

I-5 Marvin Road to Mounts Road PEL

ALTERNATIVES EVALUATION MEMORANDUM

FINAL

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1 EVALUATION CRITERIA DEVELOPMENT

2 The Planning and Environmental Linkages (PEL) study will document the alternatives development and evaluation process for the section of
3 Interstate 5 between Marvin Road/SR 510 in Lacey (Exit 111) and Mounts Road near DuPont (Exit 116). After completing the PEL, the project is
4 anticipated to advance into the preliminary engineering and National Environmental Policy Act (NEPA) environmental documentation and
5 compliance phase.

6 This technical memorandum documents the Alternatives Screening methodology and results. The evaluation criteria selected to evaluate the
7 proposed alternatives were developed based on the *Purpose and Need Memorandum* for the study. The Alternatives Screening was completed
8 in two phases — Initial Evaluation and Detailed Evaluation. The Initial evaluation included a greater number of alternatives at a higher level,
9 which eliminated unreasonable alternatives that did not meet the project purpose and need. Alternatives with a higher performance advanced
10 to the Detailed Evaluation, which provided a more comprehensive evaluation of each alternative for adoption into the NEPA documentation.

11 This process was informed by federal, state, and local agencies, tribes, and other advisory level stakeholders through regular coordination
12 meetings. Three advisory groups were convened to provide feedback and guidance through the PEL process:

- 13 • Agency Coordination Group (ACG)
- 14 • Technical Advisory Group (TAG)
- 15 • Executive Advisory Group (EAG)

16 Each group reviewed and provided input on the alternatives evaluation process, including review of the evaluation criteria, alternatives
17 considered, initial evaluation, and detailed evaluation. The input received on the alternatives and evaluation criteria through the three advisory
18 groups were incorporated into the alternatives evaluation, as appropriate. A project website also provided the opportunity for the public to
19 provide input on the alternatives identification and evaluation process.

2 INITIAL EVALUATION

The alternatives considered and methodology used for the Initial Evaluation are summarized in this section.

2.1 Initial Alternatives Evaluation

The range of reasonable alternatives evaluated in the Initial Evaluation for the *I-5 Marvin Road to Mounts Road* section were identified based on information in the *Interstate 5: Tumwater to Mounts Road Mid- and Long-Range Strategies Report* (April 2020) and the *Interstate 5 Tumwater to Mounts Road PEL Study* (March 2022). Common elements included with all alternatives are a fully separated shared use path and not precluding the future implementation of a High Capacity Transit (HCT) system. The range of alternatives include:

- Alternative 1—Operations Improvements—Operations, Land Use, Transportation Demand Management, Transit, and Part Time Shoulder Use (PTSU) strategies evaluated separately in the Corridor PEL were combined to form Alternative 1 (Design Options A-C). Three general purpose (GP) lanes in each direction would be provided on I-5.
- Alternative 2—Widen I-5 for managed/High Occupancy Vehicles (HOV) lanes (Design Options A-D)—Adds one HOV lane in each direction between Marvin Road and Mounts Road; one managed/HOV lane and three general purpose lanes in each direction would be provided on I-5. The Managed HOV lane is anticipated to operate 24 hours/day and 7 days/week with a 2+ occupancy designation requiring 2 or more people in each vehicle, similar to the I-5 HOV lane operations north of Mounts Road. The managed/HOV lane provides WSDOT with operational flexibility to change the occupancy designation or allow single occupant vehicle use during weekday evenings or weekends.
- Alternative 3—Widen I-5 for GP lanes (Design Options A-D)—Adds one general purpose lane in each direction between Marvin Road and Mounts Road; four general purpose lanes in each direction would be provided on I-5.
- Alternative 4—Convert I-5 lanes from GP to HOV Lanes—Converts an existing general purpose lane to HOV use in each direction between Marvin Road and Mounts Road (Design Options A-C); one HOV lane and two general purpose lanes in each direction would be provided on I-5.

Design Options A through D for Alternatives 2 and 3 and Design Options A through C for Alternatives 1 and 4 explored different bridge length options through the Nisqually River delta area including the Nisqually River crossing. This provided a range of options to consider for I-5 as well as providing ecosystem and habitat mitigation in the Nisqually River delta area. Table 1 summarizes the key components of each alternative.

1

Table 1. Alternative Descriptions and Components Analyzed in the Initial Evaluation

Alternatives (1-4) and Bridge Options (A-D)														
Feature	Alternative 1 – Operations Improvements			Alternative 2 – Widen I-5 for managed/HOV Lanes				Alternative 3 – Widen I-5 for GP Lanes				Alternative 4 – Convert I-5 Lanes from GP to HOV Lanes		
	A	B	C	A	B	C	D	A	B	C	D	A	B	C
I-5 Widening														
HOV/Lane Management														
Bridge Replacement														
Fill Removal														
Shared-use Path														
New/Modified Nisqually Interchange							*				*			
McAllister Creek Realignment														
I-5 Alignment Shift														

2 Note: Bridge Option lengths: Option A=3000', Option B=6000', Option C=12,000', Option D=14,000' High-Level Long Span

3 * The Nisqually Interchange would be removed with this option.

4 2.2 Initial Evaluation Criteria and Methodology

5 The Initial Evaluation methodology was developed to measure how well each alternative meets the draft *Purpose and Need* for the Project.
 6 Evaluation criteria identified for the Initial Evaluation are based on the draft purpose and need statements for the project and other WSDOT
 7 policies, as summarized in Table 2. The analysis in the Initial Evaluation stage is primarily qualitative with some quantitative data used to develop

- 1 performance ratings. A three-point rating scale was used to evaluate the alternatives, with light green representing low performance, green
- 2 representing moderate performance, and dark green representing high performance.

Table 2. Initial Evaluation Criteria and Methodology

Project Purpose Statements	Evaluation Criteria	Methodology (Qualitative Analysis)	Rating
<p>Enhance mobility and connectivity on I-5 for passenger vehicles, freight, transit, and active modes and provide support for increased person and freight throughput</p>	Accommodates Active Transportation Modes	Does the alternative accommodate active transportation?	<div style="display: flex; justify-content: space-between; align-items: center;"> Lower Performing Medium Performing Higher Performing </div> <p>3 – Includes low stress¹ nonmotorized facilities 2 – Includes moderate stress nonmotorized facilities 1 – Includes high stress nonmotorized facilities</p>
	Accommodates Transit Modes	Does the alternative accommodate transit?	<p>3 – Includes transit facilities entire length of project 2 – Includes transit facilities for portion of project 1 – Includes no transit facilities</p>
	Provides Congestion Relief for General Purpose (GP) Vehicles/Trucks	Does the alternative provide congestion relief for GP vehicles and trucks?	<p>3 – Congestion relief for GP vehicles/trucks (greater than 25%) 2 – Some congestion relief for GP vehicles/trucks (5-25%) 1 – No congestion relief (less than 5%)</p>
	Provides Congestion Relief for Transit/High Occupancy Vehicles (HOV)	Does the alternative provide congestion relief for transit and high occupancy vehicles?	<p>3 – Congestion relief for HOV/transit (greater than 15%) 2 – Some congestion relief for HOV/transit (1-15%) 1 – No congestion relief</p>
	Effects on Adjacent Roadways	Does the alternative improve mobility on arterial roadways?	<p>3 – Improves mobility on arterial streets 2 – Provides some mobility improvements on arterial streets 1 – Does not improve mobility on arterial streets</p>
	Increases Person Throughput	Does the alternative increase person throughput?	<p>3 – Increases person throughput 2 – Moderately increases person throughput 1 – Does not increase person throughput</p>
	Increases Freight Throughput	Does the alternative increase freight throughput?	<p>3 – Increases freight throughput 2 – Moderately increases freight throughput 1 – Does not increase freight throughput</p>
	Complimentary to Local and tribal Planning	Is the alternative complementary to local and tribal planning efforts, including land use plans and transportation plans?	<p>3 – Complements local planning efforts 2 – Partially complements local planning efforts 1 – Does not complement local planning efforts</p>
<p>Improve local and mainline I-5 system resiliency</p>	Reduces the Risk of Infrastructure Failures	Does the alternative reduce the risk of infrastructure failure by addressing erosion and channel migration of the Nisqually River?	<p>3 – Removes risks from erosion/channel migration 2 – Reduces risks from erosion/channel migration 1 – Does not address erosion/channel migration</p>
	Reduces the Risk of Infrastructure Failures due to Seismic Activity	Does the alternative increase resiliency of the Nisqually Bridge by enhancing its ability to withstand seismic activity?	<p>3 – Removes risk from seismic activity 2 – Reduces risk from seismic activity 1 – Does not address risk from seismic activity</p>
<p>Enable environmental restoration and ecosystem resiliency at the I-5 crossing of the Nisqually River Delta area</p>	Enables Environmental Restoration	Does the alternative improve the availability of and access to treaty resources for tribes by enabling the restoration of environmental functions of the Nisqually River Delta for improving fish passage, building, and maintaining habitat, reducing impacts to river hydraulics and geomorphology, etc.?	<p>3 – Restores all environmental systems 2 – Restores some environmental systems 1 – Does not restore environmental systems</p>
	Enables Ecosystem Resiliency	Does the alternative increase resiliency against the impacts of climate change?	<p>3 – Increases resiliency by addressing the impacts associated with extreme river flood events and providing off-channel habitat for fish</p>

¹ Level of traffic stress (LTS) scores roadway facilities from 1 to 4 to rate comfortability of the facility for bicyclists and pedestrians, with lower scores indicative of less stress for active transportation users.

Project Purpose Statements	Evaluation Criteria	Methodology (Qualitative Analysis)	Rating
			2 – Some improvements for resiliency by partially addressing the impacts associated with extreme river flood events and providing off-channel habitat for fish 1 – Does not increase resiliency by not addressing the impacts associated with extreme river flood events and providing off-channel habitat for fish
Support <i>economic vitality</i> through reliable and efficient freight movement and access to major employers	Freight Reliability	Does the alternative improve freight reliability and reduce economic impacts of freight delay?	3 – Improves freight reliability 2 – Partially improves freight reliability 1 – Does not improve freight reliability
	Multimodal Access to Opportunities (jobs, services, and recreation)	Does the alternative improve access to opportunities (jobs, services, and recreation) by driving, transit, biking, and walking?	3 – Improves access to opportunity 2 – Maintains access to opportunity 1 – Does not maintain or improve access to opportunity
	River Navigability	Does the alternative promote equitable access and navigability of the Nisqually River for all waterway users, including the Nisqually Indian Tribe?	3 – Increases navigability 2 – Does not affect navigability 1 – Reduces navigability
Support Equitable Outcomes	Minimizes Business and Residential Impacts or Displacements	Does the alternative minimize the potential business and residential impacts and displacements, especially for environmental justice (EJ) populations?	3 – No impacts and displacements 2 – Minimal impacts and displacements 1 – Moderate impacts and displacements
	Minimizes Negative Impact to Emergency Response	Does the alternative increase response times for emergency responders?	3 – Decreases emergency response times 2 – No impacts to emergency response times 1 – Increases emergency response times
	Minimizes Flood Risk Potential for EJ Populations	Does the alternative address the risk of flooding, particularly for environmental justice populations?	3 – Addresses the impacts associated with extreme river flood events, minimizing impacts to EJ populations 2 – Partially addresses the impacts associated with extreme river flood events, some impacts to EJ populations 1 – Does not address the impacts associated with extreme river flood events; impacts to EJ populations
Relative Cost of Alternatives	Planning-level Cost Comparison	Does the alternative have higher planning-level costs compared to the other alternatives?	3 – Planning-level cost is lower 2 – Planning-level cost is moderate 1 – Planning-level cost is higher

1 **2.2.1 Evaluation Rating Methodology**

2 Each alternative was assigned a performance rating for each evaluation criteria based on the following methodology.

3 **Accommodates Active Transportation**

4 High Performance (3): The alternative provides low-stress bicycle and pedestrian facilities (LTS 1 or LTS 2).

5 Moderate Performance (2): The alternative provides moderate-stress bicycle and pedestrian facilities (LTS 3).

6 Low Performance (1): The alternative provides high-stress bicycle and pedestrian facilities (LTS 4).

7 **Accommodates Transit Modes**

8 High Performance (3): The alternative provides public transportation facilities for the entire length of the project.

9 Moderate Performance (2): The alternative provides public transportation facilities for a portion of the project.

10 Low Performance (1): The alternative does not provide public transportation facilities.

11 **Provide Congestion Relief for General Purpose (GP) vehicles/trucks**

12 High Performance (3): The alternative provides the highest level of congestion relief for GP vehicles/trucks (improves freeway corridor travel
13 times compared to future No Build scenario by more than 25 percent).

14 Moderate Performance (2): The alternative provides some congestion relief for GP vehicles/trucks (improves freeway corridor travel times
15 compared to future No Build scenario by between 5 and 25 percent).

16 Low Performance (1): The alternative minimally or does not provide congestion relief for GP vehicles/trucks (improves freeway corridor travel
17 times compared to future No Build scenario by less than 5 percent).

18 **Provide Congestion Relief for Transit and High Occupancy Vehicles (HOVs)**

19 High Performance (3): The alternative provides the highest level of congestion relief for transit/HOVs (improves max throughput travel time
20 index compared to future No Build scenario by more than 15 percent).

21 Moderate Performance (2): The alternative provides some congestion relief for transit/HOVs (improves max throughput travel time index
22 compared to future No Build scenario by 1 to 15 percent).

23 Low Performance (1): The alternative does not provide congestion relief for transit/HOVs.

1 **Effects on Adjacent Roadways**

2 High Performance (3): The alternative improves mobility on adjacent arterial streets by reducing diversion from I-5.

3 Moderate Performance (2): The alternative provides some mobility improvements on arterial streets by reducing some diversion from I-5;
4 however, some diversion would still occur.

5 Low Performance (1): The alternative does not improve mobility on arterial streets by reducing diversion from I-5; diversion would continue to
6 occur and would reduce mobility.

7 **Increases Person Throughput**

8 High Performance (3): The alternative increases person throughput on I-5.

9 Moderate Performance (2): The alternative moderately increases person throughput on I-5; results in throughput reductions for some users.

10 Low Performance (1): The alternative does not or minimally increases person throughput on I-5.

11 **Increases Freight Throughput**

12 High Performance (3): The alternative increases freight throughput on I-5.

13 Moderate Performance (2): The alternative moderately increases freight throughput on I-5.

14 Low Performance (1): The alternative does not or minimally increases freight throughput on I-5.

15 **Complementary to Local Planning**

16 High Performance (3): The alternative is complementary to both tribal and local jurisdiction planning efforts.

17 Moderate Performance (2): The alternative is complimentary to either tribal or local jurisdiction planning efforts, or the alternative is neither
18 supportive nor contrary to planning efforts.

19 Low Performance (1): The alternative does not compliment or is contrary to tribal or local planning efforts.

20 **Reduces the Risk of Infrastructure Failure**

21 High Performance (3): The alternative addresses channel migration and removes the risk of infrastructure failures due to erosion and flooding.

22 Moderate Performance (2): The alternative partially addresses channel migration and reduces the risk of infrastructure failures due to erosion
23 and flooding.

1 Low Performance (1): The alternative does not address channel migration and does not remove/reduce the risk of infrastructure failures due to
2 erosion and flooding.

3 Reduces the Risk of Infrastructure Failures Due to Seismic Activity

4 High Performance (3): The alternative removes the risk of infrastructure failure due to seismic vulnerability.

5 Moderate Performance (2): The alternative reduces the risk of infrastructure failure due to seismic vulnerability.

6 Low Performance (1): The alternative does not reduce or remove the risk of infrastructure failure to due seismic vulnerability.

7 Enables Environmental Restoration

8 High Performance (3): The alternative enables the restoration of environmental systems, addressing all aspects of environmental conditions,
9 including fish passage, habitat, wetlands, river hydraulics, geomorphology, etc.

10 Moderate Performance (2): The alternative enables the restoration of some environmental systems, addressing some but not all aspects of the
11 environmental conditions.

12 Low Performance (1): The alternative does not enable the restoration of environmental systems.

13 Enables Ecosystem Resiliency

14 High Performance (3): The alternative increases resiliency against climate change by addressing the impacts associated with extreme river flood
15 events and providing off-channel habitat for fish.

16 Moderate Performance (2): The alternative provides some improvements for resiliency against climate change by partially addressing the
17 impacts associated with extreme flood events.

18 Low Performance (1): The alternative does not increase resiliency against climate change.

19 Freight Reliability

20 High Performance (3): The alternative results in the lowest amount of future freight delay in the corridor.

21 Moderate Performance (2): The alternative results in a moderate amount of future freight delay in the corridor.

22 Low Performance (1): The alternative results in the highest amount of freight delay in the corridor.

23

1 **Multimodal Access to Opportunity**

2 High Performance (3): The alternative improves access to jobs, recreation, and services through improved transportation options to and from
3 commercial and recreational areas in Lacey, Nisqually, JBLM, Camp Murray, and nearby developments.

4 Moderate Performance (2): The alternative maintains but does not substantially improve access to jobs, recreation, and services through
5 improved transportation options.

6 Low Performance (1): The alternative does not address or contribute to reduced access to jobs, recreation, and services through improved
7 transportation options.

8 **River Navigability**

9 High Performance (3): The alternative improves the ability of all users to navigate the Nisqually River, including the Nisqually Indian Tribe.

10 Moderate Performance (2): The alternative maintains the ability of all users to navigate the Nisqually River, including the Nisqually Indian Tribe.

11 Low Performance (1): The alternative reduces the ability of all users to navigate the Nisqually River, including the Nisqually Indian Tribe.

12 **Minimizes Business and Residential Impacts or Displacements**

13 High Performance (3): The alternative does not result in disproportionate residential or business property impacts or displacements to
14 environmental justice populations.

15 Moderate Performance (2): The alternative results in minimal disproportionate residential or business property impacts or displacements to
16 environmental justice populations.

17 Low Performance (1): The alternative results in moderate disproportionate residential or business property impacts or displacements to
18 environmental justice populations.

19 **Minimizes Negative Impact to Emergency Response**

20 High Performance (3): The alternative decreases emergency vehicle response times in the project area compared to the future No Build
21 alternative.

22 Moderate Performance (2): The alternative has no impacts to emergency vehicle response times in the project area compared to the future No
23 Build alternative.

24 Low Performance (1): The alternative increases emergency vehicle response times in the project area compared to the future No Build
25 alternative.

1 **Minimizes Flood Risk for EJ Populations**

2 High Performance (3): The alternative addresses the impacts associated with extreme river flood events, minimizing impacts to EJ populations.

3 Moderate Performance (2): The alternative partially addresses the impacts associated with extreme river flood events; some impacts to EJ
4 populations.

5 Low Performance (1): The alternative does not address the impacts associated with extreme river flood events; impacts to EJ populations.

6 **Relative Cost of Alternatives**

7 High Performance (3): Lower range planning-level cost.

8 Moderate Performance (2): Middle range planning-level cost.

9 Low Performance (1): Higher range planning-level cost.

10

2.3 Initial Evaluation Results

FHWA’s guidance² on Planning and Environmental Linkages (PEL) uses transportation planning decisions and analysis to inform NEPA including purpose and need, identification of preliminary alternatives, and elimination of unreasonable alternatives. This section describes the process used for the initial alternatives evaluation and elimination of unreasonable alternatives and options.

The alternatives evaluation provides a direct linkage between the project purpose and need and the recommended elimination of unreasonable alternatives and options. The criteria used to evaluate alternatives were organized in four Purpose and Need categories: **Enhance Mobility and Connectivity; System Resiliency; Environmental Restoration and Ecosystem Resiliency; Economic Vitality**; and two WSDOT policy categories **Equitable Outcomes; and Relative Cost**. An alternative or option is defined as ‘unreasonable’ if it does not meet the project Purpose and Need in one or more of the six categories.

The initial evaluation results, by criterion, alternative, and option, are summarized in Table 3. Initial evaluation results were presented to the ACG, TAG, and EAG at Meeting #3. The combined evaluation results were used to identify which alternatives or options are unreasonable based on not meeting the project purpose and need in one or more of the project purpose categories.

2.3.1 Alternatives Not Advancing to the Detailed Evaluation

Based on the initial evaluation, **Alternative 1—Operations Improvements** and **Alternative 4—Lane Conversion from GP to HOV lane** are unreasonable and not recommended for advancement into the detailed evaluation because they do not meet the project Purpose and Need in the **Enhance Mobility and Connectivity** and **Economic Vitality** categories. Alternative 1 and Alternative 4 perform low in the **Enhance Mobility and Connectivity** category with overall higher traffic congestion for general purpose vehicles, transit, and trucks. Alternatives 1 and 4 also perform low in the **Economic Vitality** category with substantially higher travel times on I-5 for trucks and freight movement.

Specific Purpose and Need and WSDOT Policy categories where Alternative 1 and Alternative 4 perform low include:

- **Alternative 1—Operations Improvements** does not add capacity to I-5 for general purpose vehicles and trucks or HOV/transit vehicles.
 - Alternative 1 has slower travel times and higher vehicle delay and was rated low overall in the **Enhance Mobility and Connectivity** category.
 - Alternative 1 performed low/moderate in the **Economic Vitality** category primarily because of the lack of any congestion reduction or accessibility benefits for general purpose vehicles, transit, or trucks.

² <https://www.fhwa.dot.gov/innovation/everydaycounts/edc-1/PEL.cfm>

- 1 ○ In the **System Resiliency** and **Environmental Restoration and Ecosystem Resiliency** categories, Alternative 1 was rated
- 2 moderate-high; performance differences occur among Options A-D only.
- 3 ○ In the **Equitable Outcomes** category, all alternatives performed the same except for the Emergency Response category with low
- 4 ratings for Alternative 1.
- 5 ○ In the **Relative Cost** category, Alternative 1 was rated low to high depending on the bridge Option A-D.
- 6 ● **Alternative 4—Lane Conversion from GP to HOV lane** provides added capacity for HOV/transit but reduces capacity for GP/trucks
- 7 resulting in slower travel times and higher vehicle delay.
- 8 ○ Alternative 4 has slower travel times and higher vehicle delay and was rated low-moderate overall in the **Enhance Mobility and**
- 9 **Connectivity** category.
- 10 ○ Alternative 4 was rated low/moderate in the **Economic Vitality** category because the general-purpose lane conversion to an
- 11 HOV lane would increase travel time for freight and general purpose vehicles.
- 12 ○ In the **System Resiliency** and **Environmental Restoration and Ecosystem Resiliency** categories, Alternative 4 rated high—
- 13 performance differences occur among Options A-D only.
- 14 ○ In the **Equitable Outcomes** category, all alternatives were rated the same except for the Emergency Response criteria with
- 15 low/moderate performance for Alternative 4. Emergency response times would increase due to increased congestion.
- 16 ○ In the **Relative Cost** category, all alternatives performed the same with primary cost differences occurring among Options A-D.

17 **Alternative 2—Widening for managed/HOV Lanes** and **Alternative 3—Widening for GP Lanes** are recommended for advancement to the Detailed
18 Evaluation. Both alternatives add one lane in each direction from Marvin Road to Mounts Road and performed higher overall compared to
19 **Alternative 1—Operations Improvements** and **Alternative 4—Lane Conversion from GP to HOV lane**.

- 20 ● In the **Enhance Mobility and Connectivity** category, Alternatives 2 and 3 improve travel times and reduce congestion for general
- 21 purpose vehicles/trucks and HOV/transit vehicles.
- 22 ● In the **Economic Vitality** category - Alternatives 2 and 3 perform high in the Freight Reliability and Access to Opportunity criteria.
- 23 ● In the **System Resiliency** and **Environmental Restoration and Ecosystem Resiliency** categories, Alternative 2 and Alternative 3 are rated
- 24 moderate to high and rating differences occur among Options A-D only.
- 25 ● In the **Equitable Outcomes** category, Alternatives 2 and 3 had high ratings in the Emergency Response criteria due to decreased
- 26 emergency response times from reduced congestion.
- 27 ● In the **Relative Cost** category, all alternatives were rated the same with primary cost differences occurring among Options A-D.

28

2.3.2 Bridge Options Not Advancing to the Detailed Evaluation

Based on the Initial Evaluation results, **Option D— High-level long span bridge** is unreasonable and would not advance to the Detailed Evaluation because of low ratings in 2 of the 4 Purpose and Need categories: **Enhance Mobility and Connectivity; and Economic Vitality**; and the 2 WSDOT policy categories: **Equitable Outcomes; and Relative Cost**. For Option D, ramp connections at the Nisqually interchange are not feasible due to the height of the high-level long span bridge. The long, steep interchange ramps would not be practicable to construct. Option D also has the highest estimated cost, more than double the estimated cost of the next highest Option C.

Purpose and Need and WSDOT Policy categories where Option D rates low include:

- In the **Enhance Mobility and Connectivity** category, Option D performs low for the Improves Mobility on Arterial Streets and Complements Local Planning criteria. Option D would result in closure of the Nisqually interchange due to the height of the high-level long span bridge. This would result in longer travel times to access businesses, residences, and the Billy Frank Jr. Nisqually National Wildlife Refuge via the Marvin Road or Mounts Road interchange and local arterial streets.
- In the **Economic Vitality** category, Option D was rated low for the Improves Access to Opportunities (jobs, recreation, services) criteria due to the closure of the Nisqually interchange.
- In the **Equitable Outcomes** category, Option D had a low rating for the Emergency Response criteria Option D would increase emergency response times due to increased travel times from closure of the Nisqually interchange.
- In the **Relative Cost** category, Option D was rated low due to the highest estimated project cost.

Based on the Initial Evaluation, **Options A, B, and C** are recommended for advancement to the Detailed Evaluation. These options include fill removal and reconstruction of I-5 on a bridge structure in the Nisqually River delta area ranging from 3,000 to 12,000 lineal feet. These options performed higher overall in the Initial Evaluation than **Option D— High-level long span bridge** (14,000 lineal feet), which is unreasonable and not recommended for advancement to the Detailed Evaluation.

3 DETAILED EVALUATION

The alternatives considered and methodology used for the Detailed Evaluation are summarized in this section.

3.1 Detailed Alternatives Evaluation

The highest performing alternatives from the Initial Evaluation phase were advanced into the Detailed Evaluation. These alternatives include:

- Alternative 2—Widen I-5 for managed/HOV lanes (Design Options A-C)—Adds one managed/HOV lane in each direction from Marvin Road to Mounts Road. The managed/HOV lane is anticipated to operate 24 hours/day and 7 days/week with a 2+ occupancy designation requiring 2 or more people in each vehicle, similar to the I-5 HOV lane operations north of Mounts Road. The managed/HOV lane provides WSDOT with operational flexibility to change the occupancy designation or allow single occupant vehicles use during weekday evenings or weekends.
- Alternative 3—Widen I-5 for GP lanes (Design Options A-C)—Adds one general purpose lane in each direction from Marvin Road to Mounts Road

Design Options A through C for Alternatives 2 and 3 will explore different options to widen I-5 through the Nisqually delta area including the Nisqually River crossing. This will provide a range of options to consider for adding capacity to I-5 and providing ecosystem and habitat mitigation in the Nisqually River delta area. Table 4 summarizes the key components of each alternative.

1

Table 4. Alternative Descriptions and Components Analyzed in the Detailed Evaluation

Feature	Alternatives (2 and 3) and Bridge Options (A-C)					
	Alternative 2 – Widen I-5 for managed/HOV Lanes			Alternative 3 – Widen I-5 for GP Lanes		
	A	B	C	A	B	C
I-5 Widening						
HOV/Lane Management						
Bridge Replacement						
Fill Removal						
Shared-use Path						
Modified Nisqually Interchange						
McAllister Creek Realignment						

2 *Note: Bridge Option lengths: Option A=3000', Option B=6000', Option C=12,000'*

3 **3.2 Detailed Evaluation Criteria and Methodology**

4 The Detailed Evaluation criteria is consistent with the Initial Evaluation criteria but includes one additional measure of “Consistency with WSDOT
5 Policies.” The Detailed Evaluation methodology also evaluates each alternative on a five-point scale compared to a three-point scale used in the
6 Initial Evaluation. This provides additional differentiation on each alternative’s performance. Evaluation criteria identified for the Detailed
7 Evaluation were based on the purpose and need statements for the project, as summarized in Table 5. The data used in the analysis for the
8 Detailed Evaluation is both qualitative and quantitative.

9

Table 5. Detailed Evaluation Criteria and Methodology

Project Purpose Statements	Evaluation Criteria	Methodology (Qualitative Analysis)	Rating <div style="display: flex; justify-content: space-between; width: 100px;"> Lower Performing Higher Performing </div>
<p>Enhance mobility and connectivity on I-5 for passenger vehicles, freight, transit, and active modes and provide support for increased person and freight throughput</p>	Accommodates Active Transportation Modes	Does the alternative accommodate active transportation?	5 – Includes LTS 1 nonmotorized facilities 4 – Includes LTS 2 nonmotorized facilities 3 – Includes LTS 3 nonmotorized facilities 2 – Includes LTS 4 nonmotorized facilities 1 – Does not include nonmotorized facilities
	Accommodates Transit Modes	Does the alternative accommodate transit?	5 – Includes dedicated transit-only facilities the entire length of project 4 – Includes transit facilities (not dedicated) the entire length of project 3 – Includes dedicated transit-only facilities for portion of the project 2 – Includes transit facilities (not dedicated) for portion of the project 1 – Includes no transit facilities
	Provides Congestion Relief for General Purpose (GP) Vehicles/Trucks	Does the alternative provide congestion relief for GP vehicles and trucks?	5 – High congestion relief for GP vehicles/freight (greater than 20%) 4 – Moderate congestion relief for GP vehicles/freight (15-20%) 3 – Some congestion relief for GP vehicles/freight (10-15%) 2 – Low congestion relief for GP vehicles/freight (5-10%) 1 – Minimal or no congestion relief for GP vehicles/freight (less than 5%)
	Provides Congestion Relief for Transit/High Occupancy Vehicles (HOV)	Does the alternative provide congestion relief for transit and high occupancy vehicles?	5 – High congestion relief for Transit/HOV (greater than 20%) 4 – Moderate congestion relief for Transit/HOV (15-20%) 3 – Some congestion relief for Transit/HOV (10-15%) 2 – Low congestion relief for Transit/HOV (5-10%) 1 – Minimal or no congestion relief for Transit/HOV (less than 5%)
	Effects on Adjacent Roadways	Does the alternative improve mobility on arterial roadways?	5 – High improvement in mobility on arterial streets 4 – Moderate improvement in mobility on arterial streets 3 – Some improvement in mobility on arterial streets 2 – Low improvement in mobility on arterial streets 1 – Does not improve mobility on arterial streets
	Increases Person and Freight Throughput	Does the alternative increase person and freight throughput?	5 – High increase in person and freight throughput for GP vehicles (greater than 15%) 4 – Moderate increase in person and freight throughput for GP vehicles (10-15%) 3 – Some increase in person and freight throughput for GP vehicles (5-10%) 2 – Low increase in person and freight throughput for GP vehicles (0-5%) 1 – Minimal or no increase in person and freight throughput for GP vehicles
	Complimentary to Local and tribal Planning	Is the alternative complementary to local and tribal planning efforts, including land use plans and transportation plans?	5 – Complements local planning efforts 3 – Partially complements local planning efforts 1 – Does not complement local planning efforts
	Consistency with WSDOT Policies	Is the alternative consistent with WSDOT Strategic Plan Vision for a Safe, Sustainable, and Integrated Multimodal Transportation System?	5 – Consistent with WSDOT Policy 3 – Partially Consistent with WSDOT Policy 1 – Not Consistent with WSDOT Policy
<p>Improve local and mainline I-5 system resiliency</p>	Reduces the Risk of Infrastructure Failures	Does the alternative reduce the risk of infrastructure failure by addressing erosion and channel migration of the Nisqually River?	5 – Removes risks from erosion/channel migration in the entire river delta area 4 – Removes risks from erosion/channel migration in most of river delta area 3 – Removes risks from erosion/channel migration in some of the river delta area

Project Purpose Statements	Evaluation Criteria	Methodology (Qualitative Analysis)	Rating
			2 – Removes risks from erosion/channel migration in a small portion of the river delta area 1 – Does not address erosion/channel migration
	Reduces the Risk of Infrastructure Failures due to Seismic Activity	Does the alternative increase resiliency of the Nisqually Bridge by enhancing its ability to withstand seismic activity?	5 – Removes risk from seismic activity 3 – Reduces risk from seismic activity 1 – Does not address risk from seismic activity
Enable <i>environmental restoration and ecosystem resiliency</i> at the I-5 crossing of the Nisqually River Delta area	Enables Environmental Restoration	Does the alternative improve the availability of and access to treaty resources for tribes by enabling the restoration of environmental systems through fish passage improvements, building, and maintaining habitat, reducing impacts to river hydraulics and geomorphology, etc.?	5 – Enables restoration of all environmental systems in the entire river delta area 4 – Enables restoration of environmental systems in most of the Nisqually River Delta area 3 – Enables restoration of environmental systems in some of the Nisqually River Delta area 2 – Enables restoration of environmental systems in a small portion of river delta area 1 – Does not enable restoration of environmental systems
	Enables Ecosystem Resiliency	Does the alternative increase resiliency against the impacts of climate change?	5 – Addresses impacts associated with flood events in the entire river delta area 4 – Addresses impacts associated with flood events in most overflow channels in the Nisqually River Delta area 3 – Addresses impacts associated with flood events in some overflow channels in the Nisqually River Delta area 2 – Partially addresses impacts associated with flood events in some overflow channels in the Nisqually River Delta area 1 – Does not address the impacts associated with flood events in some overflow channels in the Nisqually River Delta area
Support <i>economic vitality</i> through reliable and efficient freight movement and access to major employers	Freight Reliability	Does the alternative improve freight reliability and reduce economic impacts of freight delay? (Considers general purpose traffic congestion, freight throughput, and I-5 access modifications)	5 – Provides high improvement in freight reliability 4 – Provides moderate improvement in freight reliability 3 – Provides some improvement in freight reliability 2 – Provides minimal improvement in freight reliability 1 – Does not improve freight reliability
	Multimodal Access to Opportunities (jobs, services, and recreation)	Does the alternative improve access to opportunities (jobs, services, and recreation) by driving, transit, biking, and walking?	5 – Improves access to opportunity 3 – Maintains access to opportunity 1 – Does not maintain or improve access to opportunity
	River Navigability	Does the alternative promote equitable access and navigability of the Nisqually River for all users, including the Nisqually Indian Tribe?	5 – Increases navigability for all users 3 – Does not affect navigability 1 – Reduces navigability
Support Equitable Outcomes	Minimizes Business and Residential Impacts or Displacements	Does the alternative minimize the potential business and residential impacts and displacements, especially for environmental justice (EJ) populations?	5 – No impacts and displacements 4 – Minimal impacts and displacements (up to 3) 3 – Some impacts and displacements (up to 8) 2 – Moderate impacts and displacements (up to 10) 1 – High impacts and displacements (more than 10)
	Minimizes Negative Impact to Emergency Response	Does the alternative increase response times for emergency responders?	5 – Decreases emergency response times 4 – No impacts to emergency response times 3 – Minimal increase to emergency response times 2 – Moderate increase to emergency response times

Project Purpose Statements	Evaluation Criteria	Methodology (Qualitative Analysis)	Rating
			1 – High increases emergency response times
	Minimizes Flood Risk Potential for EJ Populations	Does the alternative address the risk of flooding, particularly for environmental justice populations?	5 – Addresses the impacts associated with extreme river flood events and sea level rise in the entire river delta area, no impacts to EJ populations 4 – Addresses the impacts associated with extreme river flood events and sea level rise in most of river delta area, no impacts to EJ populations 3 – Partially addresses the impacts associated with extreme river flood events and sea level rise in entire river delta area, some impacts to EJ populations 2 – Partially addresses the impacts associated with extreme river flood events and sea level rise in some of river delta area, some impacts to EJ populations 1 – Does not address the impacts associated with extreme river flood events and sea level rise; impacts to EJ populations
Relative Cost of Alternatives	Planning-level Cost Comparison	Does the alternative have higher planning-level costs compared to the other alternatives?	5 – Lowest planning-level cost 4 – Lower planning-level cost 3 – Moderate planning-level cost 2 – Higher planning-level cost 1 – Highest planning level cost

1 **3.2.1 Evaluation Rating Methodology**

2 Each alternative was assigned a performance rating for each evaluation criteria based on the following methodology.

3 **Accommodates Active Transportation**

4 High Performance (5): The alternative provides low-stress bicycle and pedestrian facilities (LTS 1).

5 Higher Performance (4): The alternative provides lower stress bicycle and pedestrian facilities (LTS 2).

6 Moderate Performance (3): The alternative provides moderate-stress bicycle and pedestrian facilities (LTS 3).

7 Lower Performance (2): The alternative provides high-stress bicycle and pedestrian facilities (LTS 4).

8 Low Performance (1): The alternative does not provide bicycle and pedestrian facilities.

9 **Accommodates Transit Modes**

10 High Performance (5): The alternative provides dedicated (transit-only) public transportation facilities for the entire length of the project.

11 Higher Performance (4): The alternative provides public transportation facilities (not dedicated) for the entire length of the project.

12 Moderate Performance (3): The alternative provides dedicated (transit-only) public transportation facilities for a portion of the project.

13 Lower performance (2): The alternative provides public transportation facilities (not dedicated) for a portion of the project.

14 Low Performance (1): The alternative does not provide public transportation facilities.

15 **Provide Congestion Relief for General Purpose (GP) vehicles/trucks**

16 High Performance (5): The alternative provides the highest level of congestion relief for GP vehicles/trucks (improves freeway corridor travel times compared to future No Build scenario by more than 20 percent).

18 Higher Performance (4): The alternative provides a higher level of congestion relief for GP vehicles/trucks (improves freeway corridor travel times compared to future No Build scenario by between 15 and 20 percent).

20 Moderate Performance (3): The alternative provides some congestion relief for GP vehicles/trucks (improves freeway corridor travel times compared to future No Build scenario by between 10 and 15 percent).

22 Lower Performance (2): The alternative provides lower congestion relief for GP vehicles/trucks (improves freeway corridor travel times compared to future No Build scenario by between 5 and 10 percent).

1 Low Performance (1): The alternative minimally or does not provide congestion relief for GP vehicles/trucks (improves freeway corridor travel
2 times compared to future No Build scenario by less than 5 percent).

3 Provide Congestion Relief for Transit and High Occupancy Vehicles (HOVs)

4 High Performance (5): The alternative provides the highest level of congestion relief for transit/HOVs (improves freeway corridor travel times
5 compared to future No Build scenario by more than 20 percent).

6 Higher Performance (4): The alternative provides a higher level of congestion relief for transit/HOVs (improves freeway corridor travel times
7 compared to future No Build scenario by between 15 and 20 percent).

8 Moderate Performance (3): The alternative provides some congestion relief for transit/HOVs (improves freeway corridor travel times compared
9 to future No Build scenario by between 10 and 15 percent).

10 Lower Performance (2): The alternative provides lower congestion relief for transit/HOVs (improves freeway corridor travel times compared to
11 future No Build scenario by between 5 and 10 percent).

12 Low Performance (1): The alternative minimally or does not provide congestion relief for transit/HOVs (improves freeway corridor travel times
13 compared to future No Build scenario by less than 5 percent).

14 Effects on Adjacent Roadways

15 High Performance (5): The alternative provides a high improvement in mobility on adjacent arterial streets by reducing diversion from I-5.

16 Higher Performance (4): The alternative provides a moderate improvement in mobility on adjacent arterial streets by reducing diversion from I-
17 5.

18 Moderate Performance (3): The alternative provides some mobility improvements on arterial streets by reducing some diversion from I-5;
19 however, some diversion would still occur.

20 Lower performance (2): The alternative provides minimal mobility improvements on arterial streets by minimally reducing diversion from I-5.

21 Low Performance (1): The alternative does not improve mobility on arterial streets by reducing diversion from I-5; diversion would continue to
22 occur and would reduce mobility.

23 Increases Person and Freight Throughput

24 High Performance (5): The alternative provides the highest increase in person and freight throughput on I-5 (greater than 15 percent).

25 Higher Performance (4): The alternative provides a moderate increase in person throughput on I-5 (between 10 and 15 percent).

1 Moderate Performance (3): The alternative provides some increase in person and freight throughput on I-5 (between 5 and 10 percent).

2 Lower Performance (2): The alternative provides a low increase in person and freight throughput on I-5 (between 0 and 5 percent).

3 Low Performance (1): The alternative does not increase person and freight throughput on I-5.

4 Complementary to Local Planning

5 High Performance (5): The alternative is complementary to both tribal and local jurisdiction planning efforts.

6 Moderate Performance (3): The alternative is complimentary to either tribal or local jurisdiction planning efforts, or the alternative is neither
7 supportive nor contrary to planning efforts.

8 Low Performance (1): The alternative does not compliment or is contrary to tribal or local planning efforts.

9 Consistency with WSDOT Policies

10 High Performance (5): The alternative meets WSDOT policies on providing a multi-modal transportation system, consistency with Statewide
11 greenhouse gas reduction and climate change goals, and supporting equitable project outcomes especially for environmental justice
12 populations.

13 Moderate Performance (3): The alternative partially meets policies on providing a multi-modal transportation system, consistency with
14 Statewide greenhouse gas reduction and climate change goals, and supporting equitable project outcomes especially for environmental justice
15 populations.

16 Low Performance (1): The alternative does not meet policies on providing a multi-modal transportation system, consistency with Statewide
17 greenhouse gas reduction and climate change goals, and supporting equitable project outcomes especially for environmental justice
18 populations.

19 Reduces the Risk of Infrastructure Failure

20 High Performance (5): The alternative addresses channel migration and removes the risk of infrastructure failures due to erosion and flooding in
21 the entire river delta area.

22 Higher Performance (4): The alternative addresses channel migration and removes the risk of infrastructure failures due to erosion and flooding
23 in most of the river delta area.

1 Moderate Performance (3): The alternative addresses channel migration and removes the risk of infrastructure failures due to erosion and
2 flooding in some of the river delta area.

3 Lower Performance (2): The alternative addresses channel migration and removes the risk of infrastructure failures due to erosion and flooding
4 in a small portion of the river delta area.

5 Low Performance (1): The alternative does not address channel migration and does not remove/reduce the risk of infrastructure failures due to
6 erosion and flooding.

7 Reduces the Risk of Infrastructure Failures Due to Seismic Activity

8 High Performance (5): The alternative removes the risk of infrastructure failure due to seismic vulnerability.

9 Moderate Performance (3): The alternative reduces the risk of infrastructure failure due to seismic vulnerability.

10 Low Performance (1): The alternative does not reduce or remove the risk of infrastructure failure to due seismic vulnerability.

11 Enables Environmental Restoration

12 High Performance (5): The alternative enables the restoration of environmental systems, addressing all aspects of environmental conditions,
13 including fish passage, habitat, wetlands, river hydraulics, geomorphology, etc in the entire river delta area.

14 Higher Performance (4): The alternative enables the restoration of environmental systems, addressing all aspects of environmental conditions,
15 including fish passage, habitat, wetlands, river hydraulics, geomorphology, etc in most of the river delta area.

16 Moderate Performance (3): The alternative enables the restoration of environmental systems, addressing all aspects of environmental
17 conditions, including fish passage, habitat, wetlands, river hydraulics, geomorphology, etc in some of the river delta area.

18 Lower Performance (2): The alternative enables the restoration of environmental systems, addressing all aspects of environmental conditions,
19 including fish passage, habitat, wetlands, river hydraulics, geomorphology, etc in a small portion of the river delta area.

20 Low Performance (1): The alternative does not enable the restoration of environmental systems.

21 Enables Ecosystem Resiliency

22 High Performance (5): The alternative increases resiliency against climate change by addressing the impacts associated with extreme river flood
23 events and providing off-channel habitat for fish in the entire river delta area.

24 Higher Performance (4): The alternative increases resiliency against climate change by addressing the impacts associated with extreme river
25 flood events and providing off-channel habitat for fish in most overflow channels of the river delta area.

1 Moderate Performance (3): The alternative increases resiliency against climate change by addressing the impacts associated with extreme flood
2 events in some overflow channels of the river delta area.

3 Lower Performance (2): The alternative provides some improvements for resiliency against climate change by partially addressing the impacts
4 associated with extreme flood events in some overflow channels of the river delta area.

5 Low Performance (1): The alternative does not increase resiliency against climate change.

6 Freight Reliability

7 High Performance (5): The alternative provides the highest improvement in freight reliability and results in the lowest amount of future freight
8 delay in the corridor.

9 Higher Performance (4): The alternative provides a moderate improvement in freight reliability and results in a lower amount of future freight
10 delay in the corridor.

11 Moderate Performance (3): The alternative provides some improvement in freight reliability and results in a moderate amount of future freight
12 delay in the corridor.

13 Lower Performance (2): The alternative provides minimal improvement in freight reliability and results in a higher amount of future freight delay
14 in the corridor.

15 Low Performance (1): The alternative results in the highest amount of freight delay in the corridor or does not improve freight reliability.

16 Multimodal Access to Opportunity

17 High Performance (5): The alternative improves access to jobs, recreation, and services through improved transportation options to and from
18 commercial and recreational areas in Lacey, Nisqually, Joint Base Lewis McChord (JBLM), Camp Murray, and nearby developments.

19 Moderate Performance (3): The alternative maintains but does not substantially improve access to jobs, recreation, and services through
20 improved transportation options.

21 Low Performance (1): The alternative does not address or contribute to reduced access to jobs, recreation, and services through improved
22 transportation options.

23 River Navigability

24 High Performance (5): The alternative improves the ability of all users to navigate the Nisqually River, including the Nisqually Indian Tribe.

25 Moderate Performance (3): The alternative maintains the ability of all users to navigate the Nisqually River, including the Nisqually Indian Tribe.

1 Low Performance (1): The alternative reduces the ability of all users to navigate the Nisqually River, including the Nisqually Indian Tribe.

2 **Minimizes Business and Residential Impacts or Displacements**

3 High Performance (5): The alternative does not result in residential or business property impacts or displacements to environmental justice
4 populations.

5 Higher Performance (4): The alternative results in minimal (up to 3) residential or business property impacts or displacements to environmental
6 justice populations.

7 Moderate Performance (3): The alternative results in some (up to 8) residential or business property impacts or displacements to environmental
8 justice populations.

9 Lower Performance (2): The alternative results in moderate (up to 10) residential or business property impacts or displacements to
10 environmental justice populations.

11 Low Performance (1): The alternative results in higher (more than 10) residential or business property impacts or displacements to
12 environmental justice populations.

13 **Minimizes Negative Impact to Emergency Response**

14 High Performance (5): The alternative decreases emergency vehicle response times in the project area compared to the future No Build
15 alternative.

16 Higher Performance (4): The alternative has no impact to emergency vehicle response times in the project area compared to the future No Build
17 alternative.

18 Moderate Performance (3): The alternative results in a minimal increase to emergency vehicle response times in the project area compared to
19 the future No Build alternative.

20 Lower Performance (2): The alternative results in a moderate increase to emergency vehicle response times in the project area compared to the
21 future No Build alternative.

22 Low Performance (1): The alternative results in a high increase to emergency vehicle response times in the project area compared to the future
23 No Build alternative.

24

1 **Minimizes Flood Risk for EJ Populations**

2 High Performance (5): The alternative addresses the impacts associated with extreme river flood events and sea level rise, no impacts to EJ
3 populations in the entire river delta area.

4 Higher Performance (4): The alternative addresses the impacts associated with extreme river flood events and sea level rise in most of the river
5 delta area; no impacts to EJ populations.

6 Moderate Performance (3): The alternative partially addresses the impacts associated with extreme river flood events and sea level rise in entire
7 river delta area; some impacts to EJ populations.

8 Lower Performance (2): The alternative partially addresses the impacts associated with extreme river flood events and sea level rise in some of
9 the river delta area; some impacts to EJ populations.

10 Low Performance (1): The alternative does not address the impacts associated with extreme river flood events; impacts to EJ populations.

11 **Relative Cost of Alternatives**

12 High Performance (5): Lowest range planning-level cost.

13 Higher Performance (4): Lower range planning-level cost.

14 Moderate Performance (3): Moderate planning-level cost.

15 Lower Performance (2): Higher planning-level cost.

16 Low Performance (1): Highest planning-level cost.

17

3.3 Detailed Evaluation Results

FHWA’s guidance³ on PEL uses transportation planning decisions and analysis to inform NEPA including purpose and need, identification of preliminary alternatives, and elimination of unreasonable alternatives. This section describes the process used for the detailed alternatives evaluation, the elimination of unreasonable alternatives and options, and recommended preferred alternative and options advancing into the NEPA process after completion of the I-5 Marvin Road to Mounts Road PEL.

The alternatives evaluation provides a direct linkage between the project purpose and need and the recommended elimination of unreasonable alternatives and options. The criteria used to evaluate alternatives were organized in four Purpose and Need categories: **Enhance Mobility and Connectivity; System Resiliency; Environmental Restoration and Ecosystem Resiliency; Economic Vitality**; and two WSDOT policy categories **Equitable Outcomes; and Relative Cost**. An alternative or option is defined as ‘unreasonable’ if it does not meet the project Purpose and Need in one or more of the six categories.

The detailed evaluation results, by criterion, alternative, and option, are summarized in Table 6. Detailed evaluation results were presented to the ACG, TAG, and EAG at Meeting #4. The combined evaluation results were used to identify which alternatives or options are unreasonable based on not meeting the project purpose and need in one or more of the project purpose categories.

3.3.1 Alternatives Not Advancing

Based on the detailed evaluation, **Alternative 3—Widening for GP Lanes** was not selected as the preferred alternative and is not recommended for advancement into NEPA because it does not meet the project Purpose and Need in the **Enhance Mobility and Connectivity** category. Alternative 3 performs lower in the **Enhance Mobility and Connectivity** category with overall higher traffic congestion for transit vehicles. Alternative 3 also performs lower in this category because it does not provide a transit priority facility, which is inconsistent with WSDOT policy.

Specific Purpose and Need and WSDOT Policy categories where Alternative 3 performs low include:

- **Alternative 3—Widening for GP Lanes** does not add capacity to I-5 for HOV/transit vehicles.
 - Alternative 3 does not provide a transit priority facility, which is inconsistent with WSDOT policy, and has lower congestion relief for transit vehicles; this alternative was rated lower in the **Enhance Mobility and Connectivity** category.
 - Alternative 3 performed lower in the **Economic Vitality** category primarily because it does not provide improved multimodal access to opportunities for transit users.

³ <https://www.fhwa.dot.gov/innovation/everydaycounts/edc-1/PEL.cfm>

1 **Alternative 2—Widening for managed/HOV Lanes** was identified as the preferred alternative and is recommended for advancement into NEPA. This
2 alternative adds one HOV lane in each direction from Marvin Road to Mounts Road and performed higher overall in the detailed evaluation
3 compared to **Alternative 3—Widening for GP Lanes**.

- 4 • In the **Enhance Mobility and Connectivity** category, Alternative 2 improves travel times and reduces congestion for general purpose
5 vehicles/trucks and HOV/transit vehicles.
- 6 • In the **Economic Vitality** category - Alternative 2 performs high in the Access to Opportunity criteria.

7 **3.3.2 Bridge Options Advancing**

8 Based on the Detailed Evaluation results, all of the design options evaluated in the Detailed Evaluation are advancing. **Options A, B, and C** are
9 recommended for advancement to the NEPA review phase. These options include fill removal and reconstruction of I-5 on a bridge structure in
10 the Nisqually River delta area ranging from 3,000 to 12,000 lineal feet. These options performed similarly in the Detailed Evaluation and will be
11 evaluated further during the next project phase in the NEPA environmental process.

Table 6. Detailed Evaluation Results


Measure	Methodology	Scoring	Alternative 2 - Widen I-5 for managed/HOV Lanes			Alternative 3 - Widen I-5 for GP Lanes					
			Design Option A - 3,000' Length	Design Option B - 6,000' Length	Design Option C - 12,000' Length	Design Option A - 3,000' Length	Design Option B - 6,000' Length	Design Option C - 12,000' Length			
 <p>Enhance mobility and connectivity on I-5 for passenger vehicles, freight, transit, and active modes and provide support for increased person and freight throughput</p>	Accommodates Active Transportation Modes	Does the alternative accommodate active transportation?	5 – Includes LTS 1 nonmotorized facilities 4 – Includes LTS 2 nonmotorized facilities 3 – Includes LTS 3 nonmotorized facilities 2 – Includes LTS 4 nonmotorized facilities 1 – Does not include nonmotorized facilities	Provides low stress active transportation facility (LTS 2)	Provides low stress active transportation facility (LTS 2)	Provides low stress active transportation facility (LTS 2)	Provides low stress active transportation facility (LTS 2)	Provides low stress active transportation facility (LTS 2)	Provides low stress active transportation facility (LTS 2)	Provides low stress active transportation facility (LTS 2)	
	Accommodates Transit Modes	Does the alternative accommodate transit?	5 – Includes dedicated transit-only facilities the entire length of project 4 – Includes transit facilities (not dedicated) the entire length of project 3 – Includes dedicated transit-only facilities for portion of the project 2 – Includes transit facilities (not dedicated) for portion of the project 1 – Includes no transit facilities	HOV lane provides transit facility but not dedicated; provided entire length of project	HOV lane provides transit facility but not dedicated; provided entire length of project	HOV lane provides transit facility but not dedicated; provided entire length of project	Does not provide a transit facility	Does not provide a transit facility	Does not provide a transit facility	Does not provide a transit facility	
	Provides Congestion Relief for General Purpose (GP) Vehicles/Freight	Does the alternative provide congestion relief for general purpose vehicles/freight?	5 – High congestion relief for GP vehicles/freight (greater than 20%) 4 – Moderate congestion relief for GP vehicles/freight (15-20%) 3 – Some congestion relief for GP vehicles/freight (10-15%) 2 – Low congestion relief for GP vehicles/freight (5-10%) 1 – Minimal or no congestion relief for GP vehicles/freight (less than 5%)	Some congestion relief for GP vehicles/freight (10-15%)	Some congestion relief for GP vehicles/freight (10-15%)	Some congestion relief for GP vehicles/freight (10-15%)	Some congestion relief for GP vehicles/freight (10-15%)	Some congestion relief for GP vehicles/freight (10-15%)	Some congestion relief for GP vehicles/freight (10-15%)	Some congestion relief for GP vehicles/freight (10-15%)	Some congestion relief for GP vehicles/freight (10-15%)
	Provides Congestion Relief for Transit and High Occupancy Vehicles (HOV)	Does the alternative provide congestion relief for Transit/HOV?	5 – High congestion relief for Transit/HOV (greater than 20%) 4 – Moderate congestion relief for Transit/HOV (15-20%) 3 – Some congestion relief for Transit/HOV (10-15%) 2 – Low congestion relief for Transit/HOV (5-10%) 1 – Minimal or no congestion relief for Transit/HOV (less than 5%)	Some congestion relief for Transit/HOV (10-15%)	Some congestion relief for Transit/HOV (10-15%)	Some congestion relief for Transit/HOV (10-15%)	Low congestion relief for Transit/HOV (5-10%)	Low congestion relief for Transit/HOV (5-10%)	Low congestion relief for Transit/HOV (5-10%)	Low congestion relief for Transit/HOV (5-10%)	Low congestion relief for Transit/HOV (5-10%)
	Effects on Adjacent Roadways	Does the alternative impact mobility on arterial roadways?	5 – High improvement in mobility on arterial streets 4 – Moderate improvement in mobility on arterial streets 3 – Some improvement in mobility on arterial streets 2 – Low improvement in mobility on arterial streets 1 – Does not improve mobility on arterial streets	Would provide some mobility improvement on adjacent arterial roadways	Would provide some mobility improvement on adjacent arterial roadways	Would provide some mobility improvement on adjacent arterial roadways	Would provide some mobility improvement on adjacent arterial roadways	Would provide some mobility improvement on adjacent arterial roadways	Would provide some mobility improvement on adjacent arterial roadways	Would provide some mobility improvement on adjacent arterial roadways	Would provide some mobility improvement on adjacent arterial roadways
	Increases Person and Freight Throughput	Does the alternative increase GP person and Freight throughput?	5 – High increase in person throughput for GP and Freight vehicles (greater than 15%) 4 – Moderate increase in person throughput for GP and Freight vehicles (10-15%) 3 – Some increase in person throughput for GP and Freight vehicles (5-10%) 2 – Low increase in person throughput for GP and Freight vehicles (0-5%) 1 – Minimal or no increase in person throughput for GP and Freight vehicles	Some increase in person throughput for GP and Freight vehicles (5-10%)	Some increase in person throughput for GP and Freight vehicles (5-10%)	Some increase in person throughput for GP and Freight vehicles (5-10%)	Moderate increase in person throughput for GP and Freight vehicles (10-15%)	Moderate increase in person throughput for GP and Freight vehicles (10-15%)	Moderate increase in person throughput for GP and Freight vehicles (10-15%)	Moderate increase in person throughput for GP and Freight vehicles (10-15%)	Moderate increase in person throughput for GP and Freight vehicles (10-15%)
	Complementary to Local Planning	Is the alternative complementary to local and tribal planning efforts, including land use plans and transportation plans?	5 – Most consistency with local planning efforts 4 – Moderate consistency with local planning efforts 3 – Some consistency with local planning efforts 2 – Minimal consistency with local planning efforts 1 – No consistency or in conflict with local planning efforts	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)	Congestion relief in corridor consistent with local planning efforts/preferences (both Tribal and local agencies)
	Consistency with WSDOT Policies	Is the alternative consistent with WSDOT Strategic Plan Vision for a Safe, Sustainable, and Integrated Multimodal Transportation System?	5 – Consistent with WSDOT Policy 3 – Partially Consistent with WSDOT Policy 1 – Not Consistent with WSDOT Policy	Consistent with WSDOT policies; provides active transportation facility as well as transit/HOV facility	Consistent with WSDOT policies; provides active transportation facility as well as transit/HOV facility	Consistent with WSDOT policies; provides active transportation facility as well as transit/HOV facility	Not consistent with WSDOT policy; includes active transportation facility; does not include HOV/transit facility	Not consistent with WSDOT policy; includes active transportation facility; does not include HOV/transit facility	Not consistent with WSDOT policy; includes active transportation facility; does not include HOV/transit facility	Not consistent with WSDOT policy; includes active transportation facility; does not include HOV/transit facility	Not consistent with WSDOT policy; includes active transportation facility; does not include HOV/transit facility

Table 6. Detailed Evaluation Results, continued



	Measure	Methodology	Scoring	Alternative 2 - Widen I-5 for managed/HOV Lanes			Alternative 3 - Widen I-5 for GP Lanes		
				Design Option A - 3,000' Length	Design Option B - 6,000' Length	Design Option C - 12,000' Length	Design Option A - 3,000' Length	Design Option B - 6,000' Length	Design Option C - 12,000' Length
Improve local and mainline I-5 system resiliency	Reduces the Risk of Infrastructure Failures	Does the alternative reduce the risk of infrastructure failure by addressing erosion and channel migration of the Nisqually River?	5 – Removes risks from erosion/channel migration in the entire river delta area 4 – Removes risks from erosion/channel migration in most of river delta area 3 – Reduces risks from erosion/channel migration in some of the river delta area 2 – Reduces risks from erosion/channel migration in a small portion of the river delta area 1 – Does not address erosion/channel migration	New elevated structure reduces risks from erosion/channel migration in some of the Nisqually River Delta area	New elevated structure reduces risks from erosion/channel migration in portion of the Nisqually most of the River Delta area	New elevated structure removes risk from entire Nisqually River Delta area	New elevated structure reduces risks from erosion/channel migration in some of the Nisqually River Delta area	New elevated structure reduces risks from erosion/channel migration in portion of the Nisqually most of the River Delta area	New elevated structure removes risk from entire Nisqually River Delta area
	Reduces the Risk of Infrastructure Failures due to Seismic Activity	Does the alternative increase resiliency of the Nisqually Bridge by enhancing its ability to withstand seismic activity?	5 – Removes risk from seismic activity 3 – Reduces risk from seismic activity 1 – Does not address risk from seismic activity	New structures built to current seismic code	New structures built to current seismic code	New structures built to current seismic code	New structures built to current seismic code	New structures built to current seismic code	New structures built to current seismic code
Enable environmental restoration and ecosystem resiliency at the I-5 crossing of the Nisqually River Delta area	Enables Environmental Restoration	Does the alternative enable the restoration of environmental systems by improving fish passage, wetlands, building and maintaining habitat, reducing impacts to river hydraulics and geomorphology, etc?	5 – Restores all environmental systems in the entire river delta area 4 – Provides environmental restoration of most of the Nisqually River Delta area 3 – Provides environmental restoration of some of the Nisqually River Delta area 2 – Restores environmental system restoration in a small portion of river delta area 1 – Does not restore environmental systems	Provides environmental restoration of some of the Nisqually River Delta area	Provides environmental restoration of most of the Nisqually River Delta area	Provides environmental restoration of the Nisqually River Delta area	Provides environmental restoration of some of the Nisqually River Delta area	Provides environmental restoration of most of the Nisqually River Delta area	Provides environmental restoration of the Nisqually River Delta area
	Enables Ecosystem Resiliency	Does the alternative increase resiliency against the impacts of climate change?	5 – Addresses impacts associated with flood events in the entire river delta area 4 – Addresses impacts associated with flood events in most overflow channels in the Nisqually River Delta area 3 – Addresses impacts associated with flood events in some overflow channels in the Nisqually River Delta area 2 – Partially addresses impacts associated with flood events in some overflow channels in the Nisqually River Delta area 1 – Does not address the impacts associated with flood events in some overflow channels in the Nisqually River Delta area	Addresses impacts associated with flood events in some overflow channels in the Nisqually River Delta area	Addresses impacts associated with flood events in most overflow channels in the Nisqually River Delta area	Addresses impacts associated with flood events in all overflow channels in the Nisqually River Delta area	Addresses impacts associated with flood events in some overflow channels in the Nisqually River Delta area	Addresses impacts associated with flood events in most overflow channels in the Nisqually River Delta area	Addresses impacts associated with flood events in all overflow channels in the Nisqually River Delta area
Support economic vitality through reliable and efficient freight movement and access to major employers	Freight Reliability	Does the alternative improve freight reliability and reduce economic impacts of freight delay?	5 – Provides high improvement in freight reliability 4 – Provides moderate improvement in freight reliability 3 – Provides some improvement in freight reliability 2 – Provides minimal improvement in freight reliability 1 – Does not improve freight reliability	Would provide some improvements in freight reliability from improved I-5 operations	Would provide some improvements in freight reliability from improved I-5 operations	Would provide some improvements in freight reliability from improved I-5 operations	Would provide increased freight reliability from congestion relief on I-5 and improved mobility on adjacent arterial streets	Would provide increased freight reliability from congestion relief on I-5 and improved mobility on adjacent arterial streets	Would provide increased freight reliability from congestion relief on I-5 and improved mobility on adjacent arterial streets
	Multimodal Access to Opportunities (Jobs, Services, and Recreation)	Does the alternative improve access to opportunities (jobs, services, and recreation) by driving, transit, biking, and walking?	5 – Improves access to opportunity 3 – Maintains access to opportunity 1 – Does not maintain or improve access to opportunity	Would improve access to jobs, services, and recreation for active transportation users, HOV, transit, and GP traffic	Would improve access to jobs, services, and recreation for active transportation users, HOV, transit, and GP traffic	Would improve access to jobs, services, and recreation for active transportation users, HOV, transit, and GP traffic	Would improve access to jobs, services, and recreation for active transportation users, and GP traffic	Would improve access to jobs, services, and recreation for active transportation users, and GP traffic	Would improve access to jobs, services, and recreation for active transportation users, and GP traffic
	River Navigability	Does the alternative promote equitable access and navigability of the Nisqually River for all users including the Nisqually Indian Tribe?	5 – Increases navigability 3 – Does not affect navigability 1 – Reduces navigability	Would improve navigability for all users including the Nisqually Indian Tribe	Would improve navigability for all users including the Nisqually Indian Tribe	Would improve navigability for all users including the Nisqually Indian Tribe	Would improve navigability for all users including the Nisqually Indian Tribe	Would improve navigability for all users including the Nisqually Indian Tribe	Would improve navigability for all users including the Nisqually Indian Tribe
Support Equitable Outcomes	Minimizes Business and Residential Impacts or Displacements	Does the alternative minimize the potential business and residential impacts and displacements, especially for environmental justice populations?	5 – No impacts and displacements 4 – Minimal impacts and displacements 3 – Some impacts and displacements 2 – Moderate impacts and displacements 1 – High impacts and displacements	Minimal displacements or impacts; footprint expected to be within the existing WSDOT ROW	Minimal displacements or impacts; footprint expected to be within the existing WSDOT ROW	Minimal displacements or impacts; footprint expected to be within the existing WSDOT ROW	Minimal displacements or impacts; footprint expected to be within the existing WSDOT ROW	Minimal displacements or impacts; footprint expected to be within the existing WSDOT ROW	Minimal displacements or impacts; footprint expected to be within the existing WSDOT ROW

Table 6. Detailed Evaluation Results, continued

	Measure	Methodology	Scoring	Alternative 2 - Widen I-5 for managed/HOV Lanes			Alternative 3 - Widen I-5 for GP Lanes			
				Design Option A - 3,000' Length	Design Option B - 6,000' Length	Design Option C - 12,000' Length	Design Option A - 3,000' Length	Design Option B - 6,000' Length	Design Option C - 12,000' Length	
	Minimizes Negative Impact to Emergency Response	Does the alternative increase response times for emergency responders?	5 – Decreases emergency response times 4 – No impacts to emergency response times 3 – Minimal increase to emergency response times 2 – Moderate increase to emergency response times 1 – High increases emergency response times	Decreases emergency response times	Decreases emergency response times	Decreases emergency response times	Decreases emergency response times	Decreases emergency response times	Decreases emergency response times	Decreases emergency response times
	Minimizes the Flood Risk Potential for EJ Populations	Does the alternative address the risk of flooding, particularly for environmental justice populations?	5 – Addresses impact of flood events in the entire river delta area, no impact to EJ populations 4 – Addresses impact of flood events in most of river delta area, no impact to EJ populations 3 – Partially addresses impact of flood events in entire river delta area, some impact to EJ populations 2 – Partially addresses impact of flood events in some of river delta area, some impact to EJ populations 1 – Does not address impact of flood events; impact to EJ populations	Partially addresses the impact of extreme river flood events; some impact to EJ populations	Addresses impact of extreme river flood events in most of river delta area; no impact to EJ populations	Addresses impact of flood events in the entire river delta area, no impact to EJ populations	Partially addresses the impact of extreme river flood events; some impact to EJ populations	Addresses impact of extreme river flood events in most of river delta area; no impact to EJ populations	Addresses impact of extreme river flood events in most of river delta area; no impact to EJ populations	Addresses impact of flood events in the entire river delta area, no impact to EJ populations
Relative Cost of Alternatives	Planning-level Cost Comparison	How do the alternatives compare for planning-level costs?	5 – Lowest planning-level cost 4 – Lower planning-level cost 3 – Moderate planning-level cost 2 – Higher planning-level cost 1 – Highest planning level cost	Lowest planning-level cost	Moderate planning-level cost	Highest planning level cost	Lowest planning-level cost	Moderate planning-level cost	Highest planning level cost	Highest planning level cost