



JOHN ENGLER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

GREGORY J. ROSINE
DIRECTOR

August 23, 2002

Dear Citizens of Michigan:

On behalf of Governor Engler, I am pleased to present Michigan's "State Long Range Plan 2000-2025 - Mobility is Security." It is the culmination of several years' work, dozens of public meetings held around the state, and many hours of dedicated staff time to bring you the best possible plan.

The multi-modal State Long Range Plan provides a framework for investment in Michigan's transportation system for the years 2000 to 2025. The investments you trust us to make must preserve the system, but make sure that it operates efficiently, effectively, and safely. When the system functions optimally, it provides the greatest mobility and economic benefit for the residents and businesses of Michigan.

Well into the course of developing the State Long Range Plan, we were confronted with the tragic events of September 11, 2001. The security of our transportation system became an issue of national concern, and of particular importance to Michigan, with our high-volume border crossings with Canada. Michigan residents recognize the importance of secure transportation to every aspect of their lives, and this plan is designed to preserve the high degree of mobility and security we currently enjoy.

By setting goals, investing wisely, monitoring system performance, and providing means for accountability and responsibility, we will be able to balance competing priorities and make the best use of our resources. I encourage you to see how we accomplish this by reviewing *your* State Long Range Plan.

Sincerely,

A handwritten signature in blue ink, appearing to read "Gregory J. Rosine".

Gregory J. Rosine
Director

State Long Range Plan: 2000-2025

Prologue.....	<u>v</u>
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Chapter 1

MDOT's Vision.....	<u>6</u>
Transportation is an Investment	<u>6</u>
Transportation and Quality of Life	<u>6</u>
Transportation and the Future	<u>7</u>
Key Questions.....	<u>7</u>

Chapter 2

Introduction.....	<u>9</u>
History and Background.....	<u>9</u>
Public Involvement.....	<u>10</u>
Customers and Providers Committee.....	<u>10</u>
Public Involvement Meetings.....	<u>11</u>
Coordination with Metropolitan Planning Organizations	<u>11</u>
Environmental Justice.....	<u>11</u>
Plan Goals and TEA-21 Emphasis Areas.....	<u>13</u>
Purpose of Present Document.....	<u>13</u>
Recommendations	<u>13</u>

Chapter 3

Baseline: Our Transportation System Today ..	<u>14</u>
Demographic and Economic Indicators	<u>14</u>
Population.....	<u>14</u>
Income, Households and Auto Ownership	<u>18</u>
Largest Economic Sectors.....	<u>18</u>
Gross State Product	<u>19</u>
Employment.....	<u>20</u>
Infrastructure Overview.....	<u>23</u>
Highways.....	<u>24</u>
Aviation	<u>36</u>
Non-motorized	<u>38</u>
Intercity Bus.....	<u>38</u>
Intercity Passenger Rail	<u>40</u>
Local Public Transit Service.....	<u>41</u>
Ridesharing.....	<u>42</u>
Ferry Service	<u>43</u>
Commercial Ports	<u>43</u>
Rail Freight.....	<u>46</u>
Intermodal Facilities	<u>47</u>
Summary of Transportation Issues	<u>47</u>

Chapter 4

Goals and Objectives.....	<u>49</u>
Preservation.....	<u>49</u>
Safety	<u>50</u>
Basic Mobility.....	<u>50</u>
Strengthening the State's Economy.....	<u>51</u>
Transportation Services Coordination	<u>51</u>
Intermodalism	<u>52</u>
Environment & Aesthetics	<u>52</u>
Land Use Coordination	<u>52</u>

Chapter 5

Transportation Strategies	<u>53</u>
Highways	<u>53</u>
Asset Management	<u>53</u>
Corridors of Highest Significance.....	<u>56</u>
Congestion Management	<u>63</u>
Other Highway Strategies	<u>66</u>
Safety	<u>66</u>
Traveler Services and Facilities	<u>66</u>
Car Pool Parking Lots	<u>67</u>
Environmental and Land Use Strategies..	<u>67</u>
Strategies for MDOT's Business Practices ..	<u>68</u>
Aviation	<u>69</u>
Non-motorized.....	<u>69</u>
Intercity Passenger Bus	<u>70</u>
Intercity Passenger Rail	<u>70</u>
Regional Rail	<u>70</u>
Local Public Transportation	<u>70</u>
Ridesharing	<u>70</u>
Ferry Service.....	<u>71</u>
Commercial Ports.....	<u>71</u>
Rail Freight.....	<u>71</u>
Matrices: How the Strategies Help Attain Plan Goals.....	<u>71</u>

Chapter 6

Performance Monitoring.....	<u>75</u>
Selecting Performance Measures.....	<u>76</u>
Performance Indicators for State Long Range Plan Goals.....	<u>76</u>

Chapter 7

Investing to Meet Our Goals	<u>80</u>
Highways	<u>80</u>
Sources of Revenue	<u>80</u>
Leveraging Existing Revenue.....	<u>81</u>

Managing Our Assets.....	81
Revenues for the Future	81
Addressing Revenue Concerns through 2025.....	83
Aviation	85
Funding Programs.....	86
Public Transportation.....	87
The Comprehensive Transportation Fund ..	87
Bus and Rail Passenger Programs	87
Rail Freight Services and Safety Programs	88
Marine.....	88
Public Transportation Funding The Next 25 Years	88
Funding Needs.....	88

Chapter 8

Conclusion & Major Recommendations	90
Setting Goals	90
Investing Wisely	90
Monitoring System Performance	91
Accountability and Responsibility	91
Recommendations	91
1. Preserve our current mobility.	91
2. Modernize the transportation system...	91
3. Improve the management of our transportation assets at all levels.	92
4. Improve the safety and security of our transportation system.	92
5. Improve intermodal connectivity between modes of transportation.	92
6. Improve connectivity and continuity within modes of transportation.	93
7. Identify revenues for the future.	93
8. Implement the State Long Range Plan throughout the MDOT Regions.	93

Appendix A

Public Involvement.....	95
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Appendix B

Michigan Transit Strategic Plan Summary of Goals and Initiatives	101
---	---------------------

Appendix C

Michigan Airport System Plan Summary	104
---	---------------------

Appendix D

Policy Plan for Michigan Air Service Summary	105
---	---------------------

Appendix E

Directory MDOT Region and TSC Offices	106
--	---------------------

Appendix F

Directory Metropolitan Planning Organizations	108
--	---------------------

Appendix G

Glossary of Terms & Abbreviations	109
---	---------------------

Appendix H

Resources.....	115
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List of Figures & Tables

Table 2-1: Michigan's Transportation Goals and TEA-21's Emphasis Areas.....	12
Figure 3-1: Relationship in Growth: Population, Households and Travel.....	15
Figure 3-2: Statewide Population 1990 - 2025: Age Groups.....	16
Figure 3-3: Total Population 2000	16
Figure 3-4: Total Population 2025	17
Figure 3-5: Total Population Change: 2000 - 2025	17
Figure 3-6: Gross State Product 1999	20
Figure 3-7: Employment by Sector 1990 - 2025.....	21
Figure 3-8: Total Employment 2000	21
Figure 3-9: Total Employment 2025	22
Figure 3-10: Total Employment Change: 2000 -2025 ...	22
Figure 3-11: Michigan's State Trunkline System	24

Figure 3-12: Congested Conditions: Level of Service F ...	25	Table 6-1: Relationship of Performance Monitoring to State Long Range Plan Goals	79
Table 3-1: Annual Vehicle Miles Traveled (AVMT) on State Trunkline System.....	26	Figure 7-1: Revenue Shortfall: Due to Erosion of Buying Power.....	84
Table 3-2: 2000 State Trunkline AVMT & CVMT by Urban/Rural	27	Figure 7-2: Road & Bridge Program and Routine Maintenance: 3.5% Annual Program Inflation, 2.2% Annual Revenue	85
Figure 3-13: Comparisons of AVMT, CVMT & Gross State Product: 1990 to 2000	28		
Table 3-3: Significant Corridors.....	30		
Table 3-4: Highway Bridges	31		
Figure 3-14: Pavement Condition	32		
Table 3-5: Highway Crash Statistics Over Time	33		
Table 3-6: Aircraft Based at Michigan's Public Use Airports: 1994-2001	36		
Figure 3-15: Publicly Owned Airports	37		
Figure 3-16: Intercity Bus Routes	39		
Table 3-7: Ridership on Intercity Bus, State- supported Routes: Selected Years.....	39		
Figure 3-17: Intercity Passenger Rail	40		
Table 3-8: Local Public Transportation Services 1990-2000.....	42		
Table 3-9: Combined EUPTA Service Data for Drummond, Neebish and Sugar Island Ferries	43		
Figure 3-18: Commercial Ports	44		
Figure 3-19: Rail Freight.....	45		
Table 3-10: Rail Tonnage Originating or Terminating in Michigan, 1999	46		
Table 5-1: Asset Management at MDOT.....	55		
Figure 5-1: Corridors of Highest Significance	57		
Table 5-2: Criteria Used to Delineate Michigan Corridors of Highest Significance.....	58		
Figure 5-2: Corridors of Highest Significance: Ranking by Criteria	59		

Prologue

Planning and public involvement for Michigan's State Long Range Plan began long before the tragic destruction that took place on September 11, 2001. In the months since those attacks, this document has taken on a new importance, a greater sense of urgency.

Many things that the people of Michigan have long taken for granted, among them the security of our transportation system, have been called into question as a result of recent events. Increased security at Michigan airports, lengthy delays at border crossings, and an increased reliance on rail and bus passenger transportation have prompted Michigan residents to recognize the importance of secure transportation to every aspect of their lives.

MDOT's first priority, and the priority of every transportation agency in the state, must be to preserve the high degree of mobility and security we currently enjoy. Michigan Governor John Engler, in addressing a February 2002 meeting of the American Association of State Highway and Transportation Officials in Washington, D.C., put it this way:

"Everyone's first priority is homeland security. Our job is to make sure that transportation is included in these discussions and debates over homeland security. Because transportation mobility IS security. Transportation is the critical fiber in the fabric of our daily lives. The economy depends on good roads, good airports, access to railroads, intermodal opportunities to get the job done. We must factor that in as we are looking at homeland security."

To accomplish this we must make wise investments to preserve our system and to keep it functioning safely and effectively. We must ensure that the system has the connectivity and continuity needed to address new travel demands. We will need new and innovative financing mechanisms to sustain our transportation revenues in coming decades.

By consistently following the path described through the goals, objectives, and strategies of Michigan's State Long Range Plan, we can preserve and improve our transportation system. In doing so, we can protect the mobility and safety we enjoy, and the personal quality of life and economic success that such mobility provides.

Chapter One

MDOT's Vision

MDOT is committed to improving Michigan's total transportation system by efficiently delivering transportation products, services and information.

Our mission statement is:

"To provide the highest quality transportation services for economic benefit and improved quality of life."

Transportation is an Investment

MDOT's multi-modal State Long Range Plan establishes the framework for investment in Michigan's transportation system, the core of our economic strength. Our transportation system supports a gross state product of \$308 billion annually and 5.7 million workers¹. The transportation requirements for every dollar of industry output have been calculated on a nationwide basis². For example, the manufacturing of motor vehicles, iron, steel and food products — all important industries in Michigan — requires between 3.7 and 6.1 cents of transportation services per dollar of output. In a global economy, where saving even 1 percent in costs can make the competitive difference, it is easy to see how transportation investments translate into direct benefits for both industry and consumers.

The investments that we make in Michigan's transportation system must not only preserve it, but make sure that it operates efficiently, effectively, and safely. The component parts of the system must be both interconnected and interacting to ensure that transportation facilities move people and goods between the regions of the state, between Michigan and other states, and across international borders. When the system functions optimally, it lowers barriers to mobility, which in turn reduces the costs of production and distribution by allowing access to a broader range of inputs (labor, raw materials, and supplies) and larger markets for outputs.

Further, a partnership effort is needed that involves federal, state, regional, and local entities working together to keep Michigan and its regions moving effectively into the 21st century. To secure the success of our efforts, we will need to continue investing billions of dollars over the life of this plan. Therefore, it is essential that we make the wisest investments to preserve and enhance the performance of the system.

Transportation and Quality of Life

The quality of life for all Michigan residents is greatly influenced by the state's transportation system. Everything — from our daily commute to work, to the food we eat, to the merchandise we purchase, to the area in which we choose to live — is affected by the transportation decisions made at the state and local level. A balanced and robust transportation system enhances quality of life and household incomes by providing freedom to move, access to a broader range of jobs, and more options in housing and consumer purchasing. To ensure that Michigan's outstanding transportation system is able to continue to support and improve our quality of life and our economy, we will have to address many transportation needs in the new century.

Some of these needs require immediate attention, while others require longer-term strategies to respond to issues not yet fully defined. There will be no single solution to the transportation challenges of the next 25 years. Solutions will reside in a multitude of travel options for residents, visitors, and businesses as MDOT strives to continue providing customers with an efficient, safe, and modern transportation system that offers transportation choices for both people and products.

Providing options in one mode does not necessarily come at the expense of another mode. For example, one study indicated that while each commuter rail rider saved \$247 to \$865 annually over automobile commuting costs, the reduced congestion resulting from all commuter rail riders saved the truck and motor freight industry \$300 to \$450 million nationally in one year².

We need to manage and operate our transportation system to gain relief from congestion before we move to add capacity, especially in our urban areas. We need to rely more on intermodal transporta-

tion, and system access that does not require the traditional transportation infrastructure. We must focus on a system that provides access as well as mobility. This includes providing access to goods and services, recreation and social interaction. This principle is embodied in the state long range plan goal to “ensure basic mobility and access to jobs, education and health care.”

One option exercised by communities all over Michigan is investing in transit services. All of Michigan's 83 counties provide some level of public transit. Transit not only provides transportation for the “transit dependent” — those with no transportation alternative to transit — but it allows other households to operate with fewer vehicles. Household automobile transportation costs are estimated to be \$3,500 per vehicle annually, so transit options can provide substantial household savings².

Transportation and the Future

The influence of transportation — and shifts in transportation technology — has been far-reaching. The advent of the interstate system, the development of a system of hub airports, increases in intermodalism, and freight containerism were all positive watershed events for transportation in the second half of the 20th century. Our mobility was increased and the costs of goods and services were reduced. Similarly, the reduced availability of passenger rail service over the same time period limited travel options, increasing our dependence on automobile, truck, and air travel. This dependency also increased the need to offset impacts on land use development, and on the environment, including air quality.

There are several potential defining moments for Michigan's transportation system in the 21st Century. In the decades to come, Intelligent Transportation Systems, high mileage and alternative fuel vehicles, high speed rail, and ever-increasing intermodalism will impact our transportation systems — their use, their funding, and the mobility they provide. Whether those impacts are positive or negative depends on how well we identify and plan for the changes.

Tragically, one defining moment for the 21st Century has already occurred — the terrorist attacks on September 11, 2001. We have responded and will continue to respond to the increased and expanded

focus on security those events have brought about for our transportation system. The immediate impacts were on our international border crossings and our airports. In the mid to long-range future, we will consider both security and safety issues throughout the entire transportation system.

In addition to changes in transportation itself, other changes will also have an impact. Changes in telecommunications and the increased use of the Internet already provide access that was previously only possible through transportation, resulting in trends toward home-based work, e-commerce, e-education, and walkable communities. These will provide relief for the traditional transportation system. Similarly, demographic changes, such as an anticipated increase in older age population, will require an increased emphasis on intermodal connections and alternatives to the automobile.

These anticipated shifts have positive implications for the environment and energy consumption. They will improve transportation's energy efficiency and reduce emissions, lead to a switch toward renewable and recyclable fuels and slow the rate of increase in motorized trips.

These trends will also have significant impact on our ability to address future transportation needs. The increased use of more fuel efficient vehicles or greater use of alternate fuel technologies will result in a significantly reduced stream of revenue for transportation improvements. Anticipating this trend will require not only that transportation agencies do a better job of managing their assets, but also that they work together, and with the private sector, to identify funding solutions for the future.

Key Questions

Under any future scenario, there are key questions for us to ask:

- What is the current state of our transportation system?
- What are our system goals?
- What can be done to increase the likelihood that we will realize our goals?
- What can be done to ensure the safety and security of our transportation system?
- What can be done to maintain the mobility required for our citizenry and our economy?
- What can we expect in the future regarding our needs and resources?

It is our intent with the current update to our state long range plan to answer these questions or to provide the guidance and direction we will need for answering them in the future.

Chapter Sources:

- 1 United States Department of Commerce, Bureau of Economic Analysis, Report, 1999 <http://www.bea.doc.gov/bea/regional>
- 2 National Cooperative Highway Research Program, prepared by Cambridge Systematics, Inc., *Economic Benefits of Transportation Investment - NCHRP Project 8-36, Task 22 Demonstrating the Positive Benefits of Transportation Investment*. October, 2001.

Chapter Two

Introduction

The *State Long Range Plan: 2000-2025* builds upon the previous long range plan, now nearly a decade old. For this update, MDOT has involved the public through numerous meetings, exercises, and invitations for comment. The state long range plan sets the stage and provides guidance for the development of transportation programs that will help achieve our transportation goals.

History and Background

Planners, engineers, and elected and appointed officials face anew the challenges their predecessors faced some 50 years ago, when construction of the interstate system of freeways began. To meet present and future challenges, great investments of time and money will be required. With a renewed emphasis on comprehensive transportation planning, we will be better able to respond to both the technological changes that frame the solutions to today's problems, and the societal changes that these solutions will create.

State and regional transportation planning and funding commitments in the 21st century must be integrated more closely with local land use planning and decisions, and in such a way that promotes optimum economic, social, and environmental health for all communities. This must be done at the same time that we are reconstructing and modernizing our transportation infrastructure.

To help address future transportation issues, the State Transportation Commission adopted the Michigan Transportation Policy Plan in 1992. In 1993, the Michigan Department of Transportation (MDOT) began development of a 20-year State Long Range Plan in response to requirements of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). With the help of consultants, local transportation agencies, and a 60-member Customers

and Providers committee, MDOT conducted more than 100 meetings across the state. This process resulted in seven broad transportation policy goals, with objectives to assist in achieving those goals. The goals and objectives were intended to guide investment decisions at all levels and for all public transportation providers in Michigan. The Federal Highway Administration and the Federal Transit Administration approved the plan in 1994, and it has served us well for eight years.

The 1994 plan for the twenty year period of 1995-2015 was a good start. However, it was developed during a period in Michigan history when our transportation revenues were severely strained. To ensure our success and to address the transportation needs of the 21st century, we reassessed our plan. The result is the current document, *State Long Range Plan: 2000-2025*. It represents an effort to anticipate and respond to the changes that will accompany the passing of the next quarter century. *The State Long Range Plan: 2000-2025* provides goals, objectives, and strategies for all modes of transportation — highways, transit, passenger rail, freight rail, air and water facilities, and bicycle and pedestrian paths. The plan also takes into account that these modes interact and interconnect to form a dynamic system.

The previous *State Long Range Plan: 1995-2015* identified goals that remain sound today and MDOT has already done much to achieve those goals. Over the past eight years, due to technological improvements and philosophical changes, MDOT has become a leaner, more responsive, more customer-focused organization. Highlights from the past eight years include:

- MDOT initiated a new effort to get closer to its customers in 1996, replacing nine former district offices with seven region offices and 26 transportation service centers. The success of a more decentralized organization with a renewed customer focus has been evident in a marked improvement in program delivery and customer service over the past few years.
- MDOT developed and adopted our first Business Plan in 1997, which identifies four key strategies that have enabled us to focus our efforts and become more efficient.
- MDOT continued development and implementation of a fully integrated and automated decision-making tool, the Transportation

Management System (TMS). First mandated in ISTEA, the TMS provides the capability to identify condition, analyze usage patterns, and determine deficiencies of the multi-modal transportation infrastructure.

- Governor Engler's *Build Michigan II* program was approved by the Legislature in 1997, providing an additional \$200 million in state revenue annually and enabling MDOT, county road commissions and cities and villages to proceed with long-postponed transportation improvements.
- The Transportation Efficiency Act for the 21st Century (TEA-21) was enacted in 1998, providing an average of \$300 million additional federal transportation dollars in Michigan annually for the six-year life of the bill and continuing the federal commitment to intermodalism, local planning, and environmental responsibility.
- TEA-21 affirmed the centrality of Michigan's seven transportation goals by establishing a set of seven "emphasis areas" that must be considered as any state long range plan is developed. The seven emphasis areas are very similar to the seven transportation goals of Michigan's *State Long Range Plan: 1995-2015*.
- In 1998, the Michigan Transportation Commission approved mid-range condition goals for state highways: 1) Freeway pavements to be rated 95 percent "Good" by 2007, and freeway bridges to be 95 percent "Good" by 2008; and 2) non-freeway pavements to be rated 85 percent "Good" by 2007, and non-freeway bridges to be 85 percent "Good" by 2008.
- MDOT released its first *Five-Year Road & Bridge Program in 1999*, which provides detailed information on five years of scheduled road and bridge projects; the document is revised and updated annually.
- Throughout 1999 and 2000 the Public Act 51 Infrastructure Study Committee appointed by Governor Engler and the Legislature examined the issues surrounding state transportation funding in Michigan and made a number of recommendations to address transportation funding needs.
- In 2001, *Build Michigan III*, a joint initiative between the Michigan Economic Develop-

ment Corporation and MDOT, focused on road and bridge improvement projects that address safety and congestion issues, and responded to immediate economic development needs to support the state's continued economic expansion. The initiative included projects on both the state highway and local road systems.

Other changes, such as improvements in technology and communication, have facilitated MDOT's efforts to strengthen its customer service and coordinate infrastructure investments. Thus, MDOT is delivering its fourth record-breaking highway maintenance and construction program as of the publication of the current document.

New ways of delivering transportation services in Michigan have resulted in many successes, and they have also pointed to areas where improvements are still needed. In addition, demographic and economic shifts anticipated over the next two decades require careful long-term planning to ensure that Michigan residents continue to enjoy the high levels of mobility and economic prosperity that our transportation system supports.

Michigan's State Long Range Plan: 2000-2025 describes those issues and others, and provides strategies to address them and sustain the progress we have made toward achieving our transportation goals. Most importantly, we are listening to the customers and providers of the transportation system — we're responding to your needs and desires.

Public Involvement

This section summarizes a more detailed discussion of MDOT's public involvement process, contained within Appendix A of this report.

Customers and Providers Committee

MDOT reconvened the Customers and Providers committee from the *State Long Range Plan: 1995-2015* process to begin public involvement for the current update. We expanded the list of customers and providers to include a broader range of groups impacted by transportation. Groups ranging from the Michigan Commission for the Blind, the Inter Tribal Council, Detroiters Working for Environmental Justice, the League of Michigan Bicyclists, and the Rural Development Council, to name a few,

participated in the series of meetings. The diversity of the groups ensured that the scope of the goals and objectives would satisfy a broad range of interests.

MDOT held nine Customer and Provider meetings over nine months. The Customers and Providers committee meetings significantly shaped the goals and objectives of our updated state long range plan. For example, the previous plan did not include a specific goal about safety; committee members at that time considered safety to be inherent in all of MDOT's practices and policies. The reconvened Customers and Providers group added this goal and corresponding objectives because they believed there were specific safety issues in areas such as transit, non-motorized and on highways that should be addressed. The group also modified the objectives of various goals to either broaden them in scope or to target an area of specific concern.

Public Involvement Meetings

After the Customers and Providers committee's updates to the state long range plan were made, MDOT's next step was to take the document to the general public for comment. We held an extensive series of public involvement meetings throughout the state.

The purpose of the public involvement meetings was to: 1) gain public input regarding the state long range plan, 2) compare public input with existing and potential strategies, and 3) assist in designing the state long range plan to be a flexible and responsive document. We initially conducted 23 meetings throughout Michigan to obtain public input to the state long range plan. An average of three meetings were held in each MDOT Region with at least two, and a maximum of five, being held in any one region. An average of 21 persons participated in each meeting, including elected officials, transportation officials, business representatives, and the general public. An additional seven meetings were later held around the state at the request of other constituent groups.

Several major themes emerged from these public meetings, based on comments that predominated in number and recurrence in the various regions. These focused on the state long range goals and addressed all transportation modes, yet varied in importance depending on the part of the state.

Coordination with Metropolitan Planning Organizations

Metropolitan Planning Organizations, or MPOs, are also required by federal legislation to prepare long-range transportation plans. To ensure coordination between the state long range plan and the MPO long-range plans adopted over the past several years, MDOT presented information for review by the MPO Technical Advisory Committees.

This review took the form of a high-level look at state highway activities within MPO areas. Additional input and coordination will be requested from these agencies as part of the ongoing development of companion long range plan reports by each of the MDOT Regions.

In addition to this project-oriented review, there was MPO representation on the Customers and Providers committee.

Environmental Justice

The people of the state of Michigan are dependent upon some form of transportation every day, and MDOT effectively provides this essential service to millions. There are, however, certain intrinsic disadvantages in the creation and maintenance of the vital infrastructure that comprises the transportation system. Whether it is a change in travel time, increased or decreased access to employment, air quality, noise, or even the purchase of right-of-way, MDOT has an obligation to ensure that any negative consequences of its activities are not borne disproportionately by any affected group. MDOT meets this obligation in a variety of ways and on a variety of levels. Public involvement is key to this process.

The principle of "environmental justice" applies to MDOT in that we provide transportation services for many while recognizing the potential for disadvantages for some. As a recipient of federal funds, MDOT is subject to a 1994 presidential executive order in the area of environmental justice. The major goal of the executive order is to ensure that no minority or low-income population suffers "disproportionately high and adverse human health or environmental effects" due to any "programs, policies, and activities" undertaken by a federal agency or any agency receiving federal funding.¹ However, environmental justice is not a recent concept at MDOT. Since no additional legislation

accompanied the executive order, its authority rests in Title IV of the Civil Rights Act of 1964 and MDOT has long considered these principles in its planning process.

The concept of environmental justice ensures that transportation services are provided equitably to everyone in Michigan. Through careful planning and proactive public involvement, MDOT guarantees the highest quality transportation services to all of Michigan's residents, regardless of race or income.

Table 2-1

Michigan's Transportation Goals and TEA-21's Emphasis Areas

Michigan State Long Range Plan	TEA-21
Preservation: Within the constraints of state and federal law, direct investment in existing transportation systems to effectively provide safety, mobility, access, intermodal connectivity, or support economic activity and the viability of older communities, and ensure that the facilities and services continue to fulfill their intended functions.	Emphasize the preservation of the existing transportation system.
Safety: Promote the safety and security of the transportation system for users and passengers, pedestrians and motorized and non-motorized vehicles.	Increase the safety and security of the transportation system for motorized and nonmotorized users.
Basic Mobility: Work with the general public, public agencies and private sector organizations to ensure basic mobility for all Michigan citizens by (at a minimum) providing safe, effective, efficient and economical access to employment, educational opportunities and essential services.	Increase the accessibility and mobility options available to people and for freight.
Strengthening the State's Economy: Provide transportation infrastructure and services that strengthen the economy and competitive position of Michigan and its regions for the 21 st century.	Support the economic vitality of the United States, the States, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency.
Transportation Services Coordination: Create incentives for coordination between public officials, private interests and transportation agencies to improve safety, enhance or consolidate services, strengthen intermodal connectivity, and maximize the effectiveness of investment for all modes by encouraging regional solutions to regional transportation problems.	Promote efficient system management and operation.
Intermodalism: Improve intermodal connections to provide "seamless" transportation for both people and products to and throughout Michigan.	Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight.
Environment and Aesthetics: Provide transportation systems that are environmentally responsible and aesthetically pleasing.	Protect and enhance the environment, promote energy conservation, and improve quality of life.
Land Use Coordination: Coordinate local land use planning, transportation planning, and development to maximize the use of existing infrastructure, increase the effectiveness of investment, and retain or enhance the vitality of the local community. (Michigan's Goal)	

Plan Goals and TEA-21 Emphasis Areas

As part of our review to ensure we are meeting the requirements of TEA-21 as well as establishing the framework for investing to achieve our system vision, we compared the eight goals from the *State Long Range Plan: 2000-2025* with the emphasis areas in the federal legislation. Table 2-1 shows that Michigan's long range plan goals coincide well with the TEA-21 emphasis areas.

Purpose of Present Document

The *State Long Range Plan: 2000-2025* sets the stage and provides guidance for the development of transportation programs that, when implemented, will help achieve our transportation system goals. It identifies transportation directions, the mechanisms to measure progress toward objectives, and the means to achieve success. The plan is structured in a way that allows for continual measurement of progress toward a planned future. MDOT will monitor the progress of the plan and make adjustments when appropriate.

Development and publication of the present document will be coordinated with companion reports for each MDOT Region. In this way, the focus and

the strategies will be customized according to the varied demographic, economic, and transportation circumstances which exist across Michigan. Yet, the philosophy embodied in the state long range plan goals and objectives will remain constant.

Recommendations

By the conclusion of this document, we will show that adopting the following recommendations will provide an effective approach for achieving the goals of the state long range plan.

1. Preserve our current mobility.
2. Modernize the transportation system.
3. Improve the management of our transportation assets at all levels.
4. Improve the safety and security of our transportation system.
5. Improve intermodal connectivity between modes of transportation.
6. Improve connectivity and continuity within modes of transportation.
7. Identify transportation revenues for the future.
8. Implement the State Long Range Plan throughout the MDOT Regions.

Chapter Source:

1 Environmental Justice, Executive Order 12898, 1998.

Chapter Three

Baseline: Our Transportation System Today

What does our current transportation system look like? How will economic and demographic trends influence our assumptions about the future of transportation in Michigan? The status of our current transportation system is portrayed by facility and usage information, within the context of economic and demographic data. In order to get a handle on the future, data trends have been forecast over the next two decades.

The demographic, economic, and transportation modal information presented in this chapter provides the framework for our long-range transportation goals and objectives (Chapter 4). Subsequent chapters will address strategies for achieving our goals (Chapter 5), ways to monitor our performance (Chapter 6), and how our transportation investments will help us attain success (Chapter 7).

In this chapter, the following key demographic and economic indicators are discussed, because of their relationship to transportation demand:

- Population: by age and geographic distribution
- Trends in income, households, auto ownership
- Gross State Product
- Employment: by sector and by geographic distribution

Where possible, we have projected trends in these indicators to the year 2025.

Following the demographic/economic discussion, we provide an infrastructure overview of our transportation system, by mode. Inventory, usage (including trends), and other information is provided, all of which lead to transportation-related issues. In addition to drawing upon the inventory

and usage data, the issues we identify derive from the demographic and economic trends, and from public comments.

Demographic and Economic Indicators

Demographic changes have an undeniable and direct impact on transportation. Shifts in the economy lead to shifts in where people live and work. Where there is rapid commercial and residential growth there is often increasing development in suburbs or rural areas. Increases in population, income, or employment translate into changing travel patterns for work, shopping and recreation, and for the delivery of goods and services.

More vehicles, more leisure time, and greater personal income all contribute to people traveling more miles each year, resulting in increased demands on the transportation system and, in some areas, increased congestion. Understanding the relationship between changing demographics and travel allows us to assess many transportation issues that lie ahead.

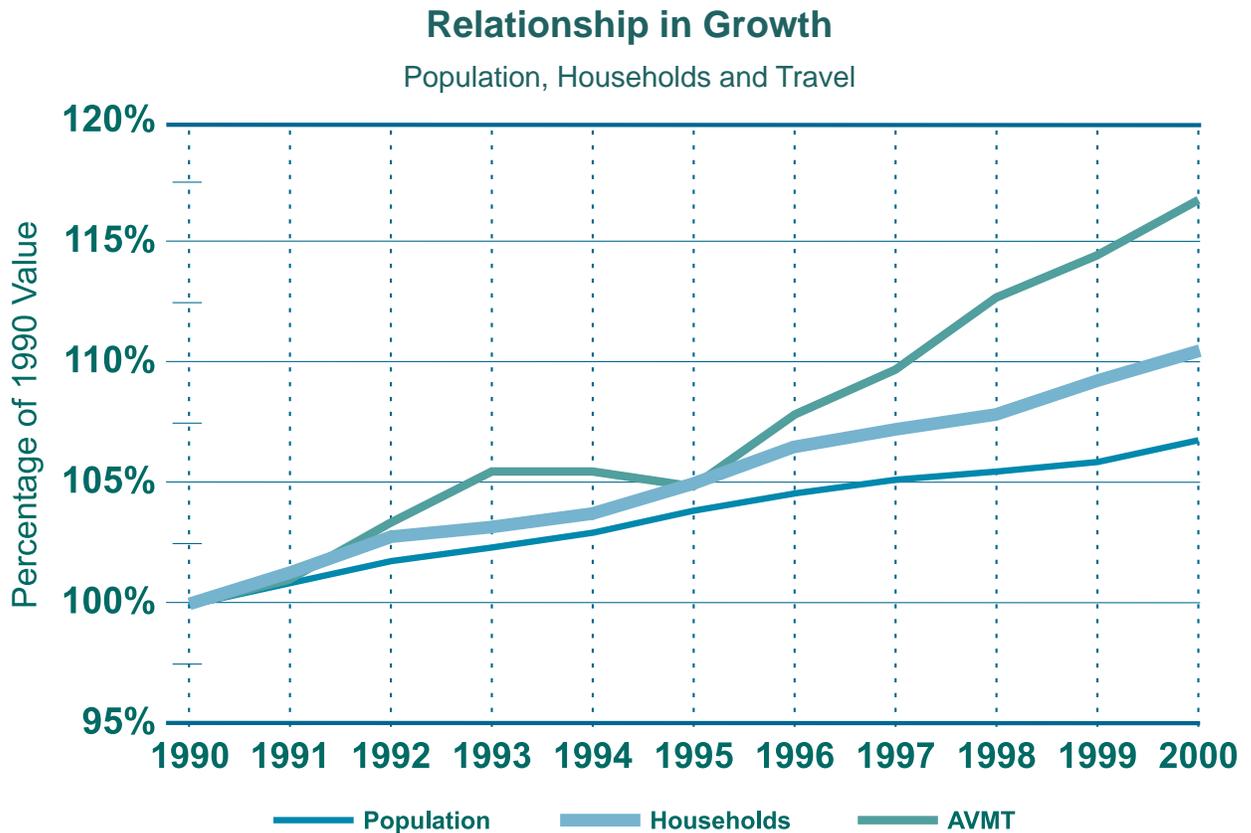
Figure 3-1 illustrates trends in three of the key demographic and travel indicators in Michigan. Total statewide travel, as measured by annual vehicle miles traveled (AVMT), has grown at a significantly higher rate than the growth in population and in households, over the period 1990-2000. These relationships will be explored further in this chapter, as current and trend information is presented by demographic and economic category, and by transportation mode.

Population

Between 1990 and 2000, Michigan's population grew by 6.9 percent, from 9.3 million to 9.9 million. Between 2000 and 2025, the state population is expected to increase nearly 10.9 percent, to exceed 11 million. The principal source of population growth will be the result of a natural increase, which results from more births than deaths rather than more people moving into Michigan (The source¹ for all of the demographic information presented in this chapter is MDOT, based on data from the U.S. Census, Regional Economic Model, Inc. - R.E.M.I. - forecasts, and local forecasts where available).

Projected changes in Michigan's age distribution will affect transportation demand over the next 25 years. Figure 3-2 shows the 1990-2025 statewide

Figure 3-1



population change by age group. The age group 0-18 represents Michigan's school age population and the group from which new drivers will be added in the next 25 years. Through 2010 this number is expected to decline about 6 percent and then grow back to approximately the 2000 level by 2025. In many areas of the state, this will slow the growth of school trips and the number of new licensed drivers.

Despite the projected increase in total statewide population over the time period 2000-2025, the number of those eligible to enter the labor force (18-24 age group) is projected to decline slightly. Over this same time period, a decrease is also projected in the 25-54 age group; the decline in this age group is projected to be 9.4 percent. The 25-54 age group is the backbone of the labor force. The result of the projected trends both in the 18-24 and the 25-54 age group is a labor force declining in size over time.

The age group of those 55 and older is the fastest growing segment of the population. Between 1990 and 2000 their number increased by 10 percent. However, between 2000 and 2025, their numbers are projected to increase by 70 percent¹. This growth trend in the older population age group is being experienced nationwide. Because of the

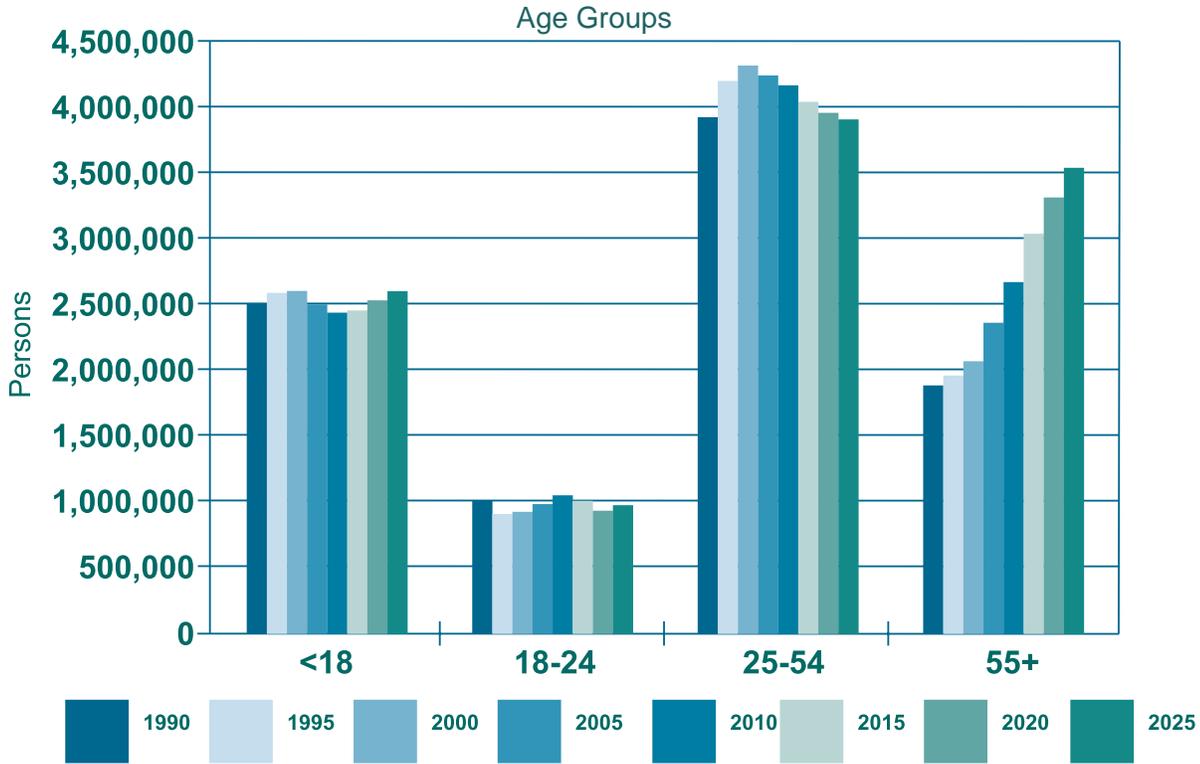
marked increase in the older age group, intermodal connections and alternative transportation modes to the automobile become more important. Additionally, increased leisure time typically results in increased travel overall, and more flexibility as to when to travel (for example, in many cases choosing to avoid normal peak hour congestion).

Michigan's population is concentrated in the southern half of the lower peninsula with high concentrations in the greater Detroit area and its radiating corridors. Many of Michigan's urbanized areas are in these radiating corridors. A second area of population concentration is the Grand Rapids-Muskegon-Holland triangle. This will continue to be the case through 2025 (see Figures 3-3 and 3-4). This translates into significantly higher traffic volumes in corridors associated with these areas. However, due to the stability in the employment forecasts, peak hour demand should increase less than average daily traffic.

Population change between 2000 and 2025 reflects substantial growth not only in the southern half of the lower peninsula, but also in the western half of the northern lower peninsula (see Figure 3-5). One likely reason behind this trend is the growth in the 55 and over age group, many of whom move to northern Michigan in their retirement years.

Figure 3-2

Statewide Population 1990- 2025



Source: MDOT, based on U.S. Census and R.E.M.I. forecasts
 Note: Population growth of those 55 and older will double between 1990 and 2025.

Figure 3-3

Total Population 2000

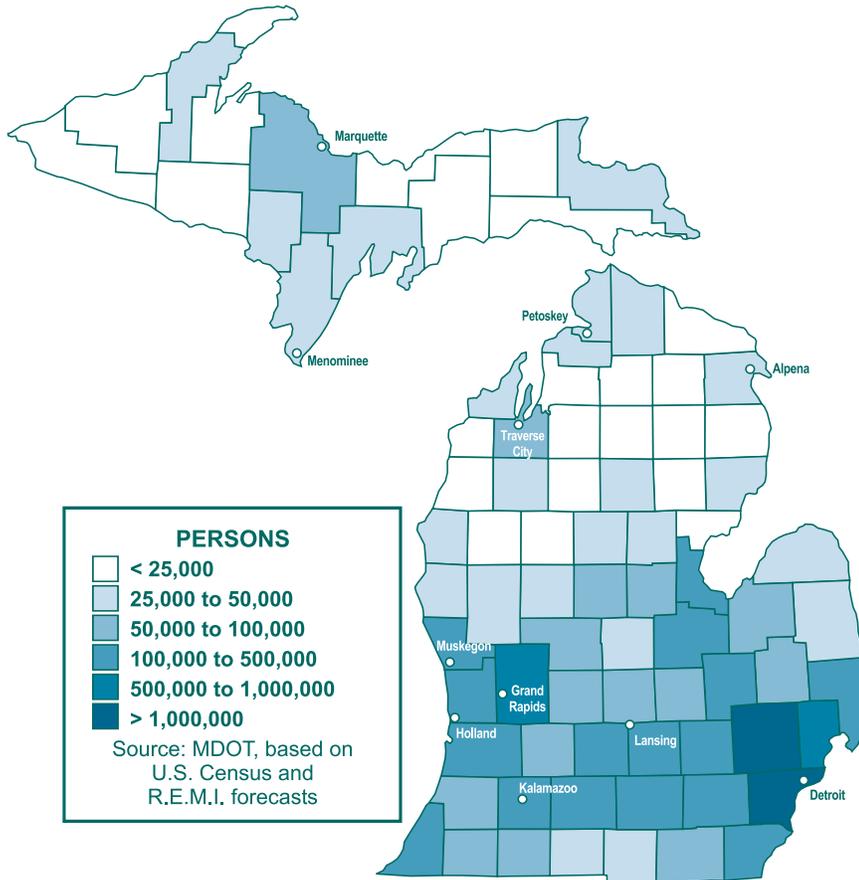


Figure 3-4

Total Population 2025

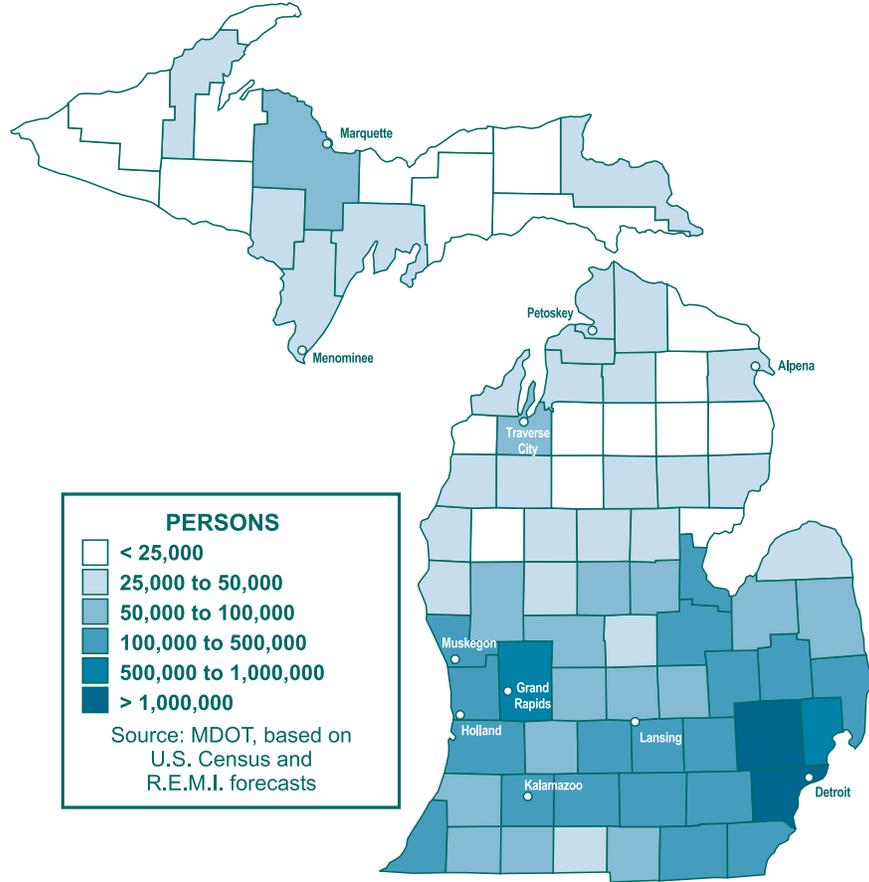
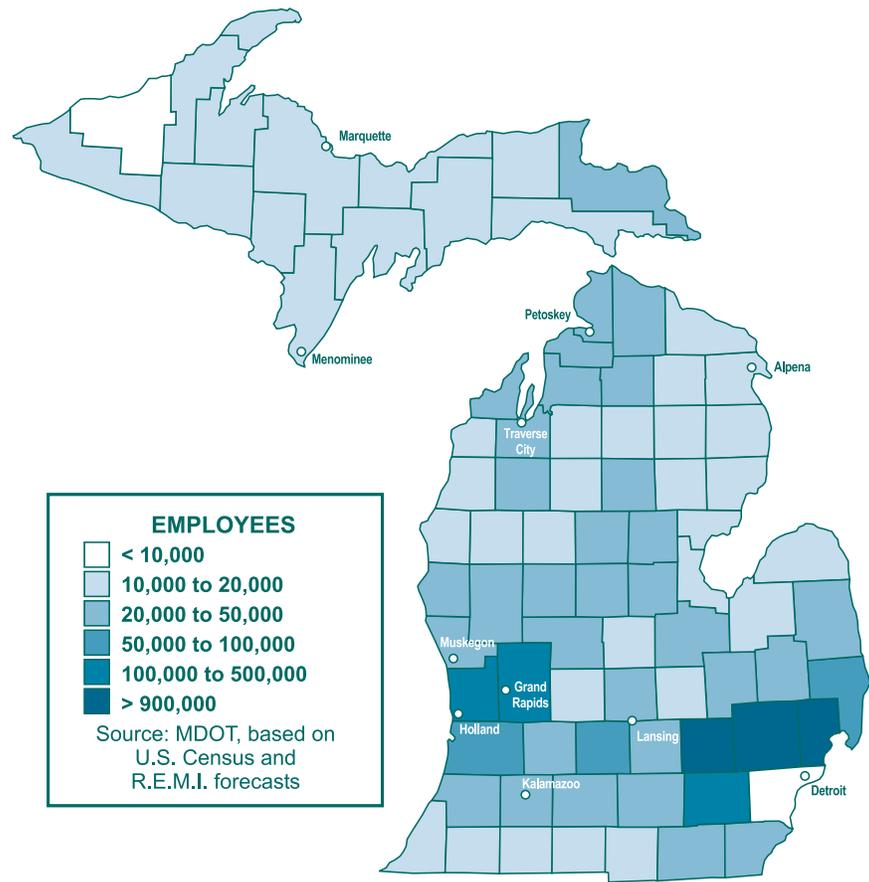


Figure 3-5

Total Population Change 2000-2025



Income, Households and Auto Ownership

Discretionary family spending dollars are closely related to increased desire to travel. During the 1990s, Michigan personal income grew at an average annual rate of 6.3 percent¹. Record levels of income combined with low inflation and numerous tax cuts have provided Michigan residents with more income available to spend and a higher standard of living than ever before. The higher income has allowed more to be spent on important public services such as education and transportation infrastructure and allowed individuals to have more money in their pockets after taxes.

In 2000, the total personal income for the state was over \$289 billion¹. Michigan income per person has been very close to the national average. The largest component of personal income is wages and salaries.

The number and size of households is another key variable in determining the number of trips the transportation system must support. In 2000, there were approximately 4 million occupied homes in the state. Michigan's households have been growing faster than the population. Between 1990 and 2000, households grew at a rate 55 percent faster than state population as a whole (10.7 percent increase for households versus 6.9 percent increase for population¹). During this same time period, the average number of persons per household declined from 2.66 to 2.56².

Between 2000 and 2025, these trends for households are expected to continue to a greater degree. Forecasts show that households will grow at a rate 77 percent faster than state population as a whole (19.3 percent increase for households versus 10.9 percent increase for population¹). Over the same time period, 2000-2025, the average number of persons per household is expected to decline further, from 2.56 to 2.44³.

As for auto ownership, Michigan had nearly 5.9 million registered autos in 2000. By 2025, this figure is projected to increase to 7.3 million¹. While this averages out to approximately 1.5 autos per household, some households have none and others many. The number of households with no car available, or zero-car households, influences demand for public transportation. Zero-car households are expected to decline slightly between 2000 and 2025. However, as a percent of total households the projected

decline is more pronounced, from 9.2 percent in 2000 to approximately 7.7 percent in 2025⁴. The availability of autos also impacts how much, and by what mode, people will choose to travel.

The key point of this discussion is the fact that **households** generate travel, and Michigan is experiencing significant growth in households. That, combined with continued decreases in average vehicle occupancy rates, results in more AVMT. This growth in households is also occurring in conjunction with the continued decentralization of the population and jobs, that is, the dispersal of people, households and jobs over an expanding geographic area. The resulting increased levels of travel are occurring on a relatively unchanging transportation network. A more detailed discussion about the implications of these demographic trends on the network, especially the highway mode, appears later in this chapter as part of the Infrastructure Overview.

Largest Economic Sectors

The three largest income-producing industries in Michigan are manufacturing, tourism and agriculture.

Manufacturing. Michigan will always be associated with the automobile, and indeed, the state still leads the nation in automobile manufacturing. In addition to transportation-related items, Michigan manufactures a wide variety of products. These include non-electric machinery, furniture and appliances, cereal, baby food, chemicals, pharmaceuticals and lumber. As of 2000, the number of workers in manufacturing jobs totals just over one million⁵.

Significant changes in the manufacturing industry have occurred over the last couple of decades. Global competitiveness, the advent of just-in-time delivery, increased customer responsiveness, and the North American Free Trade Agreement (NAFTA) have all been factors in causing the changes. As a result, the manufacturing sector's reliance on efficient transportation systems is greater than ever. Consequently, congestion and delays at border crossings have a more significant business impact than ever before.

Tourism. The tourist business is one of Michigan's largest income producers. Overall, tourism contributes more than \$10 billion per year to the Michigan economy, helping to make Michigan one of the largest travel states in the United States⁶. At one time, tourism was primarily a summer season activity,

along with several weeks of bird and deer hunting. Today, that is no longer the case, as winter brings skiing, skating, ice fishing, small game hunting and snowmobiling. Spring still means trout and bass fishing and getting the boat ready for summer. Autumn, along with traditional hunting seasons, means color tours and harvest festivals. Together, the four season attractions in Michigan combine to make tourism the state's second largest industry.

Sightseeing at both historic and natural landmarks continues to increase. Among the best-known tourist attractions are the Henry Ford Museum and Greenfield Village, Detroit's auto plants, Cranbrook, the State Capitol, Holland's Tulip Festival and Windmill Island, Traverse City's Cherry Festival, the Sleeping Bear Dunes, the Straits area (Fort Michilimackinac, the Mackinac Bridge and Mackinac Island), the Soo Locks, Isle Royale, the Porcupine Mountains, Pictured Rocks and Tahquamenon Falls.

Agriculture. Changes have occurred in the agricultural sector, where numerous, smaller family farms have been converted to other uses or have been consolidated into fewer, larger corporate farms. However, Michigan still has approximately 53,000 farms with a total of some 10,400,000 acres⁷. The state ranks first nationally in the production of red tart cherries, dry beans, blueberries, pickling cucumbers, and potted Easter lilies and geraniums. In addition to beans and wheat, principal field crops are oats, hay, corn, rye, potatoes, soybeans and sugar beets. The state is a major producer of apples, plums, peaches, grapes, mushrooms, sweet cherries, fresh-market and processing vegetables, and has long been a major supplier of spearmint. In 1999, Michigan ranked 9th nationally in milk production, accounting for 3.4 percent of U.S. production; livestock in Michigan totaled 1,010,000 cattle, 68,000 sheep and 980,000 swine; total value of production from eggs, broilers and other chickens was over \$60 million; and the state's 68,000 sheep yielded 445,000 pounds of wool⁷.

There are specific transportation issues related to agricultural operations. Frost laws, the laws that impose seasonal road and bridge load limits in some areas, impact the efficient movement of agriculturally related goods and services. For example, the shipment of fertilizer typically occurs during the spring, when seasonal load limits are in place. If the all season road network is incomplete or discontinuous in the area, a larger number of shipments at a lower weight will be required, thus raising business costs in the agricultural sector.

Gross State Product

The Gross State Product, or GSP, is the value of goods and services produced within a state's economy. Michigan, along with the rest of the nation, is moving toward a service-oriented economy. Since 1990, the service sector has increased its share of Michigan GSP. The retail and wholesale trade sectors have also shown strong growth. By contrast, the manufacturing sector has become less important. The long term trend is even more dramatic with manufacturing continuing to drop in the future. Figure 3-6 portrays the GSP by selected sectors for 1999⁸.

There is no "technology sector" shown in figure 3-6. The federal Bureau of Economic Analysis (BEA) is in the process of determining how technology affects GSP (and GDP, or gross domestic product). The BEA refers to E-business-related and high-tech economic activity as the new economy, the internet age, the information-technology (IT) revolution, and the digital economy. Estimates of the importance of the new economy vary widely, stemming from the absence of common definitions for the new economy or its sub components — including high-tech products, information technology goods and services, E-business, B2B-commerce, and retail E-commerce. Nonetheless, the new economy has played and will continue to play an important role in Michigan.

Michigan's economy has become increasingly more diversified and better equipped to compete in the global economy. The state economy has become more stable and better able to withstand national economic downturns, thus improving our prospects for growth.

Quick Facts

- Michigan leads the nation in the production of passenger cars and assembled trucks.
- Michigan has over one million people in manufacturing jobs.
- Tourism is a \$10 billion industry.
- Travelers spend \$973,653 per hour, every day in Michigan.
- Michigan agriculture ranks first nationwide in the production of red tart cherries, dry beans, blueberries, pickling cucumbers and potted geraniums.

Gross State Product 1999

Total GSP = \$308 Billion



FIRE = Finance, Insurance, Real Estate

Employment

In 2000, the total number of workers in the Michigan labor force was over 5.7 million⁵. This represents more people employed than at any other time in the state's history. The Michigan economy is much more diversified and stable than it was 20 years ago, and the state's unemployment rate has been below the national rate for the past six years, although recently it has exceeded the national rate. Favorable economic conditions and an improved business climate allowed business to develop and better adapt to the global marketplace. Across-the-board tax reductions have helped businesses to expand in Michigan. An improved educational system and continuing job training programs have eased work force transition between jobs in different economic sectors. In addition, Michigan has the highest percentage of highly-skilled workers in the nation. All these factors promoted tremendous employment growth in Michigan in the 1990s and made Michigan a leading destination for businesses, with over 9,000 new firms established in the state during the past decade⁵.

As the economy continues to grow and diversify, the greatest growth in jobs will be in the service

industry, with some growth in the retail and "other" employment sectors (see Figure 3-7). At the same time, manufacturing, resources and wholesale trade will experience little or no growth.

Employment patterns for 2000 and as projected for 2025, and the change in employment during the period 2000-2025, indicate that the greater Detroit area and corridors radiating from Detroit are the areas of highest employment. The Grand Rapids-Muskegon-Holland triangle also has a high concentration of employment.

In general, a high percentage of Michigan's jobs are in the southern half of the lower peninsula (see Figures 3-8, 3-9, and 3-10). This means that the highest volume of work trips are also occurring in these areas. Consequently, since these are often peak-period trips, this is where most of Michigan's transportation system congestion occurs.

Despite the economic downturn in 2000 and 2001, Michigan expects to remain ahead of the nation and keep employment rates steady. It is transportation mobility — the ability of people to get to jobs — that supports Michigan's economy through good economic times and bad.

Figure 3-7

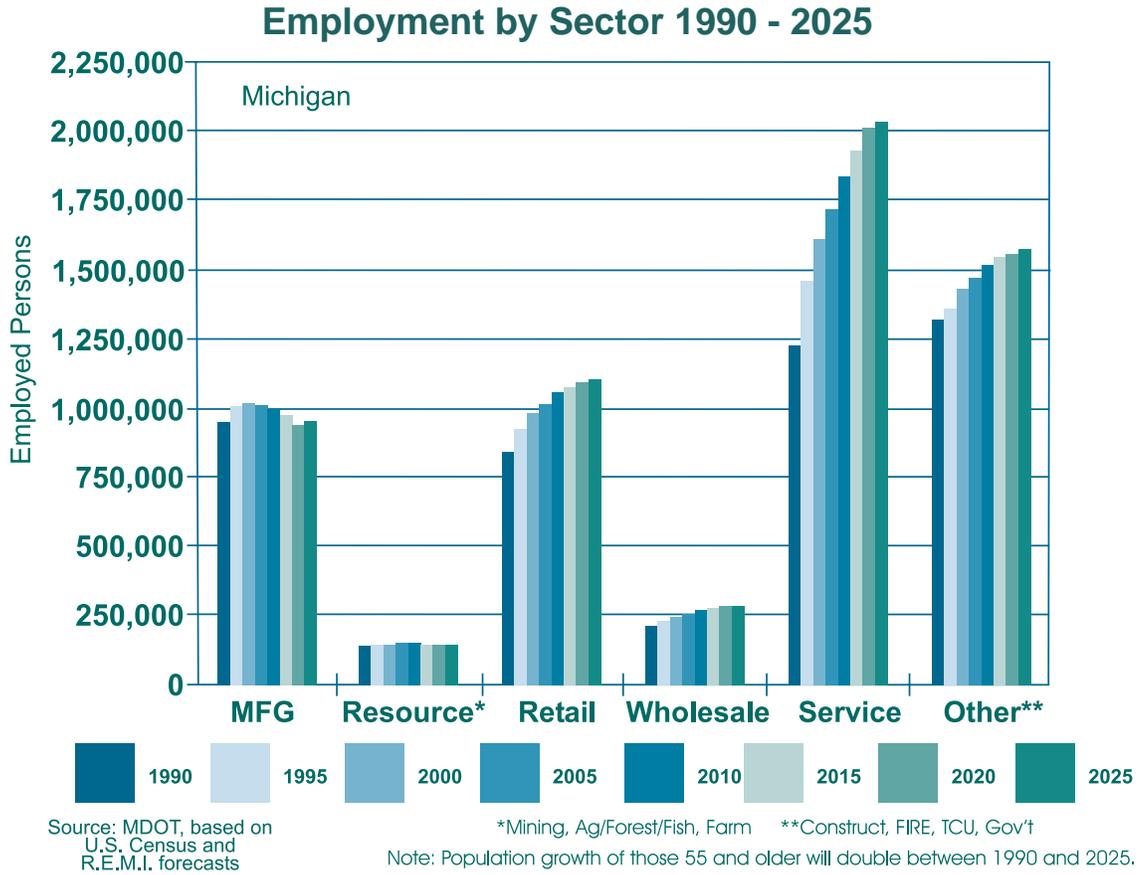


Figure 3-8

Total Employment 2000

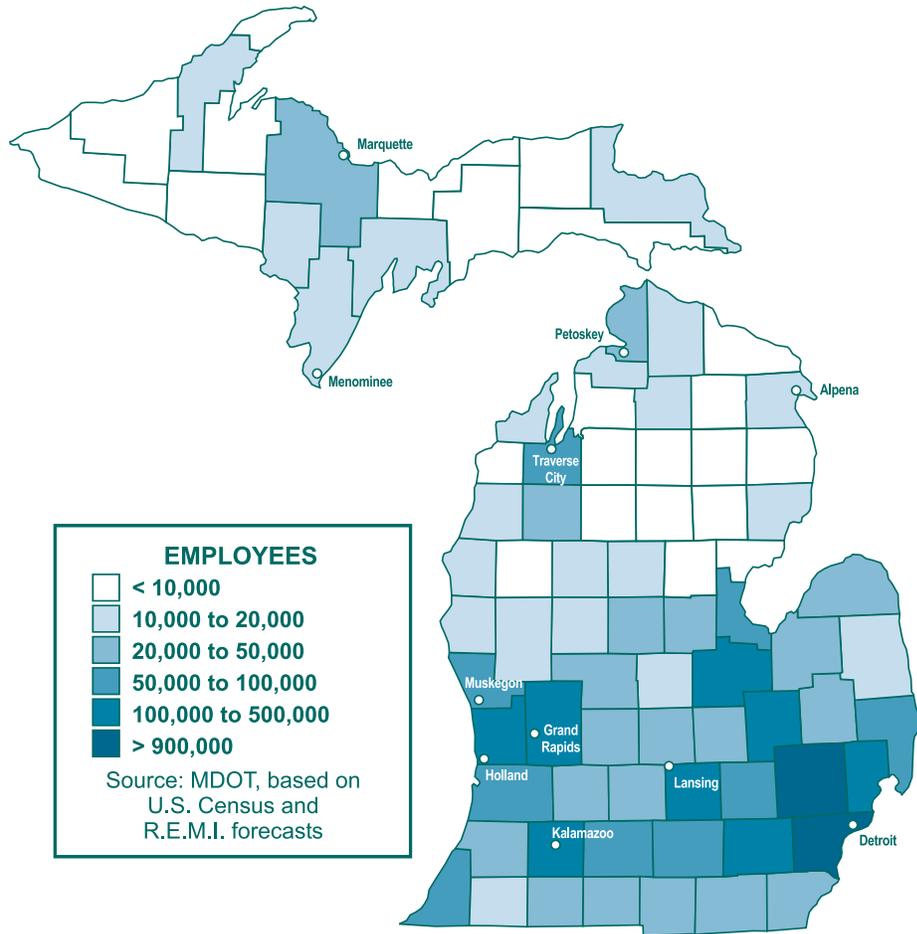


Figure 3-9

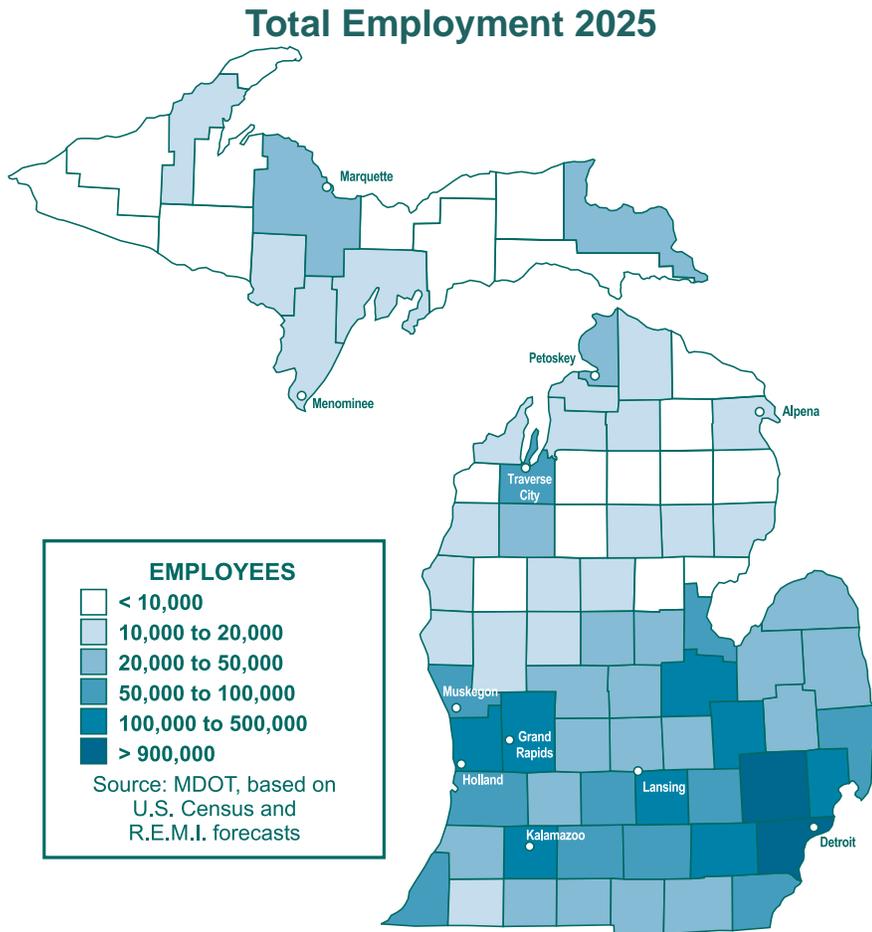
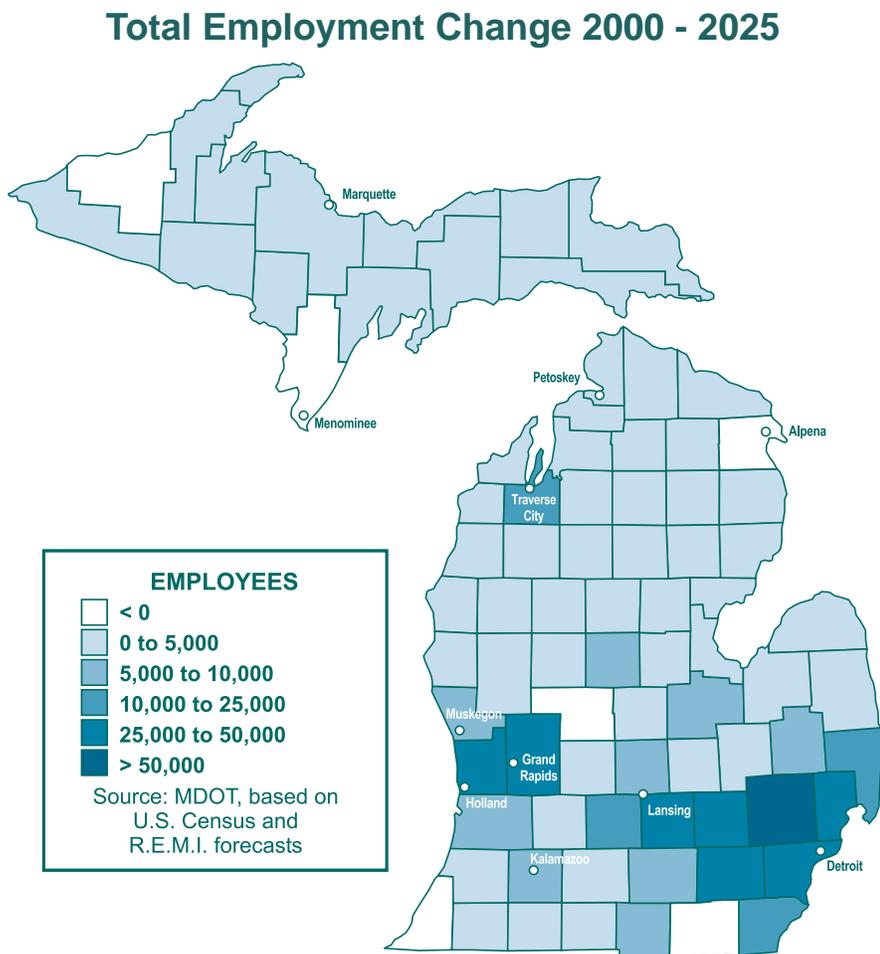


Figure 3-10



Infrastructure Overview

Our multi-modal transportation system is crucial to our state economy and to our competitive position with respect to the rest of the nation and Canada. Figure 3-11 provides a snapshot of the diverse components that make up that system. While MDOT does not own all of these assets, we can exert varying degrees of influence over the system as a whole. MDOT has direct jurisdiction over some of these assets. We provide funding to other governmental agencies which have assets under their own jurisdiction. We also have regulatory authority in certain areas. Finally, in developing

documents such as the state long range plan, we provide policy direction for all of our public and private transportation system partners.

We have arranged the transportation infrastructure overview which follows by mode. The current status of each transportation mode is described in terms of inventory and usage data, as well as other characteristics specific to the mode, including trend data where available. This information raises issues for each mode, and we have provided these, along with any additional issues identified during the public involvement process, at the conclusion of each section as appropriate.

Summary of Michigan's Transportation Assets

9,704	Miles of State Highways with 4,575 Bridges Serving 83 Counties
110,225	Miles of County Roads and Municipal Streets, with 6,560 Bridges
209	Carpool Parking Lots totaling 8,000 Parking Spaces
180	Miles of (ITS) Intelligent Transportation System Infrastructure Along state highways
235	Public Use Airports
1,000	Non-motorized "Rails-to-Trails" Miles Plus Thousands of Miles of Bike Lanes along Roadways
197	Licensed Intercity/Charter Bus Companies
74	Local Public Transportation Systems — Includes 5 using Intelligent Transportation System technologies
134	Specialized Transportation Services — Primarily for elderly persons and persons with disabilities
77	MDOT-sponsored MichiVans - Commuter Vanpools
20	Ferry Service Routes
40	Commercial Cargo Ports
48	Smaller Ports with Other Commercial Activities
30	Railroads Operating on 4,000 Route Miles of Track — Includes 520 Miles of Passenger Rail Route Usage

2000 Data

Highways Inventory

Michigan's system of state highways, county roads and municipal streets totals 119,929 miles. As of 2000, MDOT had jurisdiction over the 9,704 route miles on the state highway system, which includes all "I", "U.S." and "M" numbered highways. State highways are also known as the state trunklines. Michigan's 89,488 miles of county roads are under the jurisdiction of 83 county road commissions and its 20,737 miles of municipal streets are owned by 533 incorporated cities and villages. (There are 535 incorporated cities and villages in Michigan, but two villages have no streets under municipal jurisdiction.)

Most state highways are all season, meaning that seasonal load limitations are not imposed on vehicles carrying legal loads. Of the 9,704 mile state

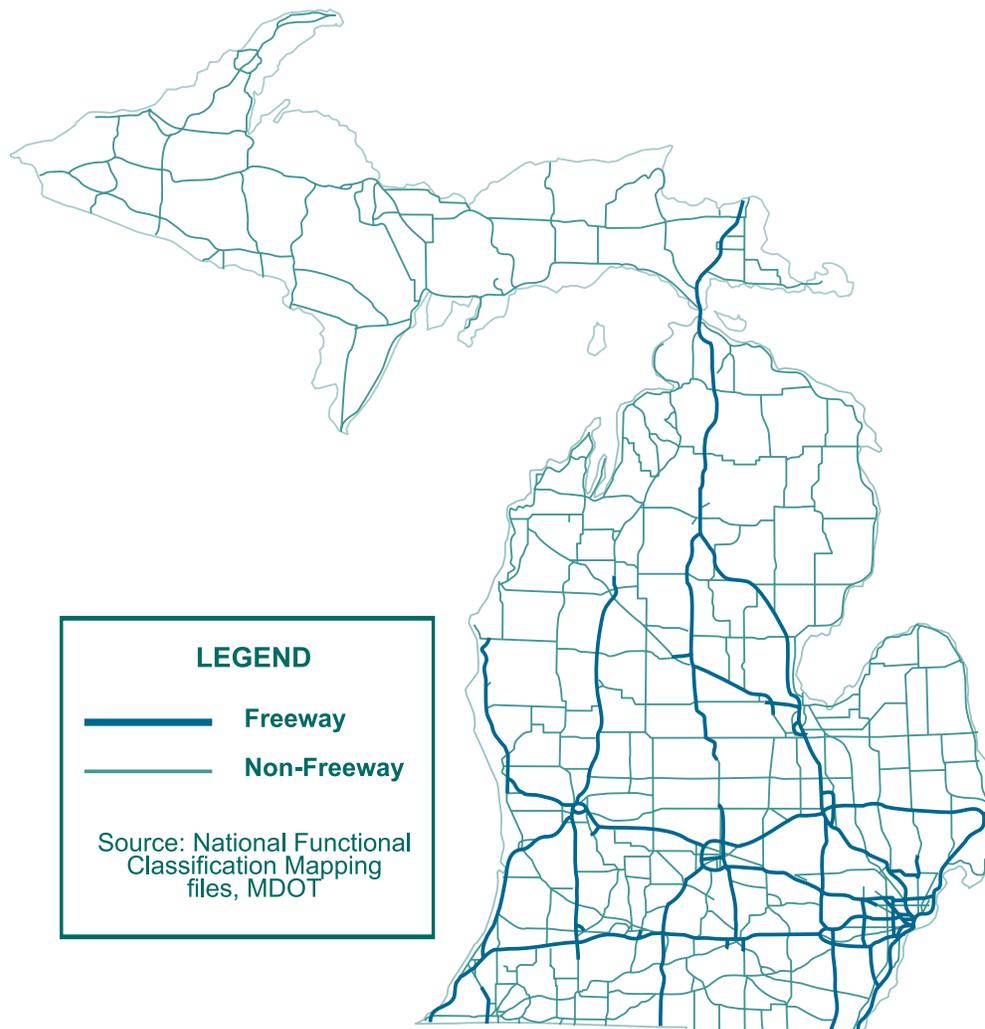
trunkline system, 9,022 miles, or 93 percent, are all-season. MDOT has less complete information about the all-season characteristics of the county and municipal road systems. Available data show that approximately 7,000 miles of all non-trunkline roads are all season¹⁰. Since the majority of these records are for county roads, an estimated 8 percent of the 89,488 mile county road system is all season.

All of Michigan's 1,891 miles of limited access freeway routes are under state jurisdiction. State trunklines also account for over 90 percent of the 4,760 miles of National Highway System (NHS) in Michigan⁹. These include nearly all freeways, and other high-level routes of national, statewide, or regional importance and intermodal significance.

Figure 3-11 shows the state trunkline system in Michigan.

Figure 3-11

Michigan's State Trunkline System



Traffic Volumes and Trends

Roadway usage on all roads in Michigan rose to 97.8 billion annual vehicle miles traveled (AVMT) in the year 2000. This is a 17 percent increase from a decade ago. Placing this within a national perspective, Michigan ranks 9th among the 50 states, District of Columbia and Puerto Rico in terms of total AVMT for 2000. The top-ten rankings are: California, Texas, Florida, New York, Ohio, Georgia, Illinois, Pennsylvania, Michigan, and North Carolina¹¹.

Traffic volume and trend information for Michigan's state highway system are major inputs into MDOT's long-range strategies (Chapter 5). Although the state trunkline system comprises only 8 percent of Michigan's roadway network, it carries 54 percent (51.5 billion) of total statewide traffic. Travel on state trunkline highways is expected to grow 27 percent to 65.5 billion AVMT in 2025. This is shown on Table 3-1.

Table 3-1 also shows the percentage of state trunkline AVMT which occurs under congested con-

ditions. Briefly, traffic flow is characterized by its Level of Service, or LOS. Alpha letter codes for LOS are defined in the 2000 Highway Capacity Manual for inventory data as A-F. Congested conditions are defined as Level of Service F. These conditions represent a volume-to-capacity ratio greater than or equal to 1. A photo depicting congested freeway conditions is shown as Figure 3-12.

Michigan's freeway system alone carried 57 percent of the AVMT on the state trunkline system in 2000 (see Table 3-1). In that same year, 10 percent of the freeway AVMT (4.9 billion) occurred under congested conditions, based on the definition above.

It is projected that travel on the entire freeway system will grow an additional 24 percent by the year 2025. By 2025, travel under congested conditions on the freeway system is projected to increase by 49 percent, to 7.3 billion AVMT (see Table 3-1).

Highway travel in Michigan continues to increase, and with little new road capacity built, urban traffic congestion has worsened. AVMT has increased by

Figure 3-12

Congested Conditions

Level of Service F



Table 3-1

Annual Vehicle Miles Traveled (AVMT) on State Trunkline System

		2000			2025		
		In Billions	Percent of System	Percent of Total	In Billions	Percent of System	Percent of Total
Freeway System	UnCongested	24.3	83%	47%	29.3	80%	45%
	Congested	5.0	17%	10%	7.3	20%	11%
	Total	29.3	100%	57%	36.6	100%	56%
Non-Freeway System	UnCongested	20.5	92%	40%	24.9	86%	38%
	Congested	1.7	8%	3%	4.0	14%	6%
	Total	22.2	100%	43%	28.9	100%	44%
Total State Trunkline System	UnCongested	44.8	87%		54.3	83%	
	Congested	6.7	13%		11.2	17%	
	Total	51.5	100%		65.5	100%	

Notes:

2025 AVMT figures are calculated using growth rates from the Statewide Travel Demand Model. The rates are based on the change in number of trips assigned to each segment of the model using the trip tables and programmed projects in MDOT's 5 year Road & Bridge Program.

Congested conditions are defined as Level of Service F. These conditions represent a volume-to-capacity ratio greater than or equal to 1.

more than half in two decades and nearly a quarter of Michigan's urban interstates and freeways are congested. Table 3-2 shows state trunkline AVMT by the following categories - urban/rural, freeway, non-freeway, and commercial (truck traffic) where urban/rural designations are based on National Functional Classification (NFC) designations as of 2000.

Along interstate freeways I-94, I-75 and I-96 — Michigan's heaviest traveled, statewide routes — traffic volumes will continue to increase. Portions of these routes have experienced a growth in traffic of up to 55 percent from 1990. On these corridors alone, 35 percent of AVMT occurs under congested conditions today. It is projected that overall AVMT along these corridors will continue to grow to almost 20 billion by 2025. Using the urban/rural breakdown based on NFC, volumes

along these freeways are estimated to grow by 14 percent in urban areas and 41 percent in rural areas. This anticipated growth in AVMT on rural portions of the freeways reflect projected changes in population distribution across the state, and the trend toward more scattered, low density development, spread further out from central cities (sometimes referred to as "urban sprawl"). Our analysis also shows that along major portions of interstate freeways I-94, I-75 and I-96, 30 to 40 percent of the vehicles are commercial. The growth of commercial traffic is expected to continue to outpace the growth in passenger traffic.

The continued increase in highway travel in Michigan is consistent with the findings of the Nationwide Personal Transportation Study (NPTS)¹², which found that average daily trips-per-person increased 10 percent nationally between 1990 and 1995. The NPTS found that people are living further from their

2000 State Trunkline AVMT & CVMT by Urban/Rural

Trunkline System		Annual Vehicle Miles Traveled		Annual Commercial Vehicle Miles Traveled	
		In Billions	% of State Total	In Billions	% of State Total
Freeway	Urban	10.6	21%	1.9	37%
	Rural	18.7	36%	1.8	35%
	Total	29.3	57%	3.7	72%
Non Freeway	Urban	11.7	23%	1.0	20%
	Rural	10.5	20%	.4	8%
	Total	22.2	43%	1.4	28%
State Total	Urban	22.3	43%	2.9	57%
	Rural	29.2	57%	2.2	43%
	Total	51.5	100%	5.1	100%

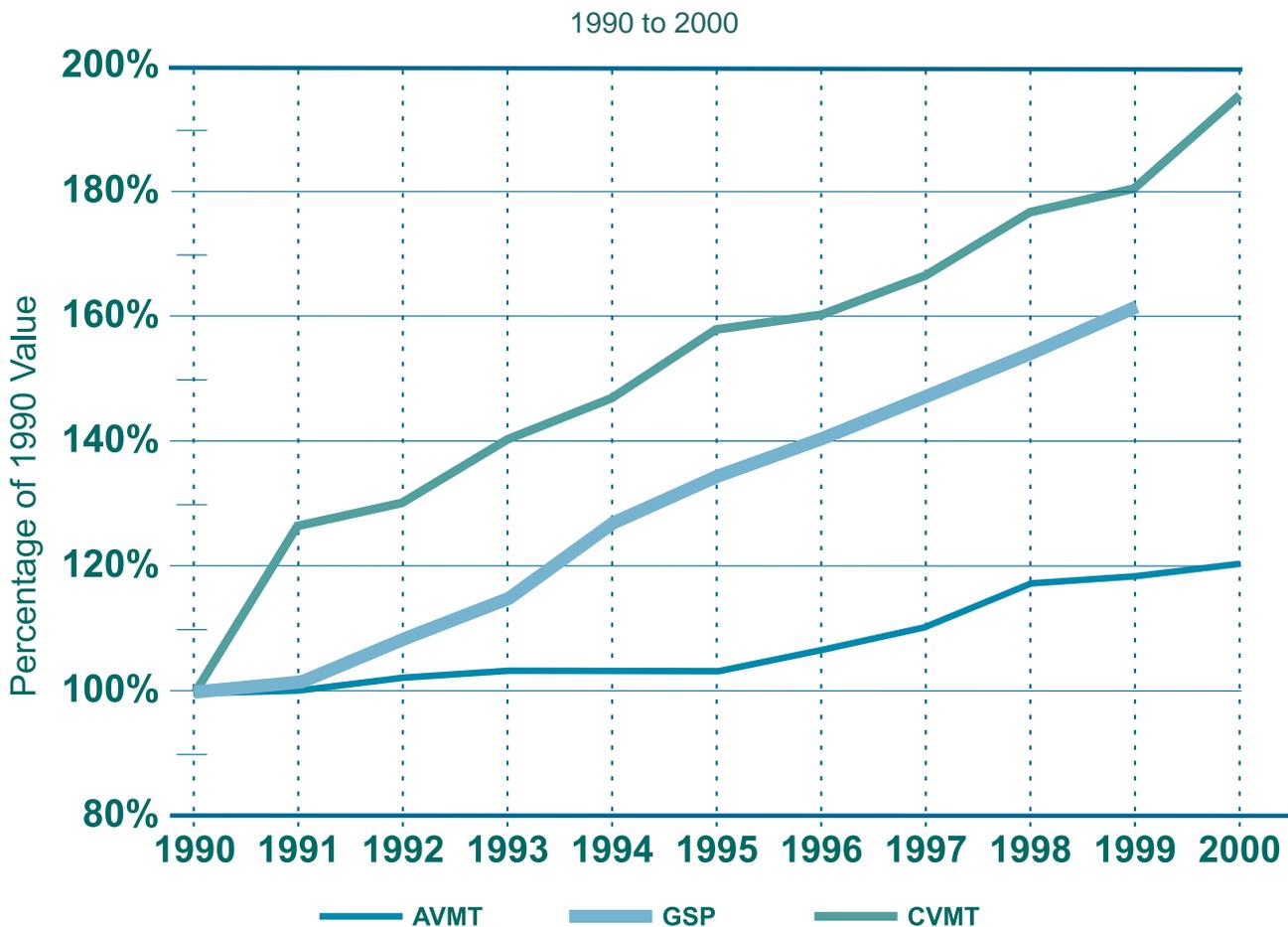
jobs, and that their work commutes often include several other stops, such as day care, schools, shopping, or social engagements. The study also found that older Americans are increasingly mobile and that current lifestyles can be expected to fuel growing demand for additional highway mobility.

The increase in driving reflects the tremendous reliance of Michigan residents on highways, not only for local neighborhood trips, but also for longer trips. Data from the 1995 American Travel Survey (ATS), conducted by the U.S. Department of Transportation (DOT), indicates that Michigan residents depend significantly on the state's road system for their long-distance trips. According to the ATS, of trips having the following characteristics — longer than 100 miles in one direction and beginning and ending in Michigan — 83 percent were in private highway vehicles, 14 percent were by commercial air, and less than one percent were by bus or rail¹³.

As discussed earlier in this chapter, Michigan's economy has become increasingly more diversified and competitive in the global economy. Since 1990, the GSP has increased by 62 percent. At the same time, commercial vehicle miles traveled (CVMT) — the measure for truck traffic — has increased by 95 percent. Since 1990, CVMT has also increased at a faster rate than AVMT.

Figure 3-13 graphs the relationships among growth in AVMT, GSP, and CVMT over the period 1990-2000. The graph shows Michigan's strong economy over this time period as reflected by the growth in GSP. The fact that CVMT has grown at an even higher rate than the GSP is an indication that the economic growth has been driven by transportation, especially the highway/truck mode. This derives from economic trends such as globalization, NAFTA and our trade with Canada, and just-in-time delivery practices in the manufacturing sector.

Comparisons of AVMT, CVMT & Gross State Product



Issues

- What are the safety and mobility implications of increasing congestion?
- What alternatives to increased highway capacity will best reduce congestion?
- If additional highway lanes are necessary, how will we fund them, particularly in urban areas where right-of-way costs can be prohibitive?
- Is construction of passing relief lanes sufficient to relieve congestion in on two-lane non-freeway corridors where large slow-moving vehicles contribute to congestion?
- With commercial traffic increasing at a faster rate than other highway traffic, should trucks continue to have a separate speed limit (55 mph) on freeways and other highways where speeds are posted above 55 mph?
- Which method of truck weight enforcement — static highway weigh stations or mobile patrol with weigh-in-motion technology — most cost-effectively improves safety?

Border Crossings and Significant Corridors

Michigan's strong economy, the completion of the I-69 freeway, and the passage of the North American Free Trade Agreement (NAFTA) are all major causes of increased AVMT. Interstate routes I-94, I-75, I-96 and I-69 are the state's most significant freeway transportation corridors for the movement of both people and commerce. We provided some AVMT trend information for these freeways in the preceding section; additional information is shown in Table 3-3.

Michigan's four international border crossings — the Detroit-Windsor Tunnel, the Ambassador Bridge, the Blue Water Bridge, and the International Bridge — are part of or closely connected to interstate routes I-94, I-75, I-96, and I-69. Thus, we have combined a discussion of our trade with Canada, our border crossings, and our significant corridors.

Trade with Canada

Michigan is Canada's largest trading partner in dollar terms, accounting for over 50 percent of the motor carrier trade. A large percentage of this trade is generated by the counties in Southeast Michigan. Historically this trade has been heavily dominated by the auto industries in Michigan and Ontario. In recent years the advent of supply chain logistics has allowed components to be manufactured in several locations, with semi-assembled autos traveling between specialized plants for completion.

In dollar terms, about 98 percent of Michigan's exports and 86 percent of our imports flow to and from Ontario. Almost all of Michigan's motor carrier trade is with Ontario. In 1999, Michigan exported \$348 million in goods weekly to Ontario and imported \$489 million (86 percent of imports) weekly. In tonnage terms the mix is about the same; Ontario accounts for roughly 85 percent of Michigan's total export and import tons. The share of truck trips is about 90 percent in both directions. Michigan's trade with Canada is clearly very closely linked with Ontario's economy¹⁴.

Three broad groups of commodities dominate commercial interactions between Michigan and Canada: 1) wood, textile, and leather products; 2) metal products and machinery; and 3) electronics, vehicles, and precision goods. Of all tonnage exchanged at all four crossings combined, these three commodity groups comprise about 67 percent. In terms of truck flows exchanged, these same three groups of goods comprise 50 percent. The mix of commodity flows at the border crossings does not vary considerably year-to-year, so it is assumed that these three commodity groups will continue to dominate commercial interactions in the future.

The system impacts of international interactions between Michigan and Canada can be measured in terms of international traffic volumes. International truck AVMT in Michigan accounts for 12 percent of statewide commercial AVMT. Overall, international AVMT is expected to increase based on MDOT forecasts of increased auto and truck crossing volumes at the four border crossings combined.

Currently, about 29.6 million vehicles cross annually at the four international crossings. Of those, 24 million are autos, while 5.4 million are trucks. Over the period 2000-2025, MDOT estimates that combined auto and truck crossing volumes at the borders will increase 47 percent. Separately, growth in auto crossing volume is expected to grow

44 percent during the same forecast period, while truck crossing volumes are estimated to increase 60 percent¹⁴.

Congestion Impacts

Recent transportation studies have concluded that the two-lane Detroit-Windsor tunnel which connects to urban streets in downtown Detroit and Windsor is close to capacity today, and that the four-lane Ambassador Bridge and its connecting link — Huron Church Road/Highway 3 in Windsor — may reach capacity around 2010. Traffic delays at the Blue Water Bridge are likely to be more frequent and of longer duration as a result of long-term growth in commercial traffic and expanded security measures implemented by border inspection agencies. Infrastructure and institutional problems at these principal border crossings have the long-term potential for dampening international trade between Michigan and Ontario.

Thus, as trade continues to grow between Michigan and Ontario, the existing Detroit border crossings are likely to reach capacity in the next 10 years and a new Detroit River crossing will be needed. To ensure that international trade between Canada and Michigan will continue to grow, transportation agencies on both sides of the border must recognize the need for an on-going, coordinated, bi-national planning strategy.

Border delays have the potential for imposing significant costs on business and travelers; long delays have already resulted in shutdowns at automobile manufacturing plants and suppliers dependent on just-in-time delivery systems. These delays have several causes: inadequate staffing at federal inspection stations, inadequate inspection facilities, antiquated border inspection processes, and inadequate lane capacity at border crossings. The ability of MDOT to move commercial and private vehicles efficiently and cost-effectively through its international gateways is in large measure dependent on the policies and procedures adopted and implemented by the U.S. and Canadian governments.

These trends will have the most impact on the established, significant trade corridors, such as I-94, I-75 and I-96 (see Table 3-3). The significance of the other corridors shown in Table 3-3 derives more from their interstate or intrastate role. All of these corridors provide the focus for one of MDOT's highway strategies, discussed in Chapter 5.

Table 3-3
Significant Corridors

Major Roadway*	2000			2025		Corridor Route Miles
	AVMT ¹	Percent Commercial	AVMT Under Congested ² Conditions	Projected ³ AVMT	Projected AVMT Under Congested Conditions	
I-94**	5.73	18.2%	2	6.98	2.96	275
I-75**	5.69	12.9%	2.5	7.14	3.26	395
I-96**	4.46	10.6%	2	5.5	2.87	192
I-69**	1.93	20.2%	0.01	2.79	0.12	194
US-131	1.77	11.7%	0.35	3.55	2.53	328
I-196 / US-31	1.46	20.4%	0.12	3.06	0.3	175
M-72	.16	8.2%	0.12	0.23	0.21	44
US-127 / M-115	1.10	10.7%	0.06	1.60	0.1	262
US-23 (southern)	1.60	12.2%	0.26	1.80	0.6	93
US-23 (northern)	0.27	7.0%	0.03	0.35	0.05	112
US-2**	0.6	10.4%	0.08	0.87	0.18	305

Source: MDOT Transportation Management Systems.

Notes:

¹ AVMT - Annual Vehicle Miles Traveled - is in Billions.

² Congestion condition for Corridor Identification is defined as Vehicle Miles Traveled operating under Level of Service E or F conditions.

³ Projected growth rates were calculated from traffic assignments using the Statewide Travel Demand Model. The rates are based on the change in number of trips assigned to each segment of the model using the 1995 trip table and the 2020 trip table.

* Some of these corridors consist of two or more routes. See Chapter 5, Corridors of Highest Significance section for a schematic depiction of the corridors.

** These corridors function as international trade corridors, from a moderate to high degree.

As indicated earlier, total statewide AVMT in 2000 was 94.9 billion, and of this, the entire state trunkline system carried 54 percent, or 51.5 billion AVMT. Strikingly, interstate freeways I-94, I-75, I-96, and I-69 alone carry 35 percent of the total state trunkline AVMT, and 52 percent of commercial AVMT. These four corridors also account for 36.5 percent of the total highway bridge square footage (see Table 3-4).

Security at the Border Crossings

The destruction of the World Trade Center in New York has brought attention to the vulnerability of Michigan's critical transportation infrastructure to terrorist attacks. The destruction or incapacitation

of an international bridge or tunnel would have a profound impact on Michigan's and Ontario's economy far beyond that which occurred when border facilities were temporarily shut down following September 11. The increase in federal inspections of vehicles crossing the border will reduce the ability of MDOT to move commercial vehicles efficiently through our border crossings.

Condition of Border Crossings

While the second span of the Blue Water Bridge in Port Huron is relatively new, construction having been completed in 1997, other components of the border crossing infrastructure are aging. For example, the International Bridge, built at Sault Ste.

Marie 40 years ago, is a facility that will require significant investments in the future to ensure the continued mobility of local, state and provincial residents, to promote U.S. and Canadian trade, tourism and regional economic development, and to meet the changing needs of U.S. and Canadian border agencies.

Issues

- What new technology, modernization or design improvements can we use to relieve congestion in key freeway corridors, facilitate the flow of traffic, and reduce delays at our international border?
- What new infrastructure may be necessary to address increasing cross-border traffic in the future?
- What improvements will be needed to key freeway corridors to accommodate the increasing percentage of commercial traffic?
- How can we preserve and modernize the existing highway system and at the same time fund improvements to increase highway safety and capacity?

- How do we identify an appropriate balance between free flow of traffic and border security?
- Given that cross-border traffic is delayed in part by federal inspections, at what point do additional infrastructure improvements no longer serve reduce delay?
- How can we improve coordination between U.S. and Canadian Transportation Agencies?

Bridges

Michigan's bridges form key links in the state's highway system, providing communities and individuals access to employment, schools, shopping and medical facilities, as well as facilitating commerce and access for emergency vehicles. Table 3-4 shows the number of bridges owned by MDOT versus those owned by counties and municipalities, along with their respective sizes by deck area. The size of a bridge's deck area is a key determinant in how much it costs to maintain, repair or replace that bridge.

Table 3-4
Highway Bridges

Owner	Number of Highway Structures	Square Footage in Millions	Percent of Total Square Footage
MDOT Freeway	3,103	34.4	64%
MDOT Non-Freeway	1,169	6.5	12%
Local - County & Municipal Combined	6,255	13	24%
Total Highway	10,527	53.9	100%
Highway Bridges On Major MDOT Freeways			
I-75	545	8.2	15.2%
I-94	489	5.5	10.2%
I-96	349	3.4	6.3%
I-69	287	2.6	4.8 %

Source: National Bridge Inventory

State Trunkline System Condition

While the state long range plan provides direction for the entire transportation system in Michigan, MDOT's direct control and jurisdiction is limited to portions of the infrastructure. MDOT's single most important infrastructure asset is the state trunkline system of freeways, highways and bridges.

In 1998, the Michigan State Transportation Commission set condition goals for MDOT to achieve: a condition rating of "good" for 95 percent of freeway pavements and 85 percent of non-freeway pavements by 2007; and a condition rating of "good" for 95 percent of freeway bridges and 85 percent of non-freeway bridges by 2008.

Pavements

Data from 2000 indicates that 82 percent of state trunkline freeway pavements are in "good" condition, while 18 percent are in "poor" condition. For non-freeway pavements, the numbers are 67 percent "good" and 33 percent "poor" (based on Remaining Service Life or RSL calculations¹⁵). "Poor" pavements generally exhibit a lot of cracking and/or potholes which are no longer cost effective to repair. Reconstruction of the pavement is generally prescribed to return the road to a "good" condition (technically, the definition of "good" pavements are those with a RSL greater than 2 years).

Bridges

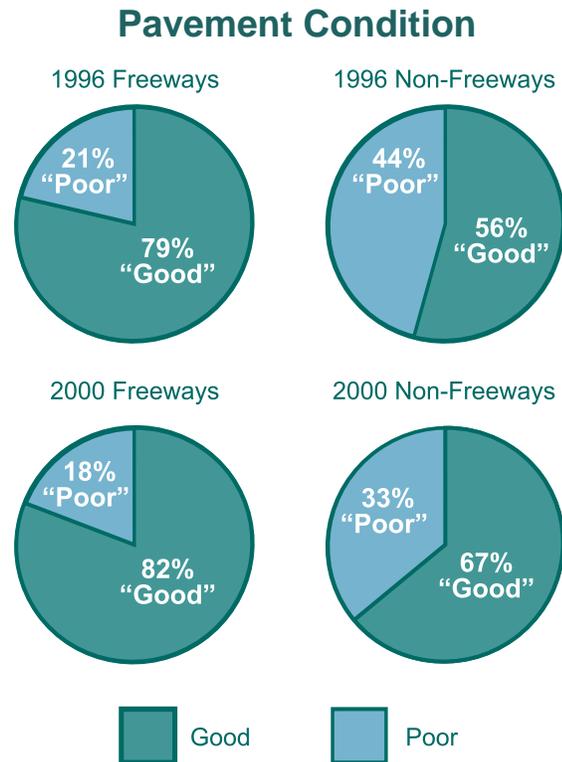
State trunkline freeway bridges, using 2000 data, 78 percent are in "good" condition and 22 are in "poor" condition. For non-freeway bridges, the numbers are 82 percent "good" and 18 percent "poor." Overall, in 2000, 32 percent of the state-maintained bridges were in need of repair or replacement, down from 1995¹⁶.

Bridges in need of repair or replacement are either structurally deficient or functionally obsolete. A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient are often posted for lower weight or are closed if they are found to be unsafe. Bridges that are functionally obsolete no longer meet current highway design standards, often because of narrow lanes, inadequate underclearances or poor alignment.

Progress toward Condition Goals

MDOT's investment and programming decisions over the time period, 1996-2000, have resulted in significant progress toward reaching our established, mid-range condition goals. This is illustrated in Figure 3-14, using pavement condition.

Figure 3-14



The transportation strategies discussed in Chapter 5 will help MDOT attain our long-range preservation goals, and will also provide guidance to the local agencies, our highway infrastructure partners.

Issues

- What combination of focused transportation investment will achieve the best and most beneficial results for the traveling public as we strive to preserve the existing infrastructure in the best possible condition?
- What are the best and most beneficial investment strategies for routine maintenance (such as pothole patching and mowing), winter maintenance (such as snow-plowing and de-icing), and capital preventive maintenance to extend the pavements useful life?
- What modernization improvements, such as strengthening to accommodate legal loads, increasing vertical clearance to accommodate commercial traffic, or widening to provide the needed lane and shoulder widths, need to be considered and undertaken when a bridge is scheduled for repair?

- Is it efficient to have a separate funding programs for bridges, or should bridge repairs be considered and funded along with roadways?
- Does the federal Bridge Repair and Rehabilitation Program which requires a bridge to reach a certain level of deterioration before it is eligible for funding, undermine proactive efforts to keep bridges in good repair by rewarding states for neglecting bridge maintenance?
- How do we schedule bridge repairs, rebuilding and widening to ensure that the right bridges receive the right repair at the right time?
- How do we maintain traffic around bridge repair or reconstruction, particularly in highly-traveled urban areas, where it is often necessary to widen the bridge to keep traffic moving without a detour, or in low-traffic rural areas, where lengthy detours may be necessary to ensure continued access to schools, health care and emergency services?
- Michigan truck weight law (Public Act 300 of 1949) allows trucks weighing up to 164,000 pounds with 11 axles, since research has shown that pavement wear is directly related to axle loading, not gross vehicle weight. Does the benefit to Michigan's economy of allowing trucks heavier than the national standard outweigh the pavement impact of the small percentage of Michigan-registered trucks capable of transporting such loads?

Highway Safety

The condition of our highway infrastructure and highway usage trends play a major role in determining many of our state long range plan goals and objectives. These factors are essential inputs in the development of our asset management and mobility strategies (see Chapter 5, Transportation Strategies). However, the safety of our highway infrastructure is an equally crucial concern, as reflected in the plan goals and objectives.

The goal of MDOT's safety program is "to serve the public's transportation needs through application of comprehensive highway traffic engineering technology; participating in all phases of the department's effort to reduce traffic crashes and injuries, vehicle delay, fuel consumption, pollution, and operating costs by increasing safety, efficiency, and capacity of the state highway trunkline system." MDOT invests \$50 million annually, in the following five general programs: 1) safety improvements, 2) signing, 3) traffic signals, 4) pavement marking, and 5) guardrails. Each program has performance goals and measures.

The crash trend data shown in Table 3-5 provides a positive starting point, showing the downward trend in highway fatalities from 1950 to 2000.

These data show that the number of Michigan traffic fatalities in 2000 dropped slightly even though the number of crashes increased. While minor fluctuations in the trend are common, the long-term trend remains favorable.

Table 3-5
**Highway Crash Statistics
Over Time**

Year	Fatalities	Injuries	Crashes	Fatality Rate*
1950	1,605	45,734	161,750	7.5
1955	2,016	62,234	196,812	7.1
1960	1,604	91,026	209,724	5
1965	2,136	155,258	310,598	5.2
1970	2,177	161,719	313,715	4
1975	1,811	147,299	333,560	3.1
1980	1,774	144,972	314,594	2.9
1983	1,331	135,811	300,797	2.1
1984	1,556	150,740	335,193	2.4
1985	1,569	157,417	386,904	2.3
1986	1,632	158,032	400,694	2.3
1987	1,632	156,318	397,224	2.2
1988	1,704	155,713	410,437	2.2
1989	1,630	154,537	417,252	2
1990	1,563	145,179	387,180	1.9
1991	1,425	135,830	364,847	1.7
1992	1,300	118,727	344,942	1.5
1993	1,414	134,548	363,636	1.6
1994	1,419	142,200	398,050	1.7
1995	1,537	146,303	421,073	1.8
1996	1,505	142,553	435,477	1.7
1997	1,446	137,546	425,793	1.6
1998	1,367	131,575	403,766	1.5
1999	1,386	124,601	415,675	1.5
2000	1,382	121,995	425,469	1.5

*Fatalities per 100 million miles of travel
Source: Michigan Department of State Police,
as reported by the Office of Highway Safety
Planning¹⁷

Crashes continue to be increasingly more survivable. In 2000, there were 3.2 fatalities and 287 injured persons per 1,000 crashes. Seventeen years earlier, in 1983, the rates were 4.4 fatalities and 452 injured persons for every 1,000 crashes¹⁷.

Increased safety belt usage is one reason for improved survivability of highway crashes. The standard enforcement safety belt law took effect in

March 2000. The law made non-compliance with proper safety belt usage a primary rather than a secondary offense for traffic stops and ticketing. Prior to the new law, the compliance rate was 70 percent. After the law was passed, the compliance rate was 83.5 percent and for 2001, the compliance rate remains high, at 82.3 percent¹⁸. As part of its Safety Management System activities, MDOT cooperates with the Office of Highway Safety Planning and law enforcement agencies in a number of programs that promote highway safety, including “Click it or Ticket,” the successful campaign to educate the public about the standard enforcement safety belt law.

It is the Michigan Department of State Police (MSP) that maintains crash statistics and data, such as those shown in Table 3-5. The location of traffic crashes (for example, near which street address or what intersection) is included in the database. The MSP assigns the crash site a physical location on the Michigan Accident Location Index (MALI), and this information is sent to MDOT. The analysis of crash location data is another important component of MDOT’s Safety Management System for highways and leads to safety-based improvements on our roads and bridges.

Thus, the continuing improvement in the fatality and injury statistics reflect improvements in many areas, including vehicles, highways, strengthened safety laws, driver behavior (such as, increased seat belt usage), and stronger law enforcement.

Issues

- How do we sustain the trend of decreasing fatalities and injuries from traffic-related crashes in the face of increasing traffic, increasing commercial traffic, and increasing congestion?
- How do we address the varied safety concerns that arise from demographic changes such as an aging population?
- Given that other factors — such as driver education, commercial vehicle regulation, enforcement, vehicle improvements, and, in the future, new technology — have such a large role to play in highway safety, how much impact can infrastructure improvements have?

Traveler Services & Facilities

Traveler Information Services: Michigan is one of the foremost states in the nation in terms of utilizing high technology to alleviate congestion and

improve traveler safety. There are 180 freeway miles in Metropolitan Detroit and over 10 miles in Metropolitan Grand Rapids that have the Intelligent Transportation System (ITS) infrastructure and traffic management centers to collect and disseminate road congestion and delay information to travelers, using computers, electronics, and telecommunications. These systems include closed circuit television cameras, sensors, dynamic message signs, highway advisory radios and ramp meters. Moreover, over 550 state highway intersections with county roads have been equipped with ITS technology called SCATS (for the Sydney Coordinated Adaptive Traffic System), to make traffic move more efficiently.

The following facilities⁹ are located along MDOT’s state trunkline system:

Travel Information Centers: There are 13 Welcome Centers at border points or popular visitor locations around the state. Centers are an information oasis where travelers can obtain construction and weather-related road condition reports, maps, directions and details on Michigan destinations. More than 5.7 million travelers each year take advantage of these centers. The staff also make lodging reservations for travelers at no charge, and conduct Michigan product promotions.

Freeway Rest Areas: Michigan travelers who use the freeway system have access to 83 rest areas, including the 13 welcome centers. Each year, some 42 million users stop at Michigan rest areas and welcome centers.

Roadside Parks: On two-lane roadways, there are 82 roadside parks providing roadside service similar to freeway rest areas. The roadside park system has been in operation since 1935.

Scenic Turnouts: There are 24 scenic turnouts, located mostly in northern Michigan and the Upper Peninsula. The turnouts provide the motoring public an opportunity to park and view some of Michigan’s beautiful scenery along our highways.

Issues

- How best to extend the use of ITS to alleviate congestion and improve traveler safety?
- How best to maintain, preserve and ensure the safety of roadside traveler services for tourists and others who use them?
- How to determine whether the number of roadside facilities open year-round is sufficient to serve the needs of travelers?

Car Pool Parking Lots

MDOT maintains over 200 commuter parking lots throughout the state, most within its own right-of-way. More than one-half of the lots are paved. In 2000, the lots were used by over 2,400 vehicles daily, saving more than two million gallons of gasoline as a result of this program⁹. Commuter travel patterns and geographic demand for carpool parking facilities change along with Michigan's constantly changing economic landscape, but over the past decade, demand for carpool parking lots has increased near major urban centers and along major freeway corridors. The highest demand for lots today exists along highly-traveled corridors at locations where new land must be purchased for new lot construction. Development pressure has also made it necessary to relocate some lots.

Issues

- When is it appropriate to sell and relocate a carpool parking lot in response to development pressure or interchange improvements?
- How best to fund new carpool parking lot construction in highly-traveled corridors where land is often more expensive than in less convenient locations?
- How to address improper use of commuter carpool parking lots, such as the overnight parking of truck trailers?
- Would improving the connectivity of commuter parking lots with transit services increase the usefulness and viability of both?

Highways and Land Use

Changes in land use and development patterns have impacts on many transportation modes — not just highways. These will be noted as appropriate, later in this chapter.

Discussions of the relationship between land use and highways often center around the concept of “urban sprawl.” This phrase has varied meanings and implications which appear to depend more upon a political point of view than upon objective interpretations of data.

The conversion of land use from rural or agricultural to urban or suburban is one area of concern. According to the National Resources Inventory, USDA, the following changes in land use occurred in Michigan, over the period 1982-1997: cropland acreage declined 8.0 percent; pastureland acreage declined 26.7 percent, forest land acreage increased 10.4 percent, and total rural land declined 3.4 percent.

Another measure which is watched as an indicator of “urban sprawl” is the degree of urbanization in the state. The U.S. Census Bureau defines the criteria for urbanized areas based upon population size and density. The simplified criteria are that the population in urbanized areas must meet a threshold size of 50,000, and the population density must be 1,000 persons per square mile¹⁹. Based on 1990 U.S. Census information, 9.8 percent of Michigan's total land area was urbanized²⁰. According to initial data from the 2000 U.S. Census, Michigan has two new urbanized areas²¹. At the time of writing, we can only estimate the boundaries for these two new areas, as well as any changes in existing urbanized areas; thus any change in the percent of Michigan's total land area which is urbanized is not yet available.

However, the U.S. Census definition of “urbanized” does not suffice to describe all of the developed area thought of as “urban sprawl.” Rather, “urban sprawl” tends to be low-density in nature and distant from the existing transportation infrastructure of the central city. The result is longer commutes for work, shopping, and other activities. The transportation system is called upon to accommodate the trips generated by the “urban sprawl” development pattern, in addition to serving the more traditional pattern, where central cities are linked with suburbs by high volume “arterial” routes.

The demographic and economic information presented earlier in this chapter indicates more intense growth and development patterns along certain highway corridors. In Michigan, land use decisions have a long history of local control, which places MDOT and other transportation agencies in a position of responding to changes in land use development, rather than causing the development to occur. At the same time, we recognize the important and potentially costly relationship between transportation and land use planning. This requires that local governments engage in better land use planning, which includes zoning practices and coordination with agencies involved in infrastructure development.

Issues

- How can we encourage land use planning and zoning decisions that limit the need for highway expansion and advance the use of alternate modes?
- How do we encourage local governments to use access management strategies (such as access

drives or limiting curb cuts) to reduce congestion and improve safety around new or existing development?

Aviation

There were 235 public use airport facilities throughout Michigan in 2000. Eighteen airports provided scheduled air service for 40.5 million passengers, up from 24.5 million in 1991. Ninety-six percent of Michigan's population live within 60 minutes travel time of an airport with scheduled air service, and ninety-eight percent of Michigan's business centers are within a 60 minute drive. Most access is provided by private automobile; only four Michigan airports have regularly-scheduled local public transit service²².

In the aftermath of the events of September 11, 2001, aviation safety and security issues have taken on greater significance. Aircraft operations and passenger levels plummeted by 20-50 percent at airports throughout Michigan in the months immediately following the terrorist attacks. With aggressive, heightened new security measures

coming on line in early 2002, aircraft operations and passenger levels are gradually increasing, and may fully recover by the end of 2002. Among the security changes are improved passenger and package screening measures, improved screening of airport personnel, federalizing airport security personnel, and in some cases modifications to airport infrastructure to emphasize improved security. MDOT will partner with federal and local officials in responding to increased public security concerns.

The number of based aircraft (those aircraft that spend six months or more at a designated airport) varies from year to year. Overall, there has been a slight decline over the period 1994-2001 (see Table-3-6). By 2025, based aircraft are projected to grow by 7 percent to 7,478. During this same period, total aircraft operations will grow by 29 percent from 4.4 million to 5.6 million, underscoring the importance of the preservation of existing airports, particularly the smaller airports which provide an alternative for smaller aircraft and help relieve some of the aviation congestion at the larger airports.

Of Michigan's 235 public use airports, 129 or 54.9 percent are publicly owned with the balance, 106 or 45.1 percent, privately owned. Although both types of facilities are open to the public, ownership plays an important role in at least two ways. First, publicly-owned airports tend to continue functioning as airports over the long haul with a sense of stability that is important to users of the airports. They are more readily accepted as a community asset. Privately-owned airports are far more likely to drift into and out of public use and, consequently, are less reliable as a long-term transportation resource. Second, privately owned airports are often under extreme pressure from developers and others for conversion to other uses such as residential or commercial developments. Once converted to another use, the likelihood of replacing one airport with another is remote at best. Figure 3-15 shows the publicly owned, public use airports in Michigan²².

Airports are classified based on runway length and width, and other airport features. The Michigan Airport System Plan²² (MASP - see Appendix C for a summary) established facility goals for each classification, and evaluated Michigan's airports against those goals. Results of this analysis indicate that 53 percent of the Tier 1 airports — those airports that respond to critical/essential system goals — met the facility standard for pavement condition on primary runways, and 55 percent

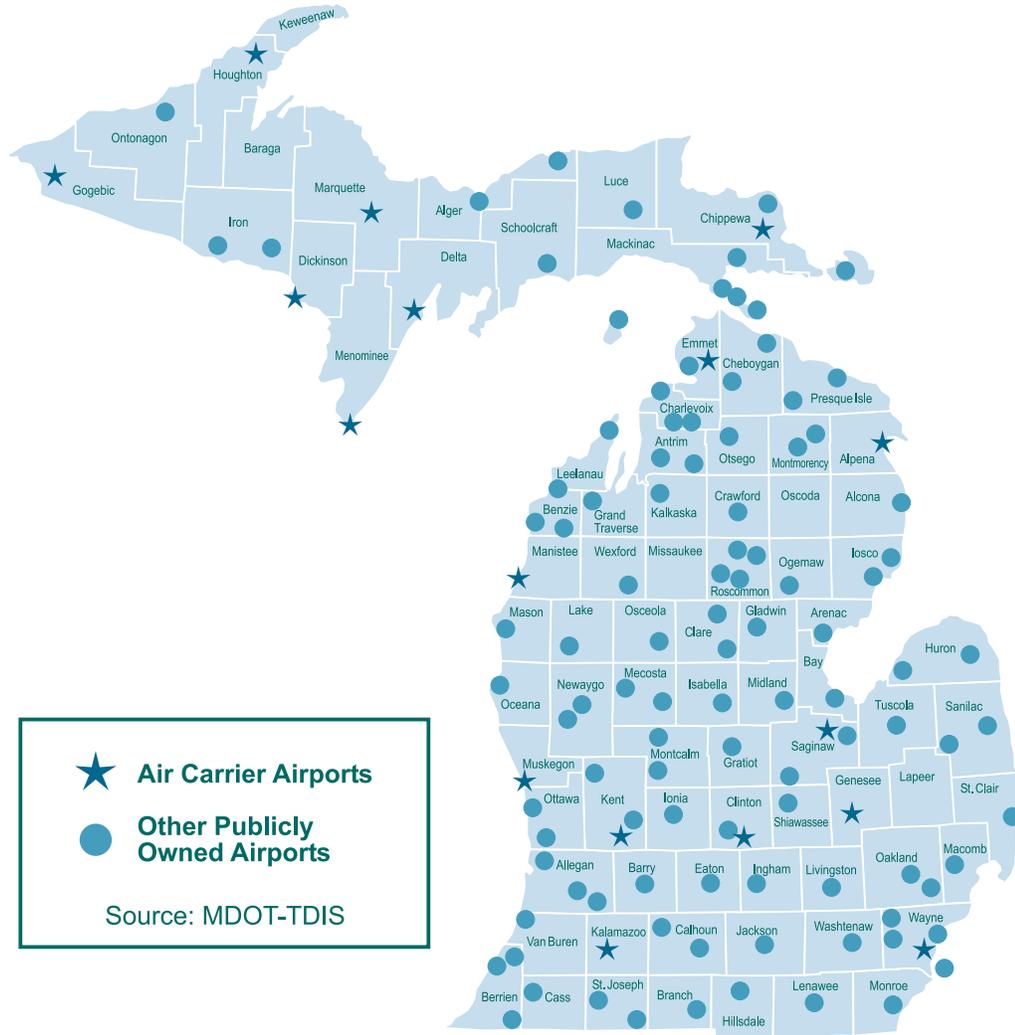
Table 3-6

Aircraft Based at Michigan's Public Use Airports: 1994 - 2001

Year	Number at Privately-Owned Airports	Number at Publicly-Owned Airports	Total Aircraft Based at Public Use Airports
1994	1,530	5,468	6,998
1995	1,561	5,532	7,093
1996	1,511	5,439	6,950
1997	1,457	5,408	6,865
1998	1,486	5,428	6,914
1999	1,549	5,657	7,206
2000	1,510	5,513	7,023
2001	1,499	5,471	6,970

Source: MDOT, Airport Information Management System

Publicly Owned Airports



met the standards for a complete and adequate runway system. Maintaining pavement condition and bringing airports up to the designated standard will be an on-going challenge.

Effective airport zoning allows an airport to function appropriately within the overall context of its community by protecting runway approaches, allowing those land uses that are compatible (such as manufacturing, farming or recreational) and restricting non-compatible land uses (such as residential or hospital) that may be sensitive to noise issues. At the time the MASP was adopted, 21 of 88 Tier 1 airports had a current airport zoning plan and an active airport zoning board, one of the facility goals for Tier 1 airports. Although these airports have had an opportunity to develop and maintain airport zoning and an active zoning board for many years, comparatively few airport sponsors have taken advantage of this opportunity. In recent years, this has become a point of emphasis of the Michigan Aeronautics Commission, and the

commission has approved in a number of instances MDOT staff participation on airport zoning boards and has taken a greater interest in seeing that effective local airport zoning is in place.

Issues

- How to fund and maintain increased airport security while still facilitating easily accessible air transportation?
- How to improve air travel safety rates given increasing aviation congestion?
- How do we prevent small privately-owned airports, which help relieve congestion at larger airports by providing an alternative takeoff and landing point for smaller aircraft, from being closed or converted to other uses?
- How do we prioritize investments to maintain, preserve and upgrade our runways, taxiways, aprons, hangars, maintenance facilities, passenger terminals, and parking areas that are critical to the safe operation and adequate service performance of an airport?

- What can we do to provide or encourage better interface at airports with other modes, particularly transit, for passenger pickup and dropoff?
- How feasible is it to provide better interface at airports with commercial freight transportation modes other than trucks?
- How best to encourage airport authorities and communities to develop appropriate land use and zoning guidelines around airports?

Non-motorized

MDOT has developed 1,900 miles of paved shoulders on state trunklines and 100 miles of facilities separated from, but near the highway that are available for use by bicycles⁹. County road commissions and municipalities also invest in these and other types of non-motorized facilities (bike lanes, pedestrian overpasses, tunnels and signals) on roadways within their jurisdiction. Together with state funding, federal Transportation Enhancement Program funding is a significant additional contributor to non-motorized facility development. MDOT also works with the Michigan Department of Natural Resources in its development of the Michigan Trailways System, primarily on abandoned railroad rights-of-way.

There is less definitive data available for this type of infrastructure than for many others, in part because bicycle and pedestrian use is more difficult to monitor and track than automobiles or other vehicles that are licensed and registered by the state.

With the exception of long distance recreational trail networks, non-motorized transportation is chiefly local in nature. For that reason, some forms of land development can encourage non-motorized transportation, such as subdivisions, commercial developments, and highway projects that incorporate design elements specifically for non-motorized users. Consideration of non-motorized access to intermodal transportation centers, to other intercity bus and passenger rail terminals, and to major local transit stops is also essential to promote this mode as a viable means of daily transportation. Other modes can also facilitate non-motorized use by accommodating riders through the provision of bike racks on buses or passenger trains.

There is little specific data available on the condition of non-motorized facilities, particularly those that are separate from the highway. As with other types of infrastructure, maintenance plays a key

role in preserving the facility's use and viability. As specific non-motorized facilities are designed and constructed, a plan and an arrangement for maintenance, with local agency commitments, are necessary to ensure the longevity of the facility and the safety and convenience of users.

State law enables pedestrians and bicyclists to share roadway corridors with motorized vehicles, but Michigan does not currently require riders to use a bike helmet. Many roadways are too highly-traveled to safely accommodate non-motorized users, and others require improvement in order to optimize the safety of non-motorized travelers.

Issues

- How to ensure that investment in non-motorized facilities is protected over time through maintained activities that sustain the facilities' usefulness?
- What criteria should exist to help transportation officials determine when it is prudent to incorporate non-motorized facilities with other infrastructure improvements?
- Is funding for non-motorized facilities sufficient, and appropriately spent, or could Act 51 funds be more effectively used if communities pool their funds for regional non-motorized projects?
- How can we encourage other modes to accommodate bicycle travelers?
- How to reduce the number and severity of vehicle/pedestrian and vehicle/bicycle crashes?
- What efforts can be made to encourage land use and zoning changes that support non-motorized travel?

Intercity Bus

Three private intercity bus companies provide regular-route service to 220 communities in Michigan. In addition, there are 197 charter bus companies licensed to provide a wide range of services, including charters, tours, sightseeing, commuter trips, and school transportation. There are 131 intermodal passenger facilities with regularly scheduled intercity bus service. Eight of those also have direct rail connections, and 22 have Amtrak Thruway bus service that feeds into an Amtrak rail terminal⁹. Michigan's intercity bus route system is shown in Figure 3-16.

The number of passengers carried and communities served has declined since deregulation of the intercity bus industry in the 1970s, although ridership appears to have increased somewhat in recent years. MDOT supports five routes to maintain a base level of service to northern communities that

Figure 3-16

Intercity Bus Routes

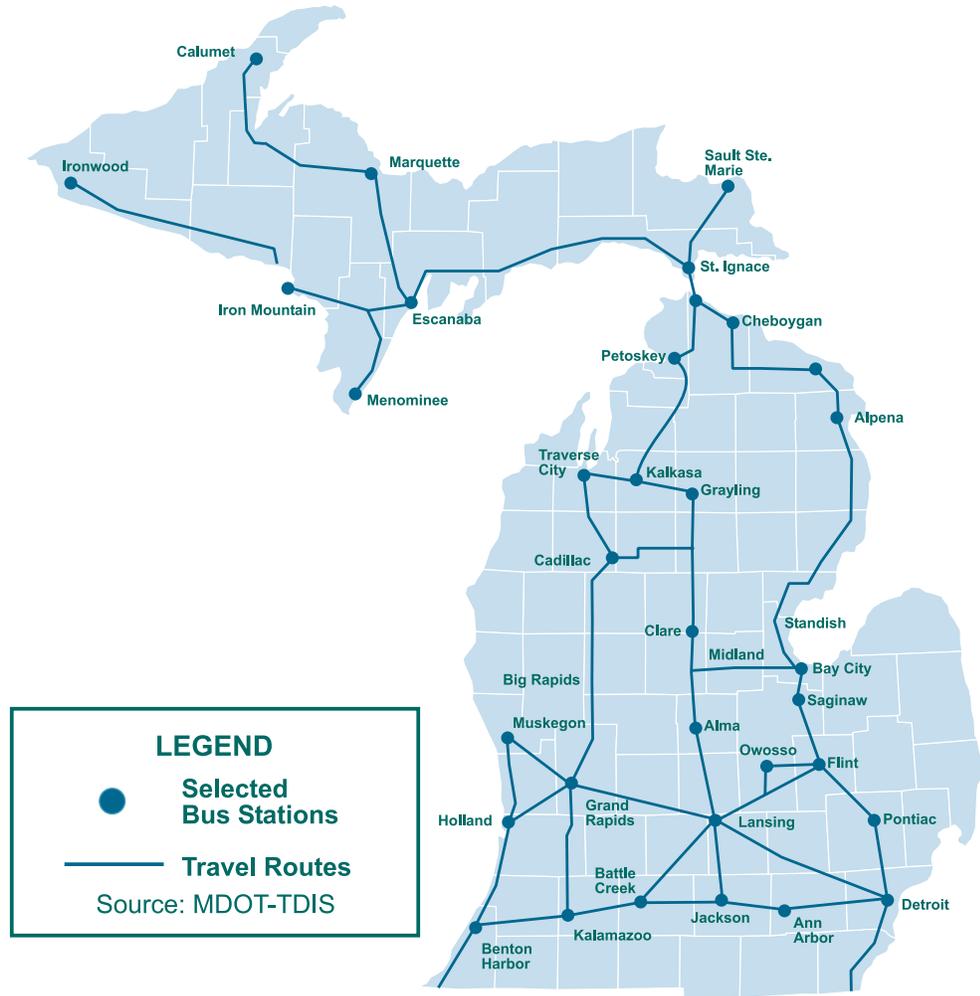


Table 3-7

Ridership on Intercity Bus, State-Supported Routes: Selected Years

Route	1991	1999*	2000
Bay City - St. Ignace	4,484	10,906	10,902
Grand Rapids - St. Ignace	7,577	20,542	22,135
St. Ignace - Duluth, MN	not available	4,800	13,706
Calumet - Milwaukee, WI	not available	8,550	23,420
Marquette - Green Bay, WI	not available	1,913	4,559

Note: * First year of service for St. Ignace - Duluth, MN, Calumet - Milwaukee, WI, and Marquette - Green Bay, WI routes

would otherwise not be served by intercity bus. Ridership on the longest-running, state-supported routes increased a total of 174 percent from fiscal year 1991 to fiscal year 2000 (see Table 3-7). Over one million miles were covered and nearly 75,000

passengers were served under the state-supported route program in 2000.

In addition, to offset the high cost of acquiring new coaches, which can be as much as \$350,000,

MDOT has a capital assistance program that makes coaches available at minimum cost to qualifying carriers.

Issues

- How best to further the joint use of passenger terminals and improve passenger connections with intercity bus and rail passenger services to promote a seamless public transportation system?
- What is MDOT's role in retaining or improving intercity bus ridership and increasing the number of communities served by the intercity bus system to further basic mobility statewide?
- What safety or security issues face the intercity bus industry and how best to address those?

Intercity Passenger Rail

Michigan's intercity passenger rail system consists of 568 route miles along three corridors and serves 22 Michigan communities⁹. The three routes are Pontiac-Detroit-Chicago, the Pere Marquette (Grand

Rapids-Chicago), and the International (Toronto-Port Huron-Chicago). The Detroit-Chicago portion of the Pontiac-Detroit-Chicago Corridor is a federally-designated high speed rail corridor. It has been served by three Amtrak trains in each direction daily for more than a quarter century. A fourth train, part of the International route, operates in this corridor between Battle Creek and Chicago. The International route has operated as such since 1982; the Pere Marquette route (one round trip daily) since 1985. Figure 3-17 shows Michigan's intercity passenger rail system and stations.

Historically, ridership on the Michigan intercity passenger rail system has fluctuated widely. In 1990, 538,338 passengers were carried on the three routes; this was the norm during the nineties. During the Amtrak era, ridership reached its zenith in 1997 with a record 599,775 passengers⁹. However, by 2000 ridership had fallen 19 percent to 487,181 passengers. These fluctuations have been caused

Figure 3-17

Intercity Passenger Rail



by many factors including periodic service changes, varying reliability, fare structure changes, equipment problems, and changes in the economy.

Reducing travel times has a significant impact on ridership as intercity passenger rail service trip times become more competitive with auto travel times. Higher speeds are key since they help reduce travel times and provide an effective marketing tool to attract ridership. Michigan's incremental train control program has resulted in train speeds of 90 mph between Kalamazoo and Niles, the highest in the midwest, with the intent of extending this westward beyond the Michigan/Indiana state line and increasing the train speed to 110 mph.

Reliability also impacts intercity passenger rail ridership. Passenger trains run on track owned and operated by freight rail carriers, for the most part, operating with permission for a fee. Increased rail freight shipping, particularly in Michigan since the completion of the double stack rail tunnel between Sarnia, Ontario and Port Huron, Michigan in April 1995, has had a significant impact on the reliability of passenger rail service on the International route. High volumes of rail freight traffic between Porter, Indiana and Chicago, a distance of 40 miles, continues to contribute to poor reliability on all three routes. According to federal legislation, the Rail Passenger Service Act of 1970, Amtrak should receive dispatching preference over freight service, but this is not always the case.

High operating and maintenance costs threaten continued conventional intercity passenger rail service in Michigan. For instance, the operating costs of state-supported trains serving Michigan, the International and the Pere Marquette, have increased by over 34 percent between 1994 and 2000²³. During this same period, state operating support has increased from approximately \$1 million to \$5.7 million²⁴. More efficient use of trains, reduction of travel times, and contracting out services such as food and beverage are strategies that could be employed to reduce the operating costs of this mode of transportation.

Amtrak faces a Congressional mandate of self-sufficiency by the end of 2002. It is clear that Amtrak will not meet this mandate since its projected budget deficit for fiscal year 2001-2002 is \$1.2 billion, its biggest ever. One impact of the mandate has been increased state subsidies for intercity passenger rail service, and the states' share of Amtrak service costs is nearing a level which exceeds what

states are willing to pay. The cost to Michigan for the International and the Pere Marquette has increased approximately sixfold between 1994 and the present time.

Issues

- What will happen to intercity passenger rail service in Michigan as a result of the mandated Amtrak self-sufficiency requirement?
- What factors — such as service quality, travel time, cost, reliability, convenience — make intercity passenger rail an attractive alternative mode?
- What role can MDOT play in retaining and improving intercity passenger rail ridership and interconnection with other modes?
- What changes or improvements are needed to reduce the operating costs of intercity passenger rail service?
- What can be done to insure the expeditious dispatching of intercity passenger trains on freight railroads?

Local Public Transit Service

Michigan is served by 76 local public transportation systems and 134 specialized transportation systems. All 83 Michigan counties are served by one or both of these services. All 76 local public transportation systems have lift-equipped vehicles in their fleet, with a number of fleets being 100 percent lift-equipped.

Local transit millages fund approximately two-thirds of Michigan's transit systems. The remainder of Michigan's transit systems are supported by local general funds. Another significant funding source is human service agency funds used to contract for transit service for their clientele.

Most of the over 89 million passengers using local transit systems each year are served by systems operating in 15 urban areas. All 15 of Michigan's urban areas have local public transportation service with over 83 million passengers being transported in 2000 by these systems (see Table 3-8). In 2000, non-urban area systems carried more than six million passengers.

All of Michigan's urban areas had transit service in 1990 with substantial amounts of service being added in many of these areas during the 1990s. During the same time period, the number of county-

Tabel 3-8

Local Public Transportation Services 1990-2000

Service Area	Annual Vehicle Miles (in millions)		Vehicles		Annual Passengers (in millions)	
	1990	2000	1990	2000	1990	2000
Greater Detroit Area	39.0	39.4	819	997	72.1	55.0
Other Urban	12.5	25.9	700	1026	21.5	28.1
Non-Urban Communities	2.9	4.2	134	202	1.8	1.8
Countywide	13.2	18.3	445	688	4.2	4.8
Total	67.6	87.8	2,098	2,913	99.7	89.6

Source: MDOT, Public Transportation Management System

wide systems increased to 48. Statewide, this resulted in the annual vehicle miles and fleet size increasing by 24 percent and 30 percent respectively. However, ridership growth did not keep pace with the increase in the number of systems and level of service. In fact, statewide, ridership decreased with the greater Detroit area experiencing a 24 percent decline between 1990 and 2000.

While every Michigan county has some level of public transit services, at least 35 counties do not have county wide public transit. In addition, transit riders often need the ability to cross county lines to reach medical care, employment, or education, but this type of service is not available in every county. Finally, coordination of local transit services with intercity passenger services is critical to minimize transfer times at intercity terminals and improve the interconnectivity of this transportation mode, particularly with the development of intercity passenger rail service in the Detroit-Chicago Corridor and the projected increase in Michigan's senior population.

Many new technologies are available to improve the safety, reliability and timeliness of transit service, and some transit agencies are already using them. "Smart cards" that allow transit riders to travel without unnecessary delay, global positioning/tracking of buses, electronic announcement of major street intersections and transfer points, use of ITS regarding grade crossings to alert transit drivers when a train is within a certain distance of the crossing, signal preemption for selected routes or portions thereof, bus stop safety, and computerized

scheduling and information systems are all technologies that can make a significant contribution to improved transit service.

Issues

- Is transit adequately funded, and if not, what viable opportunities exist to increase funding for transit?
- Why is transit ridership going up in some areas, but not in others?
- What opportunities exist to coordinate or combine transit services and make better use of existing funds by eliminating duplication and achieving greater economies of scale?
- Are funds currently spent for transit services delivering the product that transit customers need by providing cross-county or intercounty regional service, connections to other passenger modes, and timely and reliable service?
- What new technologies could be employed to improve transit service or increase ridership?
- Should some form of performance measurement be used to improve transit service and increase ridership before additional funds are made available to this mode?
- How to encourage better coordination of local transit services with intercity bus and passenger rail services to minimize transfer times at terminals?

Ridesharing

The Ridesharing Program provides grants to 12 local agencies enabling them to organize, demonstrate, and promote ridesharing activities. TEA-21 amended the federal tax code to allow for an expansion of tax incentives to include a pre-tax

option offered by employers to employees related to transit, vanpooling, and parking. Thus far, few Michigan business are participating.

The MDOT-sponsored MichiVan Program provides commuter vans to qualified groups of seven or more persons throughout the state. These vans are self-supporting except for program development enhancements and administrative costs. The program, which has accelerated the expansion of vanpooling in Michigan, continues where public transportation is unavailable or unsuited to commuter travel needs. Interest in carpooling and vanpooling varies depending on the season, gasoline prices, the economy, family needs, and other factors. For fiscal year 2001, there were an average of 77 Michivans statewide⁹.

Issues

- How to encourage participation by riders and employers in the Rideshareing program?
- How to sustain a viable ridesharing program in the face of shifting work demographics and a trend toward reverse commutes or suburb-to-suburb commutes?
- How to encourage existing commuters to register with local rideshare offices to obtain an accurate representation of commuting participants?

Ferry Service

There are 20 ferry services, excluding excursion services, operating in Michigan, carrying various combinations of autos, trucks, passengers, and package freight. Three ferry services are international border crossings connecting Michigan with Ontario, Canada. Of the three, one specializes in moving trucks that are oversize, overweight, or carrying hazardous materials and are therefore unable to use bridge or tunnel crossings into Canada.

Nine populated Michigan islands in the Great Lakes and their connecting waterways depend on the Michigan mainland for many of their supplies and services. Access to the mainland is essential to the welfare of island residents who depend on ferry services.

Three of Michigan's ferry services receive state operating support. All three are run by the Eastern Upper Peninsula Transportation Authority (EUPTA), providing service for passengers and vehicles to Drummond, Neebish, and Sugar Islands. Table 3-9 shows the large increases in passengers, vehicles and crossings from 1990 to 2000⁹.

Table 3-9

Combined EUPTA Service Data for Drummond, Neebish and Sugar Island Ferries

Year	1990	2000
Passengers	570,728	848,998
Vehicles	312,973	529,809
Crossings	60,869	68,457

In addition to capital and operating support for the EUPTA ferry services, public capital assistance was provided to the Beaver Island Ferry service and EUPTA in the recent past to update aging vessels.

TEA-21 has a Ferry Boat Discretionary Program administered by the FHWA to fund the construction of ferry boats and ferry terminal facilities²⁵. The funding for this program comes from the Highway Trust Fund, and the federal share on these projects is 80 percent. TEA-21 expands eligibility for ferry boats and terminals beyond those that are publicly owned to also include those that are publicly operated or those that are majority publicly owned and provide a substantial public benefit. In 2000, approximately \$30 million was made available to states through an application process. MDOT has used this program to purchase two new boats which were turned over to ferry operators, one for Beaver Island and another for the EUPTA.

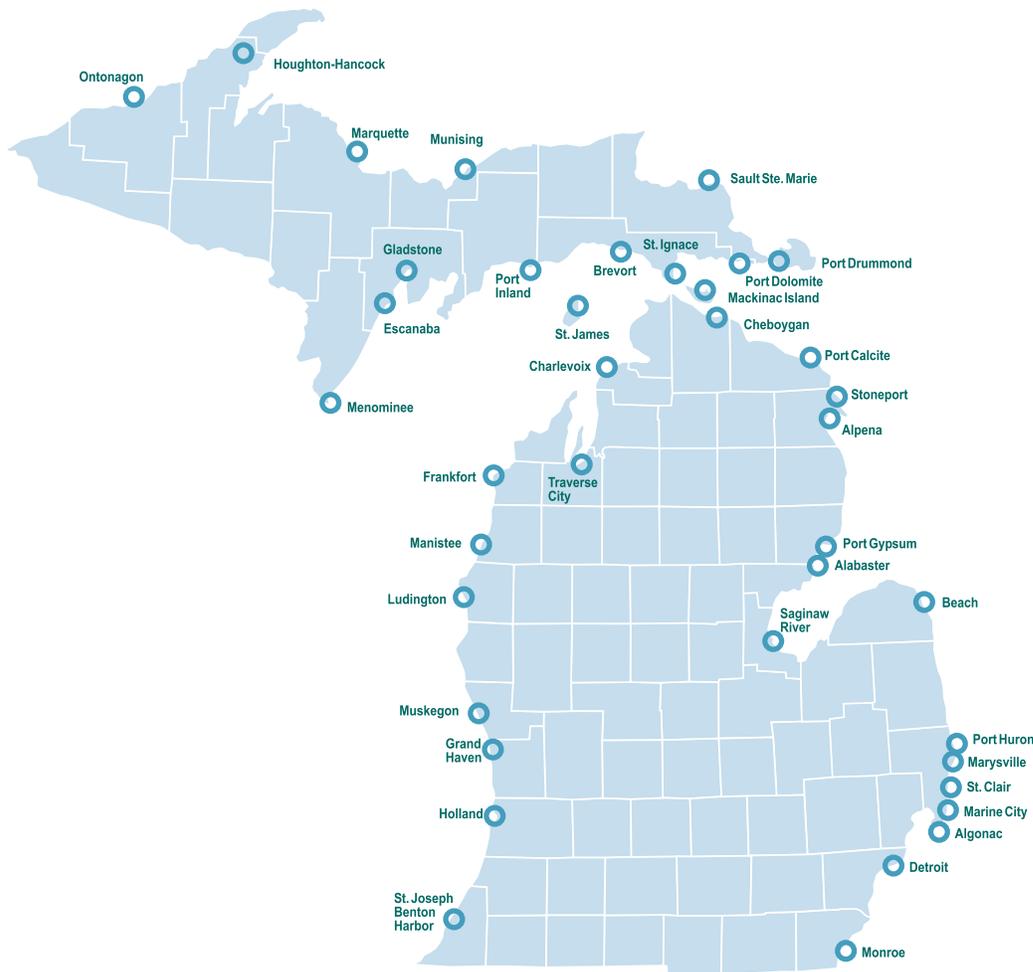
Issues

- What is the best and most cost-effective way to ensure the basic mobility of island residents who need access to the mainland for health care, jobs or school?
- Is there an additional need to provide public funds to support ferry access to economically important islands such as Mackinac Island or Isle Royale?
- What criteria should be used to determine the need to provide public funds to ferry services for capital or operating expenditures?

Commercial Ports

The St. Lawrence Seaway and the Great Lakes form a maritime transportation system extending more than 2,000 miles from the Gulf of St. Lawrence on the Atlantic Ocean to the western end of Lake Superior. Michigan's 3,200 miles of shoreline

Commercial Ports



Source: MDOT-TDIS

contain more than 100 ports serving commercial and recreational navigation. About 98 of these ports accommodate commercial marine activities, including cargo handling, ferry services, commercial fishing, shipbuilding, marine contracting, and excursion services. As of 2000, there were 40 ports which regularly accommodate commercial cargoes⁹ (see Figure 3-18).

Most of Michigan's waterborne commerce consists of bulk cargoes. Stone, sand, iron ore and coal accounted for 87 percent of the 96 million tons of total traffic in 2000, while cement, petroleum and chemicals total approximately 10 percent. These materials are used in the steel, construction, agriculture and petroleum industries throughout the Great Lakes region. The steel industry alone accounts for about half of Michigan's total waterborne commerce²⁶.

The marine transportation system involves partnerships between the public and private sectors. The waterways, including navigation channels and

related aids to navigation, are public responsibilities. The private sector owns and operates nearly all the marine terminals and cargo vessels. Funding for navigation channels has traditionally been a responsibility of the federal government, with general funds used for construction and maintenance activities. In 1986, Congress enacted the Harbor Maintenance Tax — a nationwide ad valorem tax on all cargoes — intended to pay for all maintenance activities. Since the U.S. Supreme Court ruled in 1998 that a portion of the tax is unconstitutional, an alternative funding source has yet to be identified. The type and magnitude of any replacement fee system could have a major impact on the future of our port system.

Detroit is Michigan's largest port, handling 18 percent of the state's total tonnage. Several large ports, including Calcite, Stoneport, Port Inland, Port Dolomite, Port Drummond, Alabaster, and Port Gypsum, are privately-owned and were built to ship stone produced from nearby quarries. Most of the traffic

at Escanaba and Marquette is iron ore mined in the Upper Peninsula and destined for Great Lakes steel mills. Other ports typically receive a variety of cargoes for local or regional consumption.

Nearly half of Michigan's waterborne commerce is either generated or consumed dockside. The remaining waterborne commerce is transferred to or from trucks or trains. Nearly all ports accommodate transfers of cargo between marine vessels and trucks, but the condition of local streets connecting these ports with highways is often sub-standard.

Disposal of materials dredged from the waterways is an ongoing problem. Many of the state's ports require annual dredging to maintain authorized channel depths. Where no disposal site exists, a "local sponsor" must be named to acquire and manage a site for holding the spoil before dredging can begin. Such a sponsor can be hard to find because the associated costs can be high. This,

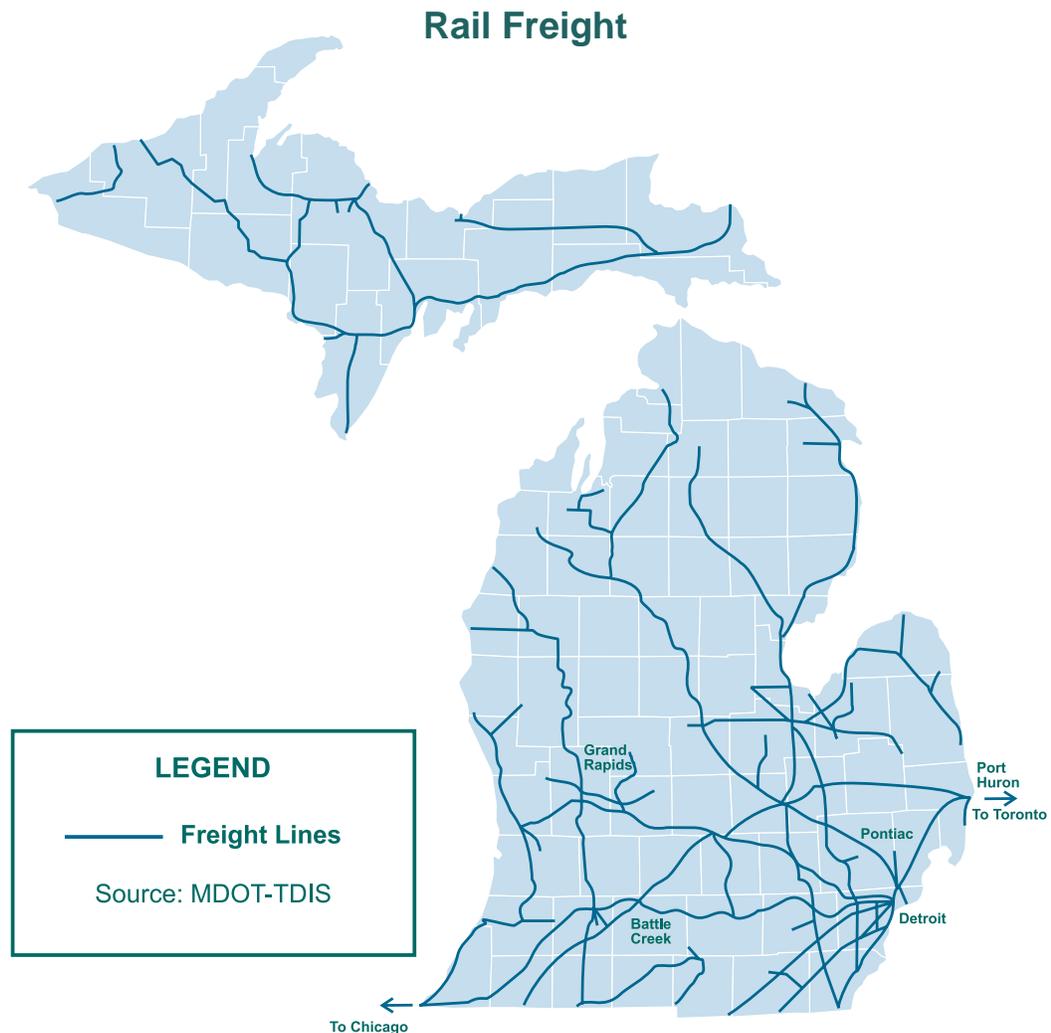
and increasingly restrictive environmental regulations, threaten continued maintenance and usage of navigation channels at individual ports.

Since the opening of the St. Lawrence Seaway in 1959, Michigan's waterborne commerce has ranged from 51 million to 114 million tons. During this period, the mean annual tonnage was approximately 93 million. Most of Michigan's waterborne traffic is generated by steel and construction industries and is susceptible to variations in the general economy and restructuring of the steel industry²⁶.

Issues

- How best to fund the maintenance and preservation of existing ports and waterways?
- How to fund improvements to landside connections to those ports where they are needed?
- How to achieve effective partnerships that enable us to address funding, environmental and other concerns associated with channel dredging?

Figure 3-19



Rail Freight

There are approximately 3,950 miles of active railroad in Michigan as of 2000. Of these, 695 miles are state-owned and the remainder are privately owned. Eight privately owned intermodal truck/rail freight terminals operate in Michigan. Our rail freight system⁹ is shown in Figure 3-19.

A series of freight railroad mergers occurred throughout the country during the 1990s, creating "mega-railroads" that dominated certain parts of the country. Several hundred miles of rail lines in Michigan were affected by these mergers, although no significant operational changes have occurred. Further consolidation among major North American railroads is possible, and these could impact Michigan in the future.

Table 3-10

Rail Tonnage Originating or Terminating in Michigan, 1999

Commodities	Tons of Cargo	Percent of Total
Originating in Michigan		
Metallic Ores	8,465,138	27
Transportation Equipment	7,591,676	24
Farm Products	2,646,765	8
Primary Metal Products	2,375,914	8
Waste and Scrap	2,357,652	8
All Others	7,912,264	25
Total	31,349,409	100
Terminating in Michigan		
Coal	20,057,228	40
Metallic Ores	8,551,139	17
Chemicals	4,366,620	9
Primary Metal Products	3,644,280	7
Mixed Freight	2,065,160	4
All Others	11,996,833	24
Total	50,681,260	100

Source: Association of American Railroads, 1999.

Michigan's rail transportation system is considered mature and no new rail corridors are expected to be developed. Much of Michigan rail traffic is generated by the steel and automotive industries and is therefore susceptible to variations in the general economy as well as government policies concerning steel production and importation. In the future, some light density rail lines may be sold to other railroads and abandonment of unprofitable lower-volume trackage is anticipated. The remaining system is expected to carry increased volumes of traffic.

In general, the existing rail system has the capacity to accommodate significantly greater volumes of cargo through improvements such as double tracking in specific high-volume rail corridors. The growth in domestic and international container trades has led to the expansion of double-stack rail service and the use of dedicated container trains. Increased intermodal and rail freight traffic in Michigan is already evident, and further increases in domestic and North American markets are expected in the decades to come.

Railroad tracks regularly cross roadways, and in some locations grade separations or road closings may be required on high volume rail corridors. Another concern is safety; approximately one-half of train/car fatalities occur at gated crossings, suggesting the need for increased protection and driver education.

The state of Michigan owns 695 miles of rail line for operation and "railbanks." When a railway is "railbanked," it means service is not currently needed but the rail right-of-way is preserved by the state for possible future use. These state-owned lines were acquired for operation by private rail freight carriers or railbanking when it appeared they would be abandoned by their former operators. The state currently contracts with operators to provide service on the selected lines. In 2001, all 695 miles of state-owned rail line were in operation and none were railbanked⁹. The State Transportation Commission has adopted a policy requiring the gradual divestiture of these lines and state legislation has been enacted authorizing this divestiture.

Table 3-10 shows 1999 national and Michigan railroad information as reported by the Association of American Railroads.

Issues

- How will future national or international railroad mergers and acquisitions effect Michigan rail freight service?
- How can we encourage creation of additional intermodal connections to encourage use of rail freight containers instead of hauling freight by truck?
- Are there more effective ways to reduce the number of accidents and delays at highway/railroad grade crossings at a reasonable cost?
- How will the divestiture of state-owned rail lines effect Michigan rail freight service?

Intermodal Facilities

The term “intermodal” is applied to facilities and services that exist between or include more than one means of transportation; this definition can apply to either passenger or freight transportation. Specific inventory, usage, and issue information has been provided for intermodal facilities and services according to primary mode, previously in this chapter. In summary, intermodal facilities and services in Michigan include: 235 public use airports; 209 carpool parking lots; 154 intermodal passenger facilities; 26 pipeline terminals; 98 ports (40 are cargo); and 8 rail/truck transfer facilities⁹.

Issue

- How best to encourage the development of intermodal facilities to improve seamless connectivity between modes for passengers and freight?

Summary of Transportation Issues

We began this chapter with demographic and economic information, thus providing the framework for our discussion of Michigan’s multi-modal transportation system. There we focused on inventory statistics, usage trends and issues for each mode in turn. Many of these issues will be reflected in the state long range plan goals and objectives (Chapter 4). Transportation strategies to address the issues, as well as to achieve the goals, appear in Chapter 5.

Highlights

- The dominant demographic trend over the next 20 years is that the age group of those 55 and older will be the fastest growing segment of the population. This means that intermodal con-

nections and alternative transportation modes will become more important.

- While the service sector is rising rapidly, manufacturing will continue to be one of the largest economic sectors in Michigan. Significant trends in manufacturing, such as global competitiveness, just-in-time delivery, and NAFTA, have increased the reliance placed on an efficient transportation system. Congestion in trade corridors and delays at border crossings impede that efficiency.
- Agriculture remains significant in Michigan and the crucial transportation issue for this sector is having a connected and continuous network of all season roads and bridges. Such a network will also benefit manufacturing, forestry, and mining. In addition, school districts, fire and other public safety departments require bridges that are open and can accommodate appropriate weight limits.
- A modernized road and bridge network, in good condition and with adequate capacity, improves safety, helps the environment, increases personal mobility, supports jobs, and enhances the quality of life for Michigan’s motorists.
- Our projections show that significant highway corridors, and urban freeways will all experience increasing levels of congestion. MDOT and other transportation agencies will have a limited ability to meet every capacity need on important corridors, due to high costs and rights-of-way issues. Alternatives to adding capacity will need examination, such as expanding our use of Intelligent Transportation Systems (ITS), and changing the characteristics of transportation demand.
- In the aviation mode, critical issues include endangered airports, that is, those under pressure from local officials or developers to be closed and converted to an alternate use. It is also important to develop and maintain airport infrastructure, such as runways, taxiways, passenger terminals and parking areas, so that these operate safely and provide adequate service.
- Continued use of intercity buses and trains are key elements of a seamless public transportation system. This can be achieved through the joint use of terminals and by supplementing

and feeding intercity rail passenger services. In the passenger rail area, Amtrak faces a Congressional mandate for self-sufficiency by the end of 2002. Improving service quality and reducing travel times are ways to attract ridership. MDOT supports higher rail speeds as a way to reduce travel times.

- Transit service can be provided more efficiently by having a single, consolidated transit system provide service to those involved in various programs such as social service agency clients, school districts, and universities. Coordination of local transit services with intercity passenger services is critical to minimize transfer times at intercity terminals. This will become increasingly important with the development of intercity rail passenger service in the Detroit-Chicago Corridor and the forecast increase in Michigan's senior population.
- Both marine and rail freight need adequate intermodal connections. Nearly half of Michigan's waterborne commerce is either generated or consumed dockside. The remaining waterborne commerce is transferred to or from trucks or trains. Nearly all ports accommodate transfers of cargo between marine vessels and trucks, but the condition of local streets connecting these ports with highways is often sub-standard. As for rail freight, the growth in domestic and international trade has led to the expansion of double-stack rail service and dedicated container trains. Increased intermodal traffic in domestic and North American markets is expected.

MDOT will continue to emphasize the efficient and effective management of the entire transportation system. We will also focus on the continuity between state highways and local roads, as well as improving connectivity with other modes: non-motorized, transit, port, rail, and air. Our state long range plan goals and objectives support this approach.

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- ² United States Census, <http://www.census.gov/>
- ³ MDOT - TDIS.(Travel Demand and Intermodal Services Section)
- ⁴ 1990 United States Census, MDOT - TDIS Trip Generation File for 2000-2025.

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⁶ Travel Michigan Data.

⁷ Michigan Agricultural Statistics Service, 1999 - 2000 report.

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⁹ MDOT, Facts and Figures Report.

¹⁰ MDOT, Rural Task Force mapping data base.

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¹³ United States Department of Transportation, 1995 American Travel Survey, <http://www.bts.gov/ats/>

¹⁴ United States - Canada Trade Data, http://strategis.ic.gc.ca/sc_mrkti/tdst/engdoc/tr_homep.html

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¹⁶ MDOT, National Bridge Inventory 2001 submittal (2000 data).

¹⁷ Michigan Department of the State Police, Michigan Office of Highway Safety Planning.

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¹⁹ United States Department of Commerce, Geographic Areas Reference Manual, Chapter 12. <http://www.census.gov/geo/www/garm.html>

²⁰ United States Department of Transportation, Soil Conservation Service, Summary Report: 1992 Resources Inventory, Washington D.C.

²¹ Federal Register, vol. 67, no. 84, May 1, 2002, Department of Commerce, Bureau of Census: Qualifying Urban Areas for Census 2000.

²² MDOT, Michigan Air Service Plan.

²³ Amtrak Data.

²⁴ MDOT, Amtrak Program Data.

²⁵ Transportation Equity Act for the 21st Century, Fact Sheet: Ferry Boat Programs. <http://www.fhwa.dot.gov/////tea21/factsheets/ferry.htm>

²⁶ United States Army Corps of Engineers and MDOT Data.

Chapter Four

Goals and Objectives

The goals and objectives of the state long range plan provide guidance and direction for all statewide transportation programs. MDOT held numerous meetings with the Customers and Providers Advisory Committee in order to review and reassess the goals and objectives adopted for the previous state long range plan. Needed updates have thus been developed in a cooperative manner. The most notable change has been the addition of **Safety** as a distinct goal, rather than being incorporated into other goals as an ever-present concern.

MDOT is committed to achieving the aims represented by all of the goals and objectives. We recognize, however, that some are more readily attained by MDOT acting within its own jurisdiction and areas of responsibility, while others require the action and cooperation of other agencies in order to be fully realized.

The short titles of the goals are: Preservation, Safety, Basic Mobility, Strengthening the State's Economy, Transportation Services Coordination, Intermodalism, Environment & Aesthetics, and Land Use Coordination. The full text of each goal is appears after the short title. The objectives follow as "bullets."

Preservation

Within the constraints of state and federal law, direct investment in existing transportation systems to effectively provide safety, mobility, access, intermodal connectivity, or support economic activity and the viability of older communities, and ensure that the facilities and services continue to fulfill their intended functions.

- Working in cooperation with the appropriate agencies, develop generally accepted service standards and evaluation criteria which establish the intended functions for each system or mode which receives, or it is anticipated will receive, state support.
- Maintain, and where appropriate, improve state highways, county primary and local roads, city major and local streets, and bridges under all jurisdictions, as necessary, to preserve and expand their usefulness for all modes according to service standards.
- Work with appropriate public and private agencies to maintain and improve public transportation services and equipment according to service standards and reinvest or adapt service, as warranted, to address changing travel and safety needs.
- Preserve rail corridors presently serving traffic according to service standards, and support public policy that encourages reinvestment to ensure their continued economic viability and safety.
- Preserve abandoned railroad corridors for possible future transportation service in keeping with service standards, with interim use that maintains the corridor's integrity.
- Encourage federal authorities to continue to maintain and, where necessary, improve Great Lakes navigational channels and related facilities and services according to service standards.
- Maintain and improve existing aviation facilities and services according to service standards and expand them where appropriate.
- Maintain, improve, and connect non-motorized facilities, with an emphasis on accessibility and mobility, recognizing the different uses and needs of those that are part of the roadway, those that are ancillary to the roadway, and those that are separate and independent facilities.

Safety

Promote the safety and security of the transportation system for users and passengers, pedestrians and motorized and non-motorized vehicles.

- Continually reduce the rate and severity of motor-vehicle crashes through research, innovation, and application in partnership with other traffic safety organizations and professionals.
- Participate in educational efforts and public information campaigns to educate vehicle operators and other users of transportation systems to become safer road users, passengers and pedestrians.
- Recognize the differing demands of the many modes using the road network, and improve the safety of different kinds of traffic using the same networks, such as automobile and truck traffic, vehicles and pedestrians or bicycles, or road and off-road vehicles, including snowmobiles.
- Continually implement infrastructure improvements and security procedures that safeguard the welfare of those using various components of the transportation system such as airports and air services, bridge, railroad and vessel border crossings, and railroads and rail services for the transport of people, services, and goods.
- Work with local communities and railroads to improve safety and traffic flow at points where transportation networks intersect, such as at rail/highway grade crossings; non-motorized paths, routes and trail crossings; and bridges and overpasses.
- Promote safety through adherence to sound engineering practices and uniform, high standards in traffic signs, signals, and pavement markings on the state and local road systems.
- Promote high professional standards among those responsible for traffic engineering, crash prevention, and enforcement through qualification and periodic in-service training.
- Work with service providers, local communities and enforcement officials to improve the user safety of transit and intercity buses and trains, and the security at bus stops, carpool parking lots, stations and rest areas.

- Work to identify and address the needs of aging drivers and pedestrians, the visually and physically impaired, and other groups with distinct safety needs.

- Ensure that the planning process considers the safety of community residents as it plans, develops, designs and implements transportation and land use actions.

Basic Mobility

Work with the general public, public agencies and private sector organizations to ensure basic mobility for all Michigan citizens by (at a minimum) providing safe, effective, efficient and economical access to employment, educational opportunities and essential services.

- Seek transportation solutions which respond to customer needs using the most beneficial and cost-effective mix of transportation modes.
- Increase the efficiency of the transportation corridors in a manner consistent with their statewide importance by modernizing their design, applying congestion management techniques, and improving service in alternate modes, reserving the addition of lanes for the highest priority road segments.
- Preserve freedom of choice regarding all modes of transportation, and the frequency and time of travel.
- Enhance the responsiveness and efficiency of transit and ridesharing services to address customer expectations, keep routes effective and equipment accessible, and reduce costs.
- Facilitate the use of mobility-enhancing devices and encourage bicycling and walking as means of transportation by providing and maintaining on- and off-road non-motorized facilities.
- Develop a plan to help facilitate the provision of a base level of public transportation services statewide, with priority given to people with specialized transportation needs such as the elderly, people with disabilities, and the transit-dependent.
- Improve safety for all modes of transportation in coordination with appropriate public agencies and private companies.

- Provide electronic and other types of information on modes and systems so travelers can make informed choices about transportation alternatives.
- Actively encourage public participation throughout the transportation decision-making process through electronic and other means.

Strengthening the State's Economy

Provide transportation infrastructure and services that strengthen the economy and competitive position of Michigan and its regions for the 21st Century.

- Improve Michigan's ability to compete in a global economy through more efficient connections and access to border crossings, intermodal facilities and improved linkages between modes.
- Focus any transportation investment for economic development on those projects that improve Michigan's competitiveness or retain or increase employment opportunities within the state.
- Support opportunities for region and community job creation and retention through transportation investments that serve employee and employer needs.
- Provide a reliable all-season transportation network.
- Support tourism by providing transportation systems that facilitate travel, enhance recreation opportunities, protect natural amenities, and make the transportation system itself a tourist attraction.
- Make improvements to rail infrastructure to accommodate safer, higher speed and more efficient rail service.
- Coordinate with the public and private maritime community to make improvements to the marine navigation system and infrastructure to more efficiently utilize the Great Lakes fleet.
- Promote development and application of new technologies, as appropriate and cost-effective to address transportation issues.

Transportation Services Coordination

Create incentives for coordination between public officials, private interests and transportation agencies to improve safety, enhance or consolidate services, strengthen intermodal connectivity, and maximize the effectiveness of investment for all modes by encouraging regional solutions to regional transportation problems.

- Promote and support regional coordination between transportation providers, and coordinate activities of public and private transportation providers, to achieve greater economies of scale and improve connectivity in the provision of transportation service across and within jurisdictions and among modes.
- Enhance coordination among state, regional, city, county, township and tribal officials, education officials, land use planners, providers of public infrastructure and private interests in order to facilitate efforts to anticipate, accommodate or manage growth.
- Coordinate public transportation service among transit agencies, human service agencies, school systems and local governments to minimize duplication of service.
- Assist coordination between transportation agencies and private sector freight interests to ensure that transportation systems continue to serve the needs of commerce effectively and safely in an environment of economic and technological change.
- Promote cooperation among airport officials and local, regional, state and federal transportation agencies and land use planners to coordinate improvements to the infrastructure and services that support aviation facilities.

Intermodalism

Improve intermodal connections to provide "seamless" transportation for both people and products to and throughout Michigan.

- Employ complementary intermodal strategies to address transportation congestion where adding capacity may not be practical.
- Resolve transportation problems by encouraging the use of the most beneficial and cost-effective mix of transportation modes available.
- Improve the efficiency of intermodal freight facilities and linkages among modes to improve freight service to and through Michigan.
- Encourage transportation trip continuity and improve the efficiency, safety and convenience of passenger, freight and commercial transportation.

Environment & Aesthetics

Provide transportation systems that are environmentally responsible and aesthetically pleasing.

- Protect, preserve, maintain and enhance the aesthetic and visual qualities of state highways, bridges, adjacent right-of-way, and other transportation facilities, as design, construction, maintenance, improvement or repair is undertaken.
- Plan and design transportation improvements that respect sensitive or unique natural, scenic and cultural environments and construct the improvements in compliance with all federal, state and local environmental regulations.
- Protect and enhance the transportation environment and mitigate environmental impacts related to transportation development.
- Incorporate creative design in transportation infrastructure to reflect Michigan's cultural, natural and artistic heritage where feasible and determined desirable, with appropriate public input.
- Challenge, through appropriate processes, federal rules and guidelines when the outcome of enforcing them will not achieve their intended objectives, will contradict other federal man-

dates, or will impose costs or delays that significantly exceed anticipated benefits.

- Encourage local participation in aesthetic work through public involvement, financial or in-kind participation and maintenance agreements.
- Take a corridor approach to aesthetic treatments, where appropriate and encourage state and local partnerships for aesthetic work along transportation corridors.

Land Use Coordination

Coordinate local land use planning, transportation planning and development to maximize the use of the existing infrastructure, increase the effectiveness of investment, and retain or enhance the vitality of the local community.

- Create incentives to coordinate local land use planning with planning for transportation and other infrastructure improvements on a multi-jurisdictional basis.
- Preserve right-of-way corridors for anticipated transportation improvements and work with local governments to address access control problems along existing corridors.
- Develop and implement a mechanism to coordinate airport and land use planning and encourage appropriate land use controls around airports to ensure that they remain a safe and viable element of the community.
- Encourage participation by land developers in transportation finance, through voluntary contributions or other mechanisms, so that transportation agencies share in the returns from new investment and road users are not burdened by unnecessary congestion.
- Implement transportation solutions which respect the integrity and cohesiveness of communities, and their natural, agricultural, and built environments, by seeking input as early as possible in the project development process from local elected and transportation officials and from area residents regarding proposed improvements such as new roads, routes, or facilities.
- Coordinate transportation improvements in economically depressed areas with efforts to revitalize those communities.

Chapter Five

Transportation Strategies

Transportation strategies are designed to address the issues identified in Chapter 3, the Baseline. They provide direction for implementing the various features of the state long range plan, and for achieving plan goals. Transportation strategies are presented in this chapter by mode, following the same order as that used in the Baseline chapter: Highways, Aviation, Non-Motorized, Intercity Bus, Intercity Passenger Rail, Local Public Transit, Ridesharing, Ferry Service, Commercial Ports, and Rail Freight.

These strategies have been selected based on factors such as input from our customers, our knowledge of “best practices,” and flexibility — the ability to customize the strategy according to the varying needs which exist across Michigan. For example, some strategies are most applicable in urbanized areas, while others are crucial to achieving our goals statewide.

Highways

MDOT has identified three strategies that are essential to attaining the long-range goals for the most important infrastructure asset under our jurisdiction — the state trunkline system of freeways, highways, and bridges. These strategies are:

- Continue implementation of an asset management process
- Focus investment on the corridors of highest significance
- Manage Congestion

Asset management began in the private sector and is applicable at every level of government, and for all transportation modes. The investment focus on corridors of highest significance provides a strategy for prioritizing our resources at a time when not every need can be met. While congestion management has less statewide applicability, the importance of this strategy is derived from the demographic and traffic volume trends which we identified in Chapter 3, the Baseline.

Asset Management

Michigan possesses an aging highway system; many of our roads and bridges were built 30 to 40 years ago. Today we face a period of reinvesting in our existing facilities. Asset management is a process which guides reinvestment to ensure that funds are spent in the most cost-effective, efficient manner possible.

Traditionally, management of assets in the public sector has been reactive, concentrating on immediate, existing conditions. This has been characterized by a “worst-first” approach to spending of transportation funds. Today, we must make decisions with regard to the long-range condition of the entire system. This requires consideration of various investment strategies which will maintain the assets at a desired condition level over time.

For example, a road or bridge, when constructed, is viewed as having a specific service life. Following an asset management philosophy, we monitor the condition of the facility and apply specific treatments at critical points, with the result that the facility life can be fully achieved and in some cases lengthened beyond the initial estimate. In short, the aim of asset management is to maintain the initial investment of public funds for as long as possible.

In order to assess improvements based on desired outcomes, performance measures and standards are required. Standards indicate the desired condition and service level of the different components of the transportation network. An outcome-based deficiency analysis is derived by examining the difference between existing conditions and established standards. The process must set targets based on agreed-upon performance criteria and design standards. The strategic focus is evident in the creation of customer service-oriented performance measures. The performance measures also consider system maintenance at a level that ensures realizing the full value from the initial investment. The key is having the ability to create and analyze alternatives.

A critical component of highway asset management is to see the entire roadway system as a unified whole rather than individual segments or individual projects. This means seeing the system through the eyes of the user rather than the eyes of the governmental jurisdictions that own the assets. It means working together as partners, rather than as competitors fighting over a larger slice of the funding pie. It is holistic rather than individualistic.

MDOT and several local road agencies and planning offices have recently concluded a pilot project aimed at jointly collecting road condition data. The results of this effort, combined with the recommendations of the June 2000, Act 51 Transportation Funding Study Committee, have led to the passage of asset management legislation. The legislation, enacted in July 2002, requires an asset management investment approach aimed initially at all roads eligible for federal aid, whether the roads are under state, county, or municipal jurisdiction. If passed, the legislation will establish a transportation asset management council that will recommend a strategy to the Michigan State Transportation Commission. The process will be consistent with current federal law and regulations. The council would be comprised of representatives from MDOT, the county road commissions and cities, as well as the Michigan Association of Counties and the Michigan Townships Association.

In our implementation of an asset management process, we focus on the safety and security of the transportation system, as well as on system preservation, operation, and maintenance. Through our Safety Management System, one of six MDOT transportation management systems (see Table 5-1), we are involved with numerous and effective programs promoting highway traffic safety. These programs are done in conjunction with the Michigan Office of Highway Safety Planning and Michigan law enforcement agencies. Safety-based improvements on our roads and bridges are also identified through the safety component of our asset management process.

For years, MDOT has conducted activities in areas throughout the organization in order to effectively manage our highway infrastructure assets. These activities, summarized in Table 5-1, will continue to be part of our implementation of an asset management process. Over the lifetime of the state long range plan, we can expect to see changes as transportation needs, technology and the economy evolve.

Specific Highway Strategies Related to Preservation

While the concept of asset management applies to all of the state long range plan goals, the process is most directly related to the plan goal of Preservation and to maintaining the existing system. Specific strategies in the area of asset management and Preservation include:

- Strategy for Repairing and Rebuilding Roads.** Network management strategies are continually being refined to work toward achieving the overall statewide goal of having 95 percent of freeway pavements and 85 percent of non-free-way pavements in “good” condition by 2007. Because freeways carry the highest volumes of traffic and are instrumental in supporting commerce, MDOT will focus its investment in improving “poor” pavements on the freeway system. Road preservation programs will include a balanced mix of long-term reconstruction (20-30 years), rehabilitation (10-20 years), and capital preventive maintenance improvements (less than 10 years) based on an analysis using state-of-the-art forecasting tools unique to Michigan in its Pavement Management System. Emphasis will be given to capital preventive maintenance, where feasible, because extending pavement life by correcting minor deficiencies is more cost effective than waiting until a road needs rehabilitation or reconstruction.
- Trucks.** New design standards - including pavement type and thickness, structural elements of bridges, configuration of interchanges and distances between interchanges - will be used to address problems that result from changing truck volumes, sizes and weights, such as spring weight limits, insufficient vertical under-clearance, or posted weight limits on bridges, safety issues, and other concerns.
- Winter Maintenance Strategy.** MDOT will continue to explore new technologies and techniques, and encourage employee innovation, to reduce the impact of winter weather on trunklines. The testing of new anti-icing materials and deployment of GPS technologies have already yielded positive results.

Asset Management at MDOT	
Area	Supporting Activities
Strategic Plan	Michigan Transportation Policy Plan; Business Plan; State Long Range Plan; Intelligent Transportation Systems (ITS) Strategic Plan
Data Collection	Transportation Management Systems (TMS); Michigan Architecture Project (MAP); Sufficiency; Traffic; Highway Performance Monitoring System (HPMS); Michigan Geographic Framework (Geographic Information System or GIS); Global Positioning Satellite System (GPS); Bridge Condition
Management Systems	Pavement; Bridge; Congestion; Safety; Intermodal; Public Transportation Systems
Performance Measures/ Standards	TMS; Quality Re-engineering
Alternatives Analysis	Road Quality Forecasting System (RQFS); Prioritization Process; Life-Cycle Cost Analysis; Travel Demand Forecasting Model; PONTIS (<i>latin for bridge</i> - bridge management system software available from AASHTO)
Decision Making and Program Development	Develop Transportation Programs; Program/Project Management System (P/PMS); MAP; <i>Five-Year Road and Bridge Program</i> ; State Transportation Improvement Program (STIP)
Implement Plan	TRANSPORT (for field data input); Field Manager
Monitoring and Reporting	Internet/Intranet; Facts & Figures; Sufficiency; HPMS; National Bridge Inventory; MDOT Newsletters; Real Time traveler information monitoring and disseminating
Internal	Quality Control; Performance Management System; Transportation Service Centers

Bridges

Bridges are a part of our highway infrastructure having particular needs distinct from pavements. Bridge strategies in the **Preservation** and asset management areas are as follows:

- **Bridge Preservation Strategy.** The overall goal of MDOT's bridge preservation program is to preserve the trunkline bridge network to ensure safety and serviceability, while making the best use of available financial and human resources. Two specific objectives are set forth in the Strategic Investment Plan for Trunkline Bridges: 1) to address 100 percent of the structures deemed to be of highest priority based on condition, and 2) to improve the overall condition of the bridge network so that 95 percent of freeway structures and 85 percent of non-freeway structures on each network are in "good" condition by 2008.

The *Strategic Investment Plan for Trunkline Bridges* proposes a statewide investment strategy which integrates rehabilitation, replacement, capital scheduled maintenance, and capital preventive maintenance projects into annual programs that will address 100 percent of the structures of critical concern and that will achieve the network condition goals most effectively. This integrated network management strategy expands the traditional rehabilitation or replacement of bridges on a "worst first" basis by placing a new emphasis on scheduled and preventive maintenance.

- **Bridge Widening or Lengthening Strategy.** MDOT will strive to incorporate long-term upgrades, capable of accommodating future traffic volumes, as part of bridge repair projects, where feasible. We will make decisions to widen or lengthen bridges where it is not initially considered necessary because the bridge reconstruction involves a 50 year investment. Particularly in cases where no likely alternate route is available for a traffic detour and temporary structures would need to be constructed to maintain traffic, the wiser investment would be widen or lengthen the bridge permanently. This includes widening to serve as a permanent improvement and modernization of freeway structures to enhance traffic flow and safety during construction, as well as facilitate future maintenance activities and protect highway workers.

Where we are studying corridor improvements and have identified the need for increased highway capacity, we will incorporate bridge widening or lengthening as part of bridge projects as well. This includes: 1) lengthening bridges over freeways to accommodate planned freeway widening, 2) lengthening trunkline bridge spans over other trunklines to accommodate planned widening of those roads, and 3) widening trunkline bridges to maintain trunkline traffic flows during construction where future trunkline widening is anticipated.

This strategy does not include widening bridges on local roads over trunkline or lengthening trunkline bridges over local routes as these are the responsibility of local road agencies. MDOT will bear the full cost of replacing a local bridge over the freeway when such replacement is recommended on a statewide priority basis, or when it is necessary because the freeway is being widened. If local authorities wish to widen or lengthen a local bridge over the freeway in conjunction with a scheduled bridge replacement, they bear only the additional cost generated by the widening or lengthening. If local authorities wish to widen or lengthen a local bridge over the freeway that is not scheduled for replacement, its full cost would be a local responsibility, and local authorities would need to work in coordination with MDOT. The same principles apply to widening of a local road under an MDOT freeway bridge. Likewise, the local road agency would be responsible for all costs associated with a new local road crossing an existing state trunkline, including grade separation structures, right-of-way, and approach work.

Corridors of Highest Significance

All components of Michigan's transportation network are integral parts of the whole and serve to enhance mobility. However, certain components provide higher levels of support to the state and national economy, and to the movement of goods, services and people.

Figure 5-1 illustrates the corridors of highest significance to our economy. These corridors show where the most critical movement of goods and people occur, whether by air, rail or highways. MDOT identified the corridors based on the multi-modal criteria and threshold values shown in Table 5-2. Figure 5-2 displays a matrix of the corridors ranked by their criteria values.

The criteria or mode used to select and rank the corridors of highest significance comprise the following:

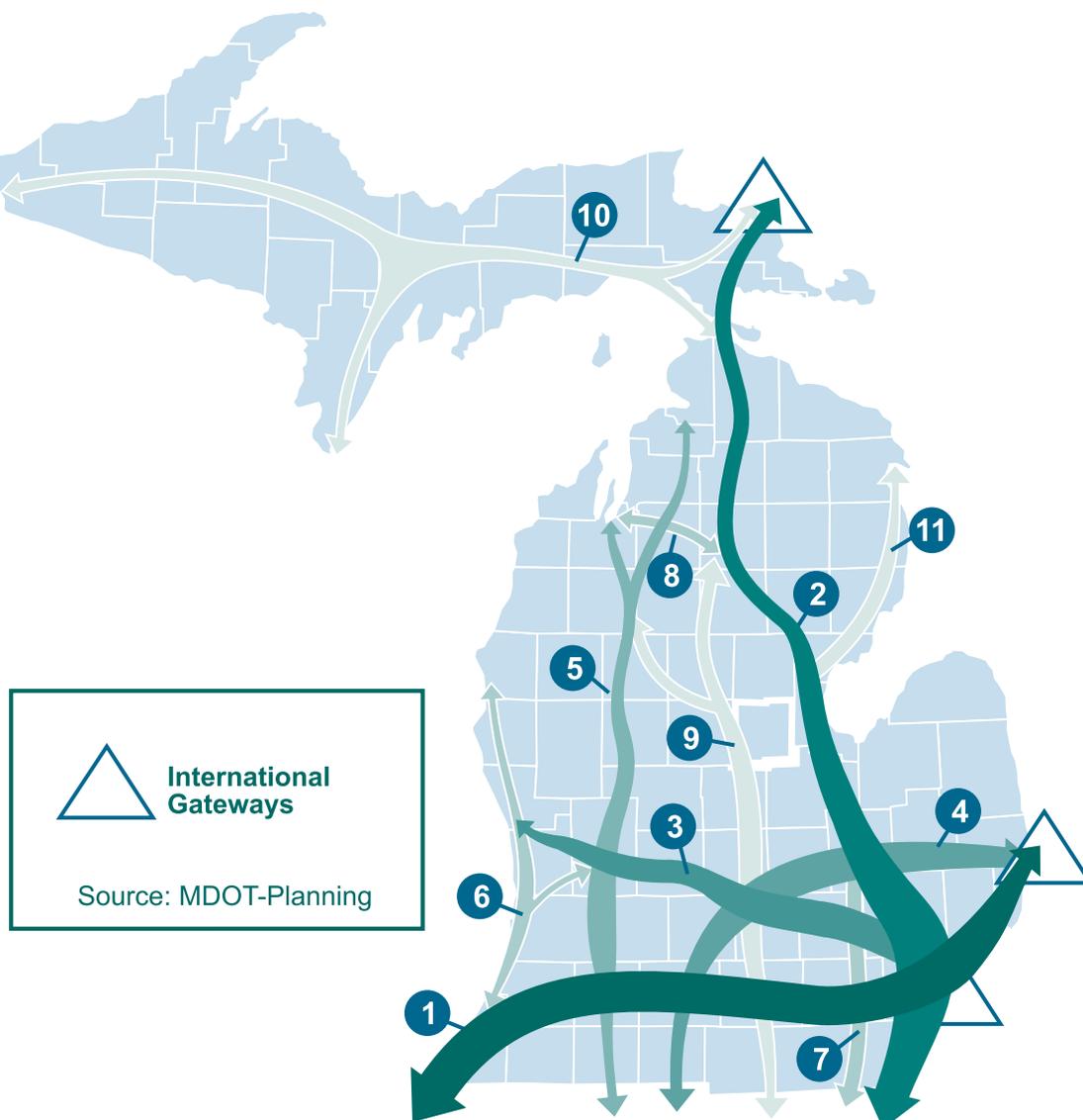
- Total and commercial average daily traffic (ADT)
- International Trade
- Total population and population density
- Total employment and employment density
- Tourism and convention centers
- Air carrier and general aviation airports
- Cargo port
- Carpool parking lots
- Intercity bus service
- Intermodal freight and passenger terminals
- Passenger and freight rail
- Level of service - LOS (congestion)

Using the threshold values for these criteria shown in Table 5-2, MDOT performed a multi-modal analysis. Components of the analysis include: 1) freight movements as represented by train and truck shipments and international commodity flows, 2) current and anticipated future roadway bottlenecks identified as likely to disrupt the flow of goods and people, as well as major population, business and tourism centers, 3) modal transfer points such as cargo ports, intermodal terminals and airports, and 4) interstate continuity and connectivity.

Once all this information was mapped, the corridors shown in Figure 5-1 emerged as being most significant to the Michigan economy.

Figure 5-1

Corridors of Highest Significance



Criteria Used to Delineate Michigan Corridors of Highest Significance

Criteria/Mode	Threshold Values		
	Highest Significance	Moderate Significance	Lower Significance
Total ADT ¹	Trunklines with 25,000 or more ADT	Trunklines with 10,000 or more ADT	Trunklines with 5,000 or more ADT
Commercial ADT	Trade corridors plus trunklines with 10,000 or more commercial ADT	Trade corridors plus trunklines with 5,000 or more commercial ADT	Trade corridors plus trunklines with 1,000 or more commercial ADT
International Trade	International truck movements greater than 1,000	International truck movements greater than 250	International truck movements greater than 100
Total Population (Population Centers)	Transportation Management Areas (200,000 or more population)	All urbanized areas (50,000 or more population)	Urban areas with 5,000 or more population
Population Density	Counties with 1,000 or more population per square mile	Counties with 200 or more population per square mile	Counties with 100 or more population per square mile
Total Employment (Business Centers)	Traffic zones with 10,000 or more employment	Traffic zones with 3,000 or more employment	Traffic zones with 250 or more employment
Employment Density	Counties with 1,000 or more employees per square mile	Counties with 100 or more employees per square mile	Counties with 50 or more employees per square mile
Tourism & Convention Centers	Traffic zones with \$100,000 or more annual lodging use tax generated	Traffic zones with \$50,000 or more annual lodging use tax generated	Traffic zones with \$30,000 or more annual lodging use tax generated
Airports (General Aviation)	Detroit Metro Airport and Willow Run Airport plus other Tier One airports with 100,000 or more annual itinerant operations	Tier One airports with 50,000 or more annual itinerant operations	All Tier One airports
Airports (Air Carrier)	Detroit Metro Airport plus other Air Carrier airports with 100 or more weekly departures	25 or more or more weekly departures	Less than 25 weekly departures
Cargo Ports ²	Detroit	Detroit plus moderate to high tonnage generally transported multi-county	All cargo ports
Carpool Parking Lots	Carpool lots with 150 or more spaces	Carpool lots with 100 or more spaces	Carpool lots with 50 or more spaces
Intercity Bus Service	Routes with 42 or more buses per week	Routes with 15-41 buses per week	Routes with 14 or less buses per week
Intermodal Freight	All major intermodal freight terminals (all are located in the greater Detroit area).		
Intermodal Passenger	Intermodal passenger terminals with 50,000 or more passengers annually	Intermodal passenger terminals with 25,000 or more passengers annually	All intermodal passenger terminals
Rail (Passenger)	High Speed Rail (HSR) Route	HSR plus other passenger rail routes	HSR plus other passenger rail routes & feeder bus routes
Rail (Freight)	10 or more trains per day	3 to 9 trains per day	2 or less trains per day
LOS E & F ³	More than 2 billion miles of congested travel annually	From 200 million to 2 billion miles of congested travel annually	Less than 200 million miles of congested vehicle travel annually
Notes:	¹ ADT - Average Daily Traffic ² Ports are generally grouped into three categories: 1) cargo ports, 2) other commercial activity ports such as those with marine contractors, ferry services and charter services, and 3) other ports without commercial activity such as recreational harbors. ³ LOS - Level Of Service		

Using the Corridors of Highest Significance to Focus Investment

The analysis performed to identify the corridors of highest significance was designed to capture information about how and to what extent the corridors contributed to and strengthened the economy. The corridors thus selected have the following characteristics:

- The corridors of highest significance transport Michigan's highest volumes of people and goods.
- They efficiently move people and goods to and from the work place, centers of commerce, major manufacturing sites and tourist regions.
- Michigan's international trade corridors are included among the corridors of highest significance.
- They have the highest level of scheduled air service, intercity bus service, intercity passenger rail, and local public transportation.
- Michigan's major intermodal transfer facilities are often located, and multiple modes operate, in these corridors.
- A high volume of freight traffic moves through these corridors.

Given these characteristics, we must prioritize and focus our investments to rebuild and modernize transportation facilities within the corridors of highest significance. Their importance also requires that we ensure the highest level of safety and security within the corridors. Michigan's four international border crossings with Canada are included within the corridors of highest significance; these necessitate their own high level of attention in the wake of September 11, 2001.

Adding Capacity within the Corridors of Highest Significance

In Chapter 3, the Baseline, we presented system, facility, and usage data for the state highway system in general, and also for Michigan's border crossings and significant corridors specifically. This information, combined with our analysis to identify the corridors of highest significance, provides a roadmap as to where capacity will need to be added in the future.

For example, current and projected congestion figures make it clear that additional capacity is, or will be, required along all I-94. Refer to Table 3-3

in Chapter 3. This shows that 35 percent of the annual vehicle miles traveled (AVMT) on I-94 occurred under congested conditions as of 2000, and that 42 percent is projected to occur under congested conditions by 2025. To maintain the mobility of people and goods along I-94 that is required for Michigan's economic well being, MDOT will not only have to rehabilitate and modernize this freeway corridor, but will also have to add capacity throughout its length — three lanes minimum in each direction. Four lanes in each direction will be called for in some urbanized areas, dependent on area-specific congestion analyses.

A similar congestion analysis for I-75 and for I-96 gives the following results:

- In 2000, 44 percent of the AVMT on I-75 occurred under congested conditions. By 2025, that figure is projected to increase to 46 percent.
- In 2000, 45 percent of the AVMT on I-96 occurred under congested conditions. By 2025, that figure is projected to increase to 52 percent.

For both I-75 and I-96, it will be necessary to add capacity when these critical transportation arteries are modernized. I-75 must be widened to a minimum of four lanes in each direction in all urbanized areas and a minimum of three lanes in each direction in more rural areas, from the Michigan state line with Ohio to north of the Saginaw/Bay City urban area.

I-96, likewise, must be modernized to accommodate three lanes outside of urban areas and four lanes in urban areas. In addition, I-196 in the greater Grand Rapids will also need to be widened to at least three lanes in each direction when it is reconstructed.

Another corridor of highest significance, called "US-131 from I-94 to Traverse City," includes freeway and non-freeway segments. In 2000, 20 percent of the AVMT on this corridor occurred under congested conditions. By 2025, that figure is projected to increase to 71 percent.

To address needs for additional capacity along the corridors of highest significance, a variety of approaches will be used, according to the characteristics of the corridor. Some freeway corridors will need additional lanes along their entire length, following the I-94 and I-96 example. Other freeway corridors

will need additional lanes only within urbanized areas. To address capacity needs along non-free-way corridors or segments of corridors, lanes may be added, passing relief lanes may be added, or access management may be used to preserve and enhance existing capacity.

These critical priorities will be established in MDOT Region plans, companion documents to the current document. The Region plans will be developed based on the goals, objectives, and strategies contained within the State Long Range Plan: 2000-2025.

Specific Projects within the Corridors of Highest Significance

Several projects that are consistent with our focus on corridors of highest significance were included within Governor Engler's Build Michigan III program. These projects were designed to meet current economic development needs and reduce congestion and improve safety. Design work for the following five projects was included in Build Michigan III; our most immediate focus for capacity improvements will be on these projects. While these Build Michigan III projects are crucial, they do not represent an exhaustive list of necessary capacity priorities through 2025. Other capacity improvements — consistent with the state long range plan goals, objectives and strategies — are in various stages of development. This includes the widening of I-94 along its entire length, as previously noted. These projects, as well as the construction phases of the Build Michigan III projects, will be incorporated into MDOT's Five-Year Road & Bridge Program as funding becomes available. Chapter 7, Investing to Meet Our Goals, will address our funding sources and future needs.

1. I-94 from I-96 to Connor, Wayne County:

I-94 in Detroit was identified as the freeway in greatest need of improvement in a planning study entitled The Greater Detroit Area Freeway Study (jointly prepared by MDOT and the Southeast Michigan Council of Governments or SEMCOG). It operates at level of service E and F during peak hours. The need to improve this segment further involves deterioration of the facility due to age and outmoded design. A major objective is to maintain truck mobility, as this segment is part of the hub of interstate-to-interstate and international truck travel. This section of I-94 provides a connection for commercial and trans-continental traffic to the two Detroit/Windsor border crossings. These border

crossings support more international trade than exists between Mexico and Texas and between Mexico and California, combined. The project may also include reconstruction of the freeway-to-freeway interchanges with M-10 and I-75.

2. I-75 from I-696 to M-59, Oakland County:

A study was completed which identified the capacity needs of I-75 in Oakland County, and also the associated local road and interchange improvements necessary to improve overall traffic operations in the corridor. The freeway operates at level of service E and F during peak hours. The pavement condition over much of this segment is rated as fair and will be in need of rehabilitation within the next few years. This segment was given the highest priority by the Traffic Improvement Association of Oakland County, representatives from communities along the I-75 corridor, and the Road Commission for Oakland County.

3. US-23 from M-14 to I-96, Washtenaw County:

This segment was selected based upon a freeway study completed for the Ann Arbor area which it ranked as the number one segment in need of improvement. The study examined freeway needs throughout the Ann Arbor area based upon capacity, condition and safety needs, and was a joint effort between the Washtenaw Area Transportation Study, SEMCOG, MDOT, FHWA, the Washtenaw County Road Commission and the cities of Ann Arbor and Ypsilanti. The freeway operates at level of service E and F, from M-14 north to the Six Mile Road interchange, during peak hours.

4. US-31 from I-196 to I-96 (Holland to Grand Haven):

Increasing traffic volumes, including heavy recreational and commercial components, have created a growing trend of traffic backups and serious accidents on US-31 in and between the cities of Holland and Grand Haven. In 1997, two of 24 intersections along the corridor operated at a LOS F. With the anticipated growth that will be occurring along the corridor, 20 of 24 intersections will operate at a LOS F by the year 2020. The intent of the US-31 project is to provide for this increasing level of traffic volumes with a route that provides an acceptable level of service and that alleviates the accident problems along US-31.

In addition to the growing traffic volumes and accident occurrences, a need exists for a second

crossing of the Grand River. Currently, only one crossing of the Grand River exists in the study area: a bascule bridge in the city of Grand Haven. This bridge carries 58,500 vehicles per day and is projected to carry 83,000 vehicles per day in 2020. Along with these high traffic volumes, frequent openings of the bridge occur during the tourist season, and a potential for operational failure of the bridge exists. A detour route of 40 miles is the only option available during these operational failures.

US-31 is a limited access facility both north and south of this segment. This project would provide system continuity by providing an uninterrupted limited access facility from I-94 to I-96.

5. **I-94 from US-131 to Sprinkle Road, Kalamazoo County:** This project was identified in the Kalamazoo Area Freeway Study as the segment most in need of improvement based upon condition and capacity. The freeway study was a joint effort between MDOT, FHWA, the Kalamazoo Area Transportation Study, the Kalamazoo County Road Commission and affected local units of government. The segment has several structures in poor condition and much of it operates at level of service E during peak hours. The remaining pavement life indicates a need to rehabilitate the roadway before 2008.

Border Crossing Strategies and Other Strategies for Corridors

Identifying the corridors of highest significance using selection criteria oriented towards Michigan's economy provides a strategy to prioritize and focus our investments over the life of the state long range plan. There are additional strategies for the corridors of highest significance, as well as strategies for Michigan's border crossings with Canada. All of our international border crossings are part of or closely connected to a corridor of highest significance.

- **Five-Year Border Crossing and Trade Corridor Strategy.** Michigan's trade corridors and highway and rail border crossings, among the busiest in the nation, are critical to international trade. The Ambassador Bridge in Detroit is the busiest commercial border crossing in North America, and the Blue Water Bridge in Port Huron is the second busiest commercial crossing on the US-Canada border. The Detroit-Windsor Tunnel carries the most passengers of any crossing on the US-Canada border. The International Bridge is

the largest international trade crossing in Northwestern Ontario; in 1996, almost \$1.7 billion in Canadian exports were shipped through the crossing to the U.S., over one-third by rail.

MDOT is committed to improve Michigan's highway and rail border crossings and their related trade corridors. A five-year strategy to systematically repair and rebuild the Michigan-Canada border infrastructure and connecting interstate freeway system has been developed and is being implemented. This consists of three key elements: 1) investments in border and corridor infrastructure, 2) enhanced coordination and cooperation with federal, state, provincial, regional, and local partners, 3) advocacy efforts for federal policies that address border and corridor infrastructure needs and improve the movement of people and goods across the United States-Canada border.

- **Border Security.** As a result of the September 11, 2001, terrorist attacks on the United States, MDOT is developing a comprehensive approach to the safety and security of MDOT's border infrastructure, including the Blue Water Bridge and the International Bridge. Protecting these facilities while ensuring the efficient movement of people and goods between the US and Canada is critical to the economic health of the state and the nation.
- **Improve border operational efficiencies using ITS:** MDOT is taking the lead role in developing a short term strategy for coordinating applications of the proven tools of ITS at the three international border crossings. Credible and real time traffic information will be provided to motor carriers and automobiles, warning them of the impending delays and advising them of any alternatives. This will result in expeditious traffic flow across the border, maintaining trade and tourism.
- **Coordination with other border agencies.** MDOT is committed to strengthening planning and coordination initiatives with U.S. and Canadian federal, state, provincial, regional and local transportation planning agencies including: 1) the Canada -U.S.-Ontario-Michigan Border Transportation Partnership whose purpose is to improve the safe and efficient movement of people, goods and services across the U.S./Canadian border at the Detroit and St. Clair Rivers, including improved connections to

national, provincial and regional transportation systems, such as I-75 and Highway 401, 2) participation in bi-national transportation planning and coordination initiatives such as the federal Transportation Border Working Group and the Eastern Border Transportation Coalition, and 3) improving cooperation, coordination, and planning with U.S. federal and provincial transportation and border inspection agencies to develop a long-term solution to capacity problems on the Blue Water Bridge Plaza.

- **New Border Crossing Strategy.** MDOT, in cooperation with our Canadian partners, will plan for a new border crossing, to be located within the area of Wayne County and the city of Detroit in Michigan and the county of Essex and the city of Windsor in Ontario, when current facilities can no longer efficiently meet the growth in international trade and travel.
- **Blue Water Bridge Strategy.** MDOT will improve capacity at the Blue Water Bridge Plaza to meet the 20-30 year needs of bridge users, inspection agencies, and other stakeholders.
- **International Bridge Strategy.** MDOT will plan and implement improvements at the International Bridge to maintain and preserve the facility and to address long-term needs of U.S. and Canadian border inspection agencies.
- **Corridor Safety.** MDOT will continue to integrate safety into the investment process, looking for opportunities to implement safety projects as part of corridor maintenance and rehabilitation.
- **Corridor Management.** MDOT's corridor management strategy strives to coordinate the construction of planned projects wherever feasible by staging and/or combining road repair, bridge work, safety projects, and capacity improvements in order to accomplish a total transportation improvement while minimizing motorist inconvenience. This also includes the following: 1) roadside developments such as rest areas, carpool parking lots, welcome centers and scenic lookouts; 2) installation of ITS conduits for telecommunication fibers, since action taken during construction results in significant savings compared to excavation after the project is complete; 3) non-motorized facilities where they are a component of the highway corridor as part of the roadway or within the right-of-way, and 4) aesthetics work.

- **State Trucking Laws Strategy.** Michigan continues to endorse the state truck weight laws currently in place. Michigan would not oppose a shift in federal truck size and weight laws that would bring the rest of the country closer to Michigan weight laws.

Congestion Management

Congestion Management Process

The Congestion Management System (CMS) is designed to monitor and analyze the magnitude of congestion on a multi-modal transportation system, to plan actions appropriate to the scope of the problem, and to implement projects that reduce congestion and enhance the performance of the transportation system.

MDOT monitors the potential need for added capacity on the state trunkline system through two processes. First, we monitor the overall operation of the roadways through the use of average daily, peak hour and commercial traffic monitoring; crash data; and system condition data. This enables us to identify where current deficiencies exist. Travel demand forecasting models are employed to assess where future system deficiencies will occur, based on future population and development trends. Second, we receive direct input, such as from the traveling public, local units of government, legislators acting for constituents, and private sector developers whose plans impact existing roadway.

These inputs are analyzed against actual system operation. If priority deficiencies are identified, the results of the analysis move forward in the project development process. Priority deficiencies include those within the corridors of highest significance and other NHS routes. Corridor and freeway studies are conducted to determine the severity and extent of capacity deficiencies on existing highways. The studies develop potential alternatives and coordinate connectivity, intermodal and capacity improvements with pavement and structure rehabilitation. Actions to be considered include changes in the transportation system by 1) utilization of ITS, 2) changing the characteristics of demand, and 3) providing added capacity. ITS tools will be explored before undertaking major capital investments for widening to improve capacity and safety on the transportation system. Changing the characteristics of demand can include actions that result in increased use of public transit and ridesharing.

If no action is taken to alleviate the congestion, considerable delays will impact the overall movement of persons and goods along Michigan’s highway system.

Congestion Baseline

In Chapter 3, the Baseline, we provided detailed information about current and projected traffic trends. To summarize, the percent of all state trunkline annual vehicles miles traveled (AVMT) under congested conditions is projected to grow from 13 percent in 2000 to 17 percent in 2025. For freeways only, the percent AVMT under congested conditions is projected to grow from 17 percent in 2000 to 20 percent in 2025. For the four major interstate freeways at the top of our corridors of highest significance ranking (I-94, I-75, I-96, and I-69), percent AVMT under congested conditions is projected to grow from 37 percent in 2000 to 41 percent in 2025 (source: MDOT Congestion Management System, 2002).

Congestion Management Strategy

The strategy for corridors of highest significance includes a discussion about the need to add capacity — lanes — along the corridors identified, using interstate freeway I-94 as the prime example. The bridge widening or lengthening strategy described under the heading of asset management earlier in this chapter, provides another essential element in the management of congestion for the corridors of highest significance. To reiterate, this bridge strategy states that “MDOT will strive to incorporate long-term upgrades, capable of accommodating future traffic volumes, as part of bridge repair projects in part,” including: “widening to serve as a permanent improvement and modernization of freeway structures to enhance traffic flow and safety during construction, as well as facilitate future maintenance activities and protect highway workers,” “lengthening bridges over freeways to accommodate planned freeway widening,” “lengthening trunkline bridge spans over other trunklines to accommodate planned widening of those roads,” and “widening trunkline bridges to maintain trunkline traffic flows during construction where future trunkline widening is anticipated.”

Whether along the corridors of highest significance or other state trunkline highways, MDOT’s strategy for congestion management includes working on an inventory of corridor strengths and deficiencies for infrastructure development, building a sense

of common interest along the corridor, creating a forum that fosters economic development opportunities, pursuing physical transportation improvements and enhancements and facilitating international trade.

Congestion Management and Metropolitan Planning

Metropolitan Planning Organizations (MPOs) play a role in the identification and prioritization of needed freeway improvements in their areas. This process is required by MDOT and the Federal Highway Administration (FHWA). Any state trunkline project in a metropolitan area must be identified in the MPO long-range plan (a plan with at least a 20-year horizon), and must have MPO approval to receive federal funds. Projects located in MPO areas and slated to have federal funds cannot go beyond the planning stage without concurrence of the MPO.

MDOT’s congestion management strategy is consistent with the long-range plans in MPO areas. Our strategy places priority on the freeway system to meet the traffic forecast to the year 2025. Elements for consideration include interchange reconstruction, right-of-way requirements, environmental impacts, and the cost of disruption to traffic and business during construction. Details for these activities will be developed in MPO area plans and studies. At the same time, as each road or bridge project is developed, alternatives to alleviate or manage congestion are considered.

Additional Strategies for Mobility

The congestion management strategy aims to enhance mobility, a component of the long range plan goal of **Basic Mobility**. Additional strategies related to **Mobility** include the following.

- **Freeway Modernization.** MDOT’s freeway modernization strategy is a continuing commitment to apply up-to-date design standards and new technology when rebuilding freeway facilities or when designing new facilities.

The transportation industry is continually refining design standards and developing new technology for all types of facilities. These standards encompass a broad range of design elements including pavement type and thickness, structural elements of bridges, con-

figuration of interchanges, distances between interchanges, and traffic volumes. It also includes the application of new technology such as weigh-in-motion programs for commercial traffic and Intelligent Transportation Systems (ITS) applications such as changeable message signs, video monitoring of freeways for incidents, and ramp metering to help maintain steady rates of traffic flow at interchanges.

- **Access Management.** Access management is a coordinated plan and review process requiring a cooperative effort between MDOT and local governmental agencies that provide or manage access to land development while simultaneously preserving the flow of traffic — mobility — on the surrounding road system.

In many instances, capacity and safety concerns can be alleviated through a local program of highway-land use access management.

MDOT has worked with the Michigan Society of Planning to conduct a series of workshops to educate local public officials and agencies on the benefits of access management, such as improved access to properties and the extended capacity life of the roadway. MDOT partners with local officials to uphold access management principles by cooperatively reviewing development plans and driveway permit applications. MDOT's future *Five-Year Road & Bridge Program* corridor improvement projects will require local adoption and implementation of an access management plan utilizing local land use regulations and controls.

- **Interchange Strategy.** Improvements to existing interchanges and construction of new interchanges present a special need for state and local coordination. For example, MDOT may choose to widen or construct an interchange in response to increasing traffic volumes. These projects are selected in response to traffic needs on a statewide priority basis and require local coordination and a concurrent local commitment to widen the local road as necessary.

Local authorities may choose to widen the local road at an interchange to attract development, even though current traffic volumes do not warrant such improvement. Such improvements may also require improvement to state highway interchange ramps. Interchange improvements prompted by locally encouraged and approved

developments are the financial responsibility of local authorities. This type of project is not part of the MDOT project selection process, but does require coordination with MDOT.

The local agency and/or private sector developers are responsible for all costs associated with a new interchange necessitated by private sector development including grade separation structures, right-of-way improvements, and approach work. An exception to this policy is granted in cases where MDOT has determined that reduction in existing congestion at adjacent trunkline interchanges can be reasonably expected and where FHWA justification criteria warrant an additional break in access. In such cases, MDOT may assume costs for structures and ramps only. The costs associated with local roadway work outside of bridge abutments, including right-of-way costs, remain the responsibility of the local road agency.

- **Intelligent Transportation Systems Strategy.** MDOT has been at the national forefront in planning, developing and deploying Intelligent Transportation Systems (ITS) technologies to address transportation and safety issues in the state. ITS refers to the application of advanced computer, electronic and telecommunication technologies to provide such benefits as real-time reports on traffic congestion, incident detection and dispatch of emergency vehicles, improved safety at railroad grade crossings, and faster customs/immigration processing at border crossings. Steps are being taken to integrate ITS into MDOT's overall transportation planning process. The process of blending high technology into solutions to transportation problems in an intermodal context is already occurring.

Ongoing partnerships with the University of Michigan and Michigan State University support research and evaluation efforts to identify promising uses for ITS technology throughout the State. Deployment of ITS has been focused on the greater Detroit area and construction zone traffic control, but is now being expanded to applications in additional Michigan urbanized areas and smaller communities. In 2002, MDOT completed an ITS pre-deployment study for Ann Arbor, Brighton, Howell, Flint, Monroe and Lansing.

MDOT, with support from FHWA, is also initiating a unique program of developing an ITS Testbed in Michigan. The program offers

an opportunity to private industry to partner with MDOT in testing their products, services, concepts and research in Michigan as a "live laboratory" utilizing our transportation infrastructure. The goal is to improve transportation services in the state, create high tech jobs that complement our auto manufacturing industries, and improve the economy.

There must be an ongoing dialog between the auto manufacturing companies and the infrastructure planning, design and operating agencies, such as MDOT. The design and operation of roadways must keep pace with the technologically advanced automobiles now being built, thus improving safety and capacity. MDOT has taken a lead role in opening that new line of communication.

To ensure interoperability of systems and improve integration of information within a regional context, MDOT and FHWA will continue to encourage and support development of ITS Regional Architectures and eventually an ITS Statewide Architecture. Such Regional Architectures have already been developed in Southeast Michigan, Grand Region, Lansing and Genesee County. These ITS Regional Architectures satisfy the federal funding requirement for ITS projects and are compliant with the ITS National Architectures. They also provide a framework for future ITS development with other stakeholders and ensure maintenance of standards.

Trucks have distinct **Mobility** issues and these can be addressed by the following strategies:

- **Truck-Related Highway Strategies.** Capacity improvements to reduce congestion, eliminate choke points, and modernize the highway system will improve conditions for trucks.
- **New Technologies.** Use of new technology such as weigh-in-motion, the Commercial Vehicle Information System Network (CVISN) and video monitoring of freeways for incidents should improve the free flow of trucks, improve safety and eliminate bottlenecks.

Other Highway Strategies

Safety

MDOT has two specific strategies within the highway mode in the area of Safety.

- **Trunkline Safety Strategy.** In the interest of safety and efficient highway operation, MDOT is committed to proactively maximizing the safety aspects inherent in all projects from conventional rehabilitation to major reconstruction. This will be achieved by the following means: 1) continuously monitoring crash patterns and making safety improvements not only at the same time as making road improvements, but also as a safety need is identified which can be met by low-cost solutions, 2) maintaining its role as a recognized leader and innovator both nationally and within the state in traffic safety research, hazard elimination, and other traffic safety projects, 3) integrating safety into transportation planning at all levels within the state to assure maximum safety of Michigan roadways and coordinated use of available resources, and 4) integrating safety into the elements of road project design, whether for repair, rehabilitation, reconstruction, or new construction. In addition, MDOT will continue the program of responsibly funding improvements to trunkline roadways with higher than expected crash patterns.
- **Highway/Railroad Grade Crossing Hazard Elimination.** MDOT is committed to improving safety at highway/railroad grade crossings in an effective and cost-efficient manner. This can be achieved, in part, by eliminating grade crossing hazards when making road improvements in the vicinity of railroads, developing intercity rail and bus terminals, and redeveloping downtown areas. In many cases, this will mean installing warning devices at a highway/railroad grade crossing or, in areas where rail traffic is no longer frequent, returning an obsolete grade separated crossing to a crossing at grade with warning devices. In areas with frequent rail traffic, such as the federally-designated Detroit-Chicago high speed rail corridor, this could involve closing or separating highway/railroad grade crossings.

Traveler Services and Facilities

- **Traveler Information Systems.** Studies indicate that travelers are demanding better service from the infrastructure agencies. These include: real time traveler information on travel delays, congestion, accidents, and unsafe driving conditions caused by the weather. ITS technological tools can be used to help meet

these informational demands — tools such as changeable message signs, highway advisory radios, web-based traveler information, traffic channels on TV, 511 system and the “on-star” type of dashboard navigational systems. In addition to real time information on road and driving conditions, travelers need information on the location of medical, law enforcement, and emergency vehicle repair facilities. MDOT will continue to take the lead in using ITS technologies these purposes.

- **Roadside Facilities Strategy.** MDOT believes that roadside facilities such as rest areas and roadside parks should be maintained in such a condition that citizens of the state can be proud of them. MDOT plans to identify funding to increase the capital outlay and maintenance budgets for our roadside facilities so that safe, clean, barrier free, and accessible facilities, with appropriate infrastructure and landscaping improvements, can be developed and maintained. Quality in transportation design and service provides long term social and economic benefits for the state and the traveling public through enhancement of motorist safety and enrichment of the quality of life.

Car Pool Parking Lots

- **Car Pool Parking Lot Strategy.** The goal of the Michigan Carpool Parking Lot Program is to promote and facilitate ridesharing in order to conserve energy, reduce congestion and parking demand, and realize the social, economic, and environmental benefits associated with reduced motor vehicle usage. Much can be done to achieve this goal through the provision and promotion of safe and convenient parking lots for ridesharing activities.

Efforts are underway to incorporate the carpool lot program into the highway project planning and development process. This strategy will move this traditionally reactive program to a proactive one where carpool parking lot facility needs are identified and coordinated with road and bridge projects, particularly in areas where congestion impacts the level of service.

Strategies will be pursued to work with local communities and transit agencies to promote usage, offer better services, address issues such as lighting and security, and share construction and operating costs.

Environmental and Land Use Strategies

MDOT’s environmental strategy applies to every transportation project it undertakes; the greatest impact is in the highway mode. Our land use strategy also promotes multi-agency coordination.

- **Environmental Strategy.** MDOT is committed to working with the public and with other agencies to ensure that the selection and implementation of transportation projects does not adversely affect the environment. The National Environmental Policy Act, the Clean Air Act, and the Clean Water Act are some of the major federal environmental laws that govern the selection and construction of transportation projects. In addition, there are a number of state statutes and rules for construction permitting that MDOT complies with in implementing transportation projects.

In accordance with the National Environmental Policy Act, MDOT ensures that every transportation project it undertakes is reviewed for potential social, economic, and environmental (SEE) impacts. In most cases, those impacts are minimal or nonexistent, but in some cases further environmental review and public involvement are required. This review process is documented in either an Environmental Assessment or a more detailed Environmental Impact Statement; in either case the document must receive approval from the Federal Highway Administration before the project can proceed to the design, right-of-way acquisition, and construction stages. The potential SEE impacts studied as part of this comprehensive process include those on wetlands, rivers, lakes and streams; air quality; endangered plant and animal species; wildlife; agricultural and park lands; historical, archeological and cultural resources; and social and economic impacts, including potential impacts on neighborhoods, churches, and area businesses.

Other state statutes and rules also require public notification and involvement prior to issuance of construction permits. MDOT has an established history of innovation in the mitigation of impacts. We have, for example, a proactive advanced wetland creation program, and are working toward development of a wetlands banking program. Over the next three years, MDOT anticipates creating over 300

acres of wetland under our advance mitigation program and 100 acres of wetland under our banking program, at approximately half the cost of past years.

MDOT continues to work with other state and federal agencies to improve and streamline the SEE review process without undermining the requirements or intent of the law.

- **Land Use Strategy:** MDOT has been effective in reviewing site plans with developing areas to ensure adequate setbacks, control over the number of curb cuts, and the minimizing of future right-of-way costs. Another successful practice is the building of stronger partnerships with local zoning agencies. Given the interaction between transportation decisions and land use or land development patterns, there is a need for consistency between the transportation decision-making process and that of other land-use planning authorities. The planning process needs to take into account demographic, economic, environmental and other factors so plans will be consistent with development goals and transportation demand projections.

As previously noted under the section, Additional Strategies for Mobility, MDOT's access management strategy relies heavily on cooperation with local governmental agencies so to provide or manage access to land development while simultaneously preserving mobility.

Strategies for MDOT's Business Practices

The following strategies apply to all modes to varying degrees and are derived from MDOT's business plan. They are shown here in the **Highway** section because this mode captures the largest proportion of our resources, both of staff and funding.

- **Customer Service Strategy.** There will continue to be a strategy to undertake construction projects in a manner which minimizes disruption of automobile and commercial traffic flow. Techniques to be employed include incentive contracts promoting early construction completion, nightwork to protect peak period flows within metropolitan areas, non-weekend work to keep at least two lanes open on weekends for those traveling to Michigan vacation and recreation areas, and signing and ITS technologies to alert motorists regarding when lanes are going to be closed.

- **Private Sector Partner Strategy.** MDOT is committed to effectively and equitably involving the private sector in its effort to preserve, improve, and expand Michigan's transportation system. This includes: 1) issuing bids early in the year, 2) evening out the construction program among eligible contractors, and 3) being open to cooperative efforts with private entities. The latter includes leveraging private dollars with public partners, encouraging private partners to locate where transportation facilities exist, retaining private and quasi-public entities to provide transportation services, and working with the construction industry to maximize the application of their skills.

- **Rural Elected Officials Involvement in Programming Transportation Improvements Strategy.** MDOT is committed to strategically involving rural elected officials in the transportation planning and programming process. Regarding local federal-aid, this is accomplished through meetings which include the county road commissions, city, village and township officials, county commissioners, local public transportation providers, and MDOT transportation service center staff. Local transportation projects are identified and prioritized. Counties submit their list of prioritized projects to multi-county rural task forces who, in turn, develop a prioritized list of projects which is submitted to MDOT for inclusion in the State Transportation Improvement Program (STIP).

Regarding the state, as opposed to local, portion of federal-aid, MDOT regions and their transportation service centers meet with local officials continuously regarding potential projects involving trunklines in their communities. If community concurrence is obtained, the trunkline project is included in the STIP.

- **Environmental Justice Strategy.** MDOT is committed to achieving environmental justice by identifying and addressing disproportionately high and adverse effects, including the inter-related social and economic effects of its programs, policies and activities on minority and low-income populations. This will be achieved by identifying, addressing, and documenting environmental justice issues and concerns during the development of transportation programs, policies and projects. Continual efforts are being made to identify potentially affected minority or low-income groups or individuals.

If such groups or individuals are found, every effort will be made to actively involve them in the public involvement program, policy or project development processes, and to avoid or mitigate any potential disproportionately adverse impacts that may result from MDOT's programs, policies, and activities.

Aviation

- **Passenger.** MDOT is committed to the appropriate development of public use airports that best respond to the system goals identified in the Michigan Airport System Plan (see Appendix C). These goals relate to the aviation needs of business centers, tourism/convention centers, population centers, capacity, land area coverage, general population, and isolated areas of the state. Airports contributing to these critical aviation needs will be given primary consideration in the allocation of funds. Safety and security measures such as terminal modifications, access-control fencing, and vehicle barriers will be one consideration in making improvements at these airports. This will continue to be achieved through a partnership comprised of local officials, MDOT, and the Federal Aviation Administration.

Regarding commercial air service, MDOT has an opportunity to positively affect the provision and use of scheduled air service throughout Michigan. The Policy Plan for Michigan Air Service (PPMAS — Summary attached as Appendix D) identifies the public role in this highly visible form of public transportation operated by the private sector for profit. Primary PPMAS considerations are to: 1) assure the appropriate distribution of air service to support and promote economic development statewide, 2) assure the appropriate distribution of air service to support quality of life for Michigan residents and visitors by providing access to the national air transportation system, and 3) match a community's air service level to that which it can profitably support.

- **Freight.** MDOT will continue to assist local communities in assuring that appropriate airports, as identified in the Michigan Airport System Plan, have adequate airside facilities to accommodate those aircraft used in processing mail, package express, and air cargo. Also, efforts will continue to provide locations with efficient access to runways at airports key to these enterprises.

Non-motorized

- **Non-motorized strategy.** MDOT recognizes that non-motorized facilities are an important component of a balanced transportation system. MDOT will continue to incorporate non-motorized investment into its enhancement program, working with communities to identify locations where non-motorized facilities will improve pedestrian and bicyclist safety, especially in locations where there is heavy non-motorized use. MDOT will also look for opportunities to partner with other units of government where cooperation and cost sharing are needed to improve the connectivity between local and state non-motorized facilities. Existing MDOT organizational structure and business processes will be used to provide assistance to communities in planning and implementing non-motorized facilities and systems.
- **Pilot Project for Systematic Analysis.** In 2001, a pilot project was completed by MDOT's Southwest Region office, resulting in a Non-Motorized Transportation Investment Plan and Project Scoping and Candidate Project Submittal Procedures. The plan and procedures provide the tools necessary to identify and prioritize non-motorized transportation projects for implementation on a region-wide basis. This is accomplished in coordination and cooperation with regional, county, and local agencies and with interested private groups and citizens, through a consensus planning process. As a result of the pilot project, MDOT has a systematic, analytical process to identify or determine: 1) potential 5 year program projects; 2) whether an accommodation for pedestrian and bicycle travel is necessary; and 3) what is the most appropriate facility to provide. The systematic tools and procedures enable non-motorized accommodations to be incorporated and estimated as part of initial project scoping and programming. The process also provides for funding strategies and tracking of non-motorized costs in the region.

The ultimate outcome of this pilot project will be the integration of non-motorized transportation planning and implementation into MDOT's routine business processes. The pilot project will be extended to the other MDOT Regions. Future non-motorized candidate projects will need to come from such a non-motorized plan.

Intercity Passenger Bus

- **Intercity Bus Strategy.** Equal opportunity will be afforded to the intercity bus carriers regarding provision of intercounty and regional bus service. Emphasis will be given to integrating intercity bus services with intercity passenger rail service by feeding passenger rail stations and supplementing passenger rail service. MDOT's investments will be primarily in capital items such as intercity coaches and station improvements, especially those stations serving more than one mode. MDOT will also provide support to maintain a basic network of intercity bus routes in northern lower Michigan and in the Upper Peninsula.

Intercity Passenger Rail

- **High Speed Rail Development.** The high speed rail development strategy is to incrementally develop the Detroit-Chicago Corridor and its branch lines. This includes a continuing commitment to implementing the incremental train control technology throughout the corridor which is essential to achieving train speeds up to 110 mph. Emphasis will also be given to working with local communities in improving passenger rail service, developing stations, and closing/separating grade crossings. Efforts will continue in working with neighboring states and Ontario to assure that the corridor is part of a developing regional system. In conjunction with the "Border Crossing and Trade Corridor Strategy," every effort will be made to work with Ontario and Immigration & Naturalization Service to reduce passenger rail border crossing times. Sharing of passenger terminals by passenger rail, intercity bus, and local public transportation will continue to be promoted.
- **Intermodal Terminal Development.** There will be a continued MDOT commitment to develop and enhance intermodal passenger terminals in an effort to provide cost effective services and promote economic development. In several of Michigan's metropolitan areas, intercity passenger rail, intercity bus, and local public transportation comprise the intermodal passenger terminals.

Regional Rail

- **Regional Rail Strategy.** Regional rail contributes to meeting the increasing demand for transportation in the nation's larger metropolitan

areas between population and employment centers within a region. Therefore, MDOT will support and encourage the periodic local assessment of the potential for regional rail in Michigan's largest metropolitan areas. This generally means metropolitan areas of one-half million or more population. Assistance in implementing this passenger rail service will be available when demand and community support warrant.

Local Public Transportation

- **Local Public Transportation Strategy.** The mission of local public transportation is to improve the mobility and quality of life by providing efficient and responsive public transit that integrates into an overall transportation system. Federal Transit Administration planning emphasis areas, metropolitan planning factors, and MDOT statewide transit goals provide direction in achieving this mission. In that context, local public transportation will continue to focus on preserving and improving the transit linkage with jobs, education, medical care, recreation, and shopping. Efforts will continue to fill gaps where no local public transportation exists. When appropriate, transit systems will feed intercity bus and rail stations. Transit systems will continue to be eligible for capital funds for buses, facilities, and equipment; and operating funds for operations which will effectively serve the local community and integrate with other intercity modes of service.

Ridesharing

The goal of these strategies is to reduce energy consumption, traffic congestion, air pollution and parking problems, while making Michigan roadways safer by reducing the number of vehicles utilizing them.

- **Rideshare Awareness.** A statewide coordinated marketing effort will aim to raise awareness of ridesharing with emphasis on guaranteed ride home. Increased signage incorporating logos, toll free rideshare contact numbers, and websites will increase the number of inquiries by commuters.
- **User Recruitment.** By utilizing an extensive promotion program, MDOT will continue to encour-

age local ridesharing offices (LROs) to actively recruit persons to use carpools and vanpools as an alternative transportation mode to the single occupant vehicle work commute trip.

- **Employer Participation.** Promotion of the Commuter Choice program, especially in urban areas, will allow for employers to become more involved in identifying the transportation needs of their workforce.
- **Use of Carpool Parking Lots.** Use of carpool parking lots as collection points by carpools and vanpools will be encouraged. Information on carpool parking locations, capacity, and other features will be made available to existing and potential carpools and vanpoolers.

Ferry Service

- **Ferry Service Strategy.** MDOT encourages private ownership and operation of ferry services to Michigan's inhabited islands. Limited state assistance may be provided to ferry services that meet state mobility objectives when the market alone cannot support service. MDOT will apply for and use dedicated federal funds for construction of new ferries when appropriate and available.

Commercial Ports

- **Commercial Port Strategy.** MDOT will work with the federal government, local agencies, and industry to ensure that maintenance of public navigation channels will continue. Improvement projects will be undertaken when economically justified and funded by the appropriate federal and local agencies.

Rail Freight

- **Safety.** The highway/railroad grade crossing hazard elimination strategy described in the **Highways Section** will continue to be a major contributor to safer railroad operations. This results from improving warning devices and closing or separating railroad/highway grade crossings. The reduced potential for collision with trucks transporting heavy loads and inflammable commodities is especially important to the railroads.

- **Intermodal Freight Terminal Strategy.** There will be a continued MDOT commitment to support the development and enhancement of intermodal freight terminals in an effort to provide cost effective services and promote economic development. Intermodal freight terminals may be divided into three categories: rail, marine, and air. Rail intermodal terminals accommodate the interchange of freight carried in containers and trailers between rail and trucks. Marine terminals accommodate primarily bulk materials interchanged between the waterways and the rail or highway systems. Airports accommodate the interchange of freight between air carriers and trucks. It is expected that major intermodal freight terminals located within one MDOT region will also serve shippers in adjoining MDOT regions.

- **Divestiture of State-Owned Lines.** MDOT will return state-owned rail lines (currently 695 miles) to the private sector using a structured bidding process. MDOT has begun divestiture of these rail lines consistent with State Transportation Commission policy and the provisions of Public Act 235 of 1998.

- **Rail Freight Economic Development.** MDOT is committed to assisting businesses and industries requiring rail freight service to locate and expand in Michigan by providing financial assistance for rail infrastructure improvements. This includes preserving and improving the railroad in the vicinity of the business or industry, constructing or upgrading spur tracks into new or expanding industrial parks, and constructing transloading facilities.

Matrices: How the Strategies Help Attain Plan Goals

On the following three pages are matrices which show the linkage between each of the strategies we have described in this chapter and the state long range plan goals. The matrices are color-coded to reflect how much the strategy contributes toward achieving each of the eight plan goals.

How the Strategies Help Attain Plan Goals

	State Long Range Plan Goals							
	Preservation	Safety	Basic Mobility	Strengthening the States Economy	Transportation Services Coordination	Intermodalism	Environment & Aesthetics	Land Use Coordination
Highway Strategies								
Asset Mangement	High	High	Moderate	High	Low	Moderate	Moderate	Low
<i>Highway Strategies Related to Preservation</i>								
Repairing & Rebuilding Roads	High	High	Moderate	High	Low	Moderate	Moderate	Low
Trucks	High	High	Moderate	High	Moderate	High	Moderate	Low
Winter Maintenance	High	High	Moderate	High	Low	Low	Low	Low
Bridge Preservation	High	High	Moderate	Moderate	Low	Low	Low	Low
Bridge Widening or Lengthening	Moderate	High	Moderate	Moderate	Low	Low	Moderate	Low
Corridors of Highest Significance								
Border Crossing & Trade Corridor	High	High	High	High	Moderate	High	Moderate	Low
Border Security	High	High	High	High	High	High	Moderate	Moderate
Improve Border Operational Efficencies Using ITS	Moderate	High	High	High	High	High	Low	Low
Coordination with Other Border Agencies	High	High	High	High	High	High	Moderate	Moderate
New Border Crossing	High	High	High	High	High	High	Moderate	Moderate
Bluewater Bridge	High	High	High	High	High	High	Moderate	Moderate
International Bridge	High	High	High	High	High	High	Moderate	Moderate
Corridor Safety	Moderate	High	Moderate	High	Moderate	Moderate	Low	Moderate
Corridor Management	High	High	High	High	High	High	Moderate	Moderate
State Trucking Laws	High	High	Moderate	High	Moderate	High	Moderate	Low

High
 Moderate
 Low

How the Strategies Help Attain Plan Goals

Strategies	State Long Range Plan Goals							
	Preservation	Safety	Basic Mobility	Strengthening the States Economy	Transportation Services Coordination	Intermodalism	Environment & Aesthetics	Land Use Coordination
Congestion Mangement	High	High	High	High	Moderate	Moderate	Moderate	Moderate
<i>Highway Strategies for Mobility</i>								
Freeway Modernization	High	High	Moderate	High	Moderate	Moderate	Moderate	Moderate
Access Management	Moderate	High	High	Moderate	Moderate	Moderate	Moderate	High
Interchange	Moderate	High	High	Moderate	High	Moderate	Moderate	High
Intelligent Transportation Systems	High	High	Moderate	High	High	High	Moderate	Moderate
Truck-Related Highway Strategies	High	High	Moderate	High	Moderate	High	Moderate	Moderate
New Truck-Related Technologies	High	High	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Other Highway Strategies								
Trunkline Safety	Moderate	High	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Highway/Railroad Grade Crossing Hazard Elimination	Moderate	High	Moderate	Moderate	Moderate	Moderate	Moderate	High
Roadside Facilities	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	High	Moderate
Carpool Parking Lot	Moderate	High	Moderate	Moderate	Moderate	Moderate	High	Moderate
Environmental	High	Moderate	Moderate	Moderate	Moderate	Moderate	High	High
Land Use	Moderate	High	Moderate	Moderate	Moderate	Moderate	High	High
MDOT Business Practices Strategies								
Customer Service	Moderate	High	Moderate	High	Moderate	Moderate	Moderate	Moderate
Private Sector Partner	High	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Rural Elected Officials Involvement in Programming Improvements	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Environmental Justice	Moderate	Moderate	High	Moderate	Moderate	Moderate	Moderate	Moderate

High
 Moderate
 Low

How the Strategies Help Attain Plan Goals

Strategies	State Long Range Plan Goals							
	Preservation	Safety	Basic Mobility	Strengthening the States Economy	Transportation Services Coordination	Intermodalism	Environment & Aesthetics	Land Use Coordination
Aviation								
Passenger	High	High	Moderate	High	High	High	High	High
Freight	High	High	Moderate	High	High	High	Moderate	High
Non-Motorized	High	High	High	Moderate	Moderate	High	Moderate	High
Intercity Passenger Bus	High	High	High	Moderate	High	High	Moderate	Moderate
Intercity Passenger Rail								
High Speed Rail Development	High	High	High	Moderate	High	High	Moderate	High
Intermodal Terminal Development	High	High	High	Moderate	High	High	Moderate	Moderate
Regional Rail	Moderate	High	High	Moderate	High	High	Moderate	High
Local Public Transportation	High	High	High	Moderate	High	High	Moderate	High
Ridesharing								
Rideshare Awareness	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	High	Moderate
User Recruitment	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Employer Participation	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Use of Carpool Lots	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Ferry Service	High	High	High	Moderate	Moderate	High	Moderate	Moderate
Commercial Ports	High	High	Moderate	High	High	High	High	High
Rail Freight								
Safety	Moderate	High	Moderate	Moderate	Moderate	Moderate	Moderate	High
Intermodal Freight Terminals	High	High	Moderate	High	High	High	High	High
Divestiture of State-owned Lines	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Rail Freight Economic Development	High	High	Moderate	High	High	High	High	High

High
 Moderate
 Low

Chapter Six

Performance Monitoring

Michigan's future growth depends on the development, maintenance and efficient operation of the transportation system. To achieve the goals of the state long range plan, it is fundamental that transportation agencies at all levels monitor the performance of their transportation systems. Performance measures can be used to benchmark the functioning of the transportation system and its components and, over time, to indicate trends. Based on those trends, transportation decision-makers can adjust their work strategies, project selection or level of investment to achieve their goals.

MDOT has organized the performance measures into three categories related to system condition, accessibility, mobility and safety, and operational and service performance. These categories and the individual performance measures relate either directly or indirectly to the state long range plan goals as follows:

- **System Condition** performance refers to the physical condition of the transportation asset, whether the asset is a highway, bus fleet, rail line, bus terminal, port or airport. This relates to the goal of **Preservation** by monitoring the condition of transportation assets.
- **Accessibility, Mobility and Safety** performance refers to monitoring how frequently the transportation service is offered, how efficiently it operates, and how many accidents are taking place. For highways, it answers the question: How congested is the system?

Accessibility best describes the ability of people or goods to reach destinations, where mobility is the relative ease or difficulty with which the

trip is made. Mobility is concerned with travel time, speeds, system usage, and system capacities. Most frequently cited measures deal with level of service, delay and amount of travel. This relates indirectly to the goal of **Strengthening the State's Economy** and relates directly to the goals of **Basic Mobility, Intermodalism and Safety**.

- **Operational and Service** performance relates to how well the transportation system is meeting the needs of the traveling public. This relates directly to the goal of **Transportation Services Coordination** as an indicator of how responsive the service is to customer needs. Travel time, delay, congestion, system usage, costs and facility access are some of the measures used to determine operational and service levels.

These categories of performance measures may relate directly to the goals of the state long range plan, or the relationships may be indirect, as when performance measures are linked to the specific strategies we will implement to achieve the goals. For instance, many of the performance measures shown in Table 6-1 can be applied to the high speed rail development strategy which, in turn, contributes to achieving the eight goals of the state long range plan.

In the state long range plan, our primary focus is on performance measures related to the parts of the transportation system that MDOT: 1) has jurisdiction over, 2) provides funding for, or 3) regulates. These include state trunklines, bridges on trunklines, carpool parking lots, local public transportation systems, intercity buses and selected intercity bus routes, selected intercity passenger rail services, and selected railroads.

MDOT relies on our federal, local government, and private sector partners to monitor changes that we cannot directly control. For example, the number of households or employment levels change with or without MDOT influence. However, knowing the direction of such changes can lead to a better understanding of how we are meeting the goals of the state long range plan. If some of these indicators change at a different rate or in a different way than we have projected, expectations about some of the plan strategies will be modified accordingly.

Selecting Performance Measures

Over 100 performance measures have been incorporated into the Transportation Management System, MDOT's multi-modal data base. This allows compilation of the performance measure values for many components of the transportation system for any given point in time. This data is used to make investment decisions, apply for federal funds, meet federal requirements, and other purposes.

Care needs to be exercised in applying performance measures. The purpose for measuring a specific performance needs to be clearly justified. Adequate data has to be readily available. Applying the performance measure should not place a private sector enterprise in a vulnerable position by publicizing proprietary data. Collecting and analyzing the data should not place an unnecessary bureaucratic burden on agencies whose primary purpose is to provide transportation infrastructure and service.

The abundance of data made available by current technology makes it relatively easy to track information that, while meaningful in some context, does not relate to the performance of the transportation system. For example, there are numerous economic indicators and data widely available to describe Michigan's economic picture such as the unemployment rate, the number of new business starts, and the number of new companies attracted to Michigan locations each year. Yet none of these statistics directly relate to the role of transportation investment in strengthening Michigan's economy, a plan goal. To measure that aspect of the system's performance requires careful selection of an appropriate measure or indicator that describes the performance of a particular aspect of transportation investment.

On the other hand, some types of system performance are not easily measured, or cannot be measured at all. For example, movement of freight via motor carriers, railroads, pipelines, and marine infrastructure is accomplished with private sector resources. The public sector has little, if any, influence over the choices made by shippers when they tender cargo for shipment; however, the public sector does have a role in reducing transportation barriers. Reliable data measuring the effectiveness and efficiency of private sector shipping choices and the impacts on the economy are not available at this time. For these reasons, MDOT will defer establishing performance measures for freight until such data from the private sector becomes available.

While changes in a single indicator can describe the relative effectiveness of a particular policy or set of policies, MDOT uses the indicators in combination to monitor the effects of the strategies in accomplishing the goals of the state long range plan. The selection of which indicators to highlight were balanced so they would collectively address all eight goals. Each set of indicators will be qualitatively assessed as to whether the trend has been positive, negative, or mixed. We will continue to explore those performance indicators and benchmarks that will provide insight as to how effective the strategies are in meeting state long range goals.

Performance Indicators for State Long Range Plan Goals

Since it is impractical to use all 100 performance measures we selected a subset for use in this plan. The measures grouped under system condition, operational performance and safety and service performance are shown in Table 6-1. The following set of criteria were used to select the measures:

- The indicator measures an outcome related to one or more of the state long range plan goals.
- Reliable information for this indicator is already collected on a regular basis, or can be obtained at reasonable cost.
- The indicator and its relationship to the state long range plan are easily understood.

Each category's relationship to the state long range plan goals has been evaluated and a qualitative judgement made, based on technical and other information, as to whether the indicator category has a strong relationship to the goal (H for high), moderate relationship to the goal (M for moderate), or a limited relationship to the goal (L for low). Areas in Table 6-1 have been left blank where no clear relationship between an indicator and a particular goal is considered to exist.

Performance measures may be relevant to more than one category and/or help measure progress in attaining more than one goal. Detailed information about the performance measures we have selected for monitoring progress toward the state long range plan goals is provided below.

- **Customer Satisfaction Survey**

The customer satisfaction survey provides feedback from our customers as to how well we are meeting their demands to provide a safe and accessible transportation system that provides the mobility they have come to expect. Outcomes of surveys provide feedback on customer perceptions of system condition, service, congestion, safety, coordination and priorities.

- **Roadway Pavement Condition**

Condition is typically evaluated using three factors: ride quality, crack severity and average depth of wheel path ruts. “Ride quality” is what the motorist experiences (the smoothness of the ride). It directly affects motor vehicle operating costs. Crack severity, or “cracking,” refers to the structural deterioration of the pavement, which leads to loss of smoothness and deterioration of the road base by water seepage, if not corrected. Wheel-path ruts, or “rutting,” are depressions in pavement caused by heavy use. These depressions can collect water, creating a safety hazard. Thresholds are reported as percent “good” or “poor”.

- **Runway Pavement Condition**

Assessed based on Pavement Condition Indices (PCI). Since 1987, MDOT has been conducting field inspections of pavements at airports throughout Michigan on a routine basis and reporting conditions of pavements using the PCI methods initially developed by the US Air Force. The PCI values for pavements range from a high of 100 for new pavements without any defects to a low of 0 for completely failed pavements. Different threshold values for “good” and “poor” apply for different classifications of airports and for different components of an airport — runway, taxiway, and apron.

- **Bridge condition**

Each bridge is evaluated every two years through the bridge inspection process. Bridge condition is assessed to identify which bridges require routine or periodic maintenance, rehabilitation, or replacement. Thresholds are reported as percent “good” or “poor”.

- **Bus Fleet Condition**

Condition of the bus fleet is assessed based on mileage and age. Thresholds are reported as number of buses eligible for replacement based on meeting the mileage or age standard and the percent not being replaced (unfunded).

- **Crash Rates and Trends**

Monitoring includes number of accidents per 100 million vehicle miles traveled, per year, accident rates, rail grade crossing property damage and facility crashes. Monitoring crashes/incidents on all types of transportation systems assesses the impact of MDOT’s investment in safety improvements.

- **Level of Service**

Typically, level of service (LOS) measures how easily a trip is made. Average speed; total travel time; passenger, vehicle or freight delay; vehicle miles of travel; person miles traveled; average daily traffic; and capacity are typical statistics compiled. LOS describes whether or not the transportation system is properly sized and has the ability to accommodate growth. Thresholds typically are described in terms of alpha letter designations, where congested conditions are defined as LOS F.

- **Seasonal Load Restrictions**

This measure relates directly to the movement of goods. Highways, in particular the National Highway System (NHS), are crucial for freight movements, also serving as connectors to and from ports, rail and air facilities. Some routes are posted with weight limits to prohibit heavy vehicles from damaging roads, primarily in the spring. The percent of state roads that are not built to all-weather standards is very low, but warrants monitoring as an indicator of performance related to the adequacy of the system to carry commercial traffic.

- **Intermodal Facilities with NHS connections**

Intermodal facilities are defined as those places where people or goods can transfer from one mode of transportation to another. Increasingly,

movements of passengers and goods rely on multiple forms of transportation to serve consumers in the most efficient manner possible. Some of these facilities have been deemed to be of national significance. When seamless connections are made between the modes served by these facilities and the NHS, they can more efficiently help us meet the needs of global economic competition, increase America's productivity, and bolster its economy. The number of these key intermodal facilities with direct connections to the NHS is measured.

- **Percent of Population Served by Transit**

Our transportation system provides accessibility to employment, recreation, shopping, intermodal transfer points, and other land uses. The measurement of transit use on a per capita basis helps to measure more directly the extent to which transit is relevant to the lives and activity patterns of individuals. This measure helps to identify the role of transit in both accessibility and mobility.

- **Passenger Terminals served by two or more modes**

Air, bus, and rail passenger terminals should have appropriate highway and public transportation access responsive to both the volume and type of vehicular traffic requiring access. Thresholds need to be set by modal system plans to achieve the appropriate level of access for all passenger facilities.

- **Adequate Primary Runway System**

Includes primary runway length, width, surface type, lighting system, taxi system, safety areas, and runway visual approach aid including a Precision Approach Path Indicator (PAPI), Visual Approach Slope Indicator (VAS I) or equivalent. This data is gathered by airport inspectors, maintained by Aeronautics in the Airport Information Management System (AIMS), and transferred to the TMS periodically. Thresholds are assessed by percent "having" or "not having" a complete primary runway system (source: MASP).

- **Number of buses eligible for replacement and the percent unfunded**

The transit vehicle fleet is the single largest capital asset for most transit systems. The age of the fleet reflects both its physical and functional condition, and represents a critical barometer with respect to user comfort and convenience. Age is also an indirect indicator of reliability. This measurement is a direct tie to both capital and operating costs and expenditure requirements.

- **Airports with All Weather Access**

Cities and counties benefit directly and indirectly from air transportation through jobs, tourism dollars, and the relocation and growth of small and medium sized industries. These industries rely on convenient, all-weather access to airports for business, and to serve distant markets. This measure indicates progress toward achieving all-weather accessibility for Tier 1 and Tier 2 airports meeting Air Carrier or General Utility airport licensing requirements (source: MASP)

Relationship of Performance Monitoring to State Long Range Plan Goals

Category/Performance Indicator	State Long Range Plan Goal							
	Preservation	Safety	Basic Mobility	Strengthening the State's Economy	Transportation Service Coordination	Intermodalism	Environment & Aesthetics	Land Use Coordination
System Condition								
Customer Satisfaction Survey	H	H	H	L	H	H	H	L
Pavement / Runway Condition	H	L	M	H	L	M/H	M/H	L
Bridge Condition	H	L	H	H	L	M/H	L	L
Bus Fleet Condition	H	M	M	H	M	L	L	
Intermodal Facility Condition	H	H	M	H	L	M	M	L
Accessibility, Mobility & Safety								
Customer Satisfaction Survey	H	H	H	L	H	H	H	L
Crash Rates & Trends	M	H	M	M	M	M		M
Level of Service		M	H	H	L	H		H
Portion of System with Seasonal Load Restrictions	M	L	M	H	L	H		
Percent of Population Served - Transit Ridership	M		M/H	H	H	M		H
Airports with Adequate Primary Runway System	H	M/H	M	H	L	L	M	H
Operational & Service								
Customer Satisfaction Survey	H	H	H	L	H	H	H	L
Level of Service		M	H	H	L	H		H
Percent of Population Served - Transit Ridership	M		M/H	H	H	M		H
Number of buses eligible for replacement and the percent unfunded	M	L	M/H	M	H			
Passenger Terminals served by two or more modes	L	M	M/H	L	M	M		M
Airports with All Weather Access	M	M/H	H	H	M	H	M	L
Notes: "H" indicates a high linkage "M" indicates a moderate linkage "L" indicates a low linkage								

Chapter Seven

Investing to Meet Our Goals

The world is changing faster now than ever. Futurists and other trend watchers expect more change in the next 50 years than has been seen in modern history. Michigan transportation agencies must respond effectively to this constantly changing world; this will require changes in the way we currently finance our transportation systems.

Throughout this document, we have stressed the importance of an efficient intermodal and multi-modal transportation system. Thus, our funding concerns must encompass all modes — highways, air, rail, marine, transit, and non-motorized transportation.

Highways

State and local spending for highway improvements is an investment in the future. As we stated at the beginning of this document, our transportation system supports a gross state product of \$308 billion annually and 5.7 million workers. When the transportation system functions optimally, it reduces the cost of production and distribution by allowing access to a broader range of inputs (labor, raw materials, and supplies) and larger markets for outputs. A balanced and robust transportation system also enhances quality of life and household incomes by providing access to a broader range of jobs and more options in housing and consumer purchasing.

Since development of the *State Long Range Plan 1995-2015*, MDOT has undertaken a variety of efforts to extend our investment opportunities and capabilities. By using our asset management approach, we are leveraging existing

revenue as much as possible, thereby getting the most out of the 1997 increase in state fuel taxes and the additional federal aid we began to receive in 1998, with the passage of TEA-21. We have focused our investments to attain the high standard set for the condition and operation of our roads and bridges, thus ensuring the continued success of our economy and the ability to meet the mobility demands of the motoring public. As is the case with any business, we are also identifying future revenue requirements.

Sources of Revenue

Michigan invests in its transportation system using revenues primarily collected through user fees; that is, those who use the system pay for it. At the state level, these user fees include gasoline and diesel fuel taxes, vehicle registration fees, auto-related sales taxes, and income from various sources such as title fees, license transfer fees, and interest. Sources of federal revenue include gasoline and diesel fuel taxes, fees on truck tires, a truck sales tax, and a truck use tax.

Federal highway dollars are raised primarily from fuel taxes at the rates of 18.4 cents per gallon of gasoline, 24.4 cents for diesel fuel, and 13.1 cents for gasohol. The funds are sent to Washington D.C. and returned to the states through formulas authorized by TEA-21 for use on eligible highways. Michigan allocates federal aid for highways as required by the state budget: roughly 75 percent for state trunkline highways and 25 percent for local federal-aid eligible roads.

State transportation revenue collected from the state fuel tax (19 cents-per-gallon for gasoline and approximately 15 cents for diesel fuel), vehicle registration fees and other sources is deposited in the Michigan Transportation Fund (MTF). The funds are divided between MDOT, all county road commissions and 533 cities and villages throughout the state based upon statutory funding formulas in Public Act 51 of 1951. The state constitution requires that at least 90 percent of the MTF must go to roads and up to 10 percent may go toward mass transit.

The MTF also includes statutory requirements to fund several grant programs including bridge repairs on the local road system, the Transportation Economic Development Fund and rail grade crossing improvements. The majority of these special grants and programs fund improvements on the local transportation system. After deductions off the top of the fund are taken for other state agencies performing work related to the collection and distribution of transportation revenue, such as the departments of State and Treasury, the fund provides an effective yield of approximately 54.2 percent of the total fund for local road and street repair, 37.3 percent for state trunkline highways, and 8.6 percent for public transit.

When both federal and state dollars are taken into account, the revenue available for surface transportation at every jurisdictional level was \$2.9 billion, in 2001.

Leveraging Existing Revenue

One of the key tools in making the **Build Michigan** programs possible has been the use of bonding. Long-term state transportation bonds are repaid through state transportation revenue. We have also used a type of bond which relies upon federal revenues, GARVEE (Grant Anticipation Revenue) bonds. GARVEE bonds, for the first time, allowed us to use future federal aid to repay the debt. In this instance, by using short term notes, MDOT is able to take advantage of low interest rates while undertaking transportation projects at an accelerated rate, thus enhancing economic development opportunities. Miles of improvements have been completed at the value of today's dollars; the cost would have been much greater in the future.

MDOT employs a business model which enables us to extract as much value as possible from our transportation dollars. Some of the highlights of this model are as follows:

- Development of the *Five-Year Road & Bridge Program* — provides program stability
- Call for projects based on asset management — we pick the right “mix of fixes”
- Capital Preventive Maintenance — extends the expected life of our pavements and bridges
- Early letting of our program — allows us to take advantage of lower prices
- Program level investment analysis — ensures the right program size, given the funding amount

Managing Our Assets

MDOT takes the asset management approach to the stewardship of the state highway system. This means a comprehensive long-term view, considering both initial and future costs, as we invest to meet program targets for our roads and bridges. Using the Road Quality Forecasting System (RQFS), a forecasting tool based on MDOT's Pavement Management System, MDOT developed investment strategies which have proven very effective at improving the condition of our roads. As a result, we are well on our way to improving the remaining average life of our roads and bridges. We will continue to refine our asset management approach by using our Maintenance Activity Reporting System (MARS) and our successful Transportation Management Systems.

Michigan was one of the first states to make a public commitment in response to the Government Accounting Standards Board Statement 34 (GASB Statement 34). Among other things, GASB Statement 34 requires that state and local governments assess the capital value and condition of their infrastructure assets, such as roads and bridges. The asset management approach taken by MDOT is consistent with GASB Statement 34, in that it sets performance and condition targets for our road and bridge infrastructure, and implements an investment strategy to achieve those targets.

Revenues for the Future

MDOT's asset management approach is designed to maximize the use of existing revenues, yet we recognize that additional revenues will be needed to carry out our program. To this end, we support efforts to increase available revenues for all transportation programs. This will allow us to provide the required level of service, account for the cost of doing business, address the impact of inflation, and meet challenges which may yet arise in the future.

Presently under consideration (2002) is a proposal to increase the state diesel fuel tax from 15 to 19 cents. MDOT supports this proposal because it will bring about equity and increase fairness for drivers of passenger vehicles. In 1997, Michigan enacted a 4-cent-per-gallon increase to the tax on gasoline. A corresponding increase was not imposed on diesel fuel. In addition to addressing this equity issue, the proposed legislation would simplify the diesel tax collection process and provide additional revenue through increased efficiency. If the entire diesel

fuel tax package is adopted as proposed, over the next ten years an estimated \$1.15 billion in state transportation revenue will be raised. Of this, an estimated \$400 million will be focused on those highways which carry the highest volumes of truck traffic and critical local bridges.

As part of the next Federal Highway Trust Fund reauthorization, MDOT will also continue the fight to increase Michigan's rate of return on the federal gas tax. Michigan is a "donor" state, which means we send more federal gas tax revenue to Washington than is returned. Currently, Michigan's "return" rate from the Highway Account is 90.5 percent. We received an additional \$300 million per year in federal revenue due to the last reauthorization, and this helped to significantly improve our position. However, we still receive less federal transportation revenue, relative to our contribution to the trust fund, than many other states. We must improve our position in this regard.

Technological changes will dramatically affect the traditional major source of funding for the road and bridge program: per-gallon fuel taxes. Over the life of this long range plan, high-efficiency vehicles or vehicles which do not burn gasoline or diesel fuel are likely to come into greater use. Market penetration by hybrid (gas-electric) vehicles could increase. Electric vehicles could prove practical, as could vehicles using hydrogen derived from electricity. Conventional vehicles may become markedly more efficient, or could be supplanted by vehicles powered by fuel cells using methanol or hydrogen.

Michigan is investing so as to become the world center for research into fuel-cell and other alternative automotive energy sources. However, if more than marginal use is made of untaxed power sources, a new mechanism for road finance will have to be developed. Clearly, some form of per-mile revenue generation will be necessary. This could take many forms, but will likely involve measures of miles traveled, type of travel, and/or the amount of energy expended during travel. Without such a mechanism, future vehicles will encounter a road system that does not meet their travel demands, or the needs of the economy.

As a guide to the range of alternative funding approaches that may be considered, MDOT has produced the "Funding Strategy Toolbox for Large Highway Projects." The "Toolbox" report evaluates the strengths and weaknesses of various revenue, finance, and project-delivery options.

Half of the "Toolbox" report applies to state projects, and half covers the methods available to local governments. Some of the potential revenue alternatives available to the state include:

- Tolls (in cash or otherwise, applied to all lanes or only to express or truck lanes)
- Cordon tolls in high-traffic areas
- Sales and use taxes, income taxes, or other general-fund revenue
- Corporate and utility taxes
- Airport parking taxes
- Casino and gambling taxes
- Rental-car, hotel, convention, and other visitor taxes
- Real-estate or personal property taxes
- Leasing and concessions on right-of-way

Many of these taxes have unattractive attributes, but all are used for road finance in some places and must at least be considered.

Other finance alternatives involve cash management or alternative means of project delivery:

- Road construction by private investors
- Private nonprofit corporations (63-20 corporations)
- Shadow tolls, privatization and service contracts
- Federal credit assistance
- Management of federal aid (advance construction, tapering, and phasing)

Many of the methods are the same for all levels of government, but some that are especially suited to local use are:

- Property taxes
- Regional sales taxes
- Special assessments
- Tax-increment financing
- Expansion of the State Infrastructure Bank
- Local-option user fees (fuel or vehicle taxes)
- City income taxes
- Impact fees
- Developer contributions

Because virtually all trips and shipments make use of local roads and streets and state highways, and because intermodal movements travel over these roads, transportation finance should be considered jointly for all levels of government.

As in any business, MDOT recognizes that in the decades to come, the buying power of today's rev-

enue will not be adequate to address the investment requirements of tomorrow. This concern has already been raised on a national level by the American Association of State Highway and Transportation Officials (AASHTO). To address the challenges of easing congestion, preserving the system, and supporting the transportation demands of the economy, AASHTO has proposed ramping up federal highway and transit funding over the six years of the next federal highway reauthorization through a combination of options including:

- Using Highway Trust Fund reserves and interest
- Transfers from the General Fund to offset revenue reductions due to gasohol use
- Indexing the federal fuel tax to inflation
- Raising federal fuel tax rates

AASHTO also proposes leveraging revenues through a new federally-chartered Transportation Finance Corporation (TFC). Through bonding, existing revenue could be more than doubled to generate program increases for highways, transit, and other programs.

The hard truths being discussed at the national level are true at the state level as well. Despite the expected 2.2 percent per year growth in revenues due to expanded economic activity, inflation of 3.5 percent per year is expected erode the buying power of MDOT and other transportation agencies throughout Michigan. In the following section, we will demonstrate the impacts of this projected erosion of the transportation dollar's buying power. It will be clear that we will have to adjust revenues to account for this loss in buying power and the requirement to modernize our transportation system.

Addressing Revenue Concerns through 2025

Over the period 2003-2025, MDOT expects about \$34 billion of highway revenue to be available — \$27 billion for road and bridge capital projects and \$7 billion for routine maintenance activities. These figures are based on existing investment levels, and are in today's dollars.

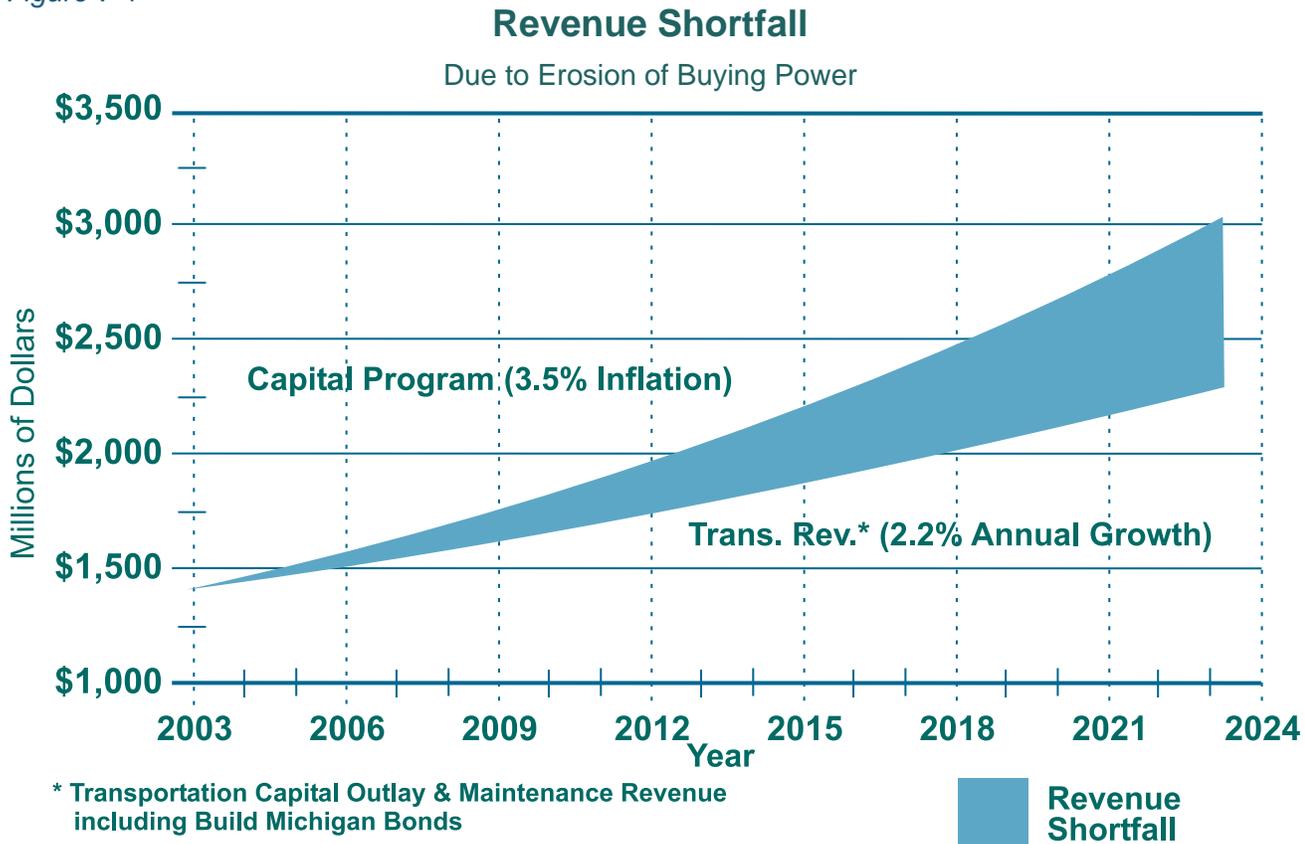
Because of inflation, however, the buying power of those dollars will be less in the future than it is today. We will need an additional estimated \$8 billion over the period just to preserve the system and continue to provide the level of mobility we enjoy today. In addition, major projects that are part of the *Build Michigan III* program, or that

have already been identified on significant corridors, but for which funding has not been identified, will require another \$5 to \$11 billion to complete, depending on when they are undertaken. Finally, there is a need to completely modernize our corridors of highest significance to sustain our economic growth and maintain our competitive position in the world economy; the cost of those projects has not yet been calculated.

First, to understand the impact of inflation on our buying power, consider the cost of a typical annual road and bridge program, about \$1.4 billion today, including maintenance activities. The average annual revenue in the short term period of 2001-2005 is also expected to be about \$1.4 billion, including bond revenue. If, because of inflation, the typical annual program increases 3.5 percent a year (the assumed inflation rate) from 2003 to 2025, the amount needed to fund the annual program increases from \$1.4 annually to approximately \$3 billion annually, more than doubling by 2025. Cumulatively, this shortfall comes to nearly \$8 billion over the period, or an average of nearly \$350 million annually. This is a conservative estimate since some of the project cost increases have recently been closer to 5 percent. Figure 7-1 illustrates the impact which the erosion in buying power has on the ability to fund a **comparable transportation program** projected to 2025.

In addition to sustaining our current program level, a variety of identified and much-needed projects have yet to be funded. At least five large freeway reconstruction and relocation projects on the corridors of highest significant (Chapter 5) have no identified revenue source for the construction phases. Other projects in these corridors are currently under study and design, and their construction will also need funding in the future. These include operational improvements, interchange construction, widening, bridge reconstruction and other improvements to portions of significant corridors beyond the parameters of the Build Michigan III projects. The total construction cost of the five freeway projects and the "study" projects is just over \$5 billion in today's dollars. We will refer to this amount as the **unfunded program**. If construction of these projects in the unfunded program is put off to 2025, their cost, because of inflation, will escalate to nearly \$11 billion. Depending on when they are undertaken during the 23 year period, funding these projects will require additional revenue averaging between \$200 to \$500 million annually.

Figure 7-1



Note: Savings due to technological change and production efficiencies, as well as increased expenses due to new federal mandates, are excluded from this simplified analysis.

As Figure 7-2 illustrates, state and federal revenues for transportation, indicated by the black vertical lines on Figure 7-2, will grow by an estimated 2.2 percent per year, yielding a little more than \$1.8 billion in total annual revenue by 2025. This falls considerably short of the cost for even the typical annual program as projected to 2025 — \$3 billion, as stated previously. It falls far short of the level of funding required to address major projects already identified on significant corridors.

Finally, beyond these identified revenue requirements, and not included in Figure 7-2, funding will be needed for additional projects to complete the modernization of our corridors of highest significance. The cost of those projects have yet to be determined. Such projects would include widening the entire lengths of interstates I-94 and I-96 to a minimum of four lanes each direction in urban areas, three lanes minimum in rural areas; widening interstate I-75 in the same manner, from the state line to the Bay City/Saginaw area; widening I-196 through greater Grand Rapids to a minimum of four lanes in each direction; and improvement and modernization of other significant corridors as traffic warrants.

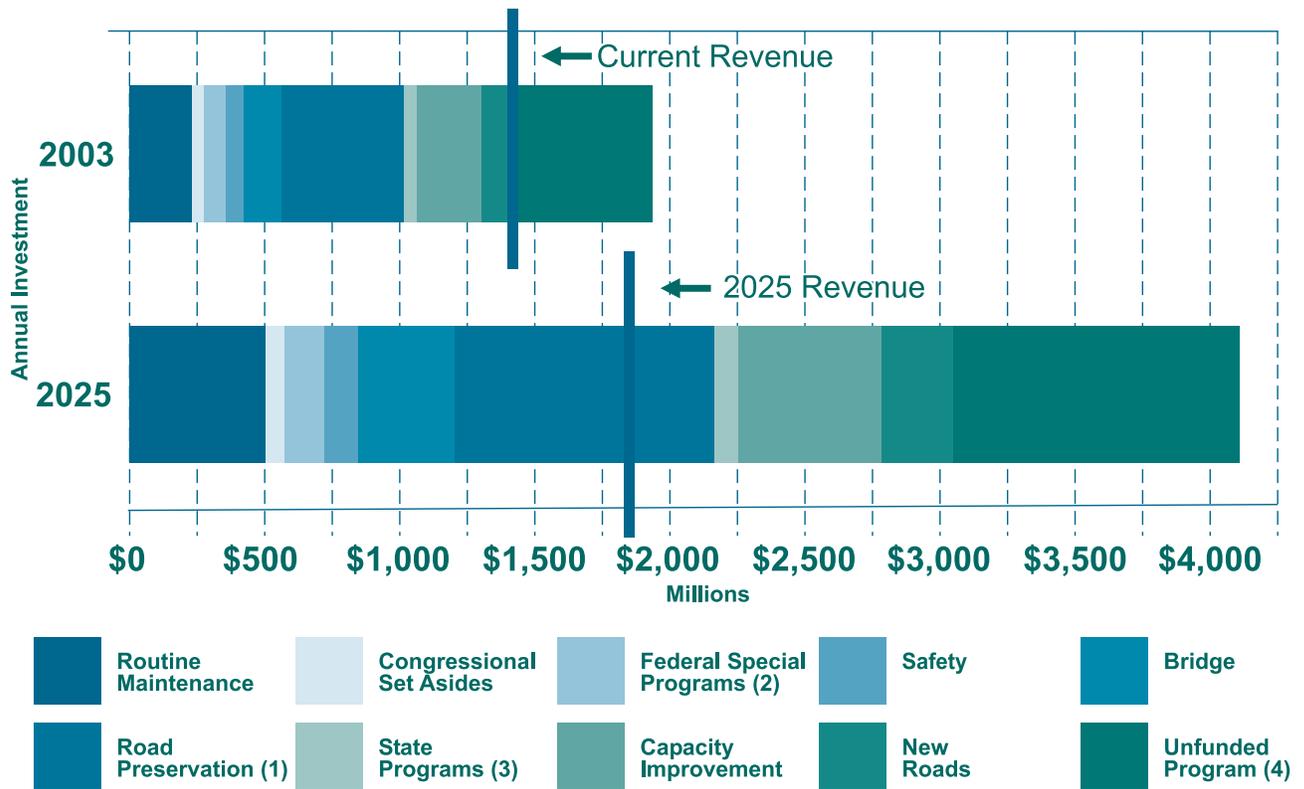
The small growth in transportation revenue each year will slowly erode our ability to fund our current program. While we will reach our condition goals of 95 percent “good” on freeways and 85 percent “good” on non-freeways by 2007, our diminished ability to fund future transportation projects may prevent us from maintaining this standard in the future. Important identified projects that must be undertaken to continue our present level of mobility are not yet funded. Moreover, without additional funding, the problem of increasing congestion on our major highway corridors will worsen in the future, with negative impact on the highway system’s ability to contribute toward mobility and economic growth.

Without increased average annual revenue of at least \$350 million in the next decade we will be unable to adequately preserve our existing system. Further, without increased average annual revenue of between \$200 to \$500 million, we will be unable to fund needed projects that have been identified and are currently being designed. Finally, funding will also be needed to undertake the complete modernization of our most significant corridors will be necessary in the decades to come if we hope to preserve our present mobility.

Figure 7-2

Road & Bridge Program and Routine Maintenance

3.5% Annual Program Inflation, 2.2% Annual Revenue



- (1) Freeway and Non-Freeway Rehabilitation & Reconstruction, CPM
- (2) CMAQ, Enhancement, Roadside, Weigh Stations, Fed RR Xing, Recreation Trails
- (3) Non Discretionary M, Advance ROW Acquisition, Program Development & Scoping, Jurisdictional Transfers, State RR Xing
- (4) Unfunded Program = Construct Research Projects + Construct of 5 Large Freeway Projects
- (5) 2025 Revenue does not include additional revenue from bonds

Aviation

Michigan’s airport system, like its highway infrastructure, makes a significant contribution to the local and state economies — more than \$10 billion annually. Airports are a significant component of an overall balanced transportation system. They provide timely and far-ranging access for businesses and others that rely upon that access to thrive in their local communities. In recent years, and particularly after the terrorist attacks of September 11, 2001, local officials, the business community, and the general public have come to recognize that airports are a vital transportation resource that opens their communities to nationwide and global economies.

MDOT’s Bureau of Aeronautics (AERO) is responsible for the overall administration of aviation

programs and airport development within the state. These responsibilities include project management for programming, planning, design, and construction of airport development projects. AERO provides assistance to communities by coordinating and developing air service. AERO enhances air transportation and state commerce by implementing the Michigan Airport System Plan (MASP), including the preservation of the existing system and expanding the system where needed to meet aviation demands.

The MASP identified those airports that best contribute to overall state goals. AERO’s staff work closely with airport authorities and local communities to encourage efforts to optimize investment in aviation resources across the state by leveraging existing revenue, seeking increased funding, and improving asset management.

State funds for aviation are supported by the state's Aeronautics Fund. Federal funds for Michigan's aeronautical programs are funded through the federal Aviation Trust Fund. The cost of keeping Michigan's airport system running safely and efficiently, and developed to meet capital needs through 2020 is estimated at \$2.3 billion. With the recent increased focus on airport security and the implementation of many new security measures, these costs are increasing. Current funding levels for capital improvements including federal, state, and local resources, total approximately \$1.4 billion over the 20-year time frame.

Aero maintains and updates a 5-year airport funding program. This program provides a view of future funding needs for each of the listed airports. Projects are prioritized and must meet federal (if applicable) and state eligibility requirements. Eligibility for federal and state supported projects (excluding Air Service Program) are as follows:

- Publicly-owned airports are eligible for federal/state/local projects if the airport is included in the National Plan of Integrated Airport Systems (NPIAS).
- Private airports are eligible under the federal program if the site is listed as a reliever in the NPIAS.
- Private airports are eligible under Aero programs if the site is in the MASP and carries a general utility license.
- Airports must adhere to an approved master plan, state and federal environmental clearances, and contractual requirements.
- Airports must agree to all federal and state grant conditions and assurances.

Funding Programs

Federal/State/Local Airport Development Program. This program is designed to be used at airports for relatively large capital improvement projects, such as new runways, runway extensions, or parallel taxiways. Funding percentages for the federal/state/local program are 90 percent federal, 5 percent state, and 5 percent local (subject to state funding limitations). In addition to capital improvement projects, master planning projects can also be funded.

An airport master plan includes a study of aviation needs and the development of an overall plan for an airport showing recommended facility development to take place over a 20-year period. The plan is

used as a tool to guide the systematic development of an airport.

State funding is not eligible as a match for land acquisition, except in participation with the acquisition of a new airport or land within a runway approach. (The definition of a new airport is a privately-owned, public-use airport acquired by a public entity.) Federal and state funds are not provided for operational maintenance of airport facilities. This is the responsibility of the airport owner.

State/Local Small Airport Development Program. This program involves state and local funds for capital improvement projects at airports. State funds are provided at 90 percent of an eligible project with the remaining 10 percent provided by local funding. Large projects that are not otherwise eligible, or projects that do not meet the appropriate priority rating to be included in the federal program are funded under this program.

State/Local Airport Development Program. This program involves matching state and local funds for capital improvement projects. State funds must be matched by local funds on a 50/50 basis.

Statewide preventive maintenance projects, such as crack sealing and pavement marking, are sponsored under this program, as well as the development of airport zoning plans. A zoning plan is prepared to ensure land use compatibility and to regulate the erection of tall structures in the airport's surrounding area. A zoning ordinance is usually developed as part of the planning process.

Loan Program. This program allows a publicly-owned airport to borrow up to \$100,000 for airport related projects. The interest rate on the plan is established annually by the state treasurer and has a six percent ceiling. Repayment is scheduled for yearly installments over a maximum 10-year period.

Loans are often used by sponsors for their local match obligations in capital improvement projects; however, a loan cannot exceed 90 percent of the sponsor's match of the project cost.

Proposed Program: Airport Safety and Protection Plan. A pending (2002) legislative initiative proposes a new plan for funding security improvements at Michigan airports. The Airport Safety and Protection (ASAP) plan, if passed by the state leg-

islature, will result in a 5-year, \$1.1 billion airport capital improvement program. Emphasis of the ASAP plan will be addressing safety and security projects at airports throughout Michigan.

The ASAP plan combines state, federal and local funds with bond proceeds to ensure new security measures are in place. These measures include controlled airport access, passenger and baggage screening, terminal modifications and employee screening.

ASAP is designed to annually invest \$6 million of the Airport Parking Tax collected at Detroit Metropolitan Airport. Five million dollars will support the issuance of \$60 million in state bonds. In turn, the bond revenue will help Michigan leverage \$160 million in federal funds each year. All funds combined will provide for a total security investment of \$1 billion over five years.

If enacted, ASAP will provide an opportunity to make what we now know is possible, in the post 9-11 world, at least less likely to occur. ASAP will place Michigan in position to maximize state and federal funding for the security of airport users.

Public Transportation

Michigan's statewide public transportation program serves its customers and partners in rail freight services and safety, marine passenger and freight services, and local and intercity bus, rail and limousine passenger services. The fundamental program objectives are to:

- Maintain the existing public transportation system to meet basic transportation needs.
- Improve or modernize the existing system to increase safety and efficiency.
- Add to the existing system where this will maintain service or where there is a current demonstrated need to upgrade the level of service.
- Make optimum use of state funds by encouraging financial participation by federal and local governments or user groups.
- Regulate certain portions of our infrastructure as authorized by state and federal legislation.
- Support Michigan's economic development through projects, in partnership with local and state governmental agencies, and private companies, to preserve and improve the state's infrastructure.

The Comprehensive Transportation Fund

The Comprehensive Transportation Fund (CTF) receives revenue primarily from the MTF, vehicle-related sales tax, and federal transportation funds. Section 9, Article 9 of the Michigan Constitution allows the CTF to receive up to 10 percent of MTF revenue after certain disbursements; currently, an effective 8.6 percent is allocated to the CTF. Pursuant to Public Act 167 of 1933, the CTF also can receive up to 27.9 percent of 25 percent of the original 4 percent sales tax on automotive-related items. These funds, along with federal grants, and some local and miscellaneous revenue, support Michigan's statewide public transportation program. MDOT also has the ability to issue bonds to finance CTF programs. Compared to other states, Michigan is sixth in the nation in the provision of state funds for local public transportation.

Bus and Rail Passenger Programs

Bus and rail passenger programs strive to provide an efficient and responsive intercity and local transportation network. This includes both local and intercity bus services and equipment, rail passenger services, vanpool and rideshare programs, as well as providing intercity bus and limousine regulatory functions. In total, these programs receive the majority of CTF revenues. The local bus operating program is the largest recipient. Public Act 51 of 1951, sets the priority of CTF expenditures. After repayment on bonds and administration costs of the fund, the first priority is the payment of local bus operating assistance to eligible agencies and authorities. MDOT provides funding to support approximately 38 percent of the urban transit agencies operating budgets and 45 percent of small and nonurban transit agencies operating budgets.

MDOT receives statutory and discretionary federal transit and Federal Railroad Administration grants for bus and rail passenger programs. MDOT provides a 20 percent match for most of these capital grants, as well as for many of the federal grants provided directly to transportation providers. MDOT also provides 50 percent of the non-federal match for urban planning study grants. The dollar amount of federal discretionary funds received by both MDOT and transportation providers varies from year to year.

Rail Freight Services and Safety Programs

Rail freight services and safety programs include local grade crossing, property management, preservation and development, Michigan Rail Loan Assistance, and rail safety regulatory functions. These programs help preserve and improve Michigan's rail infrastructure and its operational safety as we continue to make strides in state rail divestiture.

These programs also contribute to the stability and economic growth of Michigan's businesses and industries. For example, the Freight Economic Development Program provides grants and low interest loans to businesses locating or expanding in Michigan which require rail service, or to local governmental entities interested in assisting these businesses. These grants, loans, or grant/loan combinations may be for as much as 50 percent of the cost of the rail infrastructure. Priority is given to projects which can demonstrate multiple users or the potential for future public use such as spur tracks into new or expanding industrial parks or transloading facilities. The Michigan Rail Loan Assistance Program operates as a revolving fund with loans up to one million dollars per project being available. The loans can fund 90 percent of the rail portion of project costs. All projects are evaluated for their public value and the primary factors are the economic and safety value of a project as it affects the public interest. These factors include the number of jobs created or retained, the effect on rail customers and/or farmers, elimination of grade crossings, and reduction in highway congestion.

Marine

The marine program contributes capital support such as improving dock infrastructure, vessels, and support equipment to eligible service providers. MDOT provides 50 percent of the non-federal match for projects funded through the Federal Ferry Boat Discretionary program. Limited operating assistance for marine passenger service is also available through the local bus operating assistance program. MDOT also provides, by statute, up to 50 percent of the operating budgets of eligible port authorities.

Public Transportation Funding: The Next 25 Years

Based on 2002 revenues (excluding CTF bond revenues) a typical program for **state** funding for the next 25 years would be as follows:

\$103.50 million	for rail freight services and safety programs
\$ 75.00 million	for the rail infrastructure loan program
\$ 32.50 million	for marine passenger and freight programs
\$ 4.95 billion	for bus and rail passenger programs

Reauthorization of TEA-21 will set the pattern for future **federal** funding. However, determining a typical five-year program is difficult due both to Congressional earmarking and the majority of federal transit funds being granted directly to the local agencies and authorities. Michigan has historically been a donor state for federal transit funding, that is, we send more federal gas tax revenue to Washington, D.C. than we receive back.

Funding Needs

Meeting the objectives of Michigan's public transportation program will require increasing financial support, since infrastructure needs and operating needs will continue to exceed the federal, state, and local funding currently available. For example, Michigan's transit agencies operate in excess of 3,000 buses and each year an average of 1,100 buses are eligible for replacement. Current state and federal funding will only support the replacement of an average of 400 buses per year leaving 700 buses to be carried into future years for replacement funding. MDOT will support efforts to increase revenues for public transportation in the following ways:

Federal Funding

- **Seek a higher return on gas tax contributions to the Mass Transit Account of the Highway Trust Fund.** Michigan's return on contributions to the Mass Transit Account is only 40-50 percent in any given year. Michigan supports a transit equity approach that would tie transit allocations to each state's share of contributions to the Mass Transit Account, guaranteeing a return of at least 95 percent. This approach

would use additional funding, holding harmless those states receiving a larger share than they contribute to the account, while making whole those states receiving a small share.

- **Seek a higher overall funding level for transit.** A higher overall level of funding for transit would greatly assist in meeting unmet needs.
- **Pursue changes to Section 5309 discretionary funding formula.** This formula is heavily weighted to benefit areas of the nation with light and heavy rail transit systems. Buses receive only 20 percent of Section 5309 funds, while 80 percent of Section 5309 funds are used for rail modernization and starting new rail systems. A more equitable approach would be to provide equal shares for buses, rail modernization, and new starts.

State Funding

- **Additional funding to support a larger federal program.** Additional funds are also needed to develop public transit services in the 36 counties without such services. Many of these counties have specialized transportation services for seniors or disabled individuals but nothing for the general population.

Local Funding

- **Support legislation to provide different taxing mechanisms for raising funds at the local level.** The burden of funding transit is increasingly borne by state and local governments. In Michigan, approximately two-thirds of the local public transit systems are supported by local millages. Communities who seek to gain local financial support for their local transit system, by adopting millages, have been successful, which in turn allows them to attract state and federal funding. But local units of government need additional funding options to support a stable public transit system. Currently the only taxing sources being used are the property tax or the general funds of the public body. Legislation to allow other taxing mechanisms would ease the burden.

A strong federal, state, and local partnership is critical to the continued success of public transit in Michigan. This is especially true in the funding area. Stable predictable funding from all three levels of government will result in a high quality, sustainable statewide public transportation network.

Additional information about funding issues related to public transit is contained in the *Michigan Transit*

Chapter Eight

Conclusion & Major Recommendations

We provide a re-cap of the themes we have threaded throughout this document. The transportation issues and strategies identified in Michigan's State Long Range Plan: 2000-2025 lead us to identify seven major recommendations. Just as we began our process with a comparison of the state long range plan goals and the emphasis areas in federal transportation legislation, we end with an exhibit which shows how our major recommendations support the state long range plan goals.

Michigan's economic and population growth along with the love of the automobile will continue to increase the demand for transportation services. At the same time, an aging population means shifts in travel patterns and basic mobility issues. The increased flow of trade as a result of the North American Free Trade Agreement and just-in-time delivery demands will lead to increased freight and truck vehicle miles of travel, and will expand our needs for intermodalism. Changes will also continue to take place in the area of transportation technology, such as ITS and alternative fuel vehicles. In addition, we must continue to be concerned about the impact our transportation decisions have on our natural and human environment.

How do we balance competing priorities and still provide the level of mobility we enjoy today? There is not enough money available to address every transportation improvement we would like to see, but by setting goals, investing wisely, and monitoring the system's performance to ensure our investments are paying off, transportation agencies can make the best use of their resources.

Setting Goals

Michigan's *State Long Range Plan: 2000-2025* provides guidance for the investment of transportation revenue by all transportation agencies in the state. The eight goals set forth in the plan have been created with the help of a Customers and Providers Committee representing organizations from all across the state, and are consistent with the long-range plans of Michigan's metropolitan planning organizations. These goals establish a framework for the future.

The goals recommend preserving the existing transportation system; improving safety; ensuring the basic mobility of all Michigan residents to jobs, school, and health care; supporting the transportation needs of business; consolidating transportation service; coordinating passage between modes for both people and goods; protecting the environment and enhancing the traveling experience; and encouraging land use patterns that help rather than hinder effective transportation.

Preserving Michigan's outstanding transportation system to ensure appropriate mobility for the greatest number of travelers, and improving its safety and security, are two key components of this plan. The achievement of those two goals must come first as we think about future transportation investment. Achieving those goals will also help further the achievement of each of the remaining goals.

Investing Wisely

To guide investment and transportation business processes at all levels, modal strategies have been identified for every type of transportation to address issues particular to each mode and to help achieve the goals and sub-goals of this plan. From air passenger service to waterborne commerce, from high speed rail to pedestrian pathways, from local transit to the National Highway System, every travel mode in Michigan has unique issues that must be addressed.

In addition, MDOT will emphasize three key highway strategies: a scientific, data-driven asset management approach to investment; a focused, systematic approach to congestion reduction; and a corridor approach to project planning and programming, which includes investing state and federal funds in the improvement of eleven highly-used, multi-modal travel corridors. Systematic, carefully planned investment in the improvement of these "corridors of highest significance" will provide long-range benefits to every traveler in Michigan.

Monitoring System Performance

Continued monitoring of the transportation system's performance, as outlined in this plan, will help ensure that future transportation investment provides the most benefit for the users of the system, and will allow us to adjust our course if necessary in the future. The performance indicators identified in the plan, taken as a whole, will help measure progress toward the goals that have been identified.

Monitoring and measuring progress toward the goals is as much an art as a science. New information may one day be available which will foster the development of more precise indicators in the performance monitoring effort. MDOT will continue to monitor system performance and improve its performance measurement efforts in the years to come.

Accountability and Responsibility

It is the responsibility of all transportation agencies — at the state, federal, and local levels — to ensure that our limited transportation resources are wisely invested. Improved technology and increased access to information encourage public involvement in transportation decision-making and increase the accountability of transportation agencies. The mobility and safety of our future depend on a more systematic approach to transportation investment.

As required by law, the investment of federal transportation funds must be consistent with the goals and strategies of this plan. Transportation agencies must also be accountable with respect to the requirements of Government Accounting Standards Board Statement 34 (GASB Statement 34 — discussed in Chapter 7). MDOT has already embraced the asset management approach which is consistent with the requirements GASB Statement 34. Through support of the proposed Asset Management legislation (referenced in Chapter 5), MDOT seeks to extend this approach and the accountability it requires to other transportation agencies throughout Michigan.

Transportation agencies at all levels — federal, state, and local — must work as partners with each other and with the private sector. By listening to the input of the traveling public and Michigan

communities, and by continuing to provide transportation systems that support Michigan business and industry, we can ensure the continued mobility of Michigan's residents, sustain our economic prosperity, and enhance the security of Michigan's transportation systems.

Recommendations

The following recommendations are based on the information available throughout this plan and its appendices. In particular, these recommendations respond to the input of residents from across Michigan, transportation professionals, and local and state government officials. These recommendations support the goals and objectives of this plan.

1. Preserve our current mobility.

An overwhelming amount of public support for preservation of our existing system was voiced at public involvement meetings across the state. The investment we have made over the years in our transportation infrastructure is significant, and the mobility and security it provides must be preserved. Michigan was among the first states to construct a limited access freeway and some of our most highly-used freeway corridors are now aging and in need of reconstruction and modernization to keep them functioning efficiently. Other transportation systems are also in need of repair, and their preservation — or more appropriately, preservation of the level of mobility they provide — must be the first consideration of transportation agencies at all levels.

This recommendation contributes to achieving the goals of **Preservation** (by preserving current transportation infrastructure and services), **Safety** (by providing the opportunity for transportation agencies to update aging infrastructure or design), **Basic Mobility** (by preserving current levels of transportation service and mobility), and **Strengthening the Economy** (by continuing to provide the mobility and service on which Michigan businesses rely).

2. Modernize the transportation system.

One of the sentiments expressed at the public involvement meetings for this plan, and acknowledged by transportation professionals, is that we must maximize the use of the existing transportation system and existing right-of-way. By modernizing the transportation system we can increase its efficient use. Eliminating

congestion points, adding passing relief lanes where appropriate, synchronizing traffic signals, improving passenger rail speeds, and using Intelligent Transportation System technology for roads and transit, will enable us to improve traffic flow throughout the system even as the number of drivers and riders increases. Opportunities to use transportation right-of-way in new and beneficial ways will also be pursued provided they support the efficient use of the transportation system and do not impair safety. Throughout our modernization efforts, we will also continue to be sensitive to environmental concerns.

This recommendation contributes most to achieving the goals of **Preservation** (by striving for the most efficient use of our existing transportation infrastructure), **Safety** (by encouraging transportation agencies to improve or update their aging infrastructure), **Basic Mobility** (by improving the efficiency of our current systems), **Strengthening the Economy** (by improving the efficiency of transportation systems on which Michigan businesses rely), and **Intermodalism** (by using technology to improve the public's ability to make connections between modes).

3. Improve the management of our transportation assets at all levels.

Public sentiment strongly supported MDOT's asset management efforts throughout the public meetings. MDOT will continue to pursue its asset management strategy for state trunklines, and will work with local transportation providers to extend that effort to local units of government. Inherent in any asset management strategy is the need to invest funds where they will provide the biggest benefit, which speaks to public comments about recognizing transportation's link to the economy, particularly tourism, and the need to preserve and beautify our highways. Strategies outlining MDOT's corridor approach to project programming, congestion reduction efforts, access management, safety improvements, and others efforts, such as performance warranties and life-cycle costing, will be employed to further improve MDOT's management of its own infrastructure assets.

This recommendation contributes most to achieving the goals of **Preservation**, **Basic Mobility** and **Strengthening the Economy** (by making the best use of funds available for transportation and ensuring for the planned preservation of transportation assets), **Transportation Service Coordination** (by encouraging transportation providers to work

together through ongoing asset management efforts), **Environment and Aesthetics** (through strategies that address environmental impacts as part of an overall asset management approach), and **Land Use Coordination** (through strategies such as access management that control the impact of local land use on transportation infrastructure).

4. Improve the safety and security of our transportation system.

The Customers and Providers Committee included a new safety goal as part of this plan well before the attacks on September 11, 2001. There were also many comments about safety at public meetings, both before and after those tragic events. MDOT is working with the appropriate organizations specifically to improve the security of our transportation systems in the wake of those attacks, and that effort will continue. MDOT will also continue to work closely with the many other organizations involved in transportation safety efforts — including local transportation providers, the Michigan State Police, the Transportation Safety Commission, travel organizations, insurance providers, and others — as we strive to improve the system's overall safety. These improvements must take a variety of forms, and physical improvement of the infrastructure is only one way to improve safety. Appropriate enforcement and public education also play a very significant role, and a variety of emerging new technologies will also provide safety benefits in the years to come.

This recommendation contributes most to achieving the goals of **Safety** (by working to improve the safety and security of the transportation system), **Preservation**, **Basic Mobility**, and **Strengthening the Economy** (by retaining the mobility we have come to expect through improvements to security).

5. Improve intermodal connectivity between modes of transportation.

Strong public support was voiced for better connections to and between the various transportation modes, for both passengers and freight. MDOT will continue to pursue efforts to improve intermodal connectivity, including construction of intermodal freight terminals and state trunkline connections to vital intermodal facilities. Transportation agencies at all levels must be aware of the need to connect and coordinate their efforts with other modes. The approaches they take will vary, from infrastructure improvements such as providing bike racks on buses, to service improvements like coordinating bus

schedules with passenger train departures from intermodal passenger terminals. MDOT will work with local transportation providers at all levels to help develop and improve their intermodal connectivity and better integrate these alternatives with highways.

This goal contributes most to achieving the goals of **Safety and Basic Mobility** (by work to limit delays or disconnects between modes), **Strengthening the Economy** (by improving connections between modes on which Michigan businesses rely), **Transportation Service Coordination** and **Intermodalism** (by encouraging transportation providers of different modes to coordinate their services), and **Environment and Aesthetics** (by improving the efficiency and therefore encouraging greater use of modes other than motor vehicles).

6. Improve connectivity and continuity within modes of transportation.

A variety of comments supporting improved connectivity and continuity in different modes were made at the public involvement meetings. MDOT will pursue opportunities to improve the connectivity and continuity of the state trunkline system where appropriate. Local transportation providers must be aware of the public's desire to see improved connectivity and continuity in the all-season road network, in transit systems, and in local road networks.

This recommendation contributes most to achieving the goals of **Safety** and **Basic Mobility** (by reducing delays and inconvenient or confusing connections within modes), **Strengthening the Economy** (by improving connections within modes, particularly on the state trunkline and all season routes), and **Transportation Service Coordination** (by encouraging separate transportation providers of a single mode, such as county transit agencies or county road commissions, to work together to ensure the connectivity of their modes across county lines).

7. Identify revenues for the future.

Among the issues frequently raised in public meetings was the need to address truck taxation issues, and to increase revenue for transit. These issues are part of a greater concern by transportation professionals about transportation funding overall. As the use of ethanol additives and, in the future, alternative fuel vehicles increases, the means to sustain or augment current levels of transportation revenue must be identified. MDOT will continue to support state legislation introduced this year to simplify diesel tax collection,

eliminate potential revenue leaks, and achieve parity between diesel taxes and other fuel taxes. In the upcoming reauthorization of the federal Highway Trust Fund in 2003, MDOT will push for an increased and more equitable return on the revenue Michigan sends to Washington, both for highways and transit. These efforts are an appropriate start, but in the decades to come transportation officials must work closely with the private sector and the financial community to identify innovative options for transportation finance. The means to tax alternative fuels will be discussed, as will indexing fuel taxes to sustain the buying power of transportation agencies.

This recommendation contributes to every goal, because as revenue for transportation increases, the ability to address transportation issues also increases. This recommendation contributes most to achieving the goals of **Preservation, Safety, Basic Mobility**, and **Strengthening the Economy** (by encouraging sufficient funds to continue operating and improving our transportation systems), and **Environment and Aesthetics** (by encouraging sufficient funds for transportation enhancements that improve the traveling experience).

8. Implement the State Long Range Plan throughout the MDOT Regions.

The mid-range condition goals set by the Michigan Transportation Commission (for example, to have 95 percent "good" ratings on freeway pavements and 85 percent "good" ratings on non-freeway pavements, by 2007) are in the process of being attained through the action of the MDOT Regions. The Regions identify the right "mix of fixes" in their project selection process. In a similar manner, the Regions will have the responsibility of implementing many of the elements of the *State Long Range Plan: 2000-2025*.

In addition, there were other issues raised in the public involvement meetings that varied by region of the state, and these cannot all be appropriately addressed in a document written with a statewide perspective. MDOT will work with the public and local transportation providers to adapt the state long range plan into companion, regional documents. This process will be customized to each of the seven MDOT Regions: Superior, North, Grand, Bay, Southwest, University, and Metro. This effort will also help to address public comments seeking better coordination and communication among transportation providers at all levels of government.

This recommendation contributes to achieving all the goals, Preservation, Safety, Basic Mobility, Strengthening the Economy, Transportation Service Coordination, Intermodalism, Environment and Aesthetics, and Land Use Coordination (by helping MDOT staff develop a better knowledge of the particular issues that impact the provision of transportation services in each of the varied regions of the state).

Adopting these eight recommendations will enable us to move forward in to the future, confident that we can achieve the goals of the *State Long Range Plan: 2000-2025*.

Appendix A

Public Involvement

Customers and Providers Committee

In order to begin the public involvement needed to update the *State Long Range Plan: 1995 - 2015*, a group of customers and providers was called on to provide input. The purpose of the Customers and Providers meetings was to receive input on the proposed goals and objectives for the current State Long Range Plan. Input from the participants was used to modify the objectives and goals and in some instances to create new ones. This collaboration helped to create a State Long Range Plan that is a flexible and responsive planning tool for transportation customers and providers in the state of Michigan. This is in keeping with the mandate from TEA-21 that state departments of transportation, “shall provide citizens, affected public agencies, representatives of transportation agency employees, other affected employee representatives, private providers of transportation, and other interested parties with a reasonable opportunity to comment on transportation programs.”

A broad range of transportation customer and provider groups was recruited to help with this effort. Building on the public involvement program conducted for the development of the 1995 State Long Range Plan, the list of customers and providers was expanded to include a broader range of groups impacted by transportation. Groups ranging from the Michigan Commission for the Blind, the Inter Tribal Council, Detroiters Working for Environmental Justice, the League of Michigan Bicyclists, and the Rural Development Council, to name a few, participated in the series of meetings. The diversity of the groups ensured that the scope of the goals and objectives would satisfy a broad range of interests.

A total of 9 Customer and Provider meetings were held over 9 months. The initial meeting explained the purpose of the Customers and Providers advisory group, what the duties of the members would be and how their input would be used. In that meeting the goals were evaluated by the group using electronic keypad technology to gauge the range of responses and provide direction for future discussions. The next few meetings covered topics such as TEA-21, Environmental Justice, and transportation financing

to help advisory committee members understand the overall process involved in transportation planning. In subsequent meetings, each goal and set of objectives were discussed and additions, deletions and modifications were made by the consensus of input from the committee members. In addition, at each meeting a planning or transportation management tool was introduced as it related to the State Long Range Plan (SLRP). Related items such as Asset Management, the Transit Strategic Plan, the Michigan Airport System Plan, the Policy Plan for Michigan Air Service and their impact or synthesis with the SLRP were discussed.

Discussion in the meetings was moderated by MDOT staff to ensure that all participants had an opportunity to be heard. After each meeting, MDOT staff would gather to consider the suggestions made and ways to incorporate those suggestions into the goals and objectives. In between the meetings, proposed changes to the goals and objectives and drafted by MDOT staff and were sent to the advisory committee members for their review.

The Customers and Providers committee meetings significantly shaped the goals and objectives of Michigan's State Long Range transportation plan. For example, the 1995 SLRP did not include a specific goal about safety because at the time it was developed, committee members felt that safety was inherent in all of MDOT's practices and policies. The 2000 Customers and Providers group added this goal and objectives because they believed that there were specific safety issues in areas such as transit, non-motorized and on highways that should be addressed. The group also modified the objectives of various goals to either broaden them in scope or to target an area of specific concern. These modifications and additions to the goals and objectives helped to determine the thrust of the document and direction of transportation planning in Michigan for the future.

The Customers and Providers meetings were a valuable asset in creating the State Long Range Plan. The diversity of groups participating ensured that a broad spectrum of transportation users and providers had a voice in the future of transportation in Michigan. Their suggestions were heard and incorporated in the goals and objectives of the revised SLRP.

After the Customers and Providers committee's changes to the State Long Range Plan were made, the next step in the MDOT public involvement pro-

cess was to take the document to the general public for comment. To that end, an extensive series of public involvement meetings were held throughout the state.

Below is a complete list of organizations from which the members of the Customers and Providers committee were drawn:

3-C Directors Association
 AAA Michigan
 AFSCME Council
 Air Transport Association
 American Society of Landscape Architects
 Area Agencies on Aging
 Commission on Handicapper Concerns
 Commission on Spanish Speaking Affairs
 Conference of Minority Transportation Officials
 Consumers Power
 County Road Association of Michigan
 Detroit East, Inc.
 Detroit/Wayne County Port Authority
 Detroiters Working for Environmental Justice
 Environmental Community Redevelopment Program
 Flight Freedom Foundation
 I-94 International Trade Alliance
 Indian Affairs -Department of Civil Rights
 Indian Trails Incorporated
 Inter Tribal Council
 ITS Michigan
 Lake Carriers' Association
 Lansing Ministerial Alliance
 League of Michigan Bicyclists
 League of Women Voters of Michigan
 MASSTrans
 Michigan Asphalt Paving Association
 Michigan Association of Regions
 Michigan Association for Pupil Transit
 Michigan Association of Counties
 Michigan Chamber of Commerce
 Michigan Commission for the Blind
 Michigan Concrete Paving Association
 Michigan Council for the Arts and Cultural Affairs
 Michigan Department of Natural Resources
 Michigan Department of Education - Office of School Support Services
 Michigan Disability Rights Coalition
 Michigan Environmental Council
 Michigan Farm Bureau
 Michigan Manufacturer's Association
 Michigan Municipal League
 Michigan Office on Aging
 Michigan Public Transit Association
 Michigan Railroads Association
 Michigan Road Builders Association

Michigan Township Association
 Michigan Trucking Association
 Michigan United Conservation Clubs, Inc.
 Michigan State Conference of NAACP
 National Asphalt Paving Association
 Parrish & Heimbecker, Inc.
 Rails-to-Trails Conservancy of Michigan
 Traffic Safety Association of Michigan
 United States Department of Agriculture - Rural Development Council
 Urban League of Greater Lansing

Ex-Officio

Federal Transit Administration
 Federal Highway Administration
 Passenger Services Division, MDOT - UPTRAN

Public Involvement Meetings

The purpose of the public involvement meetings was to (1) gain public input regarding the State Long Range Plan, (2) compare public input with existing and potential strategies, and (3) assist in designing the State Long Range Plan to be a flexible and responsive document. Initially, 23 meetings were held throughout Michigan to obtain public input to the State Long Range Plan. An average of three meetings were held in each MDOT region with at least two, and a maximum of five, being held in any one region. An average of 21 persons participated in each meeting. Participants included elected officials, transportation officials, business representatives, and the general citizenry. An additional seven meetings were later held around the state at the request of other constituent groups.

Nine major themes, based on comments that predominated in number and reoccurrence in the various regions, emerged from these public meetings. While there were several themes (35 in all) identified for each of the eight State Long Range Plan goals, the major themes (1) focused on six of these goals, (2) addressed all transportation modes and (3) varied in importance depending on the part of the state. These consisted of the following:

- Improve existing transit service (basic mobility goal). This includes schedules & routes, and fixed-route, demand response service and specialized transit.
- Beautify Michigan's highway system (environment & aesthetics goal). This includes architec-

tural bridge columns, roadside & interchange landscaping, community and state entranceways, and billboard control.

- Provide better connections to air, intercity bus, and intercity rail systems (intermodalism goal). This includes improving facilities such as the passenger terminals.
- Improve non-motorized facilities (intermodalism goal). This includes biking facilities, sidewalks, better connections, safety, bicycle racks on buses, and additional funding.
- Continue asset management efforts (preservation goal). This includes maintenance of the existing transportation system, preserving the existing system before expanding, not building more than one can afford to maintain.
- Preserve or develop transportation corridors (preservation goal). This includes multi-modal, roadside facilities, and international trade corridors in addition to traditional highway corridors.
- Assure provision of reliable local transit and intercity passenger systems (strengthening the State's economy goal). This includes local transit, intercity bus, and intercity passenger rail services that run on-time, all-the-time.
- Provide a unified transit system (transportation services coordination goal). This includes intercounty connectivity, rural to rural, private sector and public sector transit, and coordination among providing agencies.
- Improve coordination and communication between jurisdictions (transportation services coordination goal). This applies to the state, county, and local governmental levels.

The major themes emphasized some goals more than others. Two pertained to the preservation goal with the emphasis being to adequately maintain the existing system, avoid building more than can be maintained, and apply the corridor approach in this preservation and development process. In essence, this amounts to asset management; that is, managing transportation assets in an effective, efficient, and reliable manner. Two additional themes addressed the concept of intermodalism. This includes access to, and interconnecting with, the various freight or passenger modes including non-motorized transportation.

The major themes addressed, directly or indirectly, all of the transportation modes. Many pertained to the highway system including highway beautification, asset management, corridor development, and coordination/communication among jurisdictions.

Some pertained to intercity passenger services such as better connections and reliable service, and to a lesser extent asset management. To varying degrees, four of the themes addressed transit: (1) improving existing transit service, (2) providing a unified transit system, (3) accommodating non-motorized transportation on buses, (4) better coordination and communication between jurisdictions. One addressed non-motorized transportation specifically. Freight transportation is addressed to some extent in the asset management and corridor preservation/development themes, as well as by the idea of improved intermodal connections. As MDOT has made a concerted effort in recent years to preserve the existing trunkline system, the comments may have focused less on highways than might be expected in a state where the predominant travel mode is the automobile.

Some major themes were apparent throughout Michigan, whereas others appeared to be more important in some MDOT regions than others. Asset management was a focus statewide as were preserving and developing transportation corridors, improving non-motorized facilities, providing a unified transit system, and inter-jurisdictional coordination and communication. On the other hand, improving local transit service, providing better connections to intercity transportation systems, and providing reliable local transit and intercity passenger systems appeared to be more of an issue in the southern half of the lower peninsula. Beautifying Michigan's highway system was also more of an issue in the southern half of the lower peninsula.

A wide range of topics were represented by the public meeting comments. Major topic groups included access management, aesthetics, aviation, all-season network, bridges, communication, connectivity, coordination, impact fees, environment, highway concerns, intermodal concerns, ITS, marine transportation, non-motorized transportation, passenger rail, rail freight, transit, trucks, specific projects, driver education, and aging population. The number of comments associated with these topic groups ranged from 11 for bridges and 15 for trucks to 153 for coordination and 185 for transit.

Comments are summarized in the following pages.

Comments Obtained at the State Long Range Plan Meetings

Key Message	Bay Region- 73 ¹	Grand Region- 230	Metro Region- 115	North Region- 124	Southwest Region- 158	Superior Region- 245	University Region- 322	Statewide- 1267 ²
Basic Mobility								
Improve existing transit service (schedules & routes; fixed-route, demand response and specialized transit)	■		■	■			■	■
Provide adequate access to medical, employment, and education opportunities		■			■	■	■	
Provide adequate funding for transit service			■	■	■	■		■
Fiscally constrain transit service (benefit/cost)								
Environment & Aesthetics								
Beautify Michigan's highway system (architectural bridge columns, roadside & interchange landscaping, community and state entrance-ways, billboard control)		■	■	■	■	■	■	■
Better control drainage from transportation facilities to protect ground water							■	
Balance environmental concerns with cost (benefit/cost)				■		■		
Intermodalism								
Better connects to air, intercity bus and intercity rail systems including improved facilities	■		■	■	■		■	■
Better integrate alternative modes with highways (improve corridor capacity, modal choice)		■	■	■	■	■	■	■
Provide more carpool/park & ride parking lots		■						
Improve non-motorized facilities (additional facilities, sidewalks, better connections, safety, bike racks on buses, additional funding)		■	■	■	■	■	■	■
Add or improve passenger rail service (especially light/high speed rail)		■	■		■		■	■
Land Use Coordination								
Control and coordinate development adjacent to transportation infrastructure (housing near freeways and airports, sprawl, freeway noise)	■	■		■	■	■	■	■
Require developers to financially participate in providing the transportation infrastructure needed to serve their development (impacts fees)			■					
Design community land use patterns so transit can better serve them				■				
Support efforts to implement access management (control number & location of driveways, alternate road access)		■			■			

- Key message reported in the SLRP meetings to be relevant (2-5% of comments) in the region.
 - Key message reported in the SLRP meetings, a predominate issue (greater than 5% of the comments) in the region.
- ¹The numbers in the column headings are the numbers of coments received at the public meetings held in that region.
- ²Reported if at least four out of seven regions had comment recorded.

Comments Obtained at the State Long Range Plan Meetings

Key Message	Bay Region- 73 ¹	Grand Region- 230	Metro Region- 115	North Region- 124	Southwest Region- 158	Superior Region- 245	University Region- 322	Statewide- 1267
Preservation								
Maximize use of existing system where possible to accommodate future development (ITS, HOV lanes, passing lanes, congestion pricing, consider alternatives before expanding)								
Continue asset management efforts (improve maintenance of the existing transportation system, preserve the existing system before expanding, don't build more than can afford to maintain)								
Maintain and improve signs, signals, and pavement markings								
Maximize use of existing rights-of-way (for highways, railroads and trails, and other uses such as utilities and businesses)								
Preserve or develop transportation corridors (multi-modal, roadside facilities, international trade corridors)								
Preserve or add passing relief lanes								
Address truck weight, taxation, and enforcement issues								
Safety								
Institute driver-related safety measures (driver education, testing, and licensing)								
Improve crossing safety (railroad, non-motorized, pedestrian, snowmobiles)								
Strengthening the State's Economy								
Improve or expand the all-season network								
Improve local roads (connectivity, additional funding)								
Assure the provision of reliable local transit and intercity passenger systems								
Continue to develop a transportation system that promotes tourism (one that serves Michigan tourist attractions and has elements that are by themselves tourist attractions)								
Improve freight shipping alternatives (airport, ports, rail terminals) and connectivity								
Better consider business needs in planning effort (public involvement, construction work)								
Improve navigation system (waterway dredging, locks development)								
Transportation Services Coordination								
Provide a unified transit system (urban to rural, county to county, private sector and public sector, among providing agencies)								
Improve coordination and communication between jurisdictions (state, county, local)								
Improve coordination and communication with the general public (information to travelling public)								

Coordination with Metropolitan Planning Organizations

To ensure coordination between the State Long Range Plan and the MPO Long Range Plans adopted over the past several years, MDOT staff presented information to the MPO Technical Advisory Committees (TACs) in the month of February, 2002.

MDOT's Statewide Planning Division provided each MPO with a list of trunkline projects, corridors and studies from within their Metropolitan Area Boundary (MAB) that are part of a group that had been identified for consideration in the SLRP. They were asked to review this list to see if there was anything highly important to their area that was missing from the list. The SLRP is not primarily a list of projects but MDOT intended to identify some high profile projects and corridors as part of the report.

The final decision as to what was included in the plan ultimately rested with the Director of MDOT and the State Transportation Commission.

The TACs were requested to review the list and notify the MPO staff if there were any major omissions. This list was not intended to be adopted/approved by the Committees. It was used as an indication of the important trunkline projects/corridors/studies in their areas. The MPO LRPs already contain all of the projects in MDOT's 5 Year Road and Bridge Program, so these projects were not a subject of this review process.

This review was a high level look at the trunkline activities within the MPO areas. Additional input and coordination will be requested from these agencies as part of the development of the individual Regional Long Range Plans by each of the MDOT Regions.

Appendix B

Michigan Transit Strategic Plan

Summary of Goals and Initiatives

Public Transit Mission: To improve the quality of life of Michigan residents by providing safe, efficient, responsive, and reliable public transit service that integrates into an overall transportation system.

Strategic Plan Vision: The Michigan Transit Strategic Plan for 2000-2020 strives for public transit to provide services that meet the mobility needs of all Michigan citizens.

The Michigan Transit Strategic Plan is based on four primary goals:

1. **Increase Cooperation within the Transit Community:** Transit in Michigan is provided by individual public, private, and non-profit organizations. Respective agencies provide service at state, regional, municipal, and local levels. The Michigan transit community believes that enhanced cooperation between the multiple providers could improve service and intermodal and regional connections, resulting in enhanced public support.
2. **Remove Barriers to Transit Use:** Transit passengers oftentimes face barriers to their mobility when they use transit between cities and regions; when they link transit with other modes; and when they are unaware of the full range of transportation options. Michigan transit seeks to remove these barriers through regional and intermodal mobility, internal and external communications, and coordination of transit resources.
3. **Provide Effective Transit Services:** Michigan transit seeks to improve utilization of existing resources and incorporate new technology to provide effective transit services.
4. **Ensure Adequate Funding:** Providing transit for the citizens of Michigan requires a predictable and sufficient funding base to meet increasing service needs. Michigan transit seeks to secure locally generated funds, coordinate transportation funds from multiple sources, and obtain continued and predictable state support.

Initiatives

Nine initiatives were selected for the 2000-2020 Michigan Transit Strategic Plan. These initiatives were grouped into five major categories: legislative; regional and intermodal; internal and external communication; transit efficiency and effectiveness; and land use coordination. These initiatives complement MDOT's overall planning efforts that are included in the State Long Range Plan (SLRP). The goals included in the SLRP are: service coordination; land use coordination; provide basic mobility; preserve systems appropriately; promote intermodalism; protect the environment and aesthetics; strengthen the economy; and promote safety.

A summary of the Transit Strategic Plan initiatives is as follows:

Legislative

Coordination of Funds at the State Level

Background:

There are funds for transportation throughout the state budget (e.g., for social services programs and employment). However, synergy between state departments on priorities would help to remove barriers to effective utilization of transportation funds at the local level. In some cases, public and nonprofit agencies may provide transportation services in an uncoordinated and duplicative fashion; in others, agencies expect services from public transit providers without engaging them in their planning process. It appears that coordination of transportation resources at the state level requires legislative action to foster effective coordination at the local level.

Initiative:

Build on efforts to coordinate transportation funds at the state level. In addition, Michigan transit will foster support for such coordination within the transit community and among other interests at the local level.

Budget Operating Assistance over a Multi-year Period

Background:

Year-to-year uncertainty in state funding for local transit was identified as an obstacle to planning local transit service.

Initiative:

Transit in Michigan will seek to establish year-to-year predictability in state transit funding. Four options that will be analyzed to accomplish this initiative are:

- Adoption of a more predictable formula so annual funding is tied more closely to the economy;
- Dissemination of Comprehensive Transportation Funds (CTF) budget forecasts by the Michigan Department of Management and Budget so transit agencies can better estimate funding levels;
- Multi-year authorization bills that will provide funding targets for several years; and
- Two-year legislative budgeting cycle, which would provide funding stability for two years rather than one.

Funding Alternatives**Background:**

The burden of funding transit is increasingly borne by local and state governments. Additional funding options would help local areas make up for the decline in other sources of funding for public transportation. In 1997, 45 of 72 public transit agencies were locally supported by property tax millage. The remaining 27 agencies are supported by local general funds.

Initiative:

Provide information and support to transit agencies regarding available options for expansion of local funding. One alternative is reorganization under an authorizing act that offers greater options regarding generation of local revenue. When opportunities arise, Michigan transit will seek additional ways to levy taxes. It will also work cooperatively with transit from other states to revise policies for the equitable distribution of federal transit funds.

Regional and Intermodal**Regional Coordination of Transit Provision - State****Background:**

The strategic planning process identified the cooperation of existing local public, private, or non-profit transit organizations as a way to provide a base level of transit service where it is currently lacking and to bridge jurisdictional boundaries to provide regional transit mobility.

Initiative:

Establish a statewide task force to determine how to coordinate service on a regional basis and establish how financial incentives will be initiated. The task force is responsible for:

- Developing a process for organizing regional public transportation, including the delineation of local boundaries and service areas for regional cooperation;
- Defining appropriate roles for public agencies, non-profit organizations, and private for profit providers, including intercity bus carriers, in assuring regional mobility;
- Establishing a mechanism for funding regional transportation that does not favor any particular entity;
- Seeking sustained financial incentives for regional cooperative initiatives;
- Involving representatives of the stakeholder groups in order to increase their commitment to the regional planning process;
- Defining a base level of transit service and forging collaboration between existing public, private, and non-profit providers to ensure that level of service is provided; and
- Developing intermodal initiatives to facilitate connection between intercity and local public transit. An intercity transit ridership survey will be conducted in an effort to rationalize intercity bus routes.

Regional Transportation - Local**Background:**

Input from focus groups, surveys, and the Strategic Planning Oversight Team highlighted difficulties with the provision of regionally organized transit in Michigan. While there appear to be political and fiscal barriers to effective regional public transportation, there are no apparent legislative barriers.

Initiative:

Provide information from the efforts of the task force, as well as support to local agencies to promote the provision of regional public transportation task force. Agencies already providing regional service will assist in sharing technical and political know-how in the provision of regional public transit.

Internal and External Communication

Coordinated Information Sources

Background:

Efforts to improve and coordinate service are of little use if potential passengers are unable to learn how to use and connect the different services available to reach their destination. Making comprehensive information on transit services available will help to provide seamless transportation.

Initiative:

Providing a “clearinghouse” information resource on transit services will improve communication within the transit community and promote transit ridership. Efforts to make full use of information technologies, including the Internet and intelligent transportation systems, will be made.

Communication within the Transit Community

Background:

Creating a culture of open communication and mutual trust needs to be generated within the transit community. This will lead to development of a unified voice for transit advocacy within the state of Michigan.

Initiative:

Develop forums, led by professional facilitators, to improve communication and foster cooperation within the transit community, leading to a unified voice for transit advocacy. Mutual reliance and interest are also expected to generate joint endeavors between various elements of the transit community in the state.

Transit Efficiency and Effectiveness

Transit Efficiency and Effectiveness

Background:

Measuring and increasing transit efficiency and effectiveness needs to be addressed as part of the Strategic Plan. Incorporating efficiency and effectiveness measures in incentive-based programs would be one way to encourage transit

agencies to increase performance. Other initiatives, notably those addressed previously in this document, would help transit agencies better utilize existing resources and thereby increase efficiency and effectiveness.

Initiative:

Develop common indicators of transit efficiency and effectiveness that can be used by transit providers, funding agencies, and other entities to measure performance. These indicators will help transit agencies evaluate their performance based on their past practice, as well as with “peer” transit agencies. Incorporating appropriate measures into incentive-based programs to reward improvement in efficiency and effectiveness will be considered.

Land Use Coordination

Transit and Land Use Coordination

Background:

One of the major goals of the Michigan Department of Transportation State Long-Range Plan (SLRP) is to “Coordinate local land use planning, transportation planning, and development to maximize the use of existing infrastructure, increase the effectiveness of investment, and retain or enhance the vitality of the local community.” Transit can contribute to accomplishment of this goal. Some developments make it difficult for transit operators to design effective service leaving potential passengers with little choice but to use an automobile for access to goods and services. Other developments are designed in a way that transit can serve easily, providing effective transportation for a variety of populations and destinations. Considering transit accessibility when making land use decisions can improve the transportation alternatives available to people and increase transit ridership.

Initiative:

Develop educational materials that describe how to integrate transit into land use decisions. Initiate cooperative creation of model zoning and local ordinances to facilitate transit oriented development and land use. Promote inclusion of transit agencies in land use planning from development of master plans to site plan review. Request Regional Planning Agencies to develop a regional transit plan.

Appendix C

Michigan Airport System Plan - Summary

The Michigan Airport System Plan (MASP 2000) documents the planning process that identifies the aviation role of public use airports in Michigan through the year 2020. MASP 2000 presents the results of a system planning process that has been aligned with the goals and objectives of MDOT's State Long Range Plan. The plan supports programming decisions and is useful in evaluating programming actions related to airport system and airport facility deficiencies.

Among the key functions of the MASP 2000 was identifying those airports that can best respond to state goals and objectives. To this end, all airports, were assigned to one of three tiers based on their contribution to state goals. Tier 1 airports respond to critical/essential state airport system goals. These airports should be developed to their full and appropriate level. Tier 2 airports complement the essential/critical state airport system and/or respond to local community needs. Focus at these airports should be on maintaining infrastructure with a lesser emphasis on facility expansion. Tier 3 airports duplicate services provided by other airports and/or respond to specific needs of individuals and/or small businesses. A series of system goals were identified as an outcome of an issue identification process related to the State Long Range Plan. The system goals are:

- Airports should serve significant population centers
- Airports should serve significant business centers
- Airports should serve significant tourism/convention centers
- Airports should provide access to the general population
- Airports should provide adequate land area coverage
- Airports should provide adequate regional capacity, and
- Airports should serve seasonally isolated areas.

In addition to establishing system goals, a series of facility goals were developed that identify the basic components of an airport. These facility goals are specific for each airport classification.

These are:

- Primary runway system
- Pavement condition
- All weather access
- Year round access
- Basic pilot and aircraft services
- Airport zoning
- Navigational aids
- Instrument approaches
- Surface Access

For more information, please visit the following website: <http://www.michigan.gov/aero/> and select *Forms & publications*.

Appendix D

Policy Plan for Michigan Air Service - Summary

Why develop a Policy Plan for Michigan Air Service? Recognizing that air service affects local economies, demographics, and business locations, the Policy Plan for Michigan Air Service (PPMAS) defines the public role in this highly-visible form of public transportation operated by the private sector for profit. The plan identifies three development considerations:

- Assure the appropriate distribution of air service to support and promote economic development statewide.
- Assure the appropriate distribution of air service to support quality of life for Michigan residents and visitors by providing access to the national air transportation system.
- Match a community's air service to the level which it can profitably support.

The PPMAS identifies those areas where the Michigan Department of Transportation (MDOT) has an opportunity to positively affect the provision and use of air services throughout Michigan.

PPMAS, adopted by the Michigan Aeronautics Commission in March 2001, will be used by MDOT to modify the Air Service Program as appropriate. The policy plan sets the stage for identifying and implementing those initiatives that will further enhance the availability and use of air services throughout Michigan. Policy plan goals addressing transportation services coordination, land use coordination, basic mobility, preservation, intermodalism, environment and aesthetics, strengthening the State's economy, and safety are presented in this report. As an outcome of the PPMAS process, three overall policies have been established. These are:

- The 18 Michigan airports with scheduled air service are geographically well situated and meet Michigan Service Needs within the service threshold of 60 minutes or less surface travel time without the need to add additional airports. This will be monitored to assure that needed future demand at individual airports is reasonably accommodated.
- Although the 18 Michigan airports with scheduled air service are geographically well situ-

ated and meet Michigan Service Needs, some airports have deficiencies in meeting the policy plan consideration of matching the community's air service to the level which it can profitably support. Therefore, steps will be taken through the Michigan Air Service Program and other appropriate sources to retain and/or improve quality air service at selected, existing airports to meet specific travel demands integral to business, tourism/convention, population center, and general population access needs.

- To continue to meet PPMAS goals, scheduled air service at the 18 Michigan air service airports should be retained, working within available resources. The PPMAS process utilized a team representing a wide variety of statewide and national organizations with an interest in Michigan air service. The steering committee identified air service issues from different perspectives, including airlines, airports, regulatory, and service needs. These were further examined from a customer's perspective by utilizing results from a 2000 airline passenger survey conducted at Michigan airports.

The blending of these various perspectives resulted in the policy plan goals identified in the PPMAS report. These goals are aligned with MDOT's State Long Range Plan, a policy-oriented document which guides transportation investment decisions and strategies through the year 2025.

For more information, please visit the following website: <http://www.michigan.gov/aero/> and select *Forms & publications*.

Appendix E

Directory MDOT Region and TSC Offices

Bay Region

55 E. Morley Drive, Saginaw, MI 48601
Fax 989-754-8122
989-754-0878

Bay Region Transportation Service Centers (TSCs)

Bay City

2590 E. Wilder Road
Bay City, MI 48706
Fax 989-671-1530
989-671-1555

Cass City

6867 E. Cass City Rd.
Cass City, MI 48726
Fax 989-872-4464
989-872-3007

Davison

9459 Lapeer Rd.
Davison, MI 48423
Fax 810-653-1248
810-653-7470

Mt. Pleasant

1212 Corporate Drive
Mt. Pleasant, MI 48858
Fax 989-775-6329
989-773-7756

Grand Region

1420 Front Avenue, NW, Grand Rapids, MI 49504
Fax 616-451-0707
616-451-3091
Toll Free 866-815-6368

Grand Region Transportation Service Centers (TSCs)

Grand Rapids

1420 Front Avenue, NW
Grand Rapids, MI 49504
Fax 616-451-0707
616-451-3091

Howard City

19153 W. Howard City-Edmore Rd
Howard City, MI 49329
Fax 231-937-2281
231-937-7780

Muskegon

2225 Olthoff Dr.
Muskegon, MI 49444
Fax 231-777-3621
231-777-3451

Metro Region

18101 W. Nine Mile Road, Southfield, MI 48075
Fax 248-569-3103
248-483-5100

Metro Region Transportation Service Centers (TSCs)

Detroit

723 Rosa Parks Boulevard
Detroit, MI 48216
Fax 313-965-6340
313-965-6350

Macomb

38257 Mound Rd.
Sterling Heights, MI 48310
Fax 586-978-8075
586-978-1935

Oakland

2300 Dixie Hwy, Suite 300
Waterford, MI 48328
Fax 248-451-0125
248-451-0001

Port Huron

2127 11th Ave.
Port Huron, MI 48060
Fax 810-985-5042
810-985-5032

Taylor

25185 Goddard
Taylor, MI 48180
Fax 313-295-0822
313-375-2400

North Region

927 D & M Drive, Gaylord, MI 49735
Fax 989-731-0536
989-731-5090
Toll Free 888-304-6368

North Region Transportation Service Centers (TSCs)

Alpena

1540 Airport Rd
Alpena, MI 49707
Fax 989-354-4142
989-356-2231
Toll Free 877-404-6368

Cadillac

100 E. Chapin
 Cadillac, MI 49601
 Fax 231-775-0301
 231-775-3487 or
 Toll Free 800-943-6368

Grayling

1680 Hartwick Pines Rd.
 Grayling, MI 49738
 Fax 989-344-8403
 989-344-1802
 Toll Free 888-811-6368

Traverse City

2084 US-31 S., Ste. B
 Traverse City, MI 49684
 Fax 231-941-1512
 231-941-1986 or
 Toll Free 888-457-6368

Southwest Region

1501 E. Kilgore Road, Kalamazoo, MI 49001
 Fax 616-337-3909
 616-337-3900

Southwest Region Transportation Service Centers (TSCs)**Coloma**

3880 Red Arrow Hwy.
 Benton Harbor, MI 49022
 Fax 616-849-1227
 616-849-1165
 Toll Free 877-321-6368

Kalamazoo

1501 E. Kilgore Rd.
 Kalamazoo, MI 49001
 Fax 616-337-3916
 616-337-3917
 Toll Free 877-320-6368

Marshall

15300 W. Michigan Ave.
 Marshall, MI 49068
 Fax 616-789-0688
 616-789-0592
 Toll Free 877-324-6368

Superior Region

1818 Third Avenue North, Escanaba, MI 49829
 Fax 906-789-9775
 906-786-1800

Superior Region Transportation Service Centers (TSCs)**Crystal Falls**

120 Tobin-Alpha Rd.
 Crystal Falls, MI 49920
 Fax 906-875-6264
 906-875-6644
 Toll Free 866-584-8100

Escanaba

1818 3rd Ave. North
 Escanaba, MI 49829
 Fax 906-989-9775
 906-786-1800 or
 Toll Free 888-414-6368

Ishpeming

100 S. Westwood Dr.
 Ishpeming, MI 49849
 Fax 906-485-4878
 888-920-6368

Newberry

14113 M-28
 Newberry, MI 49868
 Fax 906-293-3331
 906-293-5168
 Toll Free 866-740-6368

University Region

4701 W. Michigan Avenue, Jackson, MI 49201
 Fax 517-750-4397
 517-750-0401

University Region Transportation Service Centers (TSCs)**Brighton**

10321 E. Grand River, Ste. 500
 Brighton, MI 48116
 Fax 810-227-7929
 810-227-4681

Lansing

1019 Trowbridge Rd.
 East Lansing, MI 48823
 Fax 517-324-0294
 517-324-2260

Jackson

2750 Elm Rd.
 Jackson, MI 49201-6802
 Fax 517-780-5454
 517-780-7540

Appendix F

Directory - Metropolitan Planning Organizations

Mr. Sandeep Dey, Executive Director
West Michigan Shoreline
Regional Development Commission
P.O. Box 387
Muskegon, MI 49443-0387
(231) 722-7878
Fax: (616) 722-9362
E-mail: sdey@wmsrdc.org

Mr. Gerald Felix, Executive Director
Grand Valley Metro Council
40 Pearl St., NW, Ste. 410
Grand Rapids, MI 49503-3027
(616) 776-3876
Fax: (616) 774-9292
E-mail: felixg@gvmc.org

Ms. Julie Hinterman, Principal Planner
Genesee County Metropolitan Planning Commission
1101 Beach Street, Room 223
Flint, MI 48502-1470
(810) 257-3010
Fax: (810) 257-3185
E-mail: jhinterman@co.genesee.mi.us

Mr. Paul Tait, Executive Director
Southeast Michigan Council
of Governments
535 Griswold Street, Suite 300
Detroit, MI 48226
(313) 961-4266
Fax: (313) 961-4869
E-mail: tait@semcog.org

Ms. Pat Karr, Executive Director
Battle Creek Area Transportation Study
Springfield Municipal Building
601 Avenue A
Springfield, MI 49015
(616) 963-1158
Fax: (616) 963-4951
E-mail: bcatsmpo@aol.com

Mr. Charles Reisdorf, Executive Director
Region 2 Planning Commission
Jackson County Tower Building
120 W. Michigan Avenue
Jackson, MI 49201
(517) 788-4426
Fax: (517) 788-4635
E-mail: creisdorf@region2planning.com

Mr. Jon Coleman, Executive Director
Tri-County Regional Planning Commission
913 W. Holmes Road, Ste. 201
Lansing, MI 48910
(517) 393-0342
Fax: (517) 393-4424
E-mail: tcrpc@acd.net

Ms. Judy Lammers, Executive Director
Southwestern Michigan Commission
185 East Main Street, Suite 701
Benton Harbor, MI 49022
(616) 925-1137
Fax: (616) 925-0288
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Mr. William Wright, Director
Saginaw County Metropolitan Planning Commission
400 Court St.
Saginaw, MI 48602
(989) 797-6800
Fax: (989) 797-6809
E-mail: scmpc@voyager.net

Mr. Gary Stanley, BCATS Director
Bay County Planning Department
515 Center Ave.
Bay City, MI 48708
(517) 895-4110
Fax: (517) 895-4068
E-mail: gstan99@yahoo.com

Mr. Jon Start, Acting Director
Kalamazoo Area Transportation Study
3801 E. Kilgore Rd.
Kalamazoo, MI 49001-5534
(616) 343-0766
Fax: (616) 381-1760
E-mail: katsmpo@aol.com

Ms. Sue Higgins, Executive Director
Macatawa Area Coordinating Council
400 - 136th Ave., Ste. 416
Holland, MI 49424
(616) 395-2688
Fax: (616) 395-9411
E-mail: sus@freenet.macatawa.org

Mr. Anthony L. Reams, President
Toledo Metropolitan Area Council of Governments
300 Central Union Plaza
Toledo, Ohio 43602
(419) 241-9155
Fax: (419) 241-9116
E-mail: reams@tmacog.org

Note: Monroe, MI 3C Area is part of the Toledo Urbanized Area, but is under the SEMCOG MPO

Glossary of Terms & Abbreviations

Act 51 - Michigan Public Act 51 of 1951 as amended, which establishes and governs the distribution of funding for maintenance, preservation and improvement of transportation facilities at the state, county and city level, and establishes legal responsibilities for transportation systems.

Access Management - The process of providing and managing access to land development while preserving the flow of traffic in terms of safety, capacity, and speed.

Air Carrier (Commercial Service) Airport - An airport providing commercial scheduled air passenger service and having 2,500 or more enplaned passengers per year. (NTS)

Airport - A landing area regularly used by aircraft for receiving or discharging passengers or cargo. (NTS)

Airport Authorities - Appointed or elected officials overseeing operation of an airport.

Airport Zoning Act - Michigan law which authorizes specific zoning requirements surrounding airports.

All-Season Roads - Roads that are not subject to seasonal weight limitations during the spring thaw.

Americans with Disabilities Act (ADA) - Federal law requiring that disabled persons, as defined by the act, must have equal access to employment, public services, public facilities or telecommunications by reason of their disability; as it relates to transportation facilities and services this includes such elements as removal of physical barriers in public facilities like rest areas, buses, trains, pedestrian facilities and intermodal passenger facilities.

Asset Management - The process of strategically managing the transportation system in a cost-effective, efficient manner. It consists of five major elements: developing policy goals and objectives; data collection; planning and programming; program delivery; and monitoring and reporting results. The asset management approach emphasizes the preservation, upgrading, and timely replacement of highway and other transportation assets through cost-effective planning and resource allocation decisions.

Annual Average Daily Traffic (AADT) - The total number of vehicles passing a given location on a

roadway over the course of one year, divided by 365 (days in a year).

Bikeway - Any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes, as defined by the American Association of State Highway and Transportation Officials (AASHTO).

Bridges - Highway bridges are those that carry automobiles and trucks; non-highway bridges are those that carry pedestrians and trains. Bridges are 20 feet or more in length; culverts are less than 20 feet.

Capital Assistance - Funds specifically for the purchase of structures and equipment such as roads, bridges, maintenance facilities, buildings, equipment, and vehicles.

Cargo Port - A marine port where cargo is loaded onto a vessel or unloaded from a vessel.

City Streets - Roads under the jurisdiction of a city, town or village.

Clean Air Act Amendments of 1990 - Federal legislation which outlines steps that must be taken to reduce emissions from vehicles, factories, and other pollution sources in areas identified as having the worst air pollution.

Commuter Rail - Local and regional passenger train operations between a central city, its suburbs and /or another central city using diesel-electric or electrically propelled trains operating over existing railway trackage. Riders typically board trains at a suburban station and go to a central city work location. Usually heavy inbound traffic in the morning to the central business district and heavy outbound in the late afternoon. The service may be either locomotive hauled or self-propelled and is characterized by multi-trip tickets, specific station-to-station fares, railroad employment practices, and usually only one or two stations in the central business district.

Comprehensive Transportation Fund (CTF) - A fund derived from state gas tax, vehicle registration and other fees as authorized by Act 51, used for the provision of public transportation purposes.

Controlled Access - The limitation of direct driveway access to a roadway through permits, restrictions, or the use of service drives; used to improve aesthetics and limit accidents and congestion along a busy roadway.

Corridor - A linear grouping of metropolitan areas and markets that, by their proximity and configuration, lend themselves to efficient service by ground transport.

County Roads - Roads under the jurisdiction of a county road agency. County roads includes all roads which are not state trunklines and are located outside of cities and villages. Townships have no jurisdiction over roads.

Crossing Protection - A sign, flashing-light signal or other traffic control device placed at railroad grade crossings by which traffic is regulated, warned, or alternately directed to take specific actions in the event that a train is approaching.

Deferred Maintenance - Delaying needed maintenance, often resulting in more costly repairs.

Demand Response Transit - Non-fixed route transit service utilizing vans or buses with passengers boarding and alighting at pre-arranged times at any location within the system's service area. (APTA)

Double-Stack - Rail cars that carry intermodal containers stacked two-high.

Eastern Border Transportation Coalition - A coalition of five states and three Canadian provinces located on the eastern portion of the US-Canada border. The group is committed to the improvement of border crossing facilities and processes, and the development and maintenance of efficient international transportation corridors.

Environmental Justice - A federal initiative to address disproportionately high and adverse effects of federally-funded programs on minority and low-income populations in the United States.

Federal Aviation Administration (FAA) - The federal agency responsible for administration of federal aviation funds; oversees aviation service, safety and regulation as well as federal-aid eligible airport construction nationwide.

Federal Highway Administration (FHWA) - The federal agency responsible for distribution of federal highway funds; oversees the maintenance and construction of federal-aid eligible roads, street, highways, bridges and non-motorized facilities.

Federal Railroad Administration (FRA) - The federal agency responsible for railroad safety enforcement and assistance to local freight railroads.

Federal Transit Administration (FTA) - The federal agency responsible for distribution of federal transit funds; oversees the maintenance, operation and construction of federal-aid eligible transit systems including local and intercity bus and rail passenger infrastructure.

Ferry - A boat that carries cars, trucks, and/or passengers across a body of water for hire. The ferry travels on a specific route and the service may be scheduled or on-demand.

Ferry Port - A port which accommodates ferry service on at least one route.

Fixed Route Transit - Transit service on a repetitive, fixed-schedule basis along specific routes with vehicles picking up and discharging passengers at designated stops.

Freight - All cargo being transported.

Functionally Obsolete - A facility which, because of changing conditions or standards, does not serve the purpose for which it is intended (for example, the performance of a bridge or other structure which is still sound, but not up to current standards or satisfying current needs.

General Aviation - All civil operations other than scheduled air services and non-scheduled air transport operations for taxis, commuter air carriers, and air travel clubs which do not hold Certificates of Public Convenience and Necessity. (NTS)

General Aviation Airport - In Michigan, any airport licensed with the state of Michigan and complying with federal requirements.

Geographic Information Systems (GIS) - A computerized database management system for the capture, storage, retrieval, analysis and display of data which allows that data to be related to a location (using coordinates) and displayed geographically.

Heavy Rail - An electric railway with "heavy volume" traffic capacity with exclusive rights-of-way, multi-car trains, high speed and rapid acceleration, sophisticated signaling, and high platform loading. Also, known as "rapid rail," "subway," "elevated railway," or "metropolitan railway."

Heritage Routes Program - An MDOT program, established in 1993, to recognize and designate those special highways in Michigan that possess unique scenic, historic and recreational features and attributes. Ten such routes have been designated by the end of 2000.

High Speed Rail - Self-guided intercity passenger ground transportation that is time-competitive with air and/or auto on a door-to-door basis for trips in the approximate range of 100-500 miles.

High Speed Rail Compact - Consists of seven states (New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Missouri) with a common purpose to explore the potential for high speed ground transportation technology in the Great Lakes region. The Compact encourages a cooperative and coordinated regional approach for high speed ground transportation-related planning and development activities.

Infrastructure - As it relates to transportation, physical systems or facilities such as highways, bridges, railroads, ports, airports, buses, bike-ways, pedestrian facilities, rest areas, welcome centers, and intermodal facilities.

Intercity Rail - Long distance passenger rail service from one major city to another as currently provided by Amtrak. Usually operates over existing freight rail lines using diesel-electric locomotives with multiple coach consists (except in the Northeast Corridor where the lines are electrified). Some of the coaches may be sleeping cars, dining cars, and baggage cars.

Intermodal - Between or including more than one means of transportation; can apply to either passenger or freight transportation. Planning, infrastructure, and operations that focuses on connectivity between modes (such as trucks, planes, trains) as a means of facilitating tripmaking.

Intermodal Connectivity - The linkages among modes that ensure the ability of people or goods to move easily from one mode to another.

Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991- The Act governed the distribution of federal revenue for surface transportation nationwide. It represented a major revision of federal transportation programs and funding following completion of the Interstate system. The Act allowed competition among modes for federal funds, broadened planning requirements, and strengthened the role of the Metropolitan Planning Organization. ISTEA was effective for the six-fiscal year period 1992 through 1997.

Intelligent Transportation Systems (ITS) - The integrated application of advanced information, electronics, communications and other technologies to improve the efficiency and safety of surface transportation systems.

Jurisdiction - Indicates which agency has authority or responsibility for construction, operation or maintenance of part of the transportation system.

Just-In-Time - A method of inventory control and information exchange that minimizes warehousing; the cargo must arrive "just-in-time" for the receiver's use.

Level of Service (LOS) - The term used to indicate the quality of service provided on a road under a given set of operating conditions, or the frequency of service provided regarding intercity passenger service. As used regarding roads, level of service usually describes the degree of congestion with "A" being uncongested and "F" being completely stopped.

Light Rail - Passenger rail serving a single metropolitan area, or portion thereof, which operates all day at short intervals on predominantly separate rights-of-way or in reserved lanes on city streets, powered by overhead electric wires, between stations about one mile apart. Coaches, operating singly or in trains, provide a wide range of passenger capacities and performance characteristics at moderate costs. Coaches are not built to the heavier standards of other passenger cars which meet AAR and FRA requirements. Also known as "street car," "trolley car," and "tramway."

Metropolitan Planning Organization (MPO) - An organization of governmental units, transportation providers, and other agencies in U.S. Bureau of Census-designated urbanized area with a core population of 50,000 or more and its contiguous area expected to become urbanized within 20 years. An MPO develops transportation plans and programs for the metropolitan area necessary to satisfy the transportation planning requirements of TEA-21 to be eligible for federal funds.

MDOT - Michigan Department of Transportation.

MSPO - Michigan Society of Planning Officials.

Michigan Transportation Fund (MTF) - A fund derived from state fuel taxes, vehicle registrations, and other fees as authorized by Act 51, used for the maintenance, construction, and reconstruction of county roads, city streets and state highways.

Michigan Transportation Policy Plan (MTPP) - A comprehensive policy plan developed and adopted by the State Transportation Commission which serves as the policy framework for the State Long Range Plan. The current MTPP was adopted at the State Transportation Commission's July 1992 meeting.

Michigan Air Service Program - A program which undertakes activities aimed at promoting increased utilization of air service at local airports. This includes making improvements to airport facilities to increase passenger acceptance and undertaking studies to identify and document community air service needs.

Michigan Airport Awareness Program - A part of the Michigan Air Service Program which promotes increased public awareness of services and facilities and focuses on increased involvement with community organizations and local businesses to develop a better understanding of the airport's role in supporting economic growth and job retention.

Michigan Airport System Plan (MASP) - A plan which provides guidance for the development of a state system of airports to meet the present and future needs of the public. This plan includes potential capital improvement needs to meet future demands and also includes a study of air service.

Michigan Trailways Act (P.A. 27 of 1993) - State legislation that establishes a statewide trails system and criteria for designation as a trailway, including: statewide significance, multi-use, specific design/maintenance standards, and minimization of negative impacts on adjacent property owners.

Modes - A form or manner of transportation including motorized and non-motorized means.

Multi-modal - Planning, infrastructure, or operations that reflect consideration of more than one mode to serve transportation needs.

National Highway System NHS - a federally-designated highway system intended to provide an interconnected system to serve major population centers, international border crossings, specific modal and intermodal facilities, and other major travel destinations; to meet national defense requirements; and to serve interstate and interregional travel. Consists of 155,000 miles of highway nationally; approximately 5,800 miles are in Michigan.

National Transportation System (NTS) - proposed by ISTEA, the NTS will be an interconnected national network of transportation infrastructure including highways, rail systems, ports, airports, non-motorized facilities, and other facilities that facilitate the movement of people and goods; federal authorities are currently working to define the system and identify its components.

National Plan of Integrated Airport Systems (NPIAS) - A plan which identifies, for Congress and the public, the composition of a national system of

airports together with the airport development and costs necessary to expand and improve the system in order to anticipate and meet the present and future needs of civil aeronautics, national defense, and the U. S. Postal Service.

Non-Motorized - Any means of ground transportation that is not a motorized conveyance. This includes bicycling and pedestrian travel.

Off-Road Bicycle Facilities - Bicycle facilities that are within the highway right-of-way, but are separated from the automobile-traveled portion of the road.

Operating Assistance - Financial assistance for public transportation operating expenses (not capital costs); such aid may originate with federal, local or state governments. (APTA)

Policy Plan for Michigan Air Service - A plan containing a set of policies which define the public role in this highly visible form of public transportation operated by the private sector. It recognizes that scheduled air service affects local economies, demographics, and business locations.

Rails-to-Trails - A nationwide program to preserve abandoned railroad rights-of-way for future transportation uses and convert them into trails for public use. Some 1,000 miles have undergone this conversion in Michigan.

Railroad Grade Crossing - The general location where a railroad and a road or pedestrian path cross at the same level.

Recreation Harbor - A harbor which accommodates recreational boating activities. Docking is typically provided and other services such as fuel, supplies, telephones, and rest rooms may be provided.

Regional Rail - Railroad passenger train operations between a central city, its suburbs and other central cities and their suburbs. Usually accommodates off peak, reverse commute, weekend travel, and service to special events in addition to the traditional inbound commute trips. This results in travel being more evenly distributed throughout the day than commuter rail.

Right-of-Way - The entire width between the ownership boundary lines of roadways (publicly-owned) and railroads when any part of it is open for transportation purposes.

Rural ISTEA Task Forces - Administrative units established under ISTEA to distribute specific state and federal funds to road and transit projects. Each task force is a grouping of counties and includes

representatives of the county road commissions, cities and villages, transit providers and Indian tribal governments. (STIP)

Seamless Transportation - Multi-modal passenger or freight trips in which connections are made between modes or vehicles without unnecessary costs or delays.

Service Standards - Criteria to be established by an agreement of appropriate parties which will define the intended function and level of service to be provided by transportation facilities, according to the objectives of the State Long Range Plan.

State Long Range Plan (SLRP) - A document required by ISTEA with a 20-year planning horizon to provide statewide transportation policy and a guide for future transportation investment. It will be revised every three to five years.

State Transportation Improvement Program (STIP) - A three-year program of all road and transit transportation projects to be undertaken with federal funds, required by ISTEA to be financially constrained, meet air quality conformity guidelines, and be consistent with the policies of the State Long Range Plan.

State Transportation Commission - Governorially-appointed body of six commissioners charged with the responsibility of establishing transportation policy for the Michigan Department of Transportation.

State Trunkline Highway System - Highways under the jurisdiction of the Michigan Department of Transportation consisting of all "I", "US", and "M" designated routes.

TEDF - The Transportation Economic Development Fund. A legislatively-established program to provide funding for road and transit projects to support economic growth.

Trade Port - An industrial complex centered around a cargo airport that uses intermodal transportation technologies to accelerate materials handling, customs processing and product transfers between factories, aircraft, trucks, and rail cars.

Transit-Dependent - Those who rely on public transit for trips between home, job, recreation, education, and essential human services.

Transit Operating Assistance - Funds provided to transit agencies which supplement farebox revenues to pay the costs of operating the transit system. Operating assistance can be provided at the federal, state or local level.

Transportation Enhancement Program - A competitive program administered by MDOT and authorized by ISTEA that sets aside 10% of each state's Surface Transportation Program for Transportation Enhancement activities such as landscaping, bicycle paths, historic preservation, and highway stormwater run-off mitigation.

Transportation Equity Act for the 21st Century (TEA-21) - The federal transportation act effective June 1998 authorizing highway, highway safety, transit and other surface transportation programs for six years (fiscal years 1998-2003). The legislation builds on the initiatives of ISTEA with new programs to improve safety, protect and enhance communities and the environment, and advance economic growth and competitiveness. The "equity" in the title refers to guaranteed funding levels based on receipts to the Highway Trust Fund and more funding for "donor" states such as Michigan. (STIP)

Transportation Improved Program (TIP) - A document prepared by states and planning commissions citing projects and to be funded under federal transportation for a full year. Without TIP inclusion, a project is ineligible for federal funds. (STIP)

Transportation Management System (TMS) - Six systems mandated by ISTEA to measure the performance of transportation systems and to evaluate alternatives. They consist of management systems for highway pavements, bridges, highway safety, traffic congestion, public transportation, and intermodal facilities and systems. In 1993, Congress removed the requirement for automated management systems, but not the reporting mandates those systems were intended to meet. Consequently, the Michigan Department of Transportation (MDOT) developed an integrated and automated decision support tool called the Transportation Management System (TMS). Within the context of transportation asset management, TMS provides the capability to identify condition, analyze usage patterns, and determine deficiencies of the transportation infrastructure. In addition to the six management systems, Michigan has initiated two management systems for construction and maintenance.

Trunkline System - Highways under the jurisdiction of the Michigan Department of Transportation consisting of all "I", "US" and "M" designated routes.

USDOT - The United States Department of Transportation.

Unified Work Plan - An annual plan developed by an MPO that specifies the transportation planning

activities and the related budgets for the upcoming year. This plan is required to be processed through an MPO's public involvement process and must be approved by MDOT and the Federal Highway Administration each year.

US Army Corps of Engineers - The federal agency responsible for developing and maintaining federal harbors and channels.

Walkways - Pedestrian facilities such as sidewalks, overpasses, and skywalks.

Vehicle Miles of Travel (VMT) - Generally used as an area wide measure. May be calculated by summing data on a link basis or by multiplying average trip length by the total number of vehicle trips.

Notes:

SLRP - Definitions contained in the existing State Long Range Plan glossary.

(STIP) - Definitions taken from the STIP glossary.

(APTA) - Definitions taken from APTA's glossary.

(NTS) - Definitions taken from National Transportation Statistics glossary.

Appendix H

Resources

The identified resources consist of documents and databases contributing to or extensions of, the State Long Range Plan. They include statewide and metropolitan long range transportation system plans, transportation policy/strategic plans, and transportation improvements programs plus statewide data bases. They have been grouped, in chronological order, into the following categories: 1) metropolitan/corridor/regional, 2) statewide, 3) multi-state/federal, and 4) web sites/links. Where possible, the web site or link has been indicated for each document or database.

Metropolitan/Corridor/ Regional

Battle Creek Area Transportation Study, **Battle Creek Area Transportation Study 2025 Transportation Plan, September 2001** (www.members.aol.com/bcats01/bcathome.htm)

Battle Creek Area Transportation Study, **FY 2002-2004 Transportation Improvement Program, July 2001** (www.members.aol.com/bcats01/bcathome.htm)

Bay County Planning Department, **BCATS Year 2020 Transportation Plan**, October 1998 (Go to www.co.bay.mi.us and select *Department Index*)

Bay County Planning Department, **FY 2002/03/04 Transportation Improvement Program**, June 2001 (Go to www.co.bay.mi.us and select *Department Index*)

Genesee County Metropolitan Planning Commission, **Flint-Genesee County 2025 Long Range Transportation Plan**, July 2001 (Go to www.co.genesee.mi.us and select *County Offices*)

Genesee County Metropolitan Planning Commission, **Flint-Genesee Transportation Improvement Program**, September 2001 (Go to www.co.genesee.mi.us and select *County Offices*)

Grand Valley Metropolitan Council, **The Grand Rapids Metropolitan Area Long Range Transportation Plan for the Year 2025**, October 2000

Grand Valley Metropolitan Council, **FY 2002-2004 Transportation Improvement Program**, July 2001 (www.gvmc.org)

Jackson Area Comprehensive Transportation Study (JACTS), **2015 Long Range Transportation Plan for Jackson County, Michigan**, June 1995

Jackson Area Comprehensive Transportation Study (JACTS), **Transportation Improvement Program: Fiscal Years 2000-2002**, July 1999

Kalamazoo Area Transportation Study, **2015 Long Range Plan Document**, July 1995

Kalamazoo Area Transportation Study, **FY2002-2004 Transportation Program, July 2001**

Lansing Tri-County Regional Planning Commission, **Interim 2020 Regional Transportation Plan**, June 2000 (www.tri-co.org)

Lansing Tri-County Regional Planning Commission, **2002-2004 Transportation Improvement Program**, May 2001 (www.tri-co.org)

Macatawa Area Coordinating Council, **Macatawa Area Coordinating Council 2025 Long Range Transportation Plan**, September 2000 (www.macatawa.org/~macc)

Macatawa Area Coordinating Council, **2002-2004 Transportation Improvement Program**, July 2001 (www.macatawa.org/~macc)

Region 2 Planning Commission, **2025 Long Range Transportation Plan**, September 2001 (www.region2planning.org)

Region 2 Planning Commission, **Fiscal Years 2002, 2003, and 2004 Transportation Improvement Program**. March 2001 (www.region2planning.org)

Saginaw County Metropolitan Planning Commission, **Saginaw Metropolitan Area Transportation Study's Long Range Transportation Plan (1998-2020)**, May 1999 (www.saginawcounty.com)

Saginaw County Metropolitan Planning Commission, **Transportation Improvement Program, FY 2002-2004**, August 1999 (www.saginawcounty.com)

Southeast Michigan Council of Governments (SEMCOG), **Transportation Improvement Program for Southeast Michigan (2002-2004)**, July 2001 (www.semco.org)

Southeast Michigan Council of Governments (SEMCOG), **2025 Regional Transportation Plan for Southeast Michigan**, June 2000 (www.semco.org)

Southwestern Michigan Commission, **Twin Cities Area Transportation Study Long Range Plan 2000-2025**, August 2000 (Go to www.swmicomm.org and select *Programs*)

Southwestern Michigan Commission, **Twin Cities Area Transportation Study Fiscal Years 2002-2004 Transportation Improvement Program**, June 2001 (Go to www.swmicomm.org and select *Programs*)

Southwestern Michigan Commission, **Niles/Buchanan/Cass 2000-2025 Long Range Plan**, August 2000 (Go to www.swmicomm.org and select *Programs*)

Southwestern Michigan Commission, **Niles/Buchanan/Cass Area Transportation Study Transportation Improvement Program for Fiscal years 2002-2004**, July 2001 (Go to www.swmicomm.org and select *Programs*)

Traverse City Transportation and Land Use Study, **Traverse City Transportation Land Use Plan**, July 1995

West Michigan Shoreline Regional Development Commission, **Year 2025 Long Range Transportation Plan for Muskegon County**, December 2001 (www.wmsrdc.org)

West Michigan Shoreline Regional Development Commission, **FY 2002-2004 Transportation Improvement Program**, August 2001 (www.wmsrdc.org)

Statewide

MDOT, **The Michigan Transportation Policy Plan**, July 1992

MDOT, **State Long Range Plan, 1995-2015**, 1995

MDOT, **1997 Business Plan**

MDOT, **Strategic Investment Plan for Trunkline Bridges**, May 1998

MDOT, **Michigan's Congestion Profile, State of the System Report**, December 1998

MDOT, **Michigan Commercial Port Directory**, 1998

MDOT, **Fiscal Year 2000 Appropriations Bill Report, State Trunkline Fund Section 605**, December 1999 (Go to www.michigan.gov/mdot/ and select *Maps & Publications*)

MDOT, **Michigan Airport System Plan**, January 2000 (Go to www.michigan.gov/mdot/ and select *Forms & Publications*)

MDNR, **Michigan Harbors Guide**, 2000

MDOT, **Policy Plan for Michigan Air Service**, March 2001 (Go to www.michigan.gov/mdot/ and select *Forms & Publications*)

MDOT, **Michigan Transit Strategic Plan, 2000-2020**, Summer 2001

MDOT, **Michigan's International Corridors and Border Crossings Investment Strategy**, September 2001

MDOT, **State Transportation Improvement Program, Fiscal Years 2002-2004**, October 2001

MDOT, **Five Year Road and Bridge Program, 2002-2006**, March 2002

Rails-to-Trails Conservancy (Michigan Field Office), **Trail Directory** (www.railtrails.org)

MDOT, **Facts & Figures**, March 2002 (Go to www.michigan.gov/mdot/ and select *News & Information*). Published annually.

MDOT, **Transportation Management System** (comprised of six fully-integrated management systems: bridge, congestion, intermodal, pavement, public transportation, and safety), 2002 (www.mdot.state.mi.us/planning/tms)

Multi-State/Federal

U.S. Department of Transportation, Federal Railroad Administration, **High Speed Ground Transportation for America**, September 1997

Midwest Regional Rail Initiative, **Midwest Regional Rail System Plan: Executive Summary**, February 2000

Transportation Research Board, **A Guidebook for Performance-Based Transportation Planning**, NCHRP Report 446, 2000 (www.nas.edu/trb/)

Web Sites/Links

Asset Management:

Go to www.michigan.gov/mdot/ and select *Projects & Programs*

Average Daily Traffic:

Go to www.michigan.gov/mdot/ and select *Maps & Publications*

Carpool Parking Lots:

Go to www.michigan.gov/mdot/ and select *Roads & Travel*

Local Rideshare Offices:

Go to www.michigan.gov/mdot/ and select *Roads & Travel*

Major Places of Employment:

Go to <http://medc.michigan.org/miinfo/places/>

Michigan Air Carrier Airport Statistics:

Go to www.michigan.gov/aero/

Michigan Department of Transportation:

Go to www.michigan.gov/mdot/

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