PRELIMINARY REPORT:

Follow-Up on WSDOT's Long-Term Estimates of Bridge Preservation Needs

LEGISLATIVE AUDITOR'S CONCLUSION:

WSDOT has taken steps to improve its long-term estimates of bridge preservation needs, but will need to continue its work to provide complete and reliable estimates.

September 2019

This is a JLARC-initiated follow-up study on the Washington State Department of Transportation's (WSDOT's) efforts to improve its long-term estimates of bridge preservation needs. Preservation includes actions that prevent, delay, or reduce deterioration and extend service life.

In 2015, JLARC staff found that WSDOT could not reliably estimate its funding needs for preserving the state's bridge network. The Legislative Auditor recommended that WSDOT improve the reliability of its bridge estimates and work with the Office of Financial Management (OFM) to increase stakeholders' confidence in WSDOT's estimates. Both WSDOT and OFM concurred with these recommendations.

WSDOT has taken steps to improve its long-term bridge preservation estimates

WSDOT has done the following to improve its estimates:

- Acquired a bridge management system and hired staff to implement it. WSDOT predicts that the system will be fully operational by July 2020.
- Maintained extensive and accurate data on bridge conditions.
- Identified the highest-priority hazards affecting bridges. WSDOT has developed risk mitigation plans for some hazards and is researching appropriate mitigation approaches for others.

Federal requirements that went into effect in 2017 reinforce the Legislative Auditor's recommendations. Now all states are required to have a bridge management system that can perform a variety of functions consistent with those recommendations. WSDOT is making progress toward meeting federal requirements, but, similar to many other states, it is not yet in full compliance with them.

Despite progress, at this time WSDOT still lacks the capacity to develop reliable long-term estimates of bridge preservation needs

WSDOT is still not able to provide reliable long-term estimates. It currently has not configured its bridge management system to:

- Forecast how deterioration and preservation treatments will affect the future condition of all bridge elements.
- Analyze life cycle costs when estimating long-term preservation needs for the bridge network.
- Evaluate how funding scenarios affect bridge conditions. WSDOT claims that current funding levels are insufficient to maintain a long-term state of good repair, but it has not analyzed the consequences of different funding levels on bridge conditions.

WSDOT anticipates developing these capabilities once its bridge management system is fully implemented. These capabilities will require additional analysis, data preparation and entry, software setup, and system testing, among other tasks. Many other state transportation agencies are in a similar position.

WSDOT continues to communicate an incomplete picture of its long-term bridge preservation needs and has not identified the uncertainty of its estimates

In its publications and presentations, WSDOT does not provide a clear or complete picture of its long-term bridge preservation needs. WSDOT does not publicly document the reasons why its long-term estimates are inconsistent across agency publications, or identify the assumptions and uncertainties underlying its estimates.

In response to the Legislative Auditor's 2015 recommendation, OFM stated that it would “work with WSDOT to identify opportunities for improvement [of its estimates], emphasizing clarity, predictability, timeliness, transparency and accountability.” It has not yet done so.

Legislative Auditor Recommendations

1. WSDOT should report to the Legislature on its progress in implementing its bridge management system.
2. WSDOT and OFM should develop and implement a plan to communicate long-term bridge preservation needs accurately, reliably, and transparently.

You can find additional information on the Recommendations tab.

REPORT DETAILS
1. WSDOT is working to improve estimates

WSDOT has taken steps to improve its long-term estimates of bridge preservation needs

The 2013 transportation budget (ESSB 5024) directed the Joint Legislative Audit and Review Committee (JLARC) to review the Washington State Department of Transportation's (WSDOT's) methods for developing long-term estimates of highway preservation needs.

"Preservation" is defined as actions that prevent, delay, or reduce deterioration and extend service life. For bridges, this involves multiple activities such as painting, seismic retrofits, sealing expansion joints, and deck repair.

JLARC staff found that WSDOT followed best practices for developing pavement estimates, but not bridge estimates. WSDOT could not reliably estimate how much funding was needed to preserve the state's bridge network.

Recent federal requirements reinforce Legislative Auditor's 2015 recommendations

In JLARC's 2015 report, the Legislative Auditor recommended that WSDOT:

1. Improve its long-term estimates of bridge preservation needs, including:
    - Acquiring or developing a bridge management system.
    - Developing deterioration models.
    - Performing life cycle cost analysis.
    - Assessing risks to the bridge network.
2. Work with the Office of Financial Management (OFM) to develop a process that would improve stakeholders' confidence in its estimates.

WSDOT and OFM concurred with these recommendations. Federal regulations enacted in 2017 reinforce them as well. Now all states are required to have a bridge management system that can forecast deterioration, analyze life cycle costs, identify long-term budget needs, and recommend schedules for managing assets within fiscal constraints.

To determine whether WSDOT is improving its ability to make reliable long-term estimates for bridges, JLARC directed its staff to conduct this follow-up study.

WSDOT is implementing a bridge management system

When JLARC staff issued its 2015 report, WSDOT did not have a bridge management system. Since then, WSDOT has acquired a bridge management system that 42 other states have also adopted. WSDOT contracted with a consultant to develop a workplan and has hired staff to

implement the bridge management system. WSDOT predicts the system will be fully operational by July 2020.

JLARC staff consulted with a bridge management expert to assess WSDOT's progress in developing bridge estimates. The consultant reviewed WSDOT's workplan, and concurs with the proposed approach (see Appendix A).

Once fully implemented, the bridge management system can help WSDOT develop reliable long-term estimates and manage the state's bridge network in a cost-effective manner. This includes building the capacity to develop deterioration and treatment models, which forecast declining conditions and the impact of preservation treatments.

WSDOT maintains high-quality data and is linking it to its bridge management system

WSDOT continues to maintain extensive and accurate data on bridge conditions. It inspects bridges every two years and evaluates the condition of 172 distinct bridge elements, such as concrete decks and steel arches. The Federal Highway Administration (FHWA) reviews WSDOT's inspection and inventory procedures annually and WSDOT has been responsive to these quality assurance reviews.

JLARC's bridge management expert indicates that WSDOT has collected more detail on its bridge elements and has been tracking bridge data for a longer period of time than most other states.

WSDOT has created a link between its data inventory system and its new bridge management system.

WSDOT has identified high-priority hazards

WSDOT has identified the highest-priority hazards affecting bridges. It has developed risk mitigation plans for hazards caused by normal bridge deterioration and is researching appropriate mitigation approaches for others. WSDOT will need to perform additional work so that its new bridge management system can use this information to estimate conditions and needs.

WSDOT identified the following six hazards as the highest priorities for risk mitigation:

1. Bridge deterioration.
2. Construction quality.
3. Bridge scour (the erosion of sediment from around submerged support structures).
4. Seismic activity.
5. Over-height collisions.
6. Steel expansion joints.

2. More work needed for reliable estimates

Despite the progress made, at this time WSDOT still lacks the capacity to develop reliable long-term estimates of bridge preservation needs

The Washington State Department of Transportation (WSDOT) cannot yet reliably forecast bridge conditions, budget needs, or the consequences of funding decisions.

Since 2017, the Federal Highway Administration (FHWA) requires all states to forecast bridge conditions and estimate future preservation costs. Two national transportation organizations (the American Association of State Highway Transportation Officials and the National Cooperative Highway Research Program of the Transportation Research Board) also recommend that state transportation agencies develop analytical tools to estimate their future needs.

WSDOT has limited capacity to forecast bridge conditions

Reliable estimates require forecasting how deterioration and preservation treatments will affect future bridge conditions.

WSDOT does not yet use deterioration models to forecast declining conditions

To estimate long-term needs, the FHWA requires that state transportation agencies forecast how much the condition of bridge elements will deteriorate over several years. Reliable forecasts use statistical analysis and probability models to understand the rate of deterioration across an entire network of bridges.

WSDOT has relied on professional judgment to anticipate future deterioration of bridge conditions. Studies have found that professional judgment can be inaccurate. For example, a review of the Florida Department of Transportation found that relying on professional judgment led to predictions that bridge elements would deteriorate roughly twice as fast as they actually did.

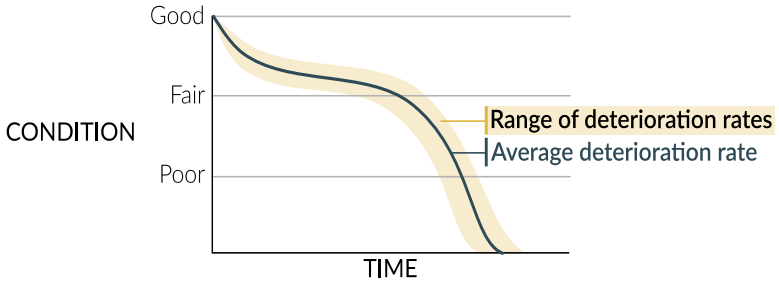
Deterioration models identify how long it takes for bridge elements to transition from one condition[1] to the next-level of diminished condition. For example, it may take an average of 5 years for a concrete slab to transition from good to fair condition and another 17 years to transition from fair to poor condition.

WSDOT has completed preliminary analysis to identify the average transition times for 147 elements, and it has entered this data into its bridge management system. It has also completed statistical analysis for two elements, but it has not yet:

[1]Elements are typically classified as "good," "fair," or "poor" condition

- Performed the statistical analysis required to reliably estimate the probability of deterioration for most bridge elements.
- Used deterioration models when it develops its long-term estimates of bridge preservation needs.

Exhibit 2.1: Typical deterioration models can provide a range of time in which asset conditions are expected to decline



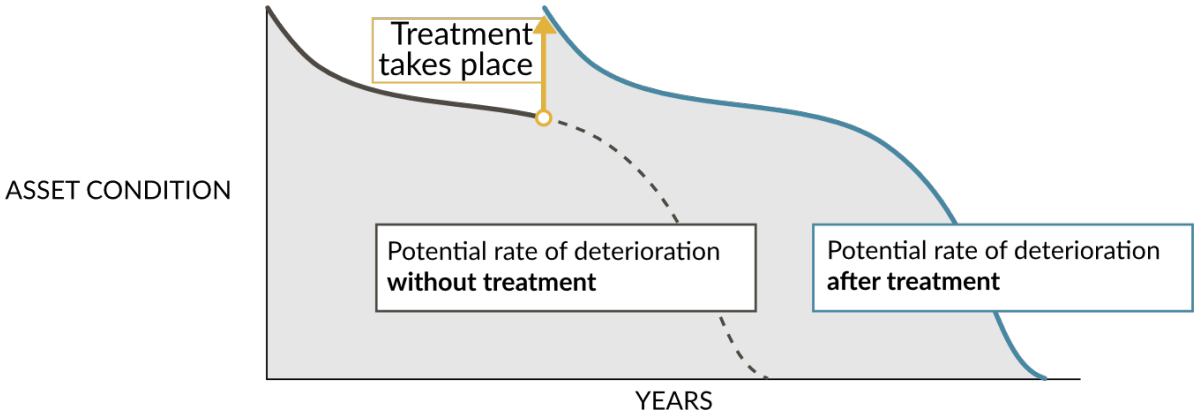
Source: JLARC staff depiction of typical deterioration models.

WSDOT does not model how preservation treatments affect overall bridge conditions

WSDOT has not yet developed models to estimate treatment effectiveness, a measure of how preservation activities will affect future bridge conditions and long-term funding needs.

While bridge conditions may worsen due to deterioration, they also may improve due to preservation actions. Repainting a bridge, for example, may forestall deterioration for many years. To develop reliable long-term estimates of bridge needs, state transportation agencies are required to estimate how preservation actions affect bridge conditions.

Exhibit 2.2: Preservation treatments can delay deterioration



Source: JLARC staff depiction of treatment effectiveness model.

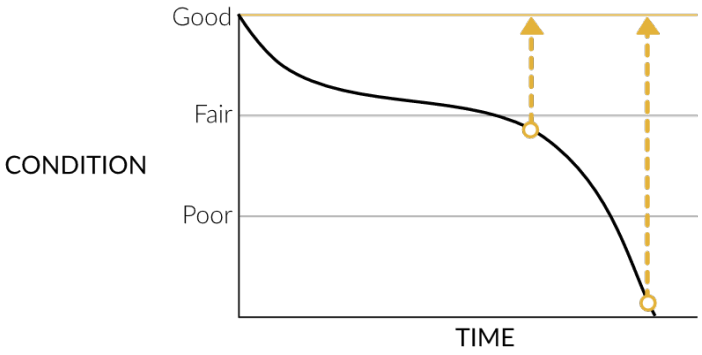
WSDOT informed JLARC staff it plans to develop models of treatment effectiveness by July 2020, which is consistent with the status of other state transportation agencies.

WSDOT does not perform life cycle cost analysis to manage its bridge network

States are required to use life cycle cost analysis (LCCA) to determine the most cost-effective option for managing their long-term highway assets. LCCA is a process for evaluating performance and maintenance over the life of an asset. It balances the initial investment with the

ongoing long-term costs of maintenance and preservation. WSDOT currently uses LCCA to manage its pavement preservation program, but not its bridge preservation program.

Exhibit 2.3: Life cycle cost analysis can help WSDOT manage its bridges at the lowest cost



Source: JLARC staff depiction of life cycle cost analysis.

LCCA requires extensive data and analysis, such as forecasting how quickly bridge elements will deteriorate and estimating the preservation or replacement costs for an entire network of bridges over an extended period of time.

Like other states, WSDOT has not yet configured its bridge management system to perform life cycle cost calculations. Some of the delay in implementing LCCA was due to software problems with the bridge management system that WSDOT and 42 other states are using. The software sponsor is working to resolve this problem and WSDOT expects to implement LCCA functionality by July 2020.

WSDOT does not evaluate the consequences of funding decisions

WSDOT claims that its current funding levels are insufficient to maintain a long-term state of good repair for its bridges. But, to date, it has not analyzed how certain funding levels will affect bridge conditions. This additional information will help highlight the consequences of current funding decisions, and how they impact future needs.

For example, if a state does not spend the right amount at the right time on preservation, its long-term costs may increase substantially due to a backlog of needs, accelerated deterioration, and increasing life cycle costs. When a state is confronted with both higher costs and deteriorating bridge conditions, it may need to choose whether to increase funding for preservation, tolerate poor bridge conditions, or allow bridge closures.

Washington is one of many states that is working to comply with federal requirements

Federal regulations now require that states forecast deterioration, use life cycle cost analysis, and evaluate the long-term impact of different funding scenarios.

WSDOT indicates that it will achieve these capabilities by July 2020 as part of its plan to implement its bridge management system. These capabilities will require additional analysis, data preparation and entry, software setup, and system testing, among other tasks. WSDOT has not publicly reported individual timelines or completion dates for each of these specific capabilities.

WSDOT's progress is similar to other state departments of transportation that are currently working to comply with federal requirements.

Exhibit 2.4: WSDOT has made improvements, but more work remains

Does WSDOT do the following in order to develop reliable estimates?	Status in 2015	Status in 2019
Maintain a management system to analyze bridge conditions and long-term needs?	No	In progress. WSDOT has acquired a bridge management system and plans to fully implement it by July 2020 .
Forecast bridge conditions based on deterioration models?	No	Partially. WSDOT has completed exploratory data analysis and entered data into its bridge management system.
Assess how preservation activities impact long-term bridge conditions?	No	In progress, pending full implementation of bridge management system.
Use life cycle cost analysis to manage the bridge network?	No	In progress, pending full implementation of bridge management system.
Identify the impact of different funding levels on long-term bridge conditions?	No	In progress, pending full implementation of bridge management system.
Analyze risks and use this data to prioritize projects?	Partially. WSDOT did not account for all types of risk and did not consider risk when prioritizing projects.	Partially. WSDOT has identified the highest-priority hazards and developed risk mitigation plans for some. It has begun to prioritize certain hazards, but has not programmed its bridge management system to prioritize risk.

Source: JLARC 2015 report and JLARC staff analysis of consultant's report.

3. WSDOT and OFM can improve communications

WSDOT continues to communicate an incomplete picture of its long-term bridge preservation needs and has not identified the uncertainty of its estimates

In its 2015 report, JLARC staff found that the Washington State Department of Transportation's (WSDOT's) estimates for long-term bridge preservation varied widely with little explanation or documentation. This led to stakeholder uncertainty and skepticism about WSDOT's bridge preservation needs.

The Legislative Auditor recommended that WSDOT and the Office of Financial Management (OFM) develop a process to improve stakeholders' confidence in its bridge estimates, including:

- Thoroughly documenting key assumptions and uncertainties.
- Communicating clearly and routinely with key stakeholders.
- Performing internal and external reviews.
- Providing organizational buffers to protect estimates from outside pressures.

Both WSDOT and OFM concurred with this recommendation, but neither has completed steps yet to address it.

Some WSDOT publications give incorrect impressions of the completeness, accuracy, and reliability of its bridge preservation estimates

WSDOT communicates bridge preservation needs in several recurring publications and presentations, such as the Gray Notebook (a quarterly performance report) and the State of Transportation (the Secretary of Transportation's annual report to the Legislature).

These reports provide a partial account of WSDOT's long-term bridge preservation needs. For example, the Gray Notebook usually identifies needs for steel bridge painting and concrete bridge deck repair, which are only two of WSDOT's eight preservation categories. Similarly, WSDOT's most recent estimate of preservation needs for the state's bridge network was issued in 2016, when WSDOT estimated it needed $2.7 billion over the next ten years. This did not include long-term estimates for border bridges, movable bridge components, and seismic retrofits.

Although WSDOT indicates that its funding needs have likely increased since 2016, WSDOT's recent reports have used the 2016 estimate without acknowledging that it is incomplete and out of date. In fact, WSDOT has updated the expected costs for at least three preservation categories by hundreds of millions of dollars, but these updates are not reflected in WSDOT's reported total estimate of $2.7 billion. Stakeholders may have an unrealistically low impression of long-term costs based on WSDOT'S recent reports.

Reliability of some estimates may be overstated

Some of WSDOT's communications have misrepresented the analysis underlying its own estimates. "The State of Good Repair of the State's Transportation System: Pavement and Bridges," presented to the Washington State Transportation Commission in April 2019, indicated that about $550 million was needed each biennium to preserve bridges at the lowest life cycle cost from 2011 to 2021. However, WSDOT did not develop this estimate using life cycle cost analysis, and it lacked appropriate data to support this estimate. JLARC staff cannot determine whether the estimates are higher or lower than what a full life cycle cost analysis would suggest.

Until WSDOT fully implements a more reliable estimating process, it should clearly acknowledge the assumptions and uncertainties of its long-term bridge preservation estimates.

Unclear how improvements in bridge conditions relate to funding

WSDOT's public presentations and reports indicate that the state is underfunding long-term bridge preservation needs. In the 2019 State of Good Repair presentation, WSDOT reports that it received only 45% of the funding it needs to preserve its bridges.

At the same time, WSDOT publications state that bridge conditions are improving. WSDOT provides annual reports on the conditions of its bridges in accordance with state and federal performance requirements. The June 2018 Gray Notebook reported that 92.5% of WSDOT's bridges (by deck area) were in fair or better condition, an improvement from 91.8% the previous year.

Without further explanation, it is unclear why bridge conditions would improve if preservation is underfunded. There may be legitimate reasons for this trend, such as changes in the way condition is measured or the impact of large-scale projects on the overall bridge network (e.g., the closure of the Alaska Way viaduct). When these explanations are not provided, stakeholders may lose confidence in WSDOT's estimates or misunderstand long-term preservation needs.

OFM has not yet completed steps to implement the recommendation to help improve stakeholder confidence in bridge estimates

In 2015, the Legislative Auditor recommended that OFM work with WSDOT to develop a process for improving stakeholder confidence in the state's long-term bridge forecasts and estimates.

Statute[2] also directs OFM to propose a 10-year preservation program for the state's highway system. OFM defers to WSDOT in identifying specific projects and costs based on WSDOT's internal expertise and familiarity with its assets.

In response to JLARC's 2015 report, OFM stated that it would “work with WSDOT to identify opportunities for improvement, emphasizing clarity, predictability, timeliness, transparency and accountability.” It has not yet completed steps to provide clear, routine communication with key

[2]RCW 47.05.030

stakeholders to ensure that those stakeholders understand the assumptions and uncertainties of WSDOT's estimates.

Appendix A: Consultant's Report

JLARC staff worked with a bridge management expert to help evaluate WSDOT's progress in developing estimates of long-term bridge preservation needs

JLARC staff engaged Paul D. Thompson to identify best practices in asset management and assess the Washington State Department of Transportation's (WSDOT's) long-term estimates of bridge preservation needs.

A full copy of the consultant report can be downloaded here:

Paul D. Thompson, *WSDOT Bridge Preservation Needs Estimation Process Follow-Up Study*

Appendix B: Applicable statutes

State and federal laws related to maintaining the transportation system

Transportation System Policy Goals: Duties

RCW 47.01.078

To support achievement of the policy goals described in RCW 47.04.280, the department shall:

(1) Maintain an inventory of the condition of structures and corridors in most urgent need of retrofit or rehabilitation;

(2) Develop long-term financing tools that reliably provide ongoing maintenance and preservation of the transportation infrastructure;

(3) Balance system safety and convenience through all phases of a project to accommodate all users of the transportation system to safely, reliably, and efficiently provide mobility to people and goods;

(4) Develop strategies to gradually reduce the per capita vehicle miles traveled based on consideration of a range of reduction methods;

(5) Consider efficiency tools, including high occupancy vehicle and high occupancy toll lanes, corridor-specific and systemwide pricing strategies, active traffic management, commute trip reduction, and other demand management tools;

(6) Promote integrated multimodal planning; and

(7) Consider engineers and architects to design environmentally sustainable, context-sensitive transportation systems.

[2007 c 516 § 6.]

NOTES:

Findings—Intent—2007 c 516: See note following RCW 47.01.011.

Transportation System Policy Goals

RCW 47.04.280

(1) It is the intent of the legislature to establish policy goals for the planning, operation, performance of, and investment in, the state's transportation system. The policy goals established under this section are deemed consistent with the benchmark categories adopted by the state's blue ribbon commission on transportation on November 30, 2000. Public investments in transportation should support achievement of these policy goals:

(a) Economic vitality: To promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy;

(b) Preservation: To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services;

(c) Safety: To provide for and improve the safety and security of transportation customers and the transportation system;

(d) Mobility: To improve the predictable movement of goods and people throughout Washington state, including congestion relief and improved freight mobility;

(e) Environment: To enhance Washington's quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment; and

(f) Stewardship: To continuously improve the quality, effectiveness, and efficiency of the transportation system.

(2) The powers, duties, and functions of state transportation agencies must be performed in a manner consistent with the policy goals set forth in subsection (1) of this section.

(3) These policy goals are intended to be the basis for establishing detailed and measurable objectives and related performance measures.

(4) It is the intent of the legislature that the office of financial management, in consultation with the transportation commission, establish objectives and performance measures for the department and other state agencies with transportation-related responsibilities to ensure transportation system performance at local, regional, and state government levels progresses toward the attainment of the policy goals set forth in subsection (1) of this section. The office of financial management shall submit objectives and performance measures to the legislature for its review and shall provide copies of the same to the commission during each regular session of the legislature during an even-numbered year thereafter.

(5) A local or regional agency engaging in transportation planning may voluntarily establish objectives and performance measures to demonstrate progress toward the attainment of the policy goals set forth in subsection (1) of this section or any other transportation policy goals established by the local or regional agency. A local or regional agency engaging in transportation planning is encouraged to provide local and regional objectives and performance measures to be included with the objectives and performance measures submitted to the legislature pursuant to subsection (4) of this section.

(6) This section does not create a private right of action.

[2016 c 35 § 3. Prior: 2015 3rd sp.s. c 16 § 1; 2015 3rd sp.s. c 1 § 304; 2013 c 199 § 1; 2010 c 74 § 1; 2007 c 516 § 3; 2002 c 5 § 101. Formerly RCW 47.01.012.]

NOTES:

Effective date—2015 3rd sp.s. c 16: "This act is necessary for the immediate preservation of the public peace, health, or safety, or support of the state government and its existing public institutions, and takes effect immediately [July 6, 2015]." [2015 3rd sp.s. c 16 § 2.]

Findings—Intent—2007 c 516: See note following RCW 47.01.011.

Effective date—2002 c 5 § 101: "Section 101 of this act takes effect July 1, 2002." [2002 c 5 § 102.]

Captions not law—2002 c 5: "Captions and part headings used in this act are not part of the law." [2002 c 5 § 419.]

Severability—2002 c 5: "If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected." [2002 c 5 § 420.]

Priority Programming for Highway Development

RCW 47.05.010

The legislature finds that solutions to state highway deficiencies have become increasingly complex and diverse and that anticipated transportation revenues will fall substantially short of the amount required to satisfy all transportation needs. Difficult investment trade-offs will be required.

It is the intent of the legislature that investment of state transportation funds to address deficiencies on the state highway system be based on a policy of priority programming having as its basis the rational selection of projects and services according to factual need and an evaluation of life cycle costs and benefits that are systematically scheduled to carry out defined objectives within available revenue. The state must develop analytic tools to use a common methodology to measure benefits and costs for all modes.

The priority programming system must ensure preservation of the existing state highway system, relieve congestion, provide mobility for people and goods, support the state's economy, and promote environmental protection and energy conservation.

The priority programming system must implement the state-owned highway component of the statewide transportation plan, consistent with local and regional transportation plans, by targeting state transportation investment to appropriate multimodal solutions that address identified state highway system deficiencies.

The priority programming system for improvements must incorporate a broad range of solutions that are identified in the statewide transportation plan as appropriate to address state highway system deficiencies, including but not limited to highway expansion, efficiency improvements, nonmotorized transportation facilities, high occupancy vehicle facilities, transit facilities and services, rail facilities and services, and transportation demand management programs.

[2002 c 5 § 401; 1993 c 490 § 1; 1969 ex.s. c 39 § 1; 1963 c 173 § 1.]

NOTES:

Effective date—2002 c 5 §§ 401-404: "Sections 401 through 404 of this act take effect July 1, 2002." [2002 c 5 § 417.]

Captions not law—Severability—2002 c 5: See notes following RCW 47.04.280.

RCW 47.05.030

(1) The office of financial management shall propose a comprehensive ten-year investment program for the preservation and improvement programs defined in this section, consistent with the policy goals described under RCW 47.04.280. The proposed ten-year investment program must be forwarded as a recommendation by the office of financial management to the legislature, and must be based upon the needs identified in the statewide transportation plan established under RCW 47.01.071(4).

(2) The preservation program consists of those investments necessary to preserve the existing state highway system and to restore existing safety features, giving consideration to lowest life cycle costing.

(3) The improvement program consists of investments needed to address identified deficiencies on the state highway system to meet the goals established in RCW 47.04.280.

[2007 c 516 § 7; 2006 c 334 § 45; 2005 c 319 § 9; 2002 c 5 § 402; 1998 c 171 § 6; 1993 c 490 § 3; 1987 c 179 § 2; 1979 ex.s. c 122 § 2; 1977 ex.s. c 151 § 44; 1975 1st ex.s. c 143 § 1; 1973 2nd ex.s. c 12 § 4; 1969 ex.s. c 39 § 3; 1965 ex.s. c 170 § 33; 1963 c 173 § 3.]

NOTES:

Findings—Intent—2007 c 516: See note following RCW 47.01.011.

Effective date—2006 c 334: See note following RCW 47.01.051.

Findings—Intent—Part headings—Effective dates—2005 c 319: See notes following RCW 43.17.020.

Effective date—2002 c 5 §§ 401-404: See note following RCW 47.05.010.

Captions not law—Severability—2002 c 5: See notes following RCW 47.04.280.

Severability—1979 ex.s. c 122: See note following RCW 47.05.021.

Statewide Transportation Planning

RCW 47.06.050

The state-owned facilities component of the statewide multimodal transportation plan shall consist of:

(1) The state highway system plan, which identifies program and financing needs and recommends specific and financially realistic improvements to preserve the structural integrity of the state highway system, ensure acceptable operating conditions, and provide for enhanced access to scenic, recreational, and cultural resources. The state highway system plan shall contain the following elements:

(a) A system preservation element, which shall establish structural preservation objectives for the state highway system including bridges, identify current and future structural deficiencies based upon analysis of current conditions and projected future deterioration, and recommend program funding levels and specific actions necessary to preserve the structural integrity of the state highway system consistent with adopted objectives. Lowest life-cycle cost methodologies must be used in developing a pavement management system. This element shall serve as the basis for the preservation component of the six-year highway program and the two-year biennial budget request to the legislature;

(b) A highway maintenance element, establishing service levels for highway maintenance on state-owned highways. The highway maintenance element must include an estimate of costs for achieving those service levels over twenty years. This element will serve as the basis for the maintenance component of the six-year highway program and the two-year biennial budget request to the legislature;

(c) A capacity and operational improvement element, which shall establish operational objectives, including safety considerations, for moving people and goods on the state highway system, identify current and future capacity, operational, and safety deficiencies, and recommend program funding levels and specific improvements and strategies necessary to achieve the operational objectives. In developing capacity and operational improvement plans the department shall first assess strategies to enhance the operational efficiency of the existing system before recommending system expansion. Strategies to enhance the operational efficiencies include but are not limited to access management, transportation system management, demand management, and high occupancy vehicle facilities. The capacity and operational improvement element must conform to the state implementation plan for air quality and be consistent with regional transportation plans adopted under chapter 47.80 RCW, and shall serve as the basis for the capacity and operational improvement portions of the six-year highway program and the two-year biennial budget request to the legislature;

(d) A scenic and recreational highways element, which shall identify and recommend designation of scenic and recreational highways, provide for enhanced access to scenic, recreational, and cultural resources associated with designated routes, and recommend a variety of management

strategies to protect, preserve, and enhance these resources. The department, affected counties, cities, and towns, regional transportation planning organizations, and other state or federal agencies shall jointly develop this element;

(e) A paths and trails element, which shall identify the needs of nonmotorized transportation modes on the state transportation systems and provide the basis for the investment of state transportation funds in paths and trails, including funding provided under chapter 47.30 RCW.

(2) The state ferry system plan, which shall guide capital and operating investments in the state ferry system. The plan shall establish service objectives for state ferry routes, forecast travel demand for the various markets served in the system, develop strategies for ferry system investment that consider regional and statewide vehicle and passenger needs, support local land use plans, and assure that ferry services are fully integrated with other transportation services. The plan must provide for maintenance of capital assets. The plan must also provide for preservation of capital assets based on lowest life-cycle cost methodologies. The plan shall assess the role of private ferries operating under the authority of the utilities and transportation commission and shall coordinate ferry system capital and operational plans with these private operations. The ferry system plan must be consistent with the regional transportation plans for areas served by the state ferry system, and shall be developed in conjunction with the ferry advisory committees.

[2007 c 516 § 10; 2002 c 5 § 413; 1993 c 446 § 5.]

NOTES:

Findings—Intent—2007 c 516: See note following RCW 47.01.011.

Finding—Intent—2002 c 5: "The legislature finds that roads, streets, bridges, and highways in the state represent public assets worth over one hundred billion dollars. These investments require regular maintenance and preservation, or rehabilitation, to provide cost-effective transportation services. Many of these facilities are in poor condition. Given the magnitude of public investment and the importance of safe, reliable roadways to the motoring public, the legislature intends to create stronger accountability to ensure that cost-effective maintenance and preservation is provided for these transportation facilities."[2002 c 5 § 408.]

Captions not law—Severability—2002 c 5: See notes following RCW 47.04.280.

Asset Management Plans

23 CFR 515

Authority: Sec. 1106 and 1203 of Pub. L. 112-141, 126 Stat. 405; 23 U.S.C. 109, 119(e), 144, 150(c), and 315; 49 CFR 1.85(a).

Source: 81 FR 73263, Oct. 24, 2016, unless otherwise noted.

Effective Date Note: At 81 FR 73263, Oct. 24, 2016, part 515 was added, effective Oct. 2, 2017.

§ 515.1 Purpose.

The purpose of this part is to:

(a) Establish the processes that a State transportation department (State DOT) must use to develop its asset management plan, as required under 23 U.S.C. 119(e)(8);

(b) Establish the minimum requirements that apply to the development of an asset management plan;

(c) Describe the penalties for a State DOT's failure to develop and implement an asset management plan in accordance with 23 U.S.C. 119 and this part;

(d) Set forth the minimum standards for a State DOT to use in developing and operating highway bridge and pavement management systems under 23 U.S.C. 150(c)(3)(A)(i).

§ 515.3 Applicability and effective date.

This part applies to all State DOTs. The effective date for the requirements in this part is October 2, 2017.

§ 515.5 Definitions.

As used in this part:

Asset means all physical highway infrastructure located within the right-of-way corridor of a highway. The term asset includes all components necessary for the operation of a highway including pavements, highway bridges, tunnels, signs, ancillary structures, and other physical components of a highway.

Asset class means assets with the same characteristics and function (e.g., bridges, culverts, tunnels, pavements, or guardrail) that are a subset of a group or collection of assets that serve a common function (e.g., roadway system, safety, Intelligent Transportation (IT), signs, or lighting).

Asset condition means the actual physical condition of an asset.

Asset management means a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on both engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the life cycle of the assets at minimum practicable cost.

Asset management plan means a document that describes how a State DOT will carry out asset management as defined in this section. This includes how the State DOT will make risk-based decisions from a long-term assessment of the National Highway System (NHS), and other public roads included in the plan at the option of the State DOT, as it relates to managing its physical assets and laying out a set of investment strategies to address the condition and system performance gaps. This document describes how the highway network system will be managed to achieve State DOT targets for asset condition and system performance effectiveness while managing the risks, in a financially responsible manner, at a minimum practicable cost over the life cycle of its assets. The term asset management plan under this part is the risk-based asset management plan that is required under 23 U.S.C. 119(e) and is intended to carry out asset management as defined in 23 U.S.C. 101(a)(2).

Asset sub-group means a specialized group of assets within an asset class with the same characteristics and function (e.g., concrete pavements or asphalt pavements.)

Bridge as used in this part, is defined in 23 CFR 650.305, the National Bridge Inspection Standards.

Critical infrastructure means those facilities the incapacity or failure of which would have a debilitating impact on national or regional economic security, national or regional energy security, national or regional public health or safety, or any combination of those matters.

Financial plan means a long-term plan spanning 10 years or longer, presenting a State DOT's estimates of projected available financial resources and predicted expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies.

Investment strategy means a set of strategies that result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

Life-cycle cost means the cost of managing an asset class or asset sub-group for its whole life, from initial construction to its replacement.

Life-cycle planning means a process to estimate the cost of managing an asset class, or asset sub-group over its whole life with consideration for minimizing cost while preserving or improving the condition.

Minimum practicable cost means lowest feasible cost to achieve the objective.

NHS pavements and bridges and NHS pavement and bridge assets mean Interstate System pavements (inclusion of ramps that are not part of the roadway normally traveled by through traffic is optional); NHS pavements (excluding the Interstate System) (inclusion of ramps that are not part of the roadway normally traveled by through traffic is optional); and NHS bridges carrying the NHS (including bridges that are part of the ramps connecting to the NHS).

Performance of the NHS refers to the effectiveness of the NHS in providing for the safe and efficient movement of people and goods where that performance can be affected by physical assets. This term does not include the performance measures established for performance of the Interstate System and performance of the NHS (excluding the Interstate System) under 23 U.S.C. 150(c)(3)(ii)(A)(IV)-(V).

Performance gap means the gaps between the current asset condition and State DOT targets for asset condition, and the gaps in system performance effectiveness that are best addressed by improving the physical assets.

Risk means the positive or negative effects of uncertainty or variability upon agency objectives.

Risk management means the processes and framework for managing potential risks, including identifying, analyzing, evaluating, and addressing the risks to assets and system performance.

Statewide Transportation Improvement Program (STIP) has the same meaning as defined in §450.104 of this title.

Work type means initial construction, maintenance, preservation, rehabilitation, and reconstruction.

§515.7 Process for establishing the asset management plan.

A State shall develop a risk-based asset management plan that describes how the NHS will be managed to achieve system performance effectiveness and State DOT targets for asset condition, while managing the risks, in a financially responsible manner, at a minimum practicable cost over the life cycle of its assets. The State DOT shall develop and use, at a minimum the following processes to prepare its asset management plan:

(a) A State DOT shall establish a process for conducting performance gap analysis to identify deficiencies hindering progress toward improving or preserving the NHS and achieving and sustaining the desired state of good repair. At a minimum, the State DOT's process shall address the following in the gap analysis:

(1) The State DOT targets for asset condition of NHS pavements and bridges as established by the State DOT under 23 U.S.C. 150(d) once promulgated.

(2) The gaps, if any, in the performance-of the NHS that affect NHS pavements and bridges regardless of their physical condition; and

(3) Alternative strategies to close or address the identified gaps.

(b) A State DOT shall establish a process for conducting life-cycle planning for an asset class or asset sub-group at the network level (network to be defined by the State DOT). As a State DOT develops its life-cycle planning process, the State DOT should include future changes in demand; information on current and future environmental conditions including extreme weather events, climate change, and seismic activity; and other factors that could impact whole of life costs of assets. The State DOT may propose excluding one or more asset sub-groups from its life-cycle planning if the State DOT can demonstrate to FHWA the exclusion of the asset sub-group would have no material adverse effect on the development of sound investment strategies due to the limited number of assets in the asset sub-group, the low level of cost associated with managing the assets in that asset sub-group, or other justifiable reasons. A life-cycle planning process shall, at a minimum, include the following:

(1) The State DOT targets for asset condition for each asset class or asset sub-group;

(2) Identification of deterioration models for each asset class or asset sub-group, provided that identification of deterioration models for assets other than NHS pavements and bridges is optional;

(3) Potential work types across the whole life of each asset class or asset sub-group with their relative unit cost; and

(4) A strategy for managing each asset class or asset sub-group by minimizing its life-cycle costs, while achieving the State DOT targets for asset condition for NHS pavements and bridges under 23 U.S.C. 150(d).

(c) A State DOT shall establish a process for developing a risk management plan. This process shall, at a minimum, produce the following information:

(1) Identification of risks that can affect condition of NHS pavements and bridges and the performance of the NHS, including risks associated with current and future environmental conditions, such as extreme weather events, climate change, seismic activity, and risks related to recurring damage and costs as identified through the evaluation of facilities repeated damaged by emergency events carried out under part 667 of this title. Examples of other risk categories include financial risks such as budget uncertainty; operational risks such as asset failure; and strategic risks such as environmental compliance.

(2) An assessment of the identified risks in terms of the likelihood of their occurrence and their impact and consequence if they do occur;

(3) An evaluation and prioritization of the identified risks;

(4) A mitigation plan for addressing the top priority risks;

(5) An approach for monitoring the top priority risks; and

(6) A summary of the evaluations of facilities repeatedly damaged by emergency events carried out under part 667 of this title that discusses, at a minimum, the results relating to the State's NHS pavements and bridges.

(d) A State DOT shall establish a process for the development of a financial plan that identifies annual costs over a minimum period of 10 years. The financial plan process shall, at a minimum, produce:

(1) The estimated cost of expected future work to implement investment strategies contained in the asset management plan, by State fiscal year and work type;

(2) The estimated funding levels that are expected to be reasonably available, by fiscal year, to address the costs of future work types. State DOTs may estimate the amount of available future funding using historical values where the future funding amount is uncertain;

(3) Identification of anticipated funding sources; and

(4) An estimate of the value of the agency's NHS pavement and bridge assets and the needed investment on an annual basis to maintain the value of these assets.

(e) A State DOT shall establish a process for developing investment strategies meeting the requirements in § 515.9(f). This process must result in a description of how the investment strategies are influenced, at a minimum, by the following:

(1) Performance gap analysis required under paragraph (a) of this section;

(2) Life-cycle planning for asset classes or asset sub-groups resulting from the process required under paragraph (b) of this section;

(3) Risk management analysis resulting from the process required under paragraph (c) of this section; and

(4) Anticipated available funding and estimated cost of expected future work types associated with various candidate strategies based on the financial plan required by paragraph (d) of this section.

(f) The processes established by State DOTs shall include a provision for the State DOT to obtain necessary data from other NHS owners in a collaborative and coordinated effort.

(g) States DOTs shall use the best available data to develop their asset management plans. Pursuant to 23 U.S.C. 150(c)(3)(A)(i), each State DOT shall use bridge and pavement management systems meeting the requirements of § 515.17 to analyze the condition of NHS pavements and bridges for the purpose of developing and implementing the asset management plan required under this part. The use of these or other management systems for other assets that the State DOT elects to include in the asset management plan is optional (e.g., Sign Management Systems, etc.).

§ 515.9 Asset management plan requirements.

(a) A State DOT shall develop and implement an asset management plan to improve or preserve the condition of the assets and improve the performance of the NHS in accordance with the requirements of this part. Asset management plans must describe how the State DOT will carry out asset management as defined in § 515.5.

(b) An asset management plan shall include, at a minimum, a summary listing of NHS pavement and bridge assets, regardless of ownership.

(c) In addition to the assets specified in paragraph (b) of this section, State DOTs are encouraged, but not required, to include all other NHS infrastructure assets within the right-of-way corridor and assets on other public roads. Examples of other NHS infrastructure assets include tunnels, ancillary structures, and signs. Examples of other public roads include non-NHS Federal-aid highways. If a State DOT decides to include other NHS assets in its asset management plan, or to include assets on other public roads, the State DOT, at a minimum, shall evaluate and manage those assets consistent with paragraph (l) of this section.

(d) The minimum content for an asset management plan under this part includes a discussion of each element in this paragraph (d).

(1) Asset management objectives. The objectives should align with the State DOT's mission. The objectives must be consistent with the purpose of asset management, which is to achieve and sustain the desired state of good repair over the life cycle of the assets at a minimum practicable cost.

(2) Asset management measures and State DOT targets for asset condition, including those established pursuant to 23 U.S.C. 150, for NHS pavements and bridges. The plan must include measures and associated targets the State DOT can use in assessing the condition of the assets and performance of the highway system as it relates to those assets. The measures and targets must be consistent with the State DOT's asset management objectives. The State DOT must

include the measures established under 23 U.S.C. 150(c)(3)(A)(ii)(I)-(III), once promulgated in 23 CFR part 490, for the condition of NHS pavements and bridges. The State DOT also must include the targets the State DOT has established for the measures required by 23 U.S.C. 150(c)(3)(A)(ii)(I)-(III), once promulgated, and report on such targets in accordance with 23 CFR part 490. The State DOT may include measures and targets for NHS pavements and bridges that the State DOT established through pre-existing management efforts or develops through new efforts if the State DOT wishes to use such additional measures and targets to supplement information derived from the pavement and bridge measures and targets required under 23 U.S.C. 150.

(3) A summary description of the condition of NHS pavements and bridges, regardless of ownership. The summary must include a description of the condition of those assets based on the performance measures established under 23 U.S.C. 150(c)(3)(A)(ii) for condition, once promulgated. The description of condition should be informed by evaluations required under part 667 of this title of facilities repeated damaged by emergency events.

(4) Performance gap identification.

(5) Life-cycle planning.

(6) Risk management analysis, including the results for NHS pavements and bridges, of the periodic evaluations under part 667 of this title of facilities repeated damaged by emergency event.

(7) Financial plan.

(8) Investment strategies.

(e) An asset management plan shall cover, at a minimum, a 10-year period.

(f) An asset management plan shall discuss how the plan's investment strategies collectively would make or support progress toward:

(1) Achieving and sustaining a desired state of good repair over the life cycle of the assets,

(2) Improving or preserving the condition of the assets and the performance of the NHS relating to physical assets,

(3) Achieving the State DOT targets for asset condition and performance of the NHS in accordance with 23 U.S.C. 150(d), and

(4) Achieving the national goals identified in 23 U.S.C. 150(b).

(g) A State DOT must include in its plan a description of how the analyses required by State processes developed in accordance with § 515.7 (such as analyses pertaining to life cycle planning, risk management, and performance gaps) support the State DOT's asset management plan investment strategies.

(h) A State DOT shall integrate its asset management plan into its transportation planning processes that lead to the STIP, to support its efforts to achieve the goals in paragraphs (f)(1) through (4) of this section.

(i) A State DOT is required to make its asset management plan available to the public, and is encouraged to do so in a format that is easily accessible.

(j) Inclusion of performance measures and State DOT targets for NHS pavements and bridges established pursuant to 23 U.S.C. 150 in the asset management plan does not relieve the State DOT of any performance management requirements, including 23 U.S.C. 150(e) reporting, established in other parts of this title.

(k) The head of the State DOT shall approve the asset management plan.

(l) If the State DOT elects to include other NHS infrastructure assets or other public roads assets in its asset management plan, the State at a minimum shall address the following, using a level of effort consistent with the State DOT's needs and resources:

(1) Summary listing of assets, including a description of asset condition;

(2) Asset management measures and State DOT targets for asset condition;

(3) Performance gap analysis;

(4) Life-cycle planning;

(5) Risk analysis, including summaries of evaluations carried out under part 667 of this title for the assets, if available, and consideration of those evaluations;

(6) Financial plan; and

(7) Investment strategies.

(m) The asset management plan of a State may include consideration of critical infrastructure from among those facilities in the State that are eligible under 23 U.S.C. 119(c).

§ 515.11 Deadlines and phase-in of asset management plan development.

(a) Deadlines. (1) Not later than April 30, 2018, the State DOT shall submit to FHWA a State-approved initial asset management plan meeting the requirements in paragraph (b) of this section. The FHWA will review the processes described in the initial plan and make a process certification decision as provided in § 515.13(a).

(2) Not later than June 30, 2019, the State DOT shall submit a State-approved asset management plan meeting all the requirements of 23 U.S.C. 119 and this part, including paragraph (c) of this section, together with documentation demonstrating implementation of the asset management plan. The FWHA will determine whether the State DOT's plan and implementation meet the requirements of 23 U.S.C. 119 and this part as provided in § 515.13(b).

(b) The initial plan shall describe the State DOT's processes for developing its risk-based asset management plan, including the policies, procedures, documentation, and implementation approach that satisfy the requirements of this part. The plan also must contain measures and targets for assets covered by the plan. The investment strategies required by § 515.7(e) and 515.9((d)(8) must support progress toward the achievement of the national goals identified in 23 U.S.C. 150(b). The initial plan must include and address the State DOT's 23 U.S.C. 150(d) targets for NHS pavements and bridges only if the first target-setting deadline established in 23 CFR

part 490 for NHS pavements and bridges is a date more than 6 months before the initial plan submission deadline in paragraph (a)(1). The initial asset management plan may exclude one or more of the necessary analyses with respect to the following required asset management processes:

(1) Life-cycle planning required under § 515.7(a)(2);

(2) The risk management analysis required under § 515.7(a)(3); and

(3) Financial plan under § 515.7(a)(4).

(c) The State-approved asset management plan submitted not later than June 30, 2019, shall include all required analyses, performed using FHWA-certified processes, and the section 150 measures and State DOT targets for the NHS pavements and bridges. The plan must meet all requirements in §§ 515.7 and 515.9. This includes investment strategies that are developed based on the analyses from all processes required under § 515.7, and meet the requirements in 23 U.S.C. 119(e)(2).

§ 515.13 Process certification and recertification, and annual plan consistency review.

(a) Process certification and recertification under 23 U.S.C. 119(e)(6). Not later than 90 days after the date on which the FHWA receives a State DOT's processes and request for certification or recertification, the FHWA shall decide whether the State DOT's processes for developing its asset management plan meet the requirements of this part. The FHWA will treat the State DOT's submission of an initial State-approved asset management plan under § 515.11(b) as the State DOT's request for the first certification of the State's DOT's plan development processes under 23 U.S.C. 119(e)(6). As provided in paragraph (c) of this section, State DOT shall update and resubmit its asset management plan development processes to the FHWA for a new process certification at least every 4 years.

(1) If FHWA determines that the processes used by a State DOT to develop and maintain the asset management plan do not meet the requirements established under this part, FHWA will send the State DOT a written notice of the denial of certification or recertification, including a listing of the specific requirement deficiencies.

(2) Upon receiving a notice of denial of certification or recertification, the State DOT shall have 90 days from receipt of the notice to address the deficiencies identified in the notice and resubmit the State DOT's processes to FHWA for review and certification. The FHWA may extend the State DOT's 90-day period to cure deficiencies upon request. During the cure period established, all penalties and other legal impacts of a denial of certification shall be stayed as provided in 23 U.S.C. 119(e)(6)(C)(i).

(3) If FHWA finds that a State DOT's asset management processes substantially meet the requirements of this part except for minor deficiencies, FHWA may certify or recertify the State DOT's processes as being in compliance, but the State DOT must take actions to correct the minor deficiencies within 90 days of receipt of the notification of certification. The State shall notify FHWA, in writing, when corrective actions are completed.

(b) Annual determination of consistency under 23 U.S.C. 119(e)(5). Not later than August 31, 2019, and not later than July 31 in each year thereafter, FHWA will notify the State DOT whether the State DOT has developed and implemented an asset management plan consistent with 23 U.S.C. 119. The notice will be in writing and, in the case of a negative determination, will specify the deficiencies the State DOT needs to address. In making the annual consistency determination, the FHWA will consider the most recent asset management plan submitted by the State DOT, as well as any documentation submitted by the State DOT to demonstrate implementation of the plan. The FHWA determination is only as to the consistency of the State DOT asset management plan and State DOT implementation of that plan with applicable requirements, and is not an approval or disapproval of strategies or other decisions contained in the plan. With respect to any assets the State DOT may elect to include in its plan in addition to NHS pavement and bridge assets, the FHWA consistency determination will consider only whether the State DOT has complied with § 515.9(l) with respect to such discretionary assets.

(1) Plan development. The FHWA will review the State DOT's asset management plan to ensure that it was developed with certified processes, includes the required content, and is consistent with other applicable requirements in this part.

(2) Plan implementation. The State DOT must demonstrate implementation of an asset management plan that meets the requirements of 23 U.S.C. 119 and this part. Each State DOT may determine the most suitable approach for demonstrating implementation of its asset management plan, so long as the information is current, documented, and verifiable. The submission must show the State DOT is using the investment strategies in its plan to make progress toward achievement of its targets for asset condition and performance of the NHS and to support progress toward the national goals identified in 23 U.S.C. 150(b). The State DOT must submit its implementation documentation not less than 30 days prior to the deadline for the FHWA consistency determination.

(i) FHWA considers the best evidence of plan implementation to be that, for the 12 months preceding the consistency determination, the State DOT funding allocations are reasonably consistent with the investment strategies in the State DOT's asset management plan. This demonstration takes into account the alignment between the actual and planned levels of investment for various work types (i.e., initial construction, maintenance, preservation, rehabilitation and reconstruction).

(ii) FHWA may find a State DOT has implemented its asset management plan even if the State has deviated from the investment strategies included in the asset management plan, if the State DOT shows the deviation was necessary due to extenuating circumstances beyond the State DOT's reasonable control.

(3) Opportunity to cure deficiencies. In the event FHWA notifies a State DOT of a negative consistency determination, the State DOT has 30 days to address the deficiencies. The State DOT may submit additional information showing the FHWA negative determination was in error, or to demonstrate the State DOT has taken corrective action that resolves the deficiencies specified in FHWA's negative determination.

(c) Updates and other amendments to plans and development processes. A State DOT must update its asset management plan and asset management plan development processes at least every 4 years, beginning on the date of the initial FHWA certification of the State DOT's processes under paragraph (a) of this section. Whenever the State DOT updates or otherwise amends its asset management plan or its asset management plan development processes, the State DOT must submit the amended plan or processes to the FHWA for a new process certification and consistency determination at least 30 days prior to the deadline for the next FHWA consistency determination under paragraph (b) of this section. Minor technical corrections and revisions with no foreseeable material impact on the accuracy and validity of the processes, analyses, or investment strategies in the plan do not constitute amendments and do not require submission to FHWA.

§ 515.15 Penalties

(a) Beginning on October 1, 2019, and in each fiscal year thereafter, if a State DOT has not developed and implemented an asset management plan consistent with the requirements of 23 U.S.C. 119 and this part, the maximum Federal share for National Highway Performance Program projects and activities carried out by the State in that fiscal year shall be reduced to 65 percent for that fiscal year.

(b)(1) Except as provided in paragraph (b)(2) of this section, if the State DOT has not developed and implemented an asset management plan that is consistent with the requirements of 23 U.S.C. 119 and this part and established the performance targets for NHS pavements and bridges required under 23 U.S.C. 150(d) by the date that is 18 months after the effective date of the 23 U.S.C. 150(c) final rule for NHS pavements and bridges, the FHWA will not approve any further projects using National Highway Performance Program funds. Such suspension of funding approvals will terminate once the State DOT has developed and implemented an asset management plan that is consistent with the requirements of 23 U.S.C. 119 and this part and established its performance targets for NHS pavements and bridges required under 23 U.S.C. 150(d).

(2) The FHWA may extend this deadline if FHWA determines that the State DOT has made a good faith effort to develop and implement an asset management plan and establish the performance targets for NHS pavements and bridges required under 23 U.S.C. 150(d).

§ 515.17 Minimum standards for developing and operating bridge and pavement management systems

Pursuant to 23 U.S.C.150(c)(3)(A)(i), this section establishes the minimum standards States must use for developing and operating bridge and pavement management systems. State DOT bridge and pavement management systems are not subject to FHWA certification under § 515.13. Bridge and pavement management systems shall include, at a minimum, documented procedures for:

(a) Collecting, processing, storing, and updating inventory and condition data for all NHS pavement and bridge assets.

(b) Forecasting deterioration for all NHS pavement and bridge assets;

(c) Determining the benefit-cost over the life cycle of assets to evaluate alternative actions (including no action decisions), for managing the condition of NHS pavement and bridge assets;

(d) Identifying short- and long-term budget needs for managing the condition of all NHS pavement and bridge assets;

(e) Determining the strategies for identifying potential NHS pavement and bridge projects that maximize overall program benefits within the financial constraints.; and

(f) Recommending programs and implementation schedules to manage the condition of NHS pavement and bridge assets within policy and budget constraints.

§ 515.19 Organizational integration of asset management.

(a) The purpose of this section is to describe how a State DOT may integrate asset management into its organizational mission, culture and capabilities at all levels. The activities described in paragraphs (b) through (d) of this section are not requirements.

(b) A State DOT should establish organizational strategic goals and include the goals in its organizational strategic implementation plans with an explanation as to how asset management will help it to achieve those goals.

(c) A State DOT should conduct a periodic self-assessment of the agency's capabilities to conduct asset management, as well as its current efforts in implementing an asset management plan. The self-assessment should consider, at a minimum, the adequacy of the State DOT's strategic goals and policies with respect to asset management, whether asset management is considered in the agency's planning and programming of resources, including development of the STIP; whether the agency is implementing appropriate program delivery processes, such as consideration of alternative project delivery mechanisms, effective program management, and cost tracking and estimating; and whether the agency is implementing adequate data collection and analysis policies to support an effective asset management program.

(d) Based on the results of the self-assessment, the State DOT should conduct a gap analysis to determine which areas of its asset management process require improvement. In conducting a gap analysis, the State DOT should:

(1) Determine the level of organizational performance effort needed to achieve the objectives of asset management;

(2) Determine the performance gaps between the existing level of performance effort and the needed level of performance effort; and

(3) Develop strategies to close the identified organizational performance gaps and define the period of time over which the gap is to be closed.

RECOMMENDATIONS & RESPONSES
Legislative Auditor Recommendations

The Legislative Auditor makes two recommendations regarding estimating and communicating long-term bridge preservation needs

Recommendation #1: WSDOT should report to the Legislature on its progress implementing its bridge management system.

These reports must provide clear timelines and anticipated completion dates for implementing deterioration models, analyzing life cycle costs for the bridge network, and evaluating the impact of different funding scenarios on its bridge conditions.

Legislation Required:	None
Fiscal Impact:	None
Implementation Date:	September 2020. If WSDOT has not fully implemented its bridge management system at that time, continue to report each September until fully implemented
Agency Response:	To be included with Proposed Final Report

Recommendation #2: WSDOT and OFM should develop and implement a plan to communicate long-term bridge preservation needs accurately, reliably, and transparently.

WSDOT and OFM should seek input from legislative transportation committee staff to ensure that the plan meets legislative needs. At a minimum, the plan should:

- Ensure that bridge preservation estimates are consistent across WSDOT's public reports and presentations. When the figures vary, provide an explanation for the differences.
- Include the assumptions, decisions, and timeframes that underlie the estimates, and identify which preservation activities are not included in the estimates. Be explicit in the limitations or uncertainties behind the estimates.
- Explain how the investment plans proposed in budget requests will affect future bridge conditions.

Legislation Required:	None
Fiscal Impact:	None

Implementation Date:	September 2020
Agency Response:	To be included with Proposed Final Report

Agency Response

Agency response(s) will be included in the proposed final report, planned for December 2019.

Current Recommendation Status

JLARC staff follow up with agencies on Legislative Auditor recommendations for 4 years. Responses from agencies on the latest status of implementing recommendations for this report will be available in 2021.

MORE ABOUT THIS REVIEW
Audit Authority

The Joint Legislative Audit and Review Committee (JLARC) works to make state government operations more efficient and effective. The Committee is comprised of an equal number of House members and Senators, Democrats and Republicans.

JLARC's non-partisan staff auditors, under the direction of the Legislative Auditor, conduct performance audits, program evaluations, sunset reviews, and other analyses assigned by the Legislature and the Committee.

The statutory authority for JLARC, established in Chapter 44.28 RCW, requires the Legislative Auditor to ensure that JLARC studies are conducted in accordance with Generally Accepted Government Auditing Standards, as applicable to the scope of the audit. This study was conducted in accordance with those applicable standards. Those standards require auditors to plan and perform audits to obtain sufficient, appropriate evidence to provide a reasonable basis for findings and conclusions based on the audit objectives. The evidence obtained for this JLARC report provides a reasonable basis for the enclosed findings and conclusions, and any exceptions to the application of audit standards have been explicitly disclosed in the body of this report.

Study Questions

Proposed Study Questions: Follow-Up on WSDOT Bridge Preservation Cost Estimating

State of Washington Joint Legislative Audit and Review Committee — March 2019

JLARC directed a study of how WSDOT has responded to recommendations to improve cost estimates of bridge preservation needs

In the 2013 transportation budget (ESSB 5024), the Legislature directed the Joint Legislative Audit and Review Committee (JLARC) to review the methods used by the Washington State Department of Transportation (WSDOT) to develop long-term estimates for highway preservation needs.

In its 2015 report, JLARC found that while WSDOT followed best practices for developing pavement estimates, it did not do so for bridge estimates. For example, WSDOT did not analyze life-cycle costs, project the rate at which bridges deteriorate, or measure the effectiveness of bridge preservation projects.

The Legislative Auditor recommended that WSDOT:

- Improve long-term estimates of bridge preservation needs.
- Work with the Office of Financial Management (OFM) to develop a process that would improve stakeholders' confidence in its estimates.

WSDOT and OFM concurred with these recommendations.

In July 2018, JLARC directed its staff to conduct a follow-up study to evaluate improvement efforts.

"Preservation" is defined as actions that prevent, delay, or reduce deterioration and extend service life

Preservation includes painting, seismic retrofits, sealing expansion joints, and deck repair. The 2017-19 state transportation budget appropriated $222 million for bridge preservation.

Study Questions

1. What actions has WSDOT taken to address the recommendations in JLARC's 2015 report?
2. Since 2015, are there new best practices for developing long-term estimates for bridge preservation needs? If so, has WSDOT used them as it responds to the recommendations?
3. What actions have WSDOT and OFM taken to improve stakeholders' confidence in preservation estimates?

Study Timeframe

Briefing Report: September 2019

Study Team

Team Lead:	Aaron Cavin	(360) 786-5194	aaron.cavin@leg.wa.gov
Research Analyst:	Eric Whitaker	(360) 786-5618	eric.whitaker@leg.wa.gov
Project Coordinator:	Eric Thomas	(360) 786-5182	eric.thomas@leg.wa.gov
Legislative Auditor:	Keenan Konopaski	(360) 786-5187	keenan.konopaski@leg.wa.gov

Joint Legislative Audit & Review Committee, 106 11th Ave SW, Olympia, WA 98501
(360) 786-5171 • (360) 786-5180 (fax) • JLARC@leg.wa.gov • www.jlarc.leg.wa.gov
Keenan Konopaski, Washington State Legislative Auditor

Methodology

The methodology JLARC staff use when conducting analyses is tailored to the scope of each study, but generally includes the following:

- **Interviews** with stakeholders, agency representatives, and other relevant organizations or individuals.
- **Site visits** to entities that are under review.
- **Document reviews**, including applicable laws and regulations, agency policies and procedures pertaining to study objectives, and published reports, audits or studies on relevant topics.
- **Data analysis**, which may include data collected by agencies and/or data compiled by JLARC staff. Data collection sometimes involves surveys or focus groups.
- **Consultation with experts** when warranted. JLARC staff consult with technical experts when necessary to plan our work, to obtain specialized analysis from experts in the field, and to verify results.

The methods used in this study were conducted in accordance with Generally Accepted Government Auditing Standards.

More details about specific methods related to individual study objectives are described in the body of the report under the report details tab or in technical appendices.

CONTACT
JLARC Authors

Aaron Cavin, **Research Analyst,** 360-786-5194

Eric Whitaker, **Research Analyst,** 360-786-51

Eric Thomas, Audit Coordinator

Keenan Konopaski, Legislative Auditor

JLARC Members

Senators

Bob Hasegawa
Mark Mullet, Chair
Rebecca Saldaña
Shelly Short
Dean Takko
Keith Wagoner
Lynda Wilson, Secretary

Representatives

Jake Fey
Noel Frame
Larry Hoff
Christine Kilduff
Vicki Kraft
Ed Orcutt, Vice Chair
Gerry Pollet, Assistant Secretary
Drew Stokesbary

Washington Joint Legislative Audit and Review Committee

106 11th Avenue SW, Suite 2500
PO Box 40910
Olympia, WA 98504-0910

Phone: 360-786-5171
Fax: 360-786-5180
Email: JLARC@leg.wa.gov