



**Washington State  
Department of Transportation**



# **Asset Management Briefing**



DYE MANAGEMENT GROUP, INC.

# Agenda

- ◆ What is Asset Management?
- ◆ Why is Asset Management important?
- ◆ What are the federal Asset Management requirements?
- ◆ How can WSDOT's improved approach to Asset Management help Washington?
- ◆ What's needed for Bridge Asset Management at WSDOT?
- ◆ How is WSDOT getting there?
- ◆ The future of Asset Management at WSDOT

# What is Asset Management?

# What is Asset Management?



- Operating and maintaining physical assets



- Analysis based on quality information



- Maintenance, preservation, repair, and replacement



- State of good repair



- Minimum practicable cost

# Statewide Transportation Asset Management

## Multimodal

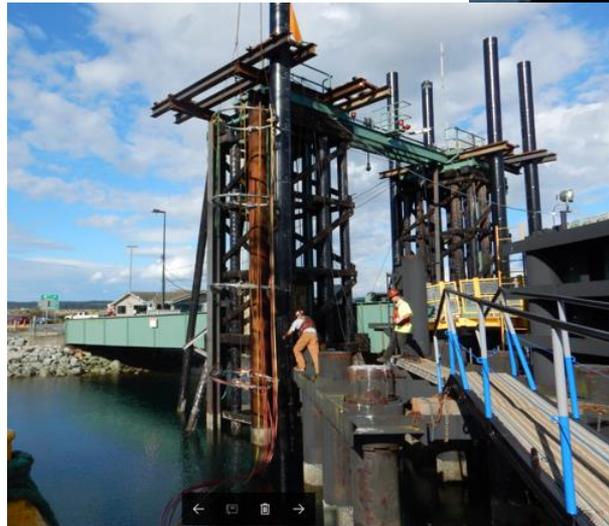
- Rail
- Aviation
- Public Transportation



# Statewide Transportation Asset Management

## Ferries

- Terminals
- Vessels



# Statewide Transportation Asset Management

## Highways

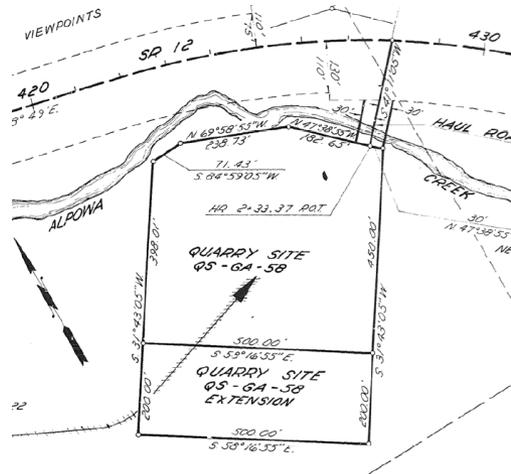
- Bridge
- Pavement
- Major Electrical
- Geotechnical
- Noise Walls
- Hydraulic
- Barriers
- Other Highway Assets



# Statewide Transportation Asset Management

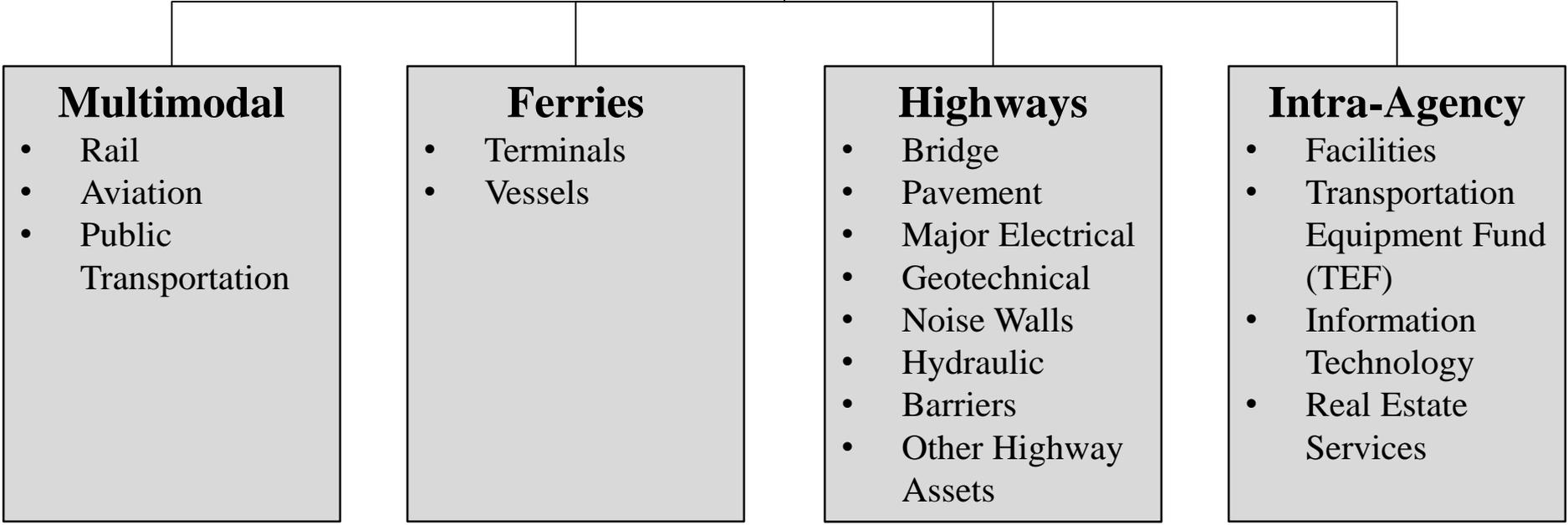
## Intra-Agency

- Facilities
- Transportation Equipment Fund (TEF)
- Information Technology
- Real Estate Services



# Statewide Transportation Asset Management

## Statewide Transportation Asset Management



# Asset Management – All WSDOT Assets

(Millions of dollars)	Replacement Value	10-year Average Spending (2007 - 2017)	10-year Future Annual Avg. Spending (2017 - 2027)	10-year Annual Additional Needs (2017 - 2027)	Budget, Plus Needs Annual Avg. (2017 - 2027)
<b>TOTAL</b>	<b>\$117,000</b>	<b>\$510</b>	<b>\$550</b>	<b>\$550</b>	<b>\$1,100</b>

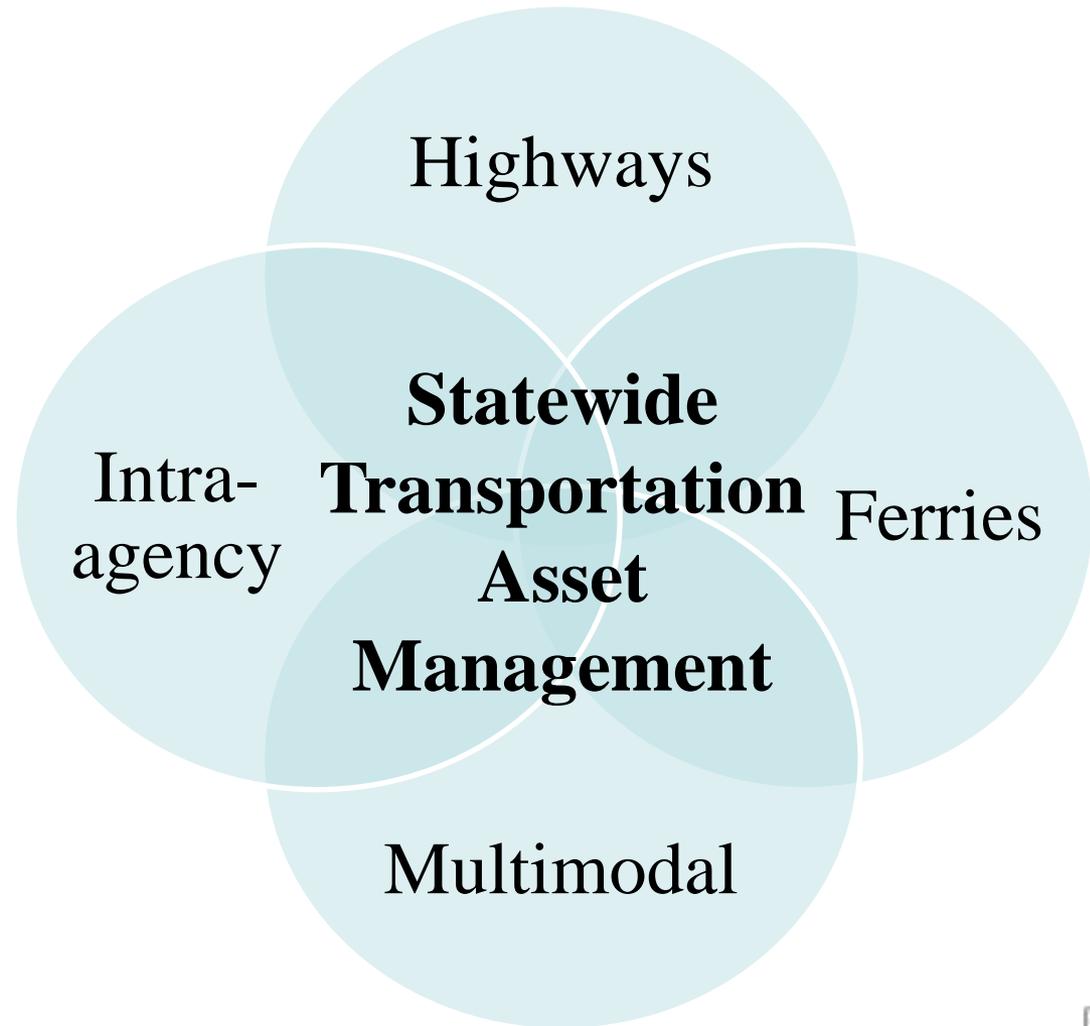
The replacement value for WSDOT-owned/managed assets is currently \$117 billion

WSDOT preservation is funded at 50% of its total need



# WSDOT's Asset Management Approach

The replacement value for WSDOT-owned/managed assets is currently \$117 billion



# Why is Asset Management Important?

# Why is Asset Management Important?

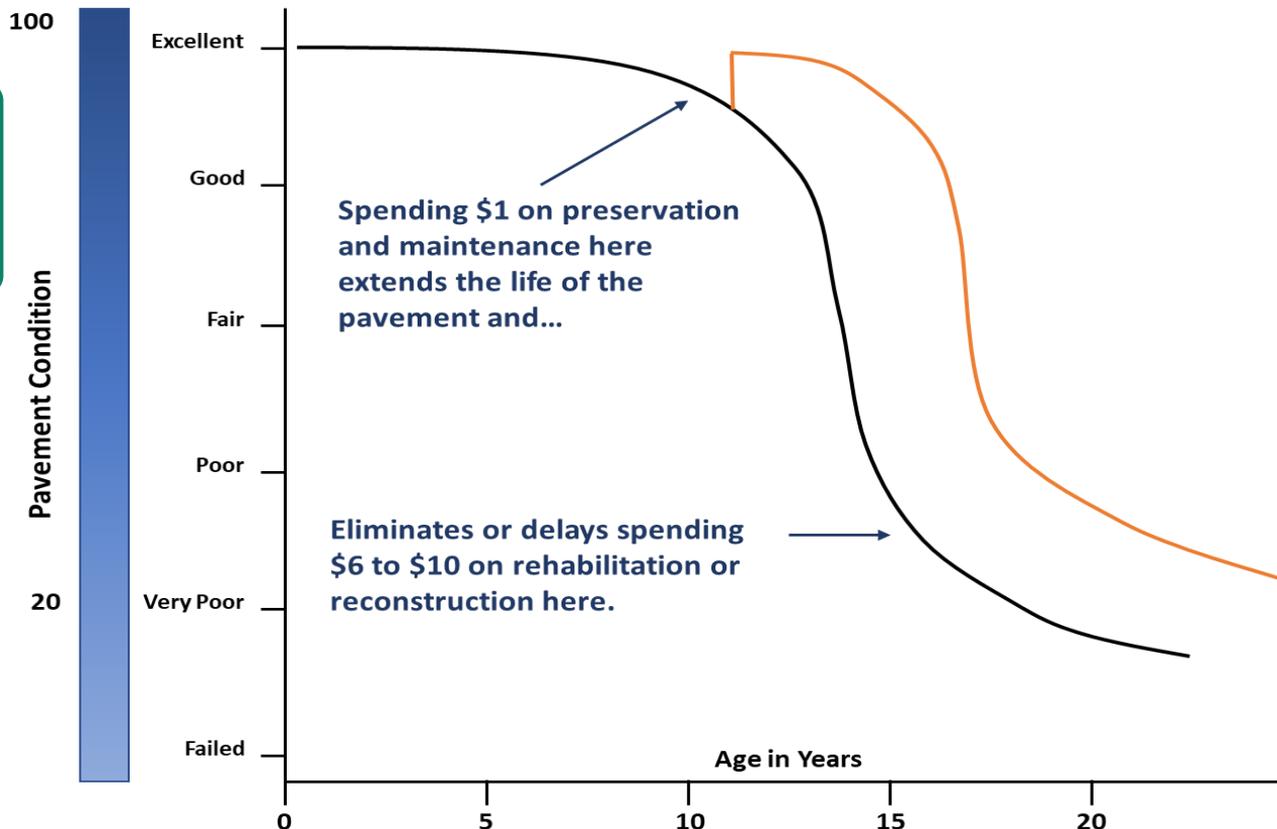
- It's good practice with focus on a two-step approach:
  - ◆ Take care of current assets
  - ◆ Manage for the long-term
- Use data to drive decisions and plan ahead:
  - ◆ Prioritize the current funding you have
  - ◆ Understand future funding needs
  - ◆ Optimize return on investment



# Proactive vs. Reactive

This sample pavement deterioration curve shows why worst-first isn't the solution: **it's expensive**

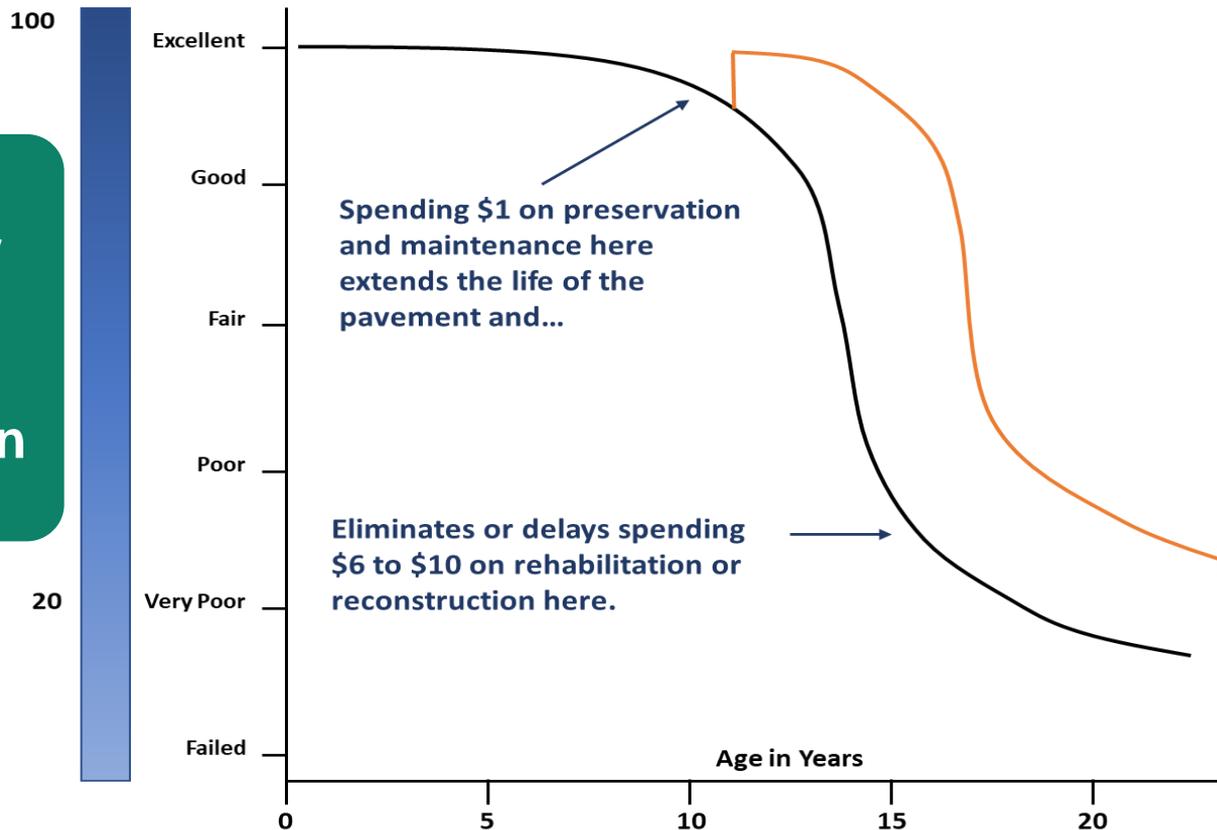
**\$1  
invested  
now...**



**...saves  
\$6-\$10  
later**

# ...in WSDOT Dollars

**\$250M**  
needed for  
annual  
pavement  
preservation  
funding...



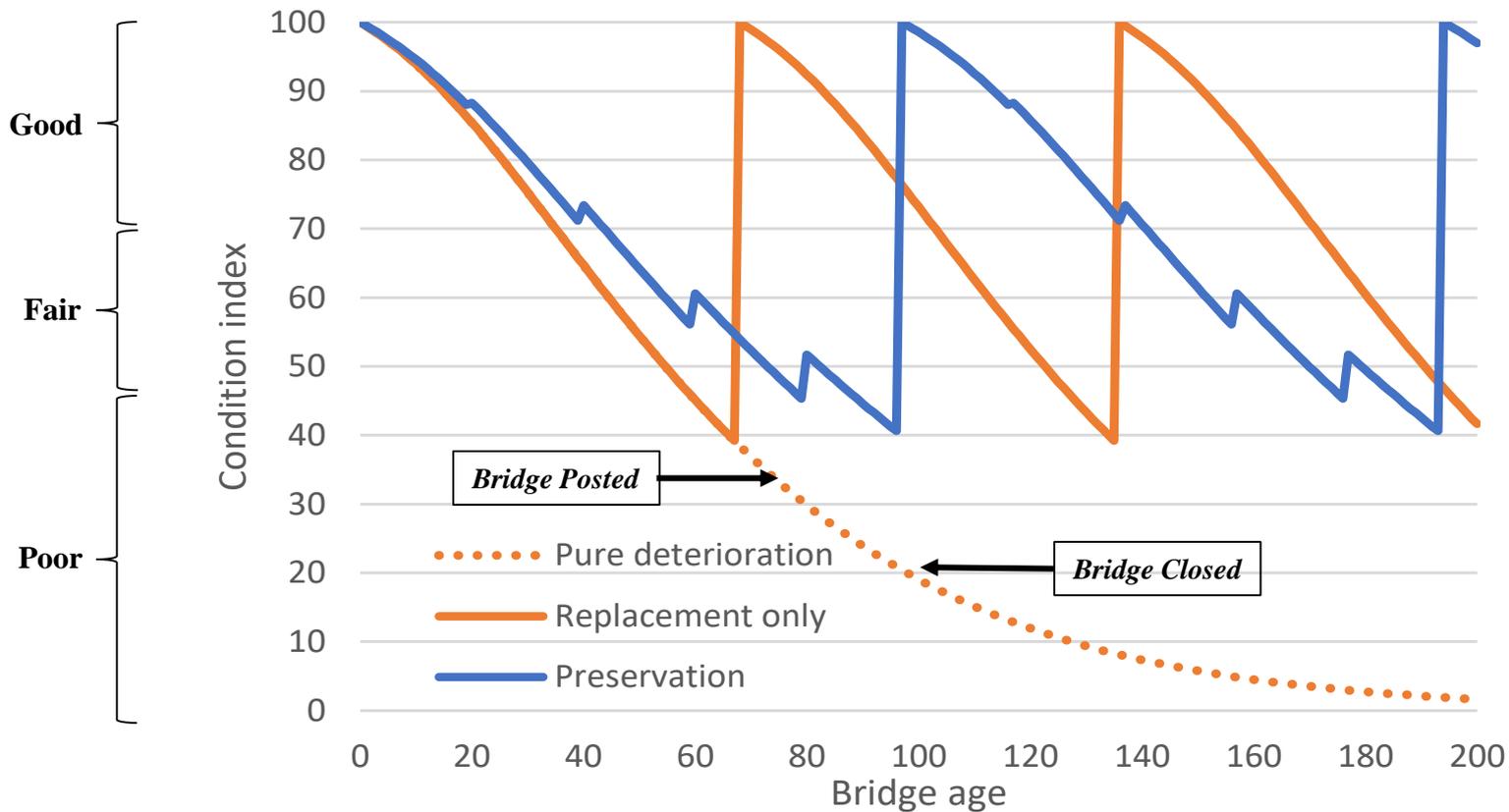
## Transportation Asset Management

**“...is about applying the right treatment at the right time...”**



# Proactive vs. Reactive

- Bridge preservation extends the useful life of a bridge



# What are the federal Asset Management requirements?



# Transportation Asset Management Plan (TAMP) Components on NHS

- Inventory and condition pavements and bridges
- Asset management objectives and measures
- Pavement and bridge minimum performance requirements
  - ◆ Bridge:
    - Maintain condition of at least 90% of NHS bridges in “good” or “fair” condition
  - ◆ Pavement:
    - Maintain condition of at least 95% of Interstate pavement in the “good” or “fair” condition



# TAMP Components

- Performance gap analysis
  - Assessing the difference between current asset performance and desired asset performance
- Risk analysis
  - Identify, assesses, and prioritizes threats that could impede asset management objectives
- Lifecycle Planning
  - Performing the right preservation at the right time on the right asset to minimize lifecycle cost



# TAMP Components

- Financial plan (minimum 10 years)
  - ◆ Identifies amount of funding WSDOT can expect to receive to manage its assets over next 10 years
- Investment strategies and analyses
  - ◆ Select projects that are aligned with WSDOT objectives
  - ◆ Consider the tradeoffs between alternatives
  - ◆ Use objective analysis methods
  - ◆ Deliver cost-effective solutions



# **How can WSDOT's improved approach to Asset Management help Washington?**



# How can Asset Management help?

- Improved Statewide Transportation Improvement Program (STIP) and budget preparation
  - ◆ Improve the identification and prioritization of asset needs
  - ◆ Assign costs to preservation activities
- Better data for management
  - ◆ Asset performance reporting
  - ◆ Performance changes over time
  - ◆ Outcome of asset investment



# How can Asset Management help?

- Better information for decision-makers
  - ◆ Illustrate return on investment/outcomes
  - ◆ Quantify impact of inaction
  - ◆ Tradeoff Analysis: Compare impact of funding for one asset class versus another (bridge/pavement)
  - ◆ Report current conditions (to support development of funding packages)
  - ◆ Highlight importance of asset preservation with quantitative data



# What's needed for Bridge Asset Management at WSDOT?



# JLARC 2015 Report

- Joint Legislative Audit and Review Committee (JLARC) January 2015 Report found that WSDOT:
  - ◆ Maintains accurate data for pavement and bridges
  - ◆ Can provide reliable long-term (10-year) estimates for pavement maintenance and preservation needs
  - ◆ “WSDOT’s pavement management program is an approach to be emulated for other assets.”
- Bridge management software being implemented by WSDOT to address need identified in report



# Identifying Budget Needs

## Preserving WSDOT's Bridges

Category	Current needs	Predicted additional needs	Total 10-year needs
Border bridge preservation	\$81.2	N/A	\$81.2
Bridge element repairs	\$26.5	\$85.9	\$112.4
Expansion joint preservation	\$250.5	\$155.2	\$405.7
Movable bridge preservation	\$39.6	N/A	\$39.6
Concrete deck preservation	\$115.6	\$726.5	\$842.1
Steel painting	\$414.5	\$292.1	\$706.6
Bridge rehab or replacement	\$255.7	\$227.8	\$483.5
Bridge scour	\$9.5	\$20.0	\$29.5
<b>Total</b>	<b>\$1,193.1</b>	<b>\$1,507.5</b>	<b>\$2,700.6</b>

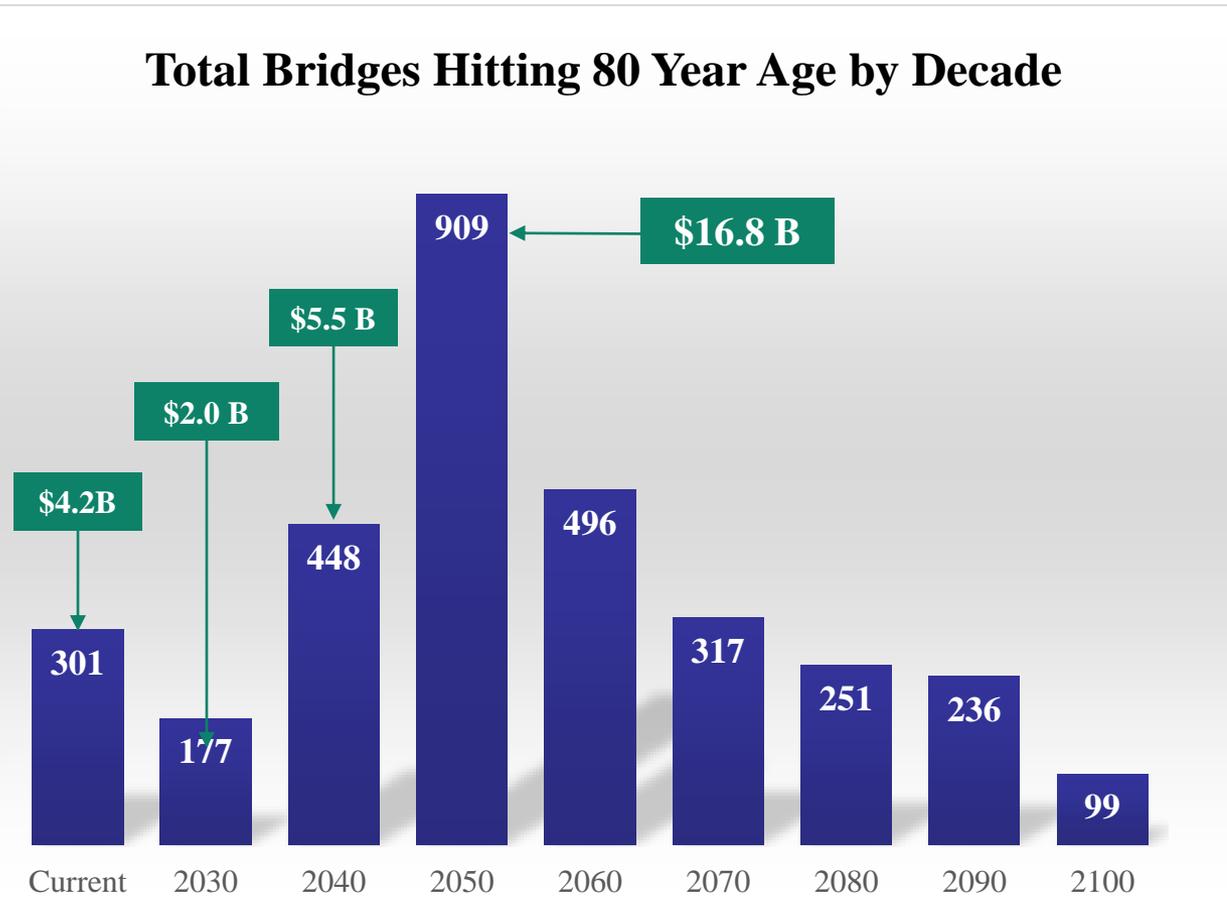
10 year bridge funding \$1,200

\$1.5B gap



# WSDOT Bridge Replacement Due to Age

### Total Bridges Hitting 80 Year Age by Decade



The replacement value for all WSDOT-owned bridges is \$58.1 billion

Good asset management and preservation will help extend the life of WSDOT's bridges, reducing the spike in 2050

# How is WSDOT getting there?



# Focused Bridge Painting



Bridge painting costs 20 % of the replacement value and extends the asset's life 20-25 years

**“One-Touch” example of maintenance and preservation extending bridge life**



# Enhanced Bridge Deck Preservation

WSDOT has preserved more than 30 percent of its bridge decks with concrete overlays, extending the life of the bridge at 1/3 of the cost of replacing the deck

Deck Replacement	\$250/SF
Concrete Overlay	\$80/SF

**\$170/SF Savings**

Despite all that good work we're doing, current projected funding will only cover 25% percent of the deck rehabilitation needs predicted for the next 10 years.



# Bridge Scour Mitigation Program



US 101 / Humptulips River  
Bridge Scour Repair



# Bridge Scour Mitigation Program



**Project Cost: \$1.8 M**  
**\$9.2M Avoided Cost**



# Bridge Scour Mitigation Program



# The future of Asset Management at WSDOT

# WSDOT TAMP

- Management tool to guide WSDOT decisions about where and when to invest
- Initial TAMP (Pavement and Bridges) submitted to FHWA April 2018
- Aligns with WSDOT Practical Solutions approach
  - ◆ Consider assets comprehensively as a system
  - ◆ Compare actual and desired system performance using measures to balance costs and priorities;
  - ◆ Life cycle management to support decision making
  - ◆ Over time, performing trend analysis



# Next Steps at WSDOT

- WSDOT is developing a Statewide Transportation Asset Management Plan that will be a holistic approach to Asset Management that includes all WSDOT-owned assets
- Implement systems to support TAM
  - ◆ Bridge Management software
  - ◆ Trade-off analysis via modeling software
    - Initially to include pavement and bridge
  - ◆ Geographic Information System (GIS)



# Next Steps at WSDOT

- WSDOT will begin incorporating some of the improved asset management practices in the 2019-2021 biennium
  - ◆ Will supplement the existing process with improved data for decision making
  - ◆ Based on state of good repair and asset investment strategies, WSDOT will communicate optimal investment levels
  - ◆ May result in need for a different distribution of preservation program funding



# Questions?

