to improve travel times on high-volume segments that are experiencing congestion problems during recreational or peak periods (e.g., use of strengthened shoulders, use of contraflow lanes, use of road pricing).

m. Encourage intercity transit providers to maintain or improve key intercity transit services.

Other Policy 5 Strategies

Strategies developed for Policy 2 (Support Land Use Decisions), Policy 3 (Effectively Manage Corridors), Policy 4 (Transportation Options) and Policy 6 (Mobility within Regional Trade Centers) complement or support the outcomes identified for Policy 5.

Coordination and Partnerships

This policy requires coordination with numerous agencies and governmental jurisdictions (e.g., Federal Highway Administration, Department of Public Safety, cities, counties, townships, metropolitan planning organizations, regional development commissions, Met Council, transit providers, airlines and freight authorities).

Policy 6: Enhance Mobility Within Major Regional Trade Centers

Outcome Statement:

a. Travel times for people and freight within Major Regional Trade Centers (levels 0 and 1) will be reasonable and reliable, based on customer expectations.

The next section (Performance Measures and Targets) explains the measures that will be used to achieve the outcomes for Policy 6. Measures and targets include the following:

6.1H Travel Time (Twin Cities – Peak to Off Peak Periods)
Twin Cities ranking among metropolitan areas for peak to off-peak travel times as reported by the (Texas Transportation Institute) Travel Rate Index. This measure applies only to the Twin Cities metropolitan area.

6.2H Travel Time Reliability
Percent of peak weekday travel that takes no longer than an acceptable travel time. That is, no longer than an "expected" travel time plus some additional buffer time.

6.3H Duration and Extent of Congestion
Percent of directional urban freeway miles in Regional Trade Centers 0 and 1 that are congested or severely congested.

Performance Measures and Targets

6.1H Travel Time (Twin Cities – Peak to Off Peak Periods)
Twin Cities ranking among metropolitan areas for peak to off-peak travel times as reported by the (Texas Transportation Institute) Travel Rate Index. This measure applies only to the Twin Cities metropolitan area.

Citizens rank congestion within the Twin Cities as one of the most important issues in the region. Congestion also affects businesses who depend on a reliable work force and need to quickly move goods to market. In some instances, the amount of congestion in the Twin Cities can influence whether a company will remain in Minnesota or if it will even choose to locate in the state.

The Texas Transportation Institute routinely analyzes and reports data relating to traffic and congestion within metropolitan areas across the country. The Institute then offers comparisons between the metropolitan areas with regard to the amount of congestion, the growth in congestion and other factors relating to congestion.

Performance Targets

The last report published by the Texas Transportation Institute in 2001 indicated that the Twin Cities was second only to Atlanta, Georgia in the rate of growth in congestion. Targets will be set for this measure in the 2003 update of the Metro Division's Transportation System Plan (TSP).

6.2H Travel Time Reliability

Percent of peak weekday travel that takes no longer than an acceptable travel time. That is, no longer than an "expected" travel time plus some additional buffer time.

While it is important to have acceptable travel times within the larger regional trade centers, it is also important that the travel times be reliable. Businesses, commuters and those traveling in and out of the larger regional trade centers need to have some assurance that they will arrive at their destination within an acceptable range of travel times. To this end, the measure identifies the percent of peak period travel within level 0 and 1 Regional Trade Centers that takes no longer than an acceptable travel time. That is, no longer than an "expected" travel time plus some additional buffer time.

Performance Targets

This measure is considered developmental and targets have not been established. Data will be collected and targets will be set in the 2003 update of the Metro Transportation System Plan. Appendix G provides additional information on travel time reliability.

6.3H Duration and Extent of Congestion

Percent of directional urban freeway miles in Regional Trade Centers 0 and 1 that are congested or severely congested.

Congestion is playing an increasing role in the daily lives of people that live and work in the Twin Cities metropolitan area and level 1 Regional Trade Centers (Duluth, Fargo/Moorhead, La Crosse/La Crescent, Rochester and St. Cloud). As congestion worsens, it is important to understand where the worst congestion is and how long it lasts. This new measure tracks the miles and duration of congestion in these areas.

Currently, this measure will apply only to the Twin Cities metropolitan area urban freeway system. As congestion grows in the level 1 Regional Trade Centers, and as the roadways become instrumented in these areas through regional Transportation Operations Communication Centers (TOCCs), the scope of the measure will be expanded.

Performance Targets

The baseline data indicates that the number of congested miles is increasing and the duration of congestion is also increasing. By 2023, if nothing is done, approximately 37 percent of metro area urban freeways will experience congestion (i.e., speeds below 45 mph), and 15 percent will experience severe congestion (more than 2 hours with speeds below 45 mph). A factor that has contributed to recent growth in congestion on the Twin Cities metropolitan area urban freeway system has been the retiming of ramp

meters. Prior to the ramp meter shutdown experiment in 2000, approximately 16 percent of the system became congested; during the shutdown approximately 23 percent of the system was congested; following the retiming of the meters, it is estimated that 20 percent of the system became congested. Ramp meter retiming also had an impact on the level of severe congestion on the Twin Cities metropolitan area urban freeway system. Prior to the ramp meter shutdown, approximately three to four percent of the system was severely congested; during the shutdown approximately 10 percent of the system was severely congested. Following the retiming of the meters, it is estimated that over 8 percent of the system is severely congested.

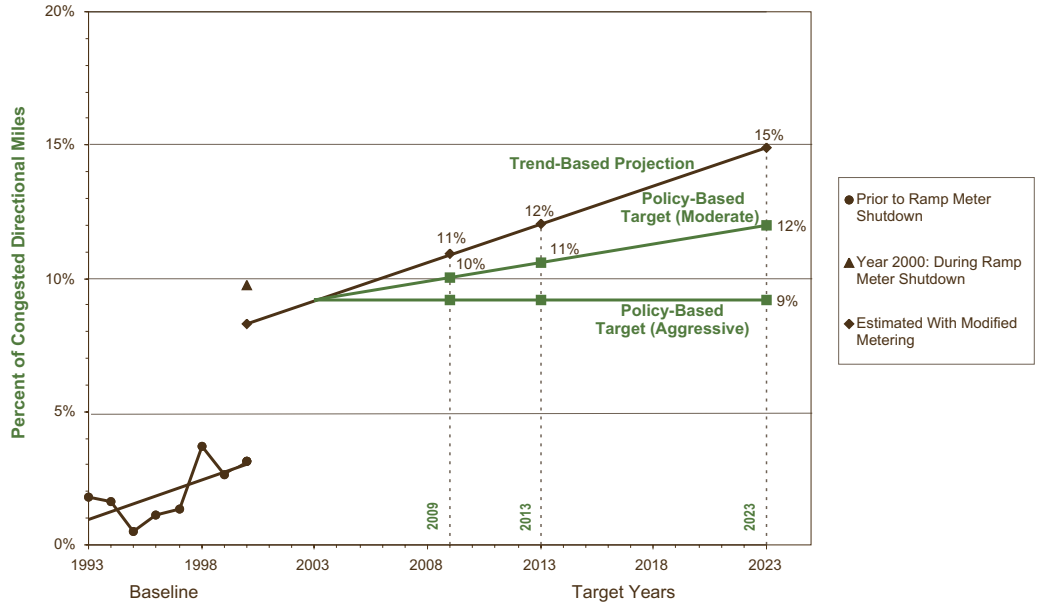
Because of the expected growth in the region's population and even higher growth in vehicle-miles traveled, it is expected that congestion will continue to increase substantially above current levels. Because resources available in any reasonable funding scenario are insufficient to achieve reductions in congestion from present levels, the targets for this measure attempt to control the rate of growth in freeway miles congested. Two sets of targets were developed for this measure. Under a moderate growth in congestion scenario, 31 percent of the urban freeway system in the Twin Cities metropolitan area would be congested and 12 percent would be severely congested by 2023. To achieve this target, capacity improvement strategies and management techniques would have to be implemented to prevent approximately 40 directional miles from becoming congested over the next twenty years. Of these 40 directional miles, 20 will have to come from the severe congestion category.

The second, more aggressive scenario, holds congestion to the levels anticipated in 2003. The targets in this scenario will require not only greater public support for travel demand management, but also implementation of innovative traffic operations/techniques (see Strategies for Policy 6). Meeting the aggressive scenario targets will require significantly higher resources than the moderate targets. Under the aggressive scenario, approximately 20 percent of the urban freeway system in the Twin Cities metropolitan area will be congested and 9 percent of the system will be severely congested by 2023.

Targets	**2009**	**2013**	**2023**
Percent Severely Congested (moderate)	10	11	12
Percent of Severely Congested (aggressive)	9	9	9
Percent of System Congested (moderate)	24	26	31
Percent of System Congested (aggressive)	21	21	21

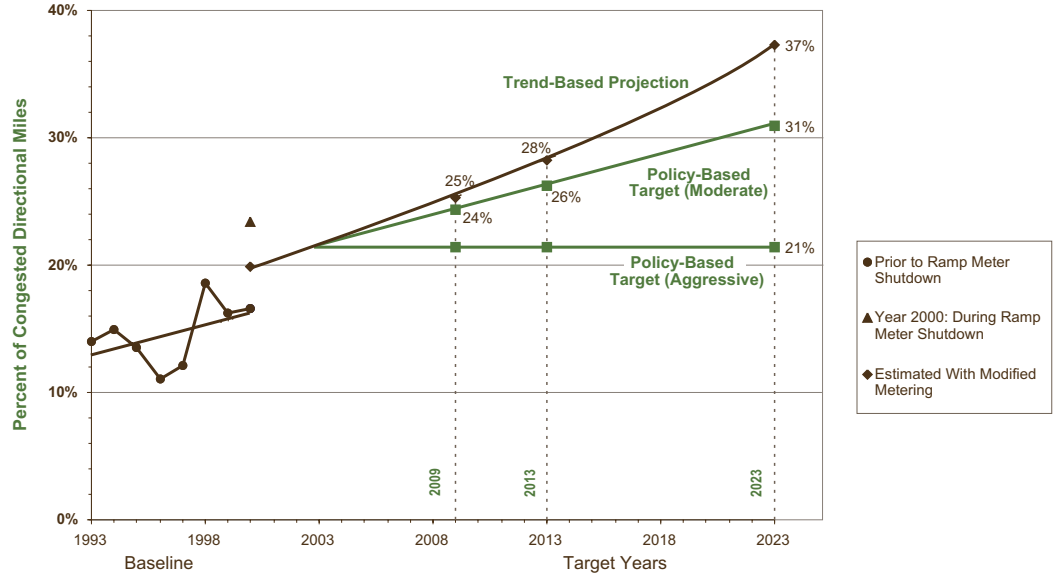
The following figures shows the baseline data and targets for this measure.

Figure 6-20: Percent of Twin Cities Urban Freeway Miles Congested (Severe Congestion)



Source of Data: Mn/DOT Metro Division

Figure 6-21: Percent of Twin Cities Urban Freeway Miles Congested (Total Congestion)



Source of Data: Mn/DOT Metro Division

Policy 6 Guidance: Enhance Mobility within Major Regional Trade Centers

Freight shippers and carriers, commuters, employers and other transportation system users expect reliable and predictable travel times. Traffic congestion levels are on the rise in many urbanized areas of the state. While low levels of congestion may be tolerable, high levels of congestion and delay reduce economic productivity and increase business costs, energy consumption and pollutant emissions. The performance measures in this policy focus on the urban freeway system. However, it is important that the entire urban roadways system function properly. The metro division long-range plan will set performance measures and identify investments needs for the entire metropolitan region highway system. This policy is aimed at reducing the rate of growth in congestion in urban areas.

Policy 6 Direction

1. Mn/DOT will maximize the performance of the existing system (through implementation of Policies 2 and 3), while working to correct bottlenecks and capacity problems in selected corridors where it is cost effective to do so.
2. Mn/DOT will maximize the remaining capacity of existing transportation infrastructure and services through proper design, construction, operations, maintenance and system management.
3. In the Twin Cities, Mn/DOT will focus improvement and expansion investments towards:
   - Relieving bottlenecks on and within the beltway freeway system and improving freeway-to-freeway movements.
   - Improving performance on Interregional Corridors.
   - Implementing Advantages for Transit (Policies 3 and 4).

Policy 6 Strategies

This section contains strategies that Mn/DOT will use, in partnership with other agencies and organizations, to achieve Policy 6. The specific mix of strategies employed will be different from region to region based on the specific conditions and circumstances.

1. Traffic and Demand Management
   a. Improve accident/incident clearance time.
   b. Improve snow and ice removal clearance time.
   c. Increase transit advantages such as park-and-ride facilities and bus-only shoulders.
   d. Increase use of Intelligent Transportation Systems (advanced traveler information about lane closures, detours, weather-related road conditions, incidents, crashes, congestion/delays ahead, estimated travel times, etc.).
   e. Expand use of advanced signal coordination and transit signal priority on arterials.
   f. Implement preferential phasing for through trips on arterials during peak periods.

g. Make spot improvements on arterials to reduce conflicts and improve throughput (access management, intersection geometrics improvements, etc.).

h. Expand use of Travel Demand Management techniques and programs (carpooling/ridesharing programs, flexible schedules, parking disincentives, transit incentive programs, etc.).

i. Consider use of reversible/contraflow lanes during peak periods.

j. Provide incentives to increase non-motorized travel (walking, biking and telecommuting).

k. Expand instrumentation to the entire urban freeway system in the Twin Cities metropolitan area. As needs arise in level 1 Regional Trade Centers, relevant portions of the system should also be instrumented.

2. Planning/Operations

   a. Improve the construction management process to shorten the construction period and to reduce detours and delays.

   b. Prepare plans and designs for congestion reduction projects well in advance of actual construction to ensure prompt delivery if programmed, or to be ready to deliver when funding becomes available.

3. Crash Rate Reduction and Response

   a. Improve crash removal clearance time (through use of greater numbers of state patrols, highway helpers, tow trucks, etc.).

   b. Improve crash response time through the strategic deployment of crash-response teams.

   c. Use more aggressive methods for removing vehicles from the crash scene.

   d. Correct design and operational deficiencies at high-accident locations.

   e. Use advanced technology for conducting scene-of-accident reconstruction.

   f. Alert drivers about upstream congestion and crashes in advance of reaching the site.

4. Bottleneck Removal and Capacity Expansion

   a. Identify and eliminate freeway system bottlenecks (lane drops, complex weaving areas, substandard interchanges and bridges, etc.).

   b. Identify and eliminate selected arterial system bottlenecks (conversion of congested high-volume intersections to interchanges or grade-separations).

   c. Expand lane capacity on congested facilities, particularly where management strategies can no longer reduce congestion.

   d. Consider conversion of selected arterials to expressway design to increase throughput.

   e. Complete construction of the Twin Cities' Beltway to three continuous lanes per direction.

   f. Pursue road pricing as a capacity expansion financing option and means to manage overall vehicular demand.

5. Education
    a. Provide continuing education to drivers about proper driving techniques and driving behavior. The aim is to reduce conflicts, lessen slowdowns and lesson congestion (example of topics: proper merging and weaving, lane changing, driving in work zones, maintaining proper speeds, etc.).
6. Policy/Legislation
    a. Optimize ramp-metering rates at selected ramps to decrease freeway congestion and reduce crashes.
    b. Investigate peak period truck-traffic restrictions to increase total vehicular throughput.
    c. Investigate peak period use of reversible lanes, especially on facilities with high directional splits.
    d. Investigate peak period use of shoulders for vehicular traffic to increase throughput.
7. Additional Strategies
    a. Develop Congestion Management Systems (CMS) tools to assess current levels of congestion and how those levels may change based on traffic growth forecasts.
    b. Consult customers and stakeholders to ensure that their travel time expectations with regard to speed and reliability are being met.

Other Policy 6 Strategies

The ability to achieve the targets identified for this policy, perhaps more than any other policy, hinge on the success of the strategies in other policy areas. Strategies developed for Policy 2 (Support Land Use Decisions), Policy 3 (Effectively Manage Operations), Policy 4 (Transportation Options), Policy 5 (Interregional Corridor Mobility) and Policy 7 (Increase Safety and Security) all are integral parts of slowing the growth of congestion and improving the reliability of the transportation system.

Coordination and Partnerships

In order to achieve this policy, close coordination and cooperation will be required with the Department of Public Safety, local units of governments and metropolitan planning agencies and jurisdictions, particularly the Metropolitan Council. Clear and effective communications will be required with traffic operation centers and media outlets.

Policy 7: Increase the Safety and Security of Transportation Systems and Their Users

Outcome Statements:

a. Crash rates, fatalities and personal injuries will be continually reduced for all modes of transportation.

b. The security of travelers, freight and transportation systems will be maintained.

The next section (Performance Measures and Targets) explains the measures that will be used to achieve the outcomes for Policy 7. Measures and targets include the following:

7.1 Crash Rate (Highways, Passenger Service and Freight)
Annual crash rate on state trunk highways using three-year averages.

7.1A Total Crashes (General Aviation)
Average total general aviation crashes (three-year average) as reported to and defined by the Federal Aviation Administration (FAA).

7.1F Total Crashes (At-Grade Railroad Crossings)
Average total crashes occurring at at-grade railroad crossings as reported by the Department of Public Safety (three-year averages).

7.2 Total Fatalities (Highways, Passenger Service and Freight)
Annual roadway-related fatalities using three-year averages.

7.2A Total Fatalities (General Aviation)
Average annual general aviation fatalities as reported by the FAA for Minnesota.

Performance Measures and Targets

7.1 Crash Rate (Highways, Passenger Service and Freight)

Annual crash rate on state trunk highways using three-year averages.

Highway safety has always been a concern for Mn/DOT, the Federal Highway Administration and the Department of Public Safety. As a result, crash records are available for many years; however, this is the first time that performance targets have been set. The performance measure selected to track crashes on the state highway system is the annual crash rate (using average crash rates for the most recent three years). Based on historical information, crashes on the trunk highway system have remained relatively constant while system use has increased substantially. The increase in system use and the relatively constant number of crashes has resulted in a declining overall crash rate.

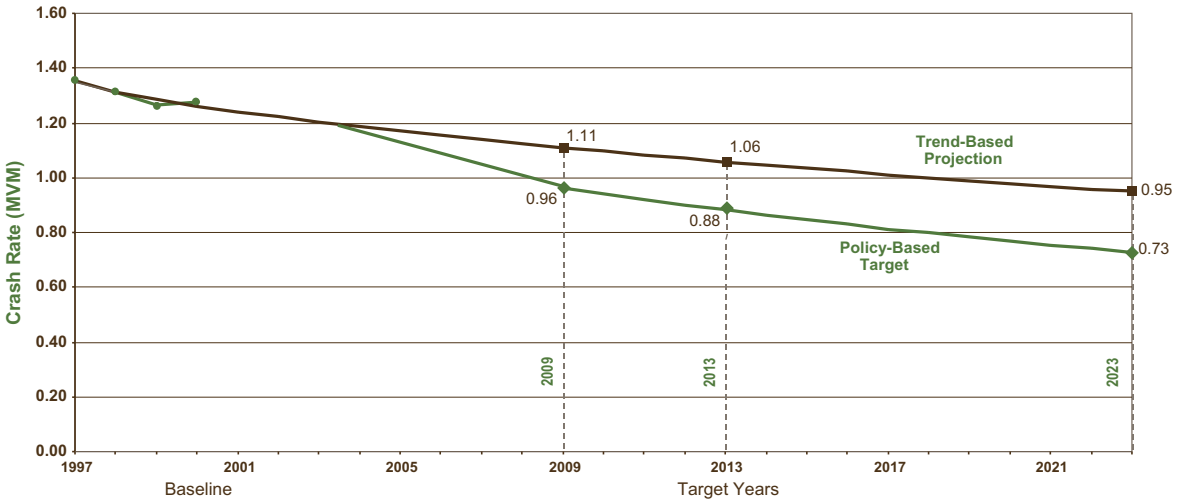
Performance Targets

The three-year average for the total crash rate on the trunk highway system has declined from 1.42 to 1.27 over the last five years. The crash rate performance target was established based on maintaining approximately 38,000 crashes per year, and assuming that system vehicle miles of travel (VMT) will continue to increase by about 2.4 percent per year (as in the past). This understanding of trends results in a target crash rate of 0.73 crashes per million vehicle miles (MVM) in 2023.

Target	2009	2013	2023
Crashes Per MVM	0.96	0.88	0.73

The following figure shows the baseline data and targets for this measure.

Figure 6-22: Crash Rate Targets of Minnesota Trunk Highways (Three-Year Moving Average)



Source of Data: Mn/DOT Office of Traffic Engineering

7.1A Total Crashes (General Aviation)

Average yearly total general aviation crashes as reported to and defined by the Federal Aviation Administration (FAA).

Mn/DOT works closely with all airports in Minnesota to make sure facilities are in good condition and that the best possible flight information (e.g., weather conditions) is available to pilots as they assess their individual flights. Like the measure for highways, data for this measure has been collected by the department for a number of years. Instead of using a crash rate, the measure for aviation tracks the total number of general aviation crashes (there is no data available for the total number of miles flown or flight hours) as reported to and defined by the Federal Aviation Administration (FAA). The FAA has responsibility to investigate each aviation crash

and determine the cause and corrective actions. The average is computed based on the most recent three years of records.

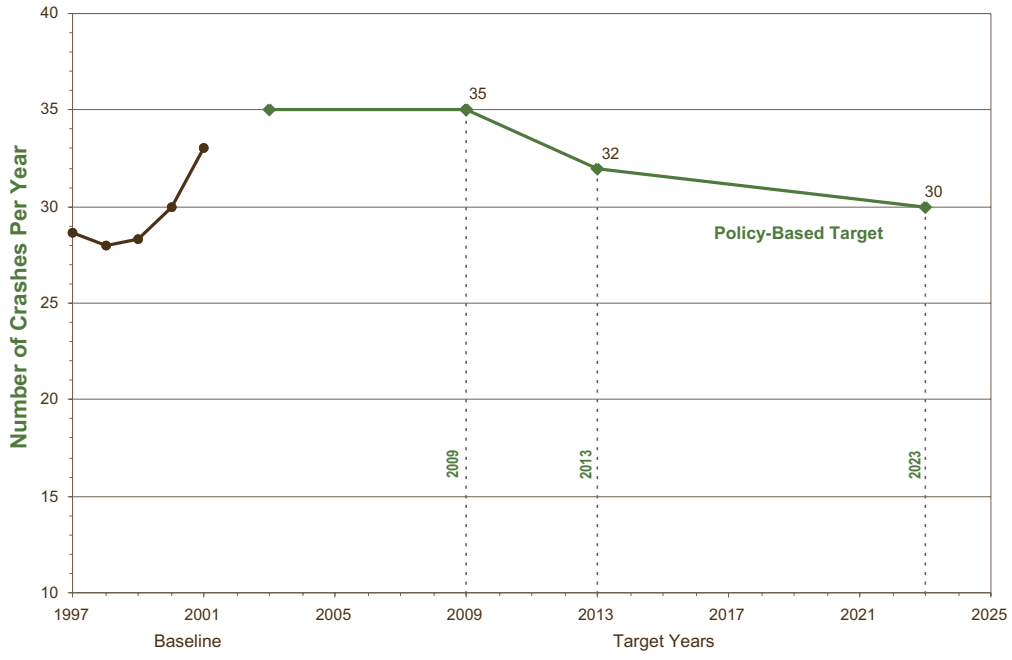
Performance Targets

While aviation crash records have been tracked for many years, this is the first time performance targets have been established. The three-year moving average for general aviation crashes has increased from 31 crashes to 35 crashes over the last five years. Long-term (over the last 15 years), however, the number of crashes has declined. Because the long-term trend both nationally and in Minnesota is a decrease in the total number of crashes, the long-term targets are established to reflect this decreasing trend. Because the most recent data for general aviation crashes is not indicative of the overall trend, a future trendline is not shown for this measure.

Target	2009	2013	2023
Total General Aviation Crashes	35	32	30

The following figure shows the baseline data and targets for this measure.

Figure 6-23: General Aviation Crashes (Three-Year Moving Average)



Source: Mn/DOT Office of Aeronautics

7.1F Total Crashes (At-Grade Railroad Crossings)

Average total crashes occurring at at-grade railroad crossings as reported by the Department of Public Safety (three-year average).

Safety at rail grade crossings is a serious concern for Mn/DOT because these crashes generally result in severe injuries and/or fatalities. Because of the severe nature of these crashes, crashes at all public rail grade crossings have been tracked for many years and safety programs have been put in place to identify the most problematic locations. Mn/DOT tracks crash information reported by the Department of Public Safety and calculates an average number of crashes based on the most recent three-year's records.

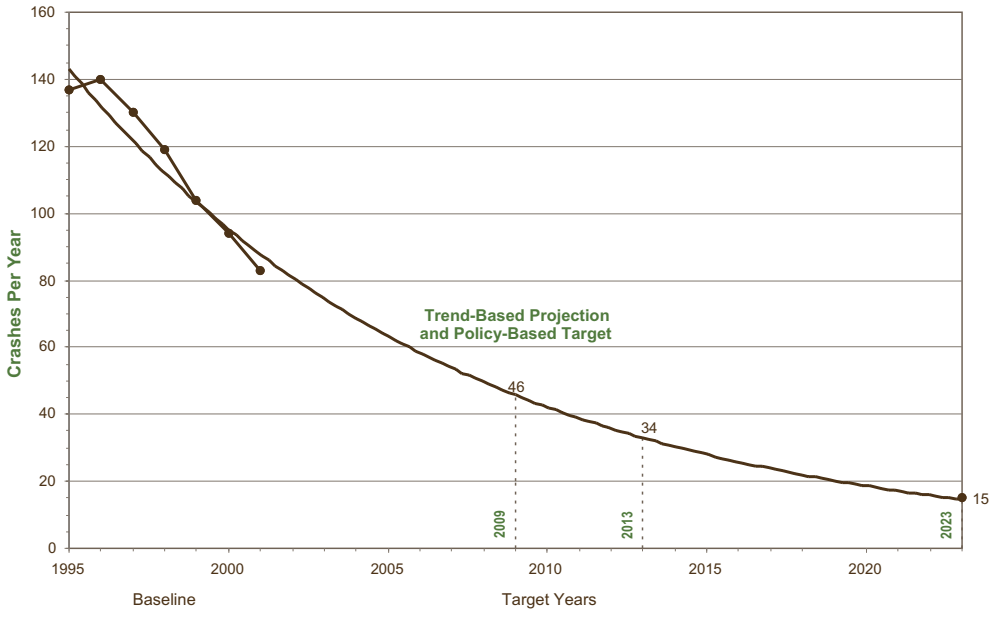
Performance Targets

Significant crash reductions have been achieved since the 1970s due to an increase in active protection measures as well as a reduction in the number of active rail lines and railroad crossings. Since 1995, the number of annual crashes has declined further from 137 to 83 (in 2001). The performance target is to reduce the number of crashes at rail grade crossings by about 9 percent per year over the next 20 years. This will yield a long-term target of 15 crashes in the year 2023.

Target	2009	2013	2023
At-Grade Rail Crashes	46	34	15

The following figure shows the baseline data and targets for this measure.

Figure 6-24: At-Grade Railroad Crossing Vehicle Crashes (Three-Year Moving Average)



Source of Data: Mn/DOT Office of Freight, Railroads and Waterways

7.2 Total Fatalities (Highways, Passenger Service and Freight)

Annual roadway-related fatalities using three-year averages.

Fatalities caused by vehicle crashes place a significant burden on society. The Department of Public Safety (DPS) and Mn/DOT have tracked the number of deaths for many years and have instituted a number of safety and driver education initiatives to reduce fatalities. While the number of deaths and serious injuries has declined from levels in the 1970s, more recent trends suggest that the number of fatalities is increasing. The performance measure for fatalities tracks the average yearly total of all roadway-related fatalities. The average is computed using the most recent three years of data.

Performance Targets

The Federal Highway Administration's (FHWA) national goal is to reduce highway fatalities from 41,800 in 2000 to 33,500 in 2008 (a 2.7 percent per year reduction). Current data suggests that FHWA is not meeting these targets. As indicated previously, the current trend in Minnesota shows an increase in fatalities (0.75 percent per year growth). Based on this trend, reversing the number of fatalities per year to a declining trend is a significant challenge that will require a multi-pronged approach and a significant commitment on the part of agencies, the public and the private sector.

While significant data is available, there has been a reluctance to set fatality targets because many of the causal factors are outside the control of the department. A second reason is that many fatalities appear to occur at random. Notwithstanding the factors just mentioned, the Department of Public Safety has adopted a "Towards Zero-Death Vision" (a policy adopted by some countries and states to reduce deaths on transportation systems). Mn/DOT supports this goal.

Progress to eliminate fatalities requires that targets be set. Two policy-based performance targets have been identified (moderate and aggressive). The moderate policy-based target has been established at 600 fatalities per year in the year 2023. Based on the fatality trends, which suggests that there will be 735 fatalities by 2023, cost-effective safety initiatives are needed in order to achieve a reduction of 135 fatalities per year.

The aggressive target is 550 fatalities per year by 2023. This aggressive target requires an even greater level of public support and coordination with other agencies and associations. Achievement of this target would reflect considerable changes in primary seat belt use and legislative action lowering blood alcohol content limits. (Refer to Table 6.1 for a listing of potential strategies to reduce the number of fatalities on all roadways.)

Targets	2009	2013	2023
Moderate Target	606	604	600
Aggressive Target	590	580	550

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Table 6-1: Potential Strategies to Reduce Fatalities

STRATEGY AREAS	REDUCTION EFFECT		COMPLEMENTARY MEASURES	ACTIONS/COMMENTS/EXPECTED EFFECTS (1)
	FATALITIES	CRASH RATE		
A. LEGISLATION				
1. Primary seat belt law	X		Enforcement/ Education (Ed.)	Increasing use to 85% (from 73%) could save 50 lives/year; 100% use: 100+ lives per year. When ejected or partially ejected, 17% were killed (of total persons killed or injured); when not ejected, 1.2% were killed. Rollovers: account for 32 % of occupant fatalities. 72% of occupants who died were not using seat belts.
2. 0.08% Blood Alcohol Content limit	X	X	Enforcement/ Ed.	Reducing Blood Alcohol Content from 0.10 to 0.08% could save 50 lives annually. Federal funding will be affected starting in federal fiscal year 2004.
3. Graduated driver's license for teens	X	X	Enforcement/ Ed.	
4. Retest older drivers	X	X	Enforcement/Ed.	Testing for useful field of vision: impaired drivers are twice as likely to be in a crash.
B. MANAGEMENT				
1. Improve crash-response time	X			MAY DAY, ambulance/patrol deployment. Emergency response time in rural areas is almost 60% higher than in urban areas.
2. Focus on preventing injuries/fatalities not crashes	X		Maintenance	Select high injury and fatality location not crashes (see Mn/DOT's top 200 & 150 sites).
3. Better linkage of motor vehicle files with crash DB, count-records, law enforcement files	X	X		Automation, Intelligent Transportation Systems (ITS)
C. ENFORCEMENT				
1. Speed limits	X	X	Education	Speed limit non-compliance is a contributing factor in 175 fatalities (28%)
2. Speed limit in Work Zones	X		Education	
3. Seat belt law	X	X	Education	100 percent use could save 100 plus lives per year.
4. Impaired and/or aggressive driving	X	X	Education	Drinking and driving is a contributing factor in 132 fatalities (21%)
D. EDUCATION				Four primary contributing factors are involved in 94% of all fatalities: speed limit compliance (175 fatalities); inattention (152 fatalities); drinking and driving (132 fatalities); and failure to yield right-of-way (126 fatalities).
1. Driver/pedestrian/bike alcohol education	X	X	Enforcement	
2. Teen driver education	X	X	Enforcement	
3. Elderly driver education	X	X	Enforcement	
4. Red-light running	X	X	Enforcement	
E. DESIGN				
System/Corridor Level:				
1. Convert 2-lane, 2-way rural highways to alternate direction passing	X		Maintenance	75% of all fatal crashes occur in rural areas; there were 428 fatalities (68%) on two-lane, two-way roads. Could save 83 lives. Urban crashes typically involve two vehicles (85%); rural crashes involve a single vehicle (55%) except crossing centerline.
2. Install 3-cable barrier	X	X	Maintenance	
3. Upgrade 2-lanes, 2-way rural highways to 4 lanes	X	X		Could save 133 lives. Head-on crashes in rural areas are 2%, but account for 20% of fatal crashes.
4. Increase use of shoulder and centerline rumble strips	X	X		There were 122 run-off-the-road-right fatalities; 82 run-off-the-road-left fatalities; and 130 head-on fatalities.
5. Widen shoulders to 6-8 feet	X	X		Converting 0-, 2- and 4-foot shoulders to 6- and 8-foot shoulders on facilities with over 2,000 ADT would result in a 30 - 40% reduction in crashes.
Spot Improvements:				
1. Close median openings	X	X	Management	Implementation of Access Spacing Guidelines: high correlation between access density and crash rates. For each access closed, 100% of head-on, right-angle and left-turn crashes and 50% of rear-end and side-swipe crashes are eliminated.
2. Remove/add traffic signals		X	Maintenance	Removal: eliminates 90% of rear-ends; add: eliminates 80% of right-angles. Signalized intersections have the lowest percentage of fatal crashes, but higher severity rate.
3. Use signal phasing to decrease crash severity		X	Maintenance	Pedestrian phase: eliminates 60% of crashes involving pedestrians; left-turn phase: eliminates 50% of left-turn crashes and helps older drivers.
4. Relocate utilities/roadside hazards	X	X	Maintenance	Eliminates 60% of fixed-object crashes; 128 persons killed in collisions with fixed objects.
5. Improve lighting, signing, pavement markings and associated maintenance	X	X	Maintenance	Lighting eliminates 50% of night crashes. Under dark conditions/no street lights on: 172 fatalities (28%). Under dark conditions/street lights on: 71 fatalities (11%).
6. Evaluate stop sign deployment	X	X	Management	Review/evaluate stop sign deployment (other than 4-way stops and flashers). A total of 101 of 179 (56%) persons were killed at controlled intersections where 2-way and 3-way stops were present. Stop signs help elderly drivers decide when to take their turn. Evaluate the use of roundabouts.
F. MAINTENANCE / OPERATIONS				
1. Snow/ice removal	X	X	Management	Snow, sleet, freezing rain reported as contributing factor in 36 deaths (6%) and 3,748 injuries (8%). Road surface condition (ice/packed snow/snow/slush) are reported as factors in 85 fatalities (14%) and 7,233 injuries (16%).
2. Crash and stalled vehicle clearance	X	X	Management	

(1) Sources of Data: Minnesota Motor Vehicle Crash Facts 2000; Mn/DOT Office of Traffic Engineering/Safety; Harvard Health Letter, June 2002.

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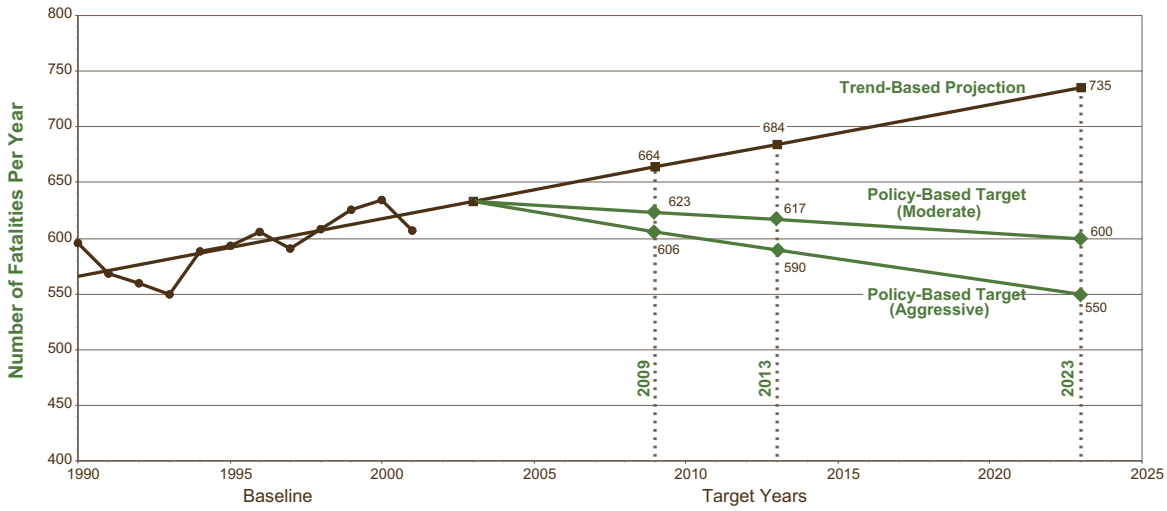
It should be noted that the discussion on previous pages applies to all fatalities on all roadways in Minnesota. For comparison purposes, historical data for fatalities on the Trunk Highway and Interstate System managed by Mn/DOT are shown below:

Fatalities on the Trunk Highway and Interstate Systems (three-year average):

	1997	1998	1999	2000
Number of Fatalities	298	319	331	331

The following figure shows the baseline data and targets for this measure.

Figure 6-25: Minnesota Roadway Fatalities (Three-Year Moving Average)



Source: Mn/DOT Office of Traffic Engineering

7.2A Total Fatalities (General Aviation)

Annual average general aviation fatalities, as reported by the FAA for Minnesota.

Performance Targets

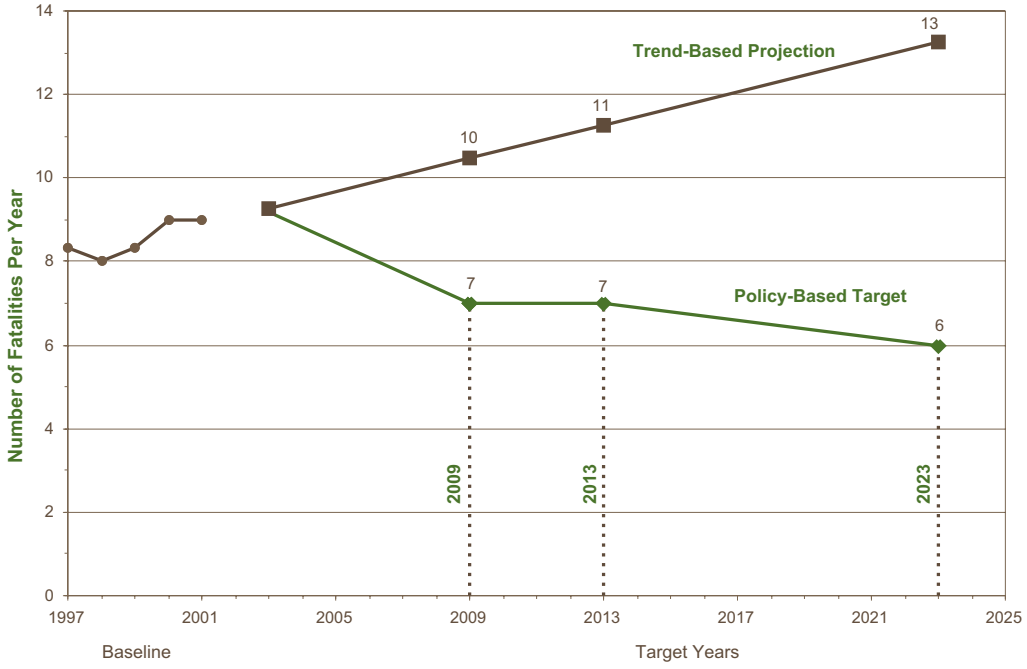
Historic trends show that Minnesota has averaged 37 aircraft crashes per year. Of these crashes, approximately 15 percent result in a fatality. The average number of fatalities per year over the last five years has been 8.2. Because the number of fatalities can vary significantly from year to year, historical data was evaluated using a three-year moving average.

The performance target established by Mn/DOT reduces the number of fatalities due to aircraft crashes to six by 2023. The following table lists the targets for aviation fatalities.

Target	2009	2013	2023
General Aviation Fatalities	7	7	6

The following figure shows the baseline data and targets for this measure.

Figure 6-26: General Aviation Fatalities (Three-Year Moving Average)



Source: Mn/DOT Office of Aeronautics

Policy 7 Guidance: Increase the Safety and Security of Transportation Systems and their Users

Citizens expect safe transportation facilities, and Minnesota's facilities are among the safest in the nation. However, numerous crashes still occur and more can be done to prevent the loss of life, pain and suffering and property damage associated with crashes.

Policy 7 Direction

1. Mn/DOT supports the Towards Zero Deaths Vision. To this end, Mn/DOT supports a multi-faceted, interagency approach to reducing fatalities by a wide variety of strategies, where these are cost-effective and demonstrated to reduce correctable fatalities, including legislation, education, enforcement, system management, design and maintenance.

2. Mn/DOT will continue its efforts to reduce crashes by focusing on roadway segments and intersections that experience high number of crashes and associated costs.
3. Mn/DOT will encourage greater cooperation among transportation agencies, educational institutions, enforcement agencies, emergency response services and private organizations to exert a concerted effort to address safety problems.
4. Mn/DOT will follow the state, the United States Department of Transportation and the American Association of State Highway and Transportation Officials' (AASHTO) directions for increasing the security of transportation systems and their users.

Policy 7 Strategies

Fatalities and crashes have many causes that must be identified and clearly understood. Six distinct strategic areas for focusing safety efforts have been identified for reducing fatalities: legislation, education, enforcement, system management, system design and maintenance. It is important to note that Mn/DOT only has control over the last three of these areas.

This section contains strategies that Mn/DOT will use, in partnership with other agencies and organizations, to achieve Policy 7. The specific mix of strategies employed will be different from region to region based on the specific conditions and circumstances.

1. Safety Strategies
   a. Monitor the safety characteristics of the current systems (highways, intersections, rail crossings, airports) to determine overall crash and fatality trends and causes so that improvements can be targeted to eliminate the root causes and to address the highest risk locations and/or segments.
   b. To achieve the aggressive targets for fatality reduction, Mn/DOT will work with the Department of Public Safety and the public and private sector agencies (e.g., medical sector, emergency response services, insurance sector) to consider legislative initiatives to reduce the number of fatalities and crashes and to achieve the aggressive targets sought (e.g., primary seatbelt law, 0.08 percent blood alcohol content, graduated drivers licenses for teens, sobriety check points, automated red light enforcement).
   c. Support the Department of Public Safety and sheriff's offices in identifying high-crash locations that may benefit from additional enforcement (e.g., speeding, DWI, seatbelt usage).
   d. Work with local units of government to raise awareness of fatalities on local transportation systems and establish task force groups to identify potential programs and to target problem areas.
   e. Work with the Department of Public Safety and private sector interests to identify educational initiatives that will help improve driver skills and promote better driving behavior (e.g., incentives for web-based driver education). Focus initiatives on high-risk groups (e.g., young and elderly drivers). In addition, explore knowledge of current traffic rules and laws to determine potential benefits of requiring periodic updates of written driver's test. Explore use of refresher courses offered on the Web, with automatic submission to insurance companies for possible credit.

f. Develop and implement communication strategies to increase awareness of safety issues and practices for vehicle operators (e.g., excessive speed, seat belt use, defensive driving, driver inattention, driving under the influence, lack of sleep).

g. Ensure that all planning and corridor studies include system safety analysis to identify potential safety problem areas as well as potential access and safety improvements that will reduce the number and severity of crashes.

h. Conduct railroad corridor analyses to address issues such as unsafe at-grade crossings, and to identify potential crossing consolidation or closures, selected replacement with over/underpasses, improved warning/safety systems to reduce crashes and fatalities.

i. Improve information available to freight carriers and pilots (e.g., weather, road and water conditions, training, regulations).

j. Consider implementing innovative safety systems (e.g., centerline rumble strips, wider pavement markings, wider shoulders, cable barriers separating two-lane traffic) to reduce the number of run-off road crashes and/or vehicles crossing the centerline into oncoming traffic. These crashes tend to be on higher speed roadways and result in more severe injuries and fatalities.

2. Security Strategies

Work with the Federal Motor Carrier Safety Administration, carriers and shippers of hazardous materials and other associations representing trucking companies/truckers that transport high-risk commodities which may pose a threat to the safety and security of the transportation infrastructure and the users of transportation systems.

In response to the events of September 11, 2001 Mn/DOT has created two teams to pursue transportation security issues. One team will focus on internal issues such as the security of Mn/DOT buildings and staff. Another, external security team, will focus on the security of external assets such as bridges, roadways, and transit facilities. The objectives for these teams are as follows:

- Identify critical highway assets and their potential vulnerabilities.
- Develop action plans/countermeasures to enhance existing capability to detect, deter and/or minimize the consequences of disasters.
- Revise existing emergency response plans so Mn/DOT can effectively carry out coordinated response duties and sustain core businesses during and after a crises.
- Prioritize and estimate the costs of putting Mn/DOT plans into action.
- Liaison and coordination with national, state and local security agencies/task forces/transportation industry representatives (public and private).

In 2003 Mn/DOT security teams will be pursuing these objectives. During this process specific performance measures will begin to emerge. It is recommended that these security teams work in partnership with other Mn/DOT staff to formalize and propose potential security performance measures to the Statewide Planning Steering Committee for approval.

Other Policy 7 Strategies

Strategies developed for Policy 2 (Support Land Use Decisions), Policy 3 (Effectively Manage Operations), Policy 5 (Interregional Corridor Mobility), and Policy 6 (Mobility within Regional Trade Centers) also complement and support the outcomes identified for Policy 7.

Coordination and Partnerships

This policy requires coordination with numerous agencies, governmental jurisdictions and private organizations, including: the Federal Highway Administration, the Transportation Security Administration, the Department of Public Safety, cities, counties, metropolitan planning organizations, regional development commissions, the Metropolitan Council, airport authorities, medical organizations, insurance industry, and the Legislature.

Policy 8: Continually Improve Mn/DOT's Internal Management and Program Delivery

Outcome Statements:

a. The delivery of transportation projects and services will be streamlined, resulting in reduced project development time, while improving cost effectiveness and maintaining quality.

b. Transportation projects will be completed on the schedule promised to the public, contractors, and affected communities.

c. Mn/DOT will achieve the best value from tax dollars by optimizing the cost effectiveness of administrative and program delivery expenditures throughout the department.

Mn/DOT is engaged in several major management initiatives aimed at yielding greater value to the public and its customers for each transportation dollar. These initiatives reduce unnecessary steps in the development of transportation projects and put more accountability and resources in the districts and offices where projects are delivered – closer to customers.

Mn/DOT is moving toward performance-based management. By using quantitative measures of performance, resources are directed to solving important transportation problems and generating benefits for customers.

In the 2004-2005 state budget cycle, resources will be allocated through Activity Based Budgeting and guided through a business plan. The business plan is tied to performance targets for every major product and service. Business units within Mn/DOT are encouraged to prioritize available resources to begin to close the gap toward short- and long-term performance targets. In some cases, where targeted performance levels are exceeded, resources can be redirected to areas in greater need. This management system will be further advanced in the 2006-2007 biennium. At the same time, work plans and dashboards are increasingly being used throughout Mn/DOT for real-time performance management. For example, monthly and quarterly dashboard reports are used to help keep major projects on schedule.

The next section explains the measures that will be used to achieve the outcomes for Policy 8. It includes two measures for construction project development and one measure for administrative overhead. Streamlining project development is a major focus for Mn/DOT. In the area of maintenance, cost-effectiveness of individual services such as snow and ice removal is being monitored, but measures are not included here. Measures and targets include the following:

8.1 Construction Project Timeliness

Percent of Mn/DOT projects in the first year of the State Transportation Improvement Program that are let for construction in that same planned year.

8.2 Construction Project Cost Deviation - Preconstruction

Percent variation in major projects' cost from estimates when projects first enter the State Transportation Improvement Program (STIP) to actual cost when let for construction.

8.3 Administrative Support Rate

General Administrative expenditures as a percent of total expenditures.

Performance Measure and Targets

8.1 Construction Project Timeliness

Percent of Mn/DOT projects in the first year of the State Transportation Improvement Program that are let for construction in that same planned year.

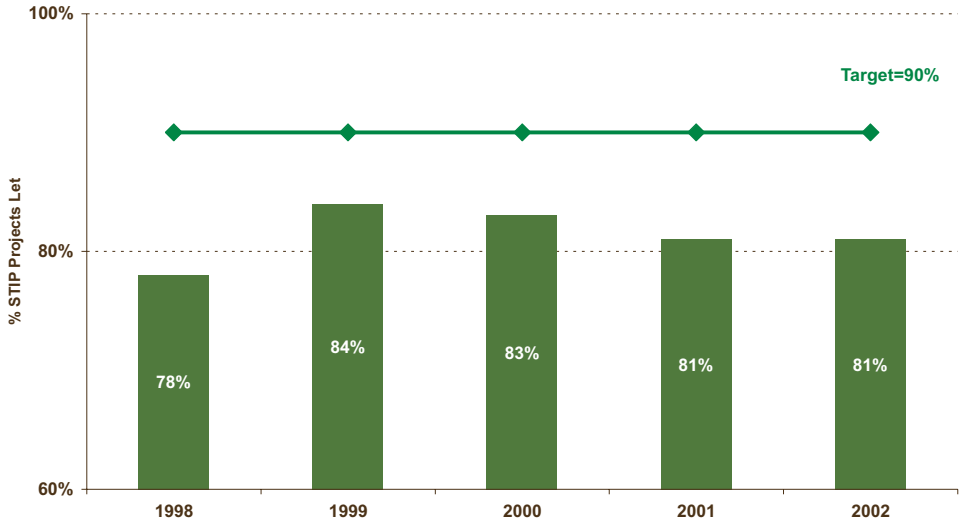
Every year Mn/DOT commits to a three-year published program of transportation projects, the State Transportation Improvement Program (STIP). This Program includes projects of all sizes and types throughout the state. Citizens, businesses and landowners, local governments, and contractors in the affected communities rely on the information in the STIP to adequately prepare for future construction projects. To enhance accountability for delivering projects on schedule, Mn/DOT has established a measure to track the letting of projects listed in the first year of the STIP. Data is collected from Mn/DOT's Project Management System.

Performance Targets

Mn/DOT has an ongoing target for 90 percent of projects in the first year of the program to be let for construction in that same planned year. Performance came close to the target, within 9 percent, every year from 1999 to 2002. Although the department would like to deliver all projects as scheduled, the variability of construction projects make a higher target inappropriate and perhaps unachievable. Important design or community concerns, or fiscal shortages may delay a few projects.

The following figure shows the baseline data and target for this measure.

Figure 6-27:
Percent of Projects in First Year of the STIP let in their Planned Year



8.2 Construction Project Cost Deviation - Preconstruction

Percent variation in major projects' cost from estimates when projects first enter the State Transportation Improvement Program (STIP) to actual cost when let for construction.

Recently Mn/DOT began to annually update cost estimates for projects under development, using a uniform methodology and adjusting for inflation. Controlling scope and cost "creep" in projects is important to containing spending and meeting budgets. This measure tracks how much costs change from when major projects enter the 3-year State Transportation Program Improvement Program (STIP) to the time they are let for construction. It measures the change in the total program cost of Major Construction, Bridge Replacement and Reconstruction projects, the three largest types of projects. It excludes smaller resurfacing, repair and enhancement projects. At this time the measure counts only construction costs, not right-of-way and engineering costs.

Only one year of baseline data is available. Seventy-four major projects let for construction in fiscal year 2002 experienced, in total, a 29 percent increase in cost at letting for construction from when they had first entered the STIP three years earlier.

Performance Targets

A target will be set when more baseline data is developed.

8.3 Administrative Support Rate

General Administrative expenditures as a percent of total expenditures.

This measure reflects Outcome C's aim of "optimizing the cost-effectiveness of administrative and program delivery expenditures." The objective is to scale overhead expenditures to a cost-effective level that best supports timely delivery of construction, maintenance, and operations, and frees any excess resources for use in those areas. This measure focuses on administration because other measures used by Mn/DOT, including 8.2 above, already monitor the program delivery expenditure level.

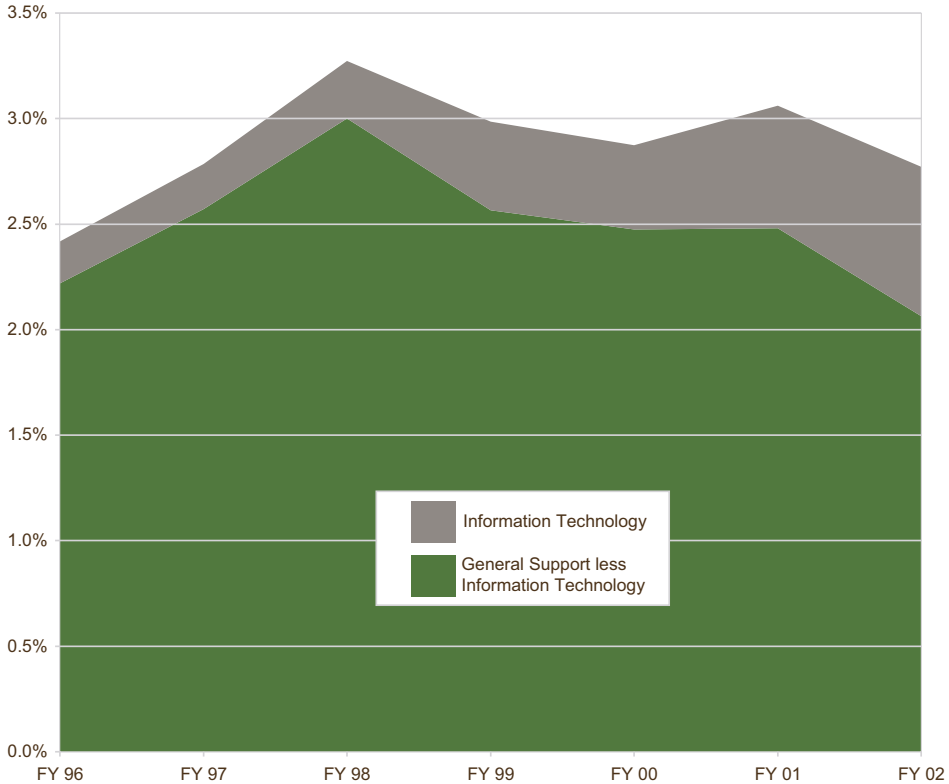
In the near term, the measure will compare expenditures for general administrative support in the central office to total Mn/DOT expenditures. The General Support Budget Activity encompasses Central Office general management and administrative functions including the Office of the Commissioner, public relations, financial management, human resources management, materials management, contracting, information technology, and mail and document services. Since FY 1998, General Support costs, excluding Information Technology, have decreased by 5%.

As new accounting tools develop the capacity, the measure will expand to include Mn/DOT general administrative expenditures in districts and additional budget activities.

Performance Targets

A target range will be developed. Reducing administration too low could impair hiring, contract processing and other services essential to program delivery. Using a range would allow for annual variance in the measure resulting from large fluctuations in the construction program. Government and industry benchmarks for comparable organizations will be considered.

Figure 6-28: General Administration as a Percentage of Total Mn/DOT Budget



Source: Mn/DOT Finance Office

Policy 8 Guidance: Continually Improve Mn/DOT's Internal Management and Program Delivery

Policy 8 Direction

1. Mn/DOT will shape its organizational future by streamlining decision making, by increasing customer-based accountability, by employing advanced technology, by fostering interagency alliances, by expediting program delivery, and by maintaining a highly skilled work force.

Policy 8 Strategies

The following strategies illustrate the types of activities that Mn/DOT will pursue to achieve Policy 8 outcomes.

a. Continue to streamline construction project delivery processes in all areas.

b. Expand use of innovative construction financing tools.

c. Develop and apply innovative construction approaches to deliver projects faster, including design-build.

d. Streamline administrative and support areas of the department. Find opportunities to identify resources that can be reprioritized to construction and operations.

e. Consider electronic government, out-sourcing and other cost-saving solutions where they are cost-effective.

f. Reduce overhead costs by effective fleet and facilities management.

g. Develop Activity-Based Budgeting (ABB), business planning, cost measurement, and automated performance measurement tools to guide investments in the two-year budget cycle that support Statewide Transportation Plan policies and outcomes.

h. Improve the capability of key information systems to monitor performance, forecast future performance, estimate resource needs, and support trade-off decisions.

i. Expand efforts to share performance planning tools with local and regional transportation partners, contractors, suppliers, and the Legislature.

j. Develop guidance on appropriate cost-sharing for Mn/DOT facilities that can effectively be transferred, managed, or operated through partnerships with other public jurisdictions or private parties.

Policy 9: Inform, Involve and Educate All Potentially Affected Stakeholders in Transportation Plans and Investment Decision Processes

Outcome Statements:

a. Mn/DOT will proactively seek early and continuing public input and involvement so as to be responsive and accountable to its stakeholders.

b. Mn/DOT will listen to its customers and respond with accurate, timely information upon which they can rely. Mn/DOT will be a trusted source of information.

c. Customers will understand Mn/DOT's roles, processes and priorities, and will have access to information about Mn/DOT's projects and activities.

The next section (Performance Measure and Targets) explains the measure that will be used to achieve the outcomes for Policy 9.

Performance Measure and Targets

9.1 Perceived Reliability of Mn/DOT Information

Percent of customers satisfied with the reliability of Mn/DOT's communications.

It is important that Mn/DOT's customers and stakeholders view the agency as a reliable source of information. The measure relies on survey results from the Omnibus Study that is conducted annually. The study is a telephone survey of a representative statewide sample of 800 citizens. Each year customers are asked the question: "Thinking about all the different communications provided by the Department of Transportation, how reliable are these communications, in your opinion?" Respondents use a 1–10 scale to rate the reliability of Mn/DOT communications, 1 being low and 10 being high. Respondents answering with a rating of 7 or higher are considered satisfied with the reliability of Mn/DOT's communications.

Performance Targets

This question has been part of the Omnibus Study since 1999. In 1999, 56 percent of respondents were satisfied with the reliability of Mn/DOT's communications. In 2000 and 2001, results declined to 48 percent and 49 percent, respectively.

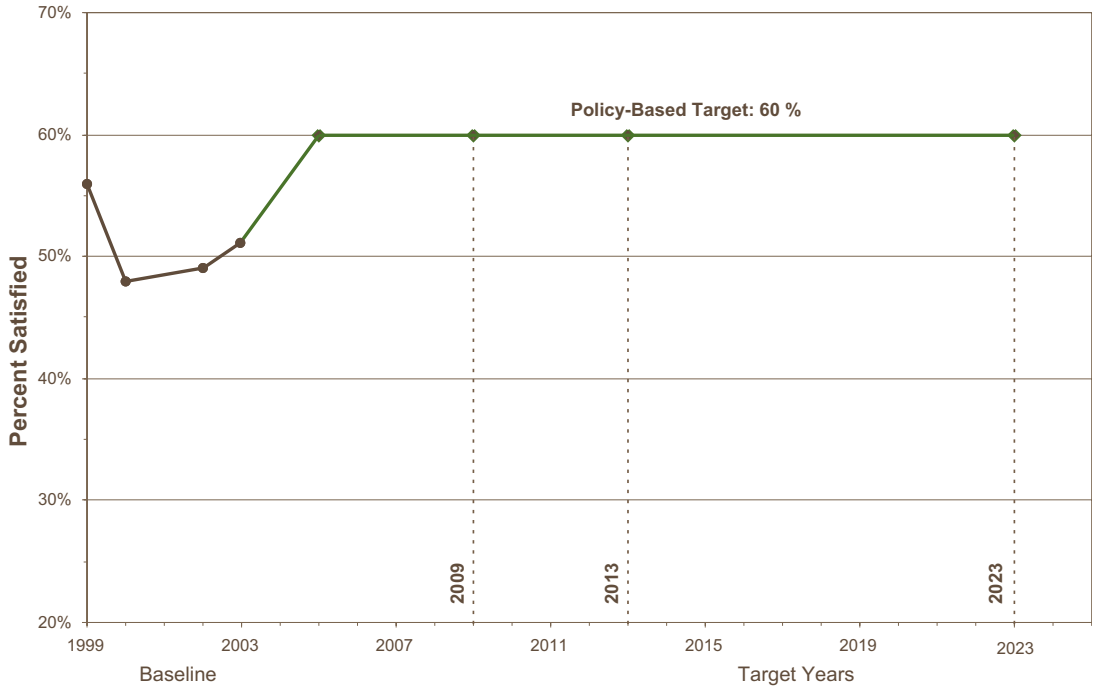
Public perceptions change slowly. Perceptions are also influenced by information and communications that do not come from Mn/DOT (such as lobbying efforts, etc.).

The targets for this measure are as follows:

Target	2009	2013	2023
Percent Satisfied	60	60	60

The following figure shows the baseline data and target for this measure.

Figure 6-28: Percent of Customers Satisfied with the Reliability of Mn/DOT's Information



Source: Mn/DOT Office of Communications & Public Relations

Policy 9 Guidance: Inform, Involve and Educate all Potentially Affected Stakeholders in Transportation Plans and Investment Decision Processes

Policy 9 Direction

1. Mn/DOT will continue to implement strategies outlined in the guidance, "Hear Every Voice: A Guide to Public Involvement at Mn/DOT" (June, 1999). The guidance identifies federal and state regulations for public involvement as well as approaches and best practices for fulfilling these requirements. It also provides resources on specific public involvement techniques.

2. Mn/DOT will continue an active program of public information and consultation with local officials to help share information with Minnesotans about transportation issues, projects and activities.

Policy 9 Strategies

Clear consistent communications with Mn/DOT's customers can provide them with the information they need to better understand the work of the agency. Involving the public in the decision making process is vital to ensure that all voices are heard and were considered in the process.

The following strategies illustrate the types of activities that Mn/DOT will pursue to achieve Policy 9 outcomes.

a. Disseminate information about Mn/DOT's activities to the broadest audience possible.

b. Use market research to seek public opinion about transportation issues and priorities as well as to assess public satisfaction with Mn/DOT information.

c. Develop public involvement plans for all Mn/DOT projects and plans.

d. Solicit public input as early in the process as possible. Use appropriate techniques for reaching all audiences: e.g., small groups, non-Mn/DOT locations, creative and interactive communication activities.

e. Ensure that two-way communication avenues are available for all who seek to be involved.

Other Policy 9 Strategies

Strategies throughout this plan call for partnerships with stakeholders, communities, other state agencies and citizens. The public involvement and partnerships required in order to achieve the outcomes for Polices 2, 5, 7 and 10 will be especially supportive of Policy 9.

Coordination and Partnerships

The fundamental purpose of this policy is to involve and educate Mn/DOT's partners and stakeholders, including local units of government, state agencies, private sector groups and citizens at large.

Policy 10: Protect the Environment and Respect Community Values

Outcome Statements:

a. Minimize impacts to the natural and human environment when building, operating and maintaining Mn/DOT's transportation system. Work with the Minnesota Pollution Control Agency, the lead agency, to achieve its mission to:
   - Ensure clean and clear air that protects human health and the environment.
   - Maintain, restore or improve the quality of Minnesota's waters.

b. Enhance the value of transportation projects through aesthetic designs that reflect environmental stewardship and community sensitivity.

The next section, Performance Measures and Indicators, describes the measures and indicators that will be used to achieve the outcomes for Policy 10, which includes the following:

10.1AQ1 Air Pollutants – Federal Compliance Standards
Outdoor levels of ozone, nitrogen dioxide, carbon monoxide and particulate matter as a percent of the National Ambient Air Quality Standards (NAAQS).

10.1AQ2 Carbon Dioxide Emissions
Estimated carbon dioxide emissions from motor vehicles in Minnesota.

10.1AQ3 Cleaner Fuels
Percent of Mn/DOT fuel consumption defined as cleaner fuels.

10.2W1 Compliance with Erosion Control
Percent of National Pollution Discharge Elimination System Mn/DOT permits that have violations.

10.2W2 Wetlands Affected and Replaced
Ratio of acres replaced by Mn/DOT to acres of wetlands affected.

10.2W3 Wetland Success Criteria
Percent of replaced wetlands where wetland types are as planned.

10.3L1 Land Acres Replanted with Native Species
Number of acres replanted with native species.

10.3L2 Conversion of Undeveloped Land
Number of undeveloped acres converted to another land use.

10.4ES1 Streamlining of Environmental Process

Time to complete Environmental Impact Statement, Environmental Assessment, Environmental Assessment Worksheet per project

Performance Measures and Indicators

This policy contains performance indicators and measures. An indicator, like a measure, is a set of consistent trend data reported over time that provides historical or predictive data. Indicators are employed because they address issues that potentially have broad impacts on society, the environment and the department. Major changes in these indicators could severely affect Mn/DOT's ability to achieve its mission.

Some performance indicators and measures represent areas of federal or state regulation that Mn/DOT is required to follow. These laws or regulations set standards, similar to targets, that govern not just Mn/DOT but others also. The department continually attempts to improve its processes and methods of addressing regulatory requirements and public concerns by using best practices to address issues affecting Minnesotans' quality of life. Targets for water quality measures and acreage planted with native species will be established as data is improved.

The outcomes listed above reflect Mn/DOT's partnerships with other agencies in addressing water, air and land resources in Minnesota. In areas relating to the environment, other state agencies are the lead partner in managing and monitoring environmental concerns. However, Mn/DOT will continue to develop joint strategies and programs to protect natural and human environments through partnerships with the Minnesota Department of Agriculture, the Minnesota Board of Water and Soil Resources, the Minnesota Department of Natural Resources, the Minnesota Pollution Control Agency, the Metropolitan Council and other metropolitan planning organizations.

Mn/DOT has provided leadership at the state and Federal level in developing methods and practices that support environmental streamlining. Current activities are consistent with Federal priorities and goals, which are to expedite the project delivery process overall. One part of the project delivery process that this measure addresses is compliance with Federal and State environmental laws and regulations. While improving efficiency, these regulations and policies simultaneously support environmental stewardship through better environmental performance. Environmental streamlining efforts at Mn/DOT address expediting project delivery and improved internal and external coordination with our natural resource partners. Current streamlining efforts include elimination of duplicate reviews, consolidation of documentation required, early coordination with other agencies/partners and using methods like Context Sensitive Design that promote the early involvement of the public and identification of issues. As these efforts are adopted, we can track the benefits of time and costs savings in the project delivery process.

10.1AQ Air Quality Indicators

10.1AQ1 Air Pollutants- Federal Compliance Standards

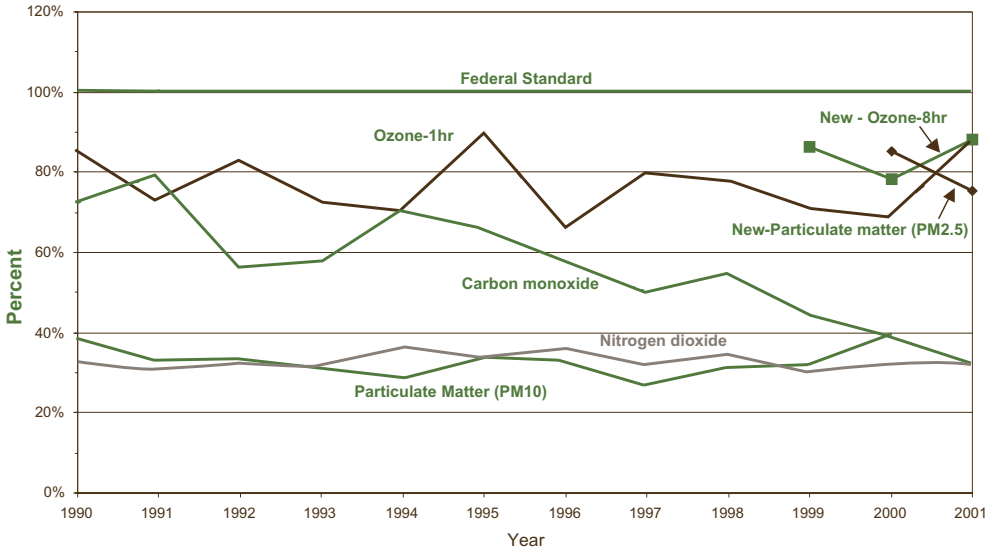
Indicators: *Outdoor levels of ozone, nitrogen dioxide, carbon monoxide and particulate matter as a percent of the National Ambient Air Quality Standards (NAAQS).*

These indicators will help Mn/DOT monitor compliance with federal air quality standards. Air quality in Minnesota is monitored by the Minnesota Pollution Control Agency (MPCA), with standards set by the United States Environmental Protection Agency (EPA).

Minnesota's monitoring sites are in the major metropolitan areas - St. Cloud, Duluth, Rochester and the Twin Cities metropolitan area. The Twin Cities metropolitan area and the cities of St. Cloud and Duluth are currently maintenance areas for carbon monoxide (CO). The term "maintenance area" refers to areas previously cited by the EPA for not meeting CO standards, but now legally recognized as meeting (attaining) these standards. Concentrations for all "criteria" pollutants have been below federal standards throughout the 1990s. Ozone and nitrogen dioxide levels have remained constant since 1990, while levels of fine particulate matter (PM2.5) are near the standards recently upheld by the courts. Four of the six criteria pollutants are reflected in Figure 6-29.

Stricter EPA standards for ozone and particulates established in 1997 were affirmed by the courts in 2002 and will be implemented within the next few years. Episodes of high ozone levels in the summer of 2001 raised concerns that in the near future Minnesota may not meet the new standards. In 2001, ozone levels approached as high as 88 percent of the new ozone 8 hour standard. In 2000, fine particulates (PM2.5) reached 85 percent percent of the new standard. In 2001, fine particulates reached 76 percent of the new standard. At present, the new standards have not replaced the former 1 hour Ozone standard and particulate matter (PM –10). Regardless of the source of high levels, these types of incidents can affect transportation project decision-making if they occur consistently. Conformity of transportation activities to federal air quality standards ensures that federal funding and approval can be obtained.

Figure 6-29: Air Pollutants as a Percent of Federal Compliance Standards



Source: Minnesota Pollution Control Agency

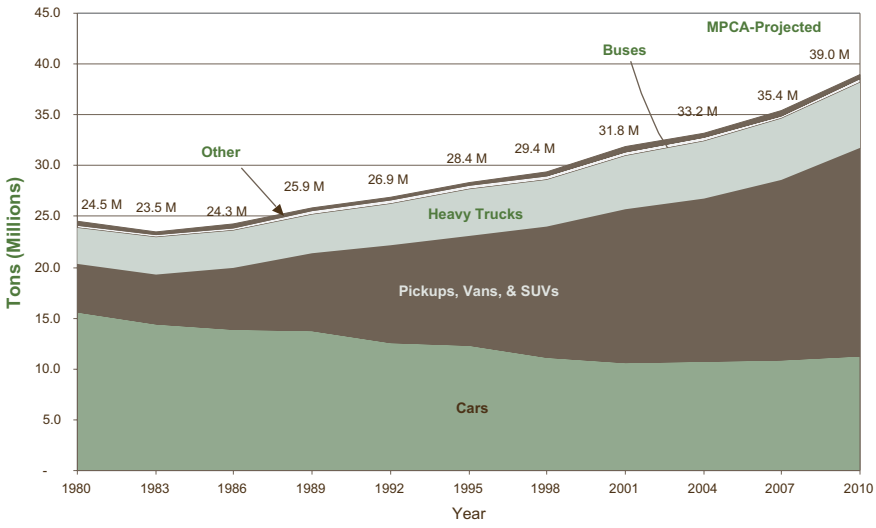
10.1AQ2 Carbon Dioxide Emissions

Indicator: *Estimated carbon dioxide emissions from motor vehicles in Minnesota.*

In 1998, motor vehicles accounted for approximately 21 percent percent of statewide carbon dioxide emissions. The amount of CO2 emitted from motor vehicles is growing, with an increase of 24 percent projected between 2000 and 2010. Factors that contribute to this trend are the fuel economy of vehicles, average miles driven, the number and types of vehicles on the road, and congestion. Pick ups, vans and sport utility vehicles (SUVs) are exempt from fuel economy standards established for passenger cars in the 1970s and represent an increasing share of vehicles purchased. Congestion results in decreased fuel economy and increased emissions. In 2001, the Twin Cities metropolitan area rose to the 15th most congested metropolitan area in the nation, up from 34th in 1990.

National and international scientific panels concur that carbon dioxide contributes to global warming. Growing global warming could lead to greater restrictions on transportation.

Figure 6-30: Carbon Dioxide Emissions (Tons) by Motor Vehicles in Minnesota



Source: Minnesota Polution Control Agency

10.1AQ3 Cleaner Fuels

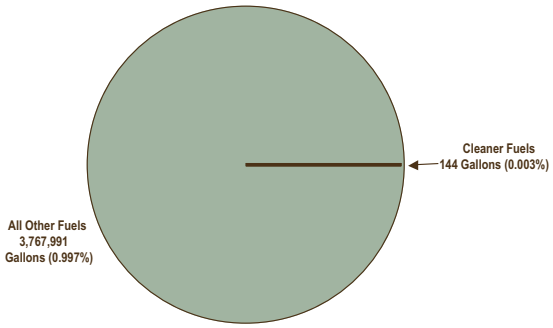
Indicator: *Percent of Mn/DOT fuel consumption defined as cleaner fuels.*

Cleaner fuels, such as E-85, biodiesel and natural gas release fewer pollutants compared to standard gasoline and diesel. E-85 is fuel that is 85 percent ethanol and 15 percent petroleum.

A new state law passed in 2002 phases in a mandatory 2 percent biodiesel/gas blend in Minnesota. In addition, the law requires state agencies to use cleaner fuels when reasonably available and at similar costs. Cleaner fuels are defined as biodiesel

blends of 20 percent or greater, compressed natural gas, ethanol blends of 70 percent or greater, hydrogen, liquefied natural gas and liquefied petroleum gas. E-85 would be the primary cleaner fuel for use in Mn/DOT's flexible-fuel vehicles.

Figure 6-31: Cleaner Fuel Use (2002)



Source: Mn/DOT Office of Maintenance

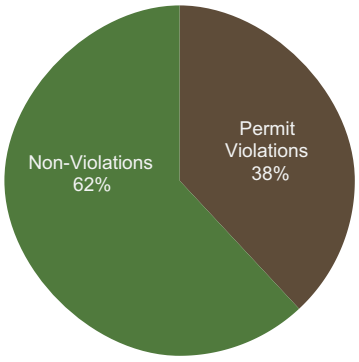
10.2W Water Quality Measures

10.2W1 Compliance with Erosion Control

Measure: *Percent of National Pollution Discharge Elimination System permits that have violations.*

Trunk highway system projects are required to comply with a multitude of executive orders and federal and state laws and rules to protect water resources. Transportation projects affect water resources both directly by filling, and indirectly from erosion and sediment runoff. By using best practices before, during and after construction, Mn/DOT can reduce adverse impacts to important water resources. In March 2003, the National Pollution Discharge Elimination System (NPDES) permit threshold will change from five acres of disturbed land to one acre, thereby greatly increasing the number of permits required. In addition to changes in the permit threshold, the Minnesota Pollution Control Agency is changing the requirements for the permits. As changes occur in laws, rules and regulations it will become increasingly important for the department to implement best practices before, during and after construction.

Figure 6-32: Permit Violations (2001)



Source: Mn Pollution Control Agency

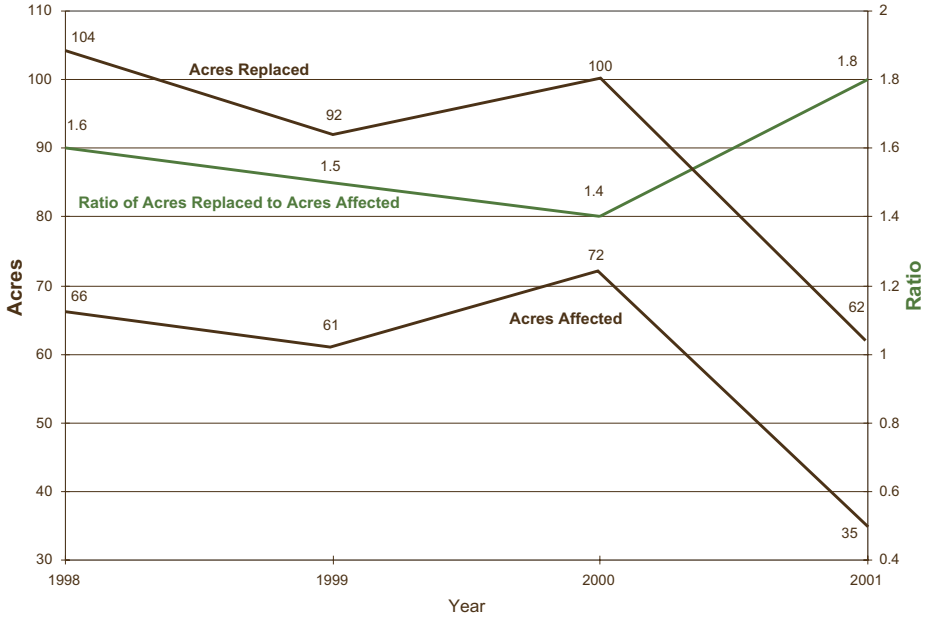
MPCA conducts inspections on projects where an NPDES permit was issued, but not all permits have inspections and some permits have multiple inspections. An inspection can occur as a result of a complaint or random selection. Mn/DOT was issued 49 permits in 2001.

10.2W2 Wetlands Affected and Replaced

Measure: *Ratio of acres replaced by Mn/DOT to acres of wetlands affected.*

Minnesota has more acres of wetlands than any other state except Alaska, in spite of extensive losses due to agricultural uses and development since the mid-19th Century. State requirements regarding impacts to wetlands were developed in 1991 through the State Wetlands Conservation Act. As part of this Act, a "no net loss" policy for wetlands was established. This policy requires the department to replace most wetlands that transportation projects impact. It should be noted that Minnesota requirements regarding wetlands are stricter than federal requirements. Current policy establishes targets to replace wetlands 2:1 in western Minnesota and 1:1 in eastern Minnesota. This policy was developed with other agencies in order to have joint strategies and practices to address all the regulations concerning wetlands.

Figure 6-33: Wetlands Affected and Replaced



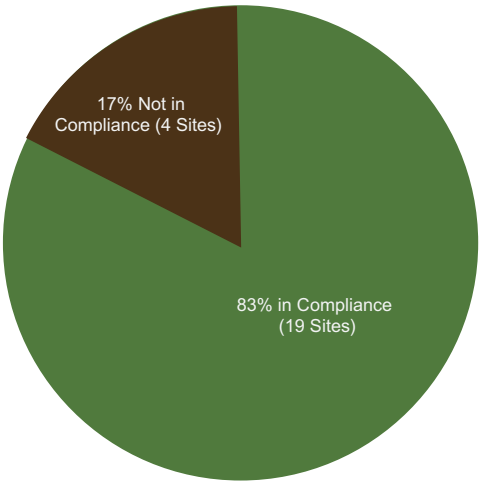
Source: Mn/DOT Office of Environmental Services

10.2W3 Wetland Success Criteria

Measure: *Percent of replaced wetlands where wetland types are as planned.*

Wetlands reduce flooding, enhance water quality, control erosion, provide habitat, and offer open space, beauty and recreational opportunities. Because of the important role they play in the ecosystem, requirements regarding the types of vegetation and soils that are used when replacing wetlands are carefully monitored. Required wetland monitoring for five years informs Mn/DOT on the "success" of the replaced wetlands.

Figure 6-34: Wetland Success (2001)



Source: Mn/DOT Office of Environmental Services

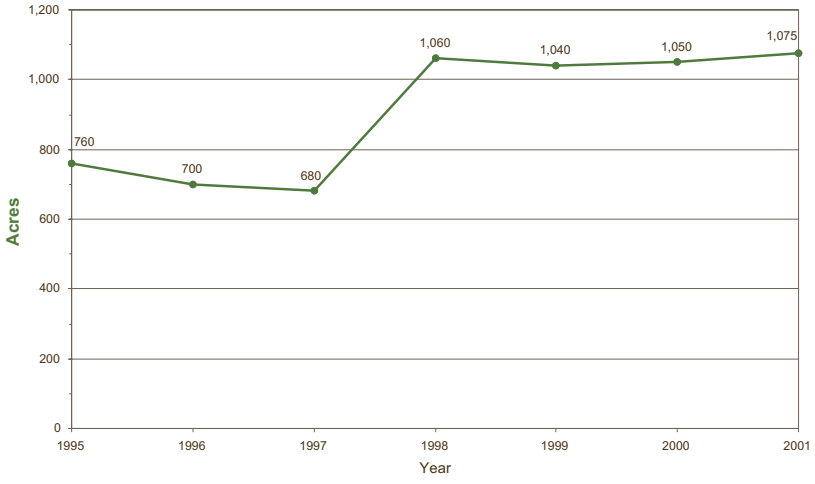
10.3L Land Management Measure and Indicator

10.3L1 Land Acres Replanted with Native Species

Measure: *Number of acres replanted with native species.*

Using local and/or regional species for replanting transportation right-of-way lands contributes to reduced mowing, maintenance and herbicide use. The current acreage planted in native species is less than one percent of all vegetated acres owned by Mn/DOT. In total, approximately 175,000 vegetated acres are planted and maintained by Mn/DOT.

Figure 6-35: Land Acres Replanted with Native Species



Source: Mn/DOT Office of Environmental Services

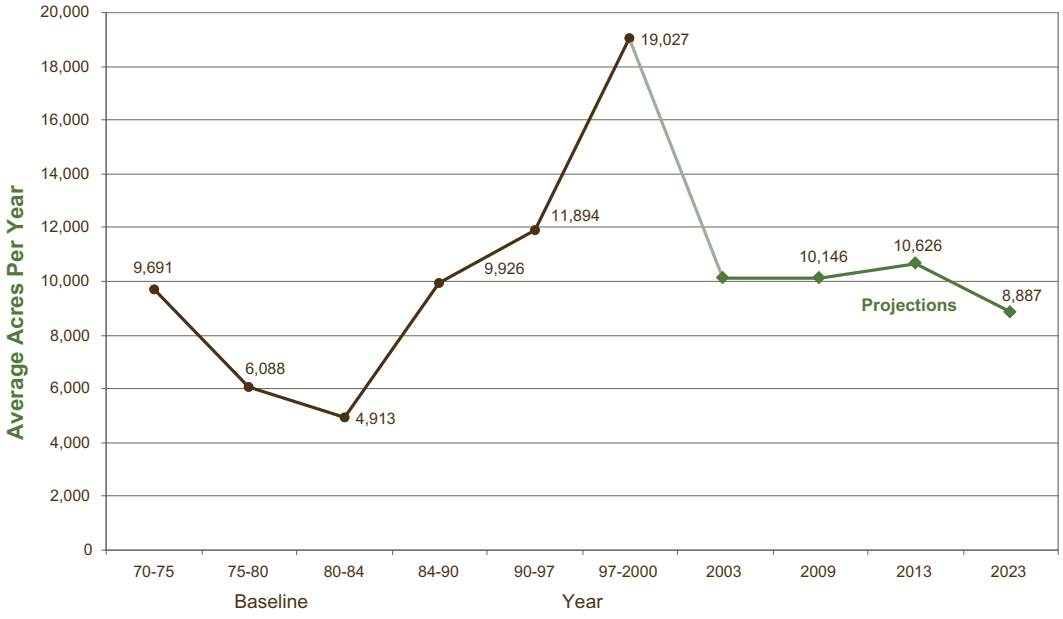
10.3L2 Conversion of Undeveloped Land

Indicator: *Number of undeveloped acres converted to another land use.*

Concentration of population and development by 2020 means that 70 percent of Minnesota's population will live between Brainerd and Rochester. Development and the corresponding transportation demand create pressure on the natural environment. Consistent with Mn/DOT's role to address present and future transportation needs, it is important to understand where, at what rate, and what type of development will continue to occur. This information will assist the department in projecting transportation demand and potential impacts to the environment. Mn/DOT can also use the information to develop strategies such as preserving future right of way in critical corridors.

The apparent sharp increase in the land consumed from 1997 to 2000 in the Twin Cities metropolitan area is due in part to changes in the methodology for the land use interpretation process used by the Metropolitan Council. It also reflects strong single-family housing demand by baby boomers, which will change in the future as that group ages and seeks housing options that use less land. Thus, the future projections are based on past consumption and other factors that affect land use.

Figure 6-36: Conversion of Undeveloped Land



Source: Metropolitan Council "Regional Update–Land Use Profiles, (Acreage Summaries by Community, 1997)" May 2000

10.4ES Environmental Streamlining Measure

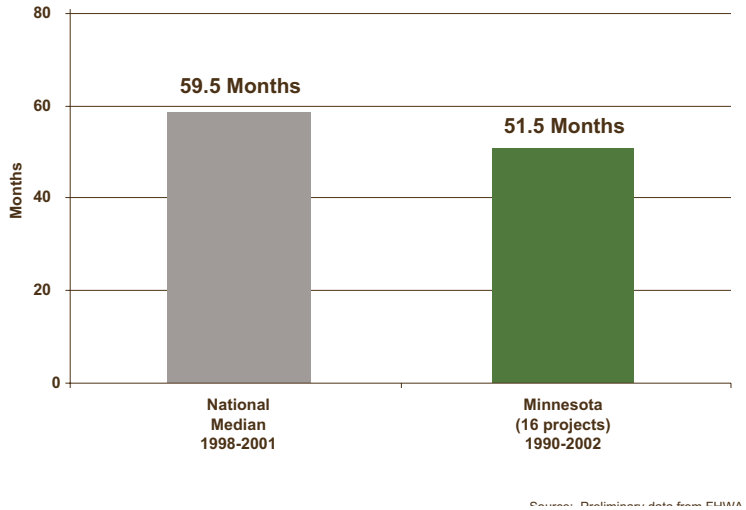
10.4ES1 Streamlining of the Environmental Process

Measure: *Time to complete Environmental Impact Statement, Environmental Assessment, Environmental Assessment Worksheet per project.*

The overall goals of environmental streamlining for the transportation sector are timelier project delivery, higher quality decisions, more concise environmental documentation that promotes clearer communication and greater consensus. By tracking and improving timelines to complete environmental statements/assessments, we will determine the source of delays and identify solutions to these problems. This measure would address approximately 70 projects in the next decade in Minnesota. The Federal Highway Administration is setting national reduction targets for the number of months to complete an environmental statements/assessments and at present is creating baseline data on timeframes in each state. Early coordination and planning with various agencies and stakeholders in Minnesota also reflects the multi-disciplined effort that is required. By reducing the time to complete environmental statements, we will demonstrate our ability to help reduce project delays.

Data source: Mn/DOT Office of Environmental Services and Office of Technical Support

Figure 6-37:
Average Processing Time to complete Environmental Impact Statements for Transportation Projects



Policy 10 Guidance: Protect the Environment and Respect Community Values

Policy 10 Direction

1. Mn/DOT will work to maintain compliance with federal air quality standards.
2. Mn/DOT's operational policy is to first avoid wetland impacts; if impacts cannot be avoided, Mn/DOT will reduce the impacts to the extent possible; and all losses will be replaced.
3. Mn/DOT will use best practices to reduce erosion of soils and maintain sediment controls during construction and maintenance activities.
4. Mn/DOT will continue to advance Interregional Corridor transportation smart growth principles.
5. Mn/DOT will create excellence in transportation project development through Context Sensitive Design (CSD). This policy applies to larger projects in general.
6. Mn/DOT will identify and address the effects of programs, policies and activities on minority and low-income populations.

Policy 10 Strategies

This section contains strategies that illustrate how Mn/DOT, as a partner to other state agencies, can achieve Policy 10 outcomes.

a. Manage transportation systems by reducing clearance times for crashes, metering freeway entrance ramps, providing transit advantages, implementing intelligent transportation systems, and implementing other management strategies.

b. Support a multimodal transportation system.

c. Monitor air pollutants as required by federal laws to identify when air quality approaches non-compliance with existing levels of pollutants from on-road vehicle sources.

d. Use results from predictive modeling of individual pollutants that incorporates estimated future emissions from on-road vehicles and air monitoring data.

e. Work with Greater Minnesota metropolitan planning organizations that are in maintenance status for air quality standards by providing technical assistance regarding air quality conformity.

f. Comply with existing state laws and rules that encourage mitigation to occur on the site of the impact, in the same watershed or in the same county in order to replace the wetland types and the environment that it serves.

g. Continue to be an active participant in an interagency wetlands group with the charge of protecting Minnesota wetland resources.

h. Minimize herbicide use in maintenance practices.

i. Reduce the amount of sand and salt applied for snow removal by adopting appropriate utilization rates for snow and ices chemicals.

j. Develop a comprehensive inventory of best practices for transportation construction projects and maintenance operations.

k. Promote and implement the six principles of Context Sensitive Design:

   1. Balance safety, mobility, community and environmental goals in all projects.
   2. Involve the public and affected agencies early and continually.
   3. Address all modes of travel.
   4. Use an interdisciplinary team tailored to project needs.
   5. Apply flexibility inherent in design standards.
   6. Incorporate aesthetics as an integral part of good design.

l. Conduct department-wide training in Context Sensitive Design.

m. Continue the investigation of measures for Context Sensitive Design.

n. Work with local units of government to require developers to assess and mitigate present and future noise impacts for proposed developments prior to approving a plat or subdivision.

o. Evaluate current environmental streamlining efforts and continue to monitor time reductions and opportunities to improve the efficiencies of meeting environmental regulations internally and with our partners.

Other Policy 10 Strategies

Strategies have been developed for many other policies that complement or support the outcomes identified for Policy 10. Strategies for Policy 2 (Support Land Use Decisions) encourage sound land use planning decisions and coordination with other units of government. Policy 4 (Transportation Options) strategies encourage and promote alternatives to single-occupant vehicles. In addition, Policy 9 (Inform and Involve All) encourages cooperation with other units of government as well as involving customers in decision making process that impact the quality of life in their communities.

Coordination and Partnerships

Other state agencies have as their mission to protect Minnesota's natural resources; Mn/DOT plays a supporting role to these agencies. The Department of Transportation recognizes the importance of working closely with the Department of Natural Resources, the Pollution Control Agency and other units of government to effectively meet environmental requirements. In recent years, Mn/DOT has developed staffing relationships and joint strategies with other state agencies to increase coordination and effective use of resources in environmental planning and addressing environmental requirements.

Chapter 7

Financial Resources

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Chapter 7
Financial Resources

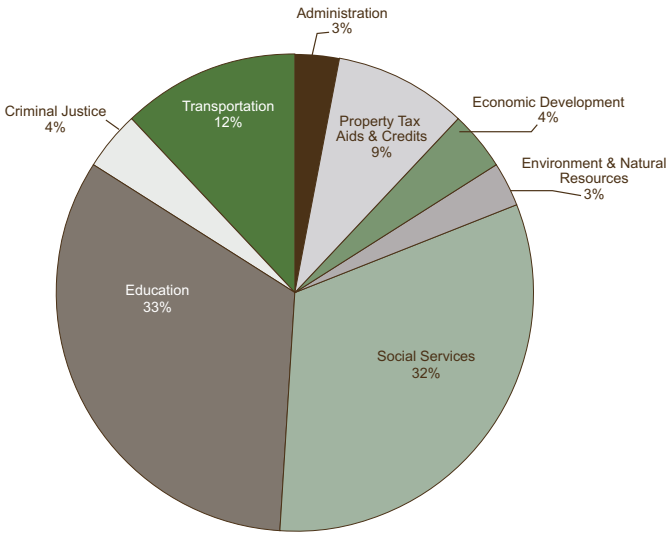
Overview of Transportation Funding

The purpose of this chapter is to give an overview of the funds available to Mn/DOT to support Minnesota's transportation systems and the adequacy of funds to meet the performance targets established in Chapter 6.

During the 2000 to 2001 biennium (July 1, 1999 to June 30, 2001), the Minnesota State Budget was nearly $37 billion. Of that amount, transportation accounted for about 12 percent or nearly $4.4 billion. The sources of the transportation funds are user taxes, federal aid, and the General Fund.

The following pie chart shows the relationship of transportation to the other areas included in Minnesota's budget.

Figure 7-1:
Minnesota State Government Expenditures
Fiscal Years, 2000-2001



Source: Minnesota Department of Finance, Budget Summary Information for 2000-2001, www.budget.state,mn.us/budget/summary

The transportation portion of the state budget provides for the following:

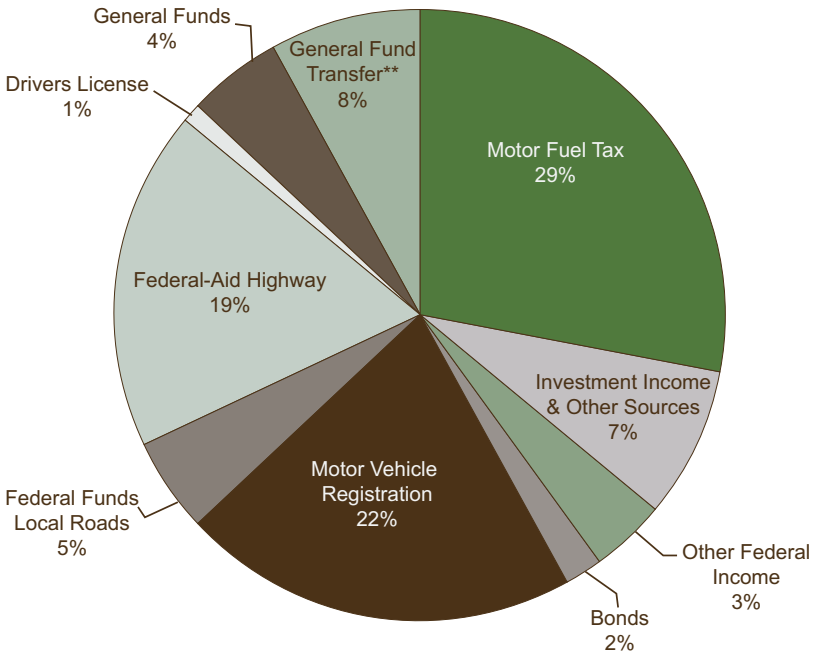
- Design, construction, maintenance, and management of state highways and bridges.
- Financing of county state-aid and municipal state-aid roads and bridges.
- State aid for Twin Cities metropolitan transit operations.
- State aid for Greater Minnesota transit operations and capital equipment.
- Development and maintenance of public airports in Greater Minnesota.
- Transportation-related functions in the Department of Public Safety, including registration of motor vehicles, licensing of vehicle operators and law enforcement activities of the State Patrol.

Mn/DOT is responsible for administering the state transportation budget, except for state aid for Twin Cities metropolitan transit operations, which is administered by the Metropolitan Council and transportation related funds administered by the Department of Public Safety.

The following two pie charts illustrate how Mn/DOT manages its portion of the state budget. For state fiscal year 2001 (July 1, 2000 to June 30, 2001), the state transportation budget managed by Mn/DOT was over $2.1 billion.

Figure 7-2 shows how transportation revenues are derived. Note that three sources represent two thirds of Minnesota's transportation revenues: motor fuel tax, motor vehicle registration, and federal aid for highways.

Figure 7-2:
Minnesota State Transportation Revenues By Source* Fiscal Year, 2001

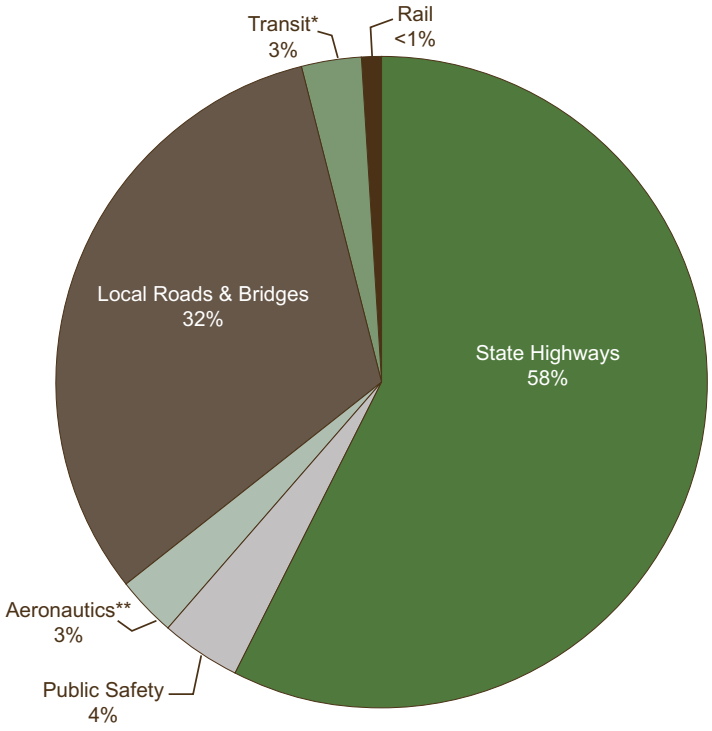


* Does not include revenues to Metro Transit
Does not include revenues to Metropolitan Council for LRT
Does not include revenues to Metropolitan Airports Commission
(except federal funds)
** Replaces revenue from motor vehicle registration reduction

Source: Mn/DOT Financial Management and Legislative Briefing Package 2002, prepared by Mn/DOT Office of Financial Planning and Analysis, January 2002

Figure 7-3 shows how Mn/DOT spends transportation revenues. The largest expenditures are for the construction, maintenance, and management of state highways, local roads, and bridges. Together, these represent 90 percent of Mn/DOT's budget.

Figure 7-3:
Minnesota State Transportation Expenditures by Category Fiscal Year, 2001*



* Does not include expenditures to operate Metro Transit and expenditures by Metropolitan Council to construct LRT
** Does not include expenditures by Metropolitan Airports Commission

Source: Mn/DOT Office of Financial Planning and Analysis

The following sections describe the financial resources available for highways, transit, aeronautics, rail, and waterways.

Highways

The state of Minnesota has approximately 130,000 miles of local streets and highways. This reflects Minnesota's entire roadway system. In 1999, approximately $2.9 billion in revenues were raised and available to construct, maintain, and manage Minnesota's roadway system. For state highways, these revenues came from state highway user tax funds (motor fuel tax and motor vehicle registration), Minnesota's General Fund, and the federal government. For local

roads and streets, these revenues came from local property taxes, bonds, and notes. (Source: Information prepared by Mn/DOT Office of Financial Management, based on data from US Department of Transportation, Local Highway Finance Report, 1999 and Mn/DOT, 2000.)

Of the $2.9 billion available in 1999 for all Minnesota roadways, Mn/DOT was responsible for the oversight of about $1.5 billion in annual funding for roadways and bridges. Mn/DOT uses highway revenues for the construction and maintenance of 12,000 miles of state trunk highways. Mn/DOT also distributes state funds and provides technical assistance for more than 33,000 miles of county state-aid and municipal state-aid highways and streets. State revenues for roadways and bridges are derived from various sources. A majority of the funding is provided through the Highway User Tax Distribution Fund that comprises motor fuel and motor vehicle registration taxes. The fund was established through a 1956 constitutional amendment and 1957 legislation, and is dedicated exclusively to "highway purposes" by the Minnesota Constitution.

The 2000 Legislature changed the motor vehicle registration tax law by lowering the tax for passenger vehicles. Beginning in fiscal year 2001, revenue from motor vehicle registration tax to the Highway User Tax Distribution Fund was reduced. To replace these revenues, $161.5 million in General Funds were transferred to the fund in 2001. In fiscal year 2002, 30.86 percent of Motor Vehicle Sales Tax paid on automobile purchases will be transferred to the fund. In fiscal year 2004 and beyond, this amount will be capped at 30 percent.

2000 Funding for Investment Strategies

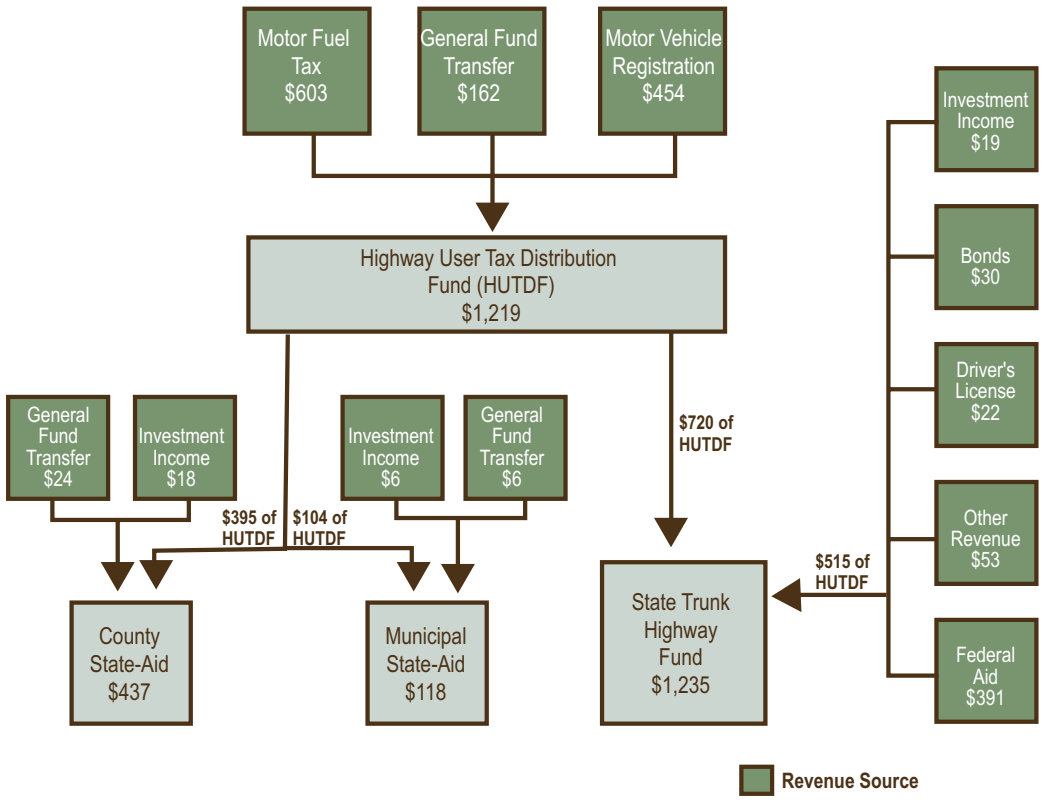
The 2000 Minnesota Legislature appropriated $459 million for bottleneck and IRC investments. These funds were allocated as follows: $5 million in general funds for Advantages for Transit and $279 million for Bottleneck Removal and Corridor Connections (the 2003 Minnesota Legislature converted $110 million of these funds to bonds and another $20 million was unalloted by the Governor). In addition, $100 million in trunk highway bonds was approved for projects under the Bottleneck Removal and Corridor Connections categories. Finally, $75 million of trunk highway funds were allocated for these purposes. This one-time funding was used for 45 projects. These funds must be expended by June 30, 2003. These funds allowed Mn/DOT to:

- Construct 25 roadway, interchange, and bridge projects.
- Advance these 25 projects a total of 113 years or about 4.5 years per project.
- Fund over $300 million in roadway, interchange, and bridge construction over the next 2.5 years.
- Purchase over $100 million in right of way for these and future construction projects.
- Provide almost $50 million for consultants to help in program delivery.
- Provide almost $15 million to Mn/DOT for program delivery.
- Provide $5 million in transit projects.
- Fund over 20 access management and corridor planning studies which will lead to the identification of additional projects for future years.

The legislation also allocated $39 million for the local bridge program and $30 million additional funding for state aid to local roads.

Figure 7-4 illustrates the funding sources for the Highway User Tax Distribution Fund and for the State Trunk Highway Fund. The portion of the one-time funding that was spent during state fiscal year 2001 is included in this chart.

Figure 7-4:
Minnesota State Revenues for Highways Fiscal Year 2001



Source: Adapted from Mn/DOT Financial Management and Legislative Briefing Package 2002, prepared by Mn/DOT Office of Financial Planning and Analysis, January 2002.

Comparing Minnesota to the rest of the nation, in 2000 Minnesota ranked 27th among the 50 states in total spending per lane mile. Minnesota spent on average $93,000 per mile of state highway, slightly less than the national average of $97,000 per mile. (Source: 2000 Highway Statistics, Table HM-10, SF4)

Highway Needs

Chapter Five of this Plan articulates a set of 10 policies that align with Mn/DOT's strategic directions and identify performance measures for each of the policies. Chapter Six sets performance targets to allow Mn/DOT to track performance and to know whether Mn/DOT is achieving its performance objectives. During 2003 and 2004, Mn/DOT's district offices will use these policies, performance measures, and performance targets to develop long-range twenty-year plans. Using projected levels of funding, Mn/DOT will be able to determine how well its performance targets can be met. Mn/DOT will also be able to determine the funding gap that must be filled in order to achieve the performance objectives.

In the past, Mn/DOT has attempted to determine needs for elements of its transportation system. During 1998, Mn/DOT's districts developed twenty-year plans using roadway measures for ride quality, infrastructure condition, and basic levels of service. Based on these plans, the estimated twenty-year unmet need for the state trunk highway system was over $13 billion, or approximately $667 million per year. It is expected that the more comprehensive approach taken within this Plan will not only substantiate this need but also likely increase it. Any significant reduction in transportation funding could result in further deterioration of conditions for the traveling public. (Source: Data compiled by Mn/DOT Office of Investment Management from Mn/DOT long-range plans.)

In 2001, the Minnesota Legislature's Major Transportation Projects Commission came to a similar conclusion about the need for new and permanent funding. The Commission adopted a resolution encouraging the Legislature to increase transportation funding by $500 million per year. Although several funding bills were introduced in both Houses of the Legislature, none was adopted by both bodies. (Source: Memo from David Jennings, Chair of Major Transportation Projects Commission, October 5, 2001.)

During 2001 and early 2002, Mn/DOT completed corridor management plans for seven high and medium priority interregional corridors (see Chapter 4 for a description and map of Minnesota's Interregional Corridor (IRC) System). IRC management plans were completed for the following corridors:

- TH 10 from TH 24 at Clear Lake to I-35W at Mounds View
- TH 10/24 from TH 371 at Little Falls to I-94 at Clearwater
- TH 52 from I-494 at Inver Grove Heights to I-90 south of Rochester
- I-94 from Maple Grove to Stearns CR 159 at Collegeville
- TH 101/169 from I-94 at Rogers to TH 18 at Garrison
- TH 169 from I-494 at Bloomington to TH 60 at Mankato
- TH 212 from the South Dakota border to I-494 at Eden Prairie

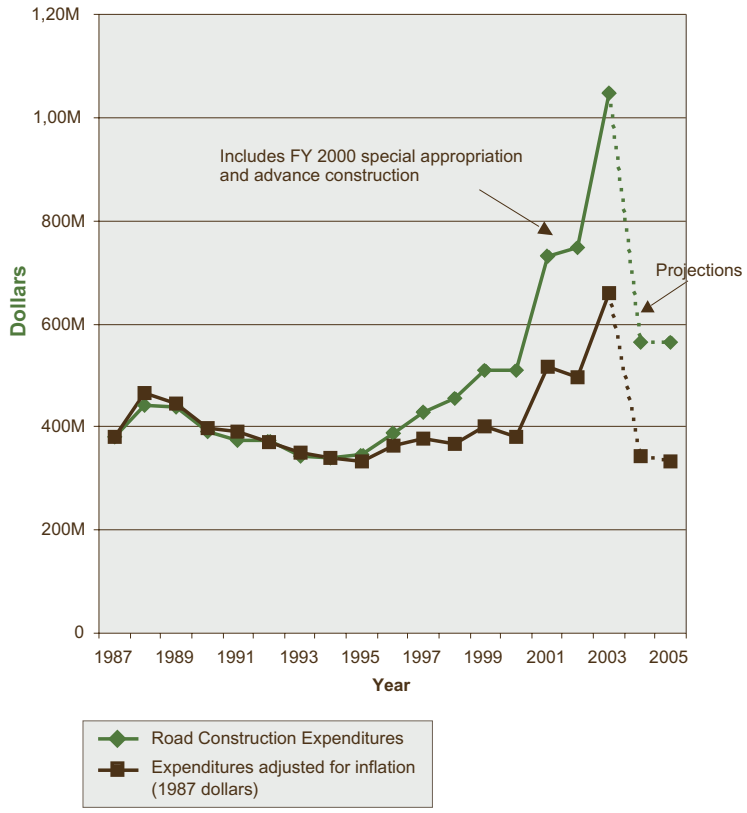
A vision was developed for each corridor, and corridor performance was calculated using travel speed and safety (see Chapter 6 for Performance Measures and Targets). In order to meet the IRC target speed and safety target and to fulfill the corridor vision, required levels of

investment were calculated for the years 2002 through 2025. The result of this analysis indicated a total performance need (above what can be funded from expected revenues) of nearly $2 billion for the seven corridors, or over $82 million per year. (Source: Data compiled by Mn/DOT Office of Investment Management from Mn/DOT IRC Management Plans.)

Clearly, substantial transportation investment is needed to make the system function properly for Minnesota's citizens. However, funding has remained relatively flat in constant dollar terms. Increased permanent funding is needed to close the gap between what can be accomplished under anticipated funding and the needs that exist. The following graph shows highway funding in real and nominal dollars.

Figure 7-5 shows the impact of the one-time new funding on the state road construction program, and depicts total Minnesota state road construction expenditures in nominal and real terms using 1987 dollars. The numbers have been deflated with the Minnesota Highway Construction Cost Index. The figure shows that since 1990, the purchasing power of our construction program has not exceeded $400 million. However, in 2001 when the new funding began to be spent, real total state road construction expenditures rose to over $500 million. Expenditures will remain over the $400 million level through June 30, 2003 when the 2000 appropriation expires. At that time, permanent revenue sources to support spending will revert to pre-2001 levels.

Figure 7-5:
Total State Road Construction Expenditures



Source: Mn/DOT Office of Investment Management

Transit

In Minnesota, state and federal public transit funds are administered by two governmental jurisdictions – Mn/DOT for the eighty-county geographic area of Greater Minnesota and the Metropolitan Council for the Twin Cities metropolitan area. During calendar year 2001, nearly $11 million was spent for transit capital and approximately $33 million for transit operating costs in Greater Minnesota. In the Twin Cities metropolitan area over $59 million was spent for transit capital and approximately $208 million for transit operating costs. In addition, the federal government and the Minnesota State Legislature have passed legislation to fund specific transit projects. (Source: *Mn/DOT 2001 Transit Report*.)

Public transit funding in Minnesota is derived from a combination of state, local, and federal funds. Mn/DOT provides federal and state funding for transit capital and operating needs for nonurbanized systems throughout Greater Minnesota. Mn/DOT also provides state funds for urbanized areas (>50,000 population) in Greater Minnesota – Duluth, St. Cloud, Rochester, Moorhead, East Grand Forks, and LaCrescent. Recipients of transit grants pay a fixed local share of program cost as mandated by state law. The Metropolitan Council is responsible for planning and distribution of state transit assistance to transit systems in the Twin Cities metropolitan area. Through its operating arm, Metro Transit, the Metropolitan Council is a direct recipient of federal transit funds.

Each biennium the Minnesota Legislature makes General Fund appropriations for public transit programs. Rural and urban transit systems in Greater Minnesota receive funding through an appropriation to Mn/DOT. The Metropolitan Council provides funding from an appropriation for metro area transit systems. In fiscal year 2003, a share of the Motor Vehicle Sales Tax Revenues (20.5% for metropolitan area transit and 1.25% for Greater Minnesota transit), became a new source of transit funds. This was instituted to replace revenues from local property taxes that previously provided part of the operating cost of transit systems.

The Transportation Equity Act for the 21st Century (TEA-21) includes authorizations for federally funded transit programs. These programs are managed in several different ways. Congress provides annual appropriations for the Federal Transit Administration (FTA) transit assistance programs and earmarks discretionary transit funding for specific projects. FTA formula program funds are apportioned to Governors and urbanized areas.

Following are descriptions of the federal programs:

Urbanized Area Formula Program, Section 5307

This formula grant program provides operating and capital assistance for public transportation in urban areas with more than 50,000 people. Based upon population and operating factors, these funds are apportioned directly to urbanized areas. The federal share for planning and capital assistance is generally 80 percent. Operating assistance is available only to urbanized areas with populations under 200,000, and the federal share may not exceed 50 percent of the operational deficit.

For 2001 (October 1, 2000 to September 30, 2001), the apportionment for Greater Minnesota operating and capital assistance under this program was nearly $2.9 million. The Twin Cities apportionment for capital expenditures for the same period was nearly $32.4 million. (Source: Mn/DOT *2001 Transit Report*.)

Nonurbanized Area Formula Program, Section 5311

This is a formula grant program for nonurbanized areas with populations under 50,000. These funds are apportioned directly to the states. The federal funds are available to finance up to 50 percent of operational deficits and up to 80 percent of capital costs. Currently, these limited federal funds are only able to provide 20 percent of Minnesota's rural transit systems' operating deficit. No funds remain for capital assistance. In addition, TEA-21 requires 15 percent of this program's funds be spent for the development and support of intercity bus transportation.

Minnesota's apportionment for federal fiscal year 2001 was nearly $4.5 million. In 2001, 58 transit systems received funds through this program. (Source: Mn/DOT *2001 Transit Report*.)

Elderly and Persons with Disabilities Program, Section 5310

The primary objective of this capital grant program is to meet the special transportation needs of elderly and/or disabled persons for whom existing transportation services are unavailable, insufficient or inappropriate. These formula funds are apportioned directly to the states. Grants are made available to eligible private, non-profit agencies and, in certain instances, public bodies, for the purchase of lift-equipped vehicles. This program provides funding for 80 percent of eligible vehicle costs.

In 2001, Minnesota's apportionment was over $1.3 million for eligible vehicle costs. All operating costs are the responsibility of the recipient. (Source: Mn/DOT *2001 Transit Report*.)

Capital Program

FTA's Capital Discretionary Program, Section 5309

This program provides discretionary capital assistance for major capital needs including the purchase of new equipment, acquisition of property, and the construction of facilities for public transportation purposes. Maximum funding is 80 percent of eligible costs. The program is available to states and urbanized areas.

During 2001, Minnesota was allocated discretionary funds for the following:

New Starts Allocations:

- Twin Cities Transitways Project – $4,953,216
- Twin Cities Transitways-Hiawatha Corridor Projects - $49,532,150

Bus and Bus Facility Allocations:

- Metro Transit, transit vehicles, and facilities - $13,369,250
- Greater Minnesota transit vehicles and facilities - $1,237,894
- St. Cloud MTC transit vehicles and facilities - $2,104,419

(Source: Mn/DOT *2001 Transit Report*.)

Flexible Highway Funding

TEA-21 provides flexible funding that may be used for highways or transit capital projects. The Area Transportation Partnerships (ATPs) have responsibility for determining needs and priorities and for allocating flexible funds to transit projects. These funds come from the Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) Program of TEA-21. During state fiscal year 2001, the ATPs approved $30.1 million in STP funds and $30.9 million in CMAQ funds to be flexed from FHWA to FTA for transit related projects. (Source: State of Minnesota 2001-2003 State Transportation Improvement Program.)

Transit Needs

The performance measures and performance targets described in Chapter 6 of the Plan allow Mn/DOT to track performance and to know whether Mn/DOT is achieving its performance objectives. One example of a transit performance measure is "annual service hours required to meet transit needs identified in the Greater Minnesota Public Transportation Plan." This plan includes targets for the amount of passenger service needed to meet 80 percent of Greater Minnesota transit needs by 2009, 85 percent of the needs by 2013, and 90 percent by 2023. According to the Greater Minnesota Public Transportation Plan, meeting the 80 percent target in Greater Minnesota will require 1.4 million hours of service at an annual operating cost of $50.9 million and 210 additional vehicles with a capital cost of $12.1 million. Currently, there is no dedicated, permanent funding for Greater Minnesota transit.

Aeronautics

The Minnesota State Airport System consists of 135 publicly owned and operated airports with 126 in Greater Minnesota and nine in the Twin Cities metropolitan area. Seven of the metropolitan area airports are owned and operated by the Metropolitan Airports Commission (MAC), one is owned and operated by the City of South Paul, and one is owned and operated by the City of Forest Lake. In addition, there are six airports that are privately owned, but open to the public and nineteen seaplane bases in the state system.

Mn/DOT provides financial and technical assistance to Minnesota airports for planning, capital improvement projects, and maintenance. Mn/DOT has basic supervisory authority over the MAC airports as well, while the MAC has authority to operate and administer the Minneapolis-St. Paul International Airport and the reliever airports that MAC owns.

Funding for aviation programs in Minnesota is derived from state and federal taxes on users of the aviation system. Following are descriptions of these programs:

State Airports Fund

Minnesota Statutes, chapter 360, established the State Airports Fund. The revenues in the fund are derived from the following aviation user taxes:

- **Airline Flight Property Tax**, a tax paid by the airlines in lieu of other property taxes.
- **Aviation Fuel Tax**, paid by all aviation fuel users. It is collected on a sliding scale from five cents to a half cent, based on amount used.
- **Aircraft Registration**, an annual licensing fee for civil, non-airline aircraft based in Minnesota and those operated in the state for more than 60 days per year. Aircraft owned by airlines and government agencies are exempt from the tax.
- **Investment Income**, state airports fund money invested in securities by the state board of investment.

In 2001, $21.7 million was appropriated to the State Airports Fund.

Aviation Trust Fund

Federal funding for aeronautics programs comes from the Aviation Trust Fund. Revenues in the trust fund come from taxes on users of the aviation system: the airline ticket tax, the federal aviation fuel tax and an excise tax. Airport Improvement Program (AIP) funds are appropriated by Congress from the Aviation Trust Fund.

In 2001, Minnesota's apportionment was $85.7 million.

Passenger Facility Charge (PFC)

Since 1990, airports with scheduled passenger service have been allowed to impose a Passenger Facility Charge (PFC). The airport owner imposes the charge on enplaning passengers for a specific project and the fee is collected by the airline. PFCs can be used to offset specific capital improvement costs, including the local matching share for federal grants.
(Source: Mn/DOT Office of Aeronautics.)

Rail

The State of Minnesota does not own or operate railroads. State investment in rail programs consists of partnerships with shippers, communities, and private rail operators to maintain and preserve viable rail service. State involvement in rail projects includes federal and state funds combined with private money provided by railroads and rail users.

State rail investment programs include the following:

Minnesota Railroad-Highway Grade Crossing Safety Improvement Program

The mission of the Minnesota Railroad-Highway Grade Crossing Safety Improvement Program is to save lives at grade crossings. Under this program, active warning devices have been installed at over 1,200 Minnesota grade crossings. Federal, state, local, and railroad funds pay for these cooperative projects.

Federal funds for railroad-highway grade crossing safety projects are available under TEA-21 Title I programs. Mn/DOT, local road authorities, railroads, and local planning agencies work together to identify railroad-highway grade crossing safety projects. The eight district/division area transportation partnerships (ATPs) integrate projects into area-wide plans. Mn/DOT helps the ATPs assess grade crossing safety investment needs.

Mn/DOT has adopted a corridor approach to identify grade crossing safety needs, similar to the process by which Mn/DOT and ATPs identify roadway projects. This new approach complements the traditional site-specific approach used to identify grade crossing safety projects.

Types of projects eligible under the Minnesota Railroad-Highway Grade Crossing Safety Program include signal and signal upgrade, signs and pavement markings, lighting, crossing closures and roadway relocations, sight condition improvements, crossing alignments, grade improvements, and grade separations.

In 2001, Minnesota's apportionment was approximately $4 million.

Minnesota Rail Service Improvement Program (MRSI)

Elements of the MRSI program include the following:

Rail Line Rehabilitation Program

The Rail Line Rehabilitation Program provides assistance to improve the local rail system and to help provide Minnesota with an integrated, multimodal transportation system; thus, improving rail service in Minnesota.

Project selection is based on (1) availability of funds; (2) profitability of the line; (3) cost/benefit ratio; (4) commitment from rail carrier and rail users; and (5) significance of the rail line to the state rail system. An overall cost/benefit analysis is conducted as part of the programming process to determine if prospective rail projects should advance to the project implementation stage. Assistance is provided in the form of loans. Upon completion of the rail rehabilitation project, the railroads repay the state on a negotiated per-car basis or a predetermined fixed rate.

Rail Purchase Assistance Program

The program helps Regional Rail Authorities in purchasing a rail line (1) if the line has not been abandoned and is to be used for continued rail service; (2) if the line has been abandoned and is to be used for continued rail service; or (3) if the line is to be used for a transportation purpose other than rail service. The Regional Rail Authority must have the capability of operating the rail line or contracting with an operator acceptable to the state. In addition, the rail line must be shown to be capable of operating at a profit and the purchase price and rehabilitation costs must not exceed potential benefits.

Rail User and Rail Carrier Loan Guarantee Program

The program assists rail users and carriers to obtain loans for rail rehabilitation and capital improvements. Guaranteed revenue bonds are issued by state political subdivisions and cover the user's share of the cost of necessary rehabilitation and capital improvements to improve rail service or to reduce the impact of discontinued rail service (or rail abandonments). In addition, the program helps rail carriers rehabilitate locomotives and acquire and rehabilitate rail cars, machinery and equipment needed to move people, goods and products.

Capital Improvement Loans

Loans of $200,000 or up to 100 per cent of the project, whichever is less, are available to rail users to improve their facilities on rail lines with state or federal funds. Capital improvement loans are available to improve rail service through construction or improvements to rail line segments (i.e., side track, team track, connections between existing lines); and to construct or improve facilities used to load, unload, store, and transfer freight and commodities. The capital improvement project must provide benefits to the economy of the state and improve the financial condition of the associated rail line. The state's interest must be protected by sufficient collateral and the loans must be repaid on a quarterly basis or lump sum over the course of 10 years.

Rail Bank Program

The program was established in 1980 to acquire and preserve abandoned and impending abandoned rail lines and rights-of-way to use for future transportation needs. Mn/DOT periodically analyzes the state's rail system to determine which lines are good candidates for rail banking, and works with other governmental units to ensure that rail corridors are not lost.

In 2001, $3.3 million was appropriated to the Minnesota Rail Service Improvement Program

Waterways

The State of Minnesota does not own or operate any waterway facilities. In the ports of St. Paul, Red Wing, Winona and Duluth local port authorities own facilities that ship and receive products via the Mississippi River and Great Lakes Systems. These port authorities contract the operation of those facilities to private companies. The private companies pay a lease fee for the use of the facilities and also a tonnage fee for all the products that pass through the leased facility. In Minneapolis, the Minneapolis Community Development Agency acts as a port authority and contracts out the management of the city owned facility and keeps the profits or losses generated by the port facility.

Minnesota Port Development Assistance Program

In 1991 the Minnesota Legislature passed the Minnesota Port Development Assistance Program, which was designed to aid public ports in modernizing physical infrastructure. The Program was first funded in 1996, and through 2001 has appropriated $10.5 million for this work. These funds are administered by Mn/DOT and are used on a priority basis to help revitalize Minnesota's five public ports.

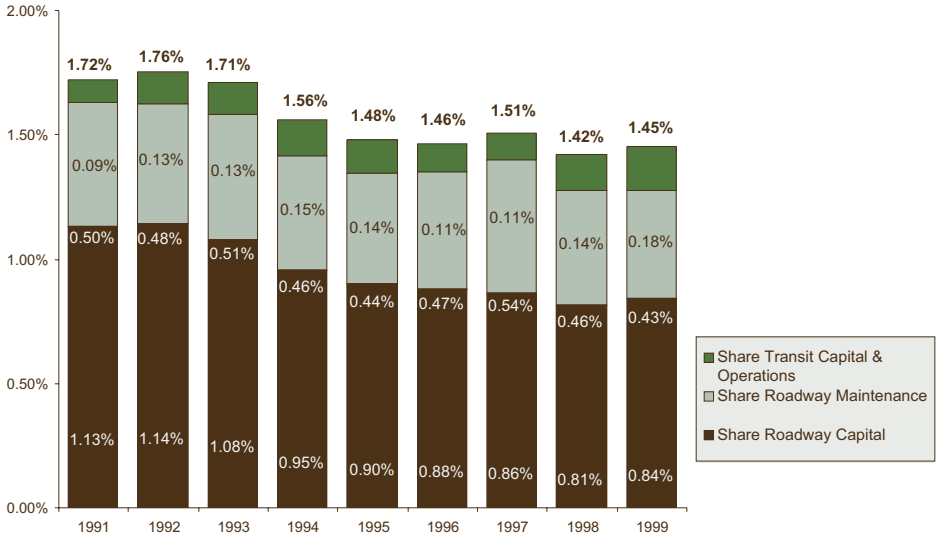
The Port Development Assistance Program will grant up to 80 percent of funds for specific projects and the port authority is responsible for the balance. The projects include the rebuilding of warehouses, docks, rail, and roadway access routes. The Program also participates in off channel dredging needed to get ships or barges to the dock.

In 2001, $1 million was appropriated to the Minnesota Port Development Assistance Program.

CONCLUSION

Over time, transportation spending has declined as a share of Minnesota's economy. For example, Figure 7-6 shows roadway and transit spending in Minnesota as a share of Gross State Product (GSP) between 1991 and 1999. Though transportation is about 12 percent of the state budget, it represented less than 1.5 percent of GSP in 1999, down from 1.7 percent in 1991. This long-term decline suggests that Minnesota is not devoting adequate resources to transportation to support an expanding economy.

Figure 7-6:
Minnesota Roadway and Transit Transportation Spending as a Share of Gross State Product



Sources: Chart prepared by Mn/DOT Office of Investment Management, based on data from Federal Highway Statistics :
Table MT-2B (Transit Operator Receipts and Disbursements for Operations);
Table MT-2A (Transit Operator Receipts and Disbursements for Capital Outlay);
Table HF-2 (Total Disbursements for Highways, all Units of Government)
U.S. Dept. of Commerce: Bureau of Economic Analysis, Regional Accounts Data

The **Minnesota Statewide Transportation Plan** develops a performance-based planning approach, which Mn/DOT will use in its investment decision-making process. Mn/DOT will monitor, evaluate, and consider performance-based transportation system needs when making investment decisions. By comparing these needs to available funding, Mn/DOT will be better able to determine and explain the funding gap for Minnesota's transportation system. This will be accomplished during the next stage of the statewide transportation planning process when each Mn/DOT district and the metropolitan division will develop transportation plans. Based on funding patterns presented in this chapter, these plans will indicate that current funding is not adequate to meet performance goals.

Appendices

Appendix A: Plan Acronyms and Definitions

Appendix B: State and Federal Planning Factors

Appendix C: Public Involvement

Appendix D: Consultation with Local Officials

Appendix E: Interregional Corridor and Regional Trade Center Maps

Appendix F: Managed Corridors

Appendix G: Travel Time Reliability

Appendix A:
Acronyms and Definitions

ADT:	Average daily traffic
ATIP:	Area transportation improvement program
ATIS:	Advanced traveler information systems
ATP:	Area transportation partnership
CCTV:	Closed circuit television
CFS:	Commodity flows survey
CURA:	Center for Urban and Regional Affairs
CVISN:	Commercial vehicle information system and network
DTED:	Minnesota Department of Trade and Economic Development
EU:	European Union
FAA:	Federal Aviation Administration
FHWA:	Federal Highway Administration
FIRE:	Finance, insurance and real estate
FTA:	Federal Transit Administration
GDP:	Gross domestic product
GSP:	Gross state product
HPI:	High priority interregional corridor
HUTDF:	Highway user tax distribution fund
IRC:	Interregional corridor
ITS:	Intelligent transportation system
JIT:	Just-in-time delivery
LGU:	Local governmental unit
LRT:	Light rail transit
MPI:	Medium priority interregional corridor
MPO:	Metropolitan planning organization
MRSI:	Minnesota rail service improvement program
MSP:	Minneapolis – Saint Paul
MVM:	Million vehicle miles
RALF:	Right-of-way acquisition loan fund
RDC:	Regional development commission
ROW:	Right-of-way
RTC:	Regional trade center
STIP:	State transportation improvement program
TCMA:	Twin Cities metropolitan area
VMS:	Variable message signs
VMT:	Vehicle miles of travel

10-Year Work Plan: Fiscally constrained program of Mn/DOT projects for the next ten years.

Acceptable Travel Time: Expected travel time plus acceptable additional travel time.

Accessibility: Highway access and modal availability.

Adequate Conditions for Bicycle Travel: Adequate conditions are defined as a 6' or wider shoulder in good condition without rumble strips unless the rumble strips are in compliance with current Mn/DOT guidance for US, TH & CSAH roads; an off-road parallel paved path; or low ADT on CSAH roads without a shoulder.

Annual Revenue Service Hours: The number of hours that passenger service is in operation for bus and passenger rail.

Annual Vehicle Miles of Travel: Annual vehicle miles of travel is calculated by taking the length of each highway segment times the average annual daily traffic volume times the number of days in a year.

Appraisal Rating (bridges): A measure of the service of the current bridge as compared to a bridge that meets current design standards.

Appropriately Designed Roadway Connections to Interregional Corridors: A roadway connection is considered appropriately designed if significant impediments to truck movements have been eliminated or mitigated. Significant impediments to truck movements potentially include: insufficient cross-section to carry the daily vehicular (truck/auto) traffic; lack of truck climbing lanes on steep hills; lack of passing lanes on narrow two-lane roads with limited passing opportunities; shoulder that is unable to support a heavy truck; insufficient shoulder width to accommodate a truck; spring weight restrictions; bridge weight restrictions; low clearance bridges or tunnels (less than 14 feet); substandard/unsafe at-grade railroad crossings; poor PSR level; three years or fewer remaining service life. Different criteria may apply to different roadway types.

Average Clearance Time: The amount of time between incident (see definition below) detection and total clearance. Average clearance time is a metric used by FHWA and other state departments of transportation.

Bare Lanes: When the "tire track" portion of the driving lane is clear of snow and ice.

Condition Code: A measure of the integrity of the physical materials of the bridge.

Congested Freeway Segment: A segment whose weekday peak-period speed falls below 45 miles per hour.

Expected Additional Travel Time: Customer-defined acceptable additional travel time over expected travel time.

Expected Travel Time: Peak weekday median travel time.

Fatality: A fatality is defined as a death that occurs within 31 days of a crash.

Incidents: Include all crashes, rollovers, spinouts and stalled vehicles blocking traffic.

Indicator: A set of consistent trend data reported over time that provides information on a changing condition of strategic importance.

Intercity Passenger Service: Bus and/or rail transportation, operating with limited stops over fixed routes, connecting two or more Regional Trade Centers (levels 1-3). This service has the capacity for transporting passengers and their baggage and making connections with other scheduled, intercity service to points within or outside Minnesota.

Interregional Corridors (IRCs): There are approximately 3,000 miles of Interregional Corridors within Minnesota. These are the impartant roadways linking regional trade centers levels 0 through 1 and 3 in the state. A map of the Interregional Corridor System and Regional Trade Centers can be found in Chapter 4 and Appendix E.

Interregional Transportation Corridors: Connections between regional trade centers (levels 0, 1 and 2). These connections are mode independent, and include highway, rail, air and/or transit connections.

Limited Actions: Plans or projects proposed for areas where local governmental units have completed comprehensive plans with goals and policies to manage access along Interregional Corridors and/or have adopted resolutions of support (endorsement) of the Interregional Corridor Management Plans or partnership studies.

Low Congestion: A segment of roadway that experiences less than one hour of peak-period congestion per day.

Managed Corridor: A managed corridor contains elements of each of three major travel management categories: Transit Advantages, Intelligent Transportation Systems, and Other Management Strategies. The more high-level management elements the corridor contains, the higher managed it is.

Minimum Speed Targets: Minimum speeds as established by the Interregional Corridor Study and adopted as part of the Statewide Transportation Plan (Moving Minnesota 2000). Minimum speed targets are 60 mph for High-Priority IRCs and 55 mph for Medium-Priority IRCs.

Mobility: Includes travel time and reliability. Reliability is also referred to as travel time variability or predictability.

Moderate Congestion: A segment of roadway that experiences one to two hours of peak-period congestion per day.

Modes: Different forms of transportation options for moving people (highways, transit, passenger rail, air and bicycles) and freight (highways, rail, air and waterways).

Multimodal: Different forms of transportation options for moving people (highways, transit, passenger rail, air and bicycles) and freight (highways, rail, air and waterways).

Non-Auto Trips: Non-auto trips include commute-only trips made via bus, walk, bicycle and, where noted, work at home. Excludes commutes defined as "other means", streetcar/trolley, subway, railroad and ferryboat. NOTE: when commuter rail or LRT come on line, these areas will have to be included.

Pavement Condition Index: A measure used by the FAA and Mn/DOT Aeronautics to evaluate runway pavement condition. The pavement condition rating is based on the Pavement Condition Index, which is a numerical indicator based on a scale of 0 to 100.

Person Trips: Person trips are computed by taking the average number of occupants times the total number of vehicles in that category. Each category is then summed to get total person trips.

Present Serviceability Rating (PSR): The PSR rating is based both on a quantitative measure of highway ride quality (roughness) and a qualitative assessment or correlation of this ride roughness on a scale of 0 to 5.

Principal Arterial Corridor: For purposes of defining levels of corridor management, a principal arterial corridor includes adjacent minor arterial(s) either side of the principal arterial facility, provided they function as alternate routes.

Protected Land (airports): Land that has been acquired or zoned to meet projected expansion needs or noise, safety and height clearance requirements.

Protected Land (highways and passenger service): Land that has been acquired or officially mapped to meet projected expansion needs. In addition, the project area may be protected if it is zoned as agricultural use to prevent urban development.

Reasonable Travel Time: Expected travel time plus acceptable additional travel time. Information on expected travel time and acceptable additional travel time should be obtained from customers and from travel time runs that identify a median travel time.

Regional Trade Center: Economic centers of activity defined as Type 0-3 in the Center for Urban and Regional Affairs' (CURA) report entitled, "Trade Centers of the Upper Midwest, 1999 Update". Major Regional Trade Centers are defined as the Twin Cities metropolitan area and the level 1 RTCs. The level 1 RTCs include Duluth-Superior, Fargo-Moorhead, St. Cloud, Rochester and La Crosse-La Crescent.

Reliable Travel Time: Travel time that is consistent during the peak period on a daily basis.

Right-of-Way: A strip of land acquired by purchase, reservation, dedication, prescription or condemnation and intended to be occupied by a roadway, trail, water line, sanitary sewer, and/or other public utilities or facilities.

Right-of-Way Acquisition Loan Fund (RALF): Loan fund available to communities in the Twin Cities eight-county metropolitan area that is used to purchase right-of-way for highway transportation projects.

Rural Commuter Route: A roadway that carries between 10,000 and 30,000 trips a day. Used for snow and ice removal purposes.

Service Miles: Length of rail corridor that services passengers.

Severe Congestion: A segment of roadway that experiences more than two hours of peak-period congestion per day.

Structural Condition of Bridges: The structural condition is made up of three areas: deck condition, superstructure condition, and substructure condition.

Super Commuter Route: A roadway that carries over 30,000 trips a day. Used for snow and ice removal purposes.

Three-Year Moving Average: Three-year moving average is defined as the sum of the most recent three years of crash data divided by three. The average is computed each year with the newest year added to the computation and the last year (4th year) dropping out of the computation. Data is assembled annually.

Transit: Schedule and demand responsive regular and express bus services; intercity bus service, light rail transit, commuter rail and Amtrak passenger services.

Transit Choice Users: Users of the transit system that are not dependent upon the system for their basic transportation needs; they choose to use the system.

Transit Dependent Population: The transit dependent population includes youth, elderly, low income, zero-car households, and persons with mobility limitation. Youth includes 18 years of age and under; elderly consists of individuals 55 years and older; and low income comprises individuals with income up to 200 percent of the poverty level.

Transportation Infrastructure: The guideways and/or associated terminals used for moving people and freight for all modes. Guideways include: highways (Interstates, US Highways, Trunk Highways and other roadways); rail lines; and waterways (rivers, lakes and associated water bodies). Terminals include: park-and-ride facilities; transit station/hubs; intermodal facilities; airports; and river terminals, lake ports and seaports. The transportation infrastructure provides the essential links to economic activity.

Transportation Services: Customer-oriented element of transportation modes (e.g., vehicle, passenger and freight-carrying capacity, frequency of service, traveler information, etc.).

Transportation Systems: Infrastructure and services specific to transportation options (modes).

Transportation Network: Aggregation of transportation systems.

Urban Commuter Route: A roadway that carries between 2,000 and 10,000 trips a day. Used for snow and ice removal purposes.

Weather Event: Time from the beginning of snowfall until three hours after snowfall has ended.

Appendix B:
State and Federal Planning Factors

STATE AND FEDERAL PLANNING FACTORS		Statewide Transportation Plan Policies									
		Preserve Essential Elements of Existing Transportation	Support Land Use Decisions that Preserve Mobility and Enhance the Safety of Transportation Systems	Effectively Manage the Operation of Existing Transportation systems to Provide Maximum Service to Customers	Provide Cost-Effective Transportation Options for People and Freight	Enhance Mobility in Interregional Transportation Corridors Linking Regional Trade Centers (RTCs)	Enhance Mobility Within Major Regional Trade Centers	Increase the Safety and Security of Transportation Systems and their Users	Continually Improve Mn/DOT's Internal Management and Program Delivery	Inform, Involve & Educate All Potentially Affected Stakeholders in Transportation Plans and Investment Decision Processes	Protect the Environment and Respect Community Values
Minnesota Transportation Goals Minnesota Statutes, Chapter 174	Provide safe transportation for users throughout the state.							✔			
	Provide multimodal and intermodal transportation that enhances mobility, economic development, and provides access to all persons and businesses in Minnesota while ensuring that there is no undue burden placed on any community.				✔						
	Provide a reasonable travel time for commuters.					✔	✔				
	Provide for the economical, efficient and safe movement of goods to and from markets by rail, highway and waterway.				✔	✔					
	Encourage tourism by providing appropriate transportation to Minnesota facilities designed to attract tourists.	✔				✔					
	Provide transit services throughout the state to meet the needs of transit users.				✔						
	Promote productivity through system management and the utilization of technological advancements.			✔							
	Maximize the benefits received for each state transportation investment.								✔		
	Provide funding for transportation that, at a minimum, preserves the transportation infrastructure.	✔									
	Ensure that the planning and implementation of all modes of transportation are consistent with the environment and energy goals of the state.										✔
	Increase high occupancy vehicle use.				✔						
	Provide an air transportation system sufficient to encourage economic growth and allow all regions of the state the ability to participate in the global economy.				✔						
	Increase transit use in the urban areas by giving highest priority to the transportation modes with the greatest people moving capacity.				✔						
	Promote and increase bicycling as an energy-efficient, non-polluting and healthful transportation alternative.				✔						
Federal Planning Requirements (TEA-21)	Support the economic vitality of the United States, and states and metropolitan areas especially by enabling global competitiveness, productivity and efficiency.				✔	✔	✔				
	Increase the safety and security of the transportation system for motorized and non-motorized users.		✔					✔			
	Increase the accessibility and mobility options available to people and for freight.		✔		✔						
	Protect and enhance the environment, promote energy conservation and improve quality of life.										✔
	Enhance the integration and connectivity of the transportation system, across and between modes throughout the state, for people and for freight.				✔						
	Promote efficient system management and operation.			✔							
	Emphasize the preservation of the existing transportation system.	✔									

Appendix C:
Public Involvement

Overview of 2002 Plan Development

The Statewide Transportation Plan is a long-range plan for transportation investment decision-making. A critical component of the development process was obtaining feedback from Mn/DOT stakeholders and customers through a comprehensive public involvement program. The purpose of this program was to gain information that will help Mn/DOT make decisions based on the needs and priorities of residents throughout Minnesota. In addition, it provided an opportunity to educate people about the planning process and involve them in the Draft Statewide Transportation Plan. To achieve its objectives, Mn/DOT implemented numerous input opportunities among a variety of audiences. As a result, Mn/DOT received feedback from more than 1,700 constituents throughout August and September, 2002. Input opportunities included:

- Eight transportation dialogue meetings were held in each of Mn/DOT's districts throughout the state. Meetings were primarily attended by partners and stakeholders, and were open to the public.
- Seven focus groups were conducted with immigrant and minority populations throughout the state, as well as special outreach efforts to the American Indian community.
- A straw poll of 1,000 citizens was completed with visitors to Mn/DOT's exhibit at the Minnesota State Fair.
- An online survey was completed by 200 citizens who visited Mn/DOT's Web site.
- Two focus groups were conducted with general citizen participants. One focus group was held in the Twin Cities area, the other in Greater Minnesota.

Mn/DOT also conducted an extensive news media outreach both to publicize the public involvement opportunities and to educate citizens unable to participate in the process about the statewide plan. Information about Mn/DOT's 20-year Draft Statewide Transportation Plan appeared in daily and weekly newspaper articles, radio interviews and television stories across the state. This media exposure had the potential of reaching more than 1 million Minnesotans.

General Themes

Throughout the public involvement process, several general themes emerged that were consistent across the state and by various populations. The following issues clearly stood out as primary concerns for all participants.

- **Preservation of Existing Infrastructure** – Minnesotans are concerned about the maintenance and care of our current transportation systems. Existing infrastructure is viewed as a public investment that should be protected. Using transportation funding for preservation is considered a cost effective method during a time of limited funds. In addition, the uniform opinion across the state is that preservation must be the first priority.
- **Improved Mobility and Transportation Options**– Participants saw a need for additional options when it comes to transporting people and freight, both within regional centers and along interregional corridors. People recognize that the current transit system has to address

growing congestion and mobility problems throughout the state. This is seen as an issue that has both economic and quality of life implications.

- **Safety and Security** – Safety is an underlying concern for Minnesotans and is seen as interrelated with all transportation plans and initiatives. Driver education and enforcement of safety regulations are key issues throughout the state. In addition, participants want to ensure that safety is a factor in the design of transportation infrastructure.

Geographical Differences

Overall, the input Mn/DOT received was consistent across geographical and cultural demographics; however, there were a couple of issues that did demonstrate a distinct difference between the Twin Cities area and greater Minnesota.

- **Traffic Congestion** – The issue of congestion was the most striking example of geographical difference during the public involvement process. Greater Minnesota participants are primarily focused on the need to transport goods across the state in a timely manner. Participants in the Twin Cities area are primarily concerned about the transportation of people and the congestion problems within the Twin Cities area. In both cases, congestion is viewed as a growing problem that has a major economic impact throughout the state.
- **Project Priority** – People in greater Minnesota feel that their transportation needs are considered less important than needs in the Twin Cities area. Whether it's snow plowing, road repair or bridge maintenance, many participants in greater Minnesota communities expressed concern that their projects are viewed as less important than ones in the Twin Cities area.

Audience Differences

During the public involvement process, Mn/DOT heard from a variety of audiences including stakeholders who work directly with transportation issues and members of the general public. The input received was generally consistent overall. However, several issues differed among various populations.

- **Public Input** – All participants we talked with appreciated the opportunity to provide feedback to Mn/DOT regarding transportation plans. However, minority populations felt especially strong about continued and increased involvement in the planning process. The issue of public input was especially important to communities that have historically been under-represented. They want to ensure that cultural diversity is taken into consideration for all future planning.
- **Transit Options**–Increased transit options are a key issue across the state among minority populations. Current problems with public transportation have a significant impact on their daily lives.
- **Project Implementation** – Participants from the general public were especially frustrated by the implementation of construction projects. Many are confused about which roads belong to which units of government, and they perceive a lack of coordination between government units that are repairing roadways. As a result, they believe the construction process is unnecessarily complicated and needs to be simplified through improved coordination.

Summary

The public involvement program provided Mn/DOT with valuable feedback and information. The program's purpose was to share information with Minnesota's residents and learn about their concerns, needs and expectations. Mn/DOT will incorporate the public comments into the Statewide Transportation Plan and use it to further guide the department in making the most effective plans and decisions. Mn/DOT plans to continue its efforts to involve the public in planning Minnesota's transportation future.

Overview of Revised Plan Development (2003)

The public involvement process for the 2003 revision of the Minnesota Statewide Transportation Plan included public meetings on July 9, 2003 along with notification of availability of the plan for review and comment through the State Register, ads placed in 11 regionally significant Minnesota newspapers, and via Mn/DOT's web site. Information regarding the public meeting and an overview of the proposed revisions was also mailed to hundreds of interested officials and citizens identified by each of Mn/DOT's eight districts. Staff from the Office of Investment Management made presentations regarding the revisions to groups in the metro area and in Greater Minnesota.

During the June 16 * July 18 comment period, Mn/DOT received written comments on the proposed revisions and verbal comments during the July 9 public meetings. Several themes were prominent in these comments, and these are noted below.

- Strong interest in knowing more about how, when, and for what projects the cost-effectiveness framework will be applied and seeking assurance that factors such as business impacts and air- and water-quality can be taken into account where applicable.
- Comments stressing the need for roadside rest areas to meet the needs of the traveling public, for safety purposes as well as personal convenience, emphasis on need for better understanding of the need for and use of rest areas by the trucking industry.
- Numerous comments about revisions that raise concerns about declining support for transit investments; concern expressed about needs of transit-dependent populations for both local and inter-city travel options.
- Comments seeking clarification of safety goals.
- Frustrations expressed regarding the lack of adequate and stable funding sources to meet identified needs.
- Comments emphasizing Mn/DOT's need for the involvement and cooperation of its many transportation partners.
- Many comments and strong support for Mn/DOT's performance framework, measures and targets.

Appendix D:
Consultation with Local Officials

This 2003 revision to the Minnesota Statewide Transportation Plan has been completed in consultation with Minnesota's local officials. These elected and appointed representatives of Minnesota's tribes, counties, cities, towns and other units of government are the transportation partners Mn/DOT most closely collaborates with in development, operation, and management of the state's transportation system.

Minnesota's Tribes

During the 2002 development of the Statewide Transportation Plan, Mn/DOT held two meetings with representatives from Minnesota's tribes. For the currently proposed 2003 Plan revisions, the identified lead representative of each tribe, along with tribal planning and roads coordinators, were provided copies of the draft revised Plan, and by letter invited to comment at the July 9 Transportation Forum or to comment by letter or email.

Regional Development Commissions

Minnesota's regional development commissions (RDC) are multi-county cooperative entities with historical and on-going roles in the provision of transportation planning coordination. The RDCs are managed by a governing board made up of county board representatives from the member counties. For the currently proposed 2003 Plan revisions, the RDC transportation planners were informed of the proposed Plan revisions during a briefing in June 2003 and invited to review and comment on them at the July 9 Transportation Forum or to comment by letter or email.

Metropolitan Planning Organizations

Communities of over 50,000 persons have federally designated responsibilities for transportation planning within their jurisdictions. In Minnesota, there are seven metropolitan planning organizations (MPOs) that serve the Twin Cities, Duluth, St. Cloud, Rochester, LaCrosse-LaCrescent, Fargo-Moorhead, and Grand Forks-East Grand Forks metropolitan areas. Each MPO is overseen by a policy board comprised principally of local elected officials. For the currently proposed 2003 Plan revisions, the MPO executive directors were informed of the proposed Plan revisions during a briefing in June 2003 and invited to ask their policy boards to review and comment on the revisions at the July 9 Transportation Forum or to comment by letter or email.

In the Twin Cities Metropolitan Area, Mn/DOT staff also met and discussed the proposed Plan revisions with the Planning and Policy subcommittees of the Transportation Advisory Committee and with the Transportation Advisory Board.

Area Transportation Partnerships

Mn/DOT established the Area Transportation Partnership (ATP) process in response to provisions contained in ISTEA and also in part in response to requests for more local involvement in the transportation decision-making process. The ATP process built on the existing district structure of Mn/DOT and created geographical sub-state, multi-county partnerships comprised of representatives from cities, counties, townships, regional agencies, transit operators and other modal groups, tribal governments, metropolitan planning organizations, regional development commissions, and state agencies within or operating within

the district's management area. Where counties overlap Mn/DOT districts, the counties chose which ATP they would affiliate with. With the result that the eight ATPs generally mirror the boundaries of the eight Mn/DOT districts. As of 2001, there were 168 members serving on the eight ATPs, and 33 percent were elected local officials. Staff support for the ATPs is provided by the RDCs, MPOs, and Mn/DOT. For the currently proposed 2003 Plan revisions, the ATPs were informed of the proposed Plan revisions and invited to review and comment on them at the July 9 Transportation Forum or to comment by letter or email.

Joint City County Engineers Executive Board

OIM staff gave an overview of the proposed Plan revision and the public involvement process and schedule to a meeting of the joint city-county engineers executive board on June 4, 2003.

Minneapolis City Council

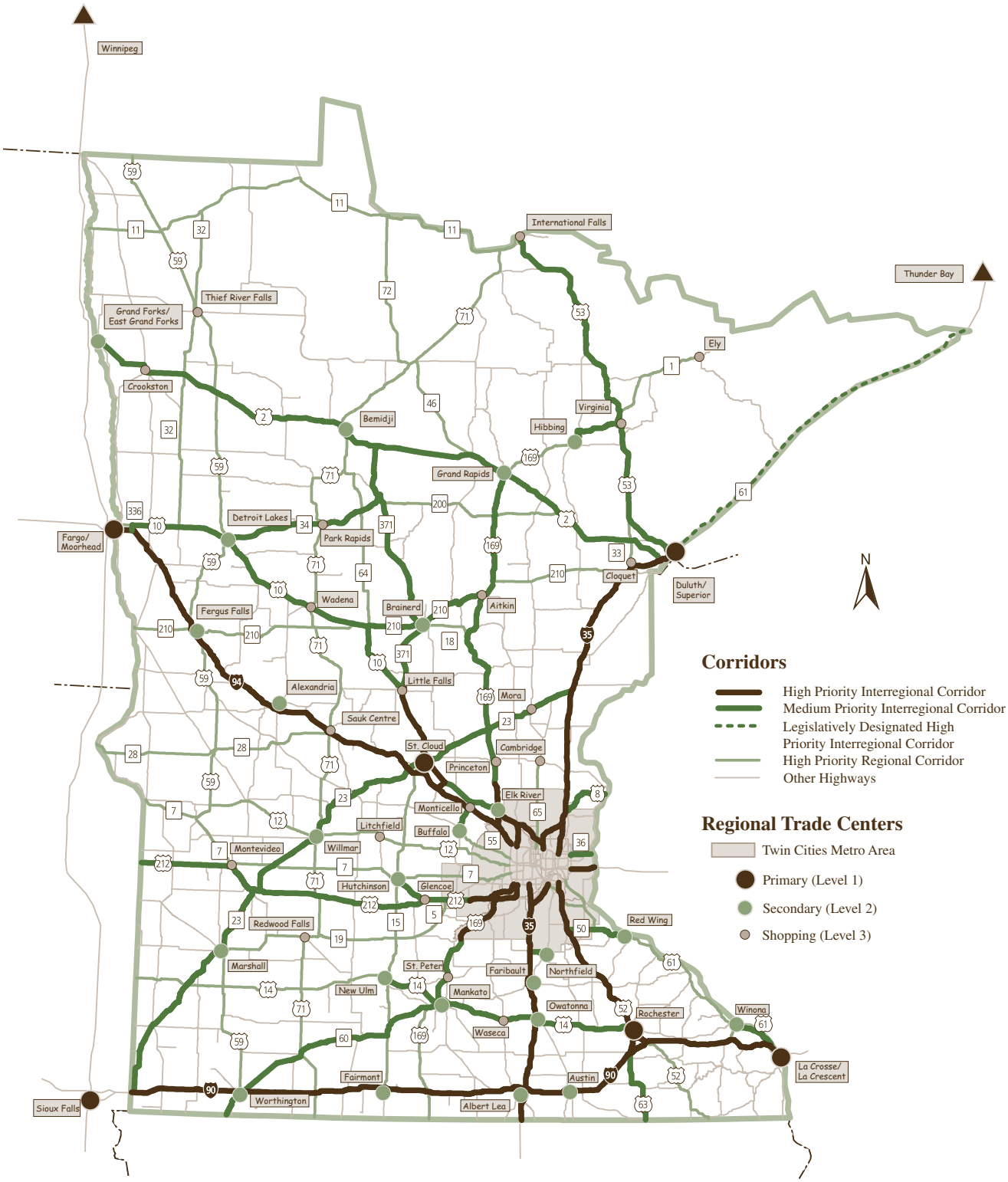
OIM staff gave an overview of the proposed Plan revision and the public involvement process and schedule to a meeting of the Minneapolis City Council's Transportation and Public Works Committee on June 24, 2003.

Additional Involvement Opportunities

Other methods to encourage involvement of local officials and the public in the planning process included publication of formal notices with respect to the availability of the proposed revised Plan for review and comment and of the opportunity to provide comment through the June 9 public meeting or through written or emailed submittals.

For the 2003 revision of the Statewide Transportation Plan, notices were published in the State Register, and ads displaying information about availability of the document and the public meeting were placed in 11 major regional newspapers throughout the state.

Appendix E:
Interregional Corridors and Regional Trade Centers



Appendix F:
Managed Corridors

Policy 3—Corridor Travel and Flow Management

A corridor is defined as the Principal Arterial plus parallel Minor Arterials that function as alternate routes for the Principal Arterial.

Travel and flow management strategies are grouped into three major categories as described below. The strategies listed are intended to be illustrative rather than required. Appropriateness will be based on feasibility and cost effectiveness. Many of these strategies apply, initially, to the Twin Cities metropolitan area where many already exist. As the concepts developed here are extended to Level 1 RTCs, different sets of categories and strategies may have to be developed.

Travel and flow Management Categories

A. Transit Advantages

This category includes:

- Ramp meter bypasses, bus-only shoulders, exclusive bus/carpool facilities within corridor (e.g., HOV lanes), etc.
- Supporting transit and carpool facilities including park-and-ride or park-and-pool facilities, transit hubs/major transfer facilities, etc.

B. Intelligent Transportation Systems

This category includes:

- Corridor is monitored by a Traffic Management Center (CCTV, loop detectors).
- Ramp metering, if warranted.
- Advanced Traveler Information Systems (ATIS) (detours, construction, incidents, accidents, weather, congestion/delays) and other ITS elements (variable message signs, trailblazing, etc.)
- Advanced signal coordination on minor arterials within the corridor.
- Signal priority for transit on minor arterials within the corridor.

C. Other Management Strategies

This category includes:

- Travel Demand Management (carpooling programs, flexible schedule, parking cash-out, transit incentive programs, etc.)
- Incident management and clearance (Highway Helpers, State Patrol)
- Other innovative strategies such as road pricing strategies to reduce congestion, and specialized use of roadways (e.g., contra-flow lanes, use of shoulders during peak periods, etc.)

Levels of Managed Corridors

Distinctions will be made between highly, moderately or minimally managed corridors based on how many of the key elements that make up each of the above travel and flow management categories exist in the corridor. Following are preliminary definitions of levels of managed corridors:

1. **Highly Managed Corridors (Examples: I-394 and I-35W, south)**

   From Category A: Contains most of the transit advantages strategies listed. At a minimum, ramp meter bypasses, bus-only shoulders, transit advantages such as HOV lanes, major transit hubs and other strategies.

   From Category B: Contains, at a minimum, ramp metering (under TMC monitoring), most ATIS elements, advanced signal coordination on the corridor's minor arterials, etc.

   From Category C: Substantial deployment of Highway Helpers and State Patrol, TDM and innovative strategies such as specialized use of lanes and shoulders and pricing strategies.

2. **Moderately Managed Corridors (Example: I-94)**

   From Category A: At a minimum, ramp meter bypasses and bus-only shoulders, plus other transit advantages, such as park-and-ride or park-and-pool facilities.

   From Category B: Ramp metering (under TMC monitoring) plus some ATIS elements; key segments of the corridor minor arterial(s) have advanced signal coordination.

   From Category C: Moderate deployment of Highway Helpers and State Patrol, plus some TDM strategies.

3. **Minimally Managed Corridors (Example: I-35E, north)**

   From Category A: Bus-only shoulders and park-and-ride and park-and-pool facilities.

   From Category B: Little or no TMC monitoring and minimal ATIS elements.

   From Category C: Highway Helpers and State Patrol minimally deployed.

IRC Travel Time Reliability
Relating Travel Time Runs to Customer Survey Results

Travel Time Runs	User Survey
1. Select peak two hours in Twin Cities metropolitan area (a.m. and p.m.)	4. Survey most recent travel to/from Twin Cities metropolitan area in peak two-hour period (a.m. and p.m.)
2. Conduct directional travel time runs and determine: ■ Median, and ■ One and two standard deviations (SD)	5. Establish expected travel time and extra time allowed: ■ Expected travel time ■ Extra time allowed
3. Establish a data-based Acceptable Travel Time (ATT) ATT = Median Time + SD $_{1 \& 2}$	6. Establish a survey-based Acceptable Travel Time (ATT) ATT = Expected travel time + extra time allowed
7. Use the two data sets for mutual calibration and finalize ATT values: ATT = Expected time + travel time buffer	