

Overview of Michigan's Transportation Asset Management Program

Michigan Bridge Conference

March 19, 2014

Presentation by
Rebecca Curtis, MDOT



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Presentation Outline

- **Formation & Charge of the Transportation Asset Management Council (TAMC) and the TAMC Bridge Committee**
- **Asset Management Tools & Training**
- **What is Asset Management and the Asset Management Process**
- **What's Next and Questions**

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Formation & Charge of the “TAMC”



P.A. 499 of 2002

- **Defined “*Asset Management*”**
- **Formed the TAMC**
- **Charged TAMC with “advising the (State Transportation) commission on a *statewide asset management strategy* and the processes and necessary tools needed to implement such a strategy...”**

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Formation & Charge of the “TAMC”



- Comprised of *10 Voting Members*
- Represents ALL road-owning jurisdictions of the State

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TAMC Membership



Carmine
Palombo
MTPA



John Egelhaaf
MAR



Roger Safford
MDOT



Dave Wresinski
MDOT



Donald Disselkoen
MAC



Rob Surber
CSS



Bill McEntee
CRAM



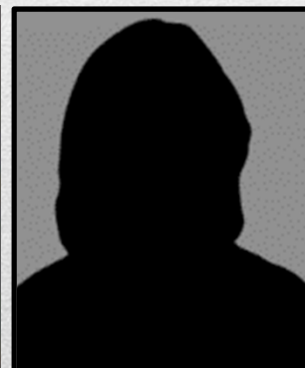
Joanna Johnson
CRAM



Bob Slattery
MML



Dale Kerbyson
MML



Jennifer Tubbs
MTA



Brian Sanada
TAMC Coordinator



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TAMC Membership



Bridge Committee

- Roger Safford – Chair
- Don Disselkoen
- Bill McEntee
- Jennifer Tubbs
- Keith Cooper (MDOT)
- Rebecca Curtis (MDOT)
- Ihab S. Darwish (Alfred Benesch & Co.)

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Bridge Committee



2014-2016 Work Program (Bridge Committee)

- Research and develop web-based “fill-in the blank” asset management plan for bridges
- Work with Michigan’s Regional Bridge Councils to assess more effective local bridge asset management strategies
- Complete Phase II of pilot bridge asset management training course
- Research partnership opportunities with FHWA, locals, private sector, other

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Bridge Committee



Pilot Bridge Asset Management Training Course

- Training course on using the Asset Management Guide for Local Agency Bridges in Michigan
- Primary audience is local agency, technical (engineers, bridge engineers) decision makers
- Secondary audience is non-technical decision makers
- Council will evaluate whether or not the course should become a permanent part of the training package

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Bridge Committee



Pilot Bridge Asset Management Training Course

Anticipated Outcomes

- Greater understanding of bridge asset management
- Greater knowledge of TAMC Guide and tools available including MiBridge and TAMC Dashboard
- Better understanding of state and federal programmatic requirements
- Interpret bridge inspection data and determine appropriate treatments necessary to address issues and perform cost estimating

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Bridge Committee



Pilot Bridge Asset Management Training Course

Feb 20, 2014

“Really appreciative of the training and will attend more, if offered.” - Lisa D.

November 13, 2013

“Estimating worksheets were very helpful!” - Randy C.

“Really good explanation of estimating and how to find the resources needed.” - Scott M.

“Handouts and visual aids were very beneficial.” - Scott M.

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Asset Management Tools & Training Available


2014 Bridge Asset Management Guide Pilot Training:

- ~~November 13th, Lansing~~
- ~~February 20th, Grand Rapids~~
- April 24th, Marquette/Webinar
 - If you are interested in attending this training/webinar, contact Brian Sanada: (517) 373-2220 / sanadab@michigan.gov



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Asset Management Tools & Training Available



Transportation Asset Management Council

MI Transportation Reporting Portal

Michigan.gov
The Official State of Michigan Website

Subscribe to TAMC Updates Login

Council Investment Reporting Data Access Education and Training Communication

Search: GO
Enter a document or meeting name.

Home » Transportation Asset Management Council »

Welcome

Welcome to the Transportation Asset Management Council's NEW Information Portal. This website is intended to be more user friendly for both the general public, as well as the 600+ Michigan Road Agencies completing annual reporting requirements via the Investment Reporting Tool and work with the Act 51 Reporting website.

For More Information

Brian Sanada, Asset Management Coordinator
517-373-2220 or sanadab@michigan.gov

Spotlight

- 2013 Annual Conference Presentations
 - 2014 AM Conferences: Save-the-Date Card
 - Local Bridge Asset Management Guide and Plan
 - Local Bridge AM Guide A-1, A-2, A-3 Blank Spreadsheets
 - 2012 Annual Report - Web Version
 - 2012 Annual Report - Full Version
 - 2013 Asset Management Conference Save-the-Date Flyer
 - Sample Asset Management Plan
 - Local Agency Guidelines for Developing an Asset Management Process and Plan

[Prev](#) [Today](#) [Next](#)

February

2013 2014 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29	30	31	1
2	3	4	5	6	7	8
		Administrative & Education Committee Meeting		TAMC Bridge Committee Meeting		
		Transportation Asset Management Council Meeting		2014 PASER Training-Webinar		
9	10	11	12	13	14	15
16	17	18	19	20	21	22
		2014 PASER Training-Webinar		AM Guide for Local Agency Bridges - Pilot Training		
23	24	25	26	27	28	1
	TAMC Bridge Committee Meeting	2014 PASER Training-West Branch	2014 PASER Training-Saginaw	2014 PASER Training-Lansing		
			TAMC Data Committee Meeting			

Asset Management - Putting practice on the pavement with treatments, strategies and practices.

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What is Asset Management?

P.A. 499 of 2002

- Defined “*Asset Management*” as an “ongoing **process** of maintaining, upgrading, and operating physical assets cost-effectively, based on a continuous inventory and condition assessment.”

What is Asset Management?

Asset Management Process

- **Assess Current Condition**
- **Create a Mix-of-Fixes Strategy, Estimate Costs and Identify Funding Sources**
- **Forecast Future Condition and Develop Performance Measures and Targets**
- **Conduct Tradeoff Analysis and Identify Candidate Projects**
- **Set Priorities and Develop a Multi-year Program**
- **Report Results**

Asset Management Process

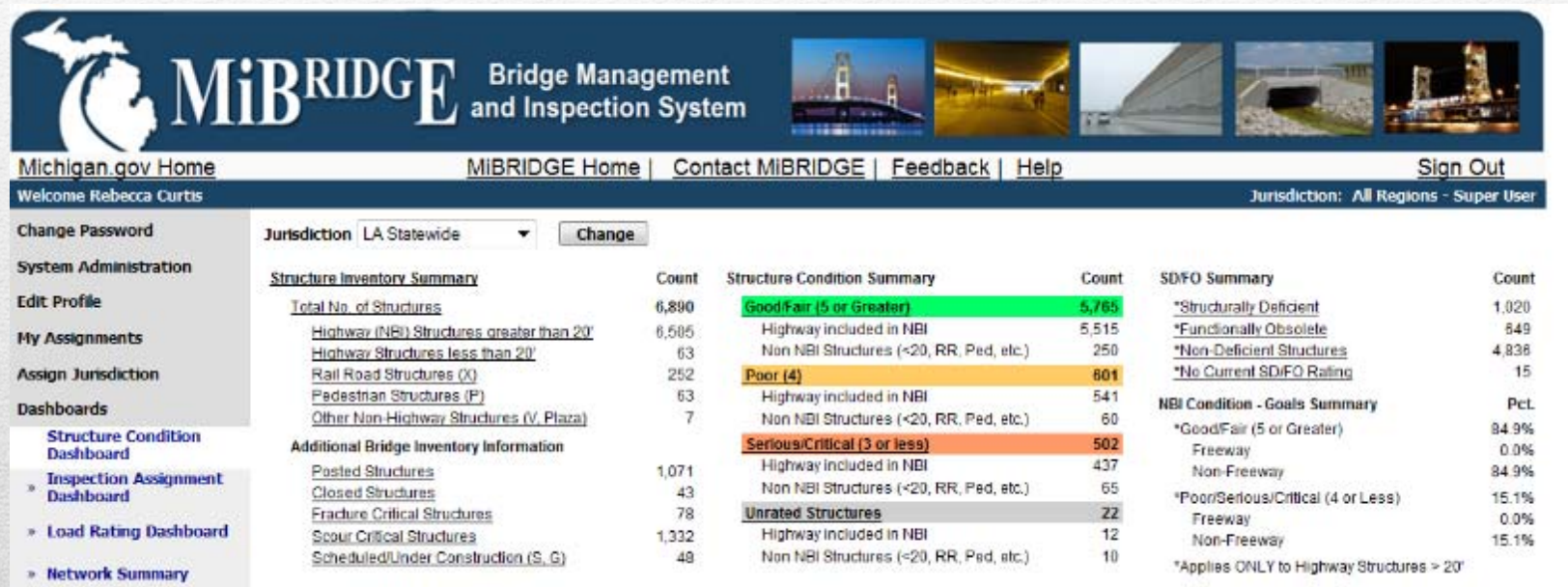
Assess Current Condition

- **National Bridge Inventory**
- **Minimum Condition Rating (NBI)**
- **Element Level Inspection**
- **Work Recommendations**
- **Risk Factors**
 - **Condition**
 - **Posted Bridges**
 - **Fracture Critical**
 - **Scour Critical**

Asset Management Process

Assess Current Condition

- **MiBridge Dashboard**



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Asset Management Process

Assess Current Condition

- **MiBridge Dashboard**
 - **Number of bridges by minimum condition rating**

Structure Condition Summary	Count
<u>Good/Fair (5 or Greater)</u>	5,765
Highway included in NBI	5,515
Non NBI Structures (<20, RR, Ped, etc.)	250
<u>Poor (4)</u>	601
Highway included in NBI	541
Non NBI Structures (<20, RR, Ped, etc.)	60
<u>Serious/Critical (3 or less)</u>	502
Highway included in NBI	437
Non NBI Structures (<20, RR, Ped, etc.)	65

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Asset Management Process

Assess Current Condition

- **MiBridge Dashboard**
 - **Structurally Deficient**
 - **Posted, Closed, Fracture Critical or Scour Critical**

SD/FO Summary	Count
<u>*Structurally Deficient</u>	1,020
<u>*Functionally Obsolete</u>	649
<u>*Non-Deficient Structures</u>	4,836

Jurisdiction	LA Statewide ▼	Change
<u>Structure Inventory Summary</u>		Count
<u>Total No. of Structures</u>		6,890
<u>Highway (NBI) Structures greater than 20'</u>		6,505
<u>Highway Structures less than 20'</u>		63
<u>Rail Road Structures (X)</u>		252
<u>Pedestrian Structures (P)</u>		63
<u>Other Non-Highway Structures (V, Plaza)</u>		7
<u>Additional Bridge Inventory Information</u>		
<u>Posted Structures</u>		1,071
<u>Closed Structures</u>		43
<u>Fracture Critical Structures</u>		78
<u>Scour Critical Structures</u>		1,332
<u>Scheduled/Under Construction (S, G)</u>		48

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Asset Management Process

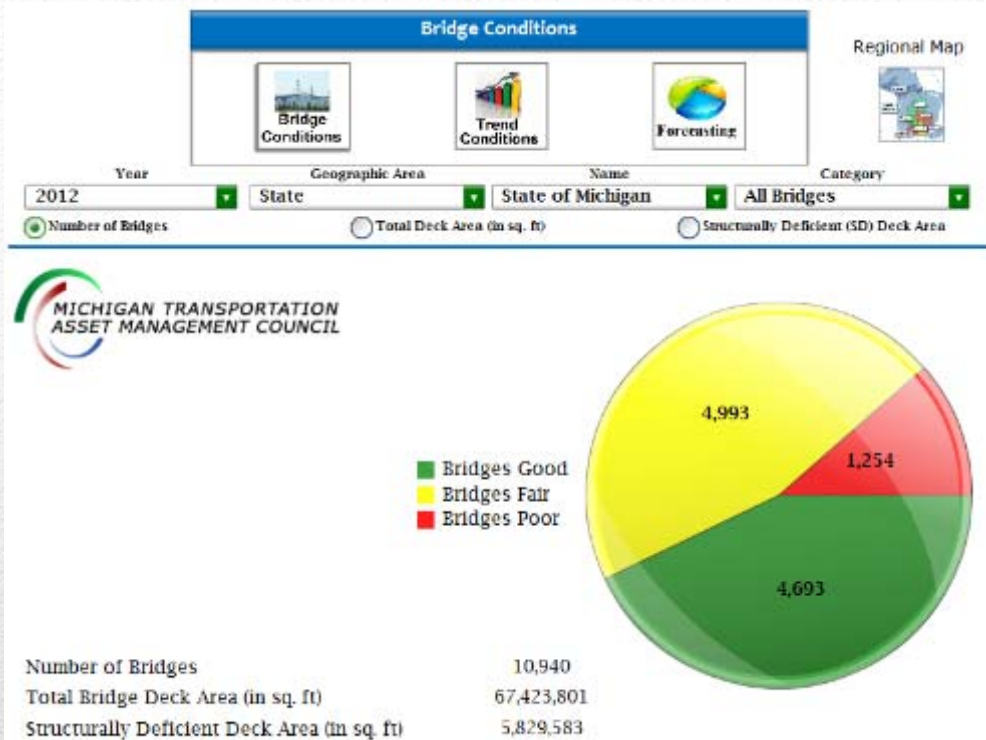
Assess Current Condition

- TAMC Dashboard
 - Comparisons over time and with other agencies

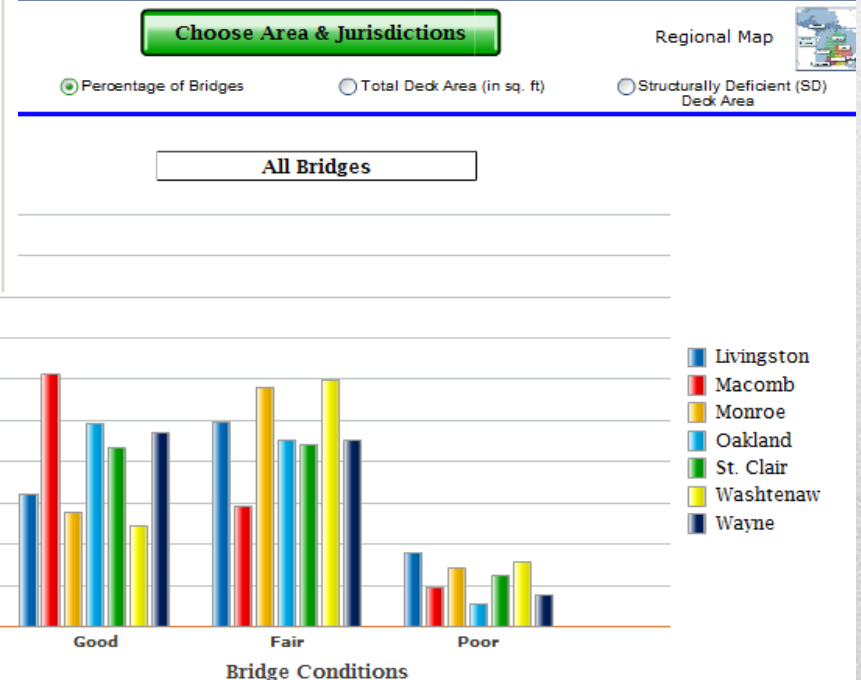


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Asset Management Tools & Training Available



Multi-Jurisdiction "Bridge Condition" Comparison Tool



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Asset Management Process

Create a Strategy, Estimate Costs and Identify Funding Sources

- **Short Term Objectives**
 - **Address poor or critical bridges**
 - **Mitigate high-risk bridges**
- **Long Term Objectives**
 - **Sustained investment in preventative maintenance**
 - **Reduce network risks**

Asset Management Process

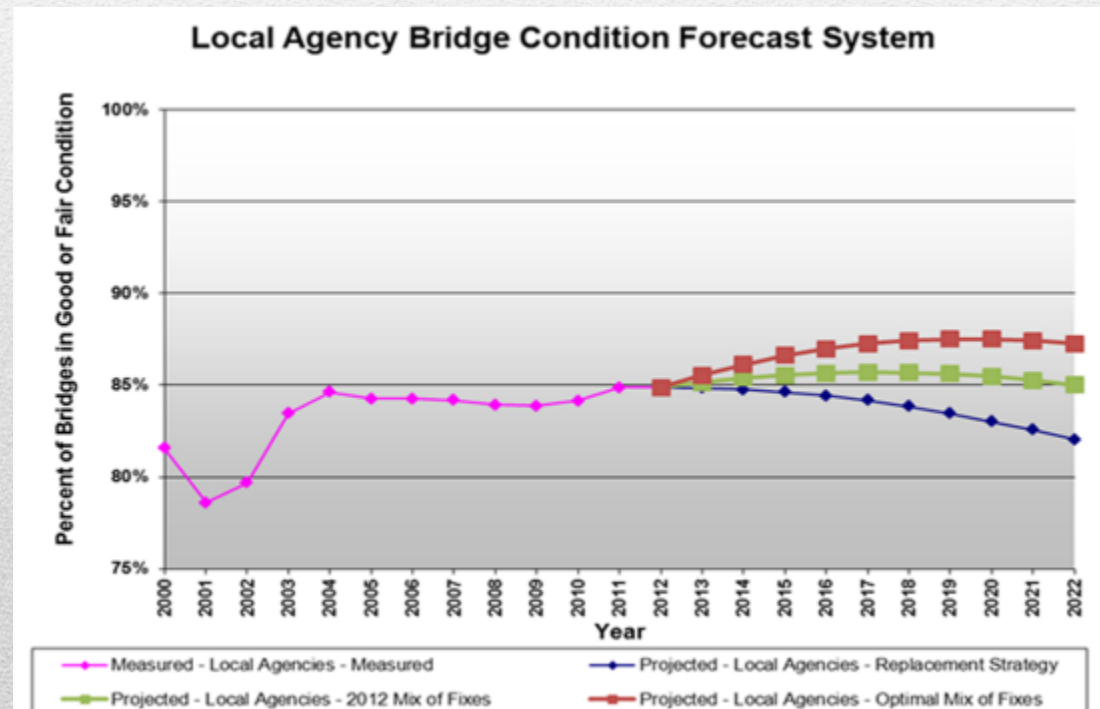
Create a Strategy, Estimate Costs and Identify Funding Sources

- **Estimate Costs**
 - **MDOT Scoping Manual**
 - **MDOT Capital Scheduled Maintenance Cost Estimate Worksheet**
 - **MDOT Bridge Scoping Worksheet**
- **Identify Funding Sources**
 - **Local Bridge Program**
 - **All NBI bridges (on and off system) are eligible for funding using STP funds**

Asset Management Process

Forecast Future Condition and Develop Performance Measures and Targets

- Forecast Condition
 - Bridge Condition Forecast System (BCFS)



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Asset Management Process

Forecast Future Condition and Develop Performance Measures and Targets

- Forecast Condition
 - Deck Matrix

BRIDGE DECK PRESERVATION MATRIX – DECKS WITH EPOXY COATED REBAR (ECR)

DECK CONDITION STATE				REPAIR OPTIONS	POTENTIAL RESULT TO DECK BSIR		ANTICIPATED FIX LIFE
Top Surface BSIR #58a	Deficiencies % (a)	Bottom Surface BSIR #58b	Deficiencies % (b)		Top Surface BSIR #58a	Bottom Surface BSIR #58b	
≥ 5	N/A	N/A	N/A	Hold (c) Seal Cracks/Healer Sealer (d)	No Change	No Change	1 to 4 years
	≤ 5%	> 5	≤ 2%	Epoxy Overlay	8, 9	No Change	10 to 15 years
	≤ 10%	≥ 4(k)	≤ 25%(k)	Deck Patch (f)	Up by 1 pt.	No Change	3 to 10 years
4(k) or 5	10% to 25%(k)	4(k)	10% to 25%(k)	Shallow Concrete Overlay (h, i)	8, 9	No Change	20 to 25 years
				HMA Overlay with water-proofing membrane (f, h, i)	8, 9	No Change	8 to 10 years
		2 or 3(k)	> 25%(k)	HMA/Cap (g, h, i)	8, 9	No Change	2 to 4 years
≤ 3(k)	> 25%(k)	4(k) or 5	2% to 25%(k)	Shallow Concrete Overlay (h, i)	8, 9	No Change	10 years
				HMA Overlay with water-proofing membrane (f, h, i)	8, 9	No Change	5 to 7 years
				HMA/Cap (g, h, i)	8, 9	No Change	1 to 3 years
		2 or 3(k)	> 25%(k)	Replacement with Epoxy Coated Rebar (ECR) Deck	9	9	50+ years

(a) Percent of deck surface area that is spalled, delaminated, or patched with temporary patch material.
 (b) Percent of deck underside area that is spalled, delaminated, or map cracked.
 (c) The "hold" option implies that there is ongoing maintenance of filling potholes with cold patch and sealing of incipient spalls.
 (d) Seal cracks when cracks are easily visible and minimal map cracking. Apply heater sealer when crack density is too great to seal individually by hand. Sustains the current condition longer.
 (e) Crack sealing can also be used to seal the perimeter of deck patches.
 (f) Hot mix Asphalt overlay with waterproofing membrane. Deck patching required prior to placement of waterproofing membrane.
 (g) Hot mix Asphalt cap without waterproofing membrane for ride quality improvement. Deck should be scheduled for replacement in the 5 year plan.
 (h) Storage crosses over traveled lanes and the deck contains slag aggregate. No deck replacement.
 (i) When deck bottom surface is rated poor (or worse) and may have loose or delaminated concrete over traveled lanes, an in-depth inspection should be scheduled. Any loose or delaminated concrete should be scaled off and false decking should be placed over traveled lanes where there is potential for additional concrete to become loose.
 (k) Contact CM's Bridge Operations section if a deck with epoxy coated rebar in poor condition is identified.

Bridge Deck Preservation Matrix - Decks with Epoxy Coated Rebar June 8, 2011 Rev.

Asset Management Process

**Forecast Future Condition and Develop
Performance Measures and Targets**

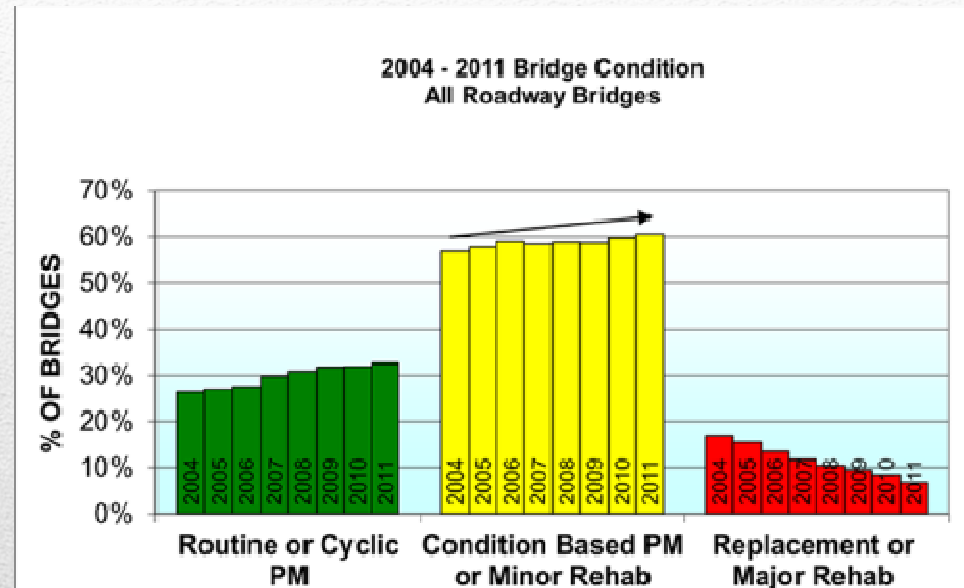
- **Develop Performance Measures**
 - **AASHTO SCOBS recommended national performance measures**
 - **Avoid performance measures that only focus on worst first**
 - **NHS and non-NHS performance**
 - **By count and deck area**
- **Set Target based on your condition, needs and funding**

Asset Management Process

Forecast Future Condition and Develop Performance Measures and Targets

Performance Measure:

% of bridges in “Need” Categories



Cyclic Maintenance
Needs
(Includes Routine
Maintenance)
NBI 7 – 9

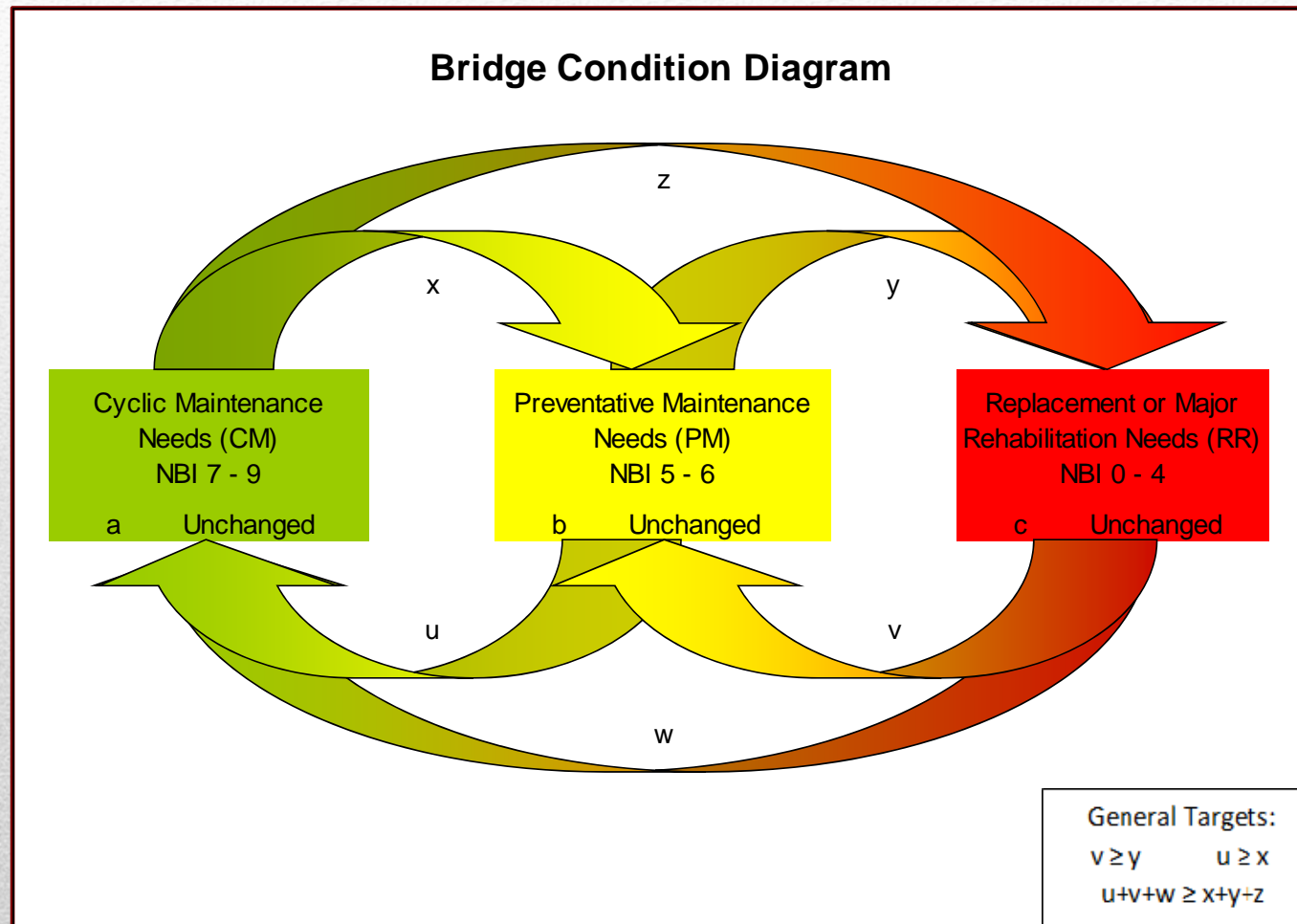
Preventive Maintenance
Needs
(Includes Minor Rehab)
NBI 5-6

Replacement or Rehab
Needs
(Includes Major Rehab)
NBI 0-4

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Asset Management Process

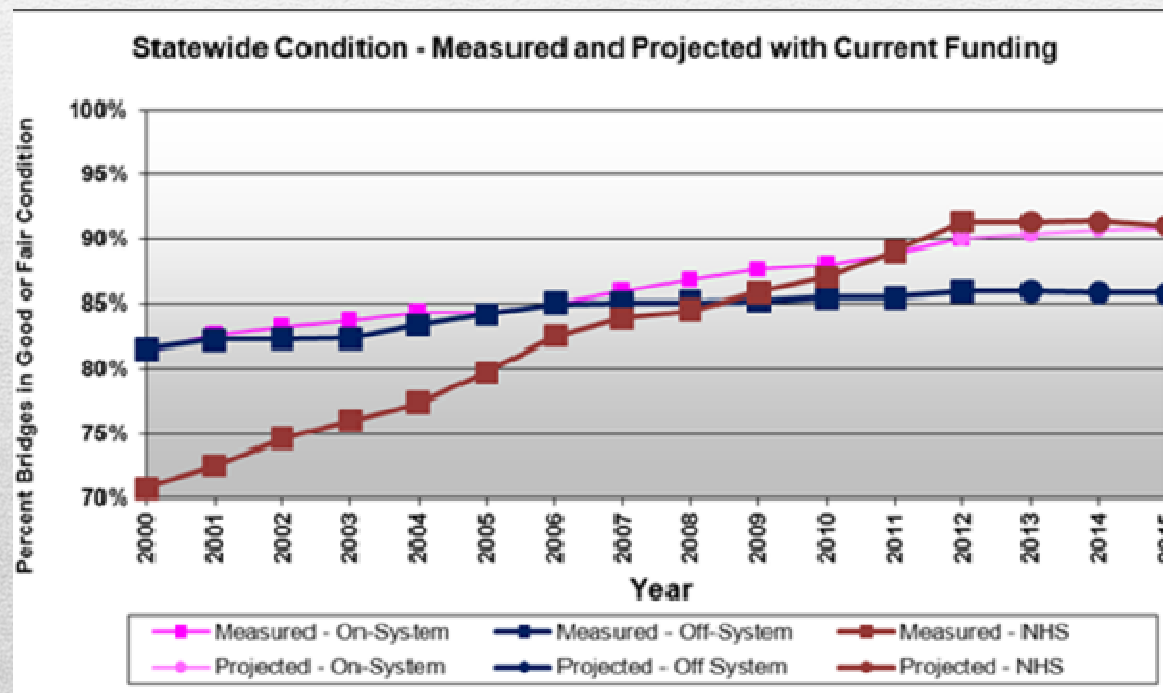
Forecast Future Condition and Develop Performance Measures and Targets



Asset Management Process

Conduct Tradeoff Analysis and Identify Candidate Projects

- Tradeoff Analysis
 - Example: Off-system funding waiver



Asset Management Process

Conduct Tradeoff Analysis and Identify Candidate Projects

- Identify Candidate Projects

MiBRIDGE Bridge Management and Inspection System

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Welcome: Rebecca Curtis | Jurisdiction: All Regions - Super User

Change Password | Jurisdiction: LA Statewide | Change

Structure Inventory Summary		Count	Structure Condition Summary		Count	SD/FO Summary		Count
Total No. of Structures		6,890	Good/Fair (5 or Greater)		5,765	*Structurally Deficient		1,020
Highway (NBI) Structures greater than 20'		6,505	Highway included in NBI		5,515	*Functionally Obsolete		649
Highway Structures less than 20'		63	Non NBI Structures (<20, RR, Ped, etc.)		250	*Non-Deficient Structures		4,836
Rail Road Structures (X)		252	Poor (4)		601	*No Current SD/FO Rating		15
Pedestrian Structures (P)		63	Highway included in NBI		541	NBI Condition - Goals Summary		
Other Non-Highway Structures (V, Plaza)		7	Non NBI Structures (<20, RR, Ped, etc.)		60	*Good/Fair (5 or Greater)		84.9%
Additional Bridge Inventory Information			Serious/Critical (3 or less)		502	Freeway		0.0%
Posted Structures		1,071	Highway included in NBI		437	Non-Freeway		84.9%
Closed Structures		43	Non NBI Structures (<20, RR, Ped, etc.)		65	*Poor/Serious/Critical (4 or Less)		15.1%
Fracture Critical Structures		78	Unrated Structures		22	Freeway		0.0%
Scour Critical Structures		1,332	Highway included in NBI		12	Non-Freeway		15.1%
Scheduled/Under Construction (S, G)		48	Non NBI Structures (<20, RR, Ped, etc.)		10	*Applies ONLY to Highway Structures > 20'		

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Asset Management Process

Set Priorities and Develop a Multi-year Program

Voted Rating Point Guidance

(Dated: 12-15-2010)

Items which the Regional Bridge Council members will vote on are listed below. A brief explanation of the items is provided with guidance.

Physical Condition

1. Structural Adequacy (by council)

The council should consider the overall structural condition of the bridge. Is the bridge structurally adequate for the traffic using it? From a structural viewpoint, should the bridge be replaced or rehabilitated? Even if the structure is closed, is it critical to replace? Just because a bridge is posted does not mean this category should get a higher rating. Some latitude in reasoning is expected.

A couple of examples:

- A narrow camel back bridge posted at 40 tons with a low average daily traffic and negligible commercial traffic may be rated a zero.
- Conversely, a functionally adequate structure posted at 60 tons in a heavily industrial area with significant commercial traffic may be rated with maximum points.

Vote 0, 1, or 2 points for each of 4 members (8 points maximum)

2. Bridge and Approach Features (by council)

Consideration to physical aspects including the roadway width, vertical and horizontal alignment, and overall acceptability of the bridge to the traffic corridor it serves. These features are not by code? A bridge is a structure and should be rated

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Asset Management Process

Set Priorities and Develop a Multi-year Program

Large Bridge 3-Year Plan

As of November 2013

Structure Number	Region	Owner	Roadway	Crossing	Replace/ Rehab	Job Number	On / Off System	Funding Capped?	Local Bridge Funding Commitment	Scheduled Let Year
4102	Grand	Muir, Village of	Prairie Street	Maple River	Replace		On	no	\$3,000,000	2014
10808	Southwest	City of South Haven	Dyckman Avenue	Black River	Rehab		On	no	\$1,380,000	2014
6784	Grand	City of Big Rapids	Baldwin Street	Muskegon River	Replace		On	no	\$2,550,000	2010=>2014
									\$6,930,000	
8976	North	Presque Isle County	County Road 489	Rainy River	Replace		On	no	\$1,507,000	2015
1307	Southwest	Calhoun County	Raymond Road	Kalamazoo River	Replace		On	no	\$3,011,600	2015
3068	North	Grand Traverse County	Cass Road	Boardman River	Replace		On	yes	\$3,088,580	2014=>2015
									\$7,607,180	
357	North	Alpena, City of	Second Avenue	Thunder Bay River	PM		On	no	\$2,172,000	2016
2120	North	Delta County	CR 420	Escanaba River	Rehab		On	no	\$2,335,000	2016
4476	University	Jackson County	Michigan Avenue	Conrail & RR Street	Replace		On	yes	\$3,433,000	2016
									\$7,940,000	

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Asset Management Process

Report Results

- **Asset Management Plan**
 - **Tangible document that shows the strategic asset management *VISION* for your agency assets; an effective communication tool w/local officials and general public**

Asset Management Process

Report Results

The screenshot displays the Michigan Transportation Asset Management Council (TAMC) website. The header includes the TAMC logo, the text "Transportation Asset Management Council MI Transportation Reporting Portal", and the "Michigan.gov" logo with the tagline "The Official State of Michigan Website". Below the header, a navigation bar contains links for "Council", "Investment Reporting", "Data Access", "Education and Training", "Communication", and "Admin". A search bar is also present. The main content area is titled "Reports" and lists "Annual Reports" from 2002 to 2011, with links for "Mini Version" and "Full Version" for each year. A large graphic on the right side of the page features the text "MICHIGAN'S ROADS & BRIDGES 2012 ANNUAL REPORT" over a background of orange and white traffic barrels. At the bottom of the graphic, a line graph shows the "ROAD CONDITION 2004 - 2012 Percent Good & Fair".

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Asset Management Tools & Training Available



For more information, contact Brian Sanada, Asset Management Coordinator at 517-373-2220 or sanadab@michigan.gov, or visit us on the Web at: www.michigan.gov/tamc.

To register, contact the Michigan Local Technical Assistance Program (LTAP) at the Center for Technology & Training at 906-487-2102 or ctt@mtu.edu.

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What's Next?

Transportation Asset Management Council 2014-16 Work Program Adopted by Council on August 7, 2013



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- More emphasis and training in local bridge maintenance
- Strengthen partnership with local regional bridge councils
- Expand use and improve upon existing asset management tools available to and used by local agencies

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Questions?

Thank You!

Rebecca Curtis, Bridge Management Engineer

Or contact

Brian Sanada, Asset Management Coordinator
(517) 373-2220 / sanadab@michigan.gov



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