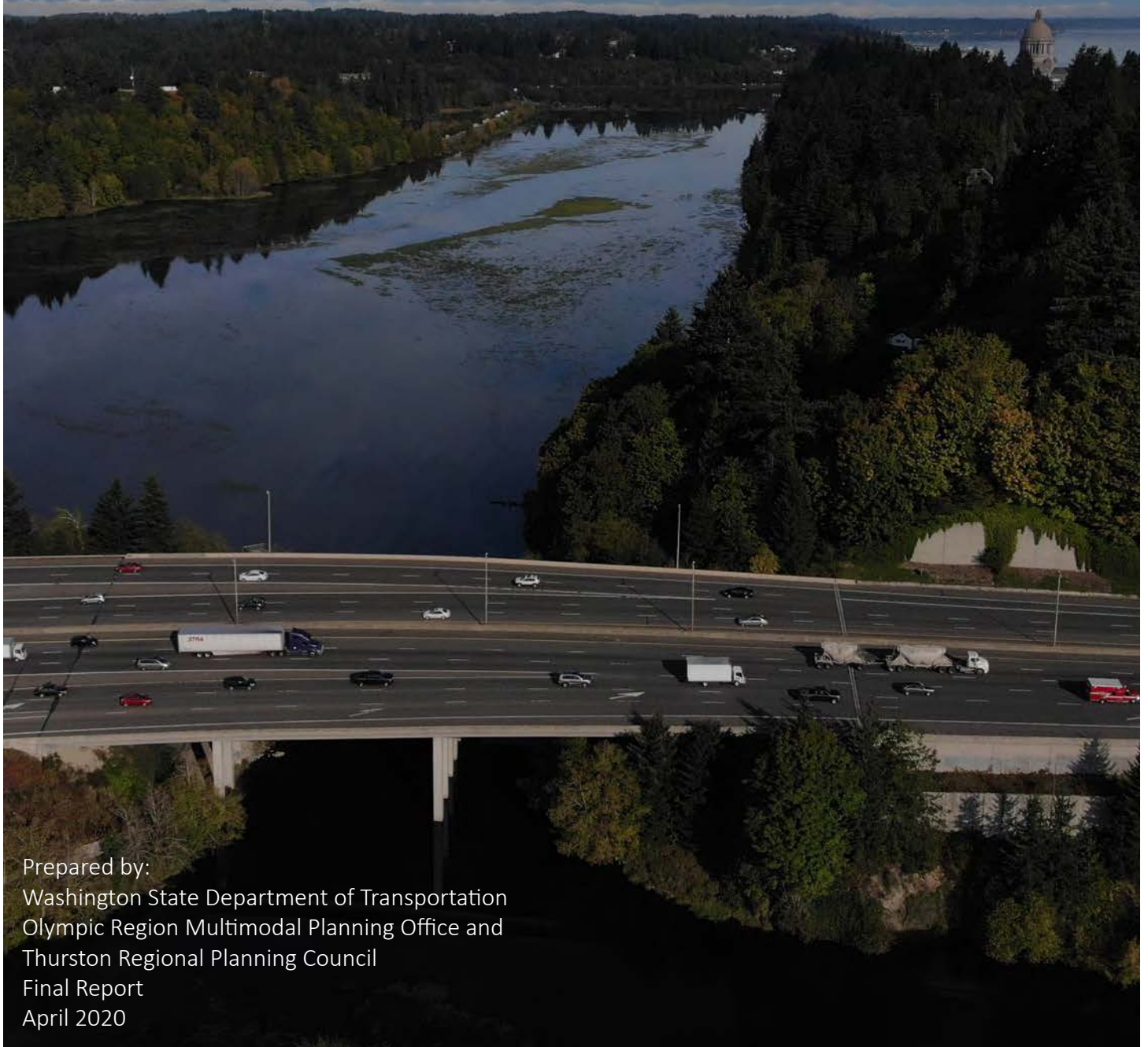


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# INTERSTATE 5: TUMWATER TO MOUNTS ROAD MID- AND LONG- RANGE STRATEGIES

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Prepared by:  
Washington State Department of Transportation  
Olympic Region Multimodal Planning Office and  
Thurston Regional Planning Council  
Final Report  
April 2020

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**Interstate 5 Tumwater to Mounts Road  
Mid- and Long-Range Strategies Planning Study**

April 2020

Study limits milepost 99 to milepost 116

Approved by:

John Wynands

John Wynands  
WSDOT Olympic Region Administrator

April 27, 2020

Date

Concurrence by:

Electronic Signature - Kerri Woehler

Kerri Woelher  
Director, Multimodal Planning

04.27.20

Date

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## Executive Summary

In 2018, the Washington State Legislature funded a planning study of Interstate 5 between SR 121 in Tumwater (exit 99) and Mounts Road near DuPont (exit 116) to develop mid- and long-term strategies for improving the region's transportation system performance. Collaborating with local partners, WSDOT and Thurston Regional Planning Council (TRPC) developed strategies to meet study goals and support local agency plans while focusing on the legislative requirements<sup>1</sup>:

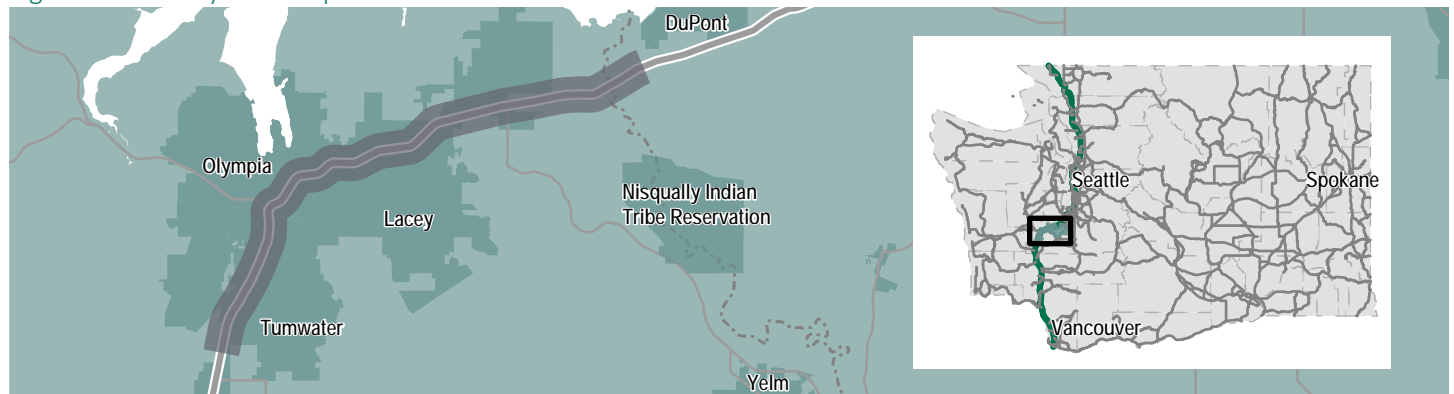
- *Identifying strategies for regional congestion management,*
- *Identifying potential improvements for the US 101/I-5 Interchange,*
- *Identifying a strategic plan for the Nisqually River bridges, considering ecosystem benefits.*

The study area includes the cities of Tumwater, Olympia, Lacey, parts of unincorporated Thurston and Pierce Counties, and the Billy Frank Jr. Nisqually National Wildlife Refuge. The study area is near the Nisqually Indian Tribe Reservation and Joint Base Lewis-McChord (JBLM). In addition to I-5, study partners considered facilities for all transportation modes present in these communities in their analysis including transit, vehicles on local roads, walking, and bicycling.

This segment of I-5 is important regionally and nationally for a number of reasons:

- It is the primary north-south route along the west coast, connecting regional and global economic centers.
- It serves as the primary commute route in the study area and the south Puget Sound region generally.
- It provides access to Joint Base Lewis-McChord and is important for base operations.
- It is one of three roads, and the only high-capacity and high-speed road, connecting Thurston and Pierce counties.

Figure ES-1: Study area map



<sup>1</sup> Engrossed Substitute Senate Bill 6106, page 45 line 37 – page 46 line 6. <http://lawfilesexternal.wa.gov/biennium/2017-18/Pdf/Bills/Session%20Laws/Senate/6106-S.S.L.pdf>



I-5 and US 101 meet just south of the Washington State Capitol. This is one of the places the legislature directed WSDOT to focus on.

- It passes directly through the Nisqually River valley near the river's estuary, an environmentally important place, the traditional home of the Nisqually Indian Tribe, and habitat for threatened species of salmon and steelhead.

This segment of I-5 experiences recurring congestion due to high traffic volumes and weaving at interchanges. These issues occur mostly at three locations during peak commute periods: the US 101 interchange at Exit 104; between the state Capitol and Lacey at Exits 105 and 109; and near the Nisqually River bridges. I-5 also passes through the Nisqually River valley, an environmentally sensitive and important area for Endangered Species Act listed Chinook salmon and steelhead as well as the traditional home of the Nisqually Indian Tribe.

WSDOT's mission is to provide safe, reliable, and cost-effective transportation options to improve communities and economic vitality for people and businesses. WSDOT approach to achieving its mission is called Practical Solutions. This approach uses performance-based, data-driven decision making and early community involvement to guide the development and delivery of transportation investments. Our goal is to identify and solve problems as quickly and inexpensively as possible.



*I-5 passes through the Nisqually River Valley just upstream of where the river meets Puget Sound.*

## A strategic approach for I-5 through the Nisqually River valley

One of the outcomes the legislature required for this study was “...a strategic plan for the Nisqually River Bridges...” As it stands, the study team can only make recommendations based on the information available, which is largely focused on transportation. WSDOT is helping fund a study led by the Nisqually Indian Tribe and U.S. Geological Survey (USGS) of the Nisqually River and its delta near I-5. WSDOT expects results by summer 2020 which will provide data on potential for movement of the river channel and any effects I-5 has on salmon habitat and recovery particularly focusing on the estuary. This will inform evaluation of risks posed to I-5 and regional transportation by the river and potential impacts of I-5, and other factors like climate change, on fish and wildlife habitat. For the meantime, the study team developed a strategic approach for WSDOT and its partners regarding I-5 through the Nisqually Valley:

- Treat all strategy recommendations from this study provisional until the study being conducted by the Nisqually Indian Tribe and USGS is completed to provide a more complete picture of risks for I-5 and impacts on the river and delta.
- If any alteration to I-5 through the Nisqually River valley occurs, incorporate salmon productivity, flood control, and other environmental considerations into the design as contextual needs rather than as mitigation for impacts.
- If replacing I-5 through the Nisqually Valley is funded for environmental reasons, the design should 1) allow for future widening to alleviate the anticipated southbound chokepoint at Mounts Road and 2) address the active transportation gap between Thurston and Pierce counties.
- All partners should continue to develop interim solutions to help address habitat and flood protection concerns.

## WSDOT used collaboration with partners and community engagement to steer the study process

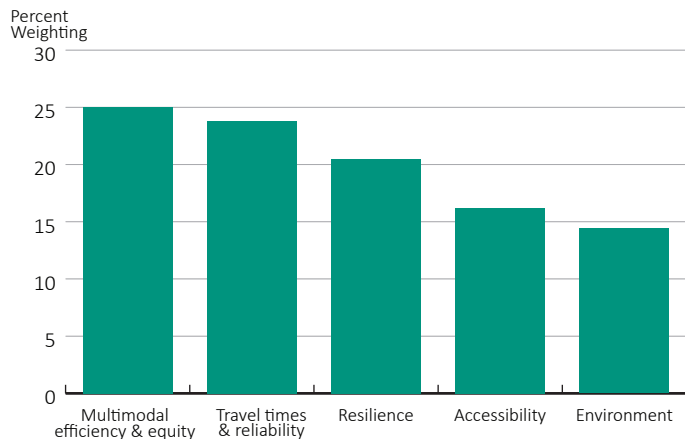
WSDOT and TRPC developed a planning process, discussed in depth in Chapter 3, which included a broad range of perspectives, disciplines, and backgrounds in outreach and decision making. To achieve this, the study team surveyed local communities and collaborated with local government partners to develop goals and strategies. The study team also worked with two advisory groups, one of technical experts and one of executive staff and elected officials from local governments, tribal governments, and state and federal agencies. Both groups met regularly to review progress and advise the study team. Early on in the study WSDOT and TRPC developed overarching goals through community engagement and collaboration with partners that articulated desired outcomes for local partners and aligned with legislative intent for the study:

- **Travel times and reliability** – Improve travel times on I-5 and make them more predictable.
- **Efficiency and equity** – Increase the transportation system’s ability to efficiently and equitably move all people and goods.
- **Accessibility** – Improve access to job sites, commercial services, and industrial areas.
- **Environmental** – Protect and enhance the environment including reducing the transportation-related impact on wildlife habitat in the Nisqually River delta.
- **Resilience** – Improve the transportation system’s ability to operate during disruption and recover from it.

The study team used input from the technical advisory group and results from study surveys to prioritize the study goals. This step allowed the stakeholder advisory groups and public to determine how study goals were weighted in evaluating the overall effectiveness of model scenarios. Advisory group input and public input were given equal weight in calculating the final prioritization.

**Exhibit ES-2: Study goal weighing scores**  
**Overall study advisory groups and public input ranked Efficiency & Equity highest among study goals, followed closely by travel times**

*Study goal area percent weighting calculated from advisory group input and public survey feedback*



**Notes:** Goal area weightings were as follows: Efficiency & Equity 25.0%, Travel Times 23.8%, Resilience 20.5%, Accessibility 16.2%, Environment 14.4%

After developing these goals, WSDOT and TRPC developed strategies with the advisory groups that would support goal achievement, incorporating ideas from previous studies by WSDOT and local partners like Intercity Transit’s Long-Range Plan, and public input. The study team conducted an initial screening of the strategies to ensure they aligned with study goals and applicable state and federal law. The strategies that made it through this initial screen were then grouped into “scenarios” to be modeled or categorized as unable to be modeled. In total, the study team and advisory groups developed ten scenarios that could be tested in models, and 45 strategies made it through the initial screen but were unable to be modeled and had to be evaluated through other means.

The study team then collaborated with study partners to evaluate the effectiveness of each for achieving

**Exhibit ES-3: Modeled strategy scenarios**



study goals. Because there were strategies that could be modeled and those that could not, the study team developed two approaches for evaluating the different ideas investigated through the study.

The study team produced data from the modeled scenarios that could be translated into measures of system performance. The study team developed an initial set of performance measures for each study goal, discussed further in Chapter Six. Both study advisory groups helped develop these measures. For the strategies that could not be modeled, the study team collaborated with the advisory groups to evaluate each one.

**Results from modeling suggest smaller improvements could yield big benefits**

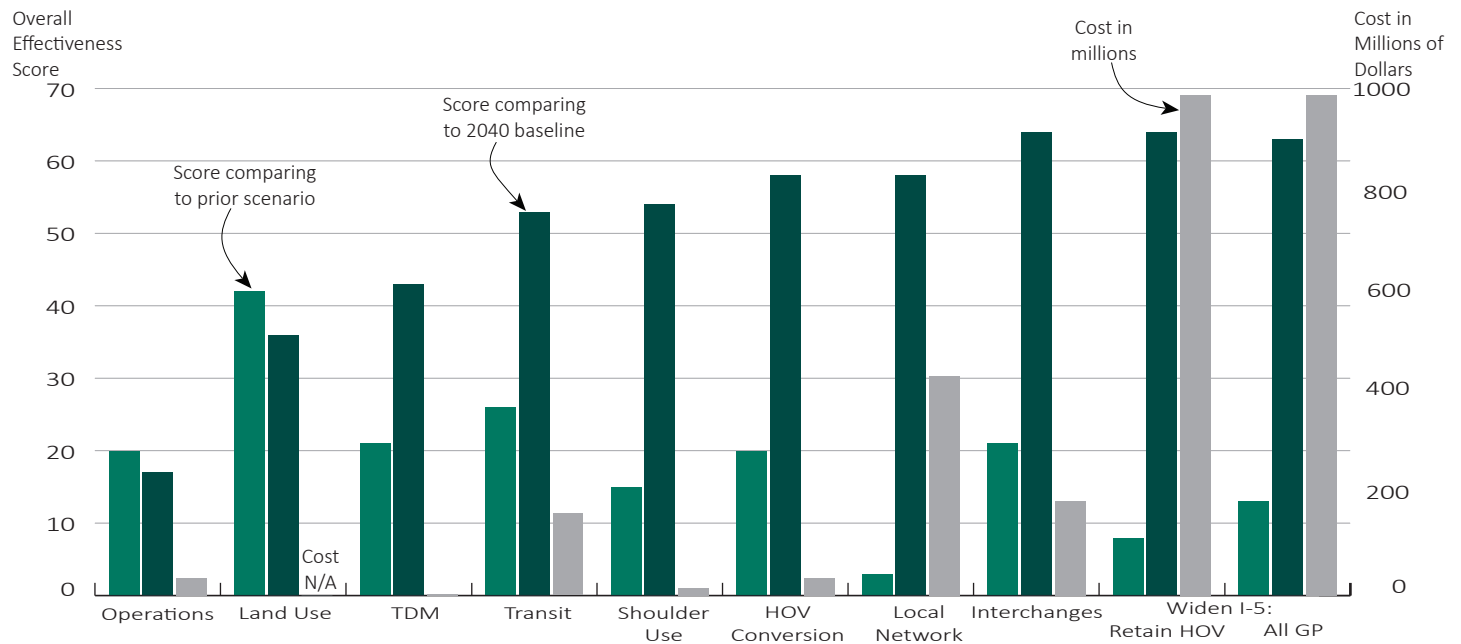
Exhibit ES-4 shows the overall effectiveness scores when comparing a scenario’s performance to the prior scenario and compared to the 2040 baseline scenario, which included all projects currently funded for construction and population and employment growth projections based on observed regional trends, as well as cost estimates. The scenarios are shown in the order they were modeled, from left to right. Each scenario included all of the improvements from previous scenarios, building off of each other, so the order of modeling is important to keep in mind with two exceptions. In *Scenario Nine – Widen I-5: Add General Purpose Lanes, Retain HOV Lanes* and *Scenario Ten – Widen I-5: Add General Purpose Lanes, Convert HOV lanes to General Purpose*, shoulder use was converted to permanent auxiliary lanes and Scenario Ten the HOV lanes were switched to general use.

These were the primary figures that influenced discussions on study recommendations. Both sets of performance scores were important as they gave the study team and advisory groups an idea of the incremental benefit of each scenario (score compared to prior scenario) and the

Exhibit ES-4: Scenario effectiveness scores

## Overall effectiveness scores compared to prior scenario and 2040 baseline show incremental and cumulative benefits of the modeled scenarios

Overall effectiveness scores from modeling results compared to prior modeled scenario and funded base; Planning-level cost estimates in millions of 2019 dollars



cumulative benefit of all the improvements together (score compared to 2040 baseline). Both sets of performance scores show that the scenarios modeled earlier on, which were also generally lower cost, provided the most incremental benefit with the exception of *Scenario Seven – Regional Transportation Plan Local Projects*.

The overall effectiveness scores comparing to 2040 baseline further show that the two widening scenarios, while showing some incremental benefit, do not improve the cumulative benefit after the other smaller improvements had been implemented in the model. Furthermore, the last two scenarios are by far the most expensive of the modeled scenarios costing \$225 million more than all others that have an estimate combined. While planning-level cost estimates were not used to score scenarios, they were presented to advisory groups when discussing study recommendations. WSDOT uses the Practical Solutions approach to solving transportation issues. This means low-cost solutions to transportation performance issues are evaluated and exhausted prior to implementing higher-cost projects.

### Recommendations for improving transportation system performance

The study team used performance data, and other information like planning-level cost estimates when available, as a tool to guide discussions of final recommendations with study advisory groups. Exhibit ES-5 shows the recommended timelines for further planning

and implementation of the various modeled scenarios as well as their planning-level cost estimates if available.

The recommendations reflect the results of those final deliberations between the study team, study partners, and input from the public received through open house events. These are considered provisional recommendations until data from the study being conducted by the Nisqually Indian Tribe and USGS on the Nisqually River channel migration, risks to I-5, and sediment delivery to the estuary have been reviewed.

Most of the recommendations developed through this study will be investigated in further detail in the next phase of planning called a Planning and Environmental Linkages (PEL) study. Others, such as land use, are outside of WSDOT’s authority to implement and will require active engagement with local partners who will be the lead



Strategies involving using existing infrastructure more efficiently such as improving transit service scored well according to study performance measures.



Exhibit ES-5: Recommended timelines for further planning and implementation of modeled scenarios

**Recommendations require transportation system will be maintained in a state of good repair**

As discussed in Chapter Four, WSDOT has maintained the majority of this section of I-5 in fair or better condition. Modeling conducted for this study assumed that WSDOT and its partners will continue to maintain and preserve the transportation system in a state of good repair so that roadway operations and capacity will be maintained. System-wide, Washington State is currently substantially under-investing in state of good repair. WSDOT has regularly communicated this Preservation gap to the Washington State Legislature – in early 2020, WSDOT estimated an annual gap of \$690 million to preserve and maintain WSDOT’s transportation assets. As this continues, there will be widespread failures in the state system, resulting in operational reductions such as speed reductions, weight limitations, etc.

Scenario	Planning-level cost estimates <sup>1</sup>	Recommended strategy timelines		
		Near term (0-5 years)	Mid term (5-10 years)	Long term (10-20 years)
#2 – Land Use	Currently N/A <sup>2</sup>	[Green bar spanning all timelines]		
#4 – Transit	\$145 million	[Green bar spanning all timelines]		
#3 – Transportation Demand Management	\$2 million	[Green bar spanning all timelines]		
#1 – Operations (state and local)	\$35 million	[Green bar spanning all timelines]		
#5 – Part Time Shoulder Use	\$15 million	[Green bar spanning all timelines]		
#8 – Interchange Improvements	\$186 million	[Green bar spanning all timelines]		
#6 – HOV Conversions	\$35 million	[Green bar spanning all timelines]		
#9 – Widen I-5: Add general purpose lanes, retain HOV lanes	\$987 million <sup>3</sup>	[Green bar spanning all timelines]		
#7 – Local Network	\$433 million	Does not appreciable contribute to study performance measures		
#10 – Widen I-5: Add general purpose lanes, convert HOV lanes to general use	\$987 million <sup>3</sup>	Not recommended		

Notes: 1) While planning-level cost estimates were developed and presented for consideration to study advisory groups, it was not used as a factor for scoring the scenarios. Cost estimates are provided in 2019 dollars. 2) WSDOT was not able to calculate the cost of planning and implementing TRPC’s Sustainable Thurston Land Use goals. Furthermore, any costs for implementing this strategy will likely be incurred by local agencies like city and county governments. 3) Cost estimate for Scenario Nine and Ten does not include an elevated causeway through the entire Nisqually River valley but does include replacing I-5 from the Nisqually River north/east to the BNSF train tracks with bridges. In general, there is a high level of uncertainty around costs for changes I-5 through the valley.

agencies. No one strategy is going to address all study goals alone, for example I-5 Travel Times and Reliability. These scenarios were modeled building off of each other and some may need to be implemented in conjunction to achieve the performance results discussed in this study.

**COVID-19 implications for the results of this study currently unknown**

WSDOT, TRPC, and their partners conducted this study between July 2018 and January 2020. Modeling used historic data on regional population, job growth and travel behavior to project future demand. This did not account for potential impacts of major disruptions such as COVID-19. While the near- and long-term effects of the pandemic are unknown, it will likely be different from the assumptions used in this study. *Scenario Three - TDM* is a good example of this, as expanded working from home has drastically reduced demand during the “Stay home, stay healthy” order.

**Next steps**

There are several ways WSDOT and its partners can move the recommendations of this study forward. There is currently no funding identified to fund the implementation of the strategies identified in this study.

- Prepare for federal documentation requirements with “Planning & Environmental Linkages” study.
- Engage partners to help deliver strategies outside WSDOT’s authority to implement.
- Work with the Nisqually Indian Tribe to analyze results of hydrologic study and develop recommendations.
- Communicate results of the study within the context of statewide priorities.