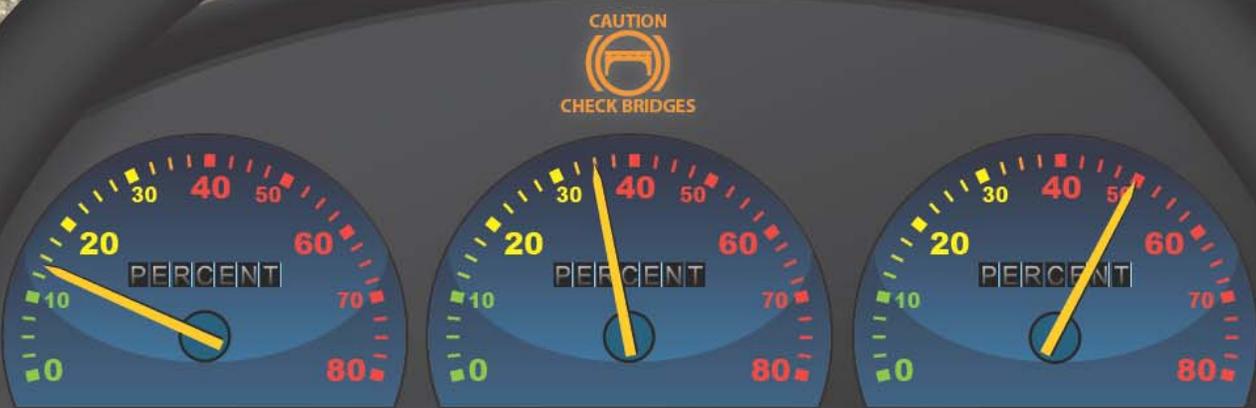


# MICHIGAN'S ROADS & BRIDGES 2010 ANNUAL REPORT



**2004**

**2010**

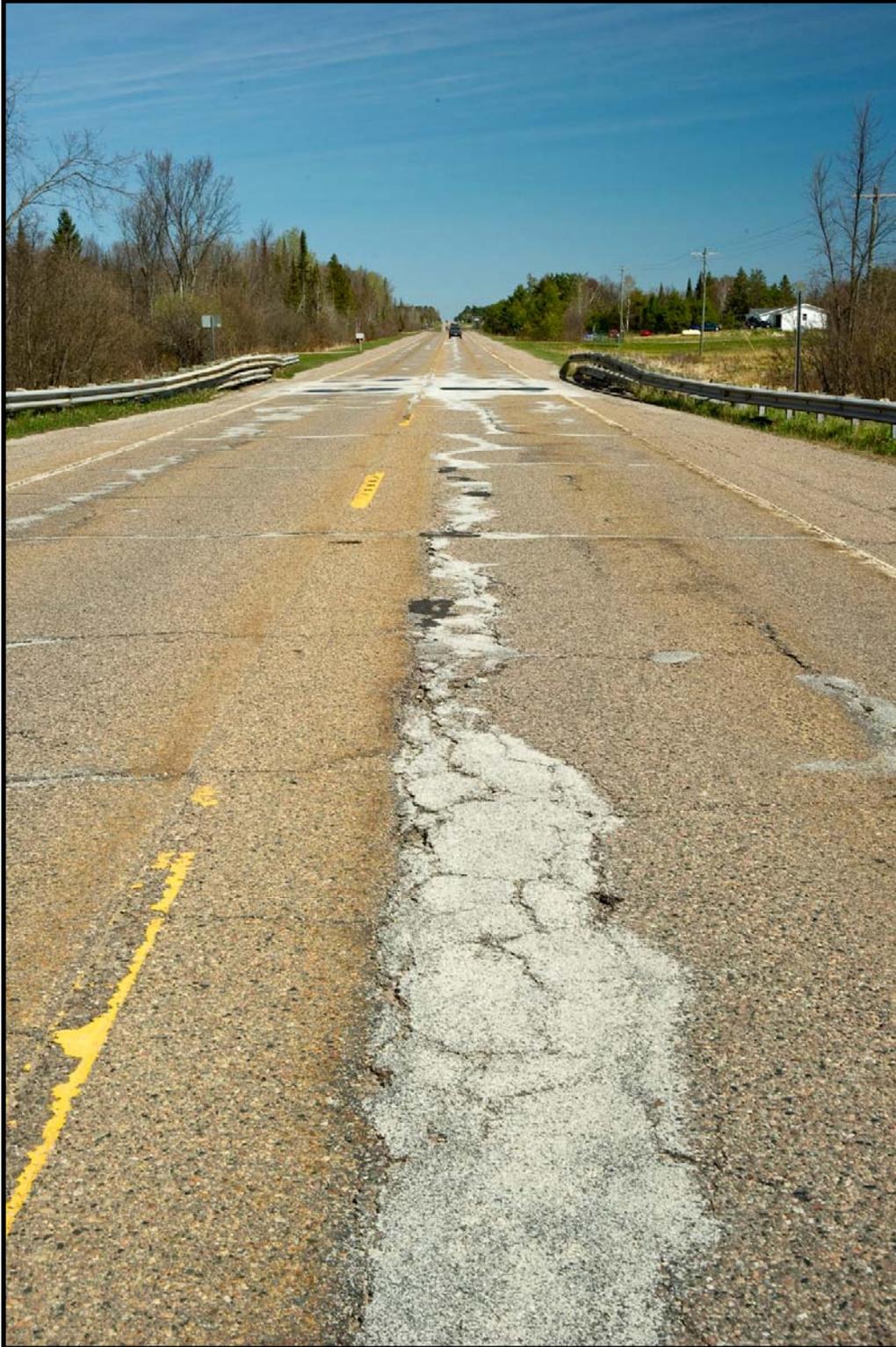
**2015?**

**PERCENT ROADS IN POOR CONDITION**

*"A strong transportation infrastructure is important to Michigan's economic health."*

- State of Michigan, MiDashboard Web site

## Cover Photograph



**Project:** M-129 from 10 1/2 Ave to M-80 in Chippewa County Preconstruction  
**Date Taken:** 4/29/2010 **Creator:** Sara J. Martin – MDOT **PASER Rating:** 3 - Poor

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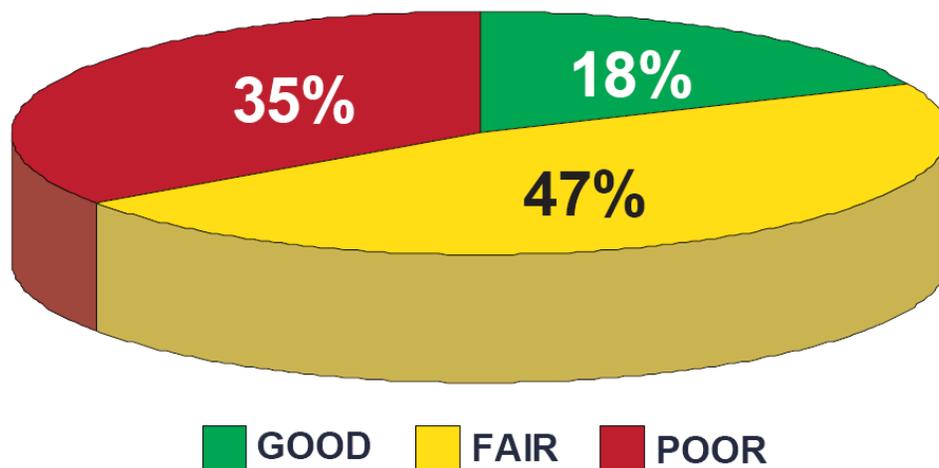
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## EXECUTIVE SUMMARY

Michigan's roads continue to deteriorate at an increasingly rapid rate. This is the conclusion of the Michigan Transportation Asset Management Council after reviewing the 2010 pavement condition data. One out of every three miles of road on the federal-aid eligible road system is now in poor condition. What is worse is that there is no evidence that this trend is going to reverse itself; in fact, the Council projects that the situation will only get worse in the coming years.

Allowing this trend to continue will have significant financial and economic consequences. For example, the cost of returning a poor road to good condition is four to five times greater than the cost of maintaining a road in fair condition. Allowing more roads to reach poor condition will dramatically increase the costs of repairing Michigan's road network.

### 2010 Pavement Condition (Federal Aid)



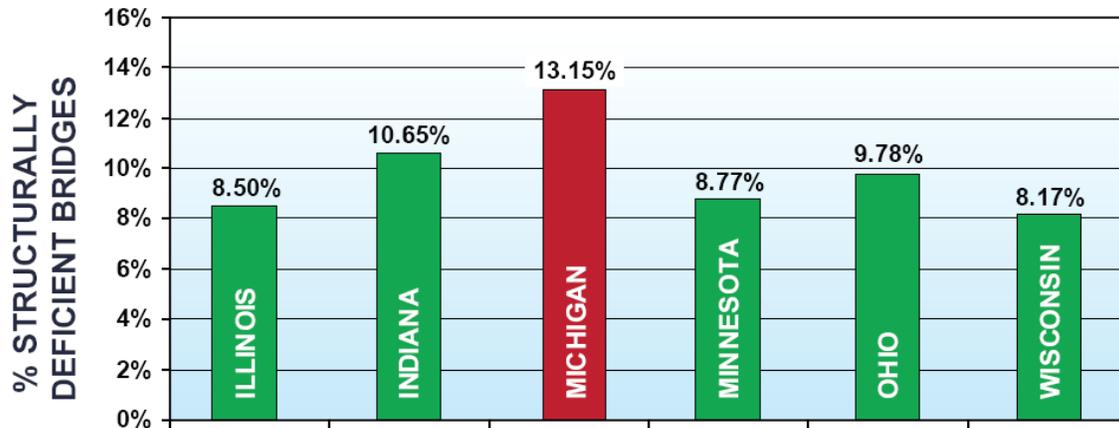
Source: TAMC 2010 PASER Data Collection  
Figure 1

Figure 1 above shows the results of the 2010 rating reveal that 35 percent (20,810.17 lane miles) were in poor condition, 47 percent (28,081.42 lane miles) were in fair condition, and 18 percent (10,926.99 lane miles) were in good condition.

With respect to Michigan's bridges, progress has been made in reducing the number of structurally deficient bridges under state jurisdiction, and more local agencies are implementing preventive maintenance "mix of fixes" on local bridges. Federal guidelines classify bridges as *structurally deficient* if at least one of three key bridge components (deck, superstructure, or substructure) is rated in poor condition. This means that qualified engineers have determined that the bridge requires significant maintenance, rehabilitation or replacement. A structurally deficient bridge may need to have heavy vehicle traffic restricted or eventually be closed until necessary repairs can be completed.

An analysis of bridge conditions in Michigan shows that state and local bridge owners and decision makers are “holding their own” despite rising costs and revenue challenges. Bridge conditions in Michigan have been given even more of a strategic focus with the development of the MiDashboard, Governor Snyder's set of high level performance measures indicating how the state compares with the rest of the nation in key result areas, along with recent trends. The percentage of Michigan's bridges which are rated structurally deficient is one of the 5 measures of the overall strength of Michigan's economy, and this measure can be accessed by clicking here: [www.michigan.gov/midashboard](http://www.michigan.gov/midashboard)

### 2010 Percent Structurally Deficient Bridges All Roadway Bridges (Great Lakes States)



Source: MDOT April 2011  
Figure 2

However, there remains reason for continued concern regarding Michigan's ability to preserve its strategic bridge assets. The figure above indicates that Michigan has a significantly higher percentage of structurally deficient bridges than other Great-Lakes states. In 2010, 8.7 percent of state-owned bridges and 16.6 percent of county and local bridges were structurally deficient, resulting in Michigan having 13.15 percent of all roadway bridges structurally deficient.

At current funding levels, the condition of Michigan's transportation infrastructure will continue to rapidly deteriorate. This alarming decline in condition of Michigan's infrastructure affects everyone—from businesses that rely on the transportation network to transport goods and services; from tourists visiting or traveling through our great state to our citizens who expect safe and convenient access to work and school. Re-investing in our transportation system and maintaining these vital public assets are essential to securing a better future for all of Michigan's citizens.

## CONDITION OF THE SYSTEM 2010

### ***Pavement Surface Evaluation and Rating (PASER)***

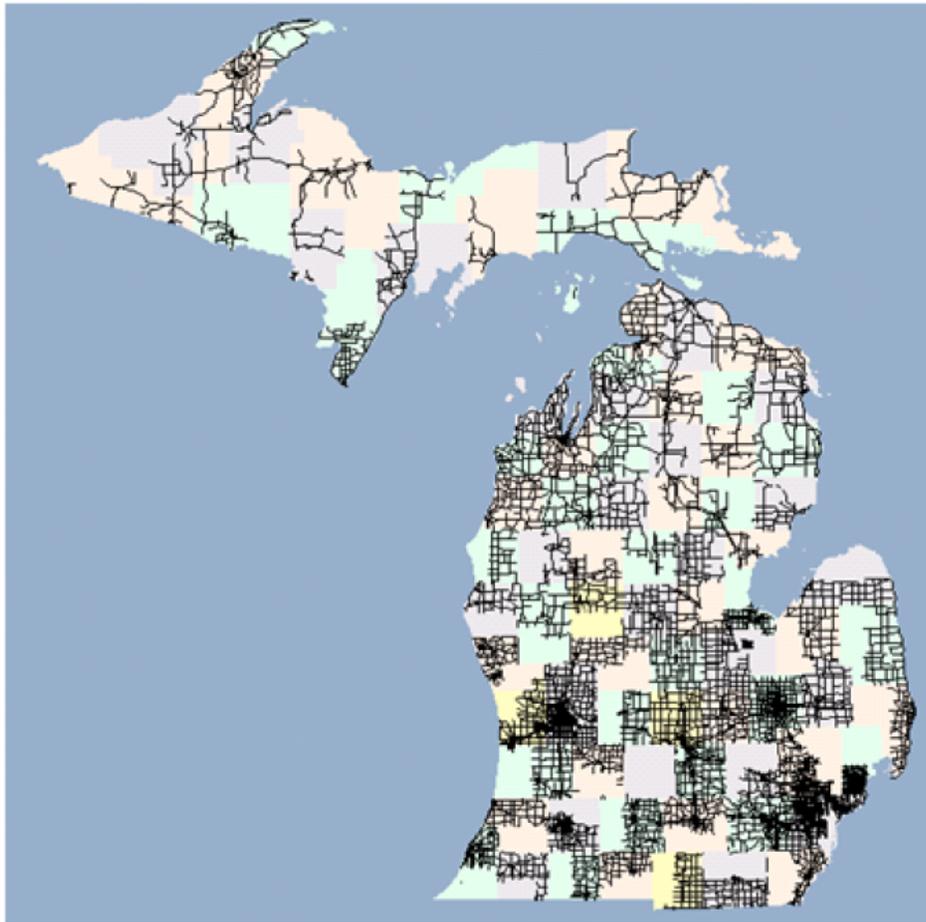
The Council has adopted the PASER rating system as a means to collect pavement condition data on the paved federal-aid and paved non-federal-aid systems. PASER is a visual survey of the condition of the surface of the road. It rates the condition of various types of pavement distress on a scale of 1-10. It is based on a system of pavement evaluation developed in Wisconsin and is used by most road agencies in the state. This type of survey is one of the easiest to do and is relatively inexpensive compared to other rating methods. This makes it ideal for small agencies.

The Council groups the 1-10 rating scale into three categories (Good 8-10, Fair 5-7, Poor 1-4) based upon the type of work that is required for each rating (Routine Maintenance, Capital Preventive Maintenance, Structural Improvement). There are different ratings for different surfaces (Asphalt, Concrete, Brick etc.) based on the type of deterioration that is observed.

### ***Federal-Aid Roads***

In 2010, the Council required that only 50 percent of the paved federal-aid eligible roads be rated, with the other 50 percent having been rated in 2009.

### **Paved Federal-Aid Eligible Roads rated in 2010**

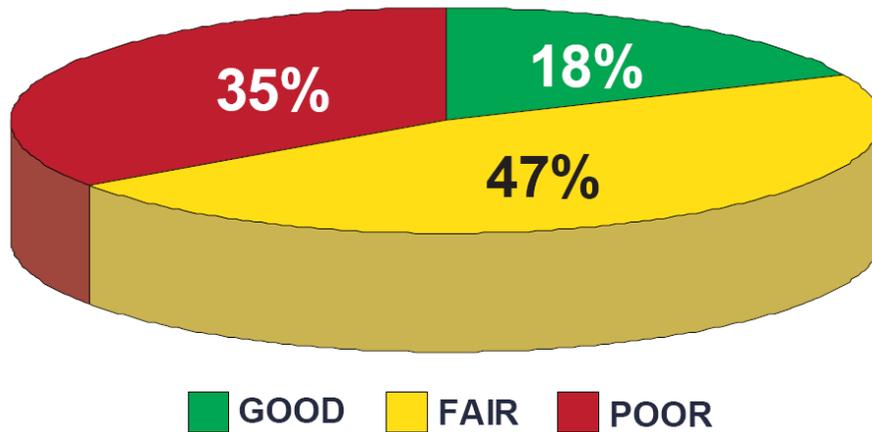


Source: TAMC 2010 PASER Data Collection - Figure 3

Even though agencies were only required to report 50 percent, approximately 71 percent of these roads were rated and reported in 2010 and 67 percent reported in 2009. Analysis of the data collected indicated that while 71 percent of the system condition was collected, it was statistically representative of the entire system. Over 100 teams of trained raters assessed the condition of 60,049 lane miles of paved federal-aid eligible roads. The collection of roadway condition data by the Council is a cooperative effort involving teams of county, city, state and regional planning staff members. Individuals must attend PASER training each year before being allowed to rate the roads. This effort was coordinated by the 21 regional planning and metropolitan planning organizations.

The data are reported in lane miles. A lane mile is determined by multiplying the number of lanes by the length of the road. For example, if you were surveying five miles of two-lane road, you would be rating ten lane miles. If it were a four-lane road, then you would have twenty lane miles.

### 2010 Pavement Condition (Federal Aid)

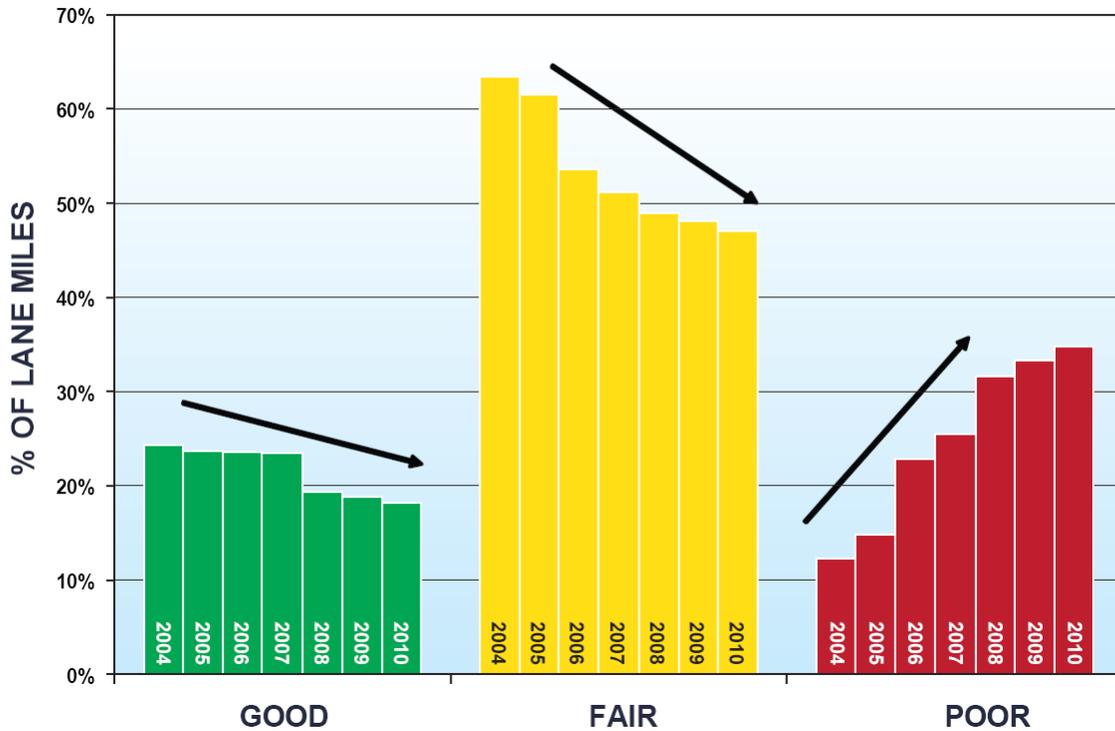


Source: TAMC 2010 PASER Data Collection

Figure 1

Figure 1 above shows the results of the 2010 rating reveal that 35 percent (20,810.17 lane miles) were in poor condition, 47 percent (28,081.42 lane miles) were in fair condition, and 18 percent (10,926.99 lane miles) were in good condition.

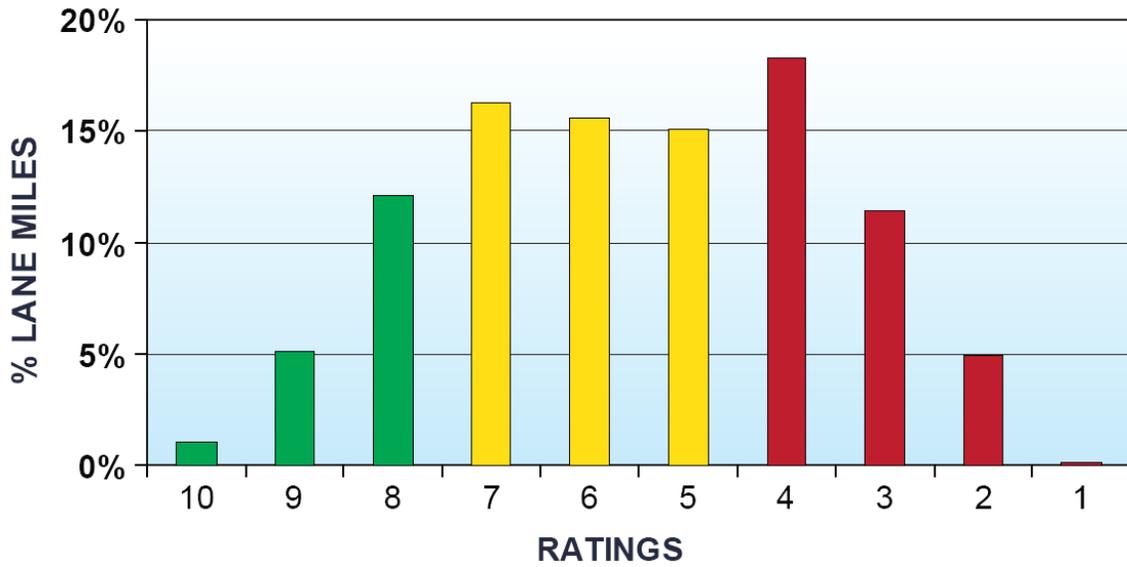
## 2004 - 2010 Pavement Condition Federal-Aid Eligible Roads



Source: TAMC 2004 – 2010 PASER Data Collection  
Figure 4

Figure 4 shows that after seven years of pavement ratings, it is clear that Michigan’s roads are deteriorating faster than they can be maintained. There has been a dramatic increase in the number of lane miles needing structural improvement (rehabilitation and reconstruction). These are roads in “poor” condition. In 2004, 13.6 percent of lane miles were identified as needing structural improvement. By 2010, that number had more than doubled to 34.8 percent. In 2004, nearly 88 percent of the federal-aid system could be considered in good or fair shape. By 2010, that figure fell to 65.2 percent. Clearly, the overall condition of the federal-aid system is getting significantly worse with more miles in poor condition than in good condition. The cost of returning a poor road to good condition is four to five times greater than the cost of returning a fair road to good condition. Allowing more roads to reach poor condition will dramatically increase the costs of repairing Michigan’s road network. Unfortunately, the current trend is for more roads to lapse into a poor condition.

## 2010 PASER



Source: TAMC 2010 PASER Data Collection  
Figure 5

Figure 5 above shows the breakdown of the 2010 pavement condition by lane miles and individual PASER ratings (Good 8-10, Fair 5-7, Poor 1-4).

### ***National Functional Classification (NFC)***

Since its inception, the Council's primary focus has been on how the transportation system functions. National Functional Classification (NFC) is a planning tool which federal, state and local transportation agencies have used since the late 1960's. The Federal Highway Administration (FHWA) developed this system of classifying all streets, roads and highways according to their function. The federal-aid system is subdivided into four major classification groups, Freeways, Principle Arterials, Minor Arterials and Collectors. These groups are determined by the extent to which each provides two essential functions; mobility and accessibility. The analysis below compares the 2010 federal-aid PASER rating's broken down by each of these classification groups.

***Freeways*** are a subset of the *Principal Arterial* system that has limited access: no at-grade intersections with other roads, railroads, or trails. Freeways generally carry the highest volume of traffic.

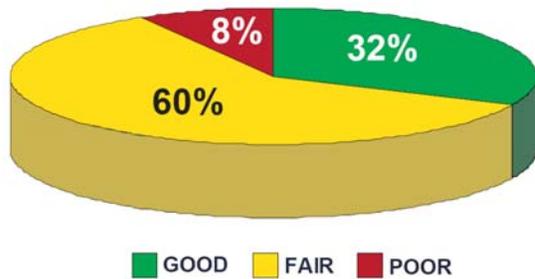


Figure 6



The 2010 rating of the *Freeway* system reveals that 8 percent (494 lane miles) were in poor condition, 60 percent (3,572 lane miles) were in fair condition, and 32 percent (1,904 lane miles) were in good condition.

***Principal Arterials*** are at the top of the NFC hierarchical system. Principal arterials generally carry long distance, through-travel movements. They also provide access to important traffic generators, such as major airports or regional shopping centers.

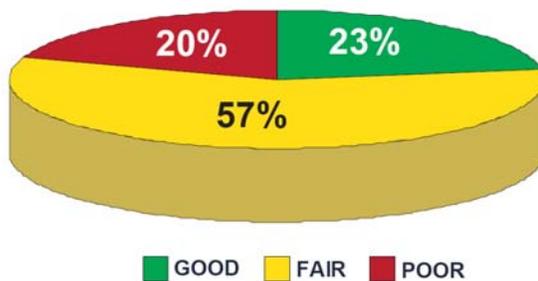


Figure 7



The 2010 rating of the *Principal Arterial* system reveals that 20 percent (1,900 lane miles) were in poor condition, 57 percent (5,501 lane miles) were in fair condition, and 23 percent (2,173 lane miles) were in good condition.

*Minor Arterials* are similar in function to principal arterials, except they carry trips of shorter distance and to lesser traffic generators.

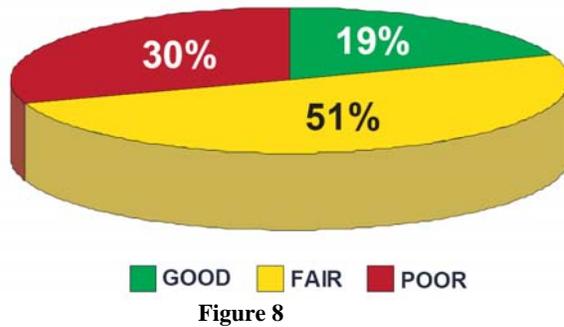


Figure 8



The 2010 rating of the *Minor Arterial* system reveals that 30 percent (4,615 lane miles) were in poor condition, 51 percent (7,669 lane miles) were in fair condition, and 19 percent (2,960 lane miles) were in good condition.

*Collectors* tend to provide more access to property than do arterials. Collectors also funnel traffic from residential to rural areas to arterials.

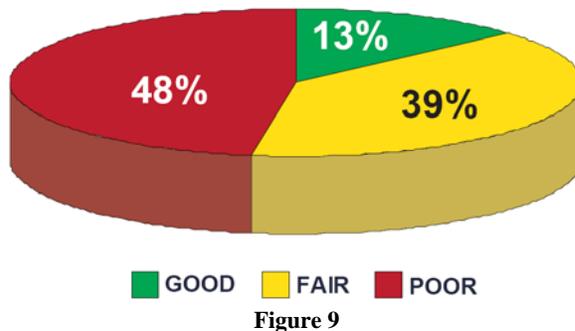


Figure 9



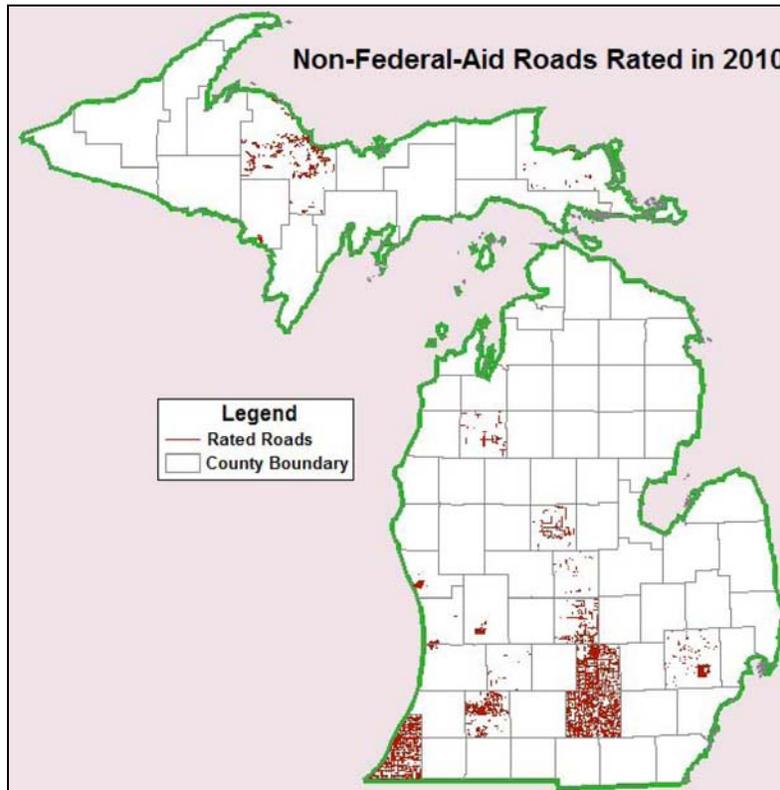
The 2010 rating of the *Collector* system reveals that 48 percent (13,800 lane miles) were in poor condition, 39 percent (11,339 lane miles) were in fair condition, and 13 percent (3,889 lane miles) were in good condition.

The analyses of the 2010 federal-aid PASER condition data by National Functional Classification (NFC) reveals that the higher level system's (*Freeways, Principal Arterials*) are in relatively good condition and the lower level system's (*Minor Arterials, Collectors*) are in poorer condition. A safe and efficient transportation system requires that both essential functions (mobility and accessibility) operate well with facilities in good condition. Most homes, manufacturing plants, tourist destinations and agriculture businesses are serviced by *Minor Arterials* and *Collectors*, where accessibility is the primary function. This analysis is evidence that Michigan's road agencies are systematically investing their limited transportation funds in the portion of the system that provides the most mobility. In order to have the safest and most efficient federal-aid system possible, funding must be systematically allocated to all four of these NFC groups.

[Source: 2010 Asset Management Council Pavement Assessment Date: April 2011]

### ***Non-Federal-Aid Roads and Streets***

Not all roads in Michigan are eligible for federal aid. Whether a road is eligible for aid or not depends upon its national functional classification. FHWA developed this system of classifying roads according to the predominant type of traffic and the traffic volume a road carries. All public roads in Michigan have an NFC designation. MDOT and local officials work cooperatively to functionally classify roads. The results of this joint process are submitted to FHWA for final approval. In general, non-federal-aid eligible roads are residential streets and lightly traveled county roads. Roughly half of these roads are unpaved.

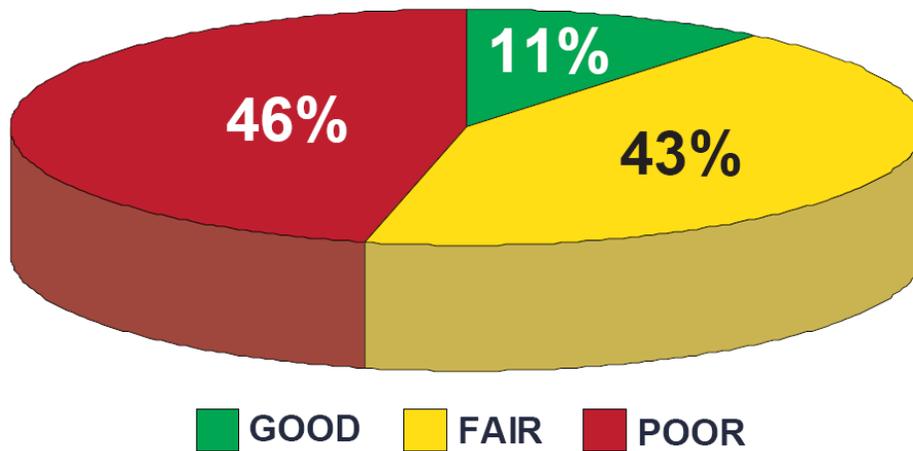


Source: TAMC 2010 PASER Data Collection  
Figure 10

Since its inception, the Council has focused its attention on the condition of the 39,700 miles of federal aid eligible roads in the state. In 2008, the Council expanded its focus to include a major portion of the paved non-federal-aid eligible roads.

There are 76,435 miles of non-federal aid eligible roads in the state. Approximately one half of this mileage (about 40,000 miles) is paved. Just over 4,296 miles of these roads were observed and assigned PASER ratings in 2010; 5,647 miles in 2009; and 11,557 miles in 2008.

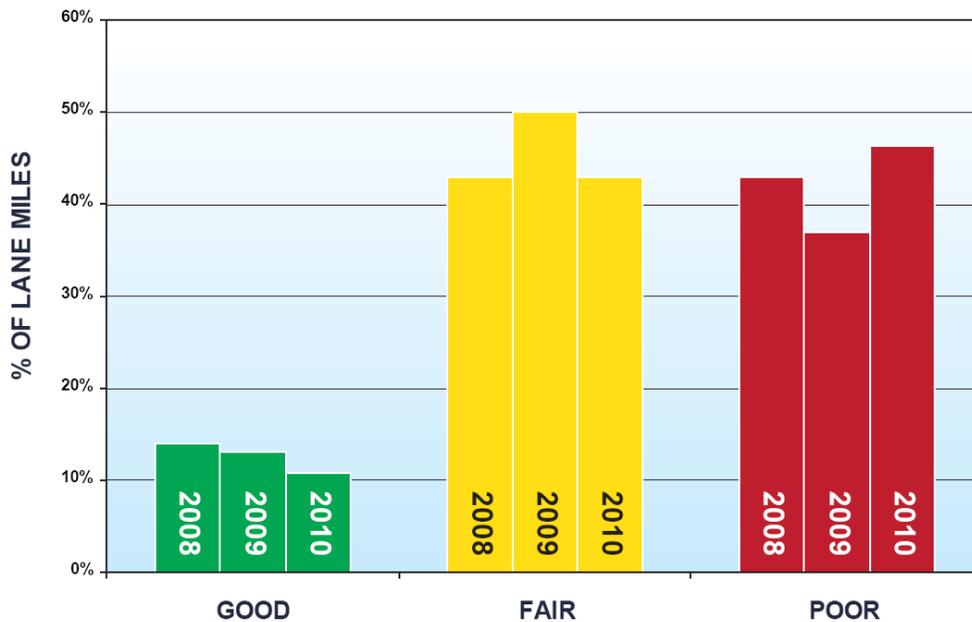
## 2010 Pavement Condition (Non-Federal-Aid)



Source: TAMC 2010 PASER Data Collection  
Figure 11

Similar to the pavement ratings for federal-aid roads, the ratings for non-federal-aid roads are reported in lane miles. Figure 11 above indicates that 4,296 miles of non-federal-aid roads were rated in 2010, comprising 8,612 lane miles. The 2010 ratings reveal that 46 percent (3,988 lane miles) are in poor condition, 43 percent (3,698 lane miles) are in fair condition, and 11 percent (926 lane miles) are in good condition.

### 2008 - 2010 Pavement Condition of Non-Federal-Aid Roads

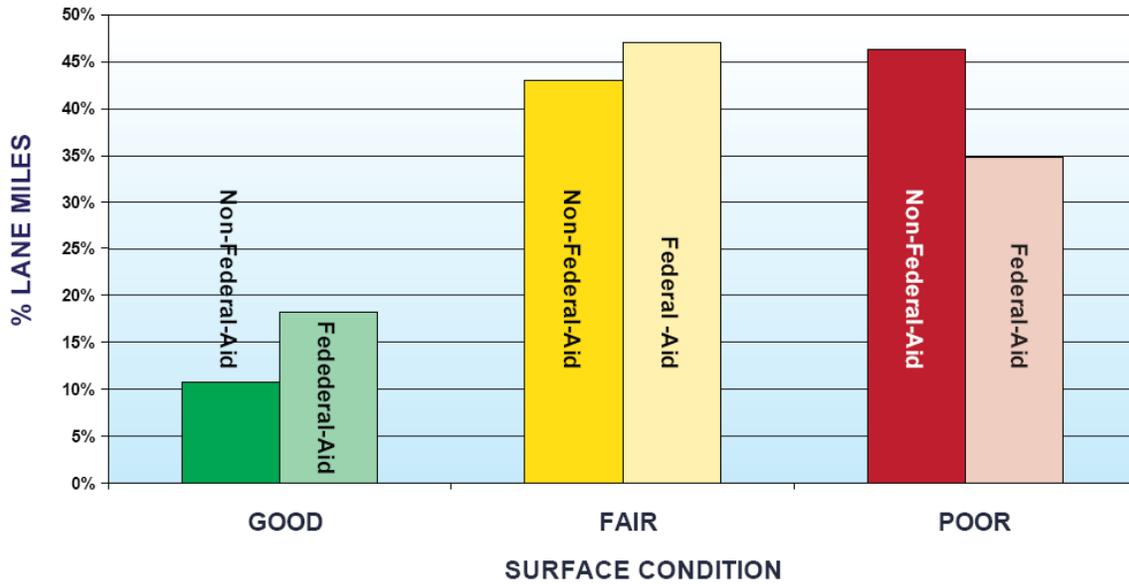


Source: TAMC 2008-10 PASER Data Collection  
Figure 12

Figure 12 above shows the results of the three-year data collection cycle (2008-10) sponsored by the Council.

*Federal-Aid vs. Non-Federal-Aid Roads and Streets*

**2010 Condition of Paved Roads in  
Federal-Aid vs. Non-Federal-Aid**

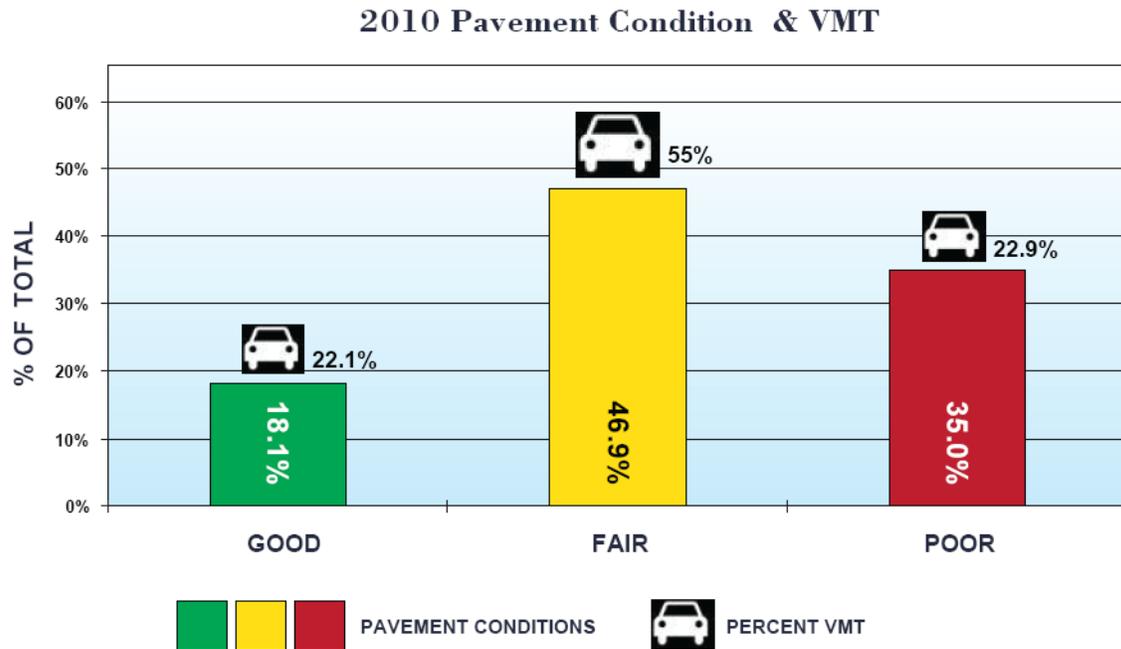


Source: TAMC 2010 PASER Data Collection  
Figure 13

The data shown in Figure 13 above indicate that the condition of the paved non-federal-aid system is significantly worse than that of the paved-federal-aid system. This difference is the result of higher funding available for federal-aid roads and the efforts of road agencies to maintain higher-volume road (most of which qualify for federal-aid) in better condition than lower-volume roads.

## *Pavement Condition and Vehicle Miles Traveled (VMT)*

Vehicle Miles Traveled (VMT) is the total number of miles driven by all vehicles in Michigan during any given year.



Source: TAMC 2010 PASER Data Collection  
Figure 14

The data shown in Figure 14 above indicate that the majority of traffic (77 percent of VMT) travels on the part of the system (65 percent) that has been rated as good and fair condition. While roads in poor condition make up 35 percent of the federal-aid system, they carry only 23 percent of all vehicle miles traveled. This difference is largely attributed to the efforts of road agencies to maintain higher volume roads in better condition than lower volume roads. This suggests that road agencies are spending their limited transportation funds on the parts of the system that carry the majority of traffic.

## ***Bridges***

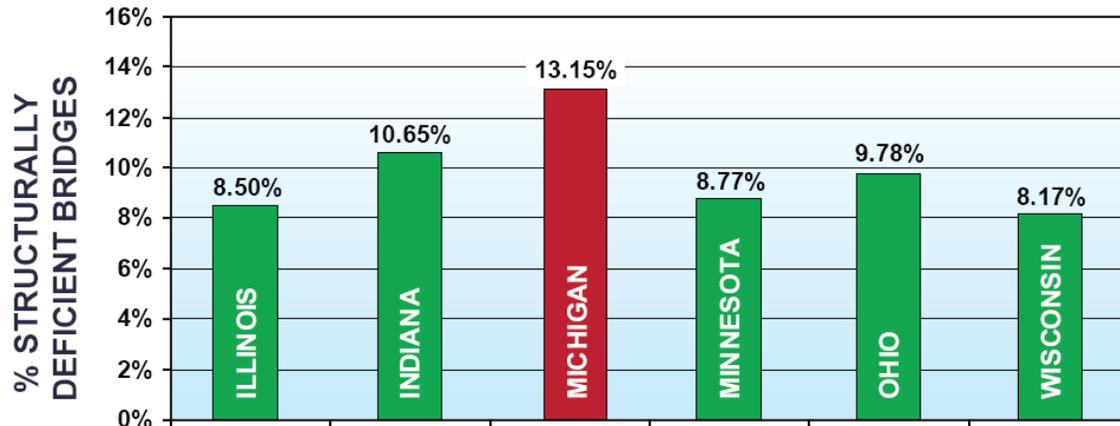
An analysis of bridge conditions in Michigan shows that state and local bridge owners and decision makers are “holding their own” despite rising costs and revenue challenges. From 2004 to 2010, the overall network of bridges in the state saw a slight but steady improvement in overall condition. This can be attributed to:

1. Progress being made in reducing the number of structurally deficient bridges under state jurisdiction.
2. More local agencies are implementing preventive maintenance “mix of fixes” strategies on local bridge systems.

Federal guidelines classify bridges as *structurally deficient* if at least one of three key bridge components (deck, superstructure, or substructure) is rated in poor condition. This means that qualified engineers have determined that the bridge requires significant maintenance, rehabilitation or replacement. A structurally deficient bridge may need to have heavy vehicle traffic restricted or eventually be closed until necessary repairs can be completed.

Bridge conditions in Michigan have been given even more of a strategic focus with the development of the MiDashboard, Governor Snyder's set of high level performance measures indicating how the state compares with the rest of the nation in key result areas, along with recent trends. The percentage of Michigan's bridges which are rated structurally deficient is one of the 5 measures of the overall strength of Michigan's economy, and this measure can be accessed by clicking here: [www.michigan.gov/midashboard](http://www.michigan.gov/midashboard)

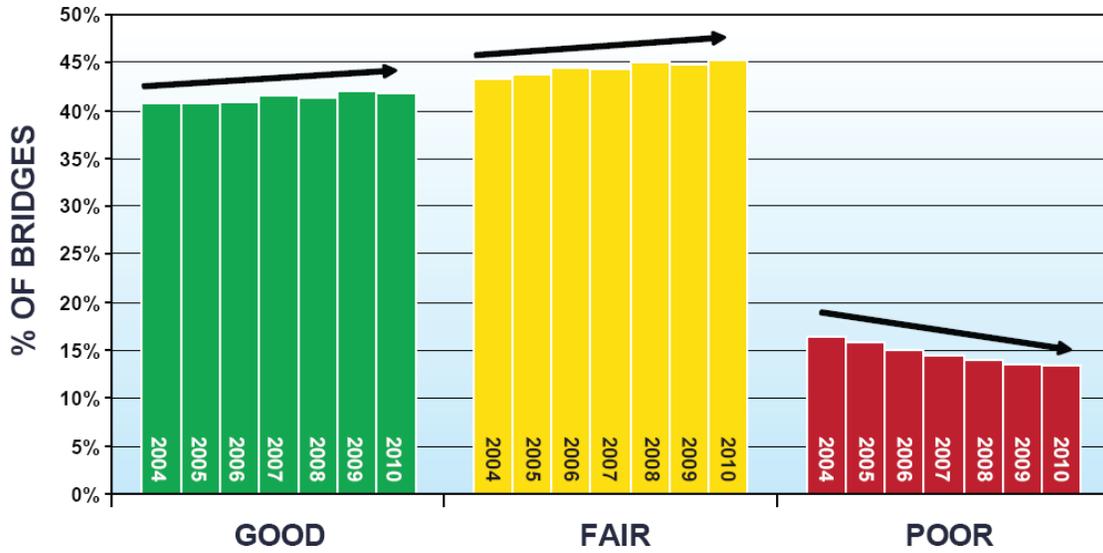
### **2010 Percent Structurally Deficient Bridges All Roadway Bridges (Great Lakes States)**



Source: MDOT April 2011  
Figure 2

However, there remains reason for continued concern regarding Michigan's ability to preserve its strategic bridge assets. The figure below indicates that Michigan has a significantly higher percentage of structurally deficient bridges than other Great-Lakes states. In 2010, 8.7 percent of state-owned bridges and 16.6 percent of county and local bridges were structurally deficient, resulting in Michigan having 13.15 percent of all roadway bridges structurally deficient.

## 2004 - 2010 Bridge Condition All Roadway Bridges (MDOT and Local Agency)



Source: MDOT April 2011  
Figure 15

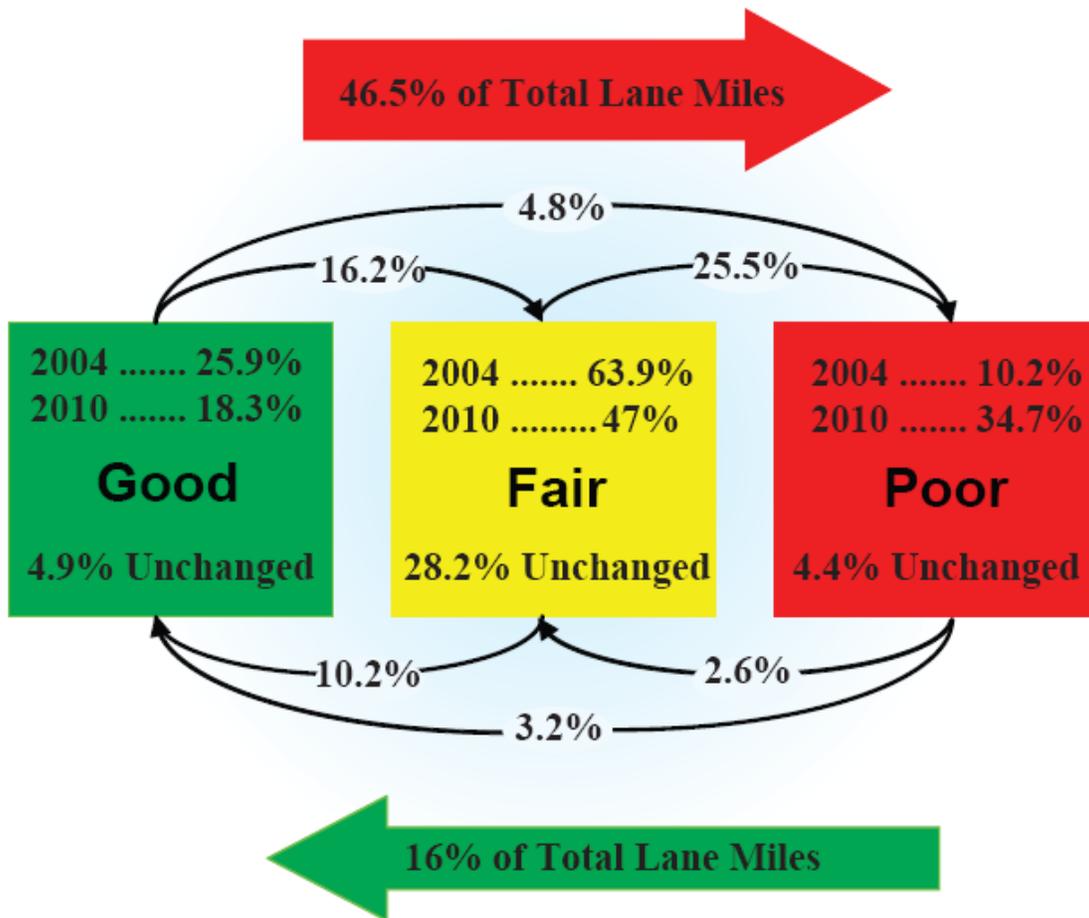
Figure 15 above compares the percentage of Michigan bridges in good, fair, and poor condition for the years 2004-10. Michigan state and local bridges owners and decision makers have reduced the percentage of bridges in poor condition while increasing the percentage of bridges in fair and good condition.

SEVEN YEAR TREND ANALYSIS

**Roads**

Figure 16 below shows that 46.5 percent of Michigan’s roads have deteriorated over the last seven years (2004 – 2010). During that period, 16.2 percent of the roads went from good to fair, 25.5 percent went from fair to poor, and 4.8 percent slid all the way from good to poor. In that same seven year period, only 16 percent of the roads were improved; 10.2 percent went from fair to good, 2.6 percent went from poor to fair and 3.2 percent went from poor to good.

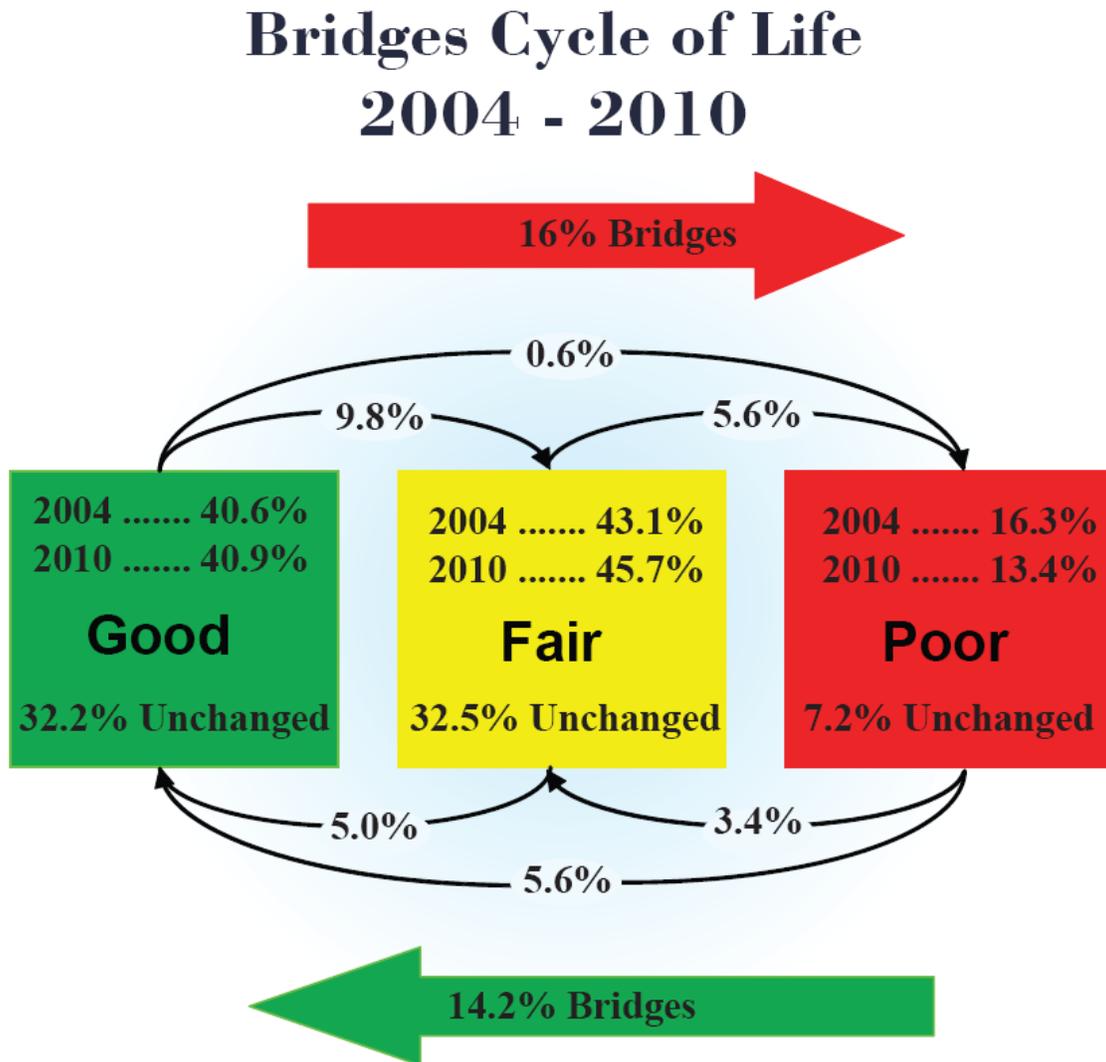
## Pavement Cycle of Life 2004 - 2010



Source: TAMC 2004 - 2010 PASER Data Collection  
Figure 16

## Bridges

Figure 17 below shows the percentage of bridges that have improved/deteriorated into each of the major condition categories over the last seven years (2004 – 2010). Michigan’s overall goal is to reduce the number of poor bridges. Over this time span, 16 percent of Michigan’s bridges have deteriorated; 9.8 percent of the bridges went from good to fair, 5.6 percent went from fair to poor, and 0.6 percent slid all the way from good to poor. In that same seven year period, 14.2 percent of the bridges were improved; 5 percent went from fair to good, 3.4 percent went from poor to fair and 5.6 percent went from poor to good.

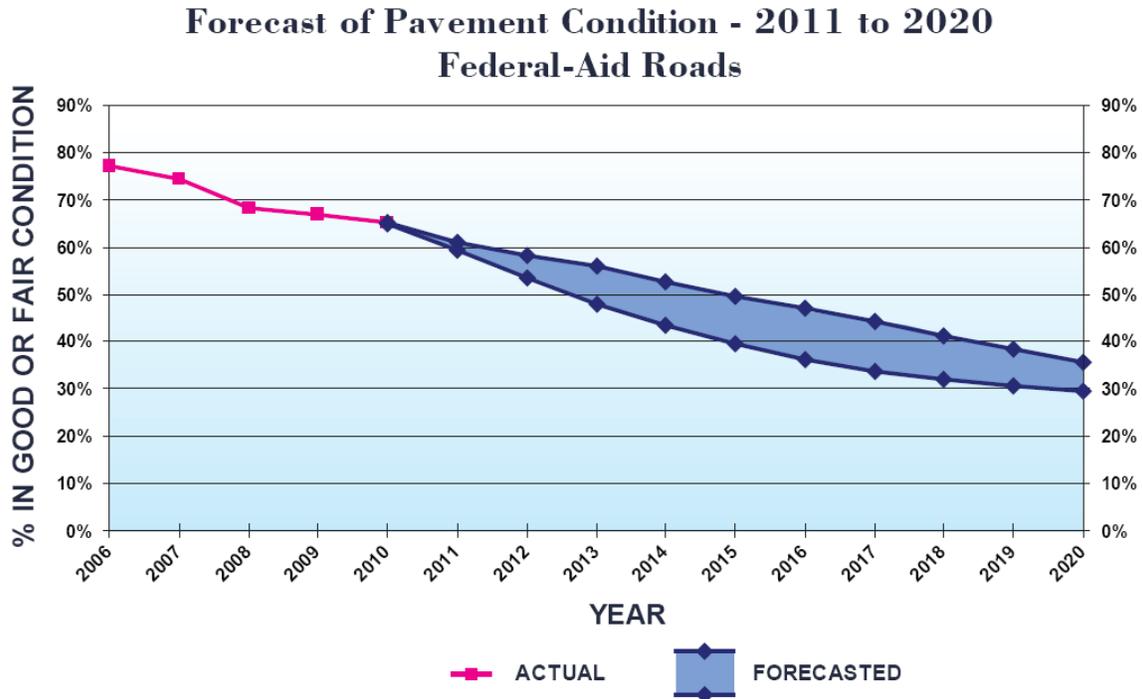


Source: Michigan Bridge Database (4/1/2011) All Michigan Highway Bridges  
Figure 17

## FORECASTED SYSTEM CONDITION

### Road Condition

Forecasts for statewide road condition, assuming current funding trends, indicate a continuation of the trend reported for the past seven years. The number of roads rated in poor condition could double within the next ten years.

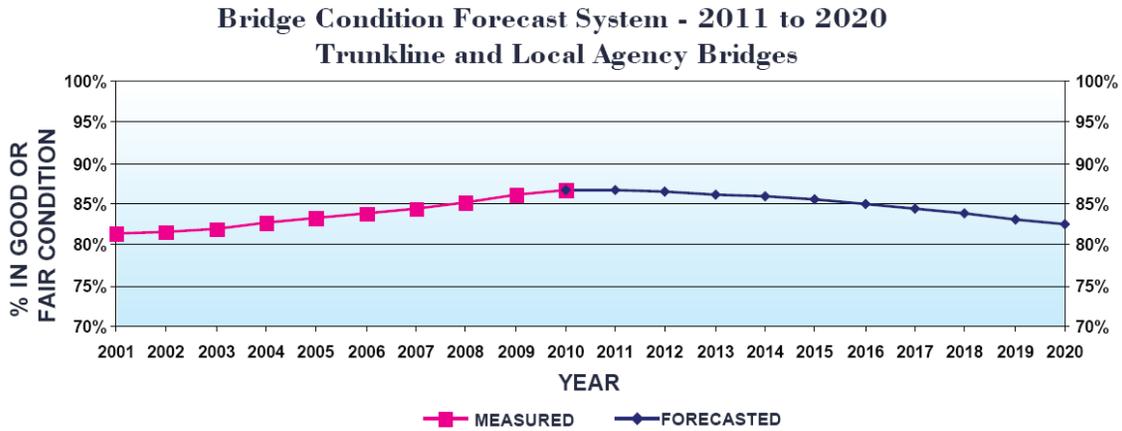


Source: MDOT April 2011  
Figure 18

Figure 18 above is a graph of past, present, and future pavement condition. It shows the probable condition of paved federal-aid roads for the next ten years if current trends continue. Each point on the graph represents the percentage of roads in good or fair condition. The first five points on the graph show the actual pavement condition for the years 2006 to 2010; the remaining data points show the forecasted pavement condition. Each forecast year is represented by two points, a high and a low. The points along the higher line were derived from a trend-line analysis based on pavement conditions in 2006 to 2010. The points along the lower line were derived from a Markovian model that uses multiple variables, such as historical pavement data, pavement management strategies, and revenues available for construction and maintenance. The results of the two models—while different in degree—show a trend of worsening pavement conditions over the next ten years.

**Bridge Condition**

Working from current bridge condition information (National Bridge Inventory Data), bridge deterioration rate, project costs, expected inflation, and fix strategies, the Bridge Condition Forecasting System (BCFS) estimates future condition of MDOT and local bridges.



Source: MDOT Date: April 2011

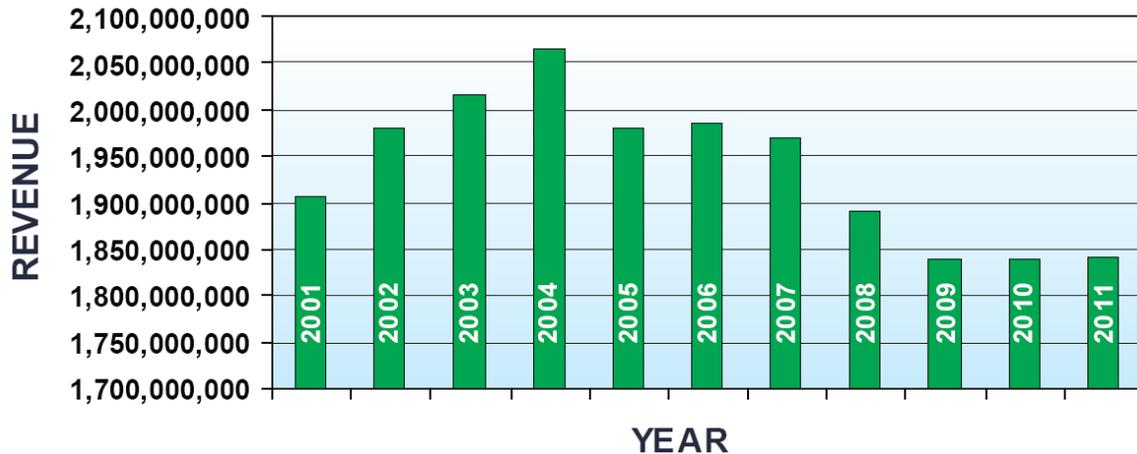
Figure 19

Figure 19 above indicates the combined overall bridge condition of all the state’s roadway bridges (MDOT and local agency) is expected to decline after 2011 unless additional funding is identified for both state and local bridge programs. In addition, the condition and forecast data show the opportunity exists for Michigan’s local bridge network to materially benefit from a systematic application of capital preventative maintenance strategies. This has been a strategic focus of Council activities over the past two years.

## INVESTMENTS IN THE SYSTEM

Michigan's public highways and bridges collectively represent the state's single largest publicly owned asset. While accurate figures for all local roads and bridges are not readily available, consider that the state government of Michigan owns some \$31.4 billion in assets of which MDOT owns \$17.3 billion, or 55 percent of all assets owned by the State. Of that \$17.3 billion, \$14.1 billion is in roads and bridges. If you consider MDOT owns only eight percent of the total mileage of public roads, the total value of all roads is significantly higher. Consequently, the public roads and bridges in Michigan constitute a tremendously valuable public asset.

### 2001-2011 MTF Total Gross Revenue



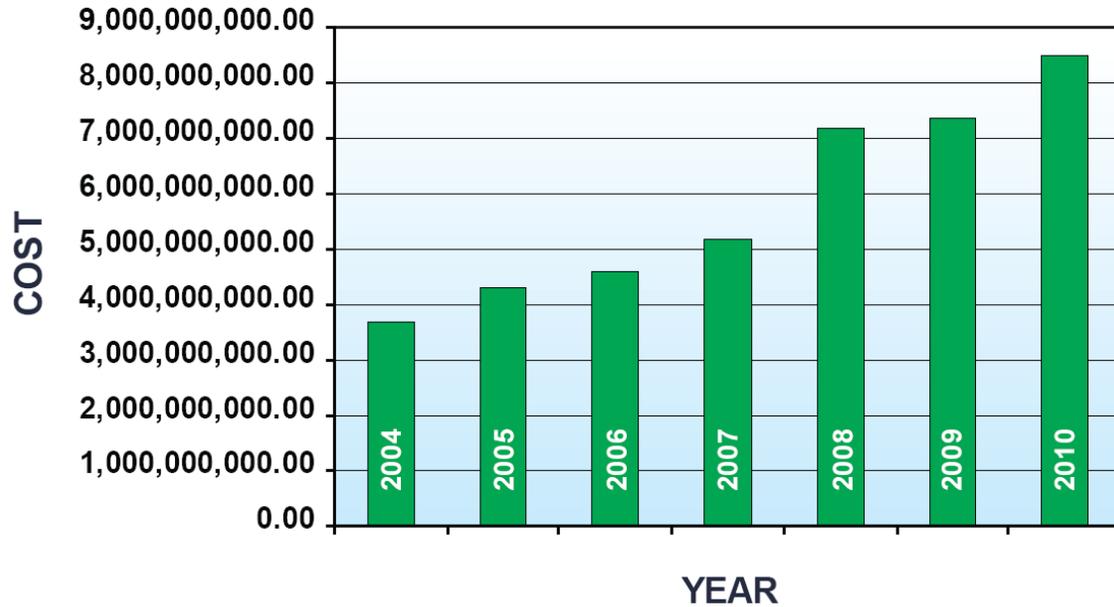
Source: MDOT Date: April 2011

Figure 20

#### *Transportation Funding Crisis*

Figure 20 above shows the Michigan Transportation Fund (MTF) total gross revenue levels between the time periods of 2001 – 2011. Revenues have declined significantly since 2004. Since the 1960's, Michigan has been in the bottom ten states for state and local transportation funding. Michigan's gas tax revenue dedicated to roads and bridges has decreased \$200 million in the past seven years. At current funding levels, the condition of Michigan's transportation infrastructure will continue to decline. The Michigan State legislature passed legislation to allow MDOT to match all available federal aid anticipated to be available in fiscal year 2011. At this time, it is anticipated that additional revenues will need to be found if MDOT is to match all federal aid anticipated to be available in fiscal year 2012. If this does not occur, the unmatched federal gas tax collected in Michigan will go to other states. In 1996, only 64 percent of the state highways were in good or fair condition. In 2007, Michigan's goal of 90 percent of all state highways in good or fair condition was achieved. By 2014, it is predicted that these gains could be significantly decreased, if not completely lost.

## 2004-2010 Cost of Returning All Lane Miles to Good Condition



Source: TAMC Date: April 2011  
Figure 21

### *Cost of Deterioration*

The costs of this continued deterioration are significant. Figure 21 above shows that in 2004 the Council projected it would have cost about \$3.7 billion to bring all poor and fair federal-aid roads up to a good rating. In 2010, we project it would have cost \$8.5 billion, more than double what it would have cost in 2004. This represents \$4.8 billion in lost value of our road assets. The adoption of good pavement and asset management practices by all road agencies can help check this deterioration and the resulting loss of value, but these practices by themselves without adequate funding will be insufficient to fix this situation. [See Appendix D for the Reduction in Asset Value 2004-10 Spread-Sheet]

## TRANSPORTATION ASSET MANAGEMENT IN MICHIGAN

Transportation Asset Management as defined in Michigan is “an ongoing process of maintaining, upgrading and operating physical assets cost-effectively, based on a continuous, physical inventory and condition assessment.” [MCL 247.659(a)]

Asset management provides a solid foundation which allows transportation professionals to monitor the transportation system. Further, it helps them plan how to optimize the preservation, improvement and timely replacement of assets through cost-effective management, programming and resource allocation decisions. REFERENCE TO APPENDIX D – Steve Warren TRB Article

Asset management involves collecting physical inventory and managing current conditions based on strategic goals and sound investments. It is a continuous, iterative process enabling managers to evaluate various scenarios, determine trade-offs between different actions, and select the best method for achieving specified goals.

While asset management utilizes the outputs of pavement and bridge management systems it is much more than just another management system with a fancy name. The significant difference is that, in many respects, pavement and bridge management systems are used in a “tactical” manner, to identify specific projects. Asset management is a “strategic” approach that looks at the network as whole rather than individual projects.

Traditionally, public sector management of roads and bridges has been tactical in nature, concentrating on the immediate and most severe problems. Asset management shifts that thinking to one that is strategic in nature. Decisions are made with regard to the long-range condition of the entire system. This requires considering various investment strategies which will maintain the assets in good condition.

It is crucial in an asset management process to have the ability to forecast future road and bridge conditions and to do investment analyses based on various funding scenarios. The strategic component of the decision-making process entails the ability to assess improvements based on desired outcomes. The strategic focus of an asset management process is supported by network level analysis in addition to the tactical focus of performing location-specific, project-level analysis. This task would include consideration of:

- Current condition of the transportation system and future condition if there is no change in current practices;
- Future condition based on alternative strategies;
- The right time to maintain, preserve, or improve to get maximum useful life from a transportation asset;
- Use preventive fixes or allow an asset to deteriorate to the point of requiring reconstruction;
- Costs and benefits of each decision; and
- Relationship to identified goals and objectives.

The key is the conscious effort required to create and analyze alternatives. It is necessary to focus attention on effectively and efficiently managing and operating our transportation system, rather than merely reconstructing it.

See Appendix D for Council Member, Steve Warren’s “*Local Communities Adopting Asset Management*” article from the September-October 2010 TR News: [www.trb.org/Publications/Blurbs/TR\\_News\\_SeptemberOctober\\_2010\\_Asset\\_Management\\_for\\_164244.aspx](http://www.trb.org/Publications/Blurbs/TR_News_SeptemberOctober_2010_Asset_Management_for_164244.aspx)

## TRANSPORTATION ASSET MANAGEMENT COUNCIL

### ***Formation & Mission***

The Transportation Asset Management Council was formed under Public Act 499 of 2002 (Amended by P.A. 199) to provide a coordinated, unified by the various roadway agencies within the state to advise the State Transportation Commission on a statewide asset management strategy. The Council is comprised of ten (10) voting members from the Michigan Department of Transportation (MDOT), Michigan Municipal League (MML), County Road Association (CRAM), Michigan Association of Counties (MAC), Michigan Township Association (MTA), Michigan Association of Regions (MAR) and one (1) non-voting member from the Center for Shared Solutions (CSS).

Mission: To support excellence in managing Michigan's transportation assets by:

1. Advising the Legislature and State Transportation Commission
2. Promoting Asset Management Principles
3. Providing Tools and Practices for Road Agencies

### ***2010/11 Accomplishments & Activities***

2010 Training & Education:

- One (1) Asset Management Conference – Attendance: 200
- Five (5) Asset Management Workshops - Attendance: 120
- Twelve (12) Elected & Appointed Officials Workshops – Attendance: 300
- Ten (10) PASER Trainings – Attendance: 400
- Fourteen (14) Investment Reporting Tool Trainings – Attendance: 200

Public Outreach:

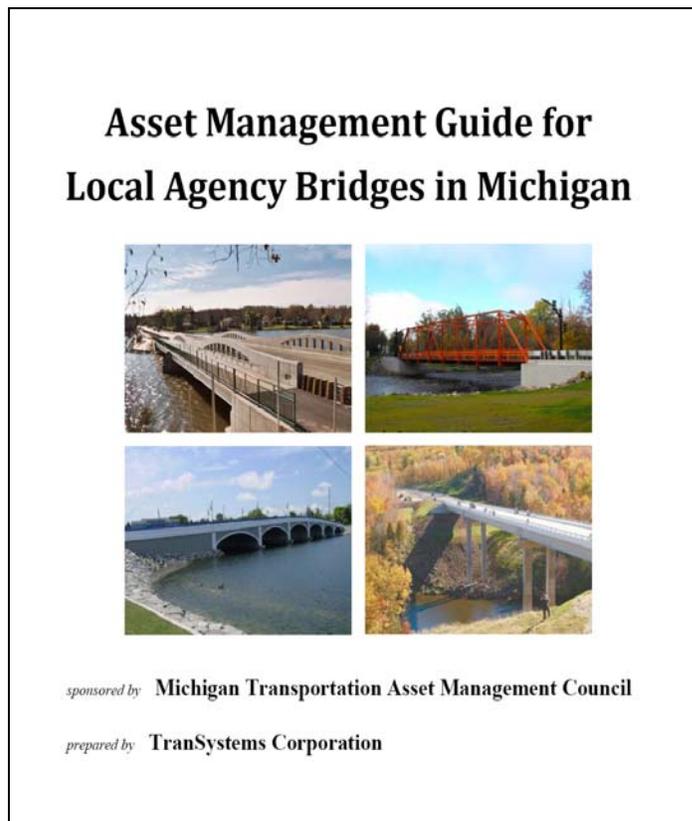
- *Website:* The Council continues to revise and update the Transportation Asset Management Council's website to improve ease of use and add content. In 2010, the Council added a public facing interactive map that includes 2004-09 PASER condition ratings. In 2011, the Council will add 2010 PASER rating and Bridge Condition information (NBI/Sufficiency).

Publications:

- *Annual Report:* On May 2<sup>nd</sup> of each year (since 2003), the Council submits an Annual Report to the State Transportation Commission and Michigan Legislature describing the asset management related efforts and condition of the road & bridge system from the year prior.
- *Asset Management Guide for Local Agencies / Sample Asset Management Plan:* Working in conjunction with MDOT, the Council is in the process of updating the existing Asset Management Guide for Local Agencies and developing a Sample Asset Management Plan which will be scalable to a local agencies size and sophistication. This effort is anticipated to be completed by Spring 2011.

- *Asset Management Guide for Bridges / Sample Bridge AM Plan:* The Bridge Committee has developed an Asset Management Guide for Local Agency Bridges in Michigan. The guide is intended to provide assistance to local agency bridge owners and decision makers in understanding bridge management and preservation. In this regard, the guide will provide guidance to decision makers and county bridge or highway engineers in the planning, developing, programming, and implementing of effective and efficient capital programs and maintenance actions to preserve the bridges under their jurisdiction; and information to assist local agencies (1) in understanding their bridge network, (2) in the preparation and implementation of a bridge preservation plan, and (3) to support applications for funding under Michigan’s Local Bridge Program.

The development of this guide, which may be updated and expanded in the future, is part of an on-going Council strategic initiative to support and encourage bridge asset management best practices in Michigan.



All Council Publication’s Available at: [www.michigan.gov/tamc](http://www.michigan.gov/tamc)

#### Reporting:

- *IRT/ADARS*: In 2010/11, the Council partnered with MDOT's – Financial Operations Division to add the annual project reporting requirements within the Investment Reporting Tool (IRT) to the newly developed online Act 51 Distribution and Reporting System (ADARS). In effect, this effort combines the annual reporting requirements of the County and City/Village engineer with those of the accountant to provide the State Legislature with a much clearer understanding of how Michigan Transportation Funds (MTF) are applied at the project level. This process will be fully integrated within the IRT by the beginning of 2012.

#### Recognition:

- *Awards Program*: The Council adopted an awards program to annually single out those individuals and organizations that support and promote asset management practices. The following individuals and organizations were recognized in 2009 and 2010:
  - Individual
    - John Daly III, PHD – 2009
    - Brian Gutowski – 2009
    - Lance Malburg – 2010
    - Rob VanEffen – 2010
    - Anamika Laad – 2010
  - Organization
    - Michigan Department of Transportation – 2009
    - Genesee County Metropolitan Planning – 2009
    - City of Manistee – 2009
    - City of Marquette – 2009
    - Alcona County Road Commission – 2009
    - Kent County Road Commission – 2009
    - Kalamazoo County Road Commission – 2010
    - Roscommon County Road Commission – 2010
    - Genesee County Road Commission – 2010

## APPENDIX A:

### STATE TRUNKLINE HIGHWAY SYSTEM (EXCERPT) Act 51 of 1951

As Amended by Act No. 199 Public Acts of 2007

**247.659a Definitions; transportation asset management council; creation; charge; membership; appointments; staff and technical assistance; requirements and procedures; technical advisory panel; multiyear program; funding; records on road and bridge work performed and funds expended; report.**

Sec. 9a. (1) As used in this section:

(a) “Asset management” means an ongoing process of maintaining, upgrading, and operating physical assets cost-effectively, based on a continuous physical inventory and condition assessment.

(b) “Bridge” means a structure including supports erected over a depression or an obstruction, such as water, a highway, or a railway, for the purposes of carrying traffic or other moving loads, and having an opening measuring along the center of the roadway of more than 20 feet between under copings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes where the clear distance between openings is less than 1/2 of the smaller contiguous opening.

(c) “Central storage data agency” means that agency or office chosen by the council where the data collected is stored and maintained.

(d) “Council” means the transportation asset management council created by this section.

(e) “County road commission” means the board of county road commissioners elected or appointed pursuant to section 6 of chapter IV of 1909 PA 283, MCL 224.6, or, in the case of a charter county with a population of 2,000,000 or more with an elected county executive that does not have a board of county road commissioners, the county executive for ministerial functions and the county commission provided for in section 14(1)(d) of 1966 PA 293, MCL 45.514, for legislative functions.

(f) “Department” means the state transportation department.

(g) “Federal-aid eligible” means any public road or bridge that is eligible for federal aid to be spent for the construction, repair, or maintenance of that road or bridge.

(h) “Local road agency” means a county road commission or designated county road agency or city or village that is responsible for the construction or maintenance of public roads within the state under this act.

(i) “Multiyear program” means a compilation of road and bridge projects anticipated to be contracted for by the department or a local road agency during a 3-year period. The

multiyear program shall include a listing of each project to be funded in whole or in part with state or federal funds.

(j) "State planning and development regions" means those agencies required by section 134(b) of title 23 of the United States Code, 23 USC 134, and those agencies established by Executive Directive 1968-1.

(2) In order to provide a coordinated, unified effort by the various roadway agencies within the state, the transportation asset management council is hereby created within the state transportation commission and is charged with advising the commission on a statewide asset management strategy and the processes and necessary tools needed to implement such a strategy beginning with the federal-aid eligible highway system, and once completed, continuing on with the county road and municipal systems, in a cost-effective, efficient manner. Nothing in this section shall prohibit a local road agency from using an asset management process on its non-federal-aid eligible system. The council shall consist of 10 voting members appointed by the state transportation commission. The council shall include 2 members from the county road association of Michigan, 2 members from the Michigan municipal league, 2 members from the state planning and development regions, 1 member from the Michigan townships association, 1 member from the Michigan association of counties, and 2 members from the department. Nonvoting members shall include 1 person from the agency or office selected as the location for central data storage. Each agency with voting rights shall submit a list of 2 nominees to the state transportation commission from which the appointments shall be made. The Michigan townships association shall submit 1 name, and the Michigan association of counties shall submit 1 name. Names shall be submitted within 30 days after the effective date of the 2002 amendatory act that amended this section. The state transportation commission shall make the appointments within 30 days after receipt of the lists.

(3) The positions for the department shall be permanent. The position of the central data storage agency shall be nonvoting and shall be for as long as the agency continues to serve as the data storage repository. The member from the Michigan association of counties shall be initially appointed for 2 years. The member from the Michigan townships association shall be initially appointed for 3 years. Of the members first appointed from the county road association of Michigan, the Michigan municipal league, and the state planning and development regions, 1 member of each group shall be appointed for 2 years and 1 member of each group shall be appointed for 3 years. At the end of the initial appointment, all terms shall be for 3 years. The chairperson shall be selected from among the voting members of the council.

(4) The department shall provide qualified administrative staff and the state planning and development regions shall provide qualified technical assistance to the council.

(5) The council shall develop and present to the state transportation commission for approval within 90 days after the date of the first meeting such procedures and requirements as are necessary for the administration of the asset management process. This shall, at a minimum, include the areas of training, data storage and collection, reporting, development of a multiyear program, budgeting and funding, and other issues related to asset management that may arise from time to time. All quality control standards and protocols shall, at a minimum, be consistent with any existing federal

requirements and regulations and existing government accounting standards.

(6) The council may appoint a technical advisory panel whose members shall be representatives from the transportation construction associations and related transportation road interests. The asset management council shall select members to the technical advisory panel from names submitted by the transportation construction associations and related transportation road interests. The technical advisory panel members shall be appointed for 3 years. The asset management council shall determine the research issues and assign projects to the technical advisory panel to assist in the development of statewide policies. The technical advisory panel's recommendations shall be advisory only and not binding on the asset management council.

(7) The department, each county road commission, and each city and village of this state shall annually submit a report to the transportation asset management council. This report shall include a multiyear program developed through the asset management process described in this section. Projects contained in the department's annual multiyear program shall be consistent with the department's asset management process and shall be reported consistent with categories established by the transportation asset management council. Projects contained in the annual multiyear program of each local road agency shall be consistent with the asset management process of each local road agency and shall be reported consistent with categories established by the transportation asset management council.

(8) Funding necessary to support the activities described in this section shall be provided by an annual appropriation from the Michigan transportation fund to the state transportation commission.

(9) The department and each local road agency shall keep accurate and uniform records on all road and bridge work performed and funds expended for the purposes of this section, according to the procedures developed by the council. Each local road agency and the department shall annually report to the council the mileage and condition of the road and bridge system under their jurisdiction and the receipts and disbursements of road and street funds in the manner prescribed by the council, which shall be consistent with any current accounting procedures. An annual report shall be prepared by the staff assigned to the council regarding the results of activities conducted during the preceding year and the expenditure of funds related to the processes and activities identified by the council. The report shall also include an overview of the activities identified for the succeeding year. The council shall submit this report to the state transportation commission, the legislature, and the transportation committees of the house and senate by May 2 of each year.

## APPENDIX B:

### ASSET MANAGEMENT COUNCIL MEMBERS

**Carmine Palombo, Chair – Michigan Transportation Planners Association:** Carmine is the Director of Transportation Programs for the Southeast Michigan Council of Governments. He is in his third term on the Council and has served as the Chair since the Council's first meeting in October 2002.

**Bob D. Slattery, Jr., Vice-Chair – Michigan Municipal League:** Bob the former Mayor of the City of Mt. Morris and life member of MML. Bob is in his second full-term on the Council.

**Spencer Nebel – Michigan Municipal League:** Spencer is the City Manager for Sault Ste. Marie. He has been in that position since 1992. Spencer is in his second term on the Council.

**William McEntee – County Road Association of Michigan:** Bill recently retired as Director of the Permits & Environmental Concerns of the Road Commission for Oakland County. He served in that position since 1992. Bill is in his third and final term on the Council.

**Steve Warren – County Road Association of Michigan:** Steve is the Deputy Director of the Kent County Road Commission. He has served in that position since 1988. Steve is in his third term on the Council.

**Roger Safford - Michigan Department of Transportation:** Roger is the Engineer for the MDOT Grand Region. Roger is in his first term on the Council.

**Bill Tansil – Michigan Department of Transportation:** Bill is the Asset Management Division Administrator for MDOT. Bill is in his first term on the Council.

**Don Disselkoen – Michigan Association of Counties:** Don currently serves on the Ottawa County Board of Commissioners and represents the 8th district of Ottawa County, which is most of the city of Holland. Don is in his second term on the Council.

**John Egelhaaf – Michigan Association of Regions:** John has served as the Executive Director of the Southwest Michigan Planning Commission (SWMPC) since 2003. John is in his first term on the Council.

**Gerald Richards:** Jerry is the Manager of Meridian Charter Township. He has been in that position since 1995. Jerry is in his second term on the council.

**Rob Surber:** Rob is the Deputy Director of the Center for Shared Solutions (CSS), formally the Center for Geographic Information (CGI). The Center serves as the Council's data storage agency and is a non-voting member. Rob has been a member of the council since 2004.

## APPENDIX C:

### DEFINITION OF TERMS

**Asset Management:** as defined in Michigan is “an ongoing process of maintaining, upgrading and operating physical assets cost-effectively, based on a continuous, physical inventory and condition assessment.” [MCL 247.659(a)]

**Bridge Replacement:** Removing the old bridge and constructing a new bridge at the same location.

**Bridge Recondition or Repair:** All types of major repairs including the replacement of the deck.

**Capital Preventive Maintenance:** Capital preventive maintenance means a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserve assets by retarding deterioration and maintaining functional condition without increasing structural capacity. Work activities and actions that are included as a capital preventive maintenance activity are those that extend the life of the asset, but do not change the original design, function, or purpose of the asset; the primary purpose of the work is to repair the incremental effects of weather, age, and use; the useful service life or benefits extend beyond the next fiscal year; and the work may restore some structural capacity of the road but, it does not substantially increase the loading allowed.

**Construction:** Construction is the building of a new road, street or bridge on a new location, and the addition of lanes to increase the capacity for through traffic. It is the improving of an existing road or street by correcting the grade, drainage structures, width, alignment, or surface. It is the building of bridges or grade separations, and the repair of such structures by strengthening, widening, and the replacement of piers and abutments. It is the initial signing of newly constructed roads or streets, major resigning of projects, and the installation, replacement, or improvement of traffic signals.

**Heavy Maintenance:** The improving of an existing road or street by correcting the grades, drainage structures, width, alignment, surface, and the hard surfacing of gravel roads. It also includes the rebuilding of existing bridges or grade separations, and the repair of such structures by strengthening, and the replacement of piers and abutments.

**Maintenance:** According to Act 51, “maintenance” means routine maintenance or preventive maintenance, or both. Maintenance does not include capital preventive treatments, resurfacing, reconstruction, restoration, rehabilitation, safety projects, widening of less than one-lane width, adding auxiliary turn lanes of one-half mile or less, adding auxiliary weaving, climbing, or speed-change lanes, modernizing intersections, or the upgrading of aggregate surface roads to hard surface roads.

**Pavement Surface Evaluation and Rating (PASER):** is a visual survey of the condition of the surface of the road. It rates the condition of various types of pavement distress on a scale of 1-10. It is based on a system of pavement evaluation developed in Wisconsin and is used by most road agencies in the state.

**Reconstruction:** Any construction where the road is totally reconstructed by regrading, new subgrade, subbase, and surface at the same location.

**Resurfacing:** Resurfacing pavements with minor base repair, minor widening, and resurfacing the existing width. This would include any double or triple seal coating.

**Routine Maintenance:** Routine maintenance includes actions performed on a regular or controllable basis or in response to uncontrollable events upon a roadway. Work activities or actions considered to be routine maintenance are those where the benefit or effective service life of the work does not last beyond the next fiscal year; the work would not significantly change the surface rating of the road; or the work would rarely require acquisition of right-of-way or site specific design.

**Structural Improvement:** Structural improvement includes any activity that is undertaken to preserve or improve the structural integrity of an existing roadway. The structural improvement category includes those work activities where the safety or structural elements of the road are improved to satisfy current design requirements. Structural improvement does not include new construction on a new location of a roadway; a project that increases the capacity of a facility to accommodate that part of traffic having neither an origin nor destination within the local area; widening of a lane width or more; or adding turn lanes of more than one-half mile in length.

**Structurally Deficient Bridge:** Federal guidelines classify bridges as *structurally deficient* if at least one of three key bridge components (deck, superstructure, or substructure) is rated in poor condition. This means that qualified engineers have determined that the bridge requires significant maintenance, rehabilitation or replacement. A structurally deficient bridge may need to have heavy vehicle traffic restricted or eventually be closed until necessary repairs can be completed.

**Vehicle Miles Traveled (VMT):** The total number of miles driven by all vehicles in Michigan during any given year. VMT can also be shown for any segment of road (total number of miles driven by all vehicles on the segment during any given year), or by geographic area (such as the total number of miles driven by all vehicles in a county during any given year).

**APPENDIX D:**

**Reduction in Asset Value 2004 - 2010  
Comparison of Road Conditions on Michigan's Federal-Aid System**

Condition		2004		2010	
		County, City, Non-Freeway	Freeway	County, City, Non-Freeway	Freeway
<b>Fair</b>	Percent	65.0%	61.0%	45.5%	59.8%
	Lane Miles	53,844	6,122	33,930	5,994
	CPM %	100%	100%	100%	100%
	CPM cost / lane mile	\$28,000	\$42,000	\$35,000	\$53,000
	Total Need in Fair Condition	\$1,507,632,000	\$257,124,000	\$1,187,564,423	\$317,670,104
<b>Poor</b>	Percent	10.8%	6.4%	37.7%	8.3%
	Lane Miles	8,915	646	28,126	829
	Rehabilitation %	70%	70%	70%	70%
	Rehab. Cost / lane mile	\$100,000	\$335,000	\$125,000	\$423,000
	Rehab. Sub Total	\$624,050,000	\$151,487,000	\$2,460,992,153	\$245,494,296
	Reconstruction %	30%	30%	30%	30%
	Reconst. Cost / lane mile	\$360,000	\$930,000	\$475,000	\$1,172,000
	Reconst. Sub Total	\$962,820,000	\$180,234,000	\$4,007,901,507	\$291,508,932
	Total Need in Poor Cond.	\$1,586,870,000	\$331,721,000	\$6,468,893,660	\$537,003,228
Total Fair and Poor Cond.	\$3,094,502,000	\$588,845,000	\$7,656,458,083	\$854,673,332	
<b>Grand Total</b>		<b>\$3,683,347,000</b>		<b>\$8,511,131,415</b>	

**Reduction in Asset Value 2004 to 2010**

**\$4,827,784,415**

*Estimated Typical Costs for Reconstruction, Rehabilitation, and Maintenance Treatments on  
Local Federal Aid Pavements in Michigan, MDOT MAP Database, and Historical Information,  
April 2011*



# Local Communities Adopting Asset Management

*Initiatives, Models, and Results in Michigan and Wisconsin*

STEVE WARREN

The author is Deputy Director, Kent County Road Commission, Grand Rapids, Michigan.

Local communities are starting to get it, to understand the benefit of taking an asset management approach to maintain their infrastructure systems. Large and small local agencies are embracing a better way of managing their transportation networks—their paved roads in particular. These agencies are turning away from the past practice of addressing the “worst first,” and adopting instead a strategy of “preserve first.”

The benefits of asset management are well documented and include efficient use of financial resources, increased reliance on a broader mix of fixes, and a system condition that improves over time. These are significant outcomes, but the communities that benefit the most go beyond the technical aspects of pavement management and apply asset management as an inclusive process, inviting their constituents to participate.

These agencies are involving a variety of community stakeholders in a decision-making process founded on the principles of asset management. In Michigan and Wisconsin, for example, statewide initiatives have encouraged local agencies to adopt an asset management approach to paved road conditions.

A chip seal operation undertaken by the Kent County Road Commission in Michigan. Encouraged by statewide initiatives, local communities have realized the benefits of an asset management approach.



TR NEWS 270 SEPTEMBER–OCTOBER 2010

PHOTO COURTESY OF STEVE WARREN

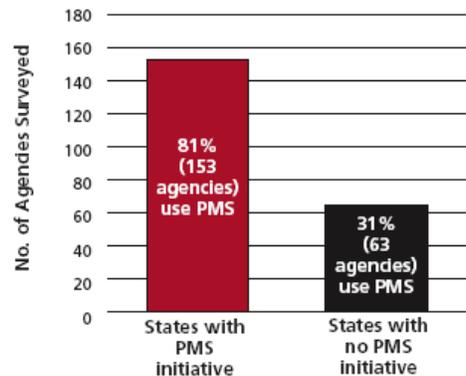


FIGURE 1 Local agencies using pavement management systems.

## Guiding Change

The times demand a better approach. People need to understand a concept and be convinced of its benefits before they are willing to change. Local transportation agencies in Michigan and Wisconsin are gaining greater understanding of asset management principles and of the long-term benefits of pavement preservation strategies.

Convincing technical staff about the benefits of pavement preservation is different from persuading elected and appointed officials, major stakeholders, and the public to embrace the practice. For many, improving roads in apparently good condition is counterintuitive if the worst roads are going untreated. Education and training of local officials, therefore, is a major focus of the statewide asset management programs in Michigan and Wisconsin.

In a survey about the use of pavement management systems (PMS) at the local agency level in the Midwest—the states of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin—de Melo e Silva et al. found that states with statewide pavement management initiatives had a significantly higher percentage of local agencies using PMS (Figure 1). Of the 189 agencies responding from Michigan and Wis-

consin—both of which have statewide pavement management initiatives—81 percent claimed to use a PMS for their systems. Of the 204 agencies in states with no such initiatives, only 31 percent claimed to use a PMS (1). Statewide initiatives therefore have a positive effect on pavement preservation efforts at the local level.

### Statewide Coordination

In 2004, the Michigan Legislature created the Transportation Asset Management Council (TAMC) to implement asset management statewide and to advise the State Transportation Commission on a strategy. The legislature recognized that road ownership in the state was large and diverse, involving three levels of government: state, county, and city or village. The Michigan Department of Transportation (DOT) is the largest road agency within TAMC, with 9,700 miles to maintain; 617 counties, cities, and villages collectively have jurisdiction over the remaining 110,000 miles, or 92 percent of the public road system.

To implement asset management statewide, the legislature wanted all three levels represented on the council and requested other major governmental stakeholders to participate. TAMC consists of representatives from the County Road Association, the Municipal League, Michigan DOT, the Association of Regions, the Transportation Planners Association, the Township Association, and the Association of Counties.

### Strategic Initiatives

Since 2004, TAMC has expanded the practice of asset management by focusing on four strategic initiatives (2):

- ◆ Surveying and reporting the condition of roads and bridges,
- ◆ Assessing completed and planned investments,
- ◆ Supporting the development of asset management tools and procedures, and



A driver and passenger log data in a Pavement Surface Evaluation and Rating (PASER) survey. Road surveying is one of TAMC's four strategic initiatives.



◆ Providing education and training on the benefits of developing road improvement programs through the use of asset management principles and procedures.

Michigan's Transportation Asset Management Council (TAMC) brings together representatives from all levels of government—state, county, and local jurisdictions.

According to the council, successful implementation of a statewide asset management strategy depends on the extent of its adoption at the local level. Education and training therefore are essential for agency staff and for the nontechnical decision makers serving on boards and councils. One of the fundamental elements of the council's education and training program is the *Asset Management Guide for Local Agencies in Michigan*, which contains detailed descriptions of condition assessment, pavement preservation techniques, and trade-off analysis to develop a multiyear improvement program, along with background information on TAMC.

### Elements of Training

The council sponsors education and training sessions annually, coordinated through the Michigan Local Technical Assistance Program (LTAP). The major elements include the following:

◆ *Asset Management Workshop*. A daylong session covers the principles of asset management and their rationale and presents tools for agency implementation. The training provides step-by-step instructions for starting up within a local agency. Although targeted to technical staff, the training is also appropriate for elected officials.

◆ *Annual Asset Management Conference*. The Transportation Asset Management Conference was launched in 2006, and two annual conferences were conducted in 2008 and 2009, one each in Michigan's Upper and Lower Peninsulas. The full-day programs inform attendees about the council's activities, focusing on the results of the annual statewide condition assessment of roads and bridges. Featured each year are presentations from local agencies about their suc-

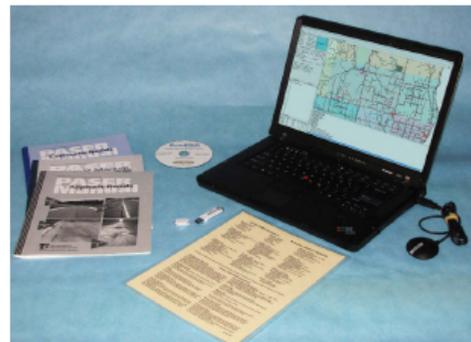


PHOTO: MICHIGAN LTAP  
The Michigan Local Technical Assistance Program, sponsored by TAMC, hosts transportation asset management training sessions for local officials, such as this one in Kalamazoo.

cess in implementing asset management. In 2009, TAMC introduced an awards program to recognize outstanding achievement by organizations and individuals in implementing the core principles of asset management.

◆ *Introduction of Asset Management for Local Officials.* Involving local elected and appointed officials in asset management is a priority for TAMC. The council sponsors a half-day training course, Introduction of Asset Management for Local Officials, for community decision makers responsible for transportation programs and investments. Attendees learn about the principles of asset management, the basics of road construction, the causes of deterioration, condition rating, and the process of developing a multiyear improvement program. The session emphasizes the long-term benefits that can be achieved through investments in pavement preservation.

◆ *PASER Training.* Pavement condition rating is essential in implementing asset management statewide in Michigan. The Pavement Surface Evaluation and Rating (PASER), developed in Wisconsin, employs a 1 to 10 (poor to good) scale to assess pavement surface deterioration. TAMC uses PASER to evaluate pavement conditions statewide, and many other road agencies use it in their asset management programs. The PASER training covers the



Laptop data collector and other PASER tools allow road agencies to record and submit pavement ratings and data to TAMC.

process of recording and submitting condition ratings to TAMC and provides consistent direction to all agencies in the use of the methodology for their federal-aid routes. This facilitates the assembly and analysis of information on the condition of the entire system for the State Transportation Commission and the legislature. Local agency participants gain the skills to assess pavement conditions on their non-federal-aid roads.

In addition to the education and training sessions sponsored by TAMC, Michigan LTAP conducts training in the use of ROADSOFT™, a computer-based program that helps agencies predict system conditions under various improvement and investment scenarios. This capability is critical to the asset management process. ROADSOFT applies the PASER data to develop pavement deterioration curves. The program is available to Michigan transportation agencies at no cost, and more than 250 agencies are using it. TAMC conducts its statewide strategic analysis with ROADSOFT (2).

### Local Agencies Forum

Wisconsin also has a statewide initiative to encourage the implementation of asset management and pavement preservation at the local government level. As in Michigan, most of the road miles in Wisconsin are under the jurisdiction of local agencies. Nearly 2,000 counties, cities, villages, and towns maintain approximately 90 percent of the state's 114,000-mile public road network (3).

In 1994, the Secretary of Wisconsin DOT established the Local Roads and Streets Council (LRSC) to provide advice on local transportation issues and to serve as a forum for local agencies to discuss issues. LRSC includes representatives from the four local agency transportation groups: the Counties Association, the League of Municipalities, the Towns Association, and the Alliance of Cities.

Wisconsin DOT and LRSC cooperatively developed the Wisconsin Information Systems for Local Roads (WISLR) to receive, store, and disseminate local road inventory and condition data. WISLR assists local agencies in evaluating system needs and in developing cost-effective pavement maintenance and improvement programs.

### Wisconsin Workshops

Transportation officials in Wisconsin also rely on education and training to advance the practice of asset management at the local level. Based at the University of Wisconsin–Madison, the Wisconsin Transportation Information Center—the state's LTAP—provides workshops on road condition rating using the PASER

methodology and on implementing pavement management using the WISLR program (4).

Wisconsin DOT maintains a telephone hotline and e-mail support for local officials who need assistance with the program. The WISLR program has been demonstrated at local government association meetings to increase understanding of the concepts and the tools of asset management.

### Community Involvement

Asset management programs and improved pavement preservation strategies are producing significant benefits for local communities. Several agencies in Michigan and Wisconsin are using asset management to educate stakeholders about the basics of pavement deterioration and to explain the logic and sense of a mix-of-fixes preservation strategy.

The community involvement has broadened awareness of system conditions and trends, making it easier for agencies to explain the challenges. This in turn builds community consensus on a plan of action and, in some instances, has gained increases in funds to implement planned improvements. In general, local transportation agencies are finding that an open and inclusive asset management process leads to greater transparency and accountability for their actions, increasing community trust and acceptance.

### Opportunity to Educate

In Michigan, the Emmet County Road Commission works with its 16 township governments to maintain a local, non-federal-aid network of 589 miles of predominantly rural roads. The condition of this system has declined gradually, as confirmed in pavement condition data collected since 1994. During that time, the Road Commission had allocated dollars from the townships for improvements according to the traditional worst-first strategy.

After participating in training sessions on asset management sponsored by TAMC, Brian Gutowski, the Road Commission's engineer-manager, realized that the folks back home needed to hear more about pavement preservation and the mix-of-fixes approach to maintaining roads. Gutowski asked Michigan LTAP to customize a training session for elected officials on the basics of roadway deterioration and the wisdom of making timely improvements to keep good roads in good condition.

The township officials took the information and set forth a plan of action. Chairman of the Emmet County Road Commission Frank Zulski, Jr., has observed, "Training local officials about asset management was instrumental in getting them on board with the program." During the election of 2004, each

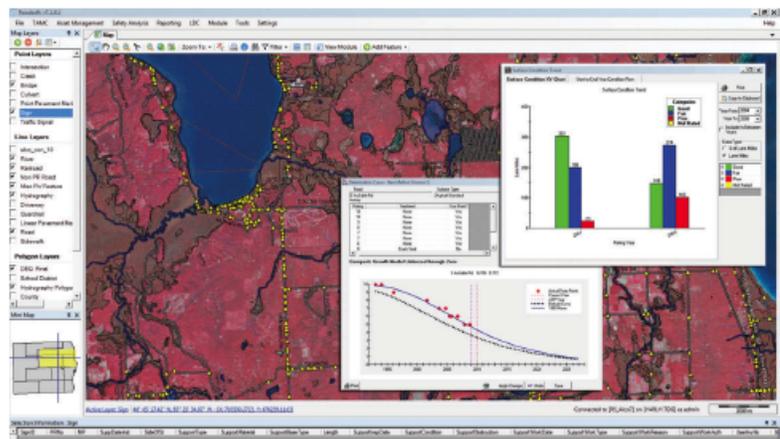


PHOTO COURTESY OF TERRY MICHON, MICHIGAN LTAP

township passed a property tax levy to implement pavement preservation in its area. Today, Gutowski works with township officials to review their pavement ratings and reach consensus on where best to invest dedicated preservation dollars.

ROADSOFT analyzes road data, collected with PASER, to predict system conditions under various scenarios.

### Raising Awareness

Agreement among agency staff and board members, however, may not be enough to change from worst-first to an approach focused on pavement preservation. Often the understanding and consensus of the broader community is necessary for success. The staff and board of the Roscommon County Road Commission (RCRC) in North Central Michigan, for example, recognized the need to emphasize systemwide pavement preservation—but they also realized that to be successful, they needed to reach out to stakeholder groups around the county. These people have a vested interest in the condition of the road system and could influence the level of funding.

RCRC organized a local Asset Management Advisory Board with representatives from area schools, transit, the economic development authority, the chamber of commerce, the county commission, the merchant association, the township, the city, and Michigan DOT. RCRC staff and the advisory board members received training in the fundamentals of asset management from Michigan LTAP. With that understanding and the results of pavement condition ratings, RCRC and the advisory board developed consensus on several pavement condition goals and developed a plan to achieve those goals for the county, as well as for individual townships.

"Asset management helped the community understand the challenges facing the Road Commission and why preserving existing pavements with a mix-of-fixes approach makes sense," notes RCRC Chairperson Kimberly Akin. "It really got people involved."



Joe Nestler, Wisconsin DOT, delivers a presentation on Wisconsin Information Systems for Local Roads (WISLR) analysis tools to the Local Roads and Streets Council in Wisconsin Rapids. Demonstrations have enhanced local governments' understanding of asset management.

### Building Consensus

The City of Ferndale in Michigan has demonstrated that building community consensus generates positive results. In 1992, the suburban Detroit community of 20,000 failed to pass a \$20 million bond proposal to improve its 75-mile network of streets and aging water and sewer infrastructure. Byron Photiades, Director of Ferndale's Department of Public Works (DPW), recommended that the city council form a citizen advisory committee with representatives from each of the city's voting precincts to investigate the issues and to make recommendations for proceeding.

After a year-and-a-half study, the citizen group—known as MAIN, for Maintain our Aging Infrastructure Now—recommended a package of three bond proposals totaling \$45 million to rebuild the city's water, sewers, and roads. According to Ferndale Mayor Robert Porter, "People became convinced, and then they convinced the political leaders."

With a stronger base of support, city staff made



PHOTO COURTESY OF STEVE WARREN

A newly preserved section of pavement in Emmet County, Michigan. The Emmet County Road Commission lobbied Michigan LTAP for customized asset management training and adopted a "preserve first" approach to its roads.

several presentations around the community about the need, benefit, and effect of the new proposal. In 1995, the citizens of Ferndale voted in favor of the more robust proposal.

Photiades points to the value of building citizen support: "Nothing that's administratively driven is very successful—you need grassroots support." Since 1995, the city has invested \$58 million to upgrade water and sewer facilities and has repaved every street in the city. The citizen advisory group remains active, to ensure that the upgraded facilities are properly maintained.

### Transparency and Accountability

Perhaps the greatest benefit of an open and inclusive asset management process is the increased transparency and accountability. In the City of Oconomowoc, a small Wisconsin community on the I-94 corridor between Milwaukee and Madison, local officials, stakeholders, and the community at large have come to understand and trust the decisions the road agency is making to manage roads and bridges appropriately and to invest tax dollars wisely.

In 2005, an analysis of pavement rating data revealed that Oconomowoc's allocation of \$100,000 annually for road improvements was inadequate to improve and preserve the condition of its 73-mile street network. Aided by the WISLR program, the city's staff and consultant demonstrated alternative future investment scenarios to improve conditions, making presentations at open public forums, in interviews with the media, and on field trips with the city council to educate people about the situation and the choices of solutions. The mayor and city council members soon approved a tenfold increase in the annual budget appropriation for street preservation.

Analysis also demonstrated that additional investments were needed to address the backlog of roads awaiting more costly structural improvements and reconstruction. The city council understood and trusted the analysis and approved two \$5 million bond issues to complete the improvements. According to DPW Director Mark Frye, "The mayor and city council wanted to give us the dollars we needed to improve the roads—we just needed to give them the reasons why."

### Local and Statewide Benefits

Local transportation agencies are realizing the benefits of asset management, especially as a means of educating and involving constituents in the decision-making process. Asset management is helping agencies provide answers to some fundamental questions about road and bridge networks—for example, Are conditions getting better or worse? What is the



The Roscommon County Road Commission's Asset Management Advisory Board, made up of stakeholders from across the county, developed pavement condition goals and a plan to achieve them.

vision for the future? What is the plan to achieve that vision? Is progress being made?

People within these communities are paying attention to—and gaining greater awareness of—system conditions and trends. Agencies in turn are finding it easier to demonstrate alternatives to working on the worst parts of the system first, by building consensus on the cost-effectiveness of pavement preservation. In this way, local agencies are achieving a greater level of transparency and accountability in their community. In several instances, agencies have gained additional, needed financial resources to implement their plans.

Statewide asset management initiatives in Michigan and Wisconsin are demonstrating success. Local agencies are establishing their own asset management programs through a variety of education and training opportunities; receiving technical assistance, including the collection and storage of condition data; and making use of available analysis tools to develop improvement plans that fit local needs and desires.

Programs like ROADSOFT and WISLR provide local agencies with the ability to make projections and to analyze the consequences of various improvement and investment options. These are powerful tools for explaining to local officials, stakeholders, and the general public what is happening to the transportation system and for convincing them that they can influence the future.

[http://www.trb.org/Publications/Blurbs/TR\\_News\\_SeptemberOctober\\_2010\\_Asset\\_Management\\_for\\_164244.aspx](http://www.trb.org/Publications/Blurbs/TR_News_SeptemberOctober_2010_Asset_Management_for_164244.aspx)

## Moving to a National Scale

Experience with statewide initiatives in Michigan and Wisconsin could prove useful in considering asset management on a national scale. Most of the transportation assets around the country are under local jurisdiction. Approximately 75 percent—or 3.0 million miles—of the national street and highway network are under the jurisdiction of 38,000 local agencies and tribes (5). To realize the benefits of asset management on a national scale, implementation at the local agency level is essential.

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