

Preservation Scenario Assumptions

Capital Program Development and Management

This document describes the assumptions across four preservation funding scenario maps. The overall preservation funding amounts are for all unfunded preservation needs. The scenarios are based on the next ten years. They are:

1. Current budget
2. Taking care of what we own: Current budget +\$10 B
3. Moderate Increase: Current budget + \$6.325 B
4. Minor Increase: Current budget + \$1.3 B

This document provides the high-level assumptions behind the performance impact communicated. In the next ten-years, those roads and bridges highlighted will experience some type of failure like rough roads, reduction in speed limits, load posted or load restricted bridges, closed bridges, and failed roadways.

More detail on assumptions for the current budget and taking care of what we own scenarios are including the Executive Summary, Pavement (P1) and Bridge (P2) sections of the 2021-23 Capital Improvement and Preservation Program (CIPP, September 2020).

More detail is available by request through the Statewide Transportation Asset Manager, Todd Lamphere. However, these scenarios and underlying data is vast and complex, and the more specific questions require time and resources to meaningfully answer or may even be outside the realm of feasibility to meaningfully answer.

Scenario – Taking care of what we own

WSDOT is continuously looking at ways to lower the amount needed to sustainably preserve assets. The lowest theoretical amount is called Lowest Life Cycle Cost (LLCC). This is the basis for WSDOT's agency budget request to take care of what we own.

The Capital Program Development and Management (CPDM) Division is the technical lead on this effort.

WSDOT has communicated this amount over the recent years primarily through the annual State of Transportation address. It now incorporates this in the Capital Improvement and Preservation Program (CIPP) book as it was the basis for the 2021-23 agency budget submittal for an additional \$10 B dollars over the next ten years. The table of needed investments by mode is on the next page.

<u>Project Title</u>	<u>Total</u>
IT	60,000,000
Facilities	310,000,000
TEF	311,000,000
Aviation	9,000,000
Highways - I-5/Columbia River Bridge	1,075,000,000
Highways - US 2 Trestle	830,000,000
Highways - Pavement	1,440,000,000
Highways - Bridge	1,780,000,000
Highways - Other Assets	860,000,000
Public Transportation	340,000,000
WSF - Terminals	695,000,000
WSF - Vessels	1,980,000,000
Rail	310,000,000
	10,000,000,000

Scenario – Current Budget

The CIPP book describes the priority approach and impacts to the pavement and bridge networks in more detail. In summary, there is enough funding to take care of T-1 freight routes, which is primarily our Interstate system with a few other very high-volume highways. This is because the amount of Preservation dollars a highway needs is very strongly correlated with the level of traffic and freight it carries.

Using data sets estimating site-specific preservation needs over the next ten-years, WSDOT is able to confirm what statewide investment strategies it can take within current ten-year budgets at a practicable approach. Holding the system together at funding amounts less than lowest life cycle costs is not possible over the next ten years. WSDOT was able to do so remarkably successfully over the last ten years, but has built up a backlog of needs, spent more on maintenance activities to reactively repair assets, and has seen very minor (relative to the kinds anticipated over the next ten years) operational impacts, such as joint failures on I-5, pavement failure on State Route 14, and the failure of the Spiketon Creek bridge.

Here are the planning level funding percentages needed by [freight classification](#) over the next ten years, as a percent of lowest life cycle cost funding in current year dollars over the next ten years:

FGTS Class	Lane Miles (% of system)	% of Truck Miles Travelled	Pavement (% LLCC Need)	Bridges (% LLCC Need)
T-1	28%	64%	57%	48%
T-2	22%	19%	20%	18%
T-3	45%	17%	22%	30%
T-4	4%	<1 %	1%	3%
T-5	< 1%	<1 %	< 1%	< 1%

Not included in the percentages are the Columbia River Bridge (\$1.08 billion Washington Share without Toll funds) and US2 Trestle bridge (\$830 million without Toll funds) replacement projects. These are included in the \$10 billion. They are not included in our current budget, and therefore are not included in this scenario.

This table can quickly be used to understand the levels required to preserve the pavements and bridges by freight classification for state highways. Since the overall preservation funding is about 50% of the need, T-1 routes can be preserved.

Scenario – Moderate Increase (Current Budget + \$6.325 B)

This scenario also does not include the Columbia River Bridge and US2 Trestle Bridge. It takes the remaining request and then evenly distributes the remaining funds based on the percentage split of their full needs requested. So, the remaining budget is \$10 B - \$1.075 (I-5 Columbia River Bridge) - \$0.83 (US 2 Trestle) = \$8.095 B. Since it is evenly distributed across programs, and pavement and bridge are at approximately 50% of the need, we can assume that the overall budget will be 50% + 50% * % of Full Request.

An additional \$6.325 B is approximately 80% of the budget request ($\$6.325 / \8.095). It represents meeting 90% ($50\% + (50\% \times 80\%)$) of the need when considered on top of the current budget. As such, T-1 and T-2 routes can be addressed, but only a portion of T-3 and lower routes can be addressed. In the map, the T-3 needs were left shown because it is unclear which particular T-3 needs may be addressed, and as Preservation funding levels get further from lowest life cycle cost, the amount spent to restore deteriorated assets increases, and this is likely to occur as well.

In summary, T-3 routes will have widespread issues even if a portion of them are able to be preserved.

Scenario – Minor Increase (Current Budget + \$1.3 B)

The minor increase represents approximately 16% ($\$1.3 \text{ B} / \8.095 B) of the budget request. It represents meeting 58% ($50\% + (50\% \times 16\%)$) of the preservation need when considered on top of the current budget. In this scenario, all T-1 bridge needs will be addressed.

NOTE: The “current budget map” excluded the unfunded T-1 bridge work because there was no clarity on which specific T-1 bridge work would not be funded. This work will provide significant benefit, but you will not see a shift in the number of dots on the map.