

Asset Management and Performance Measurement in the Ministry of Transportation



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Presentation Outline

- Asset Management
 - Overview
 - Link to Performance Measures

- Performance Measures
 - MTO Performance Measures
 - Accountability
 - Other Jurisdictions



The Ministry's Assets

- Pavements (over 16,500 centreline-km or 39,000 lane-km of roadway)
- Bridges (approx. 2,800)
- Culverts and drains
- Lighting and traffic signals
- Signs and sign structures
- Guiderail and median barriers
- Noise barriers
- Road weather sensing stations
- Truck inspection stations
- COMPASS traffic information
- Patrol yards
- Remote airports (29)
- Ferries (8 services)



What is Asset Management?

- A strategy to help allocate available funds and resources amongst competing asset needs
- Asset Management is making the “**right investment in the right place at the right time**”
- Performance measures help quantify relationship between outcome based performance targets, funding levels and infrastructure deficit

How does MTO use performance measures to manage our assets?

- Knowing the condition of our assets and how it will change over time and how various funding scenarios affect the condition.
- Having a set of performance measures and targets to determine where to invest.
 - Investment scenarios are directly linked to achievable outcomes.
 - Tracking accomplishments (lane km paved & # bridges repaired) and using asset condition performance measures (% Good)
- Reporting on investment outcomes.

Performance Measure: Bridge Condition Index



BCI = 42

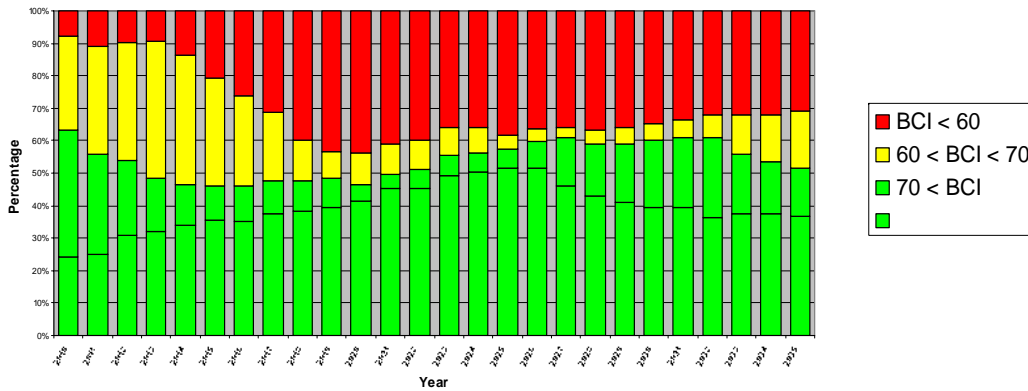


BCI = 100

Network Level Analysis – Bridge Priority Tool

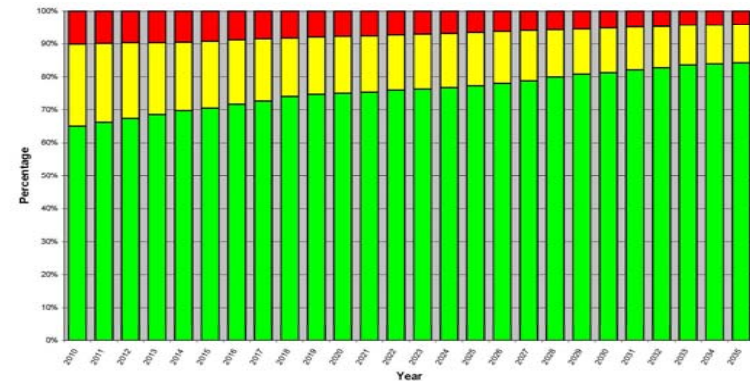
Funding Scenario 1

Bridge Condition Forecast (0 + 25 Year)



Funding Scenario 2

Bridge Condition (BCI) Summary (0 + 25 Year)



Performance Measure: Pavement Condition Index



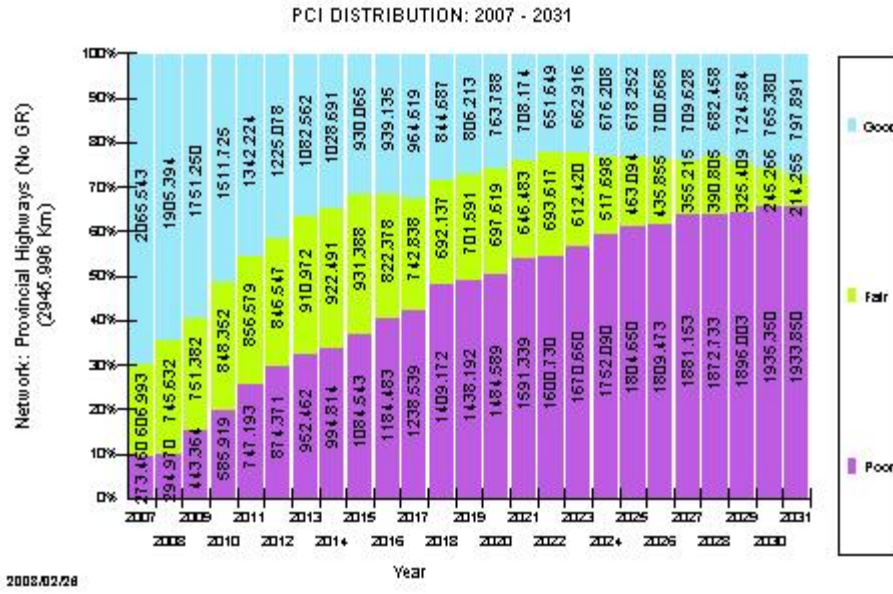
PCI =90



PCI =60

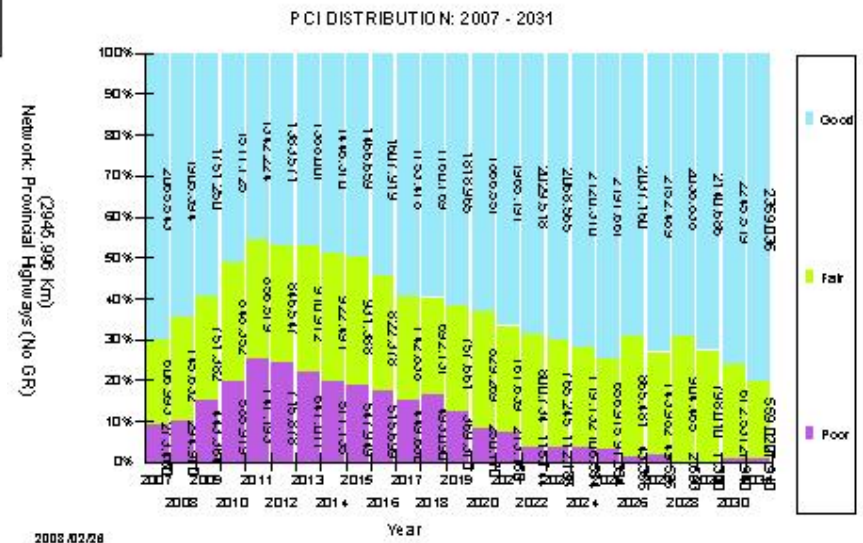
Network Level Analysis – Pavement Management System

Funding Scenario 1



2008.02.28

Funding Scenario 2



2008.02.28

Reporting on Asset Condition: Performance Measures

- **BCI and PCI used to produce annual reports for central agencies**
 - Pavements PM: % of Pavements in Good Condition
 - Long-term Performance Target → 67% Good by 2020
 - Bridges PM: % of Bridges in Good Condition
 - Long-term Performance Target → 85% Good by 2020
- **Focuses ministry resources on achieving key results**
 - ie. Improving pavement and bridge conditions
- **Communicate funding needs to Central Agencies and Senior Government decision makers:**
 - Optimal funding levels to achieve long-term performance targets
 - Analysis of various funding scenarios -- How much can be achieved and the implication on the long-term target

Promoting Accountability: Condition of All Provincial Bridges Available to the Public

Table of Contents ▾
▶ Ontario Provincial Bridges
▶ Frequently Asked Questions
List of Ontario Provincial Bridges
▶ Bridge Condition Index (BCI)
▶ Ontario Provincial Map PDF
▶ Central Region (PDF 2.21 MB)
▶ Eastern Region (PDF 1.03 MB)
▶ North Eastern Region(PDF 1.10 MB)
▶ North Western Region (PDF 470 KB)
▶ West Region (PDF 967 KB)
About the Ministry >
News >
Traveller Info >
Driver Licensing >
Vehicle Licensing >
Public Transit >

Ontario Provincial Bridges

The Ministry of Transportation owns and maintains 2,720 bridges across Ontario. From clearing snow to carrying out repairs, the Ontario government is committed to making sure that our bridges are safe and efficient for all travellers.

How Ontario Keeps Bridges Safe

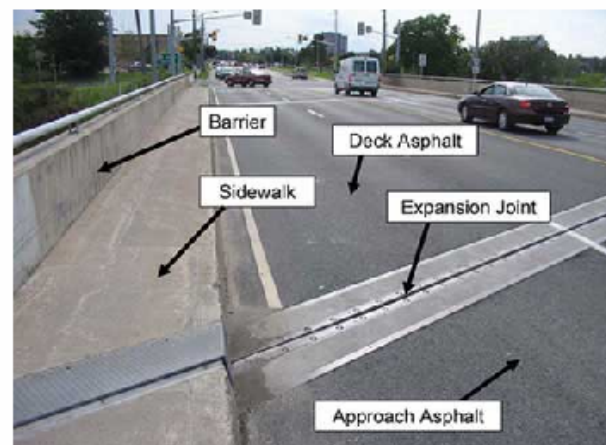
Ontario is a leader in bridge safety. Our comprehensive bridge inspection standards have been adopted by other Canadian jurisdictions.

As a part of the Ontario government's commitment to safety, all 2,720 provincial bridges undergo a legislated detailed bridge inspection every two years that is led or supervised by a trained, professional engineer. In addition, a general maintenance inspection is conducted at least twice a year. Bridge inspectors are trained engineers and technicians with several years of bridge-related experience and must have taken the Ministry of Transportation bridge inspection course.

Which Bridge Components are Inspected?

During inspection, inspectors carefully assess each part of the bridge and identify any maintenance work that needs to be completed. Each bridge component, as shown in the following pictures, is rigorously examined to ensure that bridge remains safe for travel.

The bridge components that are assessed are as follows:



Ontario Provincial Bridges - Central Region

Structure Name	Region	Highway	BCI	Comments	Inspection Status	Safe
W-N RAMP HWY 403 UNDER QEW,TWIN WBL	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
W-N RAMP HWY 403 UNDER QEW,TWIN EBL	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
N-W RAMP HWY 403 OVER FORD DR.	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
Q.E.W.OVER FORD DRIVE	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
Q.E.W.OVER FORD DRIVE	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
W-N RAMP HWY 403 OVER FORD DR.	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
Fairview St. O'Pass (NBL)	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
Fairview St. O'Pass (SBL)	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
QEW/S-403 E.W OVER QEW BR #43	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
QEW/S-403 E.W OVER RAMP QEW/E-403 W BR #45	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
N.B. Collector-Ramp S-EW O'Pass	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
RAMP 403 W-QEW/E OVER QEW & RAMP QEW/S-403 E,W BR #41	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
NORTH SERVICE RD OVER CNR	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
Guelph Line over NSR	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
CHRISTIE ST UPASS (QEW)	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
40-MI. CK. BR. AT GRIMSBY-EBL. <i>North Bridge</i>	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
40-MI. CK. BR. AT GRIMSBY-WBL. <i>South Bridge</i>	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
ONTARIO ST. U/P Q.E.W.	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
MAPLE AVE U/P ON QEW (NBL)	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
MAPLE AVE U/P ON QEW (SBL)	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
TUFFORD RD. U/P Q.E.W.	C	QEW	Good	Improvements scheduled within 5 years	Up to date	Yes
20 MILE CREEK BRIDGE EBL	C	QEW	Good	No work required in the next 5 years	Up to date	Yes
20 Mile Creek Bridge WBL	C	QEW	Good	No work required in the next 5 years	Up to date	Yes

Other Highways Related Performance Measures



- Help gauge how well the organization is performing
 - **Percentage of capital budget spent on actual construction**
 - Versus other capital “over-head” activities (eg. oversight, planning, design, etc)
 - Target is 80%
 - **Current asset value (book value) vs. Replacement cost**
 - Reflects the extent to which highway assets are deteriorating and measures if we are repairing/replacing assets in a timely fashion
 - **Winter Snowstorm Clearance (time to regain bare pavement following snow storms)**
 - Target is to meet snow clearing standards 90% of the time
 - **Central Ontario highway performance during morning rush hours**
 - % of lane-km congested in A.M. peak period
 - Mobility measure complied by Policy & Planning Division

TRIP (Traveller's Road Information Portal)

Winter Road Conditions

The screenshot displays the TRIP website interface. At the top, there is the Ontario logo and the text 'MINISTRY OF TRANSPORTATION'. Below this is a navigation bar with tabs for 'Drivers & Vehicles', 'Highways', 'Road Safety', 'Trucks & Buses', and 'Travel'. The main content area is titled 'INTERACTIVE MAP' and features a map of Ontario with various road conditions indicated by different colors and symbols. A legend at the bottom of the map area defines these symbols: Current Incidents (yellow triangle), Current Closures (red circle with slash), Reduced Visibility (grey rectangle), Road Closure (black rectangle), Bare and Dry (green line), Bare and Wet (cyan line), Partially Snow Covered (yellow line), Snow Covered (orange line), Snow Packed (purple line), Slushy (blue line), Icy (red line), and Information Unavailable (grey line). The sidebar on the left contains sections for 'TRAVELLER'S ROAD INFORMATION PORTAL', 'INTERACTIVE MAPS', 'TEXT', and 'RELATED LINKS'.

Promoting Accountability: Southern & Northern Highway Investment Plans

Highways Construction Programs >
▶ Highways Construction Programs
▶ Southern Highways Program 2010 to 2014
▶ Northern Highways Program 2010 to 2014
About the Ministry >
News >
Traveller Info >
Driver Licensing >
Vehicle Licensing >
Public Transit >
Explore Government >
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Southern Highways Program (SHP)

The **Southern Highways Program (SHP)** is an annually published five-year investment plan in highway construction for Southern Ontario.

Archive:

Format

Southern Highways Program 2008 to 2012

HTML
PDF (2.13 MB)

Southern Highways Program 2007 to 2011

Format
HTML
PDF(2.18 MB)

Southern Highways Program 2010 to 2014

Formats
HTML
PDF (6.67 MB)

Northern Highways Program (NHP)

The **Northern Highways Program (NHP)** is an annually published five-year investment plan in highway construction for Northern Ontario.

Archive:

Northern Highways Program 2008 to 2012

Formats
HTML
PDF (1.68 MB)

Northern Highways Program 2007 to 2011

Formats
HTML
PDF(1.28 MB)

Northern Highways Program 2010 to 2014

Formats
HTML
PDF (1.47 MB)

Business Effectiveness Measures (BEM)

- Developed to help ascertain whether the ministry is delivering it's public commitments under the Southern/Northern Highways Plan (SHP/NHP)
 - % of SHP/NHP projects that finished on time
 - % of SHP/NHP projects that started on time
 - % of SHP/NHP projects that stay on the program (don't get dropped)
 - % of SHP/NHP project costs that are within 10% margin of error
 - Corridor Investment Planning
- Results are shared across regions to promote competition and to incorporate best practices

Other Measures Under Consideration

- Mobility
 - Considering measures that better reflect the experience of road users across the province
 - Travel Time Index (TTI)
 - Compares peak period speeds vs. posted speeds (eg. If TTI is 1.4, a motorist's 60 minute trip will take 1.4 times longer - 84 minutes)
 - Buffer Time Index (BTI)
 - Measure of travel time reliability
 - Represents extra travel time (buffer) needed to consistently arrive on time
 - Eg. A BTI of 24% means a motorist should allow 24% more time than the average trip-time to arrive consistently on time

What are Other Jurisdictions Doing?

- Performance Measurement is used widely in Canada and US for both System Preservation and System Operation (Safety)
 - In Canada, actual practice, application and specific measures vary widely
 - Some common measures emerging for asset condition
 - Many US jurisdictions publish detailed reports and plans online
 - eg. Asset condition for bridges and pavements
- Transportation Association of Canada (TAC):
 - TAC has begun the process of addressing the issue of cross-jurisdiction comparability
 - Project initiated in 2010 to develop Guidelines for Highways Performance Measures for use by all Canadian jurisdictions
 - Project Scope:
“To identify a core set of performance measures for Asset Management and Highway Safety purposes and develop guidelines for implementation.”
 - Publication expected in late 2011

<http://itd.idaho.gov/dashboard>

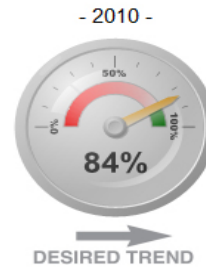


Transportation System Dashboard

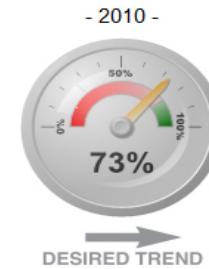
Five-Year Fatality Rate



Percent of Pavement in Good or Fair Condition



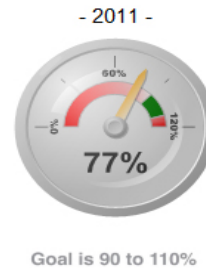
Percent of Bridges in Good Condition



Percent of Highway Projects Developed on Time



Construction Cost at Award as a Percent of Construction Budget



Highway Congestion



Administration and Planning Expenditures



Division of Motor Vehicles Title Processing Time



Division of Motor Vehicles Internet Transactions



Washington State: <http://www.wsdot.wa.gov/Maintenance/Accountability>

Maintenance Accountability Process Activity Service Level Targets and Service Levels Delivered Statewide - CY 2009

Activity	1.0 +	1.9 A -	2.0 +	2.9 B -	3.0 +	3.9 C -	4.0 +	4.9 D -	5.0 +	5.9 F -
Group - 1 Roadway Maintenance and Operations										
1A1 Pavement Patching, Repair & Crack Sealing					✓	⊙				
1A3 Shoulder Maintenance					⊙	✓				
1A4 Sweeping and Cleaning		✓		⊙						
Group - 2 Drainage Maintenance and Slope Repair										
2A1 Maintain Ditches				✓	⊙					
2A2 Maintain Culverts							⊙		✓	
2A3 Maintain Catch Basins and Inlets						✓		⊙		
2A4 Maintain Detention/Retention Basins						✓	⊙			
2A5 Slope Repair				✓	⊙					
Group - 3 Roadside and Vegetation Management										
3A1 Litter Pickup								⊙		✓
3A2 Noxious Weed Control				✓	⊙					
3A3 Nuisance Vegetation Control					⊙			✓		
3A4 Control of Vegetation Obstructions						✓		⊙		
3A5 Landscape Maintenance							⊙	✓		
Group - 4 Bridge and Urban Tunnel Maintenance and Operations										
4A1 Bridge Deck Repair						✓	⊙			
4A2 Structural Bridge Repair							⊙			✓
4A3 Bridge Cleaning					✓		⊙			
4B1 Movable and Floating Bridge Operations	✓			⊙						
4B2 Keller Ferry Operations				✓	⊙					

Performance Measures:

What Gets Measured, Gets Done!



- Regular measurement and reporting helps:
 - maintain focus
 - justify decisions
 - improve results