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Cost Estimate Validation Process (CEVP) Update Report

Initial Phase Evaluation

July 2026

Cost Estimate Validation Process (CEVP) Update

Initial Phase Evaluation

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
BRF	beta range factor
CDF	Cumulative Distribution Function
CEVP	Cost Estimate Validation Process
CIG	Capital Investment Grants
CM/GC	Construction Manager / General Contractor
CN	Construction
CRB	Columbia River Bridge
CSRA	Cost and Schedule Risk Assessment
DBB	Design Bid Build
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-5	Interstate 5
IBR	Interstate Bridge Replacement
LRT	Light Rail Transit
NB	Northbound
NPH	North Portland Harbor
ODOT	Oregon Department of Transportation
OP40	Oversight Procedure 40
OR	Oregon
P70	70th Percentile
PDB	Progressive Design Build

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Acronym/Abbreviation	Definition
PE	Preliminary Engineering
PM	Program Management
PMF	probability mass function
Program	Interstate Bridge Replacement Program
RFP	Request for Proposals
RFQ	Request for Qualifications
ROD	Record of Decision
ROW	Right-of-Way
RSD	Revenue Service Date
SABCE	Stripped Adjusted Base Cost Estimate
SB	Southbound
SCC	Standard Cost Category
SR	State Route
TriMet	Tri-County Metropolitan Transportation District of Oregon
WA	Washington
WSDOT	Washington State Department of Transportation
YOE	Year-of-Expenditure

**Funded
Phase**

Interstate Bridge Replacement Program
Funded Phase: Bridge and Connections to I-5 + Bridge Removal
Clark County, WA / Multnomah County, OR
July 2026



Description

The Funded Phase of the core set of projects would complete the Columbia River main span bridge replacement elements of the multimodal IBR program. It would build two new fixed-span bridge structures to accommodate northbound and southbound traffic from the existing bridges, with rebuilt bridge approaches to connect to I-5 in Washington and Oregon. Modified SR 14 connections would be completed. Tolling infrastructure and a shared use path would be provided, and the existing I-5 bridges will be removed. Key elements include:

- New earthquake-resilient multimodal bridges with fixed spans
- Auxiliary lanes and safety shoulders
- Accommodations on the bridge to enable future light rail transit from Portland to Vancouver
- Accommodations for bus on shoulder and express bus connectivity
- Enhanced shared-use path for people who walk, bike and roll
- Tolls to pay for bridge construction, operation and maintenance, and manage demand to improve traffic flow.

Benefits

- Improves safety, congestion, and travel reliability
- Creates an earthquake-resilient Columbia River Bridge crossing
- Eliminates traffic disruptions from bridge openings
- Improves freight movement by removing a key bottleneck and the disruptions of bridge openings
- Expands travel choices including alternatives to single-occupancy vehicles
- Creates safer and wider pathways for pedestrians, bicyclists and wheelchairs, meeting requirements for the Americans with Disabilities Act

Program Modeling Assumptions

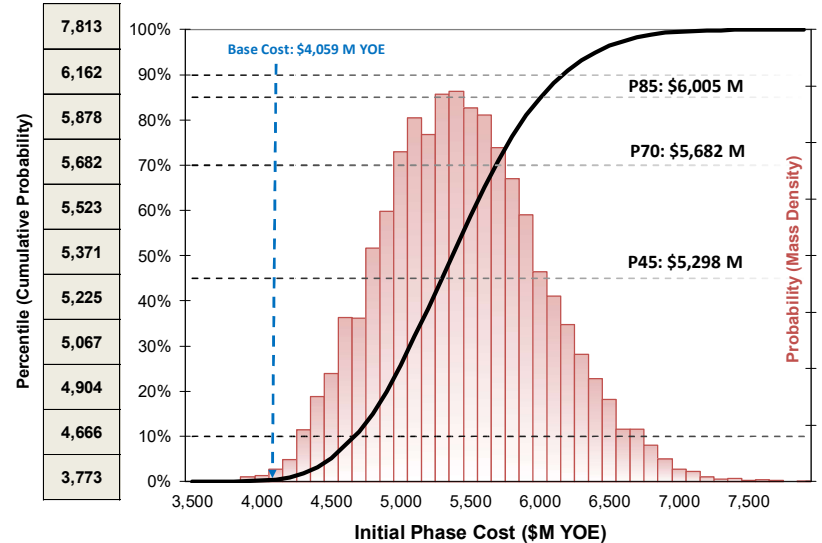
- This analysis represents the initial Funded Phase as an update to the August 2025 CEVP workshop.
- Potential re-sequencing or deferral of elements are not included in the results for this option.
- Future phase cost, including any scope deferred from the MLPA packaging assumptions, is not included in the results.
- Mitigation for any impacts associated with scope deferral is not included in the results.
- The cost results include capital costs only.

Risk Analysis Cost Range

Prior to additional risk mitigation

Projected cost includes **\$236.7M** spent to date

Total Project Cost: Year of Expenditure (YOE)



This graphic contains overlain cumulative distribution function and probability mass function outputs.

Risk Analysis Schedule Ranges

Output Percentile Values: 10th | 70th | 90th

New I-5 SB Bridge Open to Traffic:

Aug 2033 | Oct 2034 | Jul 2035

Funded Phase Completion Date:

Mar 2037 | Sep 2038 | Jul 2039

Selected Key Project Risks

Output Statistical Values: 10th | Mean | 90th

Cost Threats (potential cost increase, \$M, prior to inflation)

Uncertain market conditions: competition and pricing (combined)	+0	+273	+561
Indirect cost of program delay	+57	+127	+205
Impact of tariffs	+0	+61	+145
Miscellaneous change orders (combined)	+29	+52	+76
Structure aesthetic changes – Columbia River Bridge	0	+19	+81

Cost Opportunities (potential cost decrease, \$M, prior to inflation)

Contractor innovation opportunity (combined)	-150	-70	0
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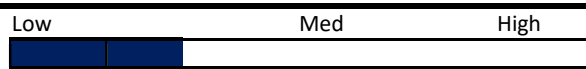
Schedule Threats (potential initial phase delay to critical path, months)

Cultural resource risks	0	+6	+17
Program coordination issues	0	+3	+8
Permit challenge or appeal	0	+1	+6
Contract administration / change management issues	0	+1	+4
Guaranteed maximum price negotiation delays	0	+1	+3

Schedule Opportunities (potential critical path acceleration, months)

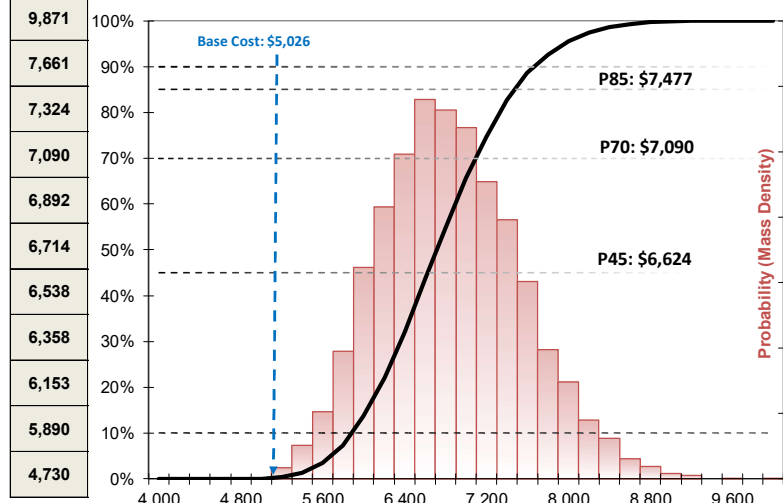
Contractor innovation opportunity	-1	-0	0
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Level of Project Design



July 2026



Core Set of Projects	Interstate Bridge Replacement Program																																														
	Core Set of Projects Analysis: Columbia River Bridge with Light Rail Service to Vancouver																																														
	Clark County, WA / Multnomah County, OR																																														
July 2026																																															
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Risk Analysis Cost Range Prior to additional risk mitigation Projected cost includes \$236.7M spent to date Total Project Cost: Year of Expenditure (YOE) <table><tr><td>9,871</td><td>100%</td></tr><tr><td>7,661</td><td>90%</td></tr><tr><td>7,324</td><td>80%</td></tr><tr><td>7,090</td><td>70%</td></tr><tr><td>6,892</td><td>60%</td></tr><tr><td>6,714</td><td>50%</td></tr><tr><td>6,538</td><td>40%</td></tr><tr><td>6,358</td><td>30%</td></tr><tr><td>6,153</td><td>20%</td></tr><tr><td>5,890</td><td>10%</td></tr><tr><td>4,730</td><td>0%</td></tr></table>  This graphic contains overlain cumulative distribution function and probability mass function outputs.				9,871	100%	7,661	90%	7,324	80%	7,090	70%	6,892	60%	6,714	50%	6,538	40%	6,358	30%	6,153	20%	5,890	10%	4,730	0%																						
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Risk Analysis Schedule Ranges Output Percentile Values: 10th 70th 90th <table><tr><td>FTA Full Funding Grant Agreement:</td><td>Jul 2030 Oct 2031 May 2032</td></tr><tr><td>Revenue Service Date:</td><td>May 2039 Sep 2040 May 2041</td></tr><tr><td>Core Set of Projects Completion Date:</td><td>May 2039 Sep 2040 May 2041</td></tr></table>				FTA Full Funding Grant Agreement:	Jul 2030 Oct 2031 May 2032	Revenue Service Date:	May 2039 Sep 2040 May 2041	Core Set of Projects Completion Date:	May 2039 Sep 2040 May 2041																																						
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Selected Key Project Risks Output Statistical Values: 10th Mean 90th Cost Threats (potential cost increase, \$M, prior to inflation) <table><tr><td>Uncertain market conditions: competition and pricing (combined)</td><td>+27</td><td>+307</td><td>+606</td></tr><tr><td>Indirect cost of program delay</td><td>+99</td><td>+165</td><td>+237</td></tr><tr><td>Impact of tariffs</td><td>+0</td><td>+71</td><td>+170</td></tr><tr><td>Miscellaneous change orders (combined)</td><td>+45</td><td>+70</td><td>+95</td></tr><tr><td>Additional or changed method of ground improvement</td><td>+0</td><td>+23</td><td>+55</td></tr></table> Cost Opportunities (potential cost decrease, \$M, prior to inflation) <table><tr><td>Contractor innovation opportunity (combined)</td><td>-151</td><td>-72</td><td>0</td></tr></table> Schedule Threats (potential initial phase delay to critical path, months) <table><tr><td>Missed in-water work window: Portland Harbor Transit Bridge</td><td>0</td><td>+3</td><td>+10</td></tr><tr><td>Material procurement delays: transit</td><td>0</td><td>+2</td><td>+6</td></tr><tr><td>Systems testing or start-up delays</td><td>0</td><td>+2</td><td>+8</td></tr><tr><td>Cultural resource risks</td><td>0</td><td>+2</td><td>+11</td></tr><tr><td>Contract administration / change management issues</td><td>0</td><td>+2</td><td>+6</td></tr></table>				Uncertain market conditions: competition and pricing (combined)	+27	+307	+606	Indirect cost of program delay	+99	+165	+237	Impact of tariffs	+0	+71	+170	Miscellaneous change orders (combined)	+45	+70	+95	Additional or changed method of ground improvement	+0	+23	+55	Contractor innovation opportunity (combined)	-151	-72	0	Missed in-water work window: Portland Harbor Transit Bridge	0	+3	+10	Material procurement delays: transit	0	+2	+6	Systems testing or start-up delays	0	+2	+8	Cultural resource risks	0	+2	+11	Contract administration / change management issues	0	+2	+6
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Level of Project Design Low Med High July 2026  Washington State Department of Transportation																																															

1. INTRODUCTION

An updated probabilistic cost and schedule risk assessment (CSRA) was performed for the Interstate Bridge Replacement (IBR) Program (“the Program”) to evaluate an initial funded phase to begin Program delivery and a core set of projects. The evaluation was performed as an update to the August 2025 full Program Cost Estimate Validation Process (CEVP) workshop and analysis, which was documented in a final report dated March 2026 (IBR 2026a).

A risk assessment update session was held March 25, 2026, and was attended by Program team members and subject matter experts from the Washington State Department of Transportation (WSDOT), Oregon Department of Transportation (ODOT), Tri-County Metropolitan Transportation District of Oregon (TriMet), Federal Transit Administration (FTA), Federal Highway Administration (FHWA), and industry representatives. The risk update focused primarily on validating updates to cost, schedule, and risk assumptions to support the identified phased implementation approach. The structure of model inputs and the analysis methodology are the same as those used in the full Program CEVP.

2. PROGRAM ASSUMPTIONS

The Program team identified the initial set of core projects that represent the minimum scope needed to construct a new bridge and operate all modes (highway/transit/active transportation). The core projects include construction of fixed-span bridges to replace the existing Interstate Bridge over the Columbia River with connections to Interstate 5 (I-5) and operable light rail transit (LRT) from Portland, Oregon, to the Waterfront Station in Vancouver, Washington. The core set also includes tolling facilities and removal of the existing Interstate Bridge.

As a subset to the Core Set of Projects, an initial Funded Phase was identified for inclusion in the Initial Finance Plan to be submitted to FHWA. The initial Funded Phase is defined as a series of projects that can be completed with funding that is already committed to the IBR Program. The Funded Phase includes Columbia River Bridges (CRB) with width for LRT service to Vancouver in the future, plus approaches and removal of the existing Interstate Bridge, along with pre-completion tolling, West Hayden Island mitigation, and transit design to 60%. The Program is taking a phased approach to construction and will use available funding to advance construction on the Funded Phase (“Step 1”) as additional funding is pursued to complete the Core Set of Projects (“Step 2”) and future Program elements.

2.1 Contract Packaging

Contract packaging assumptions have changed from the Full Program CEVP, and these changes are reflected in the updated analysis. Four packages (Columbia River Bridges, Approaches, State Route

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14A, and Hayden Island Package A) have been combined into a single progressive design-build (PDB) contract within the Funded Phase.

The contracting method assumptions, and breakdown of which contract packages are included in the Funded Phase and Core Set of Projects, are outlined in Table 2-1. Assumed contracting methods include use of a combination of PDB, construction management / general contractor (CM/GC), and design-bid-build (DBB) delivery models. The Funded Phase represents a subset of the Core Set of Projects. Future Program packages are not included in this CEVP update and are assumed to be unchanged from the Full Program CEVP analysis. Transit packages are funded for preliminary engineering (PE) only in the Funded Phase.

Subsequent to the Funded Phase and Core Set of Projects analysis, a fifth package for the Existing Bridge Removal was added to the new single PDB contract that originally included four packages. This adjustment to the PDB package does not impact the results of the Funded Phase or Core Set of Projects analysis.

Table 2-1. Contract Packaging Assumptions

Package Name	Assumed Delivery Method	Funded Phase	Core Set of Projects	Future Program Elements
Program Management	GEC	✓	✓	
Columbia River Bridge Replacement	PDB	✓	✓	
Columbia River Bridge Removal	DBB	✓	✓	
Pre-completion Tolling	DBB	✓	✓	
West Hayden Island Mitigation	DBB	✓	✓	
Marine Drive Grade Separation	CM/GC	✓ (PE)	✓	
Oregon Aerial Guideway	CM/GC	✓ (PE)	✓	
Washington Aerial Guideway	DBB, GC/CM	✓ (PE)	✓	
Track, Systems, Stations & Shelters	CM/GC	✓ (PE)	✓	
Hayden Island Surface Streets	DBB			✓
Future I-5 and LRT Guideway to Evergreen	TBD			✓
Marine Drive Interchange	CM/GC			✓
Mill Plain Interchange	DB			✓
Washington North	DB			✓

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Package Name	Assumed Delivery Method	Funded Phase	Core Set of Projects	Future Program Elements
North Expo Road	DBB			✓
Oregon I-5 Northbound	CM/GC			✓
Oregon I-5 Southbound	CM/GC			✓
North Portland Harbor Bridge Removal	DBB			✓
Evergreen Park & Ride	DB			✓
Light-Rail Overnight Facility	CM/GC			✓
LRV Procurement	2-step Sealed Bid			✓
Ruby Junction TriMet Facility Expansion	CM/GC			✓
Waterfront Park & Ride	DB			✓
Bus Procurement	Statewide purchasing agreement			✓
65th Street C-TRAN O&M Bus Facility	DBB			✓

Note: Delivery method decisions and packaging for Program elements outside of the Funded Phase reflect the current assumptions and are subject to change based on funding availability and other future packaging considerations. CM/GC = contract manager / general contractor; C-TRAN = Clark County Public Transit Benefit Area Authority; DB = design-build; DBB = design-bid-build; GEC = general engineering consultant; I-5 = Interstate 5; LRT = light-rail transit; LRV = light-rail vehicle; O&M = operation and maintenance; PDB = progressive design-build; PE = preliminary engineering; TBD = to be determined

2.2 Key Assumptions and Exclusions

The following are the major assumptions and exclusions that apply to the results described in this report.

- The Funded Phase and Core Set of Projects represent a series of assumptions regarding phased Program implementation. Potential re-sequencing or deferral of Core Set of Projects elements are not included in the results.
- Future phase cost, including the cost of future Program elements shown in Table 2-1 is not included in the results.
- Mitigation for impacts associated with scope deferral is not included in the results.

- The cost results include capital costs only. Future operations and maintenance costs are not included.

Finally, the results represent a “snapshot in time” as of the date of the evaluation. At the time of the review, the construction industry was undergoing significant cost escalation and future trends are difficult to predict. The cost inflation rates and market conditions risks developed for the CEVP reflect the understanding and professional judgment of the August 2025 workshop participants based on available information at the time. Current assumptions related to project packaging, sequencing, and delivery methods will be refined by the Program with the expectation that future CEVP review will reflect updated information related to initial phase delivery and Program sequencing. It is expected that schedules, estimates, and risk profiles will be refined (and uncertainties reduced) as the Program progresses.

3. BASE COST AND SCHEDULE

3.1 Base Schedule

The assumed base schedule for the Core Set of Projects was summarized in the form of a flowchart that shows the project strategy at an appropriate level of detail for the risk analysis. The flowchart defines a set of key activities, milestones, and precedence relationships and is used to model the project schedule (including delays or accelerations due to risk events) and to calculate year of expenditure (YOE) project costs. The schedule flowchart was based on the IBR Program’s schedule assumptions at the time of the analysis.

The base completion dates for key schedule milestones, excluding contingency, are summarized in Table 3-1. The base schedule for elements of the Core Set of Projects not included in the Funded Phase is contingent on securing additional funding.

Table 3-1. Base Milestone Schedule Completion Dates

Milestone	Funded Phase	Core Set of Projects
Issue ROD ^a	May 2026	May 2026
CRB Request for Proposals Issued	November 2026	November 2026
Start of CRB In-Water Work	September 2028	September 2028
New I-5 Southbound Bridge Complete	April 2033	April 2033
Shift I-5 to New Southbound Bridge	April 2033	April 2033
Interstate Bridge Demolition Complete	June 2036	June 2036
Funded Phase Complete	June 2036	June 2036
FTA Approves Entry into Engineering	-	March 2027
FTA Full Funding Grant Agreement	-	December 2029
LRT Revenue Service Date	-	October 2037
Core Set of Projects Complete	-	October 2037

a At the time of report issuance, the ROD signature was targeted for July 1, 2026. Potential delays to the May 2026 issuance date were included in the risk analysis

- Milestone not analyzed in studied phase

CRB = Columbia River Bridges; FTA=Federal Transit Administration; I-5 = Interstate 5; LRT=light rail transit; ROD = record of decision

The schedule flowchart is provided in Appendix B. The red colors on the flowchart reflect the base critical path to Funded Phase and Core Set of Projects milestone completion.

3.2 Base Cost

3.2.1 Deterministic Base Cost

As in the full Program CEVP analysis, contingencies were removed from the Program cost estimate to develop a deterministic base cost estimate for use in the risk analysis. These contingencies included risk-based allowances for market conditions, tariffs, and construction change orders. The removed contingencies were replaced with uncertainty ranges and specific risk items in the probabilistic risk analysis. Costs are divided by category preliminary engineering (PE), right-of-way (ROW), construction (CN), and program management (PM), and by contract package.

The deterministic base estimate for the Funded Phase and Core Set of Projects is presented in Table 3-2. The values shown in this table are expressed in July 2025 dollars and exclude uncertainty and future cost inflation.

Table 3-2. Deterministic Base Cost Summary in July 2025 Millions of Dollars

Option	Total	PE	ROW	CN	PM ^a
Funded Phase ^b	3,401	369	126	2,430	476
Core Set of Projects	4,138	420	225	2,985	508

a The PM cost total includes \$236.7 million spent prior to July 2025. No risk or inflation is applied to this cost in the risk analysis.

b The Funded Phase is included within the Core Set of Projects.

Notable changes to the cost estimate for the applicable packages relative to the Program CEVP analysis include the following:

- Reduction in PM costs to reflect the reduced scope and shortened schedule of the initial Funded Phase and Core Set of Projects.
- Packaging the bridge, I-5 connections, and two interchange connections into one PDB contract (compared to the previous assumption of four separate contracts). Consolidation into one PDB contract allowed the team to reflect an updated estimate accounting for the following:
 - Cost reductions due to the elimination of coordination between multiple contracts for design and construction in the initial phase.
 - Aligning contracting oversight staffing needs with the reduction in number of contracts.
 - Refinements to interim toll site construction management.

- Reduced ground improvements in the Columbia River Bridges and Approaches due to updated geotechnical data.
- Adjusted Shared-Use Path landing in Vancouver.

3.2.2 Base Cost Uncertainty

Base uncertainty ranges for unit prices, quantities, and markups were established for major items in the estimate. These ranges are intended to capture estimating uncertainty and variability in the estimate and are separate from risk events documented in the risk register. The uncertainties were assessed in terms of ranges (e.g., 10th to 90th percentile), relative to the deterministic base cost for major cost items. Correlations were included to account for relationships among cost items due to common underlying factors such as labor rates.

Base uncertainty was addressed in a comparable manner to the full Program CEVP with the following adjustments:

- Cost item weightings were adjusted to reflect changes in quantity.
- PE cost ranges were adjusted for packages 4 and 5 to reflect reductions in the base estimate.

3.2.3 Inflation

Inflation assumptions are the same as those used in the full Program CEVP. The deterministic base estimate values in YOE dollars are shown in Table 3-3.

Table 3-3. Deterministic Base Cost Summary in Millions of YOE Dollars

Option	Total	PE	ROW	CN	PM ^a
Funded Phase	4,059	405	130	3,007	516
Core Set of Projects ^b	5,026	463	244	3,758	561

a. The PM cost total includes \$236.7 million spent prior to July 2025. No risk or inflation is applied to this cost in the risk analysis.

b. The Funded Phase is included in the Core Set of Projects.

CN = construction; PE = preliminary; PM = program management; YOE = year of expenditure

Additional information about the base cost estimate is provided in Appendix C, including the base uncertainty ranges, correlation assumptions, and flowchart activity allocation.

4. RISK ASSESSMENT

4.1 Risk Register

The full Program risk register was used as the starting point for the risk analysis. The risk register (Appendix D) is organized around specific categories based on the WSDOT Risk Breakdown Structure. These risks span all aspects of the Program, including construction, design, environmental, ROW, procurement, management, and external interactions. Under each major heading, such as *Construction*, the table lists the identified cost and schedule risks (i.e., threats and opportunities) along with the impacted schedule activities. The risks are complementary to the base cost and schedule described in Appendices B and C (including base uncertainty ranges).

The risk team reviewed the revised assumptions for the Funded Phase and Core Set of Projects and identified targeted updates to specific risks, including refining probability and impact ranges where new information is available. Some risks were reduced or retired while others were increased or added to the register. Program risks that pertain to packages that fall outside of the Core Set of Projects scope were omitted from the analysis.

4.2 Risk Analysis

The inputs developed in the August 2025 workshop (including base cost, schedule, risks, and uncertainties) were loaded into a probabilistic, integrated (i.e., cost-loaded schedule) model that incorporated Monte Carlo simulation techniques to generate probability distributions of key performance measures related to cost and schedule, along with prioritized risk rankings. The simulation involved the generation of 10,000 independent potential outcomes and statistical compilation of selected results.

A single integrated risk model was used to analyze both the Funded Phase and Core Set of Projects. Key results for each of these Program components are provided in Sections 4.2.1 and 4.2.2.

4.2.1 Key Results: Funded Phase

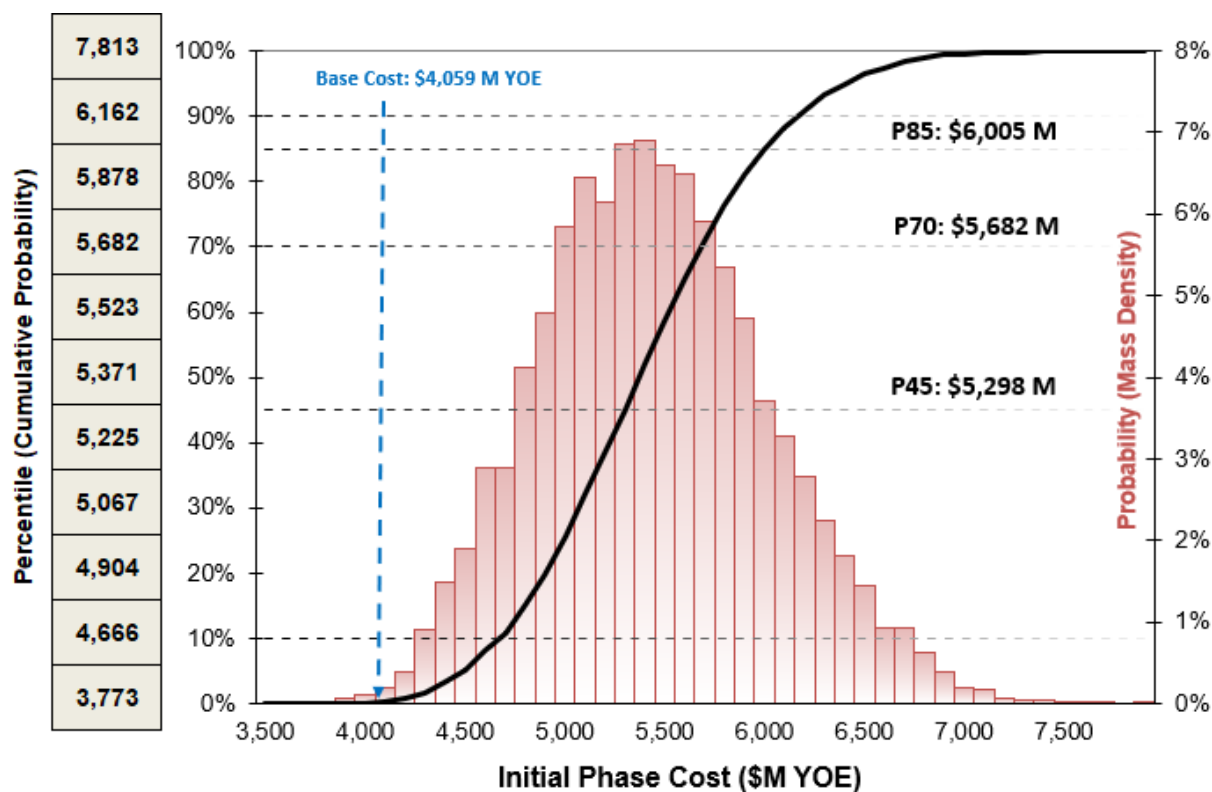
Probability distributions for Funded Phase cost are shown in Figure 4-1 as overlain probability mass functions (PMFs) and cumulative distribution functions (CDFs) in YOE dollars. Figure 4-2 depicts the probability distributions for the Funded Phase completion date. These probability distributions reflect the base cost and schedule, base uncertainties, and risk and opportunity (as documented in the risk register).

A PMF graphic is useful because it readily portrays the range of values and the most likely value. The most likely value is the value with the highest probability (tallest bar on the plot). (Note: The most likely value is not necessarily the same as the mean or median [50th percentile]). Conversely, a CDF graphic depicts the cumulative probability of not exceeding a particular value (also known as a percentile or, less formally, confidence level). For example, the 70th percentile means that there is a 70% likelihood that the value will be less than or equal to that amount (conversely, there is a 30%

likelihood that the value will be greater than that amount). The corresponding tabular results for Funded Phase cost and key milestones are presented in Table 4-1 through Table 4-3.

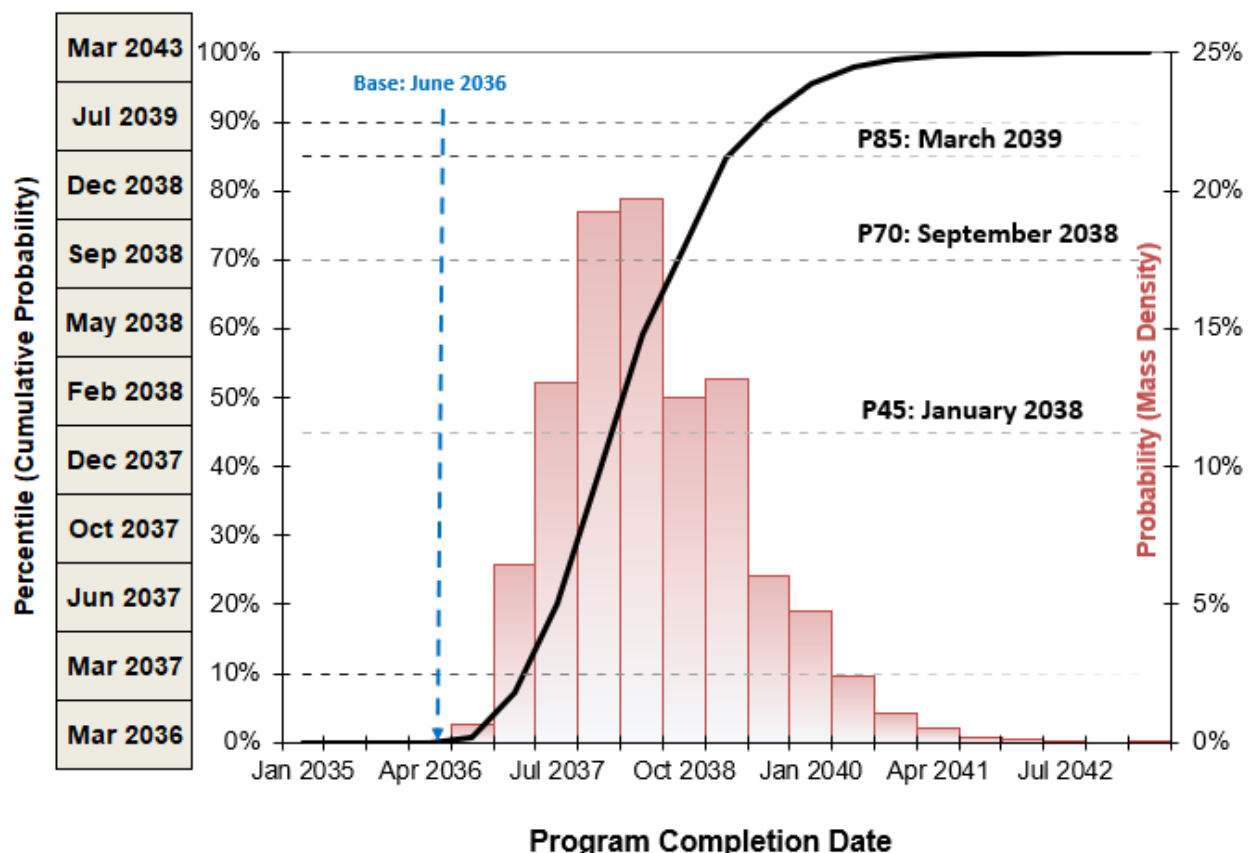
Additional package-level results are included in Appendix A.

Figure 4-1. Probability Distribution of Funded Phase Cost in YOE Dollars



M = million; YOE = year of expenditure

Figure 4-2. Probability Distribution of Funded Phase Completion Date



P = percentile

The following notes apply to Table 4-1 through Table 4-3:

1. Table 4-1 and Table 4-2: The mean component costs may be added to obtain the mean total phase cost. In general, however, the sum of the xth percentile for component costs is not the xth percentile of the total phase cost. For example, the sum of the 70th percentiles for PE, ROW, and CN (in YOE dollars) is not the 70th percentile of the total phase cost (in YOE dollars).
2. Table 4-1 and Table 4-2: “Contingency at P70” represents the percentage difference between the 70th percentile and deterministic base costs (i.e., corresponding to a risk-based contingency at the target amount).
3. Table 4-1 and Table 4-2: The total Program cost includes \$236.7 million of PM cost incurred prior to July 2025.
4. Table 4: “Contingency at P70” equals (milestone date at target percentile (P70) – base milestone date) / (base milestone date – schedule reference date as shown on flowchart).
5. Table 4: Standard deviation is in calendar months.

Table 4-1. Funded Phase Cost Statistics

Cost Parameter	Funded Phase Cost (July 2025, millions of dollars)	Funded Phase Cost (millions of YOE dollars)	Base Cost (July 2025, millions of dollars)	Risk Cost (July 2025, millions of dollars)	Escalation Cost (millions of YOE dollars)
Deterministic Base	3,401	4,058	3,401	0	658
Mean	4,347	5,398	3,760	587	1,051
Standard Deviation	435	576	299	282	158
1%	3,462	4,234	3,142	-1	748
5%	3,661	4,488	3,284	138	813
10%	3,793	4,666	3,372	227	859
20%	3,972	4,904	3,495	337	917
25%	4,039	4,988	3,546	382	940
30%	4,097	5,067	3,587	423	961
40%	4,219	5,225	3,669	502	1,000
45%	4,276	5,298	3,712	543	1,018
50%	4,327	5,371	3,751	581	1,038
60%	4,442	5,523	3,832	656	1,079
65%	4,498	5,598	3,873	698	1,101
70%	4,558	5,682	3,920	738	1,124
75%	4,634	5,774	3,967	781	1,149

Cost Estimate Validation Process (CEVP) Update Report

Cost Parameter	Funded Phase Cost (July 2025, millions of dollars)	Funded Phase Cost (millions of YOE dollars)	Base Cost (July 2025, millions of dollars)	Risk Cost (July 2025, millions of dollars)	Escalation Cost (millions of YOE dollars)
80%	4,712	5,878	4,014	831	1,178
85%	4,808	6,005	4,076	891	1,211
90%	4,923	6,162	4,151	962	1,254
95%	5,107	6,401	4,274	1,064	1,330
99%	5,396	6,812	4,467	1,251	1,481
Contingency at P70 (%)	34.0%	40.0%	15.3%	-	70.9%

P70 = 70th percentile; YOE = year of expenditure

Table 4-2. Funded Phase Cost Component Statistics

Cost Parameter	PE Cost (millions of YOE dollars)	ROW Cost (millions of YOE dollars)	CN Cost (millions of YOE dollars)	Program Management Cost (millions of YOE dollars)
Deterministic Base	405	130	3,007	516
Mean	516	144	4,134	603
Standard Deviation	63	15	531	38
1%	386	114	3,057	527
5%	417	121	3,302	545
10%	436	125	3,461	556
20%	461	131	3,673	570

Cost Estimate Validation Process (CEVP) Update Report

Cost Parameter	PE Cost (millions of YOE dollars)	ROW Cost (millions of YOE dollars)	CN Cost (millions of YOE dollars)	Program Management Cost (millions of YOE dollars)
25%	471	133	3,758	576
30%	480	136	3,831	581
40%	498	140	3,974	591
45%	506	142	4,041	596
50%	515	143	4,106	601
60%	531	147	4,243	611
65%	539	149	4,320	616
70%	548	152	4,394	622
75%	558	154	4,478	628
80%	569	157	4,581	635
85%	583	161	4,694	643
90%	600	165	4,837	654
95%	625	171	5,058	670
99%	671	182	5,423	701
Contingency at P70 (%)	35.2%	16.6%	46.1%	20.6%

CN = construction; PE = preliminary engineering; P70 = 70th percentile; ROW = right of way; YOE = year of expenditure

Table 4-3. Funded Phase Milestone Statistics

Schedule Parameter	Issue ROD	CRB Package RFP Issued	Pre-completion Tolling Go Live	CRB Start of In-Water Work	New I-5 SB Bridge Complete	Shift I-5 Traffic to New SB Bridge	Interstate Bridge Demo Complete	Funded Phase Complete
Deterministic Base	May 2026	Nov 2026	Jul 2028	Sep 2028	Apr 2033	Apr 2033	Jun 2036	Jun 2036
Mean	Jun 2026	Feb 2027	Aug 2028	Mar 2029	Jul 2034	Dec 2034	Apr 2038	Apr 2038
Standard Deviation	0.9	2.8	2.4	6.0	9.0	10.1	10.8	10.8
1%	May 2026	Nov 2026	Jul 2028	Sep 2028	Mar 2033	Jul 2033	Sep 2036	Sep 2036
5%	May 2026	Nov 2026	Jul 2028	Sep 2028	Jun 2033	Oct 2033	Jan 2037	Jan 2037
10%	May 2026	Nov 2026	Jul 2028	Sep 2028	Aug 2033	Dec 2033	Mar 2037	Mar 2037
20%	May 2026	Nov 2026	Jul 2028	Oct 2028	Nov 2033	Mar 2034	Jun 2037	Jun 2037
25%	May 2026	Dec 2026	Jul 2028	Oct 2028	Dec 2033	May 2034	Aug 2037	Aug 2037
30%	May 2026	Dec 2026	Jul 2028	Nov 2028	Jan 2034	Jun 2034	Oct 2037	Oct 2037
40%	May 2026	Jan 2027	Jul 2028	Dec 2028	Mar 2034	Aug 2034	Dec 2037	Dec 2037
45%	Jun 2026	Jan 2027	Jul 2028	Jan 2029	Apr 2034	Sep 2034	Jan 2038	Jan 2038
50%	Jun 2026	Jan 2027	Jul 2028	Jan 2029	May 2034	Nov 2034	Feb 2038	Feb 2038
60%	Jun 2026	Feb 2027	Jul 2028	Mar 2029	Aug 2034	Jan 2035	May 2038	May 2038
65%	Jun 2026	Feb 2027	Jul 2028	Apr 2029	Sep 2034	Mar 2035	Jul 2038	Jul 2038
70%	Jun 2026	Mar 2027	Jul 2028	Sep 2029	Oct 2034	Apr 2035	Sep 2038	Sep 2038

Cost Estimate Validation Process (CEVP) Update Report

Schedule Parameter	Issue ROD	CRB Package RFP Issued	Pre-completion Tolling Go Live	CRB Start of In-Water Work	New I-5 SB Bridge Complete	Shift I-5 Traffic to New SB Bridge	Interstate Bridge Demo Complete	Funded Phase Complete
75%	Jul 2026	Mar 2027	Aug 2028	Sep 2029	Dec 2034	Jun 2035	Nov 2038	Nov 2038
80%	Jul 2026	Apr 2027	Sep 2028	Sep 2029	Feb 2035	Aug 2035	Dec 2038	Dec 2038
85%	Jul 2026	Apr 2027	Oct 2028	Sep 2029	Apr 2035	Nov 2035	Mar 2039	Mar 2039
90%	Jul 2026	May 2027	Nov 2028	Oct 2029	Jul 2035	Feb 2036	Jul 2039	Jul 2039
95%	Jul 2026	Jul 2027	Jan 2029	Feb 2030	Nov 2035	Jul 2036	Dec 2039	Dec 2039
99%	Aug 2026	Dec 2027	May 2029	Sep 2030	Oct 2036	May 2037	Oct 2040	Oct 2040
Contingency at P70 (%)	14.5%	24.7%	0.8%	31.2%	19.1%	25.7%	20.8%	20.8%

CRB = Columbia River Bridge; Demo = demolition; I-5 = Interstate 5; P70 = 70th percentile; RFP=Request for Proposals; ROD = record of decision; SB = southbound

4.2.1.1 Contingency: Funded Phase

The IBR Program has selected the 70th percentile (P70) YOE cost as a budgetary target, consistent with FHWA guidelines for major projects (FHWA 2007). A corresponding Funded Phase contingency can be determined by subtracting the deterministic base YOE cost from the P70 YOE cost. Based on this risk analysis, the Funded Phase contingency at P70 equals **\$1,624 million**, or 40.0% of the deterministic base cost. The IBR Program may refine this contingency through future CEVP updates.

The major components contributing to the contingency amount are summarized in Table 4, including base uncertainty, market conditions, and other risk register events. This indicates that risk register events (including the inflationary and indirect impact of schedule delay risks) warrant a contingency worth 13.1% of the base YOE cost, with market conditions and base uncertainty comprising the remainder of the contingency amount.

Table 4-4. Components of Funded Phase Contingency

Component	Amount (millions of YOE dollars)	% of Contingency	% of Base YOE Cost
Base Uncertainty	654	40%	16.1%
Market Conditions	439	27%	10.8%
Risk Register Events	530	33%	13.1%
Total	1,624	100%	40.0%

YOE = year of expenditure

4.2.1.2 Sensitivity Analysis: Funded Phase

The most significant cost risk and uncertainty factors associated with the Funded Phase are presented graphically in Figure 4-3 and Figure 4-4, respectively. Each figure is ranked in terms of contribution to the mean absolute value impact to project cost in July 2025 dollars. The most significant threats and opportunities regarding the schedule are presented in Figure 4-5, ranked in terms of contribution to the approximate absolute value mean impact to the critical path of the Funded Phase completion milestone, in calendar months.

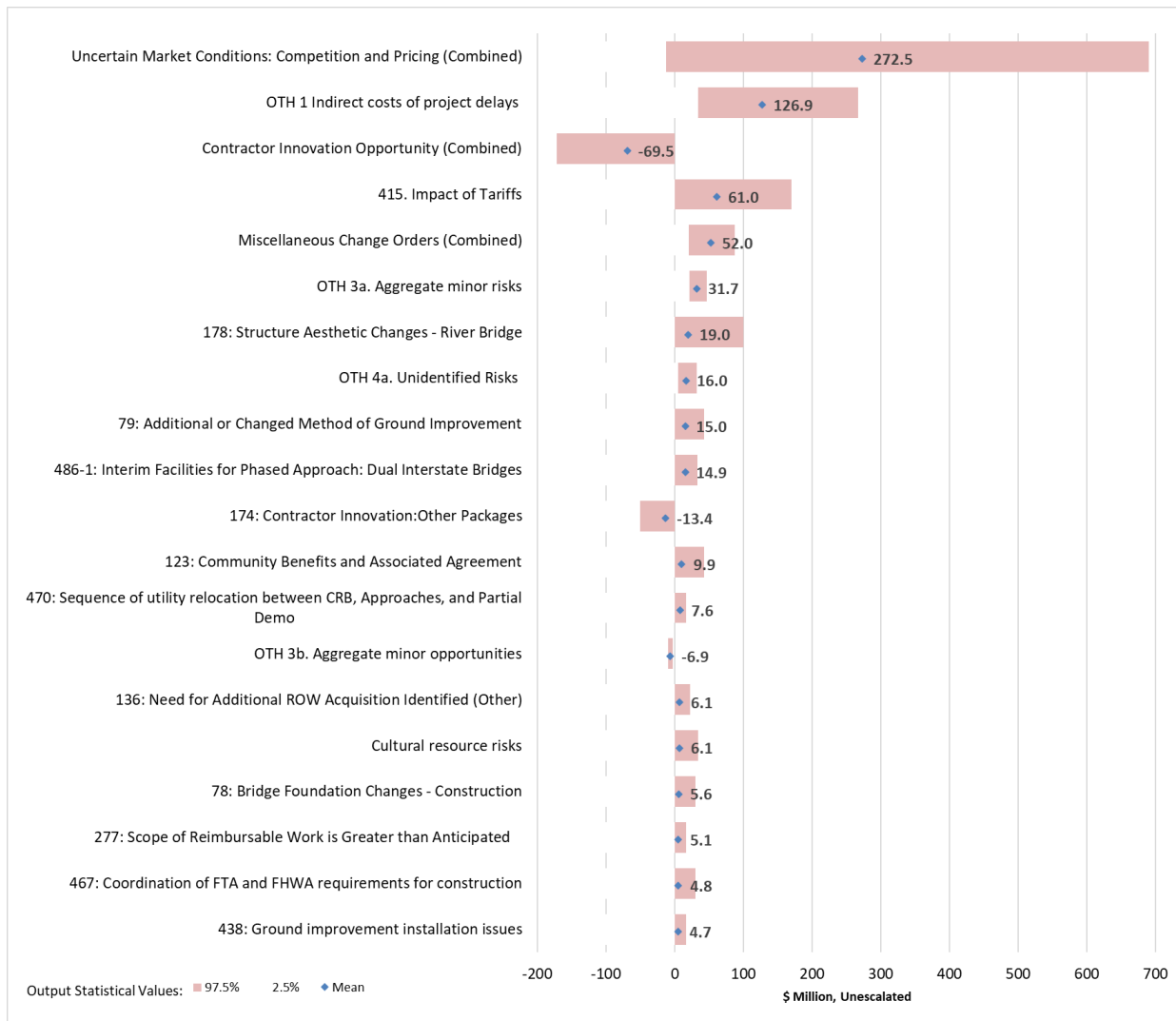
The rankings in Figure 4-3 through Figure 4-5 also indicate the range of potential impact for each risk or base uncertainty item. Each bar depicts the 95% simulated impact range (percentile 2.5 to percentile 97.5) for each factor. The simulated impact ranges consider both the likelihood of occurrence and any uncertainty in impacts if the risk occurs.

Cost Estimate Validation Process (CEVP) Update Report

Additional notes on risk rankings:

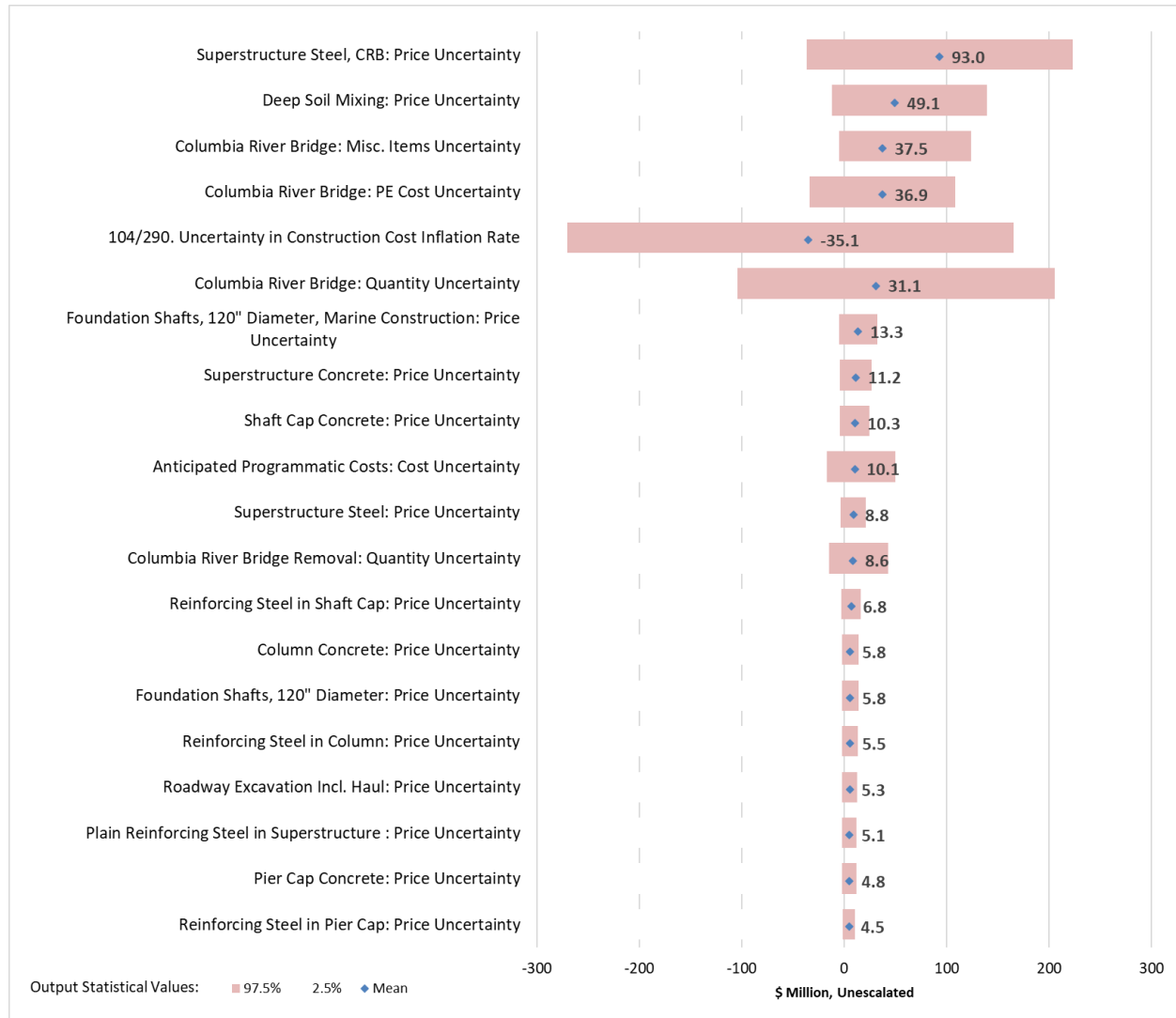
1. The schedule risk rankings are approximate but take into consideration the interaction with other risks and flowchart logic, including base float, potentially changing critical paths, and work windows as applicable.
2. Some similar risk register items were combined in the rankings for clarity (e.g., Uncertain Market Conditions and Contractor Innovation Opportunity).
3. The cost uncertainty impacts represent the approximate impact on Program costs considering the compounding effect of percentage markups applied to the direct cost items.

Figure 4-3. Most Significant Program Cost Threats and Opportunities: Funded Phase



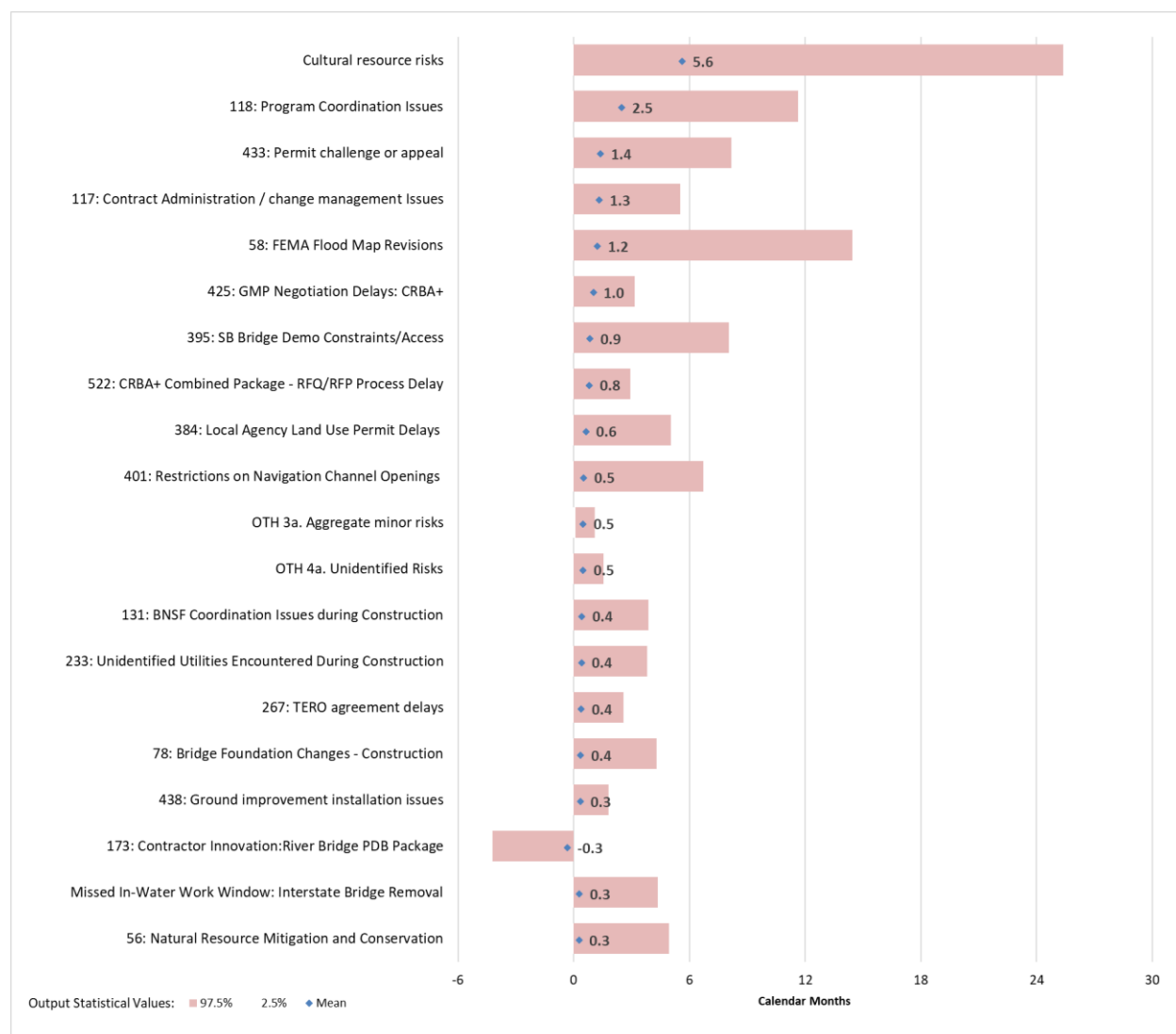
CRB = Columbia River Bridges; Demo = demolition; FHWA = Federal Highway Administration; FTA = Federal Transit Administration; ROW = right of way

Figure 4-4. Most Significant Program Base Cost Uncertainties: Funded Phase



CRB = Columbia River Bridges; PE = preliminary engineering

Figure 4-5. Most Significant Program Schedule Threats and Opportunities: Funded Phase

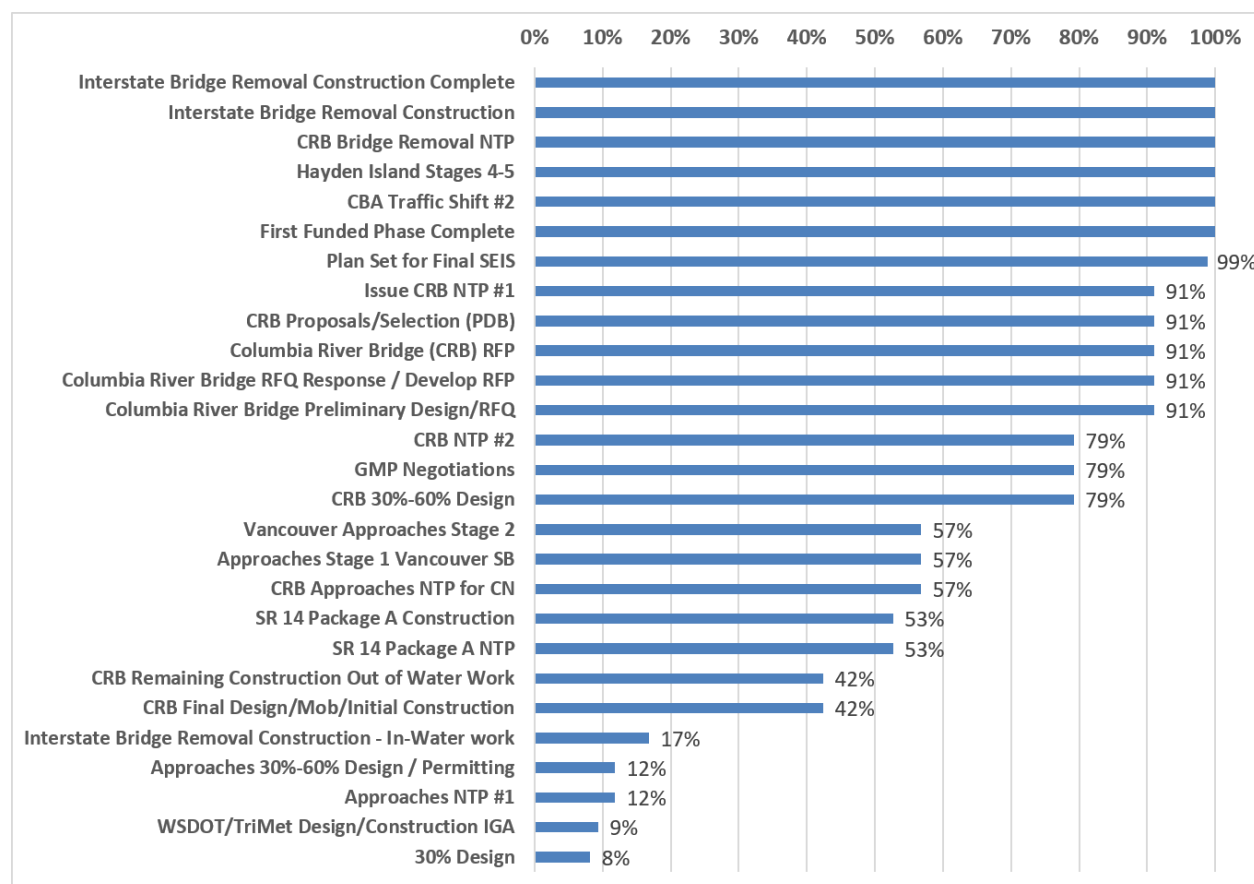


CRBA = Columbia River Bridges and Approaches; Demo = demolition; FEMA = Federal Emergency Management Agency; GMP = guaranteed maximum price; PDB = progressive design build; RFP = request for proposals; RFQ = request for qualifications; SB = southbound; TERO = tribal employment rights ordinance

4.2.1.3 Schedule Critical Path Analysis: Funded Phase

Figure 4-6 summarizes the results of the schedule analysis, including the probability that each major activity or milestone is on the overall critical path to Funded Phase Completion milestone (I-5 approaches and Interstate Bridge Demolition both being complete). For example, the activity “CRB 30%–60% Design” falls on the critical path to one or more of these milestones on 79% of the Monte Carlo realizations performed. Note that some activities/milestones may be co-critical on some realizations.

Figure 4-6. Probability of Key Activities and Milestones Being on Program Critical Path: Funded Phase



CBA = community benefit agreement; CRB = Columbia River Bridges; Final SEIS = Final Supplemental Environmental Impact Statement; IGA = intergovernmental agreement; NTP = notice to proceed; PDB = progressive design build; RFP = request for proposals; RFQ = request for qualification; SB = southbound; SR = State Route; WSDOT = Washington State Department of Transportation

4.2.1.4 Comparison with Previous Results: Funded Phase

Results of a preliminary scoping analysis of the Funded Phase elements were publicly released by the IBR Program in March 2026 in the form of a fact sheet (IBR 2026b). The P70 YOEC cost result for the Funded Phase elements has decreased from **\$6,281 million** to **\$5,682 million** since the initial analysis was performed. The cost change is attributable to program management cost reductions, efficiencies associated with repackaging, and risk adjustments, as described in Section 3.2.1 and Section 4.1.

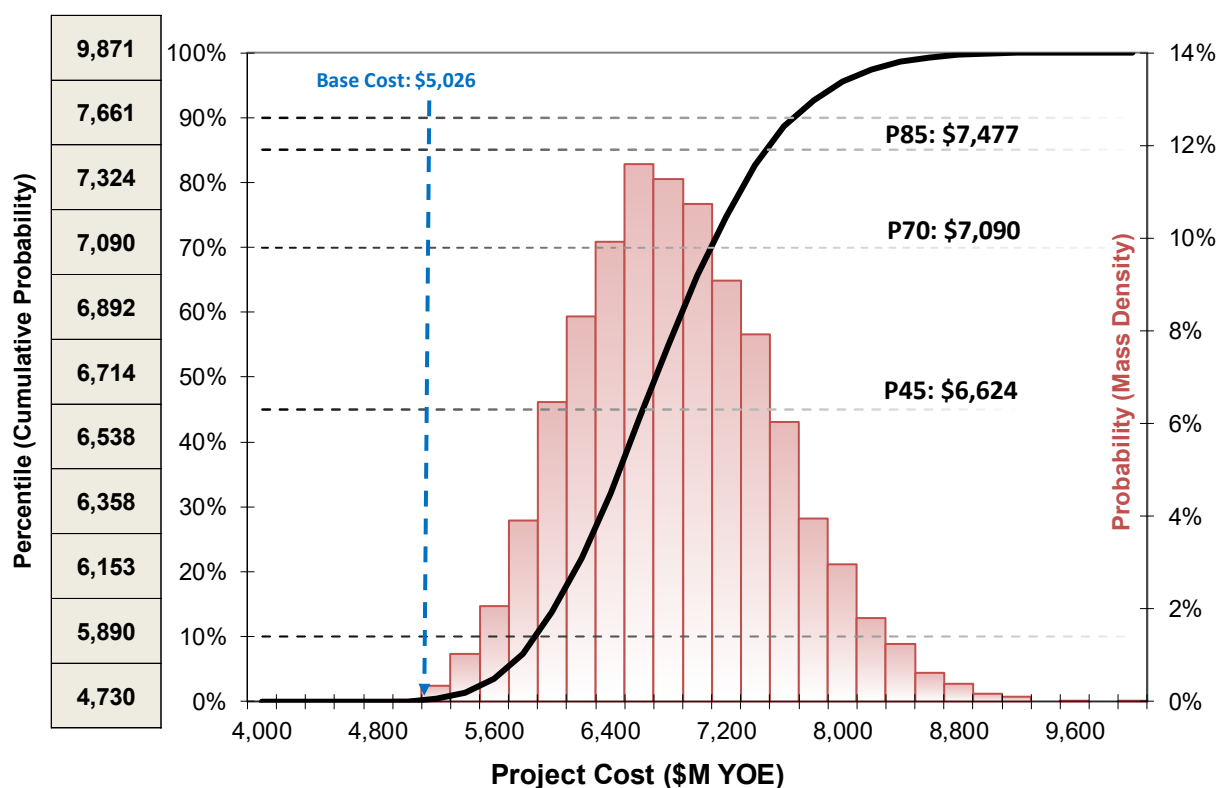
4.2.2 Key Results: Core Set of Projects

Probability distributions for Core Set of Projects cost are shown in Figure 4-7 as overlain PMFs and CDFs in YOE dollars. Figure 4-8 depicts the probability distributions for the Core Set of Projects completion date. These probability distributions reflect the base cost and schedule, base uncertainties, and risk and opportunity (as documented in the risk register).

The corresponding tabular results for Core Set of Projects cost and key milestones are presented in Table 4-5 through Table 4-7.

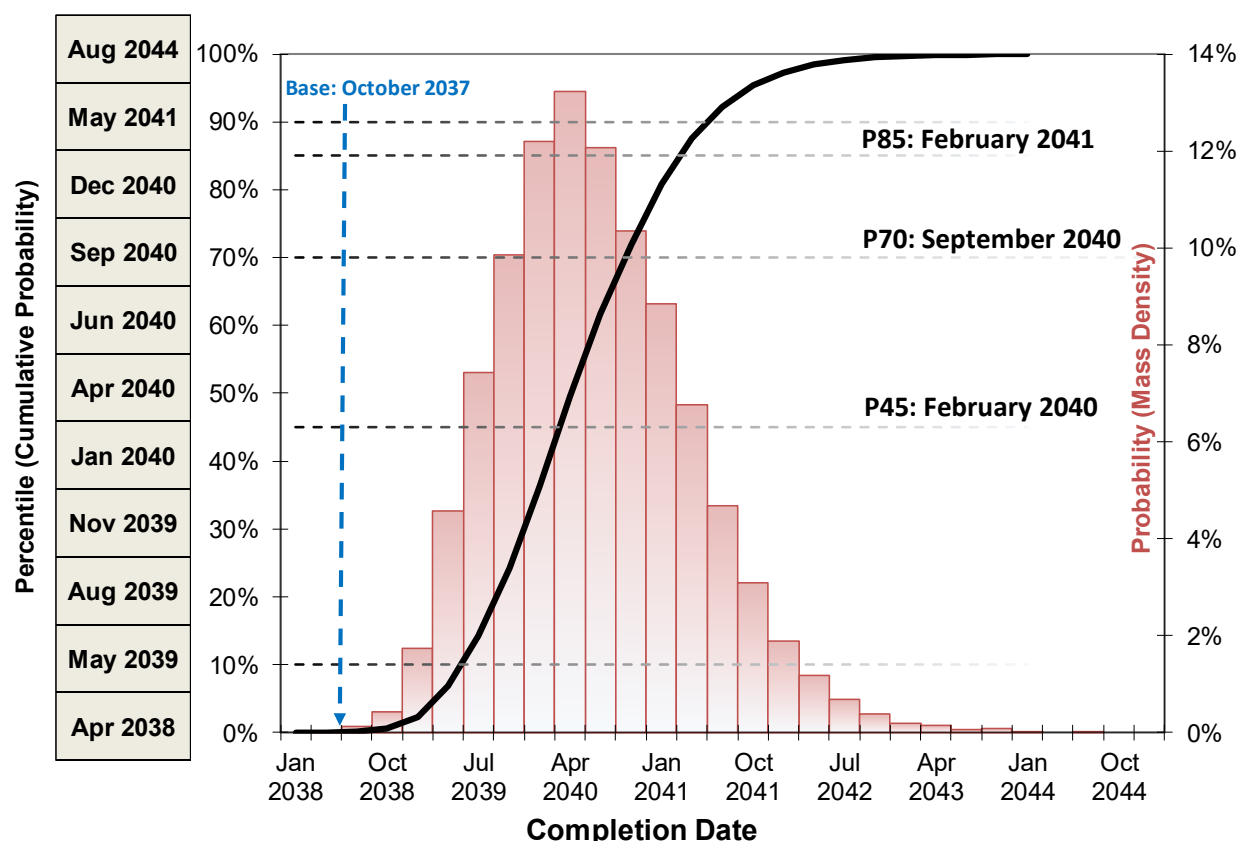
Additional package level results are included in Appendix A.

Figure 4-7. Probability Distribution of Core Set of Projects Cost in YOE Dollars



M = million; P = percentile YOE = year of expenditure

Figure 4-8. Probability Distribution of Core Set of Projects Completion Date



P = percentile

The following notes apply to Table 4-5 through Table 4-7:

1. Table 4-5 and Table 4-6: The mean component costs may be added to obtain the mean total phase cost. In general, however, the sum of the xth percentile for component costs is not the xth percentile of the total phase cost. For example, the sum of the 70th percentiles for PE, ROW, and CN (in YOE dollars) is not the 70th percentile of the total phase cost (in YOE dollars).
2. Table 4-5 and Table 4-6: “Contingency at P70” represents the percentage difference between the 70th percentile and deterministic base costs (i.e., corresponding to a risk-based contingency at the target amount).
3. Table 4-5 and Table 4-6: The total Program cost includes \$236.7 million of PM cost incurred prior to July 2025.
4. Table 4-7: “Contingency at P70” equals (milestone date at target percentile (P70) – base milestone date) / (base milestone date – schedule reference date as shown on flowchart).
5. Table 4-7: Standard deviation is in calendar months.

Table 4-5. Core Set of Projects Cost Statistics

Cost Parameter	Core Set of Projects Cost (July 2025, millions of dollars)	Core Set of Projects Cost (millions of YOE dollars)	Base Cost (July 2025, millions of dollars)	Risk Cost (July 2025, millions of dollars)	Escalation Cost (millions of YOE dollars)
Deterministic Base	4,138	5,026	4,138	0	889
Mean	5,323	6,752	4,551	772	1,429
Standard Deviation	513	689	367	316	193
1%	4,261	5,335	3,794	103	1,050
5%	4,532	5,690	3,967	268	1,144
10%	4,685	5,890	4,075	366	1,197
20%	4,875	6,153	4,227	498	1,262
25%	4,953	6,259	4,288	548	1,291
30%	5,033	6,358	4,341	597	1,317
40%	5,168	6,538	4,437	680	1,364
45%	5,232	6,624	4,492	721	1,387
50%	5,294	6,714	4,540	762	1,411
60%	5,430	6,892	4,638	847	1,461
65%	5,498	6,986	4,688	891	1,486
70%	5,576	7,090	4,747	934	1,515
75%	5,660	7,204	4,804	981	1,546

Cost Estimate Validation Process (CEVP) Update Report

Cost Parameter	Core Set of Projects Cost (July 2025, millions of dollars)	Core Set of Projects Cost (millions of YOE dollars)	Base Cost (July 2025, millions of dollars)	Risk Cost (July 2025, millions of dollars)	Escalation Cost (millions of YOE dollars)
80%	5,755	7,324	4,863	1,037	1,585
85%	5,863	7,477	4,940	1,109	1,632
90%	6,001	7,661	5,033	1,187	1,690
95%	6,206	7,952	5,182	1,312	1,772
99%	6,615	8,465	5,423	1,530	1,954
Contingency at P70 (%)	34.7%	41.1%	14.7%	-	70.5%

P70 = 70th percentile; YOE = year of expenditure

Table 4-6. Core Set of Projects Cost Component Statistics

Cost Parameter	PE Cost (millions of YOE dollars)	ROW Cost (millions of YOE dollars)	CN Cost (millions of YOE dollars)	Program Management Cost (millions of YOE dollars)
Deterministic Base	463	244	3,758	561
Mean	587	275	5,225	665
Standard Deviation	67	29	635	39
1%	448	216	3,942	586
5%	480	230	4,250	605
10%	500	238	4,436	616
20%	527	249	4,675	632

Cost Estimate Validation Process (CEVP) Update Report

Cost Parameter	PE Cost (millions of YOE dollars)	ROW Cost (millions of YOE dollars)	CN Cost (millions of YOE dollars)	Program Management Cost (millions of YOE dollars)
25%	538	254	4,772	637
30%	548	258	4,861	643
40%	567	266	5,020	653
45%	576	270	5,106	658
50%	584	273	5,184	663
60%	603	281	5,351	673
65%	611	284	5,441	678
70%	621	289	5,533	684
75%	632	294	5,638	690
80%	644	299	5,760	697
85%	659	305	5,898	706
90%	675	313	6,068	718
95%	701	325	6,333	734
99%	747	347	6,814	765
Contingency at P70 (%)	34.1%	18.4%	47.2%	22.1%

CN = construction; PE = preliminary engineering; P70 = 70th percentile; ROW = right of way; YOE = year of expenditure

Table 4-7. Core Set of Projects Milestone Statistics

Schedule Parameter	FTA Approves Entry to Engineering	FTA Approves FFGA	LRT RSD	Core Set of Projects Complete
Deterministic Base	Mar 2027	Dec 2029	Oct 2037	Oct 2037
Mean	Jun 2027	Jun 2031	Apr 2040	Apr 2040
Standard Deviation	3.1	8.4	9.5	9.5
1%	Mar 2027	Feb 2030	Oct 2038	Oct 2038
5%	Mar 2027	May 2030	Mar 2039	Mar 2039
10%	Mar 2027	Jul 2030	May 2039	May 2039
20%	Mar 2027	Oct 2030	Aug 2039	Aug 2039
25%	Mar 2027	Nov 2030	Oct 2039	Oct 2039
30%	Mar 2027	Dec 2030	Nov 2039	Nov 2039
40%	Mar 2027	Mar 2031	Jan 2040	Jan 2040
45%	Apr 2027	Apr 2031	Feb 2040	Feb 2040
50%	May 2027	May 2031	Apr 2040	Apr 2040
60%	Jun 2027	Jul 2031	Jun 2040	Jun 2040
65%	Jul 2027	Sep 2031	Jul 2040	Jul 2040
70%	Aug 2027	Oct 2031	Sep 2040	Sep 2040
75%	Aug 2027	Nov 2031	Oct 2040	Oct 2040

Cost Estimate Validation Process (CEVP) Update Report

Schedule Parameter	FTA Approves Entry to Engineering	FTA Approves FFGA	LRT RSD	Core Set of Projects Complete
80%	Sep 2027	Jan 2032	Dec 2040	Dec 2040
85%	Sep 2027	Mar 2032	Feb 2041	Feb 2041
90%	Oct 2027	May 2032	May 2041	May 2041
95%	Dec 2027	Sep 2032	Sep 2041	Sep 2041
99%	Feb 2028	Mar 2033	Jun 2042	Jul 2042
Contingency at P70 (%)	22.0%	41.5%	23.0%	23.0%

FFGA = Full Funding Grant Agreement; FTA = Federal Transit Administration; LRT = light-rail transit; P70 = 70th percentile; RSD=Revenue Service Date

4.2.2.1 Contingency: Core Set of Projects

The recommended contingency can be determined by subtracting the deterministic base YOE cost from the P70 YOE cost. Based on this risk analysis, the Core Set of Projects at P70 equals **\$2,064 million**, or 41.1% of the deterministic base cost. The IBR Program may refine this contingency through future CEVP updates.

The major components contributing to the contingency amount are summarized in Table 4, including base uncertainty, market conditions, and other risk register events. This indicates that risk register events (including the inflationary and indirect impact of schedule delay risks) warrant a contingency worth 15.7% of the base YOE cost, with market conditions and base uncertainty comprising the remainder of the contingency amount.

Table 4-8. Components of Core Set of Projects Contingency

Component	Amount (millions of YOE dollars)	% of Contingency	% of Base YOE Cost
Base Uncertainty	792	38%	15.8%
Market Conditions	484	23%	9.6%
Risk Register Events	788	38%	15.7%
Total	2,064	100%	41.1%

YOE = year of expenditure

4.2.2.2 Sensitivity Analysis: Core Set of Projects

The most significant cost risk and uncertainty factors associated with the Core Set of Projects are presented graphically in Figure 4-9 and Figure 4-10, respectively. Each figure is ranked in terms of contribution to the mean absolute value impact to project cost in July 2025 dollars. The most significant threats and opportunities regarding the schedule are presented in Figure 4-11, ranked in terms of contribution to the approximate absolute value mean impact to the critical path to the Core Set of Projects completion milestone, in calendar months.

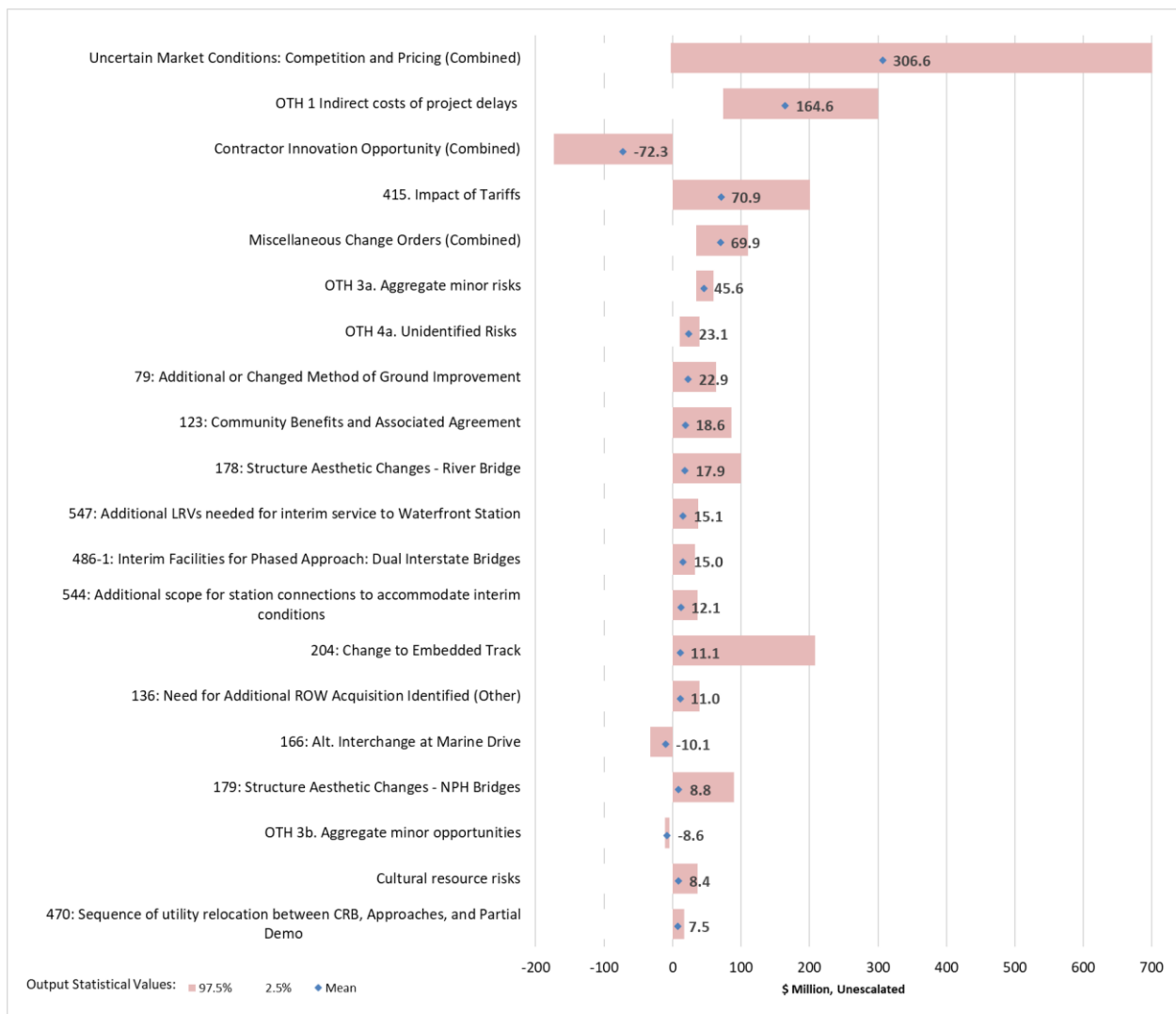
The rankings in Figure 4-9 through Figure 4-11 also indicate the range of potential impact for each risk or base uncertainty item. Each bar depicts the 95% simulated impact range (percentile 2.5 to percentile 97.5) for each factor. The simulated impact ranges consider both the likelihood of occurrence and any uncertainty in impacts if the risk occurs.

Cost Estimate Validation Process (CEVP) Update Report

Additional notes on risk rankings:

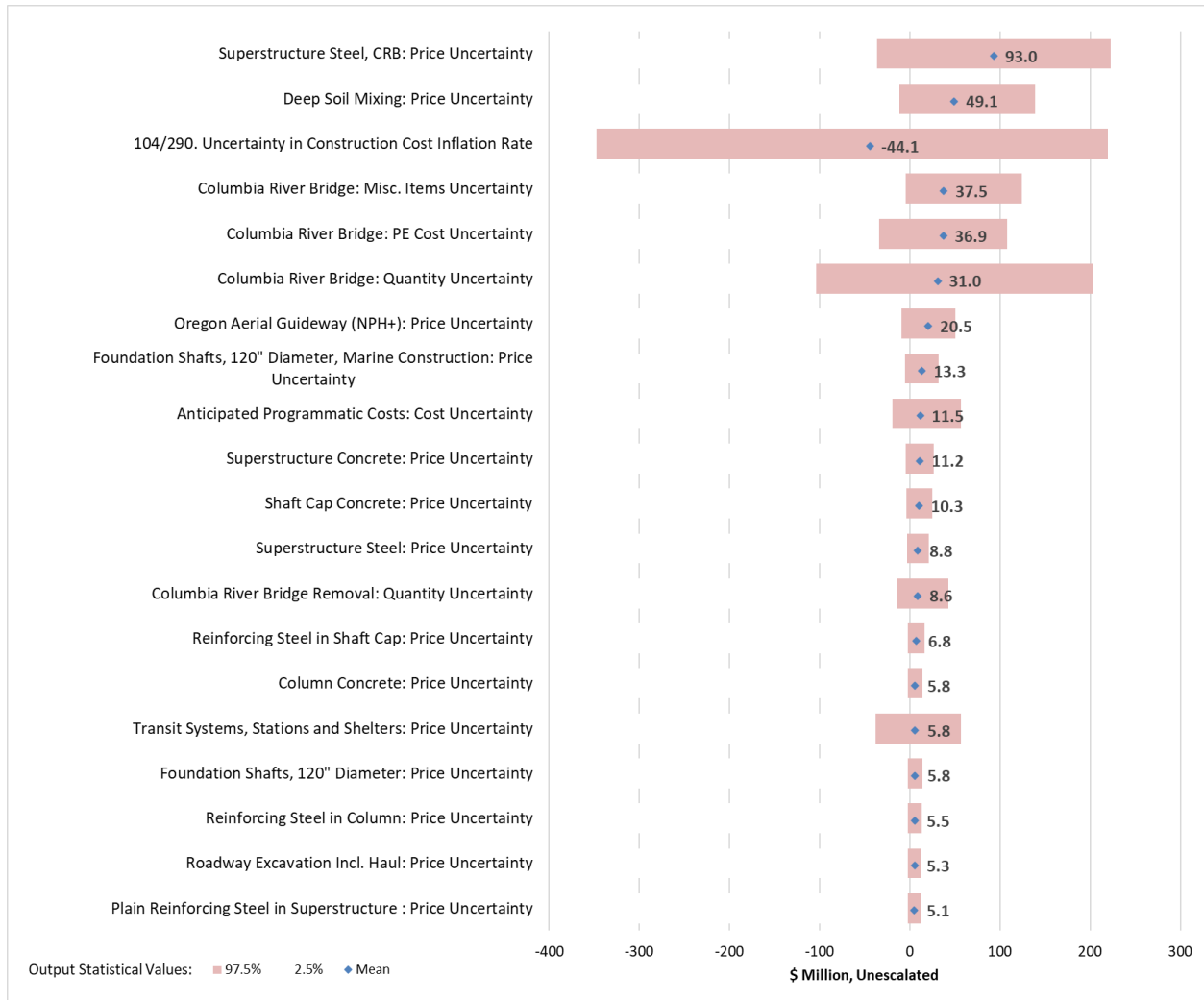
1. The schedule risk rankings are approximate but take into consideration the interaction with other risks and flowchart logic, including base float, potentially changing critical paths, and work windows as applicable.
2. Some similar risk register items were combined in the rankings for clarity (e.g., Uncertain Market Conditions and Contractor Innovation Opportunity).
3. The cost uncertainty impacts represent the approximate impact on Program costs considering the compounding effect of percentage markups applied to the direct cost items.

Figure 4-9. Most Significant Program Cost Threats and Opportunities: Core Set of Projects



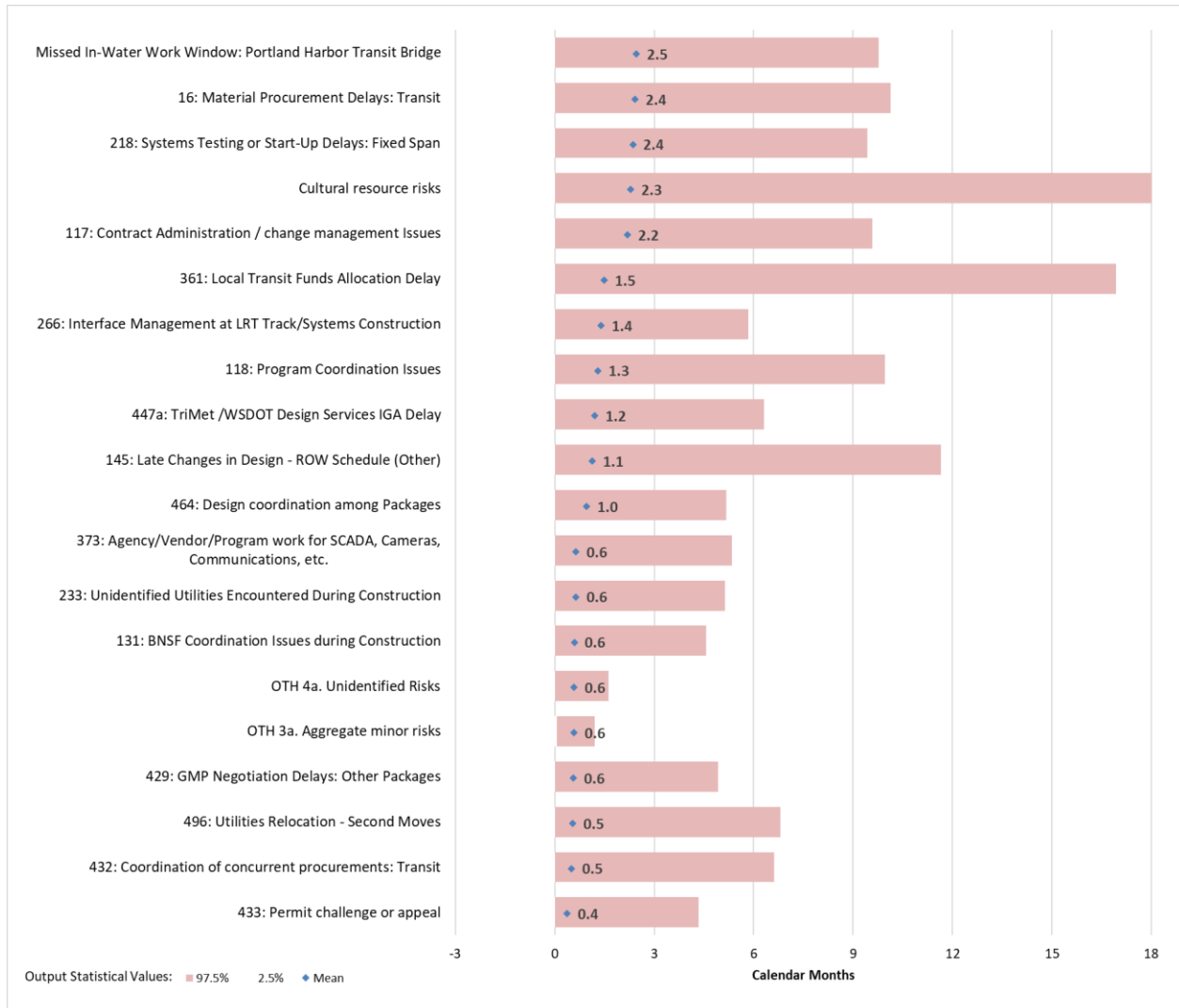
CRB = Columbia River Bridges; Demo = demolition; LRV = light rail vehicle; NPH = North Portland Harbor; ROW = right of way

Figure 4-10. Most Significant Program Base Cost Uncertainties: Core Set of Projects



CRB = Columbia River Bridges; NPH = North Portland Harbor; PE = preliminary engineering;

Figure 4-11. Most Significant Program Schedule Threats and Opportunities: Core Set of Projects

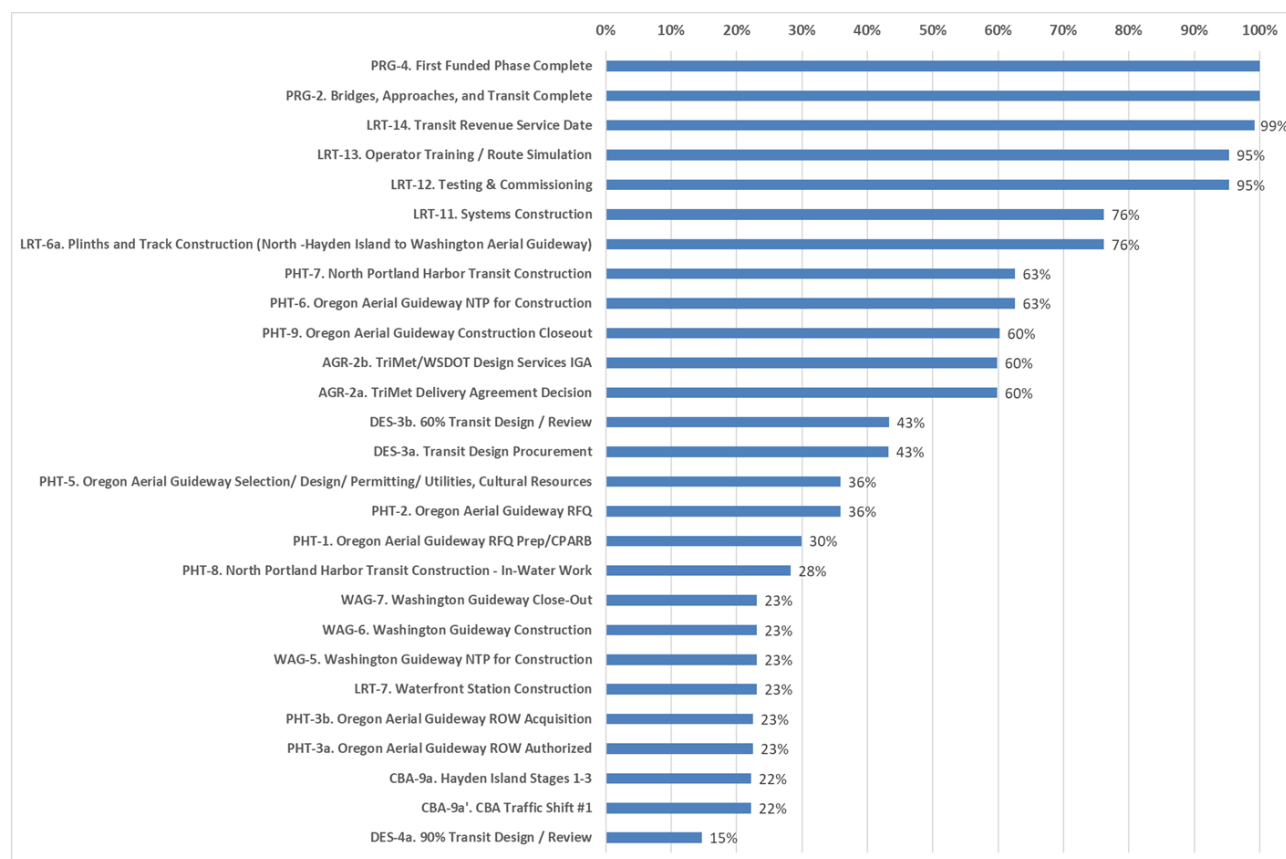


GMP = guaranteed maximum price; IGA = intergovernmental agreement; LRT = light rail transit; OTH = Other; ROW = right of way; SCADA = Supervisory Control and Data Acquisition; WSDOT = Washington State Department of Transportation

4.2.2.3 Schedule Critical Path Analysis: Core Set of Projects

Figure 4-12 summarizes the results of the schedule analysis, including the probability that each major activity or milestone is on the overall critical path to the Core Set of Projects Completion milestone (Funded Phase and LRT Revenue Service Date both being complete). For example, the “North Portland Harbor Transit Construction” activity falls on the critical path to one or more of these milestones on 63% of the Monte Carlo realizations performed. Note that some activities/milestones may be co-critical on some realizations.

Figure 4-12. Probability of Key Activities and Milestones Being on Program Critical Path: Core Set of Projects



CBA = community benefit agreement; CPARB = Capital Projects Advisory Review Board; IGA = intergovernmental agreement; NTP = notice to proceed; RFQ = request for qualifications; ROW = right of way; WSDOT = Washington State Department of Transportation

4.2.2.4 Comparison with Previous Results: Core Set of Projects

Results of a preliminary scoping analysis of the Core Set of Projects elements were provided by the IBR Program in March 2026 in the form of a fact sheet (IBR 2026c). The P70 YOE cost result for the Core Set of Projects elements has decreased from **\$7,648 million** to **\$7,090 million** since the initial analysis was performed. The cost change is attributable to Programmatic cost reductions, efficiencies associated with repackaging, and risk adjustments as described in Section 3.2.1 and Section 4.7.

5. REFERENCES

FHWA (Federal Highway Administration). 2007. Major Projects Estimating Guidance. Available at https://www.fhwa.dot.gov/majorprojects/cost_estimating/major_project_cost_guidance.pdf. Accessed January 28, 2026.

Cost Estimate Validation Process (CEVP) Update Report

- FTA (Federal Transit Administration). 2024. Risk and Contingency Review (OP40).
<https://www.transit.dot.gov/sites/fta.dot.gov/files/2024-11/Oversight-Procedure-40-Risk-and-Contingency-Review.pdf>. Accessed May 29, 2026.
- IBR (Interstate Bridge Replacement Program). 2026a. Cost Estimate Validation Process (CEVP®) Report. https://www.interstatebridge.org/media/tydnsuxl/ibr-cevp-report-2026-final-rev1_remediated.pdf. Accessed March 17, 2026.
- IBR (Interstate Bridge Replacement Program). 2026b. Step 1: Bridge and Connections to I-5 + Bridge Removal Fact Sheet. https://www.interstatebridge.org/media/0iwjt1ej/ibr-core-set-of-projects-step-1-one-pager-final-2026-03-16_remediated.pdf. Accessed May 21, 2026.
- IBR (Interstate Bridge Replacement Program). 2026c. Core Set of Projects Fact Sheet. https://www.interstatebridge.org/media/413n40zb/ibr-core-set-of-projects-one-pager-final-rev1-2026-03-16_remediated.pdf. Accessed May 21, 2026.

Appendix A – Package-Level Results

Tables A-1 and A-2 provide statistical results for each of the 30 contract packages plus programmatic costs. The package level costs shown in Table A-1 include PE, right of way, and construction costs. As noted previously, the sum of component percentile costs does not necessarily equal the overall Program costs at that same percentile (e.g., P70). However, individual package costs that sum to the overall Program P70 can be adequately estimated by using the nearest percentile that sums to the desired total. Note that this is just one possible combination of package costs that sums to the Program total (this approach assumes perfect positive correlation among package costs). In this case, the P68.5 package costs sum approximately to the Core Set of Projects P70 cost of **\$7,090 million**. These values are shown in Table A-1.

Table A-1. Package-Level Cost Results

Package Number	Package Name	Millions of YOE dollars									
		Deterministic Base	Mean	P10	P45	P50	P65	P68.5	P70	P85	P90
0	Programmatic Costs	561	664	617	657	662	678	682	684	705	717
1	65th Street CTRAN O&M Bus Facility ^a	0	0	0	0	0	0	0	0	0	0
2	Bus Procurement ^a	0	0	0	0	0	0	0	0	0	0
3	Bus Shelters ^b	-	-	-	-	-	-	-	-	-	-
4	Approaches ^c	-	-	-	-	-	-	-	-	-	-
5	Columbia River Bridge	3,127	4,296	3,644	4,200	4,263	4,481	4,530	4,551	4,862	5,001
6	Columbia River Bridge Removal	296	368	309	358	364	384	389	391	420	434
7	Evergreen Park & Ride ^a	0	0	0	0	0	0	0	0	0	0
8	Hayden Island Guideway ^d	-	-	-	-	-	-	-	-	-	-
9	Hayden Island Package A (Hayden Island Center) ^c	-	-	-	-	-	-	-	-	-	-
10	Hayden Island Surface Streets ^a	0	0	0	0	0	0	0	0	0	0
11	Light Rail Overnight Facility ^a	0	0	0	0	0	0	0	0	0	0
12	LRV Procurement ^a	0	0	0	0	0	0	0	0	0	0
13	Marine Drive Interchange ^a	0	0	0	0	0	0	0	0	0	0
14	Marine Drive Package A	200	238	200	235	238	250	253	254	269	277

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Package Number	Package Name	Millions of YOE dollars									
		Deterministic Base	Mean	P10	P45	P50	P65	P68.5	P70	P85	P90
15	Mill Plain Interchange ^a	0	0	0	0	0	0	0	0	0	0
16	North Expo Road ^a	0	0	0	0	0	0	0	0	0	0
17	North Portland Harbor Bridge Removal ^a	0	0	0	0	0	0	0	0	0	0
18	Oregon Aerial Guideway (NPH+)	275	374	314	361	367	387	392	394	426	444
19	Oregon I-5 Northbound ^a	0	0	0	0	0	0	0	0	0	0
20	Oregon I-5 Southbound ^a	0	0	0	0	0	0	0	0	0	0
21	Oregon Station Finishes ^a	-	-	-	-	-	-	-	-	-	-
22	Pre-completion tolling signage	50	56	49	55	56	58	58	59	62	64
23	Ruby Junction TriMet Facility Expansion ^a	0	0	0	0	0	0	0	0	0	0
24	SR-14 Package A ^c	-	-	-	-	-	-	-	-	-	-
25	Transit Systems, Stations, and Shelters	443	640	537	628	639	670	678	681	727	747
26	Washington Station Finishes ^b	-	-	-	-	-	-	-	-	-	-
27	Washington North ^a	0	0	0	0	0	0	0	0	0	0
28	Waterfront Park & Ride ^a	0	0	0	0	0	0	0	0	0	0
29	West Hayden Island Mitigation	2	6	2	3	3	4	4	4	13	13

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Package Number	Package Name	Millions of YOE dollars									
		Deterministic Base	Mean	P10	P45	P50	P65	P68.5	P70	P85	P90
30	Washington Aerial Guideway	73	102	73	96	98	103	104	105	114	121
	Total	5,026	6,745	-	-	-	-	7,090	-	-	-

a – Future package not included in Core Set of Projects.

b – Included in Track, Systems, Stations, and Shelters package totals.

c – Included in Columbia River Bridge package totals.

d – Included in Oregon Aerial Guideway package totals.

Table B-2. Package-Level Schedule Results

Package Number	Package Name	Package Completion Date								
		Deterministic Base	Mean	P10	P45	P50	P65	P70	P85	P90
0	Programmatic Costs	-	-	-	-	-	-	-	-	-
1	65th Street CTRAN O&M Bus Facility ^a	-	-	-	-	-	-	-	-	-
2	Bus Procurement ^a	-	-	-	-	-	-	-	-	-
3	Bus Shelters ^b	-	-	-	-	-	-	-	-	-
4	Approaches ^c	-	-	-	-	-	-	-	-	-
5	Columbia River Bridge	Aug 2035	May 2037	May 2036	Sep 2036	Feb 2037	Mar 2037	Aug 2037	Oct 2037	Nov 2037
6	Columbia River Bridge Removal	Jun 2036	Apr 2038	Mar 2037	Aug 2037	Jan 2038	Feb 2038	Jul 2038	Sep 2038	Nov 2038
7	Evergreen Park & Ride ^a	-	-	-	-	-	-	-	-	-

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Package Number	Package Name	Package Completion Date								
		Deterministic Base	Mean	P10	P45	P50	P65	P70	P85	P90
8	Hayden Island Guideway ^d	-	-	-	-	-	-	-	-	-
9	Hayden Island Package A (Hayden Island Center) ^c	-	-	-	-	-	-	-	-	-
10	Hayden Island Surface Streets ^a	-	-	-	-	-	-	-	-	-
11	Light Rail Overnight Facility ^a	-	-	-	-	-	-	-	-	-
12	LRV Procurement ^a	-	-	-	-	-	-	-	-	-
13	Marine Drive Interchange ^a	-	-	-	-	-	-	-	-	-
14	Marine Drive Package A	Jul 2035	Nov 2036	Feb 2036	Jun 2036	Sep 2036	Oct 2036	Jan 2037	Mar 2037	Apr 2037
15	Mill Plain Interchange ^a	-	-	-	-	-	-	-	-	-
16	North Expo Road ^a	-	-	-	-	-	-	-	-	-
17	North Portland Harbor Bridge Removal ^a	-	-	-	-	-	-	-	-	-
18	Oregon Aerial Guideway (NPH+)	Dec 2040	Sep 2042	Sep 2041	Dec 2041	Jul 2042	Aug 2042	Dec 2042	Dec 2042	Dec 2042
19	Oregon I-5 Northbound ^a	-	-	-	-	-	-	-	-	-
20	Oregon I-5 Southbound ^a	-	-	-	-	-	-	-	-	-
21	Oregon Station Finishes ^a	-	-	-	-	-	-	-	-	-
22	Pre-completion tolling signage	Dec 2027	Apr 2028	Dec 2027	Dec 2027	Feb 2028	Mar 2028	Jun 2028	Jul 2028	Aug 2028

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Package Number	Package Name	Package Completion Date								
		Deterministic Base	Mean	P10	P45	P50	P65	P70	P85	P90
23	Ruby Junction TriMet Facility Expansion ^a	-	-	-	-	-	-	-	-	-
24	SR-14 Package A ^c	-	-	-	-	-	-	-	-	-
25	Transit Systems, Stations, and Shelters	Jul 2037	Jan 2040	Jan 2039	Jun 2039	Oct 2039	Dec 2039	Mar 2040	May 2040	Jun 2040
26	Washington Station Finishes ^b	-	-	-	-	-	-	-	-	-
27	Washington North ^a	-	-	-	-	-	-	-	-	-
28	Waterfront Park & Ride ^a	-	-	-	-	-	-	-	-	-
29	West Hayden Island Mitigation	Aug 2028	Aug 2028	Aug 2028	Aug 2028	Aug 2028	Sep 2028	Sep 2028	Sep 2028	Sep 2028
30	Washington Aerial Guideway	Oct 2034	Mar 2036	Mar 2035	Jul 2035	Dec 2035	Jan 2036	May 2036	Jul 2036	Aug 2036

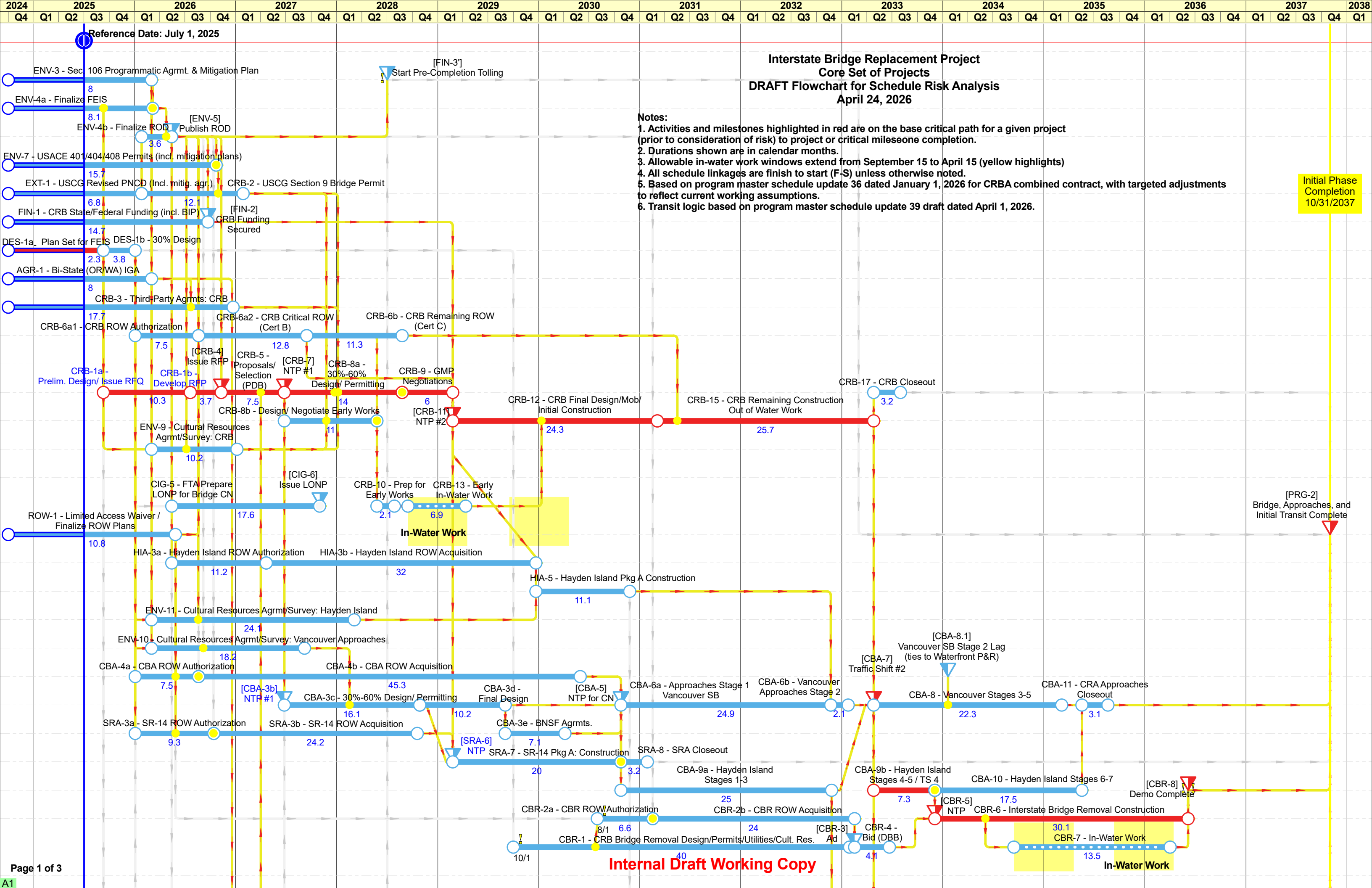
a – Future package not included in Core Set of Projects.

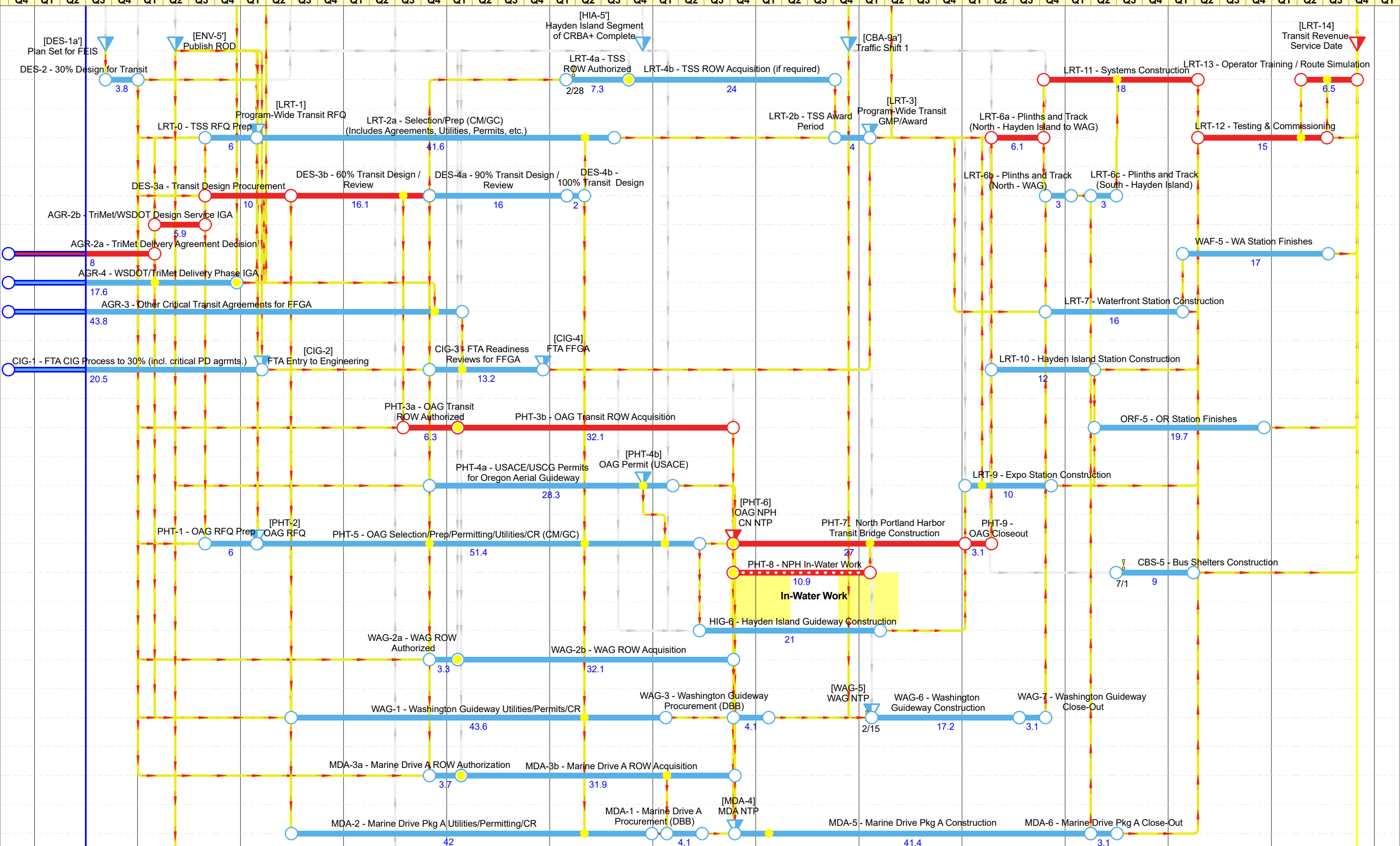
b – Included in Track, Systems, Stations, and Shelters package totals.

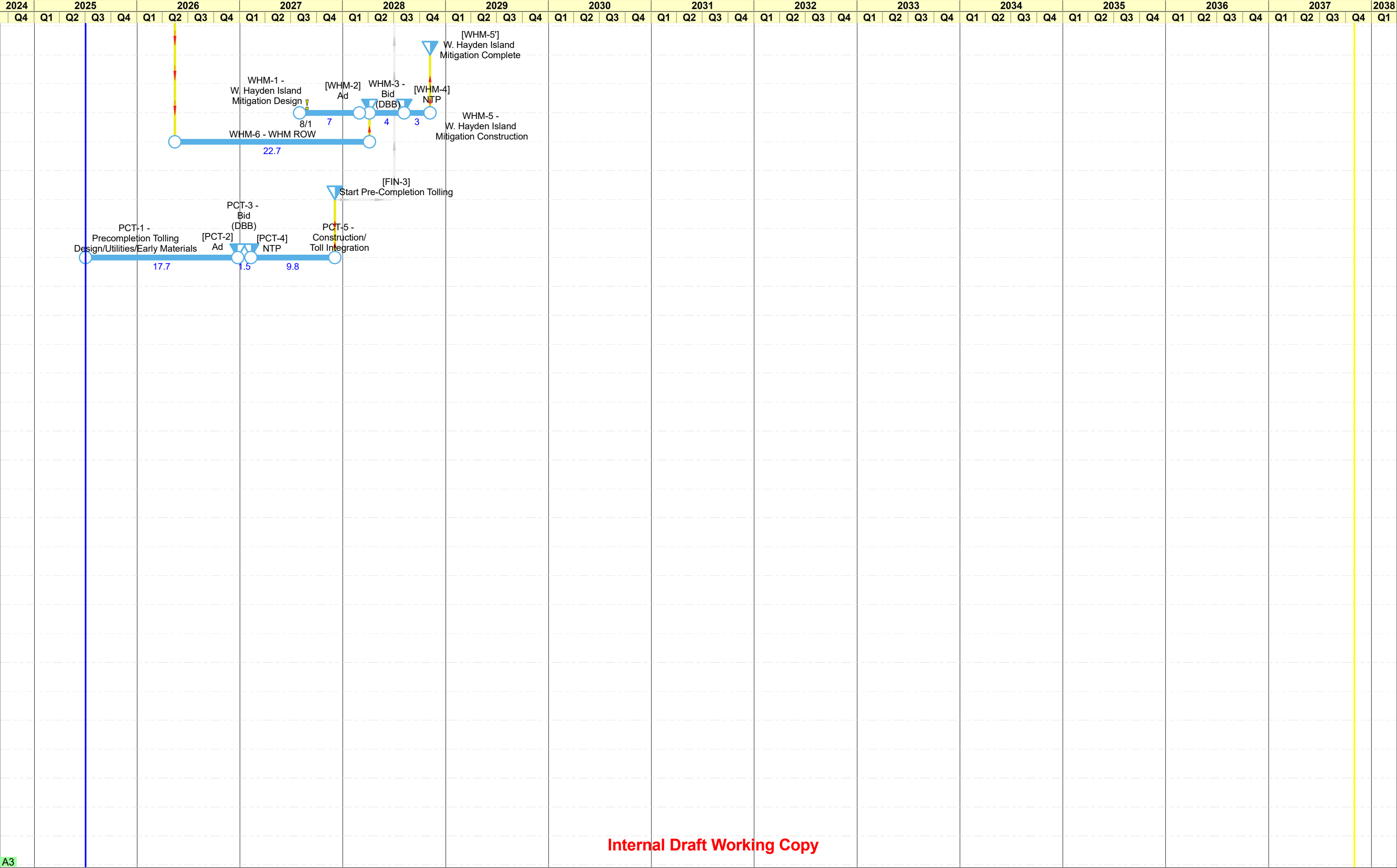
c – Included in Columbia River Bridge package totals.

d – Included in Oregon Aerial Guideway package totals.

Appendix B – Schedule Summary







Internal Draft Working Copy

Table C-1. Schedule Flowchart Logic Summary

Activity ID	Activity Name	Predecessor(s)	Successor(s)
PRG-1a	Program Management Pre-ROD (F-F with ROD, ENV-5)	ENV-5 FF	PRG-1b
PRG-1b	Program Management Post-ROD (F-F with program completion, PRG-3)	PRG-1a, PRG-3 FF	
PRG-2	Bridges, Approaches, and Transit Complete	LRT-14 FS,"CBA-11 FS","SRA-8 FS","CRB-17 FS","FIN-3' FS","CBR-8 FS","CBS-5 FS"	
PRG-3	IBR Program Complete	HIS-6 FS,"ONB-7 FS","LRT-12' FS","MPL-7 FS","WAN-7 FS","OSB-9 FS","EPR-7 FS","WPR-7 FS","NER-6 FS"	PRB-1b FF
DES-1a	Plan Set for Final SEIS		CBR-1 FS,"DES-1a' FS","CRB-1a FS","ENV-9 FS","ENV-4a FF178","DES-1b FS", DES-1a"
DES-1a'	Plan Set for Final SEIS	DES-1a FS	DES-2 FS,"LRV-1 FS"
DES-1a''	Plan Set for Final SEIS	DES-1a	OSB-1 FS,"MDI-1 FS","PHD-1 FS","ONB-1 FS","NER-1 FS","HIS-1 FS","MPL-1 FS","WAN-1 FS","WHM-1 FS"
DES-1b	30% Design	DES-1a FS	ENV-11 FS,"ENV-10 FS","SRA-3a FS","CBA-4a FS","CRB-6a1 FS"
DES-2	30% Design for Transit	DES-1a' FS	CIG-5 FS,"PHT-2 FS","PHT-1 FS","RJT-1 FS","CBF-1 FS","CBS-1 FS","CBP-1 FS","PHT-3a FS","LRT-0 FS","LRF-0 FS","RJT-4 FS","MDA-3a FS","CRB-7 FS","DES-3b FS","WAG-2a FS","WAG-1 FS","DES-3a FS", DES-2'
DES-2'	30% Design for Transit	DES-2	EPR-1 FS,"WPR-1 FS"
DES-3a	Transit Design Procurement	DES-2 FS,"AGR-2b FS"	DES-3b FS,"MDA-2 FS","WAG-1 FS"
DES-3b	60% Transit Design / Review	DES-2 FS,"AGR-4 FS","DES-3a FS"	DES-4a FS,"PHT-4a FS","CIG-3 FS","PHT-3a SS398","PHT-5 FF957","LRT-4a FS","MDA-3a FS","WAG-2a FS"
DES-4a	90% Transit Design / Review	DES-3b FS	DES-4b FS

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Activity ID	Activity Name	Predecessor(s)	Successor(s)
DES-4b	100% Transit Design	DES-4a FS	RJT-3 FF87, "LRF-2 FF90", "LRT-2a FF104", "PHT-5 FF407", "MDA-2 FF239", "WAG-1 FF288"
ENV-1	Publish Draft SEIS		
ENV-2	ESA Section 7 / BO		
ENV-3	Section 106 Programmatic Agreement & Mitigation Plan		ENV-9 FS, "ENV-4a FF", "ENV-11 FS", "ENV-10 FS"
ENV-4a	Finalize Final SEIS	ENV-3 FF, "DES-1a FF178"	ENV-4b FF20
ENV-4b	Issue ROD	EXT-1 FS, "ENV-4a FF20"	ENV-5 FS
ENV-5	Publish ROD	ENV-4b FS	HIA-3a FS, "ENV-5' FS", "FIN-2 FS", "ENV-7 FF", "CIG-5 FS", "ENV-9 FF183", "ENV-11 FF564", "ENV-10 FF366", "FIN-3' FS", "CRB-6a2 FS", "SRA-3a FF1", "CBA-4a FF", "CBR-2a FF", "CRB-4 FS", "ENV-5a, ENV-5", "PRF-1a FF"
ENV-5'	Publish ROD	ENV-5 FS	CIG-2 FS, "PHT-4a FS", "LRT-1 FS", "PHT-2 FS", "PHT-3a FF", "WAG-2a FF1", "MDA-3a FF", "WHM-6 FS", "LRF-1 FS", "RJT-4 FS", "RJT-2 FS", "LRV-2 FS", "CBP-2 FS", "LRT-4a FF"
ENV-5''	Publish ROD	ENV-5	MPL-2 FS, "MDI-4 FS", "EPR-2 FS", "WPR-2 FS", "OSB-4 FS", "NER-2 FS", "HIS-2 FS", "WAN-2 FS", "WHM-6 FS"
ENV-5a	Post-ROD	ENV-5	CRB-7
ENV-7	USACE 401/404/408 Permits	ENV-5 FF	CRB-2 FF90
ENV-9	Cultural Resources Agrmt/Survey: CRB	DES-1a FS, "ENV-3 FS", "ENV-5 FF183"	CRB-8a FF232, "CRB-8b FF183"
ENV-10	Cultural Resources Agrmt/Survey: Vancouver Approaches	ENV-3 FS, "DES-1b FS", "ENV-5 FF366"	CBA-3c FF254
ENV-11	Cultural Resources Agrmt/Survey: Hayden Island	ENV-3 FS, "DES-1b FS", "ENV-5 FF564"	HIA-5 FS
EXT-1	USCG PNCD		CRB-2 FS, "ENV-4b FS"

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Activity ID	Activity Name	Predecessor(s)	Successor(s)
ROW-1	Limited Access Waiver (WA) / Finalize ROW Plans		CBR-2a FS,"CBA-4a FF83", "SRA-3a FF138", "CRB-6a2 FS"
AGR-1	Bi-State (OR/WA) Intergovernmental Agreement (incl. governance)		CRB-4 FS,"CRB-3 FF153", "AGR-4 FF"
AGR-2a	TriMet Delivery Agreement Decision		LRT-0 FS,"PHT-1 FS", "AGR-4 FF290", "WAG-1 FS", "LRF-0 FS", "RJT-1 FS", "AGR-2b FS"
AGR-2b	TriMet/WSDOT Design Services IGA	AGR-2a FS	DES-3a FS,"PHT-1 FS", "LRT-0 FS"
AGR-3	Critical Transit Agreements for FFGA	AGR-4 FF98	CIG-3 FF286
AGR-4	WSDOT/TriMet Delivery Phase IGA	AGR-2a FF290,"AGR-1 FF"	CRB-5 FF85,"AGR-3 FF98", "DES-3b FS", "PHT-2 FS", "LRF-1 FS", "RJT-2 FS", "LRT-1 FS"
FIN-1	CRB State/Federal Funding (incl. BIP)		FIN-2 FS
FIN-2	CRB Funding Secured	ENV-5 FS,"FIN-1 FS"	CRB-11 FS
FIN-3	Start Pre-Completion Tolling	PCT-5 FS	FIN-3' FS, FIN-3'
FIN-3'	Start Pre-Completion Tolling	ENV-5 FS,"FIN-3 FS", FIN-3	PRG-2 FS
CIG-1	FTA CIG Process to 30%		CIG-2 FS
CIG-2	FTA Approval for Entry into Engineering	CIG-1 FS,"ENV-5' FS"	CIG-3 FS,"LRV-2 FS"
CIG-3	FTA Readiness Reviews for FFGA	CIG-2 FS,"AGR-3 FF286", "DES-3b FS"	CIG-4 FS
CIG-4	FTA FFGA	CIG-3 FS	PHT-6 FS,"LRT-3 FS", "WAG-5 FS", "CBS-4 FS", "LRF-3 FS", "RJT-5 FS", "CBF-5 FS", "HIG-6 FS"
CIG-5	FTA Prepare LONP for Bridge Construction	ENV-5 FS,"DES-2 FS"	CIG-6 FS
CIG-6	Issue LONP	CIG-5 FS	
CRB-1a	Columbia River Bridge Preliminary Design/RFQ	DES-1a FS, Risk FF Link	CRB-1b FS
CRB-1b	Columbia River Bridge RFQ Response / Develop RFP	CRB-1a FS	CRB-4 FS
CRB-2	USCG Bridge Permit	EXT-1 FS,"ENV-7 FF90"	CRB-8a FF232,"CRB-8b FF183"
CRB-3	Third-Party Agreements: CRB	AGR-1 FF153	CRB-8a FF232,"CRB-8b FF183"

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Activity ID	Activity Name	Predecessor(s)	Successor(s)
CRB-4	Columbia River Bridge (CRB) RFP	CRB-1b FS,"AGR-1 FS","ENV-5 FS"	CRB-5 FS
CRB-5	CRB Proposals/Selection (PDB)	CRB-4 FS,"AGR-4 FF85"	CRB-7 FS
CRB-6a1	CRB ROW Authorization	DES-1b FS	CRB-6a2 FS
CRB-6a2	CRB Critical ROW (Cert B)	ENV-5 FS,"CRB-6a1 FS","ROW-1 FS"	CRB-6b FS,"CRB-8b FF","CRB-11 FS"
CRB-6b	CRB Remaining ROW (Cert C)	CRB-6a2 FS	CRB-15 FF710
CRB-7	Issue CRB NTP #1	CRB-5 FS,"DES-2 FS"	CRB-8b FS,"CRB-8a FS","CBA-3b FS"
CRB-8a	CRB 30%-60% Design	CRB-2 FF232,"CRB-3 FF232","ENV-9 FF232","CRB-7 FS", ENV-5a FF	CRB-11 FS,"CRB-9 FS"
CRB-8b	Design / Negotiations for Early Work Packages	CRB-7 FS,"ENV-9 FF183","CRB-2 FF183","CRB-3 FF183","CRB-6a2 FF", ENV-5a FF	CRB-10 FS
CRB-9	GMP Negotiations	CRB-8a FS	CRB-11 FS
CRB-10	Prep for Early Works	CRB-8b FS	CRB-13 FS
CRB-11	CRB NTP #2	FIN-2 FS,"CRB-8a FS","CRB-9 FS","CRB-6a2 FS"	CRB-12 FS,"HIA-5 FS","SRA-6 FS"
CRB-12	CRB Final Design/Mob/Initial Construction	CRB-11 FS,"CRB-13 FF419"	CRB-15 FS
CRB-13	Early In-Water Work	CRB-10 FS	CRB-12 FF419
CRB-15	CRB Remaining Construction Out of Water Work	CRB-12 FS,"CRB-6b FF710"	CBA-7 FS,"CRB-17 FS"
CRB-16	Complete CRB NB		
CRB-17	CRB Closeout	CRB-15 FS	PRG-2 FS
CBA-3b	Approaches NTP #1	CRB-7 FS	CBA-3c FS
CBA-3c	Approaches 30%-60% Design / Permitting	ENV-10 FF254,"CBA-3b FS"	CBA-3d FS,"SRA-6 FS"
CBA-3d	Approaches Final Design	CBA-3c FS	CBA-5 FS,"CBA-3e FS", CBA-3f
CBA-3e	BNSF Agreements (C&M, ROE)	CBA-3d FS	CBA-5 FS
CBA-3f	Approaches GMP Negotiations	CBA-3d	CBA-5
CBA-4a	CRB (Vancouver) Approaches ROW Authorization	DES-1b FS,"ENV-5 FF","ROW-1 FF83"	CBA-4b FS
CBA-4b	CRB (Vancouver) Approaches ROW Acquisition	CBA-4a FS	CBA-5 FS
CBA-5	CRB Approaches NTP for CN	SRA-7 FS,"CBA-3d FS","CBA-3e FS","CBA-4b FS", CBA-3f	CBA-6a FS,"CBA-9a FS"

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Activity ID	Activity Name	Predecessor(s)	Successor(s)
CBA-6a	Approaches Stage 1 Vancouver SB	CBA-5 FS	CBA-6b FS
CBA-6b	Vancouver Approaches Stage 2	CBA-6a FS,"HIA-5 FS"	CBA-7 FS
CBA-7	CBA Traffic Shift #2	CRB-15 FS,"CBA-6b FS","CBA-9a FS"	CBA-8 FS,"CBA-9b FS","LRT-6a FS"
CBA-9a'	CBA Traffic Shift #1	CBA-9a FS	LRT-8 FS,"LRT-7 FS","WAG-5 FS","LRT-6a FS"
CBA-8	Vancouver Stages 3-5	CBA-7 FS	CBA-11 FS,"CBA-8.1 SS269"
CBA-8.1	CRBA Vancouver Stage 2 Lag (ties to Waterfront P&R)	CBA-8 SS269	CBA-8.1'
CBA-8.1'	CRBA Vancouver Stage 2 Lag (ties to Waterfront P&R)	CBA-8.1	WPR-7 FS
CBA-9a	Hayden Island Stages 1-3	CBA-5 FS	CBA-7 FS,"CBA-9a' FS"
CBA-9b	Hayden Island Stages 4-5	CBA-7 FS	CBA-10 FS,"CBA-5 FS"
CBA-10	Hayden Island Stages 6-7	CBA-9b FS	CBA-11 FS, CBA-10'
CBA-10'	Hayden Island Stages 6-7	CBA-10	OSB-7 FS,"OSB-8 FS"
CBA-11	Vancouver Approaches Closeout	CBA-8 FS,"CBA-10 FS"	PRG-2 FS, CBA-11'
CBA-11'	Vancouver Approaches Closeout	CBA-11	MPL-7 FS
CBA-12a	Prep for CRB Partial Demo		
CBA-12b	CRB Partial Demo		
SRA-3a	SR 14 ROW Authorization	DES-1b FS,"ENV-5 FF1","ROW-1 FF138"	SRA-3b FS
SRA-3b	SR 14 ROW Acquisition	SRA-3a FS	SRA-6 FS
SRA-6	SR 14 Package A NTP	SRA-3b FS,"CRB-11 FS","CBA-3c FS"	SRA-7 FS
SRA-7	SR 14 Package A Construction	SRA-6 FS	SRA-8 FS,"CBA-5 FS"
SRA-8	SR 14 Package A Closeout	SRA-7 FS	PRG-2 FS
SRA-9	Evergreen Bridge Construction		
HIA-3a	Hayden Island ROW Authorization	ENV-5 FS	HIA-3b FS
HIA-3b	Hayden Island ROW Acquisition	HIA-3a FS	HIA-5 FS
HIA-5	Hayden Island Package A Construction	HIA-3b FS,"ENV-11 FS","CRB-11 FS"	HIA-5' FS,"CBA-6b FS"
HIA-5'	Hayden Island Segment of CRBA+ Complete	HIA-5 FS	HIG-6 FS
HIG-6	Hayden Island Guideway Transit Construction	HIA-5' FS,"CIG-4 FS","PHT-5 FS"	PHT-9 FS

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Activity ID	Activity Name	Predecessor(s)	Successor(s)
CBR-1	CRB Bridge Removal Design/Permits/Utilities/Cultural Resources	DES-1a FS	CBR-3 FS,"CBR-2a SS297"
CBR-2a	CRB Bridge Removal ROW Authorization	CBR-1 SS297,"ROW-1 FS","ENV-5 FF"	CBR-2b FS
CBR-2b	CRB Bridge Removal ROW Acquisition	CBR-2a FS	CBR-3 FS
CBR-3	CRB Bridge Removal Ad	CBR-1 FS,"CBR-2b FS"	CBR-4 FS
CBR-4	CRB Bridge Removal Bid/Award (DBB)	CBR-3 FS	CBR-5 FS
CBR-5	CRB Bridge Removal NTP	CBR-4 FS,"CBA-9b FS"	CBR-6 FS
CBR-6	Interstate Bridge Removal Construction	CBR-5 FS	CBR-7 SS183,"CBR-8 FS"
CBR-7	Interstate Bridge Removal Construction - In-Water work	CBR-6 SS183	CBR-8 FS
CBR-8	Interstate Bridge Removal Complete	CBR-6 FS,"CBR-7 FS"	PRG-2 FS
LRT-0	Program-Wide Transit RFP Prep/CPARB	DES-2 FS,"AGR-2a FS","AGR-2b FS"	LRT-1 FS
LRT-1	Program-Wide Transit RFQ	LRT-0 FS,"ENV-5' FS","AGR-4 FS"	LRT-2a FS
LRT-2a	Program-Wide Transit Selection/ Permits/ Utilities	LRT-1 FS,"DES-4b FF104"	LRT-2b FS
LRT-2b	Track Systems Stations Award Period (CM/GC)	LRT-4b FS,"LRT-2a FS"	LRT-3 FS
LRT-3	Program-Wide Transit GMP/Award (CM/GC)	CIG-4 FS,"LRT-2b FS"	LRT-6a FS,"LRT-7 FS","LRT-9 FS","LRT-10 FS","LRT-8 FS","CBS-5 FS"
LRT-4a	TSS ROW Authorized	DES-3b FS,"ENV-5' FF"	LRT-4b FS
LRT-4b	TSS ROW Acquisition (if required)	LRT-4a FS	LRT-2b FS
LRT-6a	Plinths and Track Construction (North -Hayden Island to Washington Aerial Guideway)	LRT-3 FS,"PHT-9 FS","LRT-9 SS60","CBA-9a' FS","CBA-7 FS"	LRT-11 FS,"LRT-6b FS"
LRT-6b	Plinths and Track Construction (North - Washington Aerial Guideway)	WAG-7 FS,"LRT-6a FS"	LRT-6c FS
LRT-6c	Plinths and Track Construction (South - Hayden Island)	LRT-6b FS,"MDA-5 FS"	LRT-11 FF286
LRT-7	Waterfront Station Construction	LRT-3 FS,"CBA-9a' FS","WAG-6 FS","WAG-7 FS"	WAF-5 FS,"LRT-12 FS"

Cost Estimate Validation Process (CEVP) Update Report

Activity ID	Activity Name	Predecessor(s)	Successor(s)
LRT-8	Evergreen Station Construction	CBA-9a' FS, "LRT-3 FS"	LRT-12 FS, "WAF-5 FS", LRT-8'
LRT-8'	Evergreen Station Construction	LRT-8	EPR-7 FS
LRT-9	Expo Station Construction	LRT-3 FS, "PHT-7 FS"	ORF-5 FS, "LRT-12 FS", "LRT-6a SS60"
LRT-10	Hayden Island Station Construction	PHT-9 FS, "LRT-3 FS"	LRT-12 FS, "ORF-5 FS"
LRT-11	Systems Construction	LRT-6a FS, "LRT-6c FF286"	LRT-12 FS
LRT-12	Testing & Commissioning	LRT-11 FS, "LRT-7 FS", "LRT-8 FS", "LRT-9 FS", "LRT-10 FS", "LRV-7 FS", "MDA-6 FS"	LRT-14 FS, "LRT-13 SS365", "LRT-13 FF106"
LRT-13	Operator Training / Route Simulation	LRT-12 SS365, "LRT-12 FF106"	LRT-14 FS
LRT-14	Transit Revenue Service Date	WAF-5 FS, "ORF-5 FS", "LRT-12 FS", "RJT-6 FS", "LRT-13 FS"	PRG-2 FS
MDA-1	Marine Drive Package A Procurement (DBB)	MDA-3b SS729, "MDA-2 FS"	MDA-4 FS
MDA-2	Marine Drive Package A Utilities/Permitting/CR	DES-3a FS, "DES-4b FF239"	MDA-1 FS
MDA-3a	Marine Drive Package A ROW Authorized	DES-2 FS, "ENV-5' FF", "DES-3b FS"	MDA-3b FS
MDA-3b	Marine Drive Package A ROW Acquisition	MDA-3a FS	MDA-4 FS, "MDA-1 SS729"
MDA-4	Marine Drive Package A NTP for Construction	MDA-3b FS, "PHT-4a FS", "MDA-1 FS"	MDA-5 FS
MDA-5	Marine Drive Package A Construction	MDA-4 FS, "PHT-7 SS"	LRF-4 SS121, "MDA-6 FS", "LRT-6c FS"
MDA-6	Marine Drive Package A Close-Out	MDA-5 FS	LRT-12 FS
PHT-1	Oregon Aerial Guideway RFQ Prep/CPARB	DES-2 FS, "AGR-2a FS", "AGR-2b FS"	PHT-2 FS
PHT-2	Oregon Aerial Guideway RFQ	DES-2 FS, "PHT-1 FS", "ENV-5' FS", "AGR-4 FS"	PHT-5 FS
PHT-3a	Oregon Aerial Guideway ROW Authorized	DES-2 FS, "ENV-5' FF", "DES-3b SS398"	PHT-3b FS
PHT-3b	Oregon Aerial Guideway ROW Acquisition	PHT-3a FS	PHT-6 FS
PHT-4a	USACE / USCG Permits for Oregon Aerial Guideway	ENV-5' FS, "DES-3b FS"	PHT-6 FS, "PHT-4b SS757", "MDA-4 FS"
PHT-4b	Oregon Aerial Guideway Permit (USACE)	PHT-4a SS757	PHT-5 FF123

Cost Estimate Validation Process (CEVP) Update Report

Activity ID	Activity Name	Predecessor(s)	Successor(s)
PHT-5	Oregon Aerial Guideway Selection/ Design/ Permitting/ Utilities, Cultural Resources	PHT-2 FS,"PHT-4b FF123","DES-4b FF407","DES-3b FF957"	PHT-6 FS,"HIG-6 FS"
PHT-6	Oregon Aerial Guideway NTP for Construction	PHT-5 FS,"CIG-4 FS","PHT-4a FS","PHT-3b FS"	PHT-7 FS,"PHT-8 FS"
PHT-7	North Portland Harbor Transit Bridge Construction	PHT-6 FS,"PHT-8 FF337"	MDA-5 SS,"PHT-9 FS","LRT-9 FS"
PHT-8	North Portland Harbor Transit Bridge Construction - In-Water Work	PHT-6 FS	PHT-7 FF337
PHT-9	Oregon Aerial Guideway Construction Closeout	PHT-7 FS,"HIG-6 FS"	LRT-10 FS,"LRT-6a FS"
WAF-5	WA Station Finishes Construction	LRT-7 FS,"LRT-8 FS"	LRT-14 FS
ORF-5	OR Station Finishes Construction	LRT-9 FS,"LRT-10 FS"	LRT-14 FS
PCT-1	Preconstruction Tolling Design/Utilities		PCT-2 FS
PCT-2	Preconstruction Tolling Ad	PCT-1 FS	PCT-3 FS
PCT-3	Preconstruction Tolling Bid (DBB)	PCT-2 FS	PCT-4 FS
PCT-4	Preconstruction Tolling NTP	PCT-3 FS	PCT-5 FS
PCT-5	Preconstruction Tolling Construction / Toll Integration	PCT-4 FS	FIN-3 FS
WHM-1	West Hayden Island Mitigation Design/Utilities	Date: 8/1/2037	WHM-2 FS
WHM-2	West Hayden Island Mitigation Ad	WHM-1 FS,"WHM-6 FS"	WHM-3 FS
WHM-3	West Hayden Island Mitigation Bid (DBB)	WHM-2 FS	WHM-4 FS
WHM-4	West Hayden Island Mitigation NTP	WHM-3 FS	WHM-5 FS
WHM-5	West Hayden Island Mitigation Construction	WHM-4 FS	WHM-5' FS
WHM-5'	West Hayden Island Mitigation Construction	WHM-5 FS	WHM-5'' FS
WHM-5''	West Hayden Island Mitigation Construction	WHM-5' FS	
WHM-6	West Hayden Island Mitigation ROW	ENV-5' FS	WHM-2 FS
CRB-18	River Bridge Mitigation Cost	CRB-13 SS	

Cost Estimate Validation Process (CEVP) Update Report

Activity ID	Activity Name	Predecessor(s)	Successor(s)
WAG-1	Washington Guideway Utilities/Permits/CR	DES-2 FS,"AGR-2a FS","DES-3a FS","DES-4b FF288"	WAG-3 FS
WAG-2a	Washington Guideway ROW Authorized	DES-2 FS,"ENV-5' FF1","DES-3b FS"	WAG-2b FS
WAG-2b	Washington Guideway ROW Acquisition	WAG-2a FS	WAG-3 FS
WAG-3	Washington Guideway Procurement (DBB)	WAG-1 FS,"WAG-2b FS"	WAG-5 FS
WAG-5	Washington Guideway NTP for Construction	CIG-4 FS,"WAG-3 FS","CBA-9a' FS"	WAG-6 FS
WAG-6	Washington Guideway Construction	WAG-5 FS	WAG-7 FS,"LRT-7 FS"
WAG-7	Washington Guideway Close-Out	WAG-6 FS	LRT-6b FS,"LRT-7 FS"

Appendix C – Cost Estimate Summary

Cost Estimate Validation Process (CEVP) Update Report

The following materials provide additional backup for the cost estimate and probabilistic cost and schedule risk analysis inputs:

- Figure C-1: Cost Estimate Summary: Funded Phase
- Figure C-2: Cost Estimate Summary: Core Set of Projects
- Figure C-3: Base Uncertainty Ranges by Package (Unit Price and Quantity)
- Figure C-4: Base Uncertainty Ranges by Package (Percentage Markups)
- Figure C-5: Base Uncertainty Ranges by Package (PE and ROW)
- Figure C-6: Correlation Matrices
- Table C-1: Base Cost-Loaded Schedule Summary

Figure C-1. Estimate Summary: Funded Phase

Program	Interstate Bridge Replacement			Date	3/27/2026	
Location:	Portland, OR & Vancouver, WA			Estimator	GEC Team	
Description:	Funded Phase 1- Combined Approaches, CRB, Hayden Island Package A, and SR-14 Package A			Estimate Purpose	Funded Phase Development	
Estimated Costs Below Represent the: Escalated Base Year Dollars, No Risk Contingency						
Programmatic Cost Estimate						
(Pkg. 0)	Programmatic Costs		Unit	Quantity	Unit Cost	\$475,973,299
	IBR Costs To date (Actuals)		LS	1	\$238,243,299	\$238,243,299
	Anticipated Programmatic Costs		MO	231	\$1,029,134	\$237,730,000
CONSTRUCTION AND PROCUREMENT PACKAGE COSTS						
Package No.	Package Name	PCT	Construction (CN)	Preliminary Engineering (PE)	Right-of-Way (ROW)	Total
	Packages (1-30)	99.7%	\$2,430,233,174	\$368,912,000	\$125,740,000	\$2,924,885,174
1	65th Street CTRAN O&M Bus Facility	0.0%	\$0	\$0	\$0	\$0
2	Bus Procurement	0.0%	\$0	\$0	\$0	\$0
3	Bus Shelters	0.0%	\$0	\$0	\$0	\$0
4	Approaches	0.0%	\$0	\$0	\$0	\$0
5	Columbia River Bridge	88.9%	\$2,195,532,174	\$281,912,000	\$122,003,000	\$2,599,447,174
6	Columbia River Bridge Removal	7.4%	\$198,461,000	\$16,862,000	\$1,374,000	\$216,697,000
7	Evergreen Park & Ride	0.0%	\$0	\$0	\$0	\$0
8	Hayden Island Guideway	0.0%	\$0	\$0	\$0	\$0
9	Hayden Island Package A (Hayden Island Center)	0.0%	\$0	\$0	\$0	\$0
10	Hayden Island Surface Streets	0.0%	\$0	\$0	\$0	\$0
11	Light Rail Overnight Facility	0.0%	\$0	\$0	\$0	\$0
12	LRV Procurement	0.0%	\$0	\$0	\$0	\$0
13	Marine Drive Interchange	0.0%	\$0	\$0	\$0	\$0
14	Marine Drive Package A	0.3%	\$0	\$9,500,000	\$0	\$9,500,000
15	Mill Plain Interchange	0.0%	\$0	\$0	\$0	\$0
16	North Expo Road	0.0%	\$0	\$0	\$0	\$0
17	North Portland Harbor Bridge Removal	0.0%	\$0	\$0	\$0	\$0
18	North Portland Harbor Transit Bridge	0.4%	\$0	\$11,500,000	\$0	\$11,500,000
19	Oregon I-5 Northbound	0.0%	\$0	\$0	\$0	\$0
20	Oregon I-5 Southbound	0.0%	\$0	\$0	\$0	\$0
21	Oregon Station Finishes	0.0%	\$0	\$0	\$0	\$0
22	Pre-Completion Tolling Signage	1.6%	\$36,240,000	\$10,138,000	\$0	\$46,378,000
23	Ruby Junction TriMet Facility Expansion	0.0%	\$0	\$0	\$0	\$0
24	SR-14 Package A	0.0%	\$0	\$0	\$0	\$0
25	Track, Systems & Stations	1.1%	\$0	\$31,000,000	\$0	\$31,000,000
26	Washington Station Finishes	0.0%	\$0	\$0	\$0	\$0
27	Washington North	0.0%	\$0	\$0	\$0	\$0
28	Waterfront Park & Ride	0.0%	\$0	\$0	\$0	\$0
29	West Hayden Island Mitigation	0.1%	\$0	\$0	\$2,363,000	\$2,363,000
30	Washington Guideway	0.3%	\$0	\$8,000,000	\$0	\$8,000,000
	Construction and Procurement Package Total	100%	\$2,430,233,174	\$368,912,000	\$125,740,000	\$2,924,885,174
	Total Program Costs (Rounded)					\$3,400,860,000

Cost Estimate Validation Process (CEVP) Update Report

Figure C-2. Estimate Summary: Core Set of Projects

Program	Interstate Bridge Replacement				Date	4/22/2026
Location:	Portland, OR & Vancouver, WA				Estimator	GEC Team
Description:	Core Set of Projects				Estimate Purpose	Initial Phase Evaluation
Estimated Costs Below Represent the: Escalated Base Year Dollars, No Risk Contingency						
Programmatic Cost Estimate						
(Pkg. 0)	Programmatic Costs		Unit	Quantity	Unit Cost	\$507,653,299
	IBR Costs To date (Actuals)		LS	1	\$238,243,299	\$238,243,299
	Anticipated Programmatic Costs		MO	231	\$1,166,277	\$269,410,000
CONSTRUCTION AND PROCUREMENT PACKAGE COSTS						
Package No.	Package Name	PCT	Construction (CN)	Preliminary Engineering (PE)	Right-of-Way (ROW)	Total
	Packages (1-30)	99.7%	\$2,985,223,174	\$419,631,000	\$225,385,000	\$3,630,239,174
1	65th Street CTRAN O&M Bus Facility	0.0%	\$0	\$0	\$0	\$0
2	Bus Procurement	0.0%	\$0	\$0	\$0	\$0
3	Bus Shelters	0.0%	\$0	\$0	\$0	\$0
4	Approaches	0.0%	\$0	\$0	\$0	\$0
5	Columbia River Bridge	88.9%	\$2,195,532,174	\$281,912,000	\$122,003,000	\$2,599,447,174
6	Columbia River Bridge Removal	7.4%	\$198,461,000	\$16,862,000	\$1,374,000	\$216,697,000
7	Evergreen Park & Ride	0.0%	\$0	\$0	\$0	\$0
8	Hayden Island Guideway	0.0%	\$0	\$0	\$0	\$0
9	Hayden Island Package A (Hayden Island Center)	0.0%	\$0	\$0	\$0	\$0
10	Hayden Island Surface Streets	0.0%	\$0	\$0	\$0	\$0
11	Light Rail Overnight Facility	0.0%	\$0	\$0	\$0	\$0
12	LRV Procurement	0.0%	\$0	\$0	\$0	\$0
13	Marine Drive Interchange	0.0%	\$0	\$0	\$0	\$0
14	Marine Drive Package A	0.3%	\$104,604,000	\$20,566,000	\$33,803,000	\$158,973,000
15	Mill Plain Interchange	0.0%	\$0	\$0	\$0	\$0
16	North Expo Road	0.0%	\$0	\$0	\$0	\$0
17	North Portland Harbor Bridge Removal	0.0%	\$0	\$0	\$0	\$0
18	Oregon Aerial Guideway (NPH+)	0.4%	\$134,365,000	\$26,729,000	\$62,443,000	\$223,537,000
19	Oregon I-5 Northbound	0.0%	\$0	\$0	\$0	\$0
20	Oregon I-5 Southbound	0.0%	\$0	\$0	\$0	\$0
21	Oregon Station Finishes	0.0%	\$0	\$0	\$0	\$0
22	Pre-completion tolling signage	1.6%	\$36,240,000	\$10,138,000	\$0	\$46,378,000
23	Ruby Junction TriMet Facility Expansion	0.0%	\$0	\$0	\$0	\$0
24	SR-14 Package A	0.0%	\$0	\$0	\$0	\$0
25	Transit Systems, Stations and Shelters	1.1%	\$272,360,000	\$53,500,000	\$0	\$325,860,000
26	Washington Station Finishes	0.0%	\$0	\$0	\$0	\$0
27	Washington North	0.0%	\$0	\$0	\$0	\$0
28	Waterfront Park & Ride	0.0%	\$0	\$0	\$0	\$0
29	West Hayden Island Mitigation	0.1%	\$0	\$0	\$2,363,000	\$2,363,000
30	Washington Aerial Guideway	0.3%	\$43,661,000	\$9,924,000	\$3,399,000	\$56,984,000
	Construction and Procurement Package Total	100%	\$2,985,223,174	\$419,631,000	\$225,385,000	\$3,630,239,174
	Total Program Costs (Rounded)					\$4,137,890,000

Cost Estimate Validation Process (CEVP) Update Report

Figure C-3. Base Uncertainty Ranges by Package (Unit Price and Quantity)

Package No.	Package Name		Estimate	Unit Price			Quantity			
				10th	Most Likely	90th	Design %	10th	Most Likely	90th
	Programmatic Costs (Package 0)	100.0%	\$0							
0	IBR Costs To date (Actuals)	46.9%								
0	Anticipated Programmatic Costs	53.1%								
	Packages (1-29)	100.0%	\$2,985,223,174							
1	65th Street CTRAN O&M Bus Facility	0.0%	\$0	0.0%	0.0%	0.0%	1%	-8.0%	0.0%	18.0%
2	Bus Procurement	0.0%	\$0	0.0%	0.0%	0.0%	1%			
3	Bus Shelters	0.0%	\$0	0.0%	0.0%	0.0%	5.0%			
4	Approaches	0.0%	\$0	0.0%	0.0%	0.0%	25.0%			
5	Columbia River Bridge	71.7%	\$2,195,532,174	-2.0%	10.2%	24.9%	25.0%	-3.0%	0.0%	6.0%
6	Columbia River Bridge Removal	6.0%	\$198,461,000	-6.1%	2.0%	10.1%	1.0%	-5.0%	0.0%	15.0%
7	Evergreen Park & Ride	0.0%	\$0	0.0%	0.0%	0.0%	1.0%			
8	Hayden Island Guideway	0.0%	\$0	0.0%	0.0%	0.0%	25.0%			
9	Hayden Island Package A (Hayden Island Ce	0.0%	\$0	0.0%	0.0%	0.0%	20.0%			
10	Hayden Island Surface Streets	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
11	Light Rail Overnight Facility	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
12	LRV Procurement	0.0%	\$0	0.0%	0.0%	0.0%	1.0%			
13	Marine Drive Interchange	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
14	Marine Drive Package A	4.4%	\$104,604,000	-6.1%	3.5%	13.0%	25.0%	-3.0%	0.0%	7.0%
15	Mill Plain Interchange	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
16	North Expo Road	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
17	North Portland Harbor Bridge Removal	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
18	Oregon Aerial Guideway (NPH+)	6.2%	\$134,365,000	-0.6%	15.2%	31.1%	25.0%	-2.0%	0.0%	5.0%
19	Oregon I-5 Northbound	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
20	Oregon I-5 Southbound	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
21	Oregon Station Finishes	0.0%	\$0	0.0%	0.0%	0.0%	15.0%			
22	Pre-completion tolling signage	1.3%	\$36,240,000	-10.0%	0.0%	10.0%	20.0%	-5.0%	0.0%	10.0%
23	Ruby Junction TriMet Facility Expansion	0.0%	\$0	0.0%	0.0%	0.0%	15.0%			
24	SR-14 Package A	0.0%	\$0	0.0%	0.0%	0.0%	25.0%			
25	Transit Systems, Stations and Shelters	9.0%	\$272,360,000	-10.0%	0.0%	15.0%	30.0%	-4.0%	0.0%	8.0%
26	Washington Station Finishes	0.0%	\$0	0.0%	0.0%	0.0%	15.0%			
27	Washington North	0.0%	\$0	0.0%	0.0%	0.0%	10.0%			
28	Waterfront Park & Ride	0.0%	\$0	0.0%	0.0%	0.0%	1.0%			
29	West Hayden Island Mitigation	0.0%	\$0	0.0%	0.0%	0.0%	5.0%			
30	Washington Aerial Guideway	1.6%	\$43,661,000	-0.6%	15.2%	31.1%	25.0%	-2.0%	0.0%	5.0%
	Construction and Procurement Package T	100%	\$2,985,223,174							
	Total Program Costs (Rounded)		\$2,985,223,174	-2.3%	10.6%	24.8%		-2.7%	0.0%	5.9%

Cost Estimate Validation Process (CEVP) Update Report

Figure C-4. Base Uncertainty Ranges by Package (Percentage Markups)

Package No.	Package Name	Construction Phasing/Interface					MOT					Delivery Method Adjustment					Misc. Items Allowance			
		Type	Base Pct.	10th	Most Likely	90th	Type	Base Pct.	10th	Most Likely	90th	Type	Base Pct.	10th	Most Likely	90th	Base Pct.	10th	Most Likely	90th
	Programmatic Costs (Package 0)																			
0	IBR Costs To date (Actuals)																			
0	Anticipated Programmatic Costs																			
	Packages (1-29)																			
1	65th Street CTRAN O&M Bus Facility	Moderate	5.0%	3.0%	5.0%	7.0%	Minimal	0.5%	0.25%	0.50%	1.00%	DBB	0.0%	0.0%	0.0%	0.0%	12.0%	8.0%	12.0%	16.0%
2	Bus Procurement	NA	0.0%				NA	0.0%				2-step Seal	0.0%				0.0%			
3	Bus Shelters	NA	0.0%				Low	1.5%				DBB	0.0%				10.0%			
4	Approaches	Moderate	5.0%				Complex	11.0%				PDB	10.0%				7.0%			
5	Columbia River Bridge	Moderate	5.0%	3.0%	5.0%	7.0%	Low	1.5%	1.00%	1.50%	2.00%	PDB	10.0%	5.0%	10.0%	15.0%	1.0%	1.0%	1.0%	5.0%
6	Columbia River Bridge Removal	NA	0.0%	0.0%	0.0%	0.0%	Moderate	4.0%	2.00%	4.00%	5.00%	DBB	0.0%	0.0%	0.0%	0.0%	2.0%	2.0%	2.0%	5.0%
7	Evergreen Park & Ride	Moderate	5.0%				Moderate	4.0%				DB	3.0%				15.0%			
8	Hayden Island Guideway	Moderate	5.0%				Low	1.5%				CMGC	7.0%				10.0%			
9	Hayden Island Package A (Hayden Island C	Low	2.0%				Moderate	4.0%				PDB	10.0%				5.0%			
10	Hayden Island Surface Streets	Moderate	5.0%				Moderate	4.0%				DBB	0.0%				7.0%			
11	Light Rail Overnight Facility	Minimal	1.0%				Low	1.5%				CMGC	7.0%				12.0%			
12	LRV Procurement	NA	0.0%				NA	0.0%				2-step Seal	0.0%				0.0%			
13	Marine Drive Interchange	Complex	13.0%				High	7.0%				CMGC	7.0%				10.0%			
14	Marine Drive Package A	Complex	13.0%	10.0%	13.0%	16.0%	High	7.0%	5.00%	7.00%	9.00%	CMGC	7.0%	5.0%	7.0%	12.0%	5.0%	2.0%	5.0%	8.0%
15	Mill Plain Interchange	High	9.0%				High	7.0%				DB	3.0%				10.0%			
16	North Expo Road	Moderate	5.0%				Moderate	4.0%				DBB	0.0%				7.0%			
17	North Portland Harbor Bridge Removal	Minimal	1.0%				Low	1.5%	1.00%	1.50%	2.00%	DBB	0.0%	0.0%	0.0%	0.0%	2.0%	2.0%	2.0%	5.0%
18	Oregon Aerial Guideway (NPH+)	Moderate	5.0%	3.0%	5.0%	7.0%	Low	1.5%	1.00%	1.50%	2.00%	CMGC	7.0%	5.0%	7.0%	12.0%	2.0%	2.0%	2.0%	5.0%
19	Oregon I-5 Northbound	Complex	13.0%				High	7.0%				CMGC	7.0%				3.0%			
20	Oregon I-5 Southbound	Complex	13.0%				High	7.0%				CMGC	7.0%				3.0%			
21	Oregon Station Finishes	Minimal	1.0%				NA	0.0%				DBB	0.0%				15.0%	10.0%	15.0%	20.0%
22	Pre-completion tolling signage	Low	2.0%	1.0%	2.0%	3.0%	Moderate	4.0%	2.00%	4.00%	5.00%	DBB	0.0%	0.0%	0.0%	0.0%	10.0%	6.0%	10.0%	14.0%
23	Ruby Junction TriMet Facility Expansion	Minimal	1.0%				Moderate	4.0%				CMGC	7.0%				12.0%			
24	SR-14 Package A	High	9.0%				Complex	11.0%				PDB	10.0%				3.0%			
25	Transit Systems, Stations and Shelters	High	9.0%	6.0%	9.0%	11.0%	Moderate	4.0%	2.00%	4.00%	5.00%	CMGC	7.0%	5.0%	7.0%	12.0%	15.0%	10.0%	15.0%	20.0%
26	Washington Station Finishes	Minimal	1.0%				NA	0.0%				DBB	0.0%				15.0%			
27	Washington North	Complex	13.0%				High	7.0%				DB	3.0%				10.0%			
28	Waterfront Park & Ride	Low	2.0%				Low	1.5%				DB	3.0%				12.0%			
29	West Hayden Island Mitigation	Minimal	1.0%				Minimal	0.5%				DBB	0.0%				7.0%			
30	Washington Aerial Guideway	Low	2.0%	1.0%	2.0%	3.0%	Moderate	4.0%	2.00%	4.00%	5.00%	CMGC	7.0%	5.0%	7.0%	12.0%	7.0%	4.0%	7.0%	10.0%
	Construction and Procurement Package Total																			
	Total Program Costs (Rounded)			4.0%	6.1%	8.2%			1.6%	2.4%	3.1%			4.9%	8.5%	13.4%		1.5%	2.0%	5.5%

Figure C-5. Base Uncertainty Ranges by Package (PE and ROW)

Package No.	Package Name	Preliminary Engineering				Right-of-Way			
		Lump Sum				Lump Sum			
		Estimate	10th	Most Likely	90th	Estimate	10th	Most Likely	90th
	Programmatic Costs (Package 0)	\$507,653,299				\$0			
0	IBR Costs To date (Actuals)	\$238,243,299	0.0%		0.0%				
0	Anticipated Programmatic Costs	\$269,410,000	-5.0%	0.0%	15.0%				
	Packages (1-29)	\$419,631,000				\$223,022,000			
1	65th Street CTRAN O&M Bus Facility	\$0	-5.0%	0.0%	12.5%	\$0	-20.0%	0.0%	20.0%
2	Bus Procurement	\$0							
3	Bus Shelters	\$0							
4	Approaches	\$0							
5	Columbia River Bridge	\$281,912,000	-5.0%	13.1%	31.2%	\$122,003,000	-10.0%	0.0%	10.0%
6	Columbia River Bridge Removal	\$16,862,000	-5.0%	0.0%	12.5%	\$1,374,000	-20.0%	0.0%	20.0%
7	Evergreen Park & Ride	\$0							
8	Hayden Island Guideway	\$0							
9	Hayden Island Package A (Hayden Island Ca	\$0							
10	Hayden Island Surface Streets	\$0							
11	Light Rail Overnight Facility	\$0							
12	LRV Procurement	\$0							
13	Marine Drive Interchange	\$0							
14	Marine Drive Package A	\$20,566,000	-5.0%	0.0%	12.5%	\$33,803,000	-10.0%	0.0%	10.0%
15	Mill Plain Interchange	\$0							
16	North Expo Road	\$0							
17	North Portland Harbor Bridge Removal	\$0	-5.0%	0.0%	12.5%	\$0	-15.0%	0.0%	15.0%
18	Oregon Aerial Guideway (NPH+)	\$26,729,000	-5.0%	0.0%	12.5%	\$62,443,000	-10.0%	0.0%	10.0%
19	Oregon I-5 Northbound	\$0							
20	Oregon I-5 Southbound	\$0							
21	Oregon Station Finishes	\$0	-5.0%	0.0%	12.5%	\$0	-12.5%	0.0%	12.5%
22	Pre-completion tolling signage	\$10,138,000	-5.0%	0.0%	12.5%	\$0	-10.0%	0.0%	10.0%
23	Ruby Junction TriMet Facility Expansion	\$0							
24	SR-14 Package A	\$0							
25	Transit Systems, Stations and Shelters	\$53,500,000	-5.0%	0.0%	12.5%	\$0	-10.0%	0.0%	10.0%
26	Washington Station Finishes	\$0							
27	Washington North	\$0							
28	Waterfront Park & Ride	\$0							
29	West Hayden Island Mitigation	\$0							
30	Washington Aerial Guideway	\$9,924,000	-5.0%	0.0%	12.5%	\$3,399,000	-10.0%	0.0%	10.0%
	Construction and Procurement Package T	\$419,631,000				\$223,022,000			
	Total Program Costs (Rounded)	\$927,284,299	-5.0%	7.2%	22.7%	\$223,022,000	-10.1%	0.0%	10.1%

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Figure C-6. Correlation Matrices

Base Cost Uncertainty								
Correlation among construction categories:		0						
Correlation among categories:		0.25						
Correlation among packages:		1						
	Unit Price	Quantity	Construction Complexity	MOT	Delivery Method	Miscellaneous Items Allowance	Preliminary Engineering	Right-of-Way
1 Unit Price	1							
2 Quantity	0	1						
3 Construction Complexity	0	0	1					
4 MOT	0	0	0	1				
5 Delivery Method	0	0	0	0	1			
6 Miscellaneous Items Allowance	0	0	0	0	0	1		
7 Preliminary Engineering	0.25	0.25	0.25	0.25	0.25	0.25	1	
8 Right-of-Way	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1
Base Uncertainty - Inflation								
	PE	ROW	Construction					
1 PE	1							
2 ROW	0.5	1						
3 Construction	0.5	0.5	1					

Note: Values represent the assumed correlations (i.e., indirect relationships due to common underlying factors such as labor, equipment and material prices, estimator tendency) between line items in the base estimates. A value of 1 indicates a perfect positive relationship, and a value of 0 indicates no relationship (independence). Additional correlations are captured through the structure of the integrated cost/schedule model and specific risk events (including market conditions factors) which may be correlated across activities or packages.

Table C-1. Base Cost-Loaded Schedule Summary

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)
0	Prior/Fixed Costs: Program	7/1/2025	7/1/2025	236.7
PRG-1a	Program Management Pre-ROD (F-F with ROD, ENV-5)	7/1/2025	5/14/2026	54.6
PRG-1b	Program Management Post-ROD (F-F with program completion, PRG-3)	5/14/2026	10/31/2037	216.3
PRG-2	Bridges, Approaches, and Transit Complete	10/31/2037	10/31/2037	0.0
PRG-3	IBR Program Complete	6/21/2046	6/21/2046	0.0
PRG-4	First Funded Phase Complete	10/31/2037	10/31/2037	0.0
DES-1a	Plan Set for Final SEIS	7/1/2025	9/9/2025	0.0
DES-1a'	Plan Set for Final SEIS	9/9/2025	9/9/2025	0.0
DES-1a''	Plan Set for Final SEIS	9/9/2025	9/9/2025	0.0
DES-1b	30% Design	9/9/2025	1/2/2026	0.0
DES-2	30% Design for Transit	9/9/2025	1/2/2026	0.0
DES-2'	30% Design for Transit	1/2/2026	1/2/2026	0.0
DES-3a	Transit Design Procurement	8/28/2026	6/28/2027	0.0
DES-3b	60% Transit Design / Review	6/28/2027	10/31/2028	0.0
DES-4b	100% Transit Design	3/2/2030	5/3/2030	0.0

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Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)
DES-4a	90% Transit Design / Review	10/31/2028	3/2/2030	0.0
ENV-1	Publish Draft SEIS	7/1/2025	7/1/2025	0.0
ENV-2	ESA Section 7 / BO	7/1/2025	7/1/2025	0.0
ENV-3	Section 106 Programmatic Agreement & Mitigation Plan	7/1/2025	3/2/2026	0.0
ENV-4a	Finalize Final SEIS	7/1/2025	3/6/2026	0.0
ENV-4b	Issue ROD	1/25/2026	5/14/2026	0.0
ENV-5	Publish ROD	5/14/2026	5/14/2026	0.0
ENV-5'	Publish ROD	5/14/2026	5/14/2026	0.0
ENV-5''	Publish ROD	5/14/2026	5/14/2026	0.0
ENV-5a	Post-ROD	5/14/2026	5/14/2026	0.0
ENV-7	USACE 401/404/408 Permits	7/1/2025	10/22/2026	0.0
ENV-9	Cultural Resources Agrmt/Survey: CRB	3/2/2026	1/5/2027	0.0
ENV-10	Cultural Resources Agrmt/Survey: Vancouver Approaches	3/2/2026	9/6/2027	0.0
ENV-11	Cultural Resources Agrmt/Survey: Hayden Island	3/2/2026	3/4/2028	0.0
EXT-1	USCG PNCD	7/1/2025	1/25/2026	0.0
ROW-1	Limited Access Waiver (WA) / Finalize ROW Plans	7/1/2025	5/27/2026	0.0
AGR-1	Bi-State (OR/WA) Intergovernmental Agreement (incl. governance)	7/1/2025	3/2/2026	0.0
AGR-2a	TriMet Delivery Agreement Decision	7/1/2025	3/2/2026	0.0
AGR-2b	TriMet/WSDOT Design Services IGA	3/2/2026	8/28/2026	0.0
AGR-3	Critical Transit Agreements for FFGA	7/1/2025	2/24/2029	0.0
AGR-4	WSDOT/TriMet Delivery Phase IGA	7/1/2025	12/18/2026	0.0
FIN-1	CRB State/Federal Funding (incl. BIP)	7/1/2025	9/22/2026	0.0
FIN-2	CRB Funding Secured	9/22/2026	9/22/2026	0.0
FIN-3	Start Pre-Completion Tolling	12/3/2027	12/3/2027	0.0
FIN-3'	Start Pre-Completion Tolling	7/1/2028	7/1/2028	0.0
CIG-1	FTA CIG Process to 30%	7/1/2025	3/17/2027	0.0
CIG-2	FTA Approval for Entry into Engineering	3/17/2027	3/17/2027	0.0
CIG-3	FTA Readiness Reviews for FFGA	10/31/2028	12/7/2029	0.0
CIG-4	FTA FFGA	12/7/2029	12/7/2029	0.0
CIG-5	FTA Prepare LONP for Bridge Construction	5/14/2026	10/31/2027	0.0
CIG-6	Issue LONP	10/31/2027	10/31/2027	0.0
CRB-1a	Columbia River Bridge Preliminary Design/RFQ	9/9/2025	7/20/2026	42.9

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Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)
CRB-1b	Columbia River Bridge RFQ Response / Develop RFP	7/20/2026	11/9/2026	15.3
CRB-2	USCG Bridge Permit	1/25/2026	1/27/2027	0.0
CRB-3	Third-Party Agreements: CRB	7/1/2025	12/22/2026	0.0
CRB-4	Columbia River Bridge (CRB) RFP	11/9/2026	11/9/2026	0.0
CRB-5	CRB Proposals/Selection (PDB)	11/9/2026	6/25/2027	31.2
CRB-6a1	CRB ROW Authorization	1/2/2026	8/19/2026	0.0
CRB-6a2	CRB Critical ROW (Cert B)	8/19/2026	9/14/2027	18.9
CRB-6b	CRB Remaining ROW	9/14/2027	8/23/2028	16.6
CRB-7	Issue CRB NTP #1	6/25/2027	6/25/2027	0.0
CRB-8a	CRB 30%-60% Design	6/25/2027	8/24/2028	58.2
CRB-8b	Design / Negotiations for Early Work Packages	6/25/2027	5/25/2028	0.0
CRB-9	GMP Negotiations	8/24/2028	2/23/2029	25.0
CRB-10	Prep for Early Works	5/25/2028	7/27/2028	48.9
CRB-11	CRB NTP #2	2/23/2029	2/23/2029	0.0
CRB-12	CRB Final Design/Mob/Initial Construction	2/23/2029	3/5/2031	573.9
CRB-13	Early In-Water Work	9/14/2028	4/11/2029	0.0
CRB-15	CRB Remaining Construction Out of Water Work	3/5/2031	4/25/2033	553.6
CRB-16	Complete CRB NB	7/1/2025	7/1/2025	0.0
CRB-17	CRB Closeout	4/25/2033	7/31/2033	69.1
CBA-3b	Approaches NTP #1	6/25/2027	6/25/2027	0.0
CBA-3c	Approaches 30%-60% Design / Permitting	6/25/2027	10/27/2028	52.8
CBA-3d	Approaches Final Design	10/27/2028	9/1/2029	33.3
CBA-3e	BNSF Agreements (C&M, ROE)	9/1/2029	4/5/2030	23.3
CBA-3f	Approaches GMP Negotiations	9/1/2029	9/1/2029	0.0
CBA-4a	CRB (Vancouver) Approaches ROW Authorization	1/2/2026	8/19/2026	0.0
CBA-4b	CRB (Vancouver) Approaches ROW Acquisition	8/19/2026	5/30/2030	45.2
CBA-5	CRB Approaches NTP for CN	10/24/2030	10/24/2030	0.0
CBA-6a	Approaches Stage 1 Vancouver SB	10/24/2030	11/21/2032	360.2
CBA-6b	Vancouver Approaches Stage 2	11/21/2032	1/23/2033	29.9
CBA-7	CBA Traffic Shift #2	4/25/2033	4/25/2033	0.0
CBA-8	Vancouver Stages 3-5	4/25/2033	3/6/2035	322.7
CBA-8.1	CRBA Vancouver Stage 2 Lag	1/19/2034	1/19/2034	0.0
CBA-9a	Hayden Island Stages 1-3	10/24/2030	11/24/2032	0.0
CBA-9a'	CBA Traffic Shift #1	11/24/2032	11/24/2032	0.0
CBA-9b	Hayden Island Stages 4-5	4/25/2033	12/2/2033	0.0

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Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)
CBA-10	Hayden Island Stages 6-7	12/2/2033	5/18/2035	0.0
CBA-10'	Hayden Island Stages 6-7	5/18/2035	5/18/2035	0.0
CBA-11	Vancouver Approaches Closeout	5/18/2035	8/20/2035	44.6
CBA-11'	Vancouver Approaches Closeout	8/20/2035	8/20/2035	0.0
CBA-12a	Prep for CRB Partial Demo	7/1/2025	7/1/2025	0.0
CBA-12b	CRB Partial Demo	7/1/2025	7/1/2025	0.0
SRA-3a	SR 14 ROW Authorization	1/2/2026	10/13/2026	0.0
SRA-3b	SR 14 ROW Acquisition	10/13/2026	10/18/2028	22.4
SRA-6	SR 14 Package A NTP	2/23/2029	2/23/2029	0.0
SRA-7	SR 14 Package A Construction	2/23/2029	10/24/2030	29.7
SRA-8	SR 14 Package A Closeout	10/24/2030	1/28/2031	4.7
SRA-9	Evergreen Bridge Construction	2/23/2029	2/23/2029	0.0
HIA-3a	Hayden Island ROW Authorization	5/14/2026	4/21/2027	0.0
HIA-3b	Hayden Island ROW Acquisition	4/21/2027	12/21/2029	18.9
HIA-5	Hayden Island Package A Construction	12/21/2029	11/25/2030	17.1
HIA-5'	Hayden Island Segment of CRBA+ Complete	11/25/2030	11/25/2030	0.0
HIG-6	Hayden Island Guideway Transit Construction	6/15/2031	3/16/2033	0.0
CBR-1	CRB Bridge Removal Design/Permits/Utilities/Cultural Resources	10/1/2029	1/29/2033	15.3
CBR-2a	CRB Bridge Removal ROW Authorization	8/1/2030	2/17/2031	0.0
CBR-2b	CRB Bridge Removal ROW Acquisition	2/17/2031	2/16/2033	1.4
CBR-3	CRB Bridge Removal Ad	2/16/2033	2/16/2033	0.0
CBR-4	CRB Bridge Removal Bid/Award (DBB)	2/16/2033	6/22/2033	1.6
CBR-5	CRB Bridge Removal NTP	12/2/2033	12/2/2033	0.0
CBR-6	Interstate Bridge Removal Construction	12/2/2033	6/4/2036	198.5
CBR-7	Interstate Bridge Removal Construction - In-Water work	9/19/2034	4/4/2036	0.0
CBR-8	Interstate Bridge Removal Construction Complete	6/4/2036	6/4/2036	0.0
LRT-0	Program-Wide Transit RFP Prep/CPARB	8/28/2026	2/27/2027	6.2
LRT-1	Program-Wide Transit RFQ	2/27/2027	2/27/2027	0.0
LRT-2a	Program-Wide Transit Selection/ Permits/ Utilities	2/27/2027	8/17/2030	43.1
LRT-2b	Track Systems Stations Award Period (CM/GC)	10/8/2032	2/8/2033	4.2
LRT-3	Program-Wide Transit GMP/Award (CM/GC)	2/8/2033	2/8/2033	0.0
LRT-4a	TSS ROW Authorized	2/28/2030	10/8/2030	0.0
LRT-4b	TSS ROW Acquisition (if required)	10/8/2030	10/8/2032	0.0

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Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)
LRT-6a	Plinths and Track Construction (North - Hayden Island to Washington Aerial Guideway)	4/14/2034	10/16/2034	22.5
LRT-6b	Plinths and Track Construction (North - Washington Aerial Guideway)	10/24/2034	1/23/2035	0.0
LRT-6c	Plinths and Track Construction (South - Hayden Island)	4/1/2035	7/1/2035	0.0
LRT-7	Waterfront Station Construction	10/24/2034	2/22/2036	62.1
LRT-8	Evergreen Station Construction	2/8/2033	4/9/2034	0.0
LRT-8'	Evergreen Station Construction	4/9/2034	4/9/2034	0.0
LRT-9	Expo Station Construction	1/11/2034	11/11/2034	0.0
LRT-10	Hayden Island Station Construction	4/14/2034	4/14/2035	35.4
LRT-11	Systems Construction	10/16/2034	4/15/2036	66.7
LRT-12	Testing & Commissioning	4/15/2036	7/16/2037	55.7
LRT-13	Operator Training / Route Simulation	4/15/2037	10/31/2037	24.2
LRT-14	Transit Revenue Service Date	10/31/2037	10/31/2037	0.0
MDA-1	Marine Drive Package A Procurement (DBB)	2/19/2031	6/24/2031	1.8
MDA-2	Marine Drive Package A Utilities/Permitting/CR	6/28/2027	12/28/2030	18.7
MDA-3a	Marine Drive Package A ROW Authorized	10/31/2028	2/20/2029	0.0
MDA-3b	Marine Drive Package A ROW Acquisition	2/20/2029	10/18/2031	33.8
MDA-4	Marine Drive Package A NTP for Construction	10/18/2031	10/18/2031	0.0
MDA-5	Marine Drive Package A Construction	10/18/2031	4/1/2035	97.4
MDA-6	Marine Drive Package A Close-Out	4/1/2035	7/3/2035	7.2
LRF-0	LRF Overnight Facility RFQ Prep/CPARB	3/2/2026	8/1/2026	0.0
LRF-1	LRT Overnight Facility RFQ	5/6/2028	5/6/2028	0.0
LRF-2	LRT Overnight Facility Selection/Design (CM/GC)	5/6/2028	8/2/2030	0.0
LRF-3	LRT Overnight Facility GMP/Award	8/2/2030	8/2/2030	0.0
LRF-4	LRT Overnight Facility Construction	2/16/2032	8/19/2033	0.0
LRF-5	LRT Overnight Facility TriMet Move	8/19/2033	2/20/2034	0.0
LRF-6	LRT Overnight Facility ROW	7/1/2025	7/1/2025	0.0
PHT-1	Oregon Aerial Guideway RFQ Prep/CPARB	8/28/2026	2/27/2027	2.8
PHT-2	Oregon Aerial Guideway RFQ	2/27/2027	2/27/2027	0.0
PHT-3a	Oregon Aerial Guideway ROW Authorized	7/30/2028	2/8/2029	0.0
PHT-3b	Oregon Aerial Guideway ROW Acquisition	2/8/2029	10/12/2031	62.4
PHT-4a	USACE / USCG Permits for Oregon Aerial Guideway	10/31/2028	3/12/2031	0.0
PHT-4b	Oregon Aerial Guideway Permit (USACE)	11/27/2030	11/27/2030	0.0

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Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)
PHT-4b'	Oregon Aerial Guideway Permit (USACE)	7/1/2025	7/1/2025	0.0
PHT-5	Oregon Aerial Guideway Selection/ Design/ Permitting/ Utilities, Cultural Resources	2/27/2027	6/15/2031	23.9
PHT-6	Oregon Aerial Guideway NTP for Construction	10/12/2031	10/12/2031	0.0
PHT-7	North Portland Harbor Transit Construction	10/12/2031	1/11/2034	120.7
PHT-8	North Portland Harbor Transit Construction - In-Water Work	10/12/2031	2/5/2033	0.0
PHT-9	Oregon Aerial Guideway Construction Closeout	1/11/2034	4/14/2034	13.7
WAF-5	WA Station Finishes Construction	2/22/2036	7/22/2037	3.3
ORF-5	OR Station Finishes Construction	4/14/2035	12/5/2036	1.9
CBS-5	Bus Shelters Construction	7/1/2035	3/31/2036	0.5
PCT-1	Preconstruction Tolling Design/Utilities	7/1/2025	12/23/2026	9.3
PCT-2	Preconstruction Tolling Ad	12/23/2026	12/23/2026	0.0
PCT-3	Preconstruction Tolling Bid (DBB)	12/23/2026	2/8/2027	0.8
PCT-4	Preconstruction Tolling NTP	2/8/2027	2/8/2027	0.0
PCT-5	Preconstruction Tolling Construction / Toll Integration	2/8/2027	12/3/2027	36.2
WHM-1	West Hayden Island Mitigation Design/Utilities	8/1/2027	2/29/2028	0.0
WHM-2	West Hayden Island Mitigation Ad	4/4/2028	4/4/2028	0.0
WHM-3	West Hayden Island Mitigation Bid (DBB)	4/4/2028	8/5/2028	0.0
WHM-4	West Hayden Island Mitigation NTP	8/5/2028	8/5/2028	0.0
WHM-5	West Hayden Island Mitigation Construction	8/5/2028	11/5/2028	0.0
WHM-5'	West Hayden Island Mitigation Construction Complete	11/5/2028	11/5/2028	0.0
WHM-5''	West Hayden Island Mitigation Construction Complete	11/5/2028	11/5/2028	0.0
WHM-6	West Hayden Island Mitigation ROW	5/14/2026	4/4/2028	2.4
CRB-18	Mitigation	7/27/2028	7/28/2029	141.1
WAG-1	Washington Guideway Utilities/Permits/CR	6/28/2027	2/15/2031	9.1
WAG-2a	Washington Guideway ROW Authorized	10/31/2028	2/8/2029	0.0
WAG-2b	Washington Guideway ROW Acquisition	2/8/2029	10/13/2031	3.4
WAG-3	Washington Guideway Procurement (DBB)	10/13/2031	2/15/2032	0.9
WAG-5	Washington Guideway NTP for Construction	2/15/2033	2/15/2033	0.0
WAG-6	Washington Guideway Construction	2/15/2033	7/23/2034	37.1
WAG-7	Washington Guideway Close-Out	7/23/2034	10/24/2034	6.6
	Total			4,137.9

Appendix D – Risk Register

The Core Set of Projects risk register is provided in this appendix. The following notes apply:

1. All cost impacts are assessed in current terms and do not include indirect costs resulting from project delays. Cost escalation and indirect costs are calculated automatically through the simulation model.
2. “Minor” means potential impacts for individual risks or opportunities of less than \$10M and 2 mo. OR likelihood of more significant less than 5% (i.e., 1 chance in 20).
3. Ranges in impacts are expressed by their 10th, most likely value, and 90th percentiles, and typically truncated at zero. They are assumed to be represented by a fitted 3-point Pert distribution unless otherwise noted. Ranged impacts are assumed to be independent of one another unless otherwise noted.
4. Cost and schedule impacts are to specific identified activities (see flowchart). In some cases where the impacts are spread over many activities, for simplicity the impacts might be assigned to one or a few activities.
5. Schedule impacts are to specific activities, regardless of critical path, which will be calculated by the model.
6. Some events in this register are a function of base costs or durations. When those base costs or durations are assessed to be uncertain (see flowchart and cost estimate summary), the corresponding event should consider (include) changes to the base resulting from the simulated base uncertainty.
7. Correlation assumptions for occurrence and impact of risks that apply to multiple packages are noted in the risk register.
8. Risk impacts to packages not included in a given option are disabled in the risk model.

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
1	Civil / Drainage	Stormwater Facilities	Threat	\$5 M	\$10 M	\$15 M				10%	Minor	All construction activities	Yes	Yes
3	Civil / Drainage	Lack Of Downstream Conveyance Capacity	Threat	\$0.5 M	\$1 M	\$3 M				20%	Minor		Yes	Yes
4	Construction	Damage to Adjacent Structures (Other)	Threat	\$1 M	\$5 M	\$10 M				15%	Minor		Yes	Yes
7	Construction	River Bridge Final Design/Mobilization Schedule too Aggressive	Threat	\$5 M	\$10 M	\$15 M	1.0	3.0	5.0	50%	Elsewhere		Yes	Yes
8	Construction	Complex Bridge Approach MOT & Staging	Threat	\$5 M	\$10 M	\$20 M				25%	Modeled	CBA-6 - Approaches Stage 1 (Assign)	Yes	Yes
10	Construction	River Conditions Impact In-Water Construction	Threat	\$0 M	\$1 M	\$5 M	0.5	1.0	3.0	15%	Minor		Yes	Yes
13	Construction	Approach MOT Scope	Threat	\$0 M	\$3 M	\$6 M				20%	Minor		Yes	Yes
15	Construction	Material Procurement Delays: Roadway	Threat				0.0	1.0	6.0	10%	Modeled	SRA-7, HIA-5, HIS-6, NER-6, MPL-7, WAN-7, PCT-5, MDA-5	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects			
				Direct Cost Impact (\$M)	Schedule Impact (months)									
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
16	Construction	Material Procurement Delays: Transit	Threat				3.0	4.0	6.0	20%	Modeled	LRT-6a, LRT-11, LRT-7, LRT-8, LRT-10, LRT-9, WAF-5, ORF-5, LRF-4, RJT-6, CBF-6, CBS-5, EPR-7, WPR-7, PHT-7, WAG-6 (Major transit construction activities)	No	Yes
19	Construction	Construction Noise and Vibration	Threat								Minor		Yes	Yes
21	Construction	Construction Staging	Opportunity	-\$22 M	-\$5 M	\$0 M				25%	Minor		Yes	Yes
25	Construction	Civil and Systems Contractor Interface / Coordination	Threat	\$4 M	\$6 M	\$12 M	1.0	2.0	3.0	50%	Elsewhere		Yes	Yes
28	Contract Procurement	Bid Protest	Threat				0.5	1.0	2.0	50%	Minor		Yes	Yes
32	Program Management	Change in Project Delivery Method / Contract Packaging	Threat	\$1 M	\$2 M	\$3 M	3.0	6.0	9.0	75%	Excluded		Yes	Yes
38	Environmental	Environmental Regulations Change	Threat				0.0	3.0	6.0	10%	Minor		Yes	Yes
39	Environmental	Section 106 - Analysis and Programmatic Agreement	Threat	\$0 M	\$0 M	\$1 M	1.0	2.0	4.0	20%	Modeled	ENV-3 - Sec. 106 Programmatic Agrmt. & Mitigation Plan	Yes	Yes
40	Environmental	Cultural resources risk	Threat	\$2 M	\$5 M	\$10 M	6.0	9.0	18.0	40%	Modeled	CRB-15, CBA-6, CBA-9, SRA-7, HIA-5, LRT-7, LRT-8, WAN-7, MPL-7, WAG-6	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects			
				Direct Cost Impact (\$M)	Schedule Impact (months)									
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
41	Environmental	Section 4(f), 6(f), and Federal Lands to Parks - Delta Park	Threat	\$0 M	\$1 M	\$1 M	1.0	2.0	6.0	10%	Minor		Yes	Yes
44	Environmental	Final Supplemental EIS (FSEIS)	Threat				1.0	2.0	3.0	20%	Retired	ENV-4a Finalize EIS	Yes	Yes
45	Environmental	Public Comments on Draft Supplemental EIS (DSEIS)	Threat				1.0	2.0	3.0	10%	Minor		Yes	Yes
46	Environmental	External Agency NEPA Reviews	Threat				1.0	1.5	2.0	50%	Modeled	ENV-4b (Issue ROD)	Yes	Yes
47	Environmental	FHWA and FTA NEPA Review/Participation	Threat				3.0	6.0	9.0	50%	Elsewhere	covered by #46	Yes	Yes
49	Environmental	Post-ROD NEPA Challenge	Threat	\$1 M	\$5 M	\$10 M	1.0	6.0	18.0	10%	Modeled	ENV-5a (Post-ROD milestone linked to construction NTPs)	Yes	Yes
51	Environmental	USACE Permitting Delays (Nav Channel)	Threat				1.0	3.0	6.0	10%	Minor		Yes	Yes
52	Environmental	USACE Permitting Delays (Levee)	Threat				3.0	6.0	9.0	15%	Modeled	PHT-4a - North Portland Harbor Transit Permits	No	Yes
53	Environmental	USCG Bridge Permit Delay	Threat				1.0	2.0	3.0	25%	Modeled	CRB-2 PHT-4a (NPH Bridge Permit)	Yes	Yes
54	Environmental	State Agency Land Use Permit Delays	Threat				3.0	4.5	6.0	10%	Minor		Yes	Yes
56	Environmental	Natural Resource Mitigation and Conservation	Threat	\$2 M	\$4 M	\$6 M	3.0	6.0	18.0	30%	Modeled	Cost to PRG-1b - Program Management Post-ROD Time to ENV-7 - USACE 401/404/408 Permits	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
58	Environmental	FEMA Flood Map Revisions	Threat				9.0	12.0	18.0	10%	Modeled	CRB-8a - 30%-60% design, CBR 8b - Prep for early works (apply to both)	Yes	Yes
60	Environmental	Hazardous Materials - Liability Associated with Property Acquisition	Threat	\$3 M	\$5 M	\$10 M				50%	Minor		Yes	Yes
63	Environmental	Additional Measures to Achieve Climate Conditions	Threat	\$5 M	\$15 M	\$25 M				35%	Elsewhere		Yes	Yes
65	Civil / Drainage	Relocation of 60" Culvert Beneath I-5	Threat								In the Base		Yes	Yes
67	Finance	FTA Approval Delayed for Entry into Engineering	Threat				2.0	4.0	8.0	40%	Modeled	CIG-1 - FTA CIG Process to 30%	Yes	Yes
68	Finance	Transit O&M Funding: Fixed Span	Threat				1.0	3.0	6.0	20%	Modeled	AGR-3 - Other Critical Transit Agreements	Yes	Yes
77	Geotechnical	Bridge Foundation Changes - Design	Threat								Minor		Yes	Yes
78	Geotechnical	Bridge Foundation Changes - Construction	Threat	\$1 M	\$10 M	\$25 M	2.0	3.0	6.0	20%	Modeled	CRB-12 - Columbia River Bridge Construction - Set Girders/Deck NB/SB	Yes	Yes
79	Geotechnical	Additional or Changed Method of Ground Improvement	Threat	\$30 M	\$45 M	\$60 M				50%	Modeled	Split among CRB-12 - CRB Foundations/GI CBA-6 - Approaches Stage 1 MDA-5 - Marine Drive Pkg A CN	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
				Post-Managed State										
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
82	Geotechnical	Conflicts With Existing Foundations - NPH	Threat	\$3 M	\$5 M	\$7 M	1.0	2.0	3.0	25%	Modeled	PHT-7 - North Portland Harbor Transit Construction	No	Yes
84	Geotechnical	Damage/Settlement of Post Hospital	Threat	\$1 M	\$2 M	\$3 M	0.0	1.0	3.0	10%	Minor		Yes	Yes
86	Roadway Design	Partner Agency Design Review Processes - 30% Design Package	Threat				0.0	1.0	2.0	20%	Minor		Yes	Yes
87	Roadway Design	Partner Agency Design Review Processes - Subsequent Packages, 60%, 90%	Threat				1.0	2.0	3.0	20%	Modeled	CBA-3c, DES-3b	Yes	Yes
88	Interagency Coord.	Partner Agency Agreement Delays: Roadway	Threat				1.0	3.5	6.0	20%	Modeled	CRB-3, CBA-1, MDA-2 (Design/Agreements activities for each package)	Yes	Yes
89	Interagency Coord.	Aesthetics Support with Partner Agencies	Threat				1.0	3.0	6.0	15%	Elsewhere		Yes	Yes
90	Interagency Coord.	Local Parking	Threat	\$5 M	\$10 M	\$20 M				25%	Elsewhere		Yes	Yes
91	Interagency Coord.	Loss of Alignment with Partner Agencies	Threat				1.0	3.0	6.0	30%	Elsewhere		Yes	Yes
93	Interagency Coord.	Partner Requests - Data/Analysis	Threat				1.0	1.5	2.0	3%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
99	Transit	Additional Cost Associated with Expo Center Construction Impacts	Threat								Elsewhere		Yes	Yes
101	Maint. Of Traffic	Maintenance of Traffic (MOT) Mitigation	Threat	\$0 M	\$4 M	\$7 M	0.0	5.0	9.0	25%	Modeled	MDA-5 - Marine Drive A Construction	No	Yes
102	Construction	Conflicts Among IBR Contracts (SR-14 Package A and Approaches)	Threat				1.0	3.0	6.0	50%	Retired	SRA-7 -SR-14 construction	Yes	Yes
104	Market Conditions	Uncertainty in Construction Cost Inflation Rate	Threat	\$0 M	\$0 M	\$500 M				50%	Modeled	All construction activities	Yes	Yes
105	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (CRBA+ Combined)	Threat	\$84 M	\$251 M	\$419 M				75%	Modeled	CRB-8a, CRB-8b, CRB-9, CRB-12, CRB-13, CRB-14, CRB-15, CRB-16, CRB-17 (all CRB PDB activities)	Yes	Yes
106	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (Other Contracts)	Threat	\$106 M	\$213 M	\$319 M				50%	Modeled	All construction activities except CRB, CBA, and major transit packages	Yes (Demo, PCT)	Yes
107	Market Conditions	Skilled Labor Availability	Threat	\$0 M	\$10 M	\$19 M				20%	Minor	covered under market conditions	Yes	Yes
108	Market Conditions	DBE/FSBE Requirements	Threat	\$0 M	\$1 M	\$10 M				50%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects			
				Direct Cost Impact (\$M)	Schedule Impact (months)									
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
110	Program Management	Uncertainty in PE (Professional Services) Cost Inflation Rate	Threat	\$0 M	\$0 M	\$115 M				50%	Modeled	All PE and programmatic activities	Yes	Yes
117	Program Management	Contract Administration / change management Issues	Threat				1.0	3.0	6.0	50%	Modeled	CBR-12/15, CBA-6, LRT-6a, PHT-7 (River Bridge, Approaches, Transit construction)	Yes	Yes
118	Program Management	Program Coordination Issues	Threat	\$0.5 M	\$2 M	\$10 M	3.0	6.0	12.0	40%	Modeled	Split among CRB-1a, CRB-1b, CRB-5, CRB-8a / CBA-3c + DES-3 - 60% design for transit	Yes	Yes
121	Public Affairs	Turnover of Current Local Elected	Threat				1.0	3.0	6.0	10%	Elsewhere		Yes	Yes
122	Contract Procurement	Completion of Project Labor Agreements	Threat				1.0	3.0	12.0	25%	Retired	CRB-5 - CRB PDB Proposals/ Selection CBA-3a - Approaches PDB Proposals/ Selection	Yes	Yes
123	Public Affairs	Community Benefits and Associated Agreement	Threat	\$20 M	\$40 M	\$80 M				40%	Modeled	Split among CBA-6 (Approaches: 50%), LRT-7 (Waterfront Station: 16.7%), LRT-10 (Hayden Island Station: 16.7%), LRT-9 (Expo Station: 16.7%)	Yes	Yes
124	Public Affairs	Tolling Policies	Threat				1.0	3.0	6.0	5%	Minor		Yes	Yes
127	Public Involvement	Additional Community Engagement	Threat				1.0	2.0	3.0	20%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects			
				Direct Cost Impact (\$M)								Schedule Impact (months)		
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
129	Railroad	BNSF Agreement Delays	Threat				1.0	3.0	12.0	15%	Modeled	CBA-3e - BNSF Agreements DES-4b - Transit 100% Design AGR-3 - Other Critical Transit Agreements	Yes	Yes
130	Railroad	Railroad Agreement Term Sheets Delays	Threat				1.0	3.0	6.0	25%	Modeled	CIG-1 - FTA CIG Process to 30%	Yes	Yes
131	Railroad	BNSF Coordination Issues during Construction	Threat				0.0	3.0	6.0	20%	Modeled	SRA-7, CBA-6, LRT-6, PCT-5, WAG-6	Yes	Yes
135	Right-of-Way	ROW Cost Increases	Threat	\$10 M	\$20 M	\$30 M				50%	Modeled	All ROW activities	Yes	Yes
136	Right-of-Way	Need for Additional ROW Acquisition Identified (Other)	Threat	\$10 M	\$30 M	\$50 M				50%	Modeled	All ROW activities	Yes	Yes
138	Right-of-Way	Additional Condemnation - Washington	Threat				6.0	12.0	18.0	5%	Modeled	CRB-6a, CRB-6b, SRA-3, CBA-4, WAG-2b - WA key ROW activities	Yes	Yes
139	Right-of-Way	Lack of Appraisers	Threat				1.0	1.5	2.0	15%	Minor		Yes	Yes
140	Right-of-Way	Relocation Delays - Oregon	Threat				1.0	2.0	3.0	10%	Minor		Yes	Yes
141	Right-of-Way	Relocation Delays - Washington	Threat				1.0	2.0	6.0	10%	Minor		Yes	Yes
144	Right-of-Way	Late Changes in Design - ROW Schedule (Columbia River Bridge)	Threat				1.0	6.0	12.0	5%	Minor	CRB non-critical ROW CRB-6b - CRB Remaining ROW	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State						Disposition	Impacted Activities	Funded Phase	Core Set of Projects	
				Direct Cost Impact (\$M)			Schedule Impact (months)							Likelihood of Impact Occurring
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
145	Right-of-Way	Late Changes in Design - ROW Schedule (Other)	Threat				1.0	6.0	12.0	20%	Modeled	CRB-6b - CRB Non-Critical ROW, HIA-3 - Hayden Island RIW, SRA-3 - SR-14 ROW, PHT-3b - Portland Harbor Transit ROW, MDA-3b - Marine Drive A ROW, WAG-2b - Washington Guideway ROW, LRT-4b - Track Systems Stations ROW	Yes	Yes
146	Railroad	BNSF Property Rights Resolution	Threat				0.0	6.0	12.0	10%	Modeled	CBA-4 - CBA ROW	Yes	Yes
151	Right-of-Way	Uncertainty in ROW Cost Inflation Rate	Threat	\$0 M	\$15 M	\$25 M				25%	Modeled	All ROW activities	Yes	Yes
161	Roadway Design	Local Street Scope, Vancouver	Threat	\$0.5 M	\$2 M	\$5 M				15%	Minor		Yes	Yes
166	Roadway Design	Alt. Interchange at Marine Drive	Opportunity	-\$30 M	-\$20 M	-\$10 M				50%	Modeled	MDA-5 - Marine Drive Pkg A CN	No	Yes
169	Roadway Design	USACE Levee Project Coordination	Threat				1.0	2.0	3.0	10%	Minor		Yes	Yes
170	Roadway Design	Shared-Use Bike/Ped Path Design (OR)	Threat	\$1 M	\$20 M	\$40 M				10%	Minor		Yes	Yes
173	Roadway Design	Contractor Innovation: River Bridge PDB Package	Opportunity				-6.0	-3.0	-1.0	35%	Modeled	CRB-15 - Columbia River Bridge Construction - Set Girders/Deck NB/SB	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
				Post-Managed State										
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
174	Roadway Design	Contractor Innovation: Other Packages	Opportunity	-\$120 M	-\$80 M	-\$60 M	-6.0	-3.0	-1.0	35%	Modeled	CBA-6 / CBA-8, HIG-6, PHT-7	Yes	Yes
175	Roadway Design	Opposition for Single Aux Lane	Threat	\$80 M	\$94 M	\$110 M	3.0	6.0	12.0	10%	Minor		Yes	Yes
178	Structures	Structure Aesthetic Changes - River Bridge	Threat	\$50 M	\$75 M	\$100 M				25%	Modeled	CRB-15 - Columbia River Bridge Construction - Set Girders/Deck NB/SB	Yes	Yes
179	Structures	Structure Aesthetic Changes - NPH Bridges	Threat	\$25 M	\$50 M	\$100 M				15%	Modeled	PHT-7 - North Portland Harbor Transit Construction	No	Yes
180	Structures	Structure Aesthetic Change - Other	Threat	\$25 M	\$50 M	\$100 M				10%	Modeled	CBA-6, CBA-8, CBA-9, SRA-7, OSB-7, ONB-7, MPL-6, WAN-7	Yes	Yes
182	Structures	Changed Seismic Design Criteria	Threat	\$20 M	\$40 M	\$60 M				10%	Modeled	CBA-6, CBA-8, CBA-9, OSB-7, ONB-7, MPL-6, WAN-7	Yes	Yes
189	Traffic	Additional ATMS Infrastructure	Threat	\$0 M	\$2 M	\$4 M				30%	Minor		Yes	Yes
190	Traffic	Approval of ARR / Intersection Control Decisions	Threat								Elsewhere		Yes	Yes
192	Transit	Expo Center Station Modifications	Opportunity	-\$30 M	-\$20 M	-\$5 M				25%	Excluded	LRT-9 - Expo Center Station Construction	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
194	Transit	Hayden Island Station/NPH Design Changes	Opportunity	-\$15 M	-\$10 M	-\$5 M				50%	Modeled	LRT-10 - Hayden Island Station Construction	No	Yes
204	Transit	Change to Embedded Track	Threat	\$150 M	\$200 M	\$250 M	3.0	6.0	9.0	5%	Modeled	CRB-15, CBA-6, PHT-7, WAG-6 (Guideway construction activities) DES-3, CRB-8a (Transit 60% design, CRB 60% design)	Yes	Yes
210	Transit	Existing Yellow Line Intersection Improvements	Threat	\$5 M	\$10 M	\$15 M				10%	Minor		Yes	Yes
215	Transit	Transit LRT O&M Agreement	Threat				3.0	6.0	9.0	20%	Modeled	AGR-3 - Other Critical Transit Agreements	No	Yes
216	Transit	Delay to FTA Letter of No Prejudice (LONP)	Threat				3.0	6.0	12.0	25%	Minor	CIG-6 - Issue LONP	Yes	Yes
218	Transit	Systems Testing or Start-Up Delays: Fixed Span	Threat				3.0	6.0	9.0	40%	Modeled	LRT-12 - LRT Testing & Commissioning	No	Yes
220	Tribal Coord.	Section 106 - Approach	Threat	\$10 M	\$15 M	\$20 M	0.5	1.0	1.5	25%	Modeled	PRG-1b - Programmatic Costs (post-ROD)	Yes	Yes
221	Tribal Coord.	Tribal Consultation - Fisheries	Threat	\$5 M	\$10 M	\$20 M	1.0	3.0	6.0	30%	Modeled	Cost to PRG-1b - Program Management Post-ROD Time to each of ENV-7 - USACE 401/404/408 Permits and PHT-4a USACE permits for NPH/Marine Drive	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Disposition	Impacted Activities	Funded Phase	Core Set of Projects				
				Direct Cost Impact (\$M)							Schedule Impact (months)			Likelihood of Impact Occurring
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
223	Utilities Relocation	Scope of Utilities Required is Greater than Anticipated	Threat	\$5 M	\$8 M	\$10 M	3.0	4.5	6.0	60%	Minor		Yes	Yes
224	Utilities Relocation	Utility Service Connection Uncertainty	Opportunity								Minor		Yes	Yes
225	Utilities Relocation	Delayed Completion of Utility Agreements and Permits	Threat				0.0	3.0	6.0	5%	Elsewhere		Yes	Yes
226	Utilities Relocation	Utilities Take Longer Than Anticipated to Implement Relocation Plan (CRB)	Threat				2.0	4.0	6.0	30%	Minor		Yes	Yes
227	Utilities Relocation	Utility Relocation Delays (Program-Wide)	Threat				1.0	3.0	6.0	20%	Modeled	HIA-5, CBA-3d, SRA-2, PHT-5, MDA-2, WAG-1 (advance utility or final design activities)	Yes	Yes
233	Utilities Relocation	Unidentified Utilities Encountered During Construction	Threat				1.0	2.0	6.0	20%	Modeled	HIA-5, CBA-6, SRA-7, PHT-7, HIG-6, LRF-4, RJT-6, CBF-6, MDA-5, ONB-7, MDI-6, HIS-6, NER-6, MPL-7, WAN-7, WAG-6 (construction activities)	Yes	Yes
241	Other	Indirect Cost of Project Delays (Owner, PM)	Threat								Modeled		Yes	Yes
243	Other	Aggregate minor risks / opportunities	Threat	\$0 M	\$75 M	\$150 M				99%	Modeled	All	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
244	Other	Unidentified risks / opportunities	Threat	\$0 M	\$63 M	\$126 M	0.0	3.0	6.0	50%	Modeled	All	Yes	Yes
249	Construction	Work Package Interface	Threat							75%	Elsewhere		Yes	Yes
252	Environmental	Section 4(f) - All Parks (Except Delta Park)	Threat				1.0	2.0	6.0	5%	Minor		Yes	Yes
257	Finance	Delay to OR/WA Tolling Finance (Flow of Funds) Agreement	Threat				3.0	6.0	12.0	5%	Excluded		Yes	Yes
261	Construction	Contract Interfaces	Threat				3.0	6.0	12.0	50%	Elsewhere		Yes	Yes
262	Finance	State Funding Timing	Threat				3.0	12.0	24.0	10%	Excluded		Yes	Yes
266	Transit	Interface Management at LRT Track/Systems Construction	Threat	\$1 M	\$2 M	\$4 M	1.0	3.0	6.0	60%	Modeled	LRT-6a - Plinths and Track Construction	No	Yes
267	Tribal Coord.	Tribal Workforce Engagement & Employment Rights	Threat				1.0	2.0	3.0	25%	Modeled	CRB-1b - Develop CRB RFP	Yes	Yes
271	Construction	River User MOT During CRB Construction	Threat	\$0 M	\$1.5 M	\$3 M	0.0	1.0	2.0	10%	Minor		Yes	Yes
272	Environmental	Federal Lands to Parks	Threat				1.0	3.0	6.0	5%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
274	Finance	IBR Program Seeks Federal Funding - CIG	Threat				12.0	24.0	48.0	30%	Excluded		Yes	Yes
275	Contract Procurement	CRBA+: Failure to Reach GMP Results in Re-Procurement	Threat	\$2 M	\$4 M	\$8 M	12.0	15.0	18.0	5%	Excluded	CBA-3f - Approaches GMP Negotiations	Yes	Yes
276	Utilities Relocation	Design Changes impact utility relocations	Threat				0.0	3.0	18.0	20%	Elsewhere		Yes	Yes
277	Utilities Relocation	Scope of Reimbursable Work is Greater than Anticipated	Threat	\$5 M	\$10 M	\$15 M				50%	Modeled	CBA-9 - Hayden Island Stages 1-3	Yes	Yes
280	Utilities Relocation	Utilities Relocation Delays - Double Moves	Threat				2.0	4.0	6.0	40%	Minor		Yes	Yes
285	Environmental	Unanticipated Mitigations Needed	Threat	\$1 M	\$2 M	\$3 M				75%	Minor		Yes	Yes
288	Right-of-Way	Relocation Delays - (Hayden Island)	Threat				1.0	2.0	6.0	10%	Minor	HIA-5 - Hayden Island Pkg A Construction	Yes	Yes
289	Right-of-Way	Uncertainty in ROW Cost Inflation Rate	Opportunity	-\$25 M	\$0 M	\$0 M				25%	Modeled	All ROW activities	Yes	Yes
290	Market Conditions	Uncertainty in Construction Cost Inflation Rate	Opportunity	-\$500 M	\$0 M	\$0 M				50%	Modeled	All construction activities	Yes	Yes
291	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (River Bridge Contract)	Opportunity								Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects			
				Direct Cost Impact (\$M)	Schedule Impact (months)									
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
292	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (Approaches Contract)	Threat	\$77 M	\$154 M	\$307 M				75%	Modeled	CBA-3c through CBA-12b (all approaches PDB activities)	Yes	Yes
293	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (Approaches Contract)	Opportunity								Minor		Yes	Yes
294	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (Other Contracts)	Opportunity	-\$159 M	-\$106 M	-\$53 M				20%	Modeled	All construction activities except CRB, CBA, and major transit packages	Yes	Yes
295	Roadway Design	Partner Agency Design Review Processes - 30% Design Package (River Bridge)	Threat				0.0	1.0	2.0	20%	Minor		Yes	Yes
296	Roadway Design	Partner Agency Design Review Processes - Subsequent Packages, 60%, 90% (River Bridge)	Threat				1.0	2.0	3.0	10%	Minor		Yes	Yes
297	Transit	Track / Systems Design	Threat	\$0.5 M	\$0.75 M	\$1 M	1.0	3.0	6.0	50%	Elsewhere		Yes	Yes
301	Structures	Decision on Evergreen Complex	Threat								Minor		Yes	Yes
302	Construction	Expiration of Manufactured Products Waiver	Threat								In the Base		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
303	Construction	Conflicting BABAA Requirements	Threat								Elsewhere		Yes	Yes
304	Construction	BABAA-Defined Steel & Iron Products	Threat								Elsewhere		Yes	Yes
305	Construction	BABAA-Defined (Permanently Installed) Construction Materials	Threat								Elsewhere		Yes	Yes
306	Construction	BABAA-Defined Fabricated Materials	Threat								Elsewhere		Yes	Yes
307	Construction	Non-Domestic Materials Waivers	Threat								Minor		Yes	Yes
311	Right-of-Way	Early ROW Acquisition	Opportunity				-5.0	-3.0	-1.0	25%	Minor		Yes	Yes
313	Roadway Design	Maintenance of On/Off Ramps (Marine Drive Package A)	Threat				3.0	6.0	9.0	5%	Elsewhere		No	Yes
317	Environmental	Negotiations with Impacted Vessels and Fabricators (Affected River Users)	Threat				3.0	6.0	9.0	90%	Elsewhere		Yes	Yes
319	Environmental	Other Interested Parties / River Users	Threat				3.0	6.0	9.0	30%	Elsewhere		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
323	Environmental	Support from External Parties	Opportunity				-6.0	-4.0	-2.0	60%	Elsewhere		Yes	Yes
325	Roadway Design	COV Pump Station/WSDOT Real Estate Restrictions	Threat								Minor		Yes	Yes
326	Contract Procurement	CRB RFP Review Periods Reduced or Removed	Threat							25%	N/A		Yes	Yes
327	Utilities Relocation	Condition of COV Waterlines	Threat				2.0	3.0	4.0	50%	Elsewhere		Yes	Yes
329	Program Management	Bridge Configuration and Type Selection - Multiple Options	Uncertainty								Elsewhere		Yes	Yes
330	Program Management	RFP Timeline Results in Multiple NTPs and Increased Risk of Monetary Penalties	Threat								N/A		Yes	Yes
334	Finance	Post-ROD Discretionary Grant Funding Obligations	Threat	\$1 M	\$2 M	\$4 M	3.0	12.0	18.0	50%	Excluded	CIG-3 (Readiness for FFGA)	Yes	Yes
335	Transit	Delay to OCS Design	Threat				1.0	3.0	5.0	50%	Minor	DES-2 - 30% Design for Transit	Yes	Yes
336	Program Management	Agencies Do Not Allow RFQ Issuance Pre-ROD	Threat				1.7	1.7	1.7	33%	Modeled	CRB-1 - CRB Prelim. Design/RFQ	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
337	Program Management	RFP Before ROD Results in Request for Extension	Threat								N/A		Yes	Yes
338	Delivery Method	Compressed Design Schedule Results in Increased Contractor Price	Threat	\$2 M	\$5 M	\$10 M				50%	In the Base		Yes	Yes
339	Program Management	RFP Before ROD Results in Federal Non-Compliance	Threat								N/A		Yes	Yes
340	Program Management	RFP Before ROD Affects Bid Responses	Threat								N/A		Yes	Yes
341	Utilities Relocation	Utility Agreements Incomplete for Procurement	Threat								Elsewhere		Yes	Yes
343	Environmental	Agreement on Path for Cultural Resources	Threat	\$0 M	\$0 M	\$1 M	3.0	6.0	12.0	15%	Modeled	ENV-9, ENV-10, ENV-11 - Cultural Resources Survey CRB, HI, CRBA/SR-14, also PHT-5, WAG-1, MDA-2.	Yes	Yes
348	Environmental	Bridge Permit Delay Results in Changed Conditions	Threat								N/A		Yes	Yes
349	Environmental	Cultural Resources/Arch Work Incomplete for NTP #2	Threat	\$0 M	\$0 M	\$1 M	6.0	12.0	24.0	25%	Elsewhere		Yes	Yes
350	Program Management	Federal Staffing Reductions Impact Federal Reviews and Project Schedule	Threat				0.0	1.0	2.0	20%	Elsewhere		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
				Post-Managed State										
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
351	Right-of-Way	Floating Homes	Threat				6.0	10.0	12.0	5%	Modeled	PHT-3b - Portland Harbor Transit ROW	No	Yes
352	Right-of-Way	WA Limited Access Hearing Findings and Order	Threat				6.0	10.0	12.0	50%	Modeled	ROW-1 - Limited Access Waiver / Finalize ROW Plans	Yes	Yes
354	Transit	Denial of Design Exception Request for Expo LRT Station	Threat								Elsewhere		Yes	Yes
356	Program Management	Provisions for Follow-on Contracts: Program Wide	Threat	\$1 M	\$2 M	\$3 M	3.0	6.0	9.0	50%	Elsewhere		Yes	Yes
357	Transit	PD Extension Denied	Threat								Minor		Yes	Yes
358	Transit	ROD Delayed Beyond Maximum Extension	Threat								Elsewhere		Yes	Yes
361	Finance	Local Transit Funds Allocation Delay	Threat				6.0	12.0	24.0	20%	Modeled	DES-3b - 60% Design for Transit, DES-4a - 90% Design for Transit	Yes	Yes
362	Transit	Power Service Needs	Threat	\$1 M	\$2 M	\$3 M				50%	Minor		Yes	Yes
363	Public Affairs	Local, State, and Federal Partner Misalignment	Threat				1.0	3.0	6.0	20%	Elsewhere		Yes	Yes
365	Utilities Relocation	Power Service to Existing NB Bridge	Threat	\$5 M	\$10 M	\$15 M				20%	Modeled	CBA-12b - CRB Partial Demo	Yes	Yes
366	Contract Procurement	Project Labor Agreements Process	Threat				0.0	1.0	2.0	30%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Disposition	Impacted Activities	Funded Phase	Core Set of Projects				
				Direct Cost Impact (\$M)							Schedule Impact (months)			Likelihood of Impact Occurring
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
368	Right-of-Way	30% Design for Transit Elements	Threat				1.0	3.0	6.0	10%	Minor		Yes	Yes
372	Transit	Head-End System Upgrades at TriMet OCC	Threat								In the Base		No	Yes
373	Transit	Agency/Vendor/Program work for SCADA, Cameras, Communications, etc.	Threat				1.0	3.0	6.0	25%	Modeled	LRT-11 - LRT Systems Construction	No	Yes
377	Transit	Transit Station Elevator Delivery	Threat								Minor		No	Yes
380	Transit	Public Art Delivery and Responsibility	Threat							10%	Minor		No	Yes
383	Environmental	Section 106 – Post-ROD Analysis and Implementation	Threat	\$2 M	\$5 M	\$8 M	9.0	12.0	18.0	30%	Modeled	ENV-9, ENV-10, ENV-11 - Cultural Resources Survey CRB, HI, CRBA/SR-14	Yes	Yes
384	Environmental	Local Agency Land Use Permit Delays	Threat				2.0	4.0	6.0	20%	Modeled	CRB-8a, CBA-3c, PHT-5, WAG-1, MDA-2, DES-3	Yes	Yes
385	Maint. Of Traffic	Median Width for CRB (Fixed Span)	Opportunity							80%	Elsewhere	Cost split among: CRB-15, CBA-8	Yes	Yes
386	Railroad	Railroad Facilities Impact	Threat	\$0 M	\$0.5 M	\$1 M				10%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
387	Program Management	Legal Descriptions Delay Start of ROW	Threat								Minor		Yes	Yes
388	Construction	Approach MOT Scope: Jantzen Drive	Threat	\$5 M	\$10 M	\$15 M				25%	Modeled	HIA-5- Hayden Island Pkg. A Construction	Yes	Yes
390	Maint. Of Traffic	Improvements to Local Roads	Threat								Elsewhere		Yes	Yes
391	Traffic	Interim ITS Elements	Threat								Minor		Yes	Yes
392	Traffic	Interim Tolling Elements	Threat	\$5 M	\$10 M	\$20 M				20%	Minor		Yes	Yes
393	Construction	Combined Demolition Under One Contract	Opportunity	-\$8 M	-\$4 M	-\$2 M	0.0	0.0	0.0	25%	Elsewhere		Yes	Yes
394	Environmental	Demolition Permit	Threat	\$0 M	\$1 M	\$2 M	6.0	18.0	24.0	15%	Minor		Yes	Yes
395	Construction	SB Bridge Demo Constraints/Access	Threat	\$10 M	\$20 M	\$40 M	3.0	6.0	9.0	15%	Modeled	CBR-6 - Interstate Bridge Removal Construction	Yes	Yes
396	Construction	Unknown Debris in River	Threat	\$0.5 M	\$1 M	\$2 M	1.0	2.0	4.0	20%	Modeled	CBR-7 - Interstate Bridge Removal Construction - In-Water Work	Yes	Yes
397	Construction	Perform Demo Without Coffe Dams	Opportunity	-\$8 M	-\$4 M	-\$2 M	0.0	0.0	0.0	10%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
398	Program Management	Provisions for Follow-on Contracts: CRB & Handoff to Approaches	Threat	\$5 M	\$14 M	\$28 M	1.0	3.0	6.0	25%	Elsewhere		Yes	Yes
399	Program Management	Provisions for Follow-on Contracts: Transit CIG	Threat	\$0 M	\$0.3 M	\$0.6 M	0.0	1.0	2.0	15%	Elsewhere		Yes	Yes
400	Structures	Structure Aesthetic Changes - Extradosed Bridge Type	Threat	\$12 M	\$24 M	\$36 M	0.0	0.0	0.0	10%	Elsewhere		Yes	Yes
401	Construction	Restrictions on Navigation Channel Openings	Threat	\$0 M	\$1 M	\$2 M	1.0	3.0	9.0	20%	Modeled	CRB-12/15 - Columbia River Bridge Construction	Yes	Yes
402	Construction	Hazardous Materials Spill	Threat								Minor		Yes	Yes
405	Construction	CRB Demo / Pier 8 Conflict	Threat	\$2 M	\$4 M	\$6 M				50%	Minor		Yes	Yes
410	Roadway Design	West Hayden Island Mitigation	Threat	\$8 M	\$9 M	\$10 M				25%	Modeled	WHM-5 - W. Hayden Island Mitigation Construction	Yes	Yes
411	Finance	Annual FFGA Disbursements Amounts / Timing	Threat	\$15.0 M	\$25 M	\$50 M				50%	Elsewhere		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
				Post-Managed State										
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely ³	High (90% CI)					
412	Roadway Design	Design coordination between CRB, Approaches Packages	Threat				2.0	3.0	6.0	90%	Retired	CBA-3c - Approaches 30% to 60% design	Yes	Yes
414	Railroad	BNSF property not available for Waterfront Station Access	Threat	\$20 M	\$30 M	\$40 M				20%	Modeled	LRT-7 - Waterfront Station Construction	No	Yes
415	Contract Procurement	Impact of tariffs	Threat	\$202 M	\$265 M	\$359 M				50%	Modeled	All construction activities	Yes	Yes
416	Finance	FTA Approval Delayed for FFGA	Threat				2.0	4.0	8.0	40%	Modeled	CIG-3 - FTA Readiness Reviews for FFGA	Yes	Yes
419	Other	Third party agreements with transit, City of Vancouver, on future IBR infrastructure ownership and maintenance									Minor		Yes	Yes
421	Structures	Delayed decision on interstate bridge type									Minor		Yes	Yes
423	Transit	TriMet /WSDOT Delivery Agreement Decision Point Delay	Threat				1.0	3.0	6.0	50%	Retired	AGR-2 - TriMet Delivery Agreement Decision	Yes	Yes
424	Finance	LONP not issued									Excluded		Yes	Yes
425	Contract Procurement	GMP Negotiation Delays: CRBA+	Threat				1.0	2.0	3.0	60%	Modeled	CRB-9 - GMP negotiations	Yes	Yes
427	Structures	Additional Security Measures Identified	Threat	\$5 M	\$10 M	\$15 M				50%	Minor	CRB-15 - Columbia River Bridge Construction - Set Girders/Deck NB/SB	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects			
				Direct Cost Impact (\$M)	Schedule Impact (months)									
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
428	Contract Procurement	Delayed design/negotiation for CRB early work packages	Threat				1.0	3.0	6.0	30%	Modeled	CRB-8b - Design/ Negotiate Early Works	Yes	Yes
429	Contract Procurement	GMP Negotiation Delays: Other Packages	Threat				3.0	6.0	9.0	40%	Modeled	LRT-2b, PHT-5,-LRF-2, RJT-3, OSB-3, ONB-3, MDI-3 (GMP activities)	Yes	Yes
430	Construction	Allowable working hours / work restrictions	Threat								In the Base		Yes	Yes
432	Contract Procurement	Coordination of concurrent procurements: Transit	Threat				6.0	9.0	12.0	15%	Modeled	LRT-0,MDA-2, WAG-1, PHT-1 (RFQ prep activities)	Yes	Yes
433	Environmental	Permit challenge or appeal	Threat				3.0	6.0	9.0	75%	Modeled	CRB-8a, CBA-3c, PHT-5 (60% design CRB, approaches,PHT)	Yes	Yes
435	Contract Procurement	Cost premium associated with labor agreements	Threat	\$0 M	\$32 M	\$64 M				75%	Retired	CRB-8a through CRB-17 (all CRB PDB activities) CBA-3c through CBA-12b (all Approaches PDB activities)	Yes	Yes
437	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (Large Transit Contracts)	Threat	\$48 M	\$95 M	\$143 M				60%	Modeled	LRT-*, EPR-*, HIG-*, LRF-*, MDA-*, PHT-*, RJT-*	No	Yes
437	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (Large Transit Contracts)	Opportunity	-\$72 M	-\$47 M	-\$24 M				20%	Modeled		No	Yes
438	Geotechnical	Ground improvement installation issues	Threat	\$9 M	\$15 M	\$30 M	0.0	1.0	2.0	50%	Modeled	Split among CRB-12, CBA-6, MDA-5, MDI-6	Yes	Yes
440	Transit	Driver availability	Threat				1.0	2.0	3.0	10%	Modeled	LRT-13 - Operator Training / Route Simulation	No	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State						Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Direct Cost Impact (\$M)			Schedule Impact (months)							
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
441	Environmental	Section 106 – Post-ROD Analysis and Implementation: CRB								5%	Elsewhere		Yes	Yes
443	Other	Partner Agency Agreement Delays: Critical Transit	Threat				1.0	3.0	6.0	20%	Modeled	AGR-3 - Other Critical Transit Agreements	Yes	Yes
444	Interagency Coord.	Governance agreement ODOT/WSDOT	Threat				1.0	4.0	6.0	20%	Modeled	AGR-1 - WA/OR Bi-State Agreement	Yes	Yes
445	Environmental	Unanticipated hazardous materials discovery during construction	Threat				2.0	4.0	6.0	20%	Modeled	CRB-15, CBA-6, SRA-7, HIA-5 / PHT-7, MDA-5, LRF-4, WAG-6 / OSB-7, ONB-7, MDI-6, HIS-6, NER-6	Yes	Yes
448	Traffic	Delay to precompletion tolling schedule	Threat				3.0	6.0	12.0	50%	Modeled	PCT-1 - Precompletion Tolling Design	Yes	Yes
449	Roadway Design	Shared Use Path Optimization (WA)	Opportunity	-\$10 M	-\$5 M	-\$2 M				10%	Minor		Yes	Yes
454	Transit	Change to number of LRVs purchased	Opportunity	-\$154 M	-\$39 M	\$0 M				50%	Excluded	LRV-3, LRV-7 - LRV Manufacture/ Deliver Groups 1-3	No	Yes
457	Civil / Drainage	Condition of existing drainage infrastructure	Threat	\$5 M	\$10 M	\$20 M				80%	Modeled	CBA-6, SRA-7, ONB-7, OSB-7, WAN-7	Yes	Yes
458	Civil / Drainage	HRM updates	Threat	\$3 M	\$4 M	\$5 M				75%	Minor		Yes	Yes
461	Roadway Design	Expo Road local street improvements	Threat	\$5 M	\$10 M	\$15 M				10%	Minor		Yes	Yes
462	Transit	Fire/Life/Safety on transit facilities	Threat	\$10 M	\$15 M	\$20 M				20%	Modeled	LRT-7 - Waterfront Station Construction	No	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Disposition	Impacted Activities	Funded Phase	Core Set of Projects				
				Direct Cost Impact (\$M)							Schedule Impact (months)			Likelihood of Impact Occurring
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
463	Transit	BNSF Agreements not Completed for FFGA Rating Submittal	Threat				3.0	6.0	9.0	50%	Modeled	CIG-3 - FTA Readiness for FFGA	Yes	Yes
464	Transit	Design coordination among Packages	Threat				3.0	4.5	6.0	50%	Modeled	DES-3 - 60% Design for Transit	Yes	Yes
465	Transit	Design coordination among packages impacts profile / alignment									Elsewhere		Yes	Yes
467	Contract Procurement	Coordination of FTA and FHWA requirements for construction	Threat	\$10 M	\$20 M	\$30 M				25%	Modeled	CRB *, CBA *, SRA *, HIA *, MDA * Split between CRB-12 and CBA-6a	Yes	Yes
469	Environmental	Presence of marine mammals	Threat								Minor		Yes	Yes
470	Utilities Relocation	Sequence of utility relocation between CRB, Approaches, and Partial Demo	Threat	\$5 M	\$10 M	\$15 M				75%	Modeled	CRB-15 - Columbia River Bridge Construction - Set Girders/Deck NB/SB	Yes	Yes
471	Utilities Relocation	Coordination of gravity sanitary sewer relocation on SR-14	Threat	\$1 M	\$3 M	\$5 M	0.0	0.0	3.0	20%	Modeled	SRA-2 - SR-14 Advance Utilities	Yes	Yes
472	Construction	Changes to phasing and sequencing assumptions									Excluded		Yes	Yes
474	Maint. Of Traffic	MOT during Approach construction	Threat	\$0 M	\$1 M	\$1 M	0.0	1.0	2.0	25%	Minor		Yes	Yes
475	Program Management	Uncertainty in PE (Professional Services) Cost Inflation Rate	Opportunity	-\$100 M	\$0 M	\$0 M				50%	Modeled	All PE and programmatic activities	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Disposition	Impacted Activities	Funded Phase	Core Set of Projects				
				Direct Cost Impact (\$M)							Schedule Impact (months)			Likelihood of Impact Occurring
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
479	Transit	Loss of confidence in transit funding									Excluded		Yes	Yes
480	Right-of-Way	Critical CRB ROW delays	Threat				0.0	2.0	5.0	20%	Modeled	CRB-6a - CRB Critical ROW	Yes	Yes
482	Transit	Transit Design Procurement	Threat				6.0	8.0	10.0	50%	Retired	DES-3 - 60% Design for Transit	Yes	Yes
483	Right-of-Way	Continuing Control Agreement	Threat	\$2.0 M	\$4 M	\$6 M				80%	Minor		Yes	Yes
484	Construction	Miscellaneous post-GMP changes: CRBA+	Threat	\$32 M	\$64 M	\$96 M				100%	Modeled	All construction activities on CRB and former CBA, SRA, and UIA packages	Yes	Yes
485	Construction	Miscellaneous change orders: Other packages	Threat	\$60 M	\$90 M	\$120 M				100%	Modeled	All construction activities on other packages	Yes	Yes
488	Utilities Relocation	Accuracy of quantity assumptions	Threat	\$10 M	\$20 M	\$30 M	5.0	7.0	10.0	50%	In the Base		Yes	Yes
489	Utilities Relocation	Unforeseen Utility Impact Areas & Design Elements	Threat				3.0	6.0	9.0	20%	Elsewhere		Yes	Yes
490	Utilities Relocation	Ongoing Reimbursable Rights Investigation	Threat	\$1 M	\$2 M	\$3 M				20%	Minor		Yes	Yes
491	Utilities Relocation	Ongoing Reimbursable Rights Investigation	Opportunity	-\$1 M	-\$2 M	-\$3 M				20%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects			
				Direct Cost Impact (\$M)	Schedule Impact (months)									
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
492	Utilities Relocation	Accuracy of Utility Information related to Quality Level C and D	Threat	\$1 M	\$2 M	\$3 M				20%	Minor		Yes	Yes
493	Utilities Relocation	Accuracy of Utility Information related to Quality Level C and D	Opportunity	-\$1 M	-\$2 M	-\$3 M				20%	Minor		Yes	Yes
494	Utilities Relocation	Impact to Utility based on Risk 359	Threat	\$1 M	\$2 M	\$3 M				70%	Minor		Yes	Yes
495	Utilities Relocation	Procurement Delays	Threat	\$1 M	\$2 M	\$3 M	3.0	6.0	12.0	20%	Elsewhere		Yes	Yes
496	Utilities Relocation	ROW acquisitions not on schedule may cause 2nd move for utilities	Threat	\$0.25 M	\$0.5 M	\$1 M	3.0	6.0	12.0	20%	Modeled	LRT-2a, PHT-5, WAG-1, MDA-2	Yes	Yes
497	Utilities Relocation	WA easements being worked through ROW delays may cause the utilities not to relocate on schedule	Threat	\$0.25 M	\$0.5 M	\$1 M	3.0	6.0	12.0	20%	Elsewhere		Yes	Yes
498	Utilities Relocation	Per Risk 160 - full depth reconstruction of what is currently planned as surface only may trigger relocation needs	Threat	\$0.25 M	\$0.5 M	\$1 M	3.0	4.0	6.0	20%	Elsewhere		Yes	Yes
499	Utilities Relocation	Levee Project requires relocations of utilities at cost to that project done ahead of IBR	Opportunity	-\$0.25 M	-\$1 M	-\$1 M				20%	Minor		Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
Risk Identification				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Post-Managed State						Disposition	Impacted Activities	Funded Phase	Core Set of Projects	
				Direct Cost Impact (\$M)			Schedule Impact (months)							Likelihood of Impact Occurring
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
500	Utilities Relocation	Agreements in one package not executed in time for work on different, concurrent package	Threat				3.0	4.0	6.0	80%	Elsewhere		Yes	Yes
501	Finance	Annual FFGA Disbursements Amounts / Timing	Threat	\$15 M	\$25 M	\$50 M				50%	Excluded		Yes	Yes
502	Other	Design Efficiency - Package A	Opportunity	-\$150 M	-\$125 M	-\$100 M				50%	Modeled	Cost split between CRB-12 and CRB-15	Yes	Yes
503	Other	Design Efficiency - Package B	Opportunity	-\$125 M	-\$100 M	-\$75 M				50%	Modeled	Cost split between CRB-12 and CRB-15. Mutually exclusive with #502.	Yes	Yes
522	Contract Procurement	CRBA+ Combined Package - RFQ/RFP Process Delay	Threat				1.0	2.0	3.0	50%	Modeled	Split between CRB-1a and CRB-1b	Yes	Yes
544	Transit	Additional scope for station connections to accommodate interim conditions	Threat	\$2 M	\$10 M	\$30 M				75%	Modeled	LRT-7 - Waterfront Station Construction, LRT-10 - Hayden Island Station Construction	No	Yes
545	Environmental	NEPA re-evaluation delay	Threat								Minor		No	Yes
546	Construction	Staging and access issues: Washington Aerial Guideway	Threat								Minor		No	Yes
547	Transit	Additional LRVs needed for interim service to Waterfront Station	Threat	\$24 M	\$30 M	\$36 M				50%	Modeled	Split among LRT-6a, LRT-11, and LRT-12	No	Yes
447a	Interagency Coord.	TriMet /WSDOT Design Services IGA Delay	Threat				1.0	3.0	6.0	50%	Modeled	AGR-2b - TriMet Design Services IGA	Yes	Yes
447b	Interagency Coord.	WSDOT/TriMet Delivery Phase IGA Delay	Threat				1.0	4.0	6.0	40%	Modeled	AGR-4 - WSDOT/TriMet Delivery Phase IGA	Yes	Yes

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN														
<u>Risk Identification</u>				Quantitative Analysis							CEVP Workshop			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Direct Cost Impact (\$M)			Schedule Impact (months)			Likelihood of Impact Occurring	Disposition	Impacted Activities	Funded Phase	Core Set of Projects
				Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)					
486-1	Construction	Interim Facilities for Phased Approach	Threat	\$10 M	\$20 M	\$30 M				75%	Modeled	SRA-7 - SR 14 Package A; CBA-6 - CRB Approaches	Yes	Yes

Appendix E – Transit Cost Analysis

The Core Set of Projects includes LRT service to Waterfront Station in Vancouver, WA. Thus, a subset of the Core Set of Projects cost is associated with these transit improvements. The transit cost subtotal is calculated in the CEVP model as a percentage of the total cost of certain packages, as summarized in Table E-1.

Table E-1. Transit Cost Allocations by Package

Package Name	Transit Percentage
Program Management	26.7%
Columbia River Bridge Replacement	16% of Columbia River Bridge ^a
Columbia River Bridge Removal	0%
Pre-completion Tolling	0%
West Hayden Island Mitigation	0%
Marine Drive Grade Separation	100%
Oregon Aerial Guideway	100%
Washington Aerial Guideway	100%
Track, Systems, Stations & Shelters	100%

Notes:

Future packages not included in the Core Set of Projects are not shown.

- a. 16% of the Columbia River Bridge PE, ROW, and CN cost is assigned to transit. Other elements of the combined Columbia River Bridge Replacement package including the former Approach, Hayden Island Package A, and SR-14 Package A package elements are not transit-eligible.

The P70 YOE cost for transit elements within the Core Set of Projects from the CEVP analysis is **\$2,032.1 million**. The CEVP results for the transit cost subtotal are shown in Table E-2. The following notes apply to Table E-2.

1. The mean component costs may be added to obtain the mean total phase cost. In general, however, the sum of the xth percentile for component costs is not the xth percentile of the total phase cost. For example, the sum of the 70th percentiles for PE, ROW, and CN (in YOE dollars) is not the 70th percentile of the total phase cost (in YOE dollars).
2. “Contingency at P70” represents the percentage difference between the 70th percentile and deterministic base costs (i.e., corresponding to a risk-based contingency at the target amount).

The transit costs shown in Table E-2 include \$29.7 million in program management costs incurred prior to FTA approval for Entry into Project Development in September 2024. Therefore, the P70 YOE cost eligible for reimbursement by the FTA Capital Improvement Grants (CIG) program is **\$2,002.4 million**.

Table E-2. Transit Cost Statistics

Cost Parameter	Transit Cost (July 2025, millions of dollars)	Transit Cost (millions of YOE dollars)	Transit PE Cost (millions of YOE dollars)	Transit ROW Cost (millions of YOE dollars)	Transit Construction Cost (millions of YOE dollars)	Transit Programmatic Cost (millions of YOE dollars)
Deterministic Base	1,156.3	1,440.8	154.7	120.1	1,016.0	149.9
Mean	1,480.0	1,935.3	188.5	137.3	1,433.6	175.9
Standard Deviation	136.7	191.1	19.0	14.9	173.1	10.2
1%	1,194.0	1,537.0	151.8	107.2	1,070.5	155.9
5%	1,264.7	1,636.3	160.1	114.1	1,164.7	160.4
10%	1,306.4	1,692.7	165.1	118.3	1,215.4	163.4
20%	1,361.6	1,769.1	171.8	124.4	1,285.2	167.2
25%	1,385.4	1,803.3	174.6	126.7	1,311.4	168.6
30%	1,405.0	1,828.5	177.3	128.6	1,336.6	169.9
40%	1,440.5	1,878.6	182.1	132.6	1,381.9	172.6
45%	1,457.2	1,902.5	184.6	134.6	1,403.7	173.8
50%	1,473.7	1,926.2	187.0	136.5	1,426.1	175.1
60%	1,510.7	1,977.3	192.2	140.4	1,469.1	177.9
65%	1,530.7	2,003.1	194.9	142.5	1,495.8	179.3
70%	1,549.7	2,032.1	197.7	144.8	1,520.8	180.9
75%	1,570.6	2,062.2	200.7	147.0	1,547.5	182.6

Cost Estimate Validation Process (CEVP) Update Report

Cost Parameter	Transit Cost (July 2025, millions of dollars)	Transit Cost (millions of YOE dollars)	Transit PE Cost (millions of YOE dollars)	Transit ROW Cost (millions of YOE dollars)	Transit Construction Cost (millions of YOE dollars)	Transit Programmatic Cost (millions of YOE dollars)
80%	1,593.1	2,093.7	204.3	149.7	1,578.3	184.5
85%	1,621.6	2,132.8	208.2	152.8	1,613.8	186.8
90%	1,656.9	2,183.9	213.7	157.3	1,659.7	189.4
95%	1,713.4	2,266.1	222.4	163.0	1,734.3	193.7
99%	1,820.8	2,417.0	238.4	175.3	1,870.2	202.2
Contingency at P70 (%)	34.0%	41.0%	27.8%	20.5%	49.7%	20.7%

Notes:

- b. a. Transit costs include \$29.7 million in programmatic costs incurred prior to FTA approval for Entry into Project Development in September 2024 that are not eligible for reimbursement from the FTA CIG program.