Transportation Asset Management Webinar Series

Webinar 2: Asset Management and Performance Management

Sponsored by FHWA and AASHTO

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Please do not put your phone on hold.
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Webinar 2 — January 9, 2013

FHWA-AASHTO Asset Management Webinar Series

- Sharing of knowledge is a critical component of advancing asset management practice
- This is the second of a 12-part webinar series that will be held over the next two years
- Webinars will be held every two months with topics such as AM and safety, risk-based AM, GIS application in AM, etc.
- Welcome ideas for future webinar topics and presentations
- Submit questions using the webinar's Q&A feature
- Next webinar: **Asset Management Business Models and Barriers to Implementation – March 13, 2013 2:00 EST**

Why is AM and PM Important?

- Asset Management applies performance principles for the long-term cost-effective maintenance, preservation, rehabilitation, and reconstruction of physical assets
- Asset Management decisions that lead to the preservation or enhancement of infrastructure condition also contribute to other strategic performance objectives related to safety, system mobility, economic viability, and environmental sustainability
- Asset Management and performance management have to work together for effective results

Why is AM and PM Important?

- In many transportation agencies, their Asset Management program is one of the most developed applications of performance management principles
- Many transportation agencies are already using Asset Management principles as the cornerstone of their Performance Management program, the provisions under MAP-21 are sure to increase interest and involvement in these areas

AM and PM Webinar Purpose

- Get an overview of the asset management requirements and FHWA and AASHTO work in MAP-21 rulemaking
- Share best practices in asset management and performance management implementation
- Present approaches to better integrate asset management and performance management programs
- Share lessons learned by peer agencies
- **SHARE LESSONS LEARNED, IDEAS, KNOWLEDGE!!!**

Webinar Agenda

2:00	**Webinar introduction and overview** Matt Hardy (AASHTO) Steve Gaj (FHWA) and Hyun-A Park (Spy Pond Partners, LLC)
2:10	**FHWA and AASHTO: MAP-21 Implementation Perspective** Steve Gaj and Matt Hardy
2:25	**Linking Asset Management and Performance Management: Protecting Assets, Reducing Risk, Making a Case for Funding** Daniela Bremmer, John Milton, & Pat Morin (Washington State DOT)
2:45	**NCDOT: Back to the Future** Jennifer Brandenburg (North Carolina DOT)
3:00	**Asset Management: Tools & Methods for Monitoring Performance** Ron Vibbert & Craig B. Newell (Michigan DOT)
3:15	**Q&A and wrap up**

Asset Management and MAP-21

Steve Gaj

Team Leader, Asset and Pavement Management Team,

FHWA Office of Asset Management, Pavement, and Construction

SCOPM Task Force on Performance Measure Development, Coordination and Reporting

Supported by the NCHRP 20-24 program

Matt Hardy, AASHTO

SCOPM Task Force Purpose

- Assist SCOPM and AASHTO recommend a limited number of national performance measures to meet MAP-21 requirements
  - Including issues related to the recommended performance measures

  http://scopm.transportation.org
- Help prepare AASHTO members meet new Federal performance management requirements
- Develop strategies for communicating national performance measure reporting requirements
- Helping educate the general public on the need for transportation investment in our nation

Overarching Principles

1. **There is a Difference**—National-level performance measures are not necessarily the same performance measures State DOTs will use for planning and programming of transportation projects and funding.
2. **Specificity and Simplicity**—National-level performance measures should follow the SMART and KISS principles:
   - SMART: Specific, Measurable, Attainable, Realistic, Timely
   - KISS: Keep it Short and Simple
3. **Possession is 9/10ths of the Law**—National-level performance measures should focus on areas and assets that States DOTs have control over.

Overarching Principles (cont.)

4. **Reduce and Re-use**—The initial set of national-level performance measures should build upon existing performance measures, management practices, data sets and reporting processes.
5. **Ever Forward**—National-level measures should be forward thinking to allow continued improvement over time.
6. **Communicate, Communicate, Communicate**—Messaging the impact and meaning of the national-level measures to the public and other audiences is vital to the success of this initiative.

Safety
Recommended Measures

- **Number of Fatalities—**Five-year moving average of the count of the number of fatalities on all public roads for a calendar year.
- **Fatality Rate—**Five-year moving average of the Number of Fatalities divided by the Vehicle Miles Traveled (VMT) for a calendar year.
- **Number of Serious Injuries**—Five-year moving average of the count of the number of serious injuries on all public roads for a calendar year.
- **Serious Injury Rate**—Five-year moving average of the Number of Serious Injuries divided by the Vehicle Miles Traveled (VMT) for a calendar year.

Pavement Recommended Measures

- **Interstate Pavement in Good, Fair and Poor Condition based on the International Roughness Index (IRI)—** Percentage of 0.1 mile segments of Interstate pavement mileage in good, fair and poor condition based on the following criteria: good if IRI<95, fair if IRI is between 95 and 170, and poor if IRI is greater than 170.
- **Non-Interstate NHS Pavement in Good, Fair and Poor Condition based on the International Roughness Index (IRI)—** Percentage of .1 mile segments of non- Interstate NHS pavement mileage in good, fair and poor condition based on the following criteria: good if IRI<95, fair if IRI is between 95 and 170, and poor if IRI is greater than 170.
- **Pavement Structural Heath Index**—Percentage of pavement which meet minimum criteria for pavement faulting, rutting and cracking.

Bridge Recommended Measures

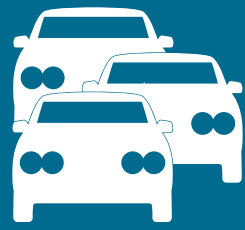
- **Percent of Deck Area on Structurally Deficient Bridges**—NHS bridge deck area on structurally deficient bridges as a percentage of total NHS bridge deck area.
- **NHS Bridges in Good, Fair and Poor Condition based on Deck Area—**Percentage of National Highway System bridges in good, fair and poor condition, weighted by deck area.

The first measure is required in MAP-21 and AASHTO supports this as an initial measure. However, this measure could steer a State DOT to implement a worst-first approach for maintaining bridge condition. Therefore, AASHTO is exploring the second measure.

Freight Recommended Measures

- **Annual Hours of Truck Delay (AHTD)**—Travel time above the congestion threshold in units of vehicle-hours for trucks on the Interstate Highway System.
- **Truck Reliability Index (RI_{80})**—The RI is defined as the ratio of the 80th percentile total truck travel time needed to ensure on-time arrival to the agency-determined threshold travel time (e.g., observed travel time or preferred travel time).

System Performance Recommended Measures



- **Annual Hours of Delay (AHD)**—Travel time above a congestion threshold (defined by State DOTs and MPOs) in units of vehicle -hours of delay on Interstate and NHS corridors.
- **Reliability Index (RI_{80})**—The Reliability Index is defined as the ratio of the 80th percentile travel time to the agency-determined threshold travel time.

CMAQ

- **On-road Mobile Source Emissions**
  - **Criteria Pollutant Emissions—**Daily kilograms of on-road, mobile source criteria air pollutants (VOC, NOx, PM, CO) reduced by the latest annual program of CMAQ projects.
- **Traffic Congestion**
  - **Annual Hours of Delay (AHD)**—Travel time above a congestion threshold (defined by State DOTs and MPOs) in units of vehicle -hours of delay reduced by the latest annual program of CMAQ projects.

These measures apply only to MPOs that serve Transportation Management Areas (TMAs) with populations of over 1,000,000 and that are nonattainment or maintenance areas.

Next Steps

- SCOPM Task Force to address other areas of MAP-21 Performance Management Requirements
  - Target Setting, Reporting, Communication (*Winter 2012/2013*)
- SCOPM Task Force coordinates AASHTO's collective response to the Notice of Proposed Rulemaking (*Spring/Summer 2013*)

Linking Asset Management and Performance Management

Protecting Assets- Reducing Risk- Making a Case for Funding

Daniela Bremmer
Director, Strategic Assessment Office
Patrick Morin
Operations Mgr., Capital Program Development & Management Office (CPDM)
John Milton
Director, Risk Management Office

FHWA & AASHTO Transportation Asset Management Webinar #2 - January 9th, 2013

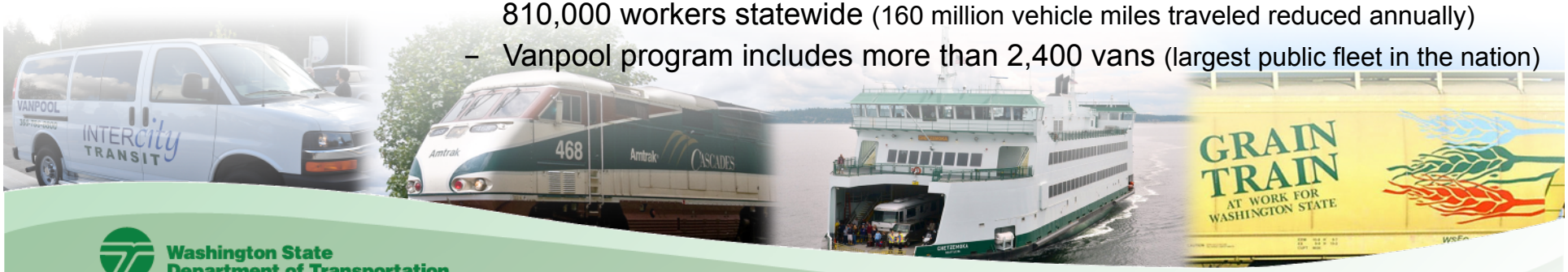
Washington State Department of Transportation

Washington's transportation system is big, complex and multimodal

Comprehensive system connects roadways, airports, waterways and railways

On the state-owned system alone:

- **Highways**: 87 million vehicle miles/day (18,500 state highway lane miles)
  - 309 lane miles of the 320 miles funded for HOV systems are in place (Including transit and HOV treatments on arterials and ramps)
  - More than 3,600 bridges and structures
- **Ferries:** 23 million passengers/year (23 ferry vessels, 19 terminals in Washington, and 450 total sailings per day with 900 total sailings)
- **Aviation:** 17 WSDOT-managed airports (138 public-use airports)
- **Passenger rail:** Nearly 850,000 passengers in 2011 (partner in Amtrak *Cascades* state passenger rail)
- **Freight rail:** 3,600 miles of operated public and private freight railroads move 103 million tons of freight. (2009 data)
  - Grain Train delivers more than 1.6 million tons of grain since 1994, 100 tons per car in 2010. (The Grain Train program runs 118 cars, including 29 added in 2010.)
  - WSDOT owns 326 miles of short-line railroad. (During 2010, shipping on the Palouse-Coulee City rail system increased 20% over 2009 to 8,000 carloads)
- **Transit support**
  - Business and state partnerships in commute programs support more than 810,000 workers statewide (160 million vehicle miles traveled reduced annually)
  - Vanpool program includes more than 2,400 vans (largest public fleet in the nation)

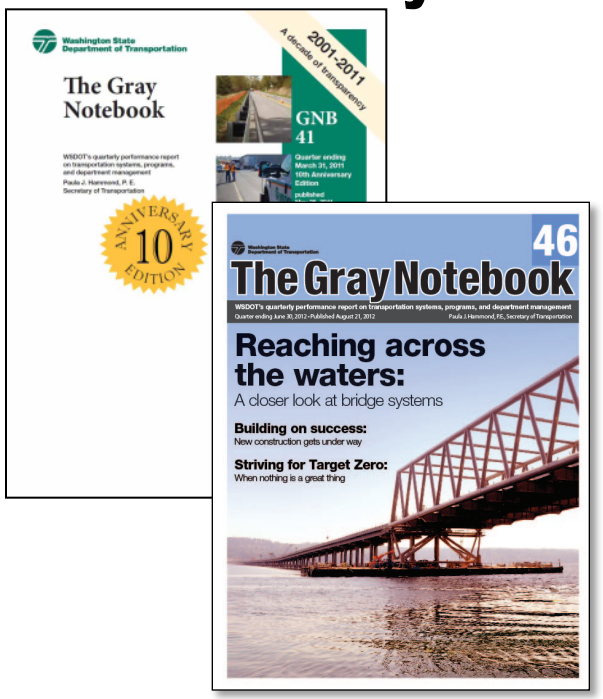


Source: WSDOT Strategic Assessment; Freight

Our History …

WSDOT's Response:

Communication and Accountability



***The Gray Notebook*, WSDOT's quarterly performance report**

WSDOT responded to the accountability challenge : our brand

WSDOT's Strategic Approach - *adopted in 2001*

1. Accountability and transparency
2. Comprehensive performance analysis and reporting for all programs
3. Adaptive and dynamic performance measurement to meet changing needs

Tool: WSDOT's quarterly performance report – *our brand*
The *Gray Notebook* (GNB)

WSDOT's Strategic Plan – *linking the pieces*
Commits to transparency and accountability

More than a report, the *Gray Notebook* anchors WSDOT's management philosophy: "*What gets measured, gets managed*" and "*No Surprises Reporting*."

Communicate Performance:

Principles of transparency

Our goal: "to share the performance of WSDOT's most complex and diverse programs and projects clearly and concisely in a format that everyone can easily understand and explain to their neighbors…."

1. Use candor and transparency: "The good, the bad, and the ugly" – no exceptions
2. Use "Plain Talk" – language people can understand
3. Combine quantitative and narrative reporting in Performance Journalism to tell the story
4. Make reports easily accessible to the public and the media
5. Be current and timely

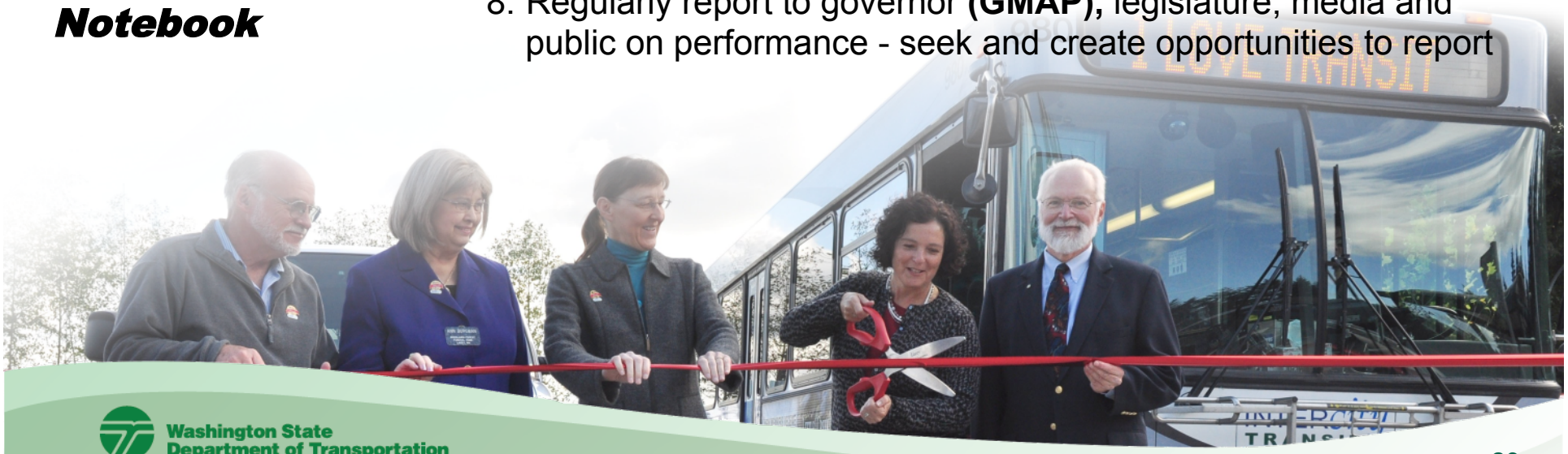
Washington State Department of Transportation

WSDOT's Performance Management Philosophy for all Programs:

WSDOT pioneered the concept of *Performance Journalism* and it formed the basis for the *Gray Notebook*

Performance Journalism crafts compelling stories; Performance Management achieves results

1. Communicate clear, relevant and easy-to-understand measures and results using Performance Journalism
2. Demonstrate how programs contribute to priorities
3. Monitor and analyze detailed program data
4. Evaluate effectiveness (Before and After)
5. Hold regular problem-solving sessions
6. Allocate resources based on strategies that work – performance based investment decisions
7. Target and define your key audience
8. Regularly report to governor **(GMAP),** legislature, media and public on performance - seek and create opportunities to report



Tangible Results and Benefits:

Accountability, credibility, and funding

Enhanced WSDOT credibility and accountability supports positive funding considerations:

2003 State Gas Tax Increase

- Transportation Revenue Package: 5 cents/gallon gas tax increase took effect July 1, 2003 ($4 billion)

2005 State Gas Tax Increase

- Transportation Revenue Package: 9.5 cents/gallon gas tax increase (phased in over three years) July 1, 2005 ($7 billion)

Nov 2005: 'No' on I-912

- Through a simple majority vote, Washington State citizens had a choice to eliminate the 9.5 cents gas tax that was passed by the 2005 WA Legislature.
  - 47% voted YES – eliminate the new gas tax
  - 53% voted NO – don't eliminate the new gas tax

Nov 2011: 'No' on I-1125

- Washington State citizens voted 'no' to restrict how tolling revenues are used

Other System and Asset Benefits

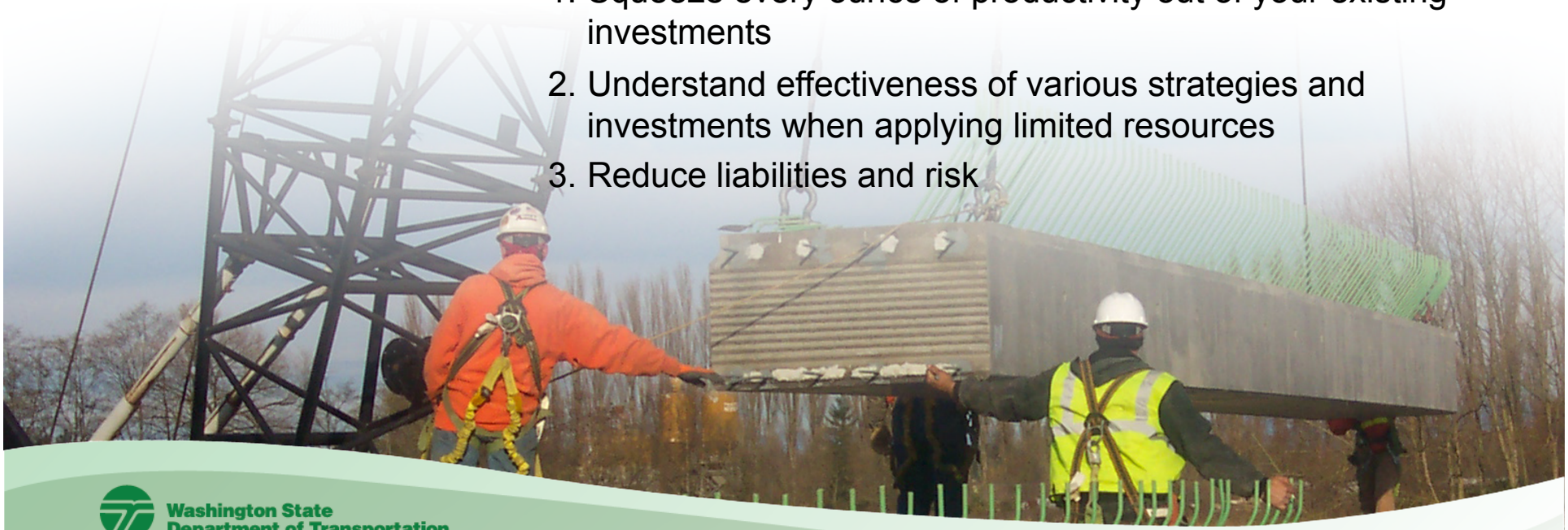
How does Asset and Risk Management benefit from Performance Reporting?

Ability to tell your story and report on condition and needs

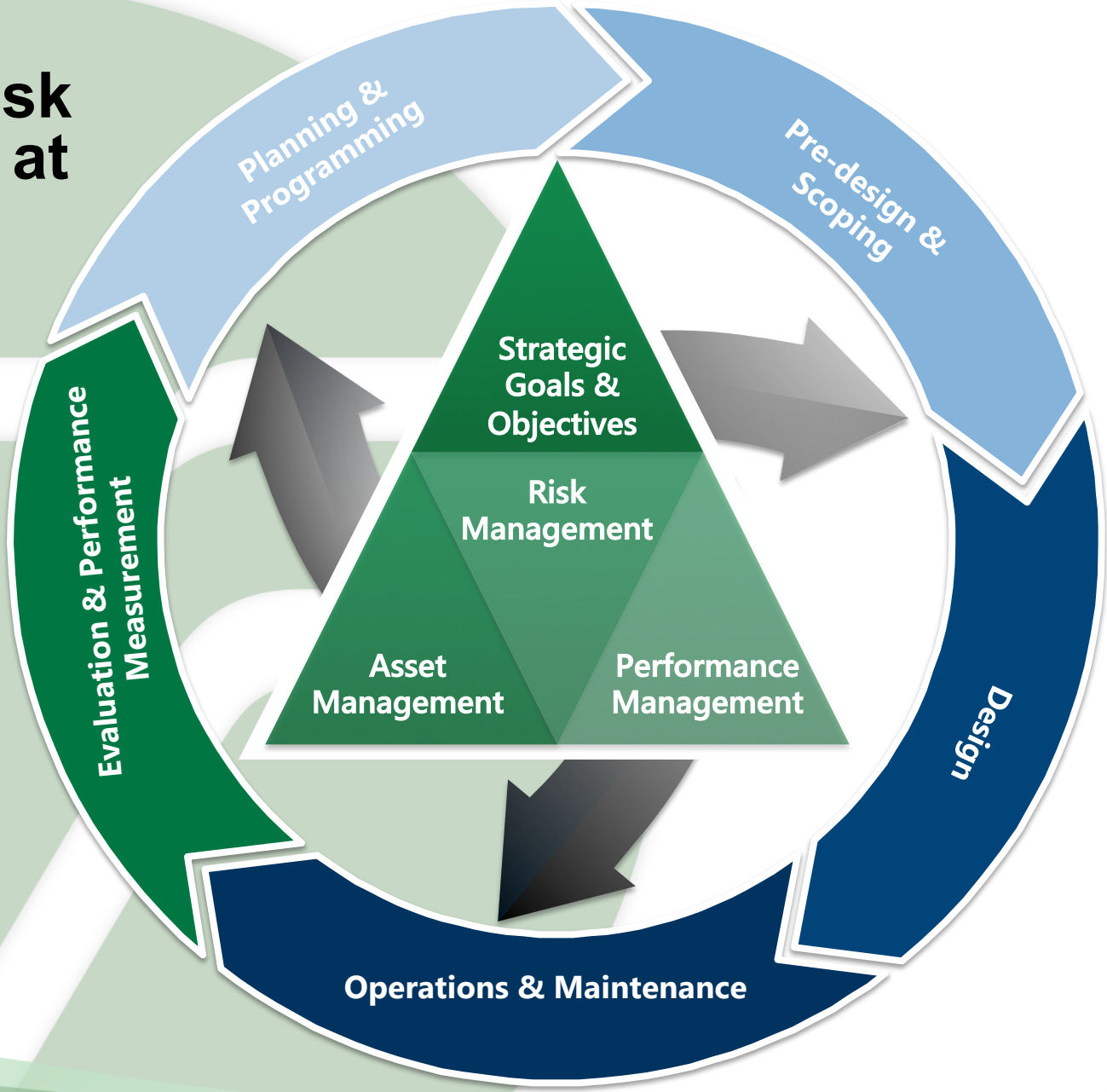
1. Informed media
2. Informed officials and decision makers
3. Informed managers and employees

Allows for better management of the system and enhanced operations

1. Squeeze every ounce of productivity out of your existing investments
2. Understand effectiveness of various strategies and investments when applying limited resources
3. Reduce liabilities and risk



Integrating Enterprise Risk Management at WSDOT



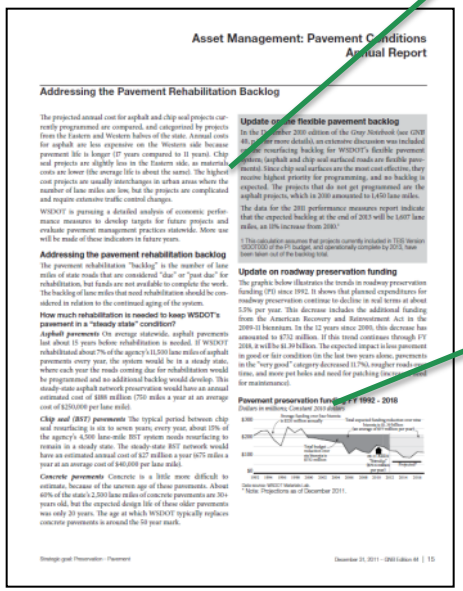
Washington State Department of Transportation

Source: Milton and Van Schalkwyk (2012)

Telling the story

Pavement:

Target lowest life-cycle cost


Asset Management: Pavement Conditions Annual Report

Addressing the Pavement Rehabilitation Backlog

Update on the flexible pavement backlog

Update on roadway preservation funding

Pavement preservation funding FY 1992 - 2018

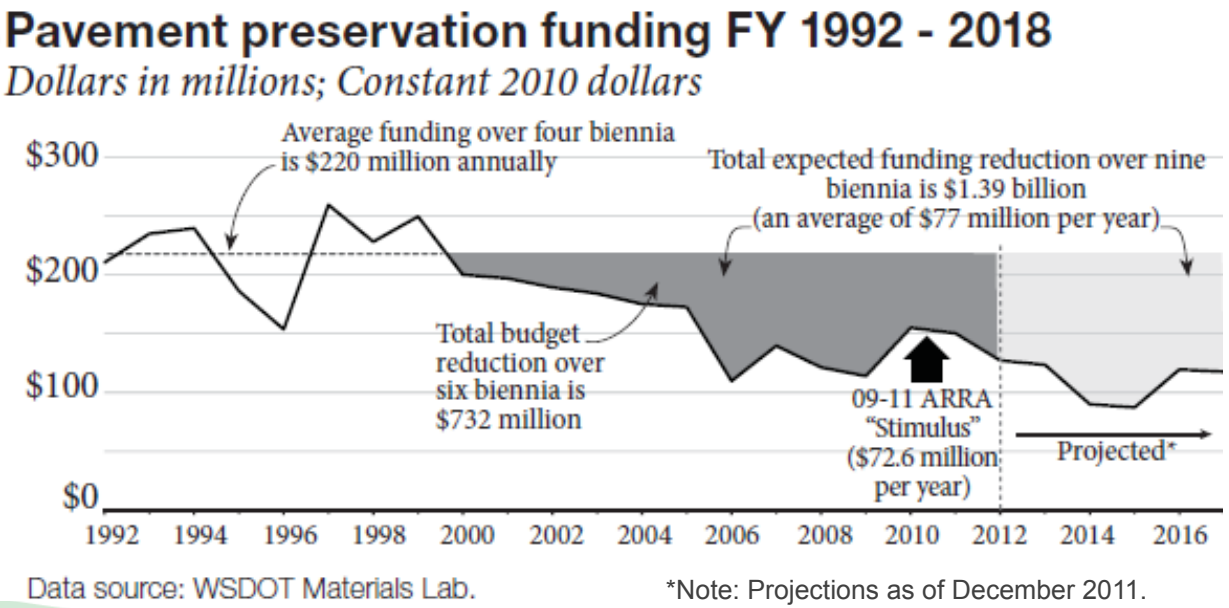
Communicating the funding crisis, while achieving pavement preservation goals

WSDOT uses graphs and charts to illustrate declining funding:

- Maintaining over 20,000 lane miles while funding dropped by $600 million in 10 years (27% reduction)

WSDOT uses performance management to create efficiencies:

- Target lowest life-cycle cost – WSDOT achieves pavement condition goals amidst funding crisis (next slide)



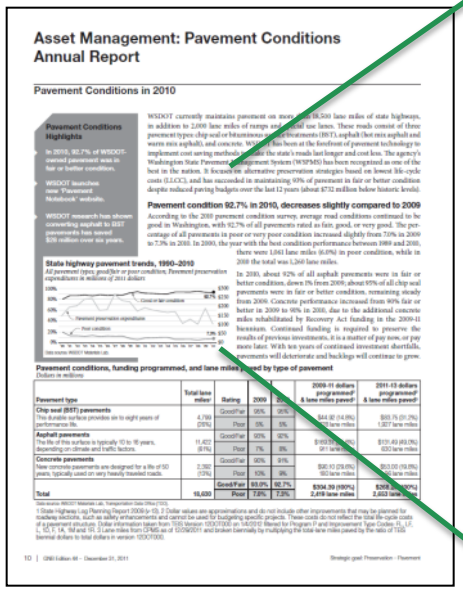
Data source: WSDOT Materials Lab.

*Note: Projections as of December 2011.

Telling the story

Pavement:

Innovations to lower costs, preserve life


Asset Management: Pavement Conditions Annual Report

Pavement Conditions in 2010

Pavement Conditions Highlights

Pavement condition 92.7% in 2010, decreases slightly compared to 2009

State highway pavement trends, 1990–2010

Pavement conditions, funding programmed, and lane miles paved by type of pavement

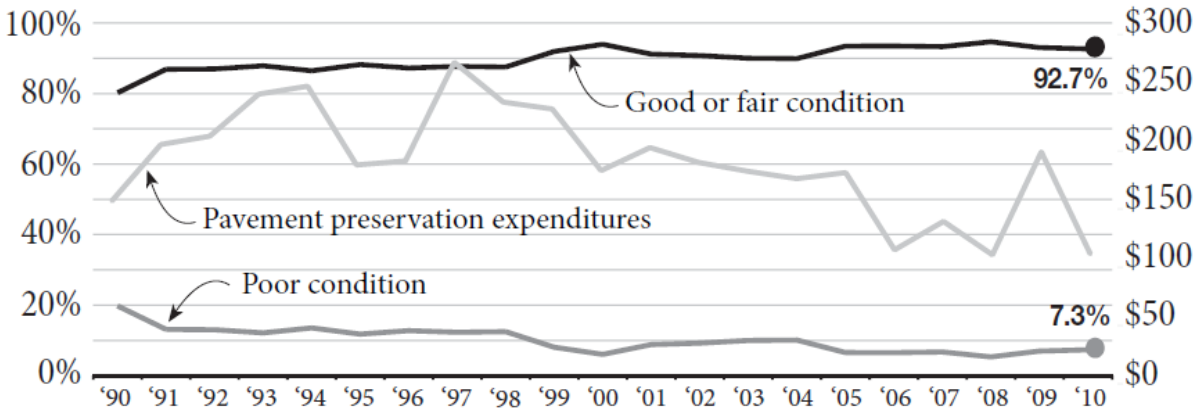
WSDOT's pavement technology innovations help offset declining investments

WSDOT uses pavement technology to make the state's roads last longer and cost less. Efficiencies include:

- Dowel bar retrofits on concrete pavements
- Selective panel replacement and diamond grinding on concrete pavements
- Converting higher cost asphalt pavements to lower cost chip seal pavements ($151 million saved as of December 2011)

State highway pavement trends, 1990–2010

All pavement types; good/fair or poor condition; Pavement preservation expenditures in millions of 2011 dollars



Data source: WSDOT Materials Lab.

Pavement Preservation

Flexible Pavements

- Minimum Performance Standard
  - Rutting – ½ inch
  - Cracking – score of 45 out of 100
  - Ride – 220 inches per mile (lagging indicator)

- Alternative Analysis based on Lowest Life-cycle cost
  - Preventative Maintenance (strategic Crack Sealing)
  - Chip Seals on lower volume and lower truck loadings

- Prioritization
  - 70% of the analysis units within a paving job should be below he minimum performance standard

Rigid Pavements

- Minimum Performance Standard
  - Rutting – ½ inch
  - Faulting
  - Cracking
  - Ride – 220 inches per mile

- Alternative Analysis based on Lowest Life-cycle cost
  - Preventative Maintenance to replace isolated panels with significant cracking
  - Grind rutted panels with minimal faulting and rutting
  - Dowel-bar rehab faulted panels & grind
  - Replace concrete roadway that is beyond rehabilitation

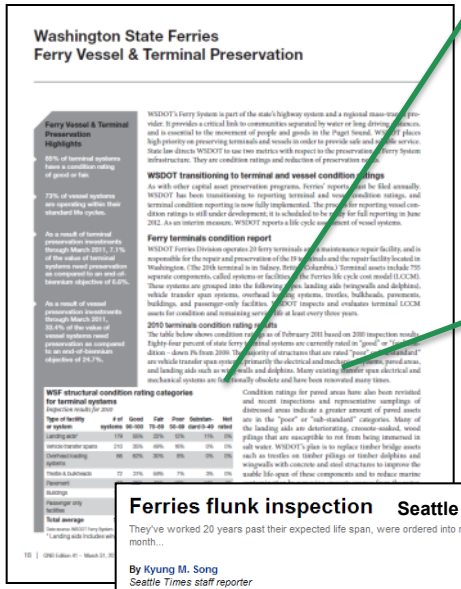
1990-2010: Changes in Pavement Asset Management

Then (1990)	Now (2010)
Worst first	Lowest life cycle cost
Allocation funding	Need based funding
WSPMS as sideline	WSPMS as key decision making tool
Hveem mix design protocol	Superpave mix design
Volumetrics in the lab	Volumetrics in the field
Concrete Total Replacement	Dowel bar retrofit
Dowel bar retrofit	Triage protocol
Thick overlays (>2"+)	P-1 protocol (2" overlays for all HMA)
No westside BST	All west side regions doing BST
BST only if ADT <2000 ADT	BST on all routes under 5,000 ADT and consideration for routes between 5,000-10,000
No RAP	Consuming all the RAP produced in the state
No RAS	Test project with RAS
No clear pavement selection	Pavement Type Selection Protocol
No dowel bar selection	Dowel Bar Selection Protocol

Telling the story

Ferries:

Terminal condition; Vessel life-cycle


Washington State Ferries
Ferry Vessel & Terminal Preservation

Ferry Vessel & Terminal Preservation Highlights

- 85% of terminal systems have a condition rating of good or fair.
- 73% of vessel systems are operating within their standard life cycles.
- As a result of terminal preservation investments through March 2011, 7.1% of the value of terminal systems need preservation as compared to an end-of-biennium objective of 6.6%.
- As a result of vessel preservation investments through March 2011, 33.4% of the value of vessel systems need preservation as compared to an end-of-biennium objective of 24.7%.

WSDOT transitioning to terminal and vessel condition ratings

Ferry terminals condition report

2010 terminals condition rating results

WSF structural condition rating categories for terminal systems
Inspection results for 2010

Type of facility or system	# of systems	Good 90-100	Fair 70-89	Poor 50-69	Substandard 0-49	Not rated
Landing aids*	179	55%	22%	12%	11%	0%
Vehicle transfer spans	210	35%	49%	16%	0%	0%
Overhead loading systems	66	62%	30%	8%	0%	0%
Trestle & bulkheads	72	31%	58%	7%	3%	0%
Pavement	77	25%	42%	19%	14%	1%
Buildings	136	45%	54%	1%	0%	1%
Passenger only facilities	15	53%	33%	13%	0%	0%
Total average	**755**	**43%**	**42%**	**11%**	**4%**	**0%**

Data source: WSDOT Ferry System.
* Landing aids includes wingwalls and dolphins.

Condition ratings for paved areas have also been revisited and recent inspections and representative samplings of distressed areas indicate a greater amount of paved assets are in the "poor" or "sub-standard" categories. Many of the landing aids are deteriorating, creosote-soaked, wood pilings that are susceptible to rot from being immersed in salt water. WSDOT's plan is to replace timber bridge assets such as trestles on timber pilings or timber dolphins and wingwalls with concrete and steel structures to improve the usable life-span of these components and to reduce marine

Ferries flunk inspection Seattle Times, December 9, 2007

They've worked 20 years past their expected life span, were ordered into retirement in 2001 and yet remained active up until last month...

By Kyung M. Song
Seattle Times staff reporter

They've worked 20 years past their expected life span, were ordered into retirement in 2001 and yet remained active up until last month despite cracks, holes and pitting.

But the curtain may be close to falling on Washington state's four oldest ferries.

Emergency inspections on two of the 80-year-old Steel Electric-class ferries on Seattle's Harbor Island have uncovered more extensive pitting and corrosion than expected, posing a dilemma for state officials who must now decide whether repairing the vessels would be a wise investment.

Opting to buy new boats could leave the Port Townsend-Keystone route without car-ferry service for two years while the boats are built, said Traci Brewer-Rogstad, deputy executive director of the ferry system.


enlarge ALAN BERNER
The 80-year-old Steel Electric-class ferry Quinault will not be returned to service unless the damage to its hull is repaired.

Related
- Lummi Island ferry's red ink may sink discounts
- Archive | Ferry options would all be costly
- Archive | Cracks in hulls sideline 4 state ferries

Preserving Ferries terminal assets

- 85% of terminal systems have a condition rating of fair or better
- Terminal preservation investments result in 7.1% of the value of terminal systems needing preservation, compared to 6.6% target

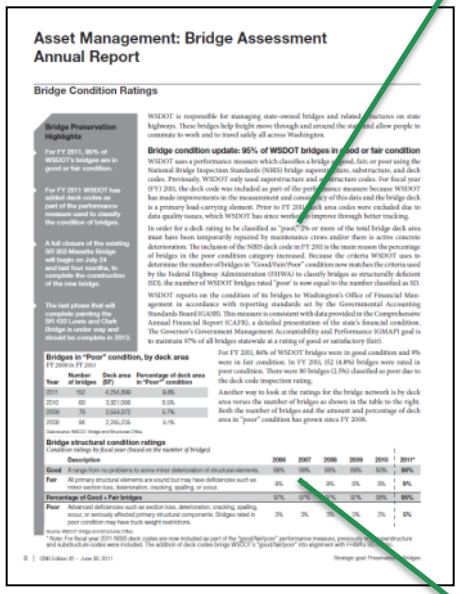
Vessel preservation: life-cycle assessment

- WSDOT tracks the life cycle status of vessel systems in terms of how close systems are to the end of standard life cycle
- Low vessel preservation investments resulted in 33.4% of the value of vessel systems needing preservation, compared to the 24.7% target
- Four vessels pulled from service in 2007. Emergency replacement funds needed: Construction of three new vessels within 2009-2011

Telling the story

Bridges:

Condition rating used to prioritize spending



Asset Management: Bridge Assessment Annual Report

Bridge Condition Ratings

Bridge condition ratings prioritize investments:

- 95% of WSDOT bridges in fair or better condition
- Bridge structural condition rating identifies needs, guides decision-making for preservation funding

Bridge load ratings help ensure public safety

- Load rating tests verify structures can safely carry legal and permitted loads
- Truck load rating is re-analyzed based on bridge age/condition
- Deficient structures posted with allowable truck weights

Benefits of consistent bridge condition reporting

- Consistent reporting on bridge conditions allowed for rapid response to media and public concerns in the wake of the Minnesota I-35W bridge failure

Bridge structural condition ratings

Condition ratings by fiscal year (based on the number of bridges)

	Description	2006	2007	2008	2009	2010	2011*
Good	A range from no problems to some minor deterioration of structural elements.	88%	88%	88%	89%	90%	**86%**
Fair	All primary structural elements are sound but may have deficiencies such as minor section loss, deterioration, cracking, spalling, or scour.	9%	9%	9%	8%	8%	**9%**
Percentage of Good + Fair bridges		97%	97%	97%	97%	98%	**95%**
Poor	Advanced deficiencies such as section loss, deterioration, cracking, spalling, scour, or seriously affected primary structural components. Bridges rated in poor condition may have truck weight restrictions.	3%	3%	3%	3%	2%	**5%**

Source: WSDOT Bridge and Structures Office.

* Note: For fiscal year 2011 NBIS deck codes are now included as part of the "good/fair/poor" performance measure, previously only superstructure and substructure codes were included. The addition of deck codes brings WSDOT's "good/fair/poor" into alignment with FHWA's SD metric.

Structure Preservation Performance Criteria

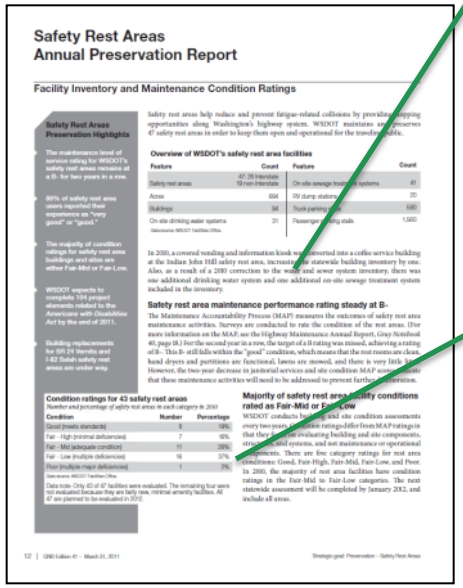
- Minimum Performance Standard
  - Scour – Amount of erosion
  - Seismic – Structure in seismic zones with ground motion > 0.25g
  - Painting – rusting > 2%
  - Concrete Decks – delamination > 3% of deck area
  - Major repair – determined by inspection
  - Replacement/Rehab – based on national bridge replacement eligibility

- Alternative Analysis based on Lowest Life-cycle cost
  - Created a life-line network for emergency response and economic recovery – see next slide

Telling the story

Safety Rest Areas:

Facilities condition and public perception


Safety Rest Areas
Annual Preservation Report

Facility Inventory and Maintenance Condition Ratings

Facility condition ratings prioritize replacement

- The majority of condition ratings for safety rest area buildings and sites are either Fair-Mid or Fair-Low
- 88% of safety rest area users who submitted comment cards reported their experience as “very good” or “good”
- Condition ratings used to prioritize facility replacements

Condition ratings for 43 safety rest areas

Number and percentage of safety rest areas in each category in 2010

Condition	Number	Percentage
Good (meets standards)	8	19%
Fair - High (minimal deficiencies)	7	16%
Fair - Mid (adequate condition)	11	26%
Fair - Low (multiple deficiencies)	16	37%
Poor (multiple major deficiencies)	1	2%

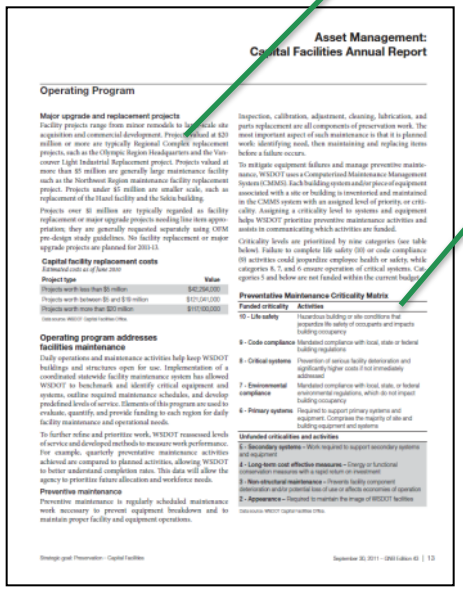
Data source: WSDOT Facilities Office.

Data note: Only 43 of 47 facilities were evaluated. The remaining four were not evaluated because they are fairly new, minimal-amenity facilities. All 47 are planned to be evaluated in 2012.

Telling the story

Capital Facilities:

Preventive maintenance is planned work


Asset Management:
Capital Facilities Annual Report

Operating Program

Major upgrade and replacement projects

Capital facility replacement costs

Operating program addresses facilities maintenance

Preventive maintenance

Preventative Maintenance Criticality Matrix

Planning for preventive maintenance:

Identifying needs, then maintaining and replacing items before a failure occurs.

Computerized Maintenance Management System

WSDOT inventories each building system in CMMS, and assigns a level of criticality which is used to prioritize investments.

- Life-safety and code compliance (9-10) affect employee health, safety
- Levels 6-8 operate critical systems
- Levels 5 and below are not funded within the current budget
- Emergency repairs are top priority and absorb funding

Preventative Maintenance Criticality Matrix

Funded criticality	Activities
10 - Life safety	Hazardous building or site conditions that jeopardize life safety of occupants and impacts building occupancy
9 - Code compliance	Mandated compliance with local, state or federal building regulations
8 - Critical systems	Prevention of serious facility deterioration and significantly higher costs if not immediately addressed
7 - Environmental compliance	Mandated compliance with local, state, or federal environmental regulations, which do not impact building occupancy
6 - Primary systems	Required to support primary systems and equipment. Comprises the majority of site and building equipment and systems
Unfunded criticalities and activities	
5 - Secondary systems –	Work required to support secondary systems and equipment
4 - Long-term cost effective measures –	Energy or functional conservation measures with a rapid return on investment
3 - Non-structural maintenance –	Prevents facility component deterioration and/or potential loss of use or affects economies of operation
2 - Appearance –	Required to maintain the image of WSDOT facilities

Data source: WSDOT Capital Facilities Office.

Challenges

- Capital Facilities investment deficit of over $150 million
- Room for improved communication of asset preservation

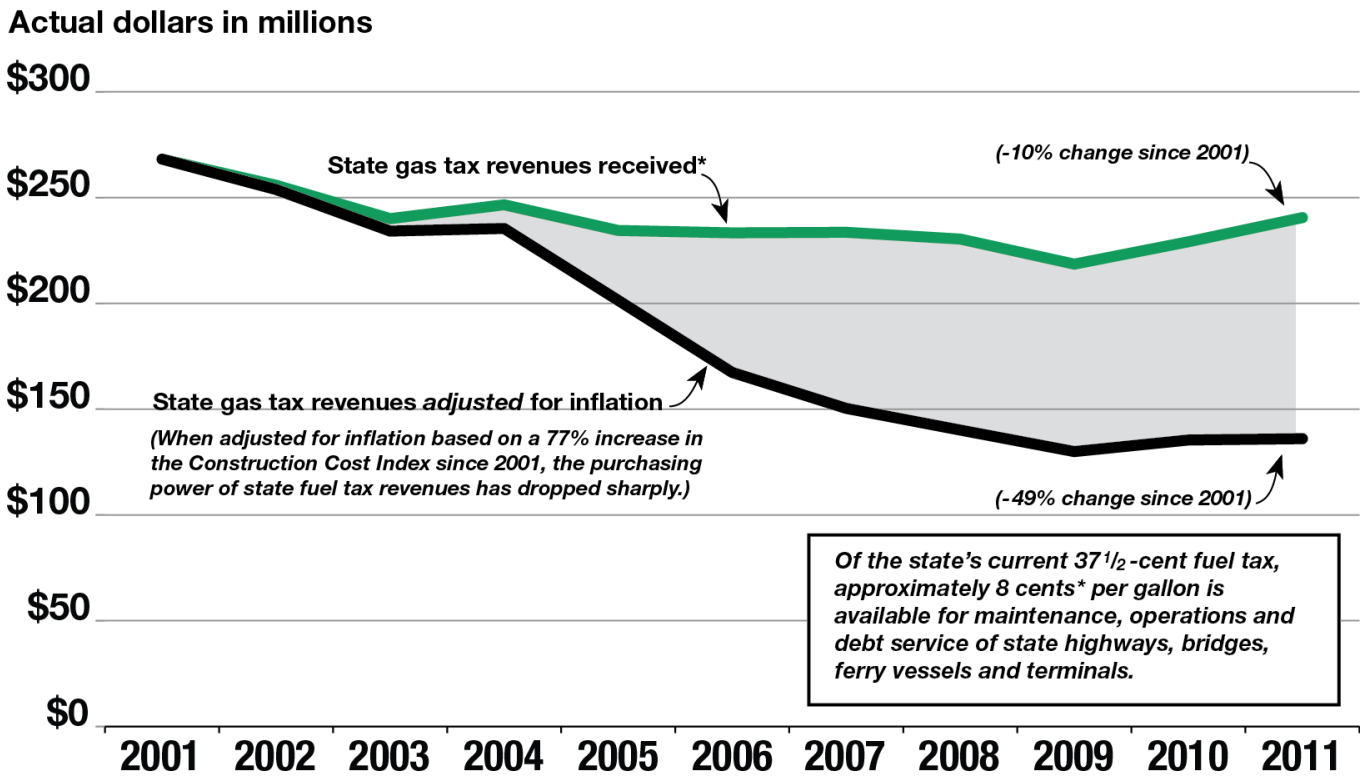
Gas tax purchasing power declines over time

Gas tax not indexed to inflation

…and compelling communication is more important than ever

Funding crisis

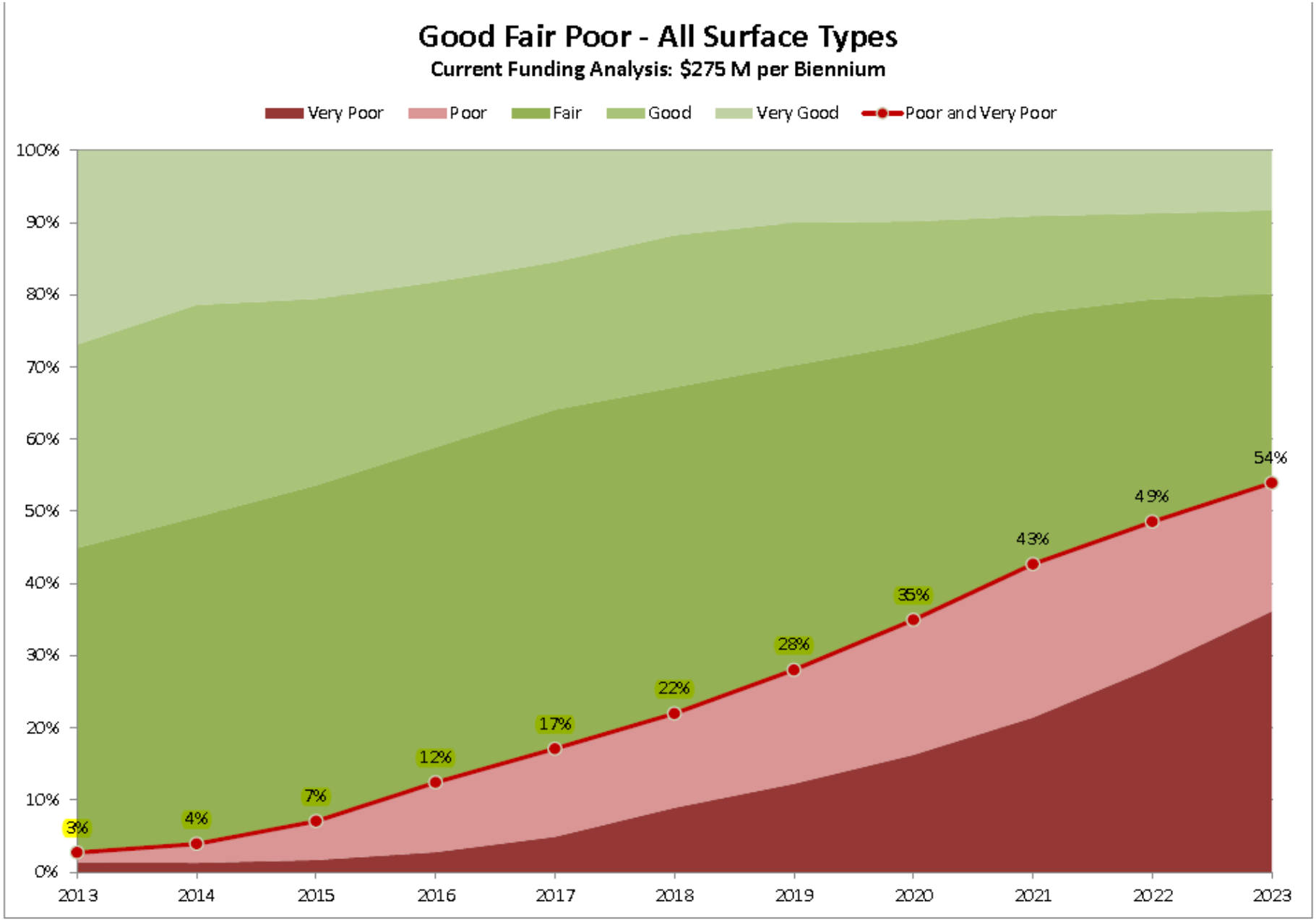
- Revenue significantly under projections
- Inflation increasing cost of maintenance and construction
- Challenge in getting another tax increase



• Includes maintenance, preservation, safety improvements, and other department operations.
** Less Debt Service.

Washington State Department of Transportation

Source: WSDOT


Good Fair Poor - All Surface Types
Current Funding Analysis: $275 M per Biennium
Very Poor
Poor
Fair
Good
Very Good
Poor and Very Poor
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
3%
4%
7%
12%
17%
22%
28%
35%
43%
49%
54%

Achieving Strategic Objectives

- Examples of lower cost approaches
- To improve performance
- To become more efficient than full scale replacement or upgrade
- Lower risk and tradeoffs
- Meet multiple goals with limited budget

- Chip seal conversion/preventative crack sealing
- Targeted concrete panel replacement
- Bridge washing and targeted painting
- Focused corridors for seismic
- Rock scaling for slopes
- Electric system component replacement
- Signal Conversions to roundabouts

Key messages include:

"Transportation investment is not an option – it is a necessity."

WSDOT redoubling communication efforts

Key Messages from the "State of Transportation" 2012 presentation include:

- **A strong transportation system is needed for a strong, healthy state**
- **Transportation investments create jobs, spur recovery, create vibrant communities and position businesses for the global economy**
  - Maintaining, preserving and improving Washington's statewide, multimodal transportation system is vital. It is the foundation that moves goods to market, people to jobs and families to activities
  - Investing in transportation creates living-wage jobs. It builds the infrastructure to support long-term economic growth. It supports the flow of commerce and the health of businesses large and small

*Source: * Employment Security Dec. 14, 2011; WSDOT Strategic Assessment*

Investing in transportation puts people to work

2003 and 2005 revenue packages supported an average of 10,000 jobs annually

Key Messages (continued):

- Statewide unemployment drops to 8.3% in January 2012*
- Private-sector construction jobs have been impacted
  - Laborers: 30% unemployment statewide decrease in employment from the peak
  - Building trades: 40% unemployment statewide decrease in employment from the peak and 35% in the Puget Sound region
- Federal Recovery Act-funded highway projects provided more than $199.5 million in payroll to workers between March 2009 and January 2012
- 74% of highway program dollars are contracted to the private sector

Source: * Employment Security January 2012; WSDOT Strategic Assessment

Investments deliver benefits – WSDOT delivers results

Projects enhance safety, mobility, economy and environment

Key Messages (continued):

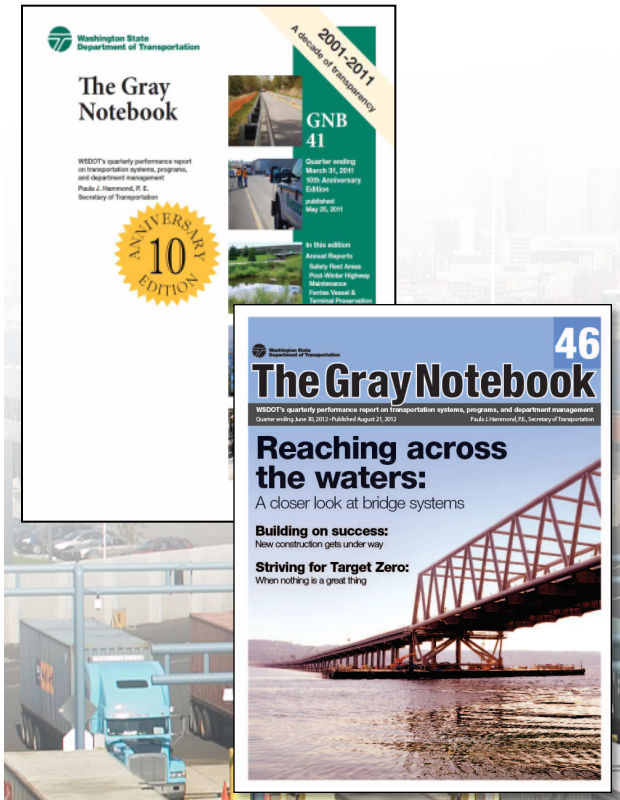
- **Safety:** Between 2006 and 2011, annual traffic fatalities declined 28%, resulting in lowest fatality rate in the state's recorded history
  - Low-cost improvements: Cable median barrier and centerline rumble strips together reduced serious and fatality collisions up to 48%
  - Washington State Ferries has the best pedestrian safety record in the world*
- **Highways:** 95% bridges and 93% of pavements are in fair or better condition in 2011
- **State ferry terminals:** 85% are in fair or better condition
- **Mobility:** In 2010, 45 out of 46 HOV lane segments provided better reliability compared to general purpose lanes
- **Travel options:** In 2011, Washington's statewide transit-operated vanpool program added 160 vanpools, for a total of 2,971
- **Environment:** Since 1991, investments have restored 258 fish passages, improving access to 850 lineal miles of habitat

Washington State Department of Transportation

** Source: WSDOT Strategic Assessment; Bridge and Structures; Ferries; Environmental Services; 2009 UW study comparing WSF to 20 ferry systems worldwide*

Then & now:

A decade of accountability and communication



- Then: **Blue Ribbon Commission (2000)**
  - Convened to address concerns about government efficiency and accountability
  - Response to unfavorable public perceptions of WSDOT
  - Focus was on WSDOT's performance and transparency
  - Critical need to invest in transportation, but little public trust
- Now: **Connecting Washington Task Force (2012)**
  - Collaborative and diverse group focusing on critical transportation needs
  - Conversations focused on transportation needs and revenue
  - Agency credibility and trust

Washington State Department of Transportation

Resources:

- **WSDOT's Accountability Website**: http://www.wsdot.wa.gov/accountability/
- **WSDOT's quarterly performance report: the *Gray Notebook***: http://www.wsdot.wa.gov/Accountability/GrayNotebook/navigateGNB.htm
  - ✓ Safety Rest Areas (GNB 41, p. 12)
  - ✓ Ferries (GNB 41, p. 18)
  - ✓ Bridges (GNB 42, p. 8)
  - ✓ Capital Facilities (GNB 43, p. 10)
  - ✓ Pavement (GNB 44, p. 10)
- **Performance Measurement at WSDOT, four page folio** http://www.wsdot.wa.gov/NR/rdonlyres/91089378-E709-49EF-AE42-AE80BC44A91C/0/TRB_Performance_Folio.pdf
- **WSDOT's Strategic Plan**: http://www.wsdot.wa.gov/Accountability/PerformanceReporting/StrategicPlan.htm
- ***Performance Journalism***: http://www.wsdot.wa.gov/NR/rdonlyres/685F6B37-9082-47DE-81FC-676EE95C5EE9/0/Bridging_Gap_PJ_TRBprintedvsn.pdf
- ***Making the Case for Funding: The WSDOT Experience*** (2008, Transportation Research Record) http://www.wsdot.wa.gov/NR/rdonlyres/E5D34B36-6662-4464-B4BA-1E858BBD710D/0/2007_TRB_Making_Case_Funding.pdf
- **Performance Management and Accountability at WSDOT, four page folio** http://www.wsdot.wa.gov/NR/rdonlyres/024555DA-3CAD-4793-8FD9-8BF1CF4A6D07/0/2010_WSDOT_PerformanceManagement_Folio.pdf

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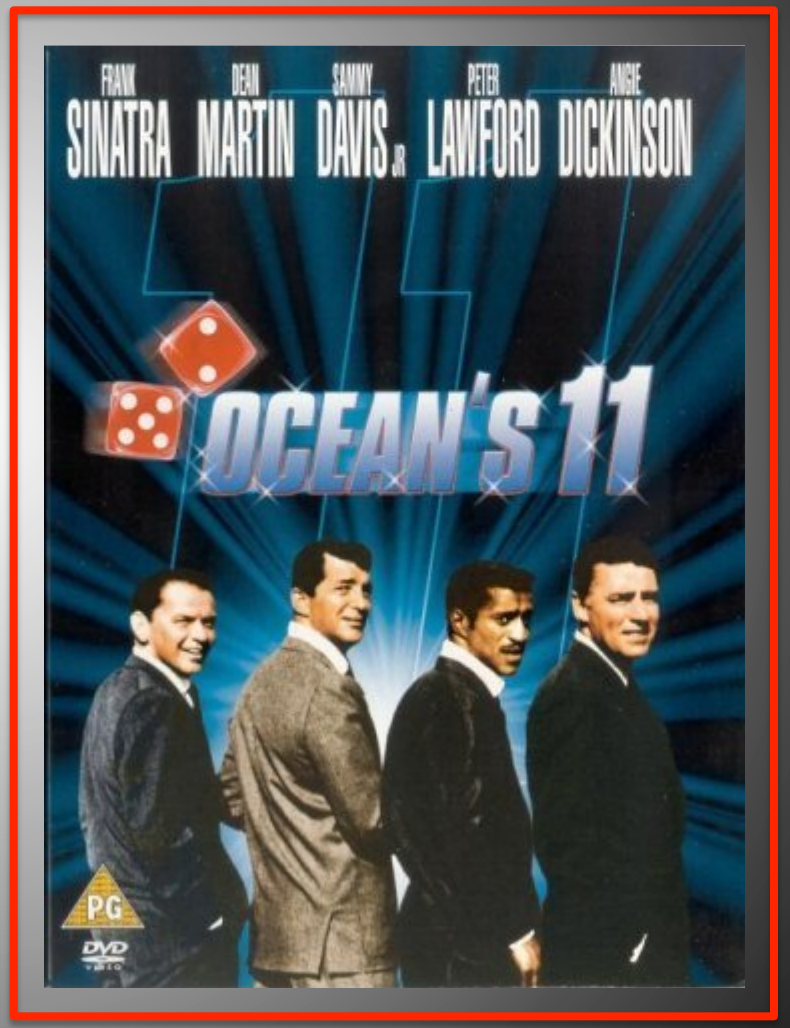
NCDOT: Back to the Future

Jennifer Brandenburg
State Asset Manager

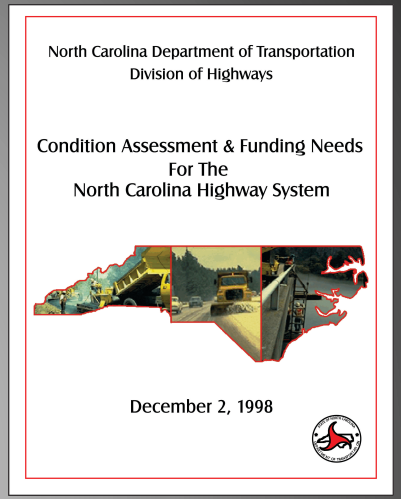
Outline

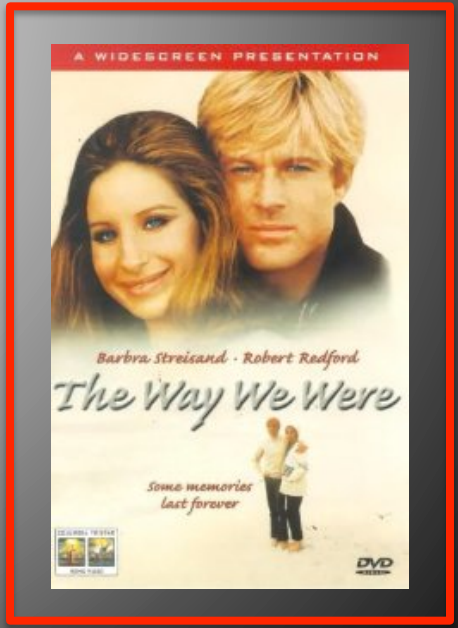
- Where we've been
- What happened
- Regroup and refine
- Forward again



The Way We Were

- Began in 1998
- Legislative Condition Report (MCA)
- Work groups defined measures
- Refined measures twice
- Installed management systems (MMS, PMS, BMS)
- Tied employee performance to condition



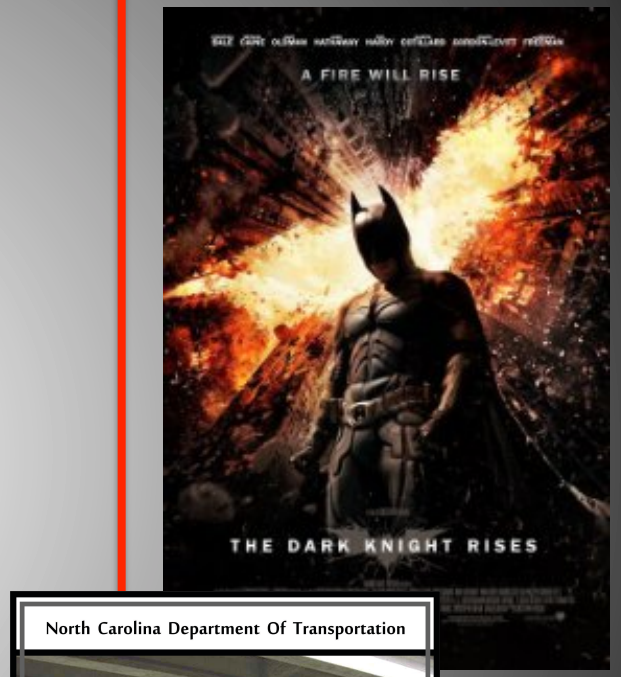


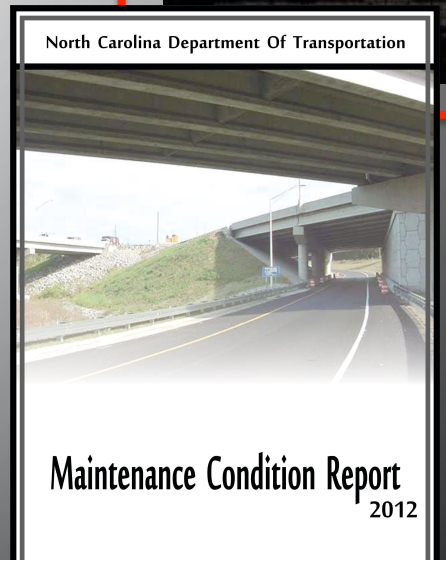
Gone in 60 Seconds

- Director of Asset Management retired
- Reorganized
- Asset Management focus lost
- Central groups allowed to set own priorities
- Lost field emphasis

The Dark Knight Rises

- Trade-off analysis tool
- Chief Engineer directive to refocus
- Reorganized most of original AM group
- 2011/2012 Roadway Review
- 2012 MCAP report “new and improved”

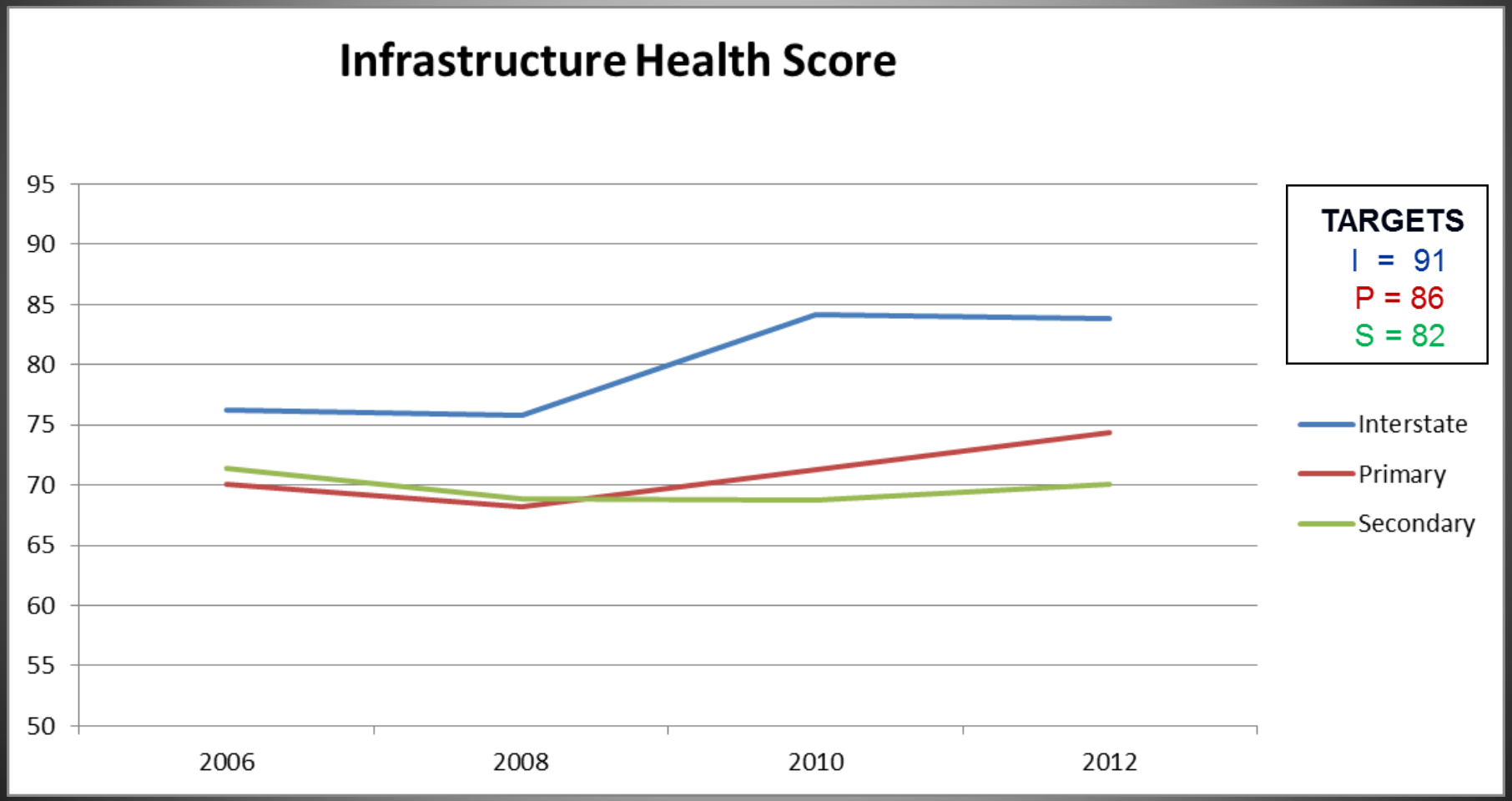




2011/2012 Roadway Reviews

- Public told us:
  - Interstate: Meeting expectations with no areas of concern
  - Primary: Meeting expectations and identified shoulders as an area of concern
  - Paved Secondary: Slightly below expectation and focus areas include pavement condition, smoothness, width of travel lanes, roadway striping and markers

Infrastructure Health Index

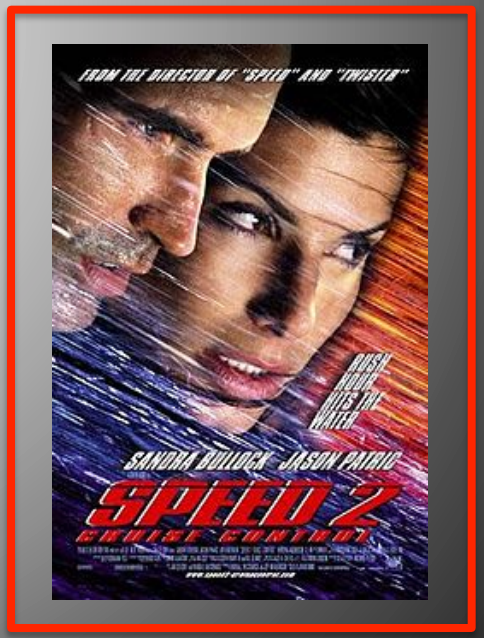


Statewide Annual Maintenance Funding Plan

Fiscal Year ($ millions)					
Maintenance Programs	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**
Maintenance and Operations	765.97	792.01	818.94	846.79	875.58
Disasters/Emergencies	15.00	15.00	15.00	15.00	15.00
Contract Resurfacing	427.16	441.68	456.70	472.23	488.28
Pavement and Bridge Preserv	195.59	202.24	209.12	216.23	223.58
Total Maint. Funding Needed	**1,403.72**	**1,450.35**	**1,498.55**	**1,548.40**	**1,599.94**
Supplemental Maint. Funds	152.00	152.00	152.00	152.00	152.00
Estimated Maint. Fund Allocation	**$ 1,188.18**	**$ 1,248.90**	**$ 1,309.59**	**$ 1,317.58**	**$ 1,413.24**
Shortfall	***(63.54)***	***(49.45)***	***(36.96)***	***(78.82)***	***(34.70)***

Speed"ing" Ahead

- 2013 - New Beginnings
  - Using tradeoff analysis to estimate funding splits
  - Working with Legislature to remove funding restrictions
  - Pushing AM concepts into Ferry and Ports Divisions
  - Institutionalizing Asset Management principles
- MAP-21?




ICE CUBE
ARE WE THERE YET?
"THE FUNNIEST FAMILY COMEDY SINCE 'HOME ALONE.'"

Questions?

Asset Management: Tools & Methods for Monitoring Performance

Ron Vibbert

Craig B. Newell

Bureau of Transportation Planning

Michigan Department of Transportation

Presentation Objectives

- Provide Overview of Asset Management at Michigan DOT
- Describe Program Development Process – Call for Projects
- Review Pavement Preservation Achievements
  - Pavement Condition Goal
  - Road Quality Forecasting System (RQFS)
- Discuss the Link between Asset Management and Performance Measures

Asset Management

- Is the primary role of DOT's
  - Plan, design, build, and maintain/manage roadway systems
  - This role has grown beyond this mission
    - Multi-modal concerns – public transportation, rail, ferry systems, bike paths, car pool parking lots, and all the things that are related to travel



Overall Asset Management Process

Program Development Process

- Estimate Federal & State Revenue Available & Develop Investment Strategies
- Issue Call for Projects
  - Develop Condition Strategies
  - Candidate Project Selection and Submittal
  - Scope and Estimate Candidate Projects
  - Final Project Selection and Approval
- Five Year Transportation Program
  - Public Involvement and Outreach
- Adjustments Throughout the Process

Program Development Process
Call for Projects

- Program funding investment strategy established
  - Allocate funding by template category
  - Pavement funding allocated by formula to 7 MDOT Regions based on condition, usage, cost and eligible lane miles
- Integrated Call for Projects Letter
  - Program goals, funding targets, measures
- Fix strategies that guide project selection are reviewed and approved
  - Strategies constrained to funding targets
  - Reviewed annually to ensure strategies are being implemented

Pavement Preservation Goal

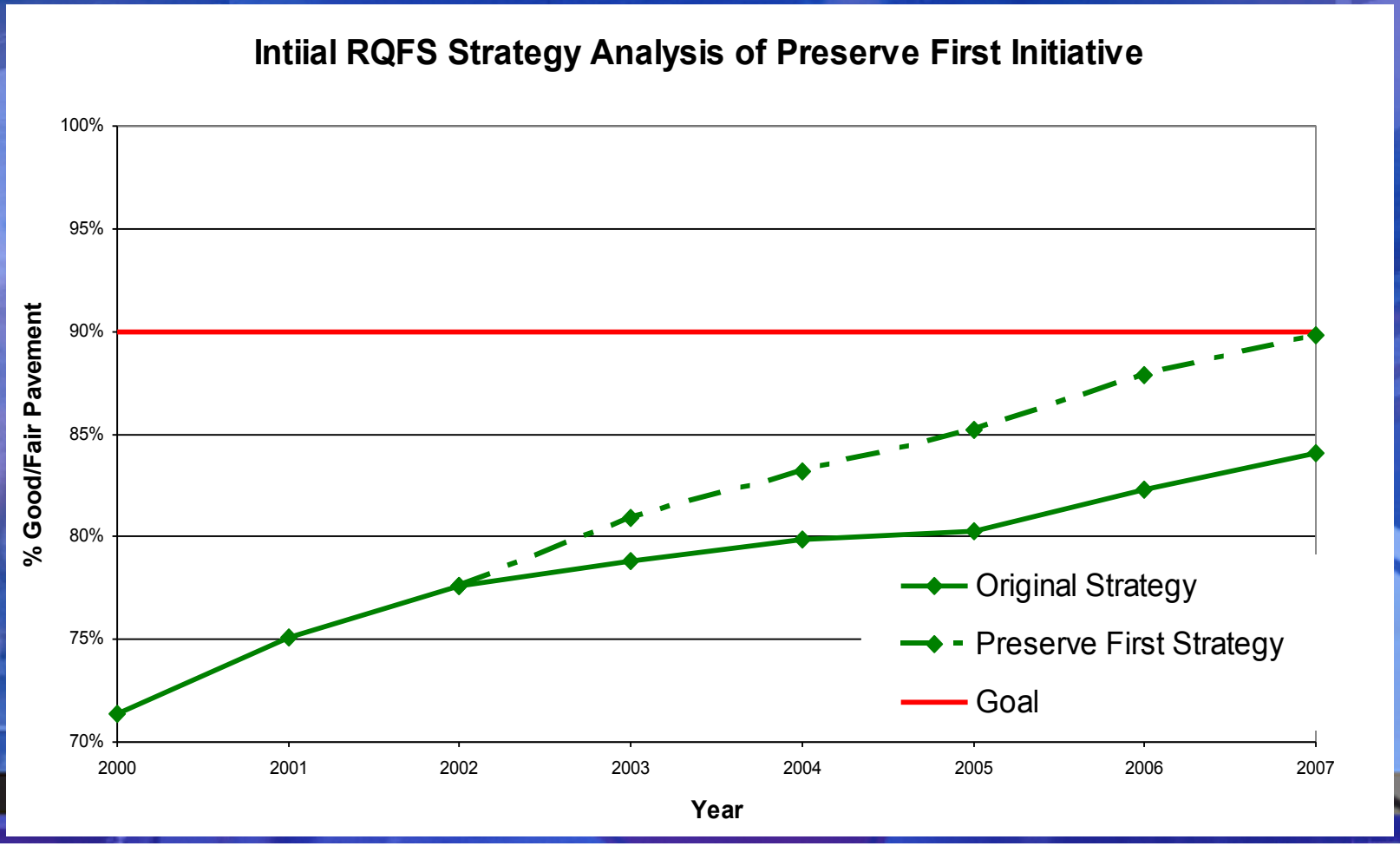
- Pavement preservation goal established in 1997 by State Transportation Commission
  - 95% of Freeways in good/fair condition by 2007
  - 85 % of non-freeways in good/fair condition by 2007
- Remaining Service Life (RSL) established as performance measure

Road Quality Forecasting System (RQFS)

- RQFS is a program level model used to forecast future MDOT pavement condition based on RSL
- RQFS is also used to determine funding need based on desired future condition
- "Fix Strategies" identify percentage of network to move from one RSL category to another
  - Mix of fixes approach most effective
  - Road PM increased from $30M in 1997 to $90M today

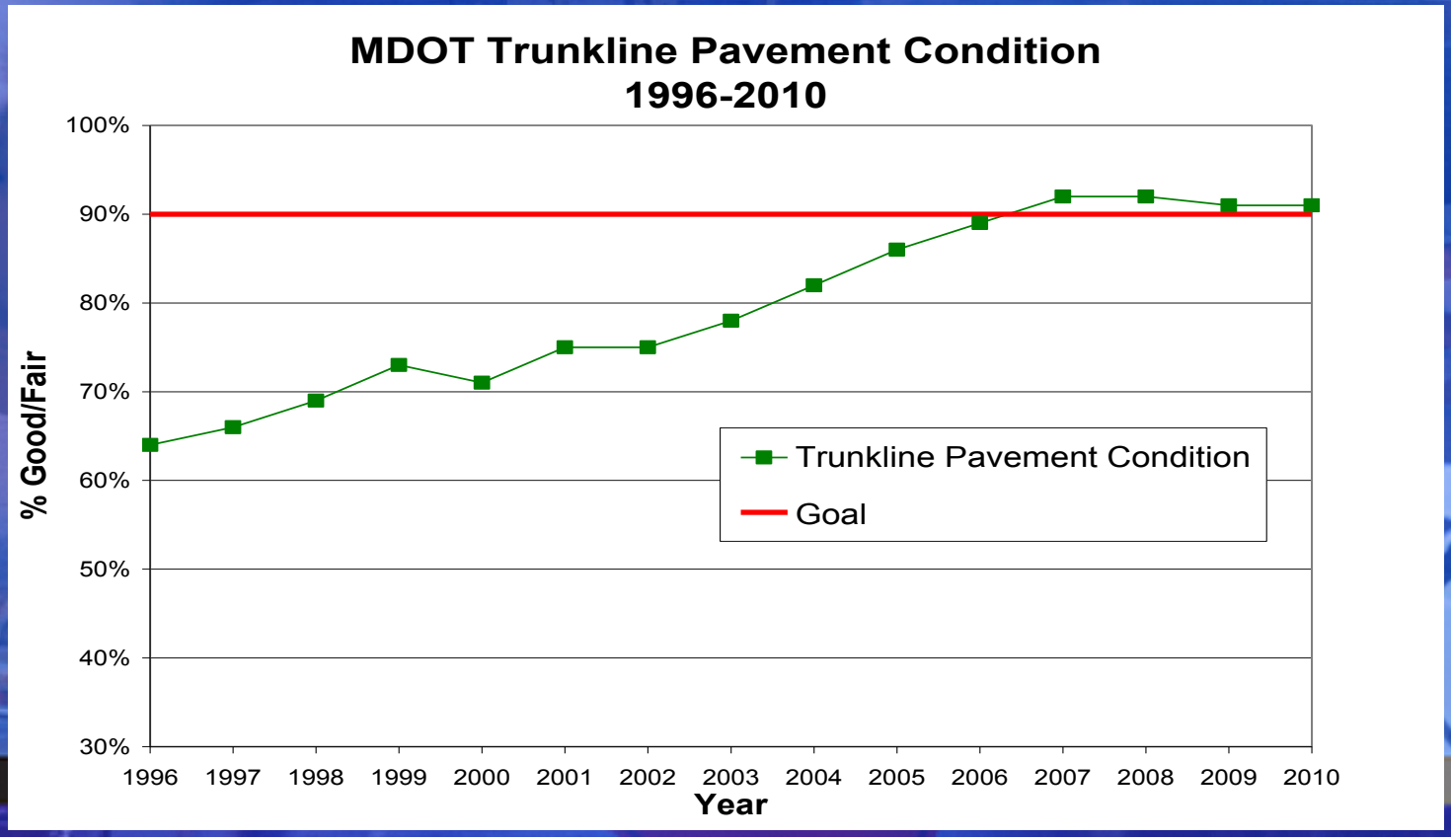
Linking Asset Management and Performance Measures
Adjustments Made Along the Way

- Identified need for additional $500 million in funding starting in 2003 (Preserve First)



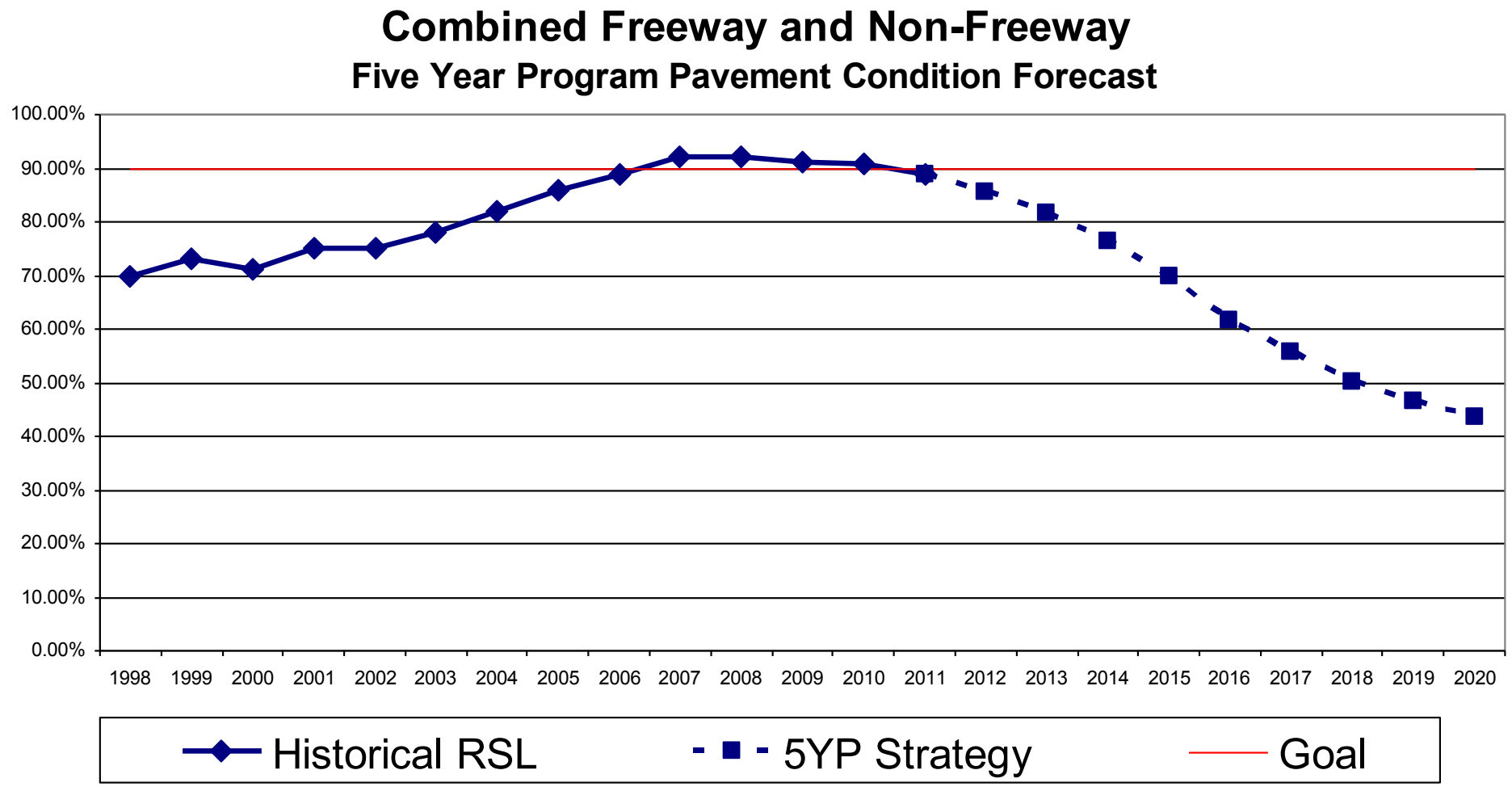
Linking Asset Management and Performance Measures

- Goal was achieved thanks to many adjustments along the way



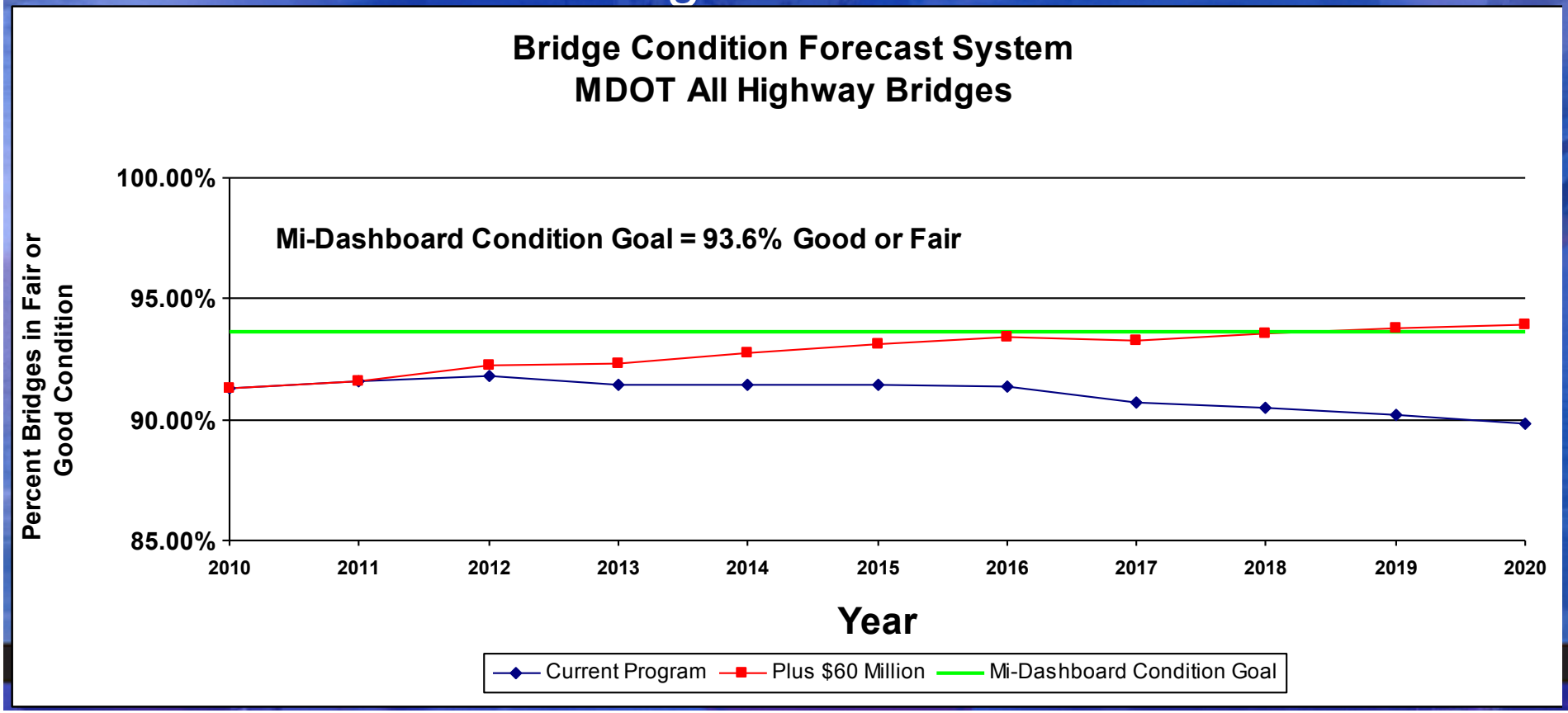
Pavement Condition Forecast Alarming

- There is insufficient funding to keep pavement condition at current levels. This is the result of increasing costs and down trending revenues.



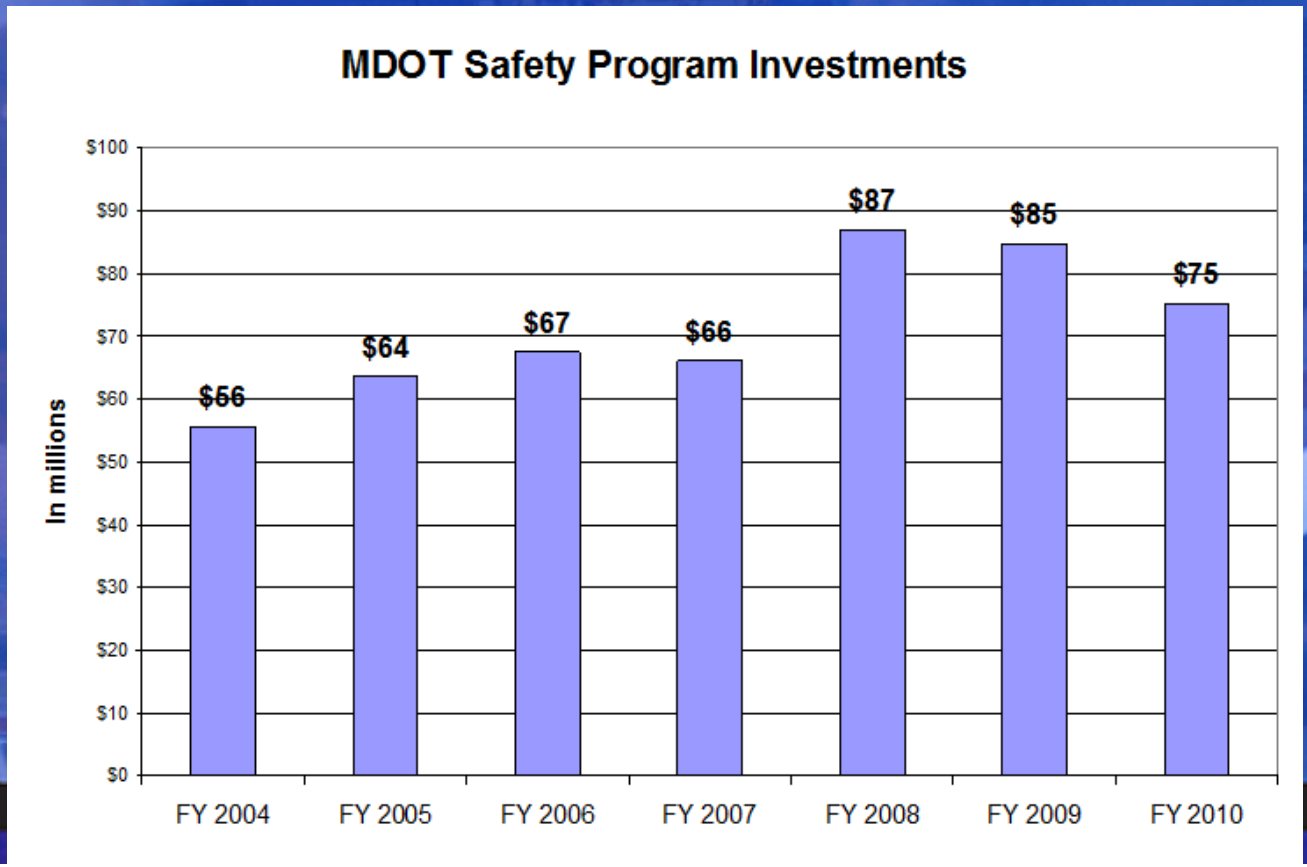
Bridge Monitoring

- Bridge Condition Forecasting (BCFS) uses National Bridge Inspection (NBIS) Ratings to measure the bridge network condition



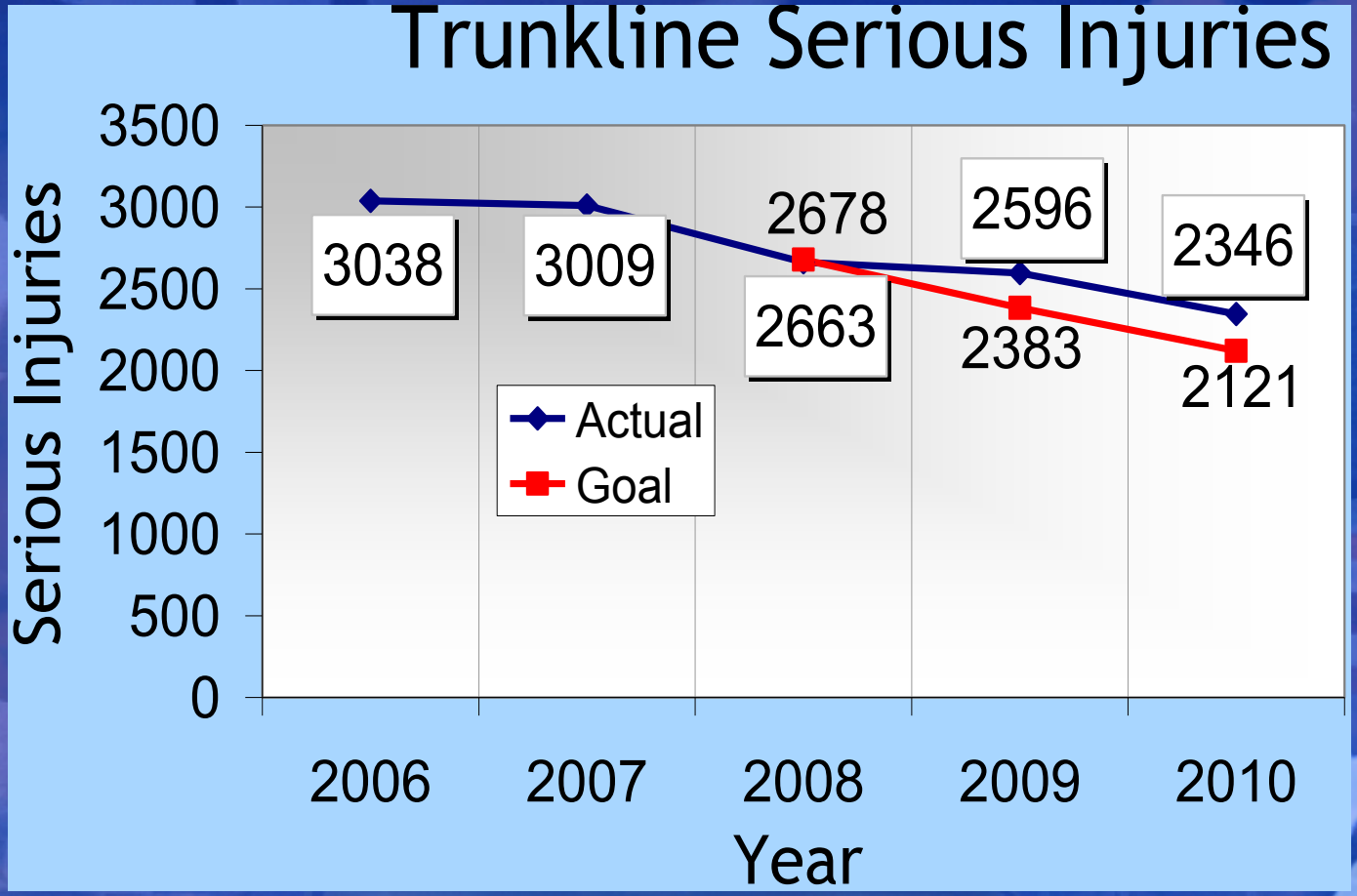
Safety Monitoring

- Infusion of additional safety funding has resulted in a decline of serious injuries and fatalities over the past several years



Safety Monitoring

Reducing Traffic Crashes, Fatalities and Injuries



A reduction of 23% in five years for trunkline

Key Take Aways

- Asset Management approach used to develop capital program and achieve performance goals
- Link investment strategy with condition goals as well as fix strategy
- Condition forecasting allows for proactive program adjustments along the way
- MDOT looks forward to FHWA position on MAP-21 performance measurement

Thank You

Questions?

- Submit your questions using the webinar's Q&A feature

Next webinar:

Asset Management Business Models and Barriers to Implementation – 03/13/13, 2:00 PM EST

Save the Dates!

Webinars are scheduled Wednesdays at 2:00 PM EST, beginning December 5, 2012

Announcing the first four webinars in the series:

December 5, 2012 2:00 PM EST – Asset Management and Safety

January 9, 2013 2:00 PM EST – Asset Management and Performance Management

March 13, 2013 2:00 PM EST – Asset Management Business Models and Barriers to Implementation

May 8, 2013 2:00 PM EST – Asset Management and Risk Management

U.S. Department of Transportation Federal Highway Administration

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For more information or to register:
http://tam.transportation.org