

# Audit on Highway & Bridge Maintenance and Preservation Needs

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# Recommendation 1

## Report: Highway Maintenance and Preservation Needs

**Recommendation 14-5(1):** WSDOT should use best practices to make its bridge estimates as reliable as its pavement estimates.

JLARC's consultant notes that every state that uses its bridge management system effectively has required several years of incremental changes, and expects that WSDOT will be no different. Therefore, developing a multi-year plan of implementing recommendations is a key first step.

1. **Develop implementation plan.** WSDOT should develop and report its plan to improve the reliability of its long-term bridge estimates to the appropriate Legislative committees by June 30, 2015.
2. **Identify near term actions.** While fully implementing the recommendations from this report will be a multi-year process, there are several actions that WSDOT can complete in the short-term to improve the accuracy of its long-term bridge estimates. Examples include developing:
  - Deterioration models and cost models;
  - Preliminary estimates of life cycle costs and construct a preservation plan which minimizes life cycle cost;
  - A list of bridges that are most vulnerable to natural and man-made hazards, and the Department's plans to report regularly on its progress reducing risk.

**Identify longer-term actions.** These actions include acquiring or developing a bridge management system, and determining when these actions will be completed and what, if any, cost is associated with doing so.

**Implementation Due Date (if any):** 6/30/2015

# Recommendation 2

## Report: Highway Maintenance and Preservation Needs

**Recommendation 14-5(2):** WSDOT and OFM should develop a process to improve stakeholders' confidence in its highway estimates.

JLARC's report identifies best practices that contribute to a confidence-building forecasting and estimating process. These include:

- Thoroughly documented estimates, including key assumptions and uncertainties;
- Clear, routine communication with key stakeholders;
- Internal and external review; and
- Organizational buffers to assure estimate is not influenced by other factors.

WSDOT and OFM should identify an approach that incorporates these practices. WSDOT should use this approach to keep key stakeholders updated on changes to long-term bridge maintenance and preservation cost estimates as well as progress implementing Recommendation One. WSDOT should report its plans to accomplish this to the appropriate Legislative committees by June 30, 2015.

**Implementation Due Date (if any):** 6/30/2015

# WSDOT Response

## WSDOT's July 13, 2015 Letter - Response to the Report and Recommendations:

### Improve bridge estimates

- WSDOT should use best practices for bridges similar to pavement

### Document and communicate

- WSDOT and OFM should develop a process to improve stakeholder's confidence in its highway estimates

# WSDOT's Plan

## Near Term (1-2 years)

- Literature Research on other States practices
- Survey states on their Bridge Asset Management practices
- Review WSDOT bridge element data to determine rate of deterioration / service life – Document Results
- Evaluate options on using AASHTO Bridge Asset Management software or develop a plan to develop an in-house system
- Prepare and update list of bridges that are vulnerable to natural and man-made hazards – Report on progress in reducing risk

# WSDOT Actions

## WSDOT Actions to Date (November 2015):

- Literature Research on other States practices: working with Research Office to perform search
- Survey states on their Bridge Asset Management practices – survey is under development, planned to deploy in January 2016, with follow-up discussions at AASHTO Subcommittee on Bridge and Structures meeting in June 2016
- Evaluate options on using AASHTO Bridge Asset Management software or develop a plan to develop an in-house system: demonstration software acquired and under review; new AASHTO software coming in late 2015 to be reviewed
- Review WSDOT bridge element data to determine rate of deterioration / service life; Document Results: no action pending staffing decisions

# WSDOT Actions

## WSDOT Actions to Date (November 2015):

- Prepare and update list of bridges that are vulnerable to natural and man-made hazards. Report on progress in reducing risk:
  - Lists of higher risk bridges under development and will deploy to website in late 2015:
    - Structurally Deficient Bridges (already posted and mapped online)
    - Timber Bridges
    - Fracture Critical Bridges / Through Truss Bridges
    - Bridges with unknown or unexplained behaviors
- New research RFP on the street for a “Risk-based Asset Management” proposal, seeking to achieve optimum life cycle management with coherent financial information, including estimates

# Future Efforts

## Estimates

- Developing protocol to:
  - Establish and record assumptions for each estimate (scope, type of estimate, timeframe determined, etc.)
  - Standard cost tables need to be developed (and updated in assumptions) to provide basis of estimates (similar to construction inflation)
  - Intent will be to always compare apples to apples

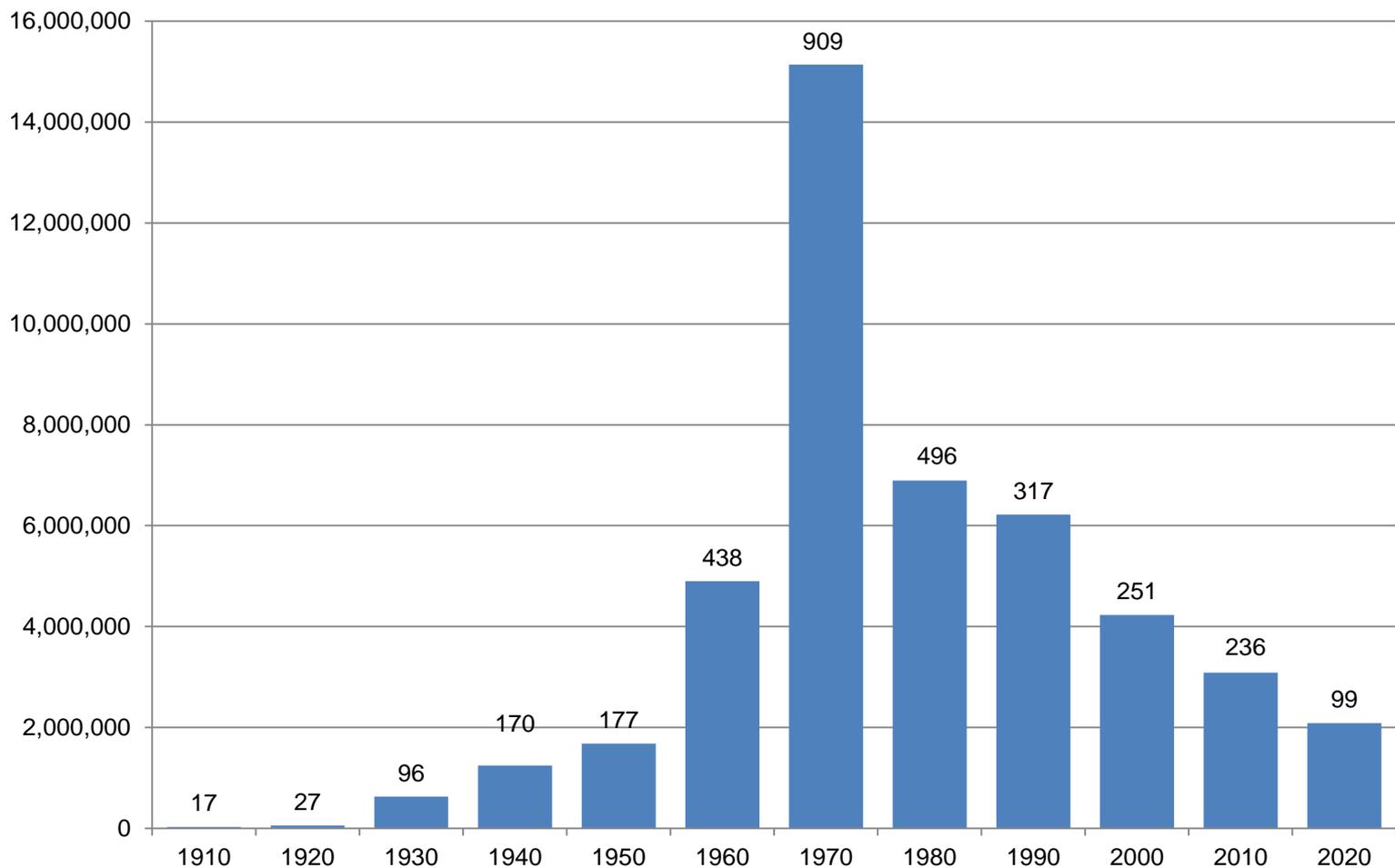
# Future Efforts

## Continue Near Term and begin Long Term steps

### Longer Term (2-4 years)

- Based on short-term findings and results, Implement a Bridge Asset Management Plan (electronic database driven system)
- Partner with Universities and leading states on Bridge Asset Management research
- Integrate Maintenance Management Systems (MPET) with Bridge Asset Management software

# WSDOT Bridge Population



3,108 Vehicular Structures (53 million sq. ft.) *(Average Age = 45 yrs)*

75+ yrs old – 310 bridges (1.6 million sq ft)

50+ yrs old - 1,339 bridges (10.7 million sq ft)

# Bridges

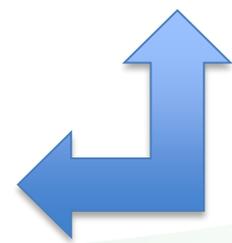
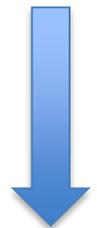
## Primary Bridge Elements

Groups	Concrete	Steel	Timber	Totals
Deck	6	4	1	11
Superstructure	24	19	7	50
Substructure	16	4	6	26
Culverts	1	1	1	3
<b>Totals</b>	<b>47</b>	<b>28</b>	<b>15</b>	<b>90</b>

## Secondary Bridge Elements

Elements	Totals
Deck Overlays	6
Expansion Joints	20
Bridge Rail	8
Sidewalk	6
Bearings	7
Paint	8
Seismic Retrofit	7
<b>Totals</b>	<b>62</b>

152 Bridge Elements



# Questions?

For additional information, please contact:

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