

# **Michigan Transportation Asset Management Council**

## **Michigan Bridge Conference**



**Beckie Curtis**

**March 20, 2019**



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Transportation Asset  
Management Council

# Michigan's Road System

## ❖ *Michigan – A Home Rule State*

- 83 Counties
- 533 Cities and Villages
- 1,240 Townships
- MDOT
- 14 Planning Regions
- 15 Metro Planning Agencies
- Consultants & Contractors
- 617 Road-Owning Agencies
  - 122,000+ miles of public roads
  - 11,000+ public bridges





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# Legislature Act in 2002

*All public roads in Michigan will be managed  
using the principles of Asset Management*

— Public Act 499



- Act Creates Transportation Asset Management Council – TAMC
- Advisory to Michigan State Transportation Commission
  - Asset Management Process
  - Tools and Education
  - Statewide Asset Management Strategy
  - Federal Aid System First
- Partnership for Deployment with Metro & Regional Planning Agencies



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# 2019 Council



Joanna Johnson  
Chair (CRA)



Bill McEntee  
Vice Chair (CRA)



Derek Bradshaw  
(MAR)



Christopher Bolt  
(MAC)



Gary Mekjian  
(MML)



Bob Slattery  
(MML)



Jon Start  
(MTPA)



Jennifer Tubbs  
(MTA)



Brad Wieferich  
(MDOT)



Todd White  
(MDOT)



Rob Surber  
(DTMB – CSS)



Roger Belknap  
(MDOT– TAMC  
Coordinator)



# 2019 Bridge Committee

- Rebecca Curtis - Chair – MDOT Bureau of Bridges and Structures
- Keith Cooper – Vice-Chair – MDOT Local Agency Programs
- Brad Wieferich – Council Member – MDOT
- Christopher Bolt – Council Member - MAC
- Wayne Harrall – CRA
- Al Halbeison – ACEC
- Brian Vilmont – Subject Matter Expert (Culverts)





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# Support & Partners



County Road Association  
OF MICHIGAN



michigan municipal league



MICHIGAN TOWNSHIPS ASSOCIATION





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# Creating Resources

## ❖ ***“An Honest Broker of Data”***

- ✓ Publication of Michigan's Roads & Bridges Annual Report
- ✓ Reporting Investments – Data Sharing Requirement Part of Act 51 Compliance
- ✓ Interactive Maps, Dashboards & Mobile Accessible Data
- ✓ Road Condition Data on no less than ½ Federal Aid System Annually





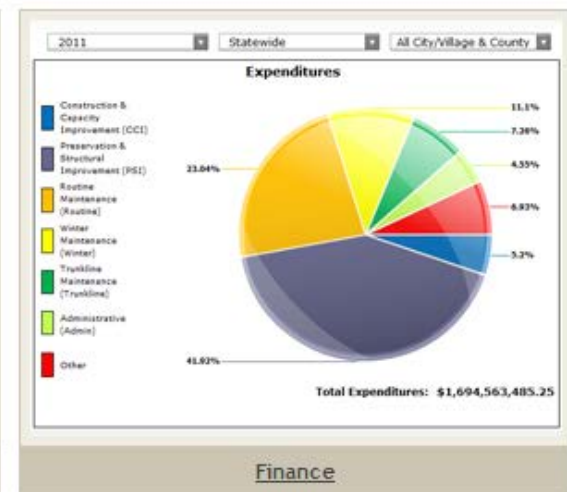
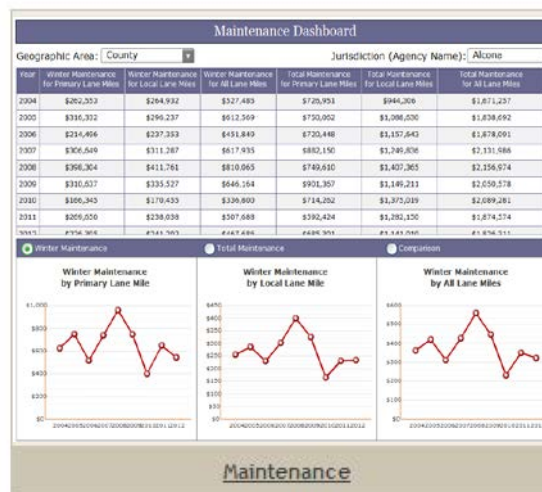
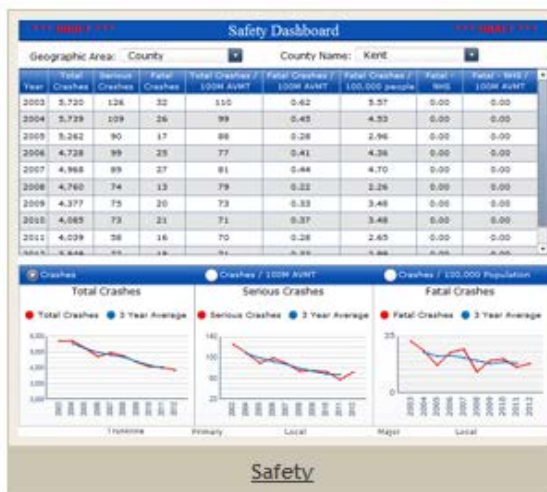
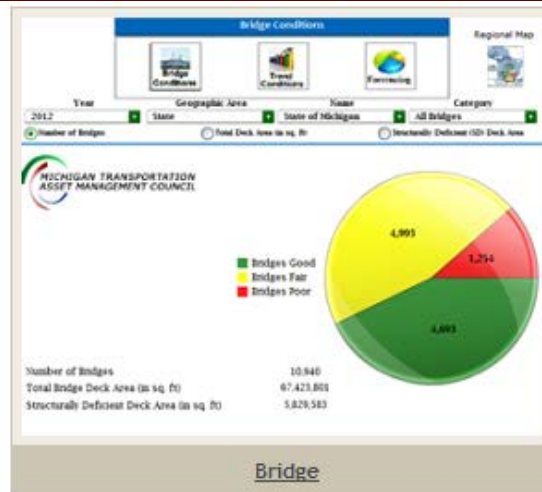
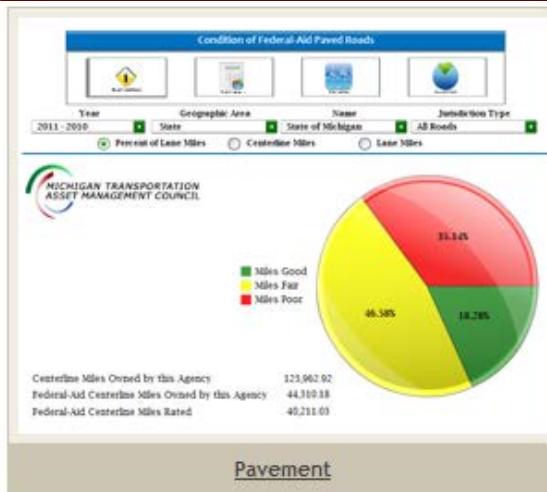
# Transportation Asset Management Council

## MI Transportation Reporting Portal

Michigan.gov

The Official State of Michigan Website

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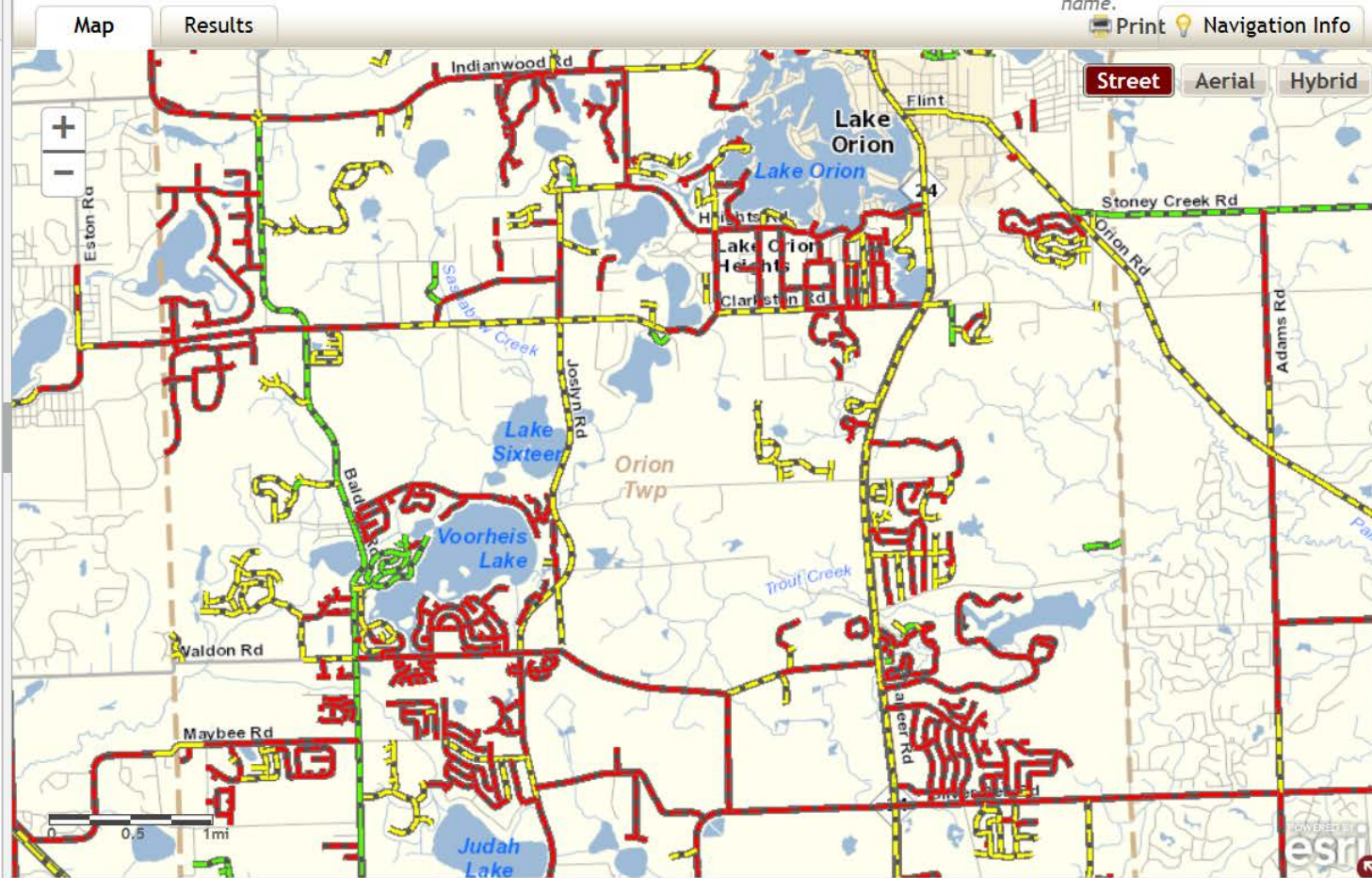
PASER - Road Condition

Most Current:

Poor

Fair

Good





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## Bridge Asset Management Webinars & Workshops

Webinars introduce participants to the core concepts of bridge asset management and the tools available for creating a bridge asset management plan

- Part 1: Introduction, bridge condition evaluation, assessment of maintenance needs
- Part 2: Cost estimating, optimization of bridge preservation actions



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## Bridge Asset Management Webinars & Workshops

Workshops are structured to give participants the tools and materials needed for creating their own bridge asset management plan. Participants will gather data prior to the workshop and use Excel and Word templates to organize their data and create a draft written plan.



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# Bridge Asset Management Webinars & Workshops

## Tentative 2019 Training Dates:

### Webinars:

- Bridge Asset Management Part 1 – April 30<sup>th</sup> and October 24<sup>th</sup>
- Bridge Asset Management Part 2 – May 7<sup>th</sup> and October 31<sup>st</sup>

### Tentative Workshop Dates (locations TBD):

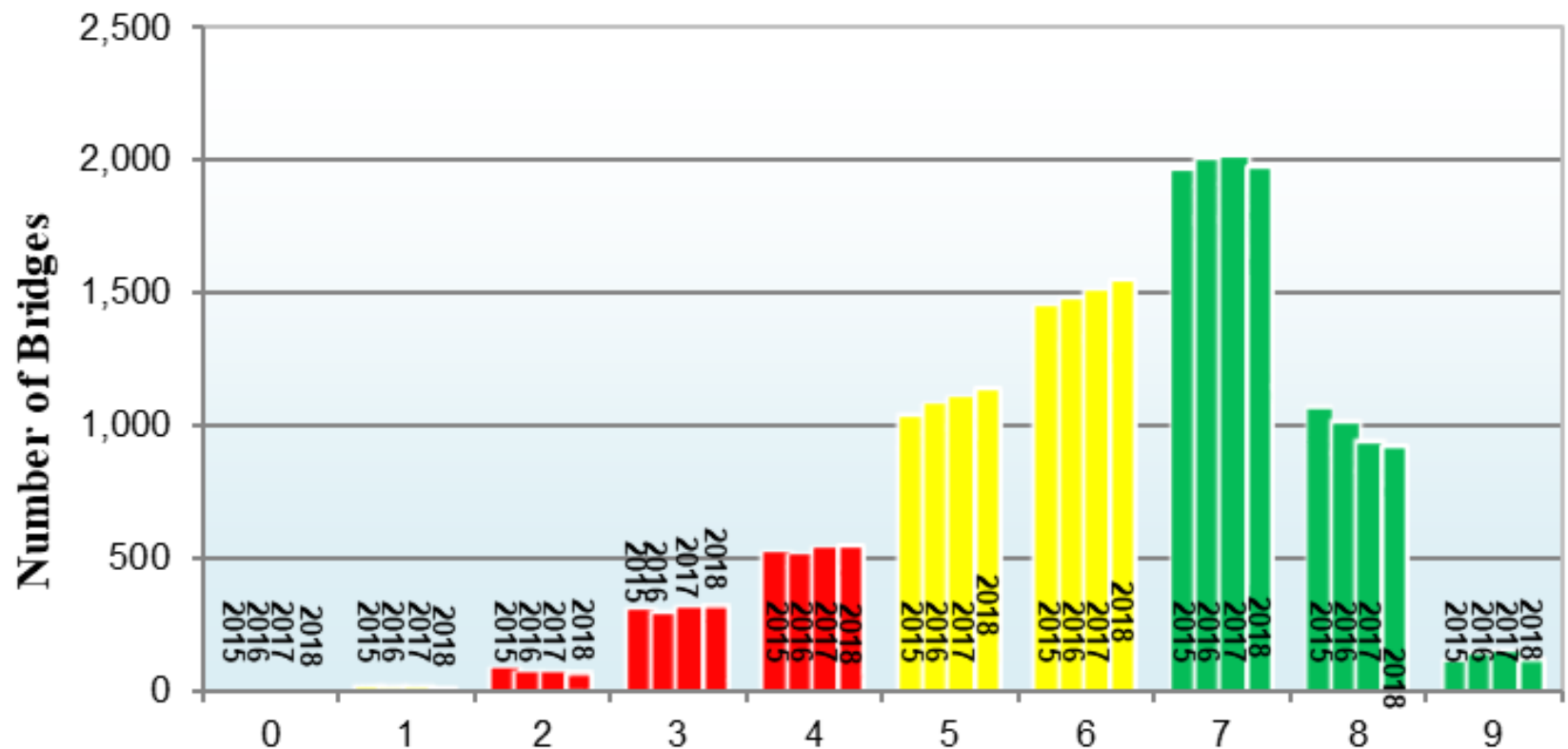
- May 14<sup>th</sup>
- November 6<sup>th</sup>
- November 7<sup>th</sup>





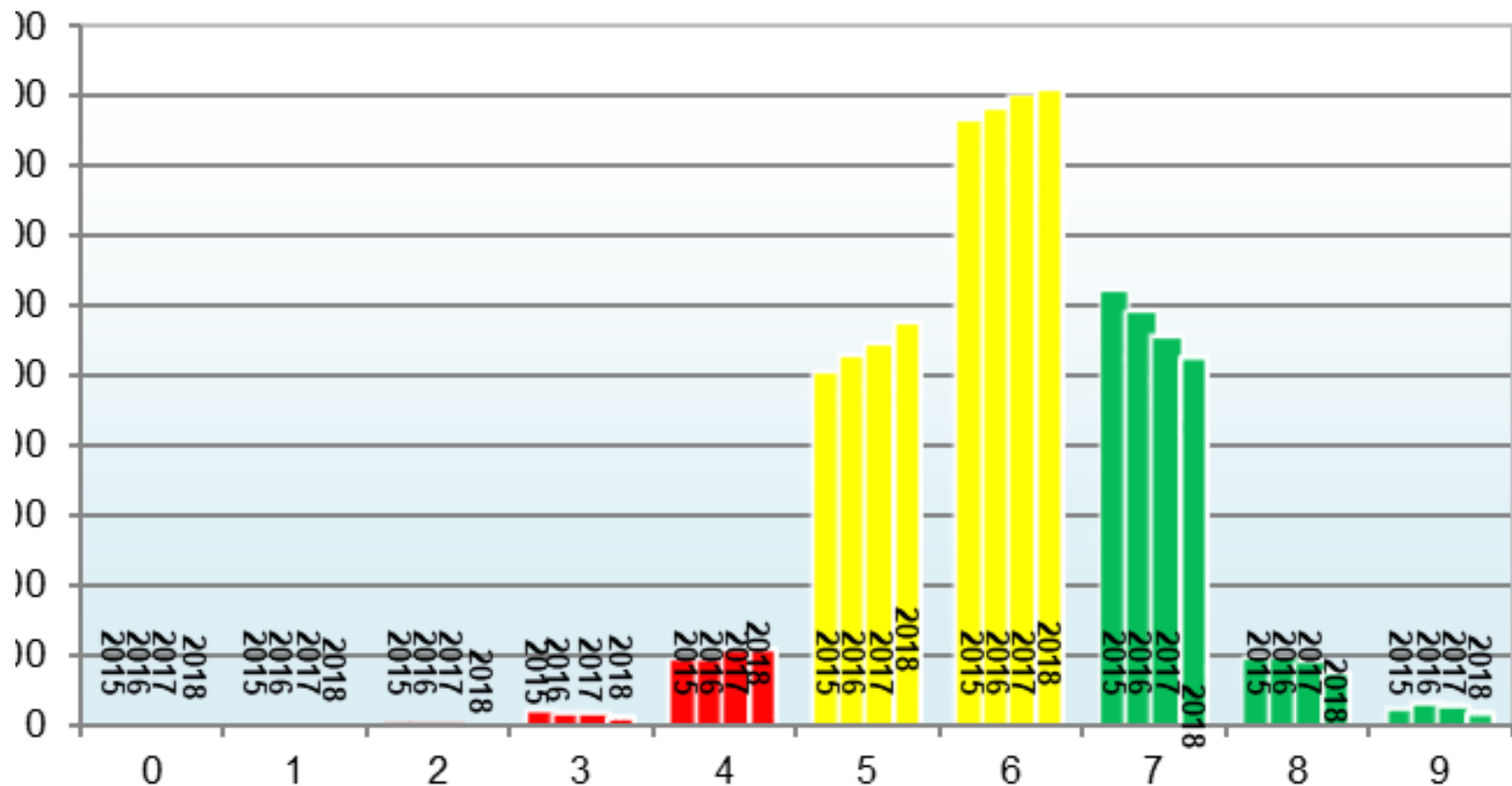
## 2018 Condition Data

2015-2018 Local Condition Trend





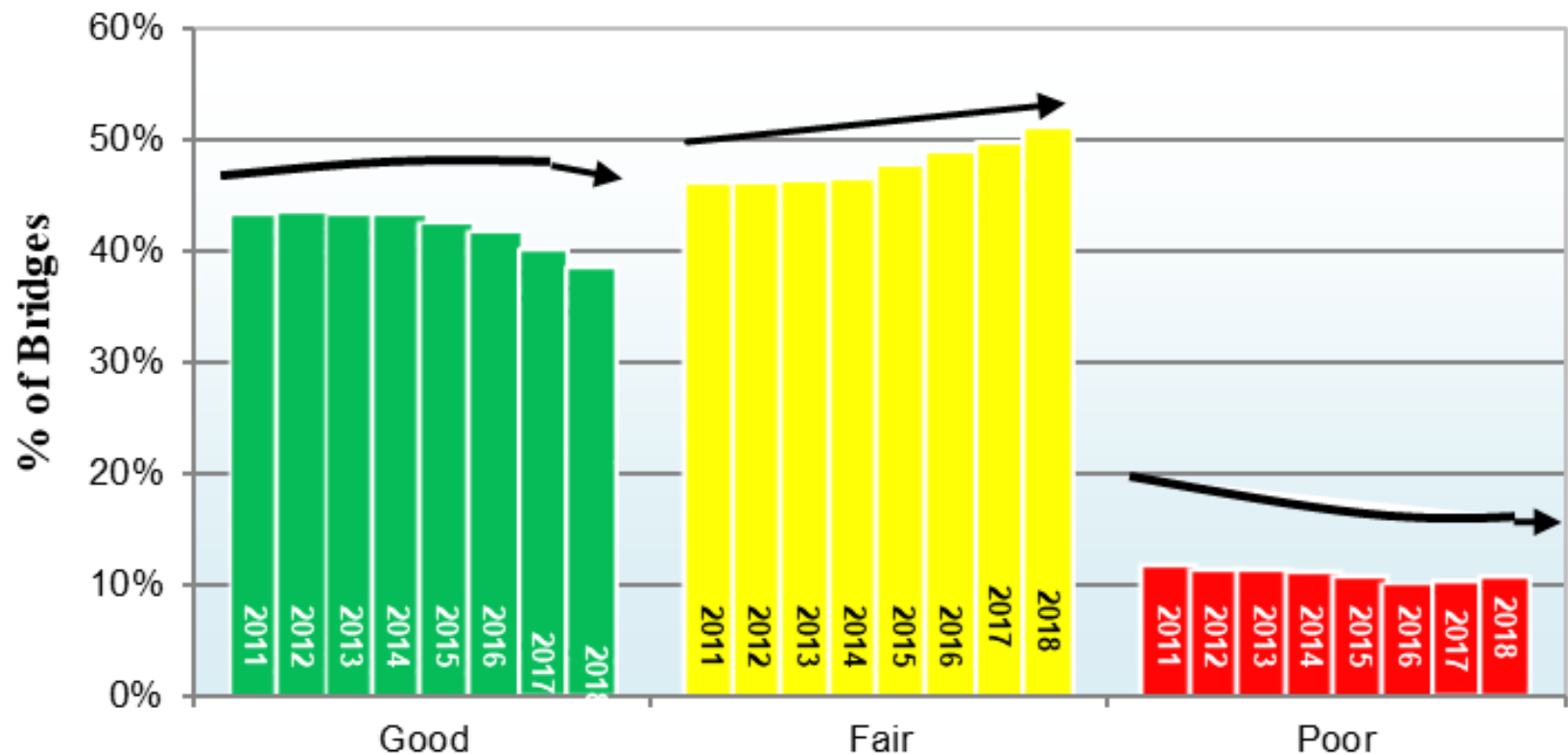
2015-2018 Trunkline Condition Trend





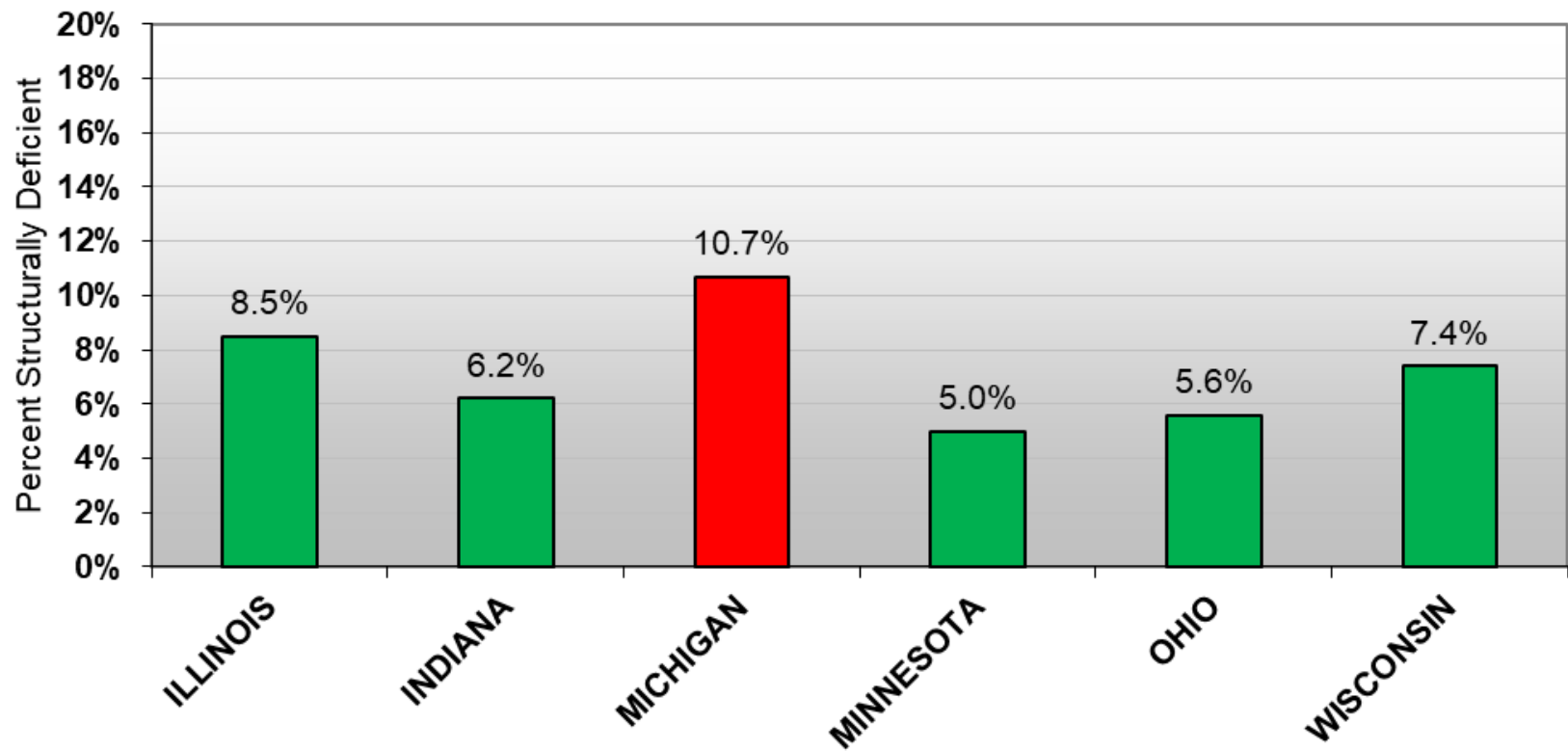
## 2018 Condition Data

**2010-2017 Bridge Condition**  
**All Roadway Bridges (MDOT and Local Agency)**





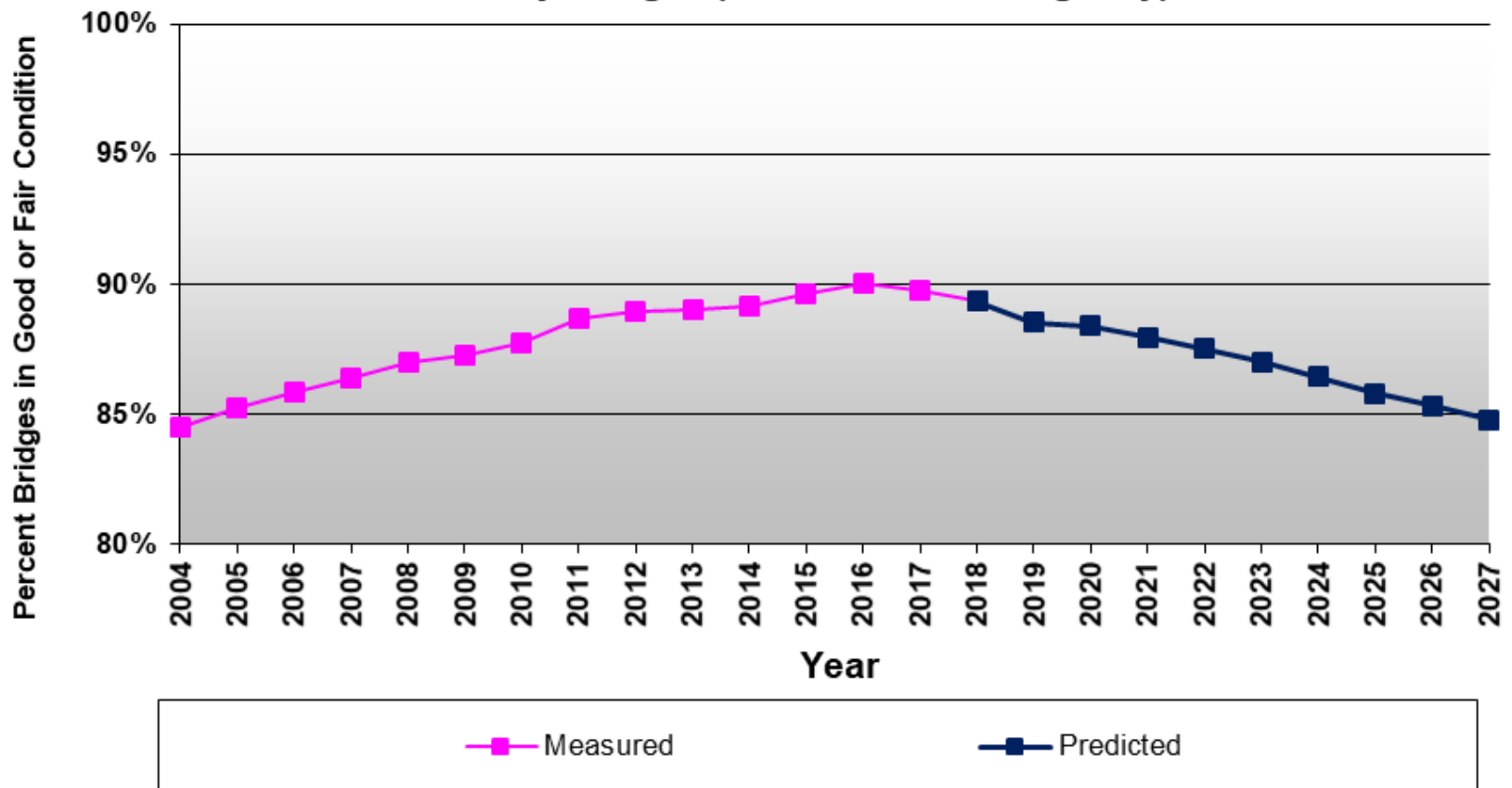
**2017 Percent Poor Bridges  
All Highway Bridges (Great Lake States)**







**Bridge Condition Forecast System - 2018 to 2027**  
**All Roadway Bridges (MDOT and Local Agency)**



2018

# Michigan Local Agency Culvert Inventory Pilot Evaluation Report



Photo provided by the Center for Technology and Transportation





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## Culvert Pilot

The Michigan Transportation Asset Management Council (TAMC), the TAMC Bridge Committee and the Center for Technology and Training at Michigan Technological University (CTT) wish to acknowledge the contribution of the transportation professionals who coordinated the culvert data collection at their respective agencies, and for the data, input and suggested best practices for the collection of culvert data for Michigan's local transportation agencies. Their input assisted in the development of this report.

### TAMC Bridge Committee Members:

Rebecca Curtis, Michigan Department of Transportation (MDOT)  
Donald Disselkoen, Ottawa County  
Al Halbeisen, OHM Advisors  
Brad Wieferich, MDOT  
Gary Mekjian, City of Farmington Hills  
Keith Cooper, MDOT  
William McEntee, Road Commission for Oakland County  
Wayne Harrall, Kent County Road Commission  
Joanna Johnson, Road Commission of Kalamazoo County  
Brian Vilmont, Prein and Newhof, Inc.

**Scott Bershing, Technical Writer**  
Center for Technology and Training

**Tim Colling, Ph.D., P.E., Director**  
Center for Technology and Training

**Chris Gilbertson, Ph.D., P.E., Associate Director**  
Center for Technology and Training



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Michigan Technological University  
**Civil and Environmental  
Engineering**

A full detailed report can be found on the  
TAMC website at [www.michigan.gov/tamc](http://www.michigan.gov/tamc)



## Goals

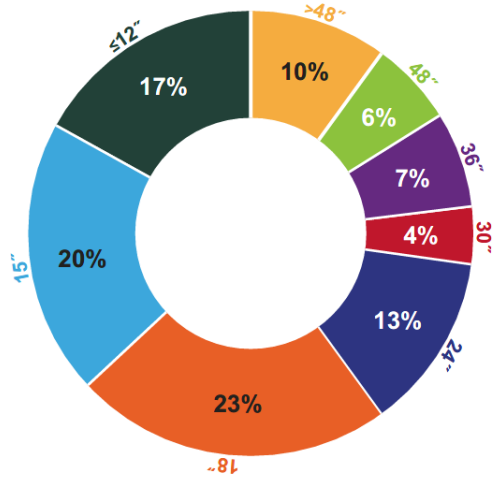
1. Estimate the **total number** of culverts on the local system of Public Act 51-certified public roads.
2. Estimate the **overall condition** of culverts in the state using similar inspection components and ratings.
3. Determine the range of **physical characteristics** (inventory information) of culverts.
4. Benchmark estimates of agency **labor** (time and materials) necessary **to find and collect inventory data**.
5. Benchmark estimates of agency **labor** (time and materials) necessary **to find and collect condition data**.



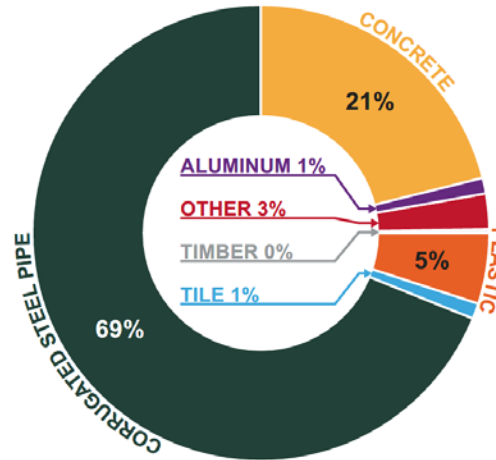


# Culvert Pilot

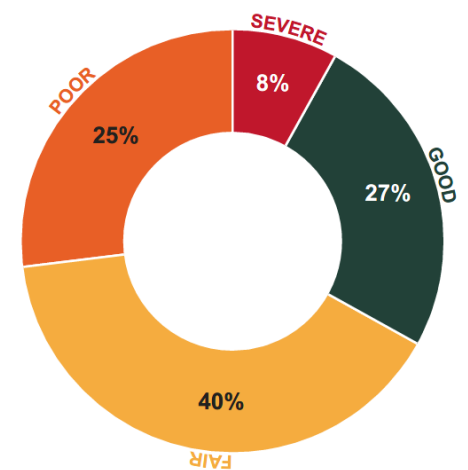
Reported Culverts by Span or Diameter  
(in inches)



Reported Culverts by Material Type

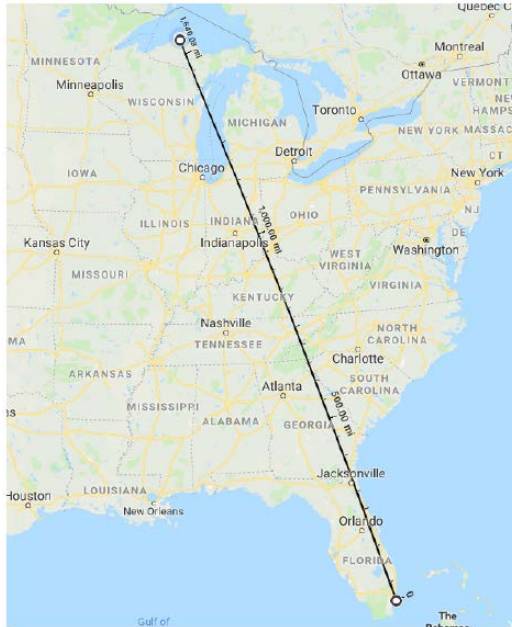


Estimated Local Agency Culvert Condition





# Culvert Pilot



- ▶ Estimated number of local agency culverts: 196,000
- ▶ 27 percent of the culverts are in good condition
- ▶ 69 percent of the culverts are corrugated steel pipe
- ▶ Estimated time to inventory a culvert: 17 minutes
- ▶ Estimated time to inventory and inspect a culvert: 25 minutes
- ▶ Estimated length of local agency culverts: 7.3 million to 9.2 million feet (1,389 to 1,756 miles) of culvert. This is enough culvert pipe to build a single straight culvert from Houghton, Michigan, to the tip of Key West, Florida. (see map below)
- ▶ Estimated replacement cost of local agency culverts: \$1.48 billion



# CULVERT COLLECTION BY THE NUMBERS

- ▶ **Data collection training using Roadsoft: 78 participants**
- ▶ **Condition evaluation training: 83 participants**
- ▶ **Data submittal training: 65 participants**
- ▶ **Typical collection team size: 2 people**
- ▶ **Number of culverts inventoried in this pilot: 49,664**



## KEY FINDINGS

- The tools, training, business processes, and relationship building that the TAMC initiated for the collection of Pavement Surface Evaluation and Rating (PASER) road condition data has created a strong framework for the rapid collection of other asset data on the local agency road system.
- The repeating five-year costs associated with training and data collection for a culvert inventory and condition evaluation program are estimated at \$10.5 million to \$11.25 million (\$2.1 million to \$2.5 million annually). These estimates do not include costs associated with development and implementation of asset management programs for culverts.
- A post-pilot survey showed participant interest in continuing to collect inventory and condition evaluation data on their culverts beyond the pilot timeframe.
- Inventory data from culverts revealed that the majority (approximately 73 percent) of local agency-owned culverts are small (24 inches in diameter or less), made from corrugated steel, and are circular culverts that are located less than 6 feet from the surface. Larger and more deeply buried culverts are of specific interest because they present a larger consequence of failure in terms of risk to the public and expenditure of funds for repair.
- Condition data indicates that local agency-owned culverts are in serviceable shape, with 27 percent of the rated culverts holding condition ratings of 8 or better, and 67.2 percent of the rated culverts holding conditions ratings of 6 or better.
- It is estimated that it will take approximately \$10 million and more than 131,000 collection team hours to complete the initial data collection of local agency culverts.





# Michigan Transportation Asset Management Council

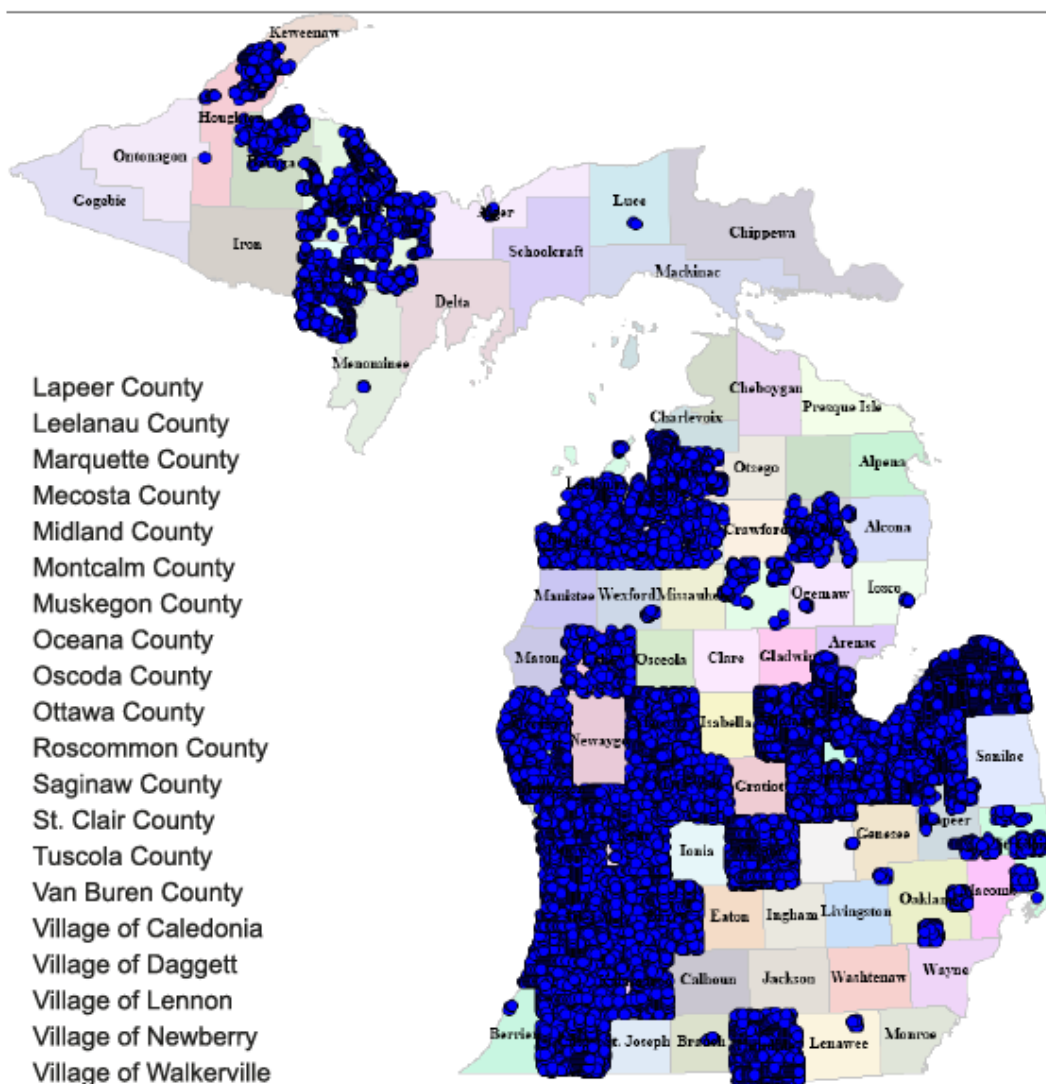
## Culvert Pilot

### PARTICIPATING AGENCIES AND LOCATIONS OF INVENTORIED CULVERTS

#### Local Road Agencies:

Allegan County  
Antrim County  
Baraga County  
Barry County  
Bay County  
Benzie County  
Cass County  
City of Benton Harbor  
City of Big Rapids  
City of Cadillac  
City of Coldwater  
City of East Tawas  
City of Farmington Hills  
City of Fenton  
City of Munising  
City of Muskegon Heights  
City of Rochester Hills  
City of Tecumseh  
City of West Branch  
Clinton County  
Dickinson County  
Grand Traverse County  
Hillsdale County  
Houghton County  
Huron County  
Kalamazoo County  
Kalkaska County  
Kent County  
Lake County

Lapeer County  
Leelanau County  
Marquette County  
Mecosta County  
Midland County  
Montcalm County  
Muskegon County  
Oceana County  
Oscoda County  
Ottawa County  
Roscommon County  
Saginaw County  
St. Clair County  
Tuscola County  
Van Buren County  
Village of Caledonia  
Village of Daggett  
Village of Lennon  
Village of Newberry  
Village of Walkerville





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# Feedback? Questions?

## THANK YOU!



[www.michigan.gov/tamc](http://www.michigan.gov/tamc)