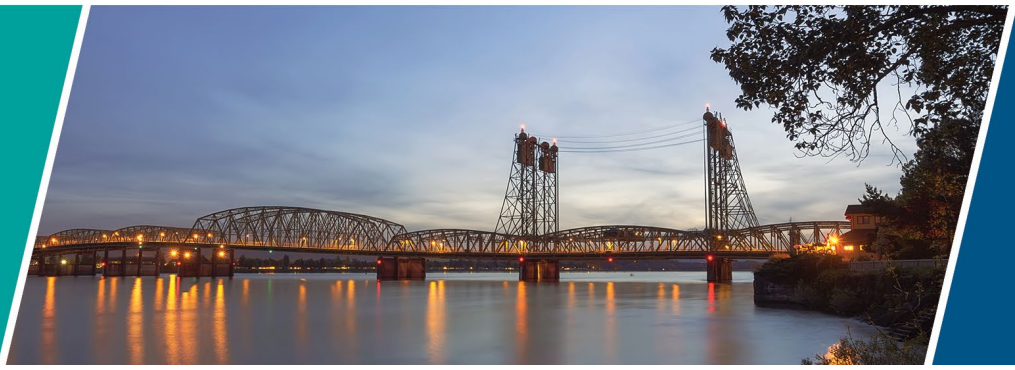
Interstate BRIDGE Replacement Program

Considering the significance of our natural environment



Cost Estimate Validation Process (CEVP) Report

March 2026

Cost Estimate Validation Process (CEVP)

CONTENTS

FIGURES

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
C-TRAN	Clark County Public Transportation
CCI	Construction Cost Index
CDF	Cumulative Distribution Function
CEVP	Cost Estimate Validation Process
CM/GC	Contract Manager / General Contractor
CN	Construction
CRB	Columbia River Bridge
CRBA	Columbia River Bridges and Approaches
CRC	Columbia River Crossing
CSRA	Cost and Schedule Risk Assessment
C-TRAN	Clark County Public Transportation Benefit Area
DBB	Design-Bid-Build
FEIS	Final Environmental Impact Statement
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-5	Interstate 5
IBR	Interstate Bridge Replacement
LPA	Locally Preferred Alternative
LRT	Light Rail Transit
MAX	Metropolitan Area Express

Acronym/Abbreviation	Definition
NB	Northbound
NEPA	National Environmental Policy Act
NTP	Notice to Proceed
ODOT	Oregon Department of Transportation
P70	70th Percentile
PDB	Progressive Design-Build
PE	Preliminary Engineering
PEI	Preliminary Engineering Cost Index
PM	Program Management
PMF	Probability Mass Function
PNCD	Preliminary Navigation Clearance Determination
Program	Interstate Bridge Replacement Program
RBS	Risk Breakdown Structure
RFQ	Request for Qualifications
RFP	Request for Proposals
RMV	Real Market Value
ROD	Record of Decision
ROW	Right-of-Way
ROWI	Right-of-Way Cost Index
SB	Southbound
SME	Subject Matter Expert
SR	State Route

Acronym/Abbreviation	Definition
TriMet	Tri-County Metropolitan Transportation District of Oregon
USCG	U.S. Coast Guard
WSDOT	Washington State Department of Transportation
YOE	Year-of-Expenditure

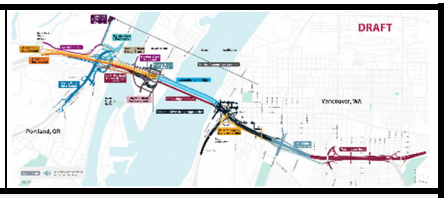
Program Summary

Fixed Span

Interstate Bridge Replacement Program

CEVP® Risk Analysis

Clark County, WA / Multnomah County, OR



Program Description

The Interstate Bridge Replacement Program will address congestion, limited mobility, and safety risks on Interstate 5 between SR 500 in Vancouver, Wash., and Victory Boulevard in Portland, Ore. Project elements include:

- New earthquake-resilient multimodal bridge
- Light rail extension from Portland to Vancouver, and bus on shoulder and express bus connectivity
- Improvements to seven closely spaced interchanges
- Updated pedestrian and bicycle paths throughout the program area
- Tolls to pay for bridge and to be used as a demand management tool to improve traffic flow, and to pay for ongoing operations and maintenance
- Addition of auxiliary lanes and safety shoulders

Program Benefits

- Improves safety, congestion and travel reliability
- Creates an earthquake-resilient corridor
- Eliminates traffic disruptions from bridge openings due to maritime vessels
- Improves freight movement and connections
- Expands travel choices including alternatives to single-occupancy vehicles
- Supports tens of thousands of jobs during construction of the five-mile corridor

CEVP® Workshop

The inputs for the risk analysis were developed during a workshop held August 18-22, 2025. The workshop was attended by multiple experts representing the lead agencies, federal partners, and consultants supporting the Program.

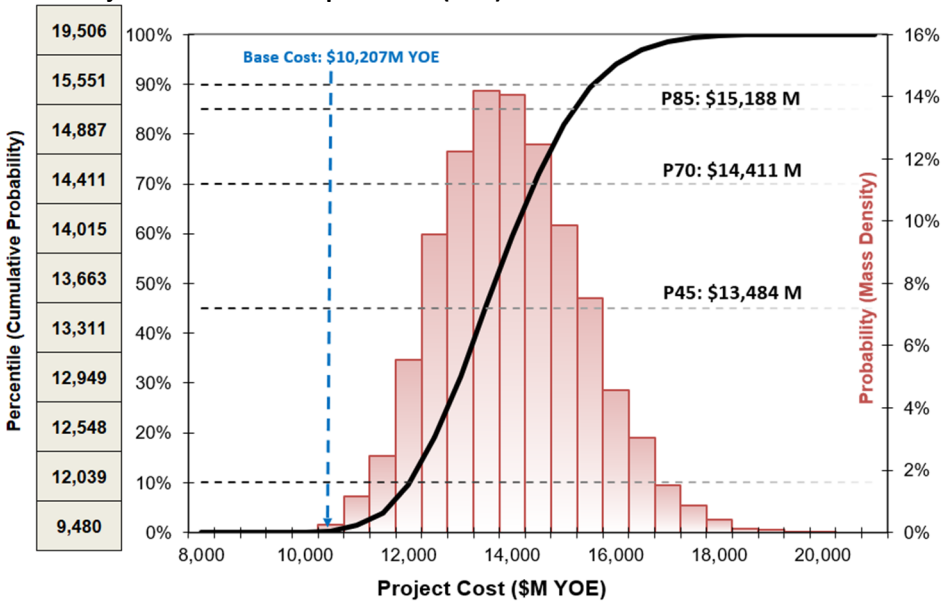
Program Modeling Assumptions

- Use a mix of traditional and alternative delivery methods for over two dozen contract packages. Potential changes to packaging or delivery assumptions are not included.
- Construction of new fixed-span bridges to replace the existing Interstate Bridge over the Columbia River is assumed.
- Construction of the entire 5-mile program starting with the replacement bridges at the Columbia River with required funding available to construct the entire corridor.
- The cost results represent capital costs only. Future operations and maintenance costs are not included.

Risk Analysis Cost Range

Prior to additional risk mitigation — Projected cost includes **$238.2M** 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 | Dec 2034 | Oct 2035
Light Rail Transit Revenue Service Date:	Jan 2038 | Jun 2039 | Feb 2040
Program Completion Date:	Jun 2047 | Oct 2048 | Aug 2049

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)	+197	+456	+723
Indirect cost of program delay	+205	+305	+415
Miscellaneous change orders (combined)	+102	+145	+190
Impact of tariffs	0	+138	+331
Coordination of FTA and FHWA requirements	0	+54	+106
Cost Opportunities (potential cost decrease, $M, prior to inflation)			
Contractor innovation opportunity (combined)	-88	-48	0.0
Schedule Threats (potential Program delay to critical path, months)			
Cultural resource risks	0	+8	+23
Design coordination among packages	0	+4	+17
Unidentified utilities encountered during construction	0	+3	+8
BNSF agreement delays	0	+3	+14
System testing and start-up delays	0	+2	+8
Schedule Opportunities (potential critical path acceleration, months)			
Contractor innovation opportunity (combined)	-2	-1	0

Level of Project Design — Low | Med | High

March 2026

Washington State Department of Transportation

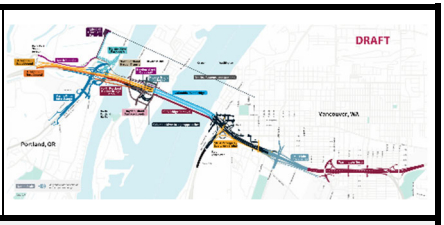
Program Summary

Movable Span Scenario

Interstate Bridge Replacement Program

CEVP® Risk Analysis

Clark County, WA / Multnomah County, OR



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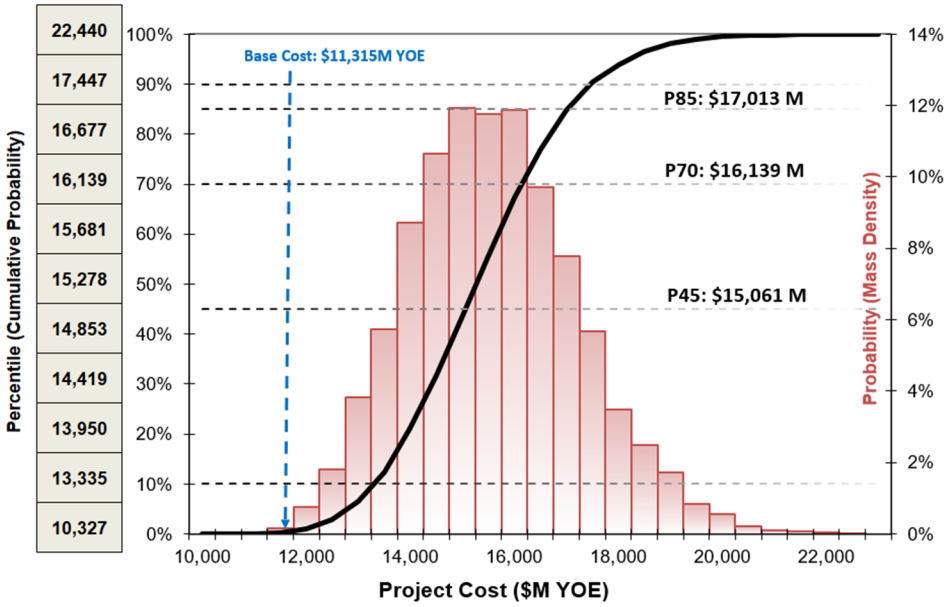
- The cost results represent capital costs only. Future operations and maintenance costs are not included.

Risk Analysis Cost Range

Prior to additional risk mitigation

Projected cost includes **$238.2M** 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:	Jan 2036 | Aug 2037 | Jun 2038
Light Rail Transit Revenue Service Date:	May 2039 | Jan 2041 | Jan 2042
Program Completion Date:	Feb 2049 | Oct 2050 | Sept 2051

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)	+218	+539	+872
Indirect cost of program delay	+191	+307	+437
Miscellaneous change orders (combined)	+109	+155	+204
Impact of tariffs	0	+152	+364
Coordination of FTA and FHWA requirements	0	+65	+125
Cost Opportunities (potential cost decrease, $M, prior to inflation)			
Contractor innovation opportunity (combined)	-83	-38	0
Schedule Threats (potential Program delay to critical path, months)			
Cultural resource risks	0	+8	+23
Columbia River Bridge Contract Guaranteed Maximum Price Negotiation Delays	0	+6	+11
Systems Testing or Start-Up Delays	0	+6	+11
Missed In-Water Work Window	0	+3	+5
Owner agency decision making following Preliminary Navigation Clearance Decision requiring a movable span	0	+3	+9
Schedule Opportunities (potential critical path acceleration, months)			
Contractor innovation opportunity (combined)	-6	-2	0

Level of Project Design

Low | Med | High

March 2026

Washington State Department of Transportation

EXECUTIVE SUMMARY

A probabilistic cost and schedule risk assessment (CSRA) was performed for the Interstate Bridge Replacement (IBR) Program ("the Program") following the Washington State Department of Transportation's (WSDOT's) Cost Estimate Validation Process (CEVP) methodology (WSDOT 2018) and consistent with Federal Highway Administration (FHWA) CSRA requirements for Major Projects (FHWA 2007). The objectives of the CEVP analysis were to provide independent review of Program cost and schedule estimates and to quantify uncertainty and risk associated with those estimates. A risk assessment workshop was held from August 18 to 22, 2025, and was attended by Program team members and subject matter experts (SMEs) from WSDOT, Oregon Department of Transportation (ODOT), Tri-County Metropolitan Transportation District of Oregon (TriMet), FHWA, Federal Transit Administration (FTA), and industry representatives. The risk workshop was followed by probabilistic analyses of Program cost and schedule.

Two configuration options were analyzed for the Columbia River Bridge structures: a fixed span option and a movable span option. Following the U.S. Coast Guard's January 2026 issuance of a revised Preliminary Navigation Clearance Determination (PNCD), the movable-span option is no longer being considered. The PNCD specifies a minimum vertical navigation clearance of 116 feet, which corresponds to the fixed-span option. All inputs and results presented in this report represent the fixed span option unless otherwise indicated.

Program Schedule Review

The Program "base" schedule was summarized in a flowchart depicting the Program 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 Program schedule (including delays or accelerations due to risk events) and to calculate escalated year-of-expenditure (YOE) Program costs. The schedule reflects the current assumed Program delivery approach, which includes 29 contract packages plus programmatic activities. The schedule flowchart was reviewed during the risk workshop, and comments were incorporated. The base Program completion date (prior to consideration of risk) is **June 2045**.

Program Cost Review

The Program cost estimate was reviewed by independent cost estimation experts and additional SMEs representing a variety of technical disciplines prior to, during, and after the risk workshop. Contingencies were removed to develop a base cost estimate of approximately **$7,812 million** in July 2025 dollars. This deterministic base cost excludes inflation, estimating uncertainties, and risk, which are addressed through the risk analysis. Base uncertainty ranges for unit prices, quantities, and percentage markups were established for the estimate. The uncertainties were assessed in terms of ranges (i.e., 10th to 90th percentiles), relative to the deterministic base cost and mapped to individual contract packages. The professional judgment of the cost estimation and risk SMEs was used to inform the uncertainty ranges and associated correlations.

Program Risk Assessment

A risk register was developed for the Program, which included identification and characterization of specific risks (threats and opportunities) to the Program cost and schedule. A total of 486 risks were identified, of which 135 were determined to be significant (the remainder either fell below predetermined screening thresholds and were thus considered minor, were excluded, or have been resolved and retired). Risks were characterized and quantified based on the collective professional judgment of the SMEs assembled for the workshop. The risk quantifications included potential impacts to direct Program cost and schedule (relative to the base assumptions) and the likelihood of those impacts occurring. The risk quantifications reflected the proactive risk mitigation strategies currently being pursued by the Program team.

Risk Analysis

The inputs developed in the workshop (including base cost, base schedule, inflation, uncertainties, and risks) 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.

Program Results

Results from probabilistic analyses are commonly communicated in terms of the 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 amount will not be exceeded (conversely, there is a 30% likelihood that the value will be greater than that amount).

For the Program as defined in this CEVP, the 70th percentile cost in YOE dollars is **$14,411** million, and the 10th to 90th percentile (i.e., 80% confidence level) range is **$12,039** million to **$15,551** million.

Key Program cost risks include the following:

- Uncertain market conditions: competition and pricing
- Indirect cost of Program delay
- Miscellaneous change orders following award of construction contracts
- Impact of tariffs
- Coordination of technical provisions and administrative requirements for both FTA and FHWA

Key Program estimating uncertainties (related to base cost) include the following:

- Price uncertainty: deep soil mixing
- Price uncertainty: superstructure steel (marine and upland)

- Uncertainty in the construction cost inflation rate
- Price uncertainty: superstructure concrete
- Miscellaneous items uncertainty: Columbia River Bridge

The 70th percentile Program completion date is **October 2048**, with a 10th to 90th percentile range of **June 2047** to **August 2049**. Schedule risks to key Program milestones include the following:

- Cultural resource risks
- Design coordination among packages
- Unidentified utilities encountered during construction
- Completion of BNSF agreements
- Systems testing or start-up delays

Assumptions and Exclusions

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

- Program results reflect the Modified Locally Preferred Alternative.
- The Program is assumed to be delivered through a mix of traditional and alternative delivery methods, including 29 contract packages. Potential changes to packaging or delivery assumptions are not included.
- Construction of the entire 5-mile area of Program improvements is assumed, starting with the replacement bridges at the Columbia River, with funding available as needed. Potential resequencing or deferral of Program elements (e.g., due to fiscal constraints) is not included.
- Construction of two new fixed-span bridges to replace the existing Interstate Bridge over the Columbia River is assumed.
- 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 experiencing significant cost escalation, and future trends were difficult to predict. The cost inflation rates and market conditions risks developed for the CEVP reflect the understanding and professional judgment of the workshop participants based on available information at the time. Current assumptions related to packaging, sequencing, and delivery methods will be refined by the Program, with the expectation that future CEVP reviews 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.

1. INTRODUCTION

1.1 Overview

A probabilistic cost and schedule risk assessment (CSRA) was performed for the Interstate Bridge Replacement (IBR) Program ("the Program") following the Washington State Department of Transportation's (WSDOT's) Cost Estimate Validation Process (CEVP) methodology and consistent with Federal Highway Administration (FHWA) CSRA requirements for Major Projects. The objectives of the CEVP analysis were to provide independent review of Program cost and schedule estimates and to quantify uncertainty and risk associated with those estimates. A risk assessment workshop was held August 18 to 22, 2025, and was attended by Program team members and subject matter experts (SMEs) from WSDOT, Oregon Department of Transportation (ODOT), Tri-County Metropolitan Transportation District of Oregon (TriMet), FHWA, Federal Transit Administration (FTA), and industry representatives (Appendix A). The risk workshop was followed by probabilistic analyses of Program cost and schedule.

1.2 Approach

The general approach used for the CEVP analysis is summarized in the following steps:

1. Establish a common understanding of the Program among the participants, including overall scope, strategy, status, existing conditions, and key assumptions.
2. Develop a base schedule in the form of a flowchart depicting the high-level sequence of key activities and milestones, including their durations and predecessor-successor relationships, that represents the assumed Program schedule if "everything goes as planned" (i.e., no built-in contingency, float, or other consideration of potential risk is included).
3. Establish a base cost that represents the "best estimate" for the Program if "everything goes as planned" (i.e., both explicit and implicit contingencies are removed). The base cost includes allowances for "known but not quantified" items (incidentals).
4. Quantify uncertainty in the base estimates where appropriate to represent the potential variation (due to variability or lack of information) in the base values (e.g., unit price, quantity, percentage markups, duration, inflation rates, etc.), consistent with the assumptions used to prepare the base estimates.
5. Identify potential risks, considering both threats and opportunities for each key discipline associated with the Program. Risks are defined as events characterized by a probability of occurrence and an impact if the event occurs (in terms of deltas relative to the base cost and/or schedule for specific schedule activities) and are documented in a risk register. For risks determined to be significant (based on a predefined cutoff threshold), the direct cost and schedule impacts and associated probability are quantified based on the professional judgment of the SMEs. The risk quantifications consider risk management actions that are being implemented or planned by the Program. Possible additional mitigation strategies for major risks

are discussed as time allows during the workshop and subsequently reviewed and evaluated by the Program team.

6. Develop a probabilistic model that integrates the base cost and schedule (including uncertainties, where applicable), explicitly represents individual risks, and includes correlations and dependencies as appropriate. The model is used to generate probability distributions for Program cost and schedule milestone completion dates, along with an importance analysis ranking of the input factors (base uncertainties and risks) relative to the cost and schedule outputs to guide future risk management. The resulting probability distributions can be used to evaluate potential contingency levels for cost and schedule. A risk-based contingency level for cost or schedule can be determined from the difference between the output value at a chosen percentile (e.g., 70th) and the base value without contingency.

1.3 Common Assumptions

WSDOT maintains a library of CEVP support information, including common assumptions for its risk assessments. The current list of assumptions is contained within Appendix H of the Project Risk Management Guide (WSDOT 2018).

2. PROGRAM STATUS AND ASSUMPTIONS

2.1 Program Overview

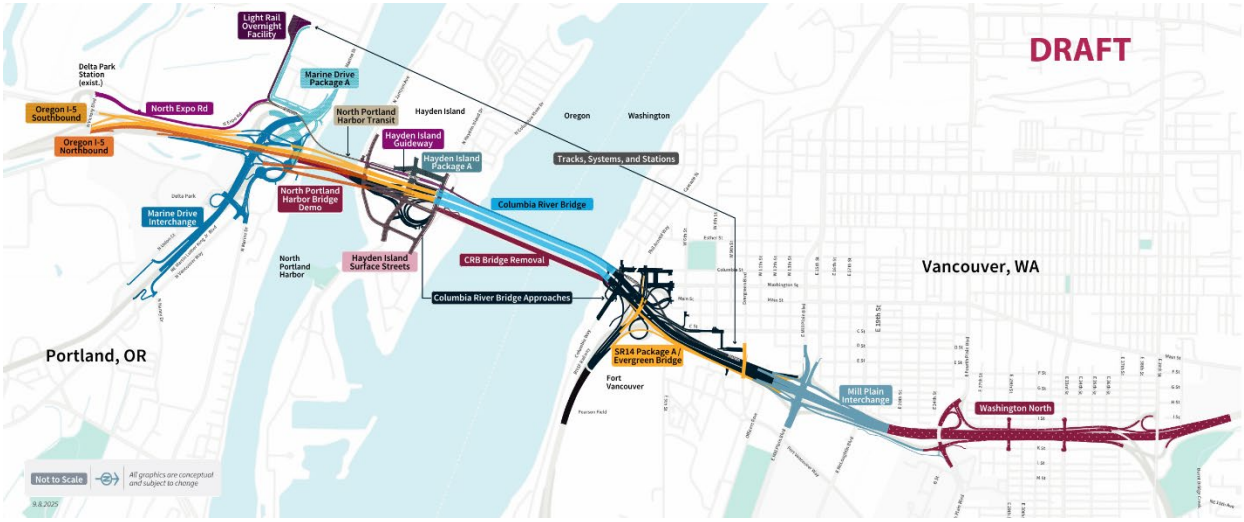
The IBR Program is a bridge, transit, and highway improvement project to address safety and mobility in the Interstate 5 (I-5) corridor between Portland, Oregon, and Vancouver, Washington. I-5 is the main interstate corridor on the West Coast of the United States, stretching from Canada to Mexico, and is one of only two roadway crossings of the Columbia River in the Portland-Vancouver metropolitan area. The IBR Program focuses on a 5-mile segment of the I-5 corridor that extends from Victory Boulevard in Portland to State Route (SR) 500 in Vancouver. In combination with highway and transit improvements, the IBR Program would replace the Interstate Bridge over the Columbia River. Transit service between Portland, Oregon, and Vancouver, Washington, would include extending the TriMet Metropolitan Area Express (MAX) Light Rail Transit (LRT) Yellow Line from the current terminus at the Expo Station in Portland to Vancouver. In addition, the Clark County Public Transportation Benefit Area (C-TRAN) would operate zero-emission express buses using the inside highway shoulder through the IBR Program area. These services are provided by partner agencies from different states and serve different travel markets.

This section describes the major scope and cost elements of the Program by package. With 29 distinct work packages, the Program integrates structural, roadway, and transit elements across two states and multiple jurisdictions. Key scope components include:

- Over 5 miles of I-5 corridor improvements, including improvements to existing interchanges, one auxiliary lane in each direction across the bridge, collector-distributor segments, extending LRT, and adding and improving active transportation facilities connections.
- Replacement of two bridges over the Columbia River between Oregon and Washington with modern, seismically resilient fixed-span structures.
- Construction of 48 bridge structures, including highway, transit, and arterial crossings.
- Extension of LRT approximately 2 miles into Washington, with four new stations and supporting systems infrastructure.
- Reconstruction of interchanges at Marine Drive, Hayden Island, SR 14, Mill Plain, Fourth Plain, Victory Boulevard, and SR 500.
- Two park-and-ride facilities supporting new C-TRAN and TriMet transit services.
- Multimodal investments, including shared-use paths, bike and pedestrian facilities, and a lid structure in Vancouver.

Figure 2-1 illustrates the Program setting and the major elements of the Modified Locally Preferred Alternative (LPA).

Figure 2-1. Program Modified LPA Overview



2.2 National Environmental Policy Act Status

FHWA and FTA are the lead federal agencies responsible for ensuring that the Program complies with the National Environmental Policy Act (NEPA) and its associated regulations and policies. A final environmental impact statement (FEIS) and Record of Decision (ROD) were issued for the former Columbia River Crossing (CRC) project in 2011. A series of NEPA re-evaluations were subsequently completed, most recently in 2022, to reflect changes to the Program and regulatory requirements since the original ROD was issued. The 2022 re-evaluation determined that the original environmental impact statement remains valid, but supplemental analysis was required for the IBR Program. A final supplemental environmental impact statement and amended ROD are expected to be issued in spring/summer 2026.

2.3 Scenarios and Sensitivity Analyses

The results presented in this report represent the Modified LPA with fixed-span Columbia River Bridge (CRB) structures, as described in Section 2.1. During the CEVP workshop, a movable-span option was also evaluated. The U.S. Coast Guard (USCG) subsequently issued a revised Preliminary Navigation Clearance Determination (PNCD) on January 16, 2026, specifying a minimum vertical navigation clearance of 116 feet, which corresponds to the fixed-span option. All inputs and results contained in this report correspond to the fixed-span option unless otherwise specified.

Additionally, because of the uncertainty surrounding the impact of tariffs on Program cost, three scenarios were analyzed:

1. Tariffs addressed as a risk (with 50% probability of occurrence): all results reflect this assumption unless otherwise specified.

2. Tariff impacts excluded (i.e., the probability of future tariffs impacting the Program cost in addition to the base estimate and inflation forecast is zero).
3. Tariff impacts assumed (i.e., the probability of future tariffs impacting the Program cost in addition to the base estimate and inflation forecast is 100%).

The potential range of cost impacts associated with future tariffs was developed by the cost estimation SMEs. Summary results for the movable span and tariff scenarios are presented in Section 4.2.5.

2.4 Key Assumptions and Exclusions

Assumptions are necessary for any analysis, and the results of the analysis must clearly state the assumptions upon which they are based. Probabilistic assessments attempt to include all relevant uncertainties so that the results are as inclusive and robust as possible (i.e., the results will "stand the test of time"). The more uncertainties that are excluded, the more "constrained" or "conditional" the results are. In many cases, however, an owner has good reason to exclude particular uncertainties from the analysis. The analysis is based on the following key assumptions. Changes to these assumptions were not quantified or modeled. Therefore, the reader should be mindful of these exclusions when reviewing and interpreting the results.

- Program results reflect the Modified LPA.
- The Program is assumed to be delivered through a mix of traditional and alternative delivery methods, including 29 contract packages. Potential changes to packaging or delivery assumptions are not included.
- Construction of the entire 5-mile area of Program improvements is assumed, starting with the replacement bridges at the Columbia River, with funding available as needed. Potential resequencing or deferral of Program elements (e.g., due to fiscal constraints) is not included.
- Construction of two new fixed-span bridges to replace the existing Interstate Bridge over the Columbia River is assumed.
- 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 experiencing significant cost escalation, and future trends were difficult to predict. Inflation rates and market condition risks developed for the CEVP reflect the understanding and professional judgment of the workshop participants based on available information at the time. Current assumptions related to packaging, sequencing, and delivery methods will be refined by the Program, with the expectation that future CEVP reviews 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 Program base schedule was summarized in a flowchart depicting the Program strategy at an appropriate level of detail for the risk analysis. The flowchart defines a set of key activities, milestones, and precedence relationships, and forms the basis for the Program schedule model, including delays or accelerations due to risk events. The schedule flowchart was based on IBR Program Schedule Update 29, dated July 11, 2025, with targeted adjustments for the CEVP. The flowchart was reviewed during the risk workshop, and comments were incorporated.

The schedule flowchart contains over 250 activities and milestones and reflects the current Program packaging and delivery plan, which includes the contract packages described in Table 3-1. For each package, one or more activities representing each major cost category (preliminary engineering [PE], right of way [ROW], and construction [CN]) are included, along with major Program and package-level milestones. Schedule logic for each package reflects the assumed delivery method and sequencing among packages, if applicable. Assumed delivery methods include design-build (DB), design-bid-build (DBB), progressive design-build (PDB), and contract manager/general contractor (CM/GC). Two-step sealed bids are assumed for bus and vehicle procurement packages.

Certain activities are subject to in-water work windows. The impact of these windows on the Program schedule is automatically accounted for in the integrated Program risk model.

Table 3-1. Contract Packaging Assumptions

Package Number	Package Name	Assumed Delivery Method
0	Programmatic Costs	N/A
1	65th Street C-TRAN O&M Bus Facility	DBB
2	Bus Procurement	2-step Sealed Bid
3	Bus Shelters	DBB
4	Approaches	PDB
5	Columbia River Bridge	PDB
6	Columbia River Bridge Removal	DBB
7	Evergreen Park & Ride	DB
8	Hayden Island Guideway	CM/GC

Package Number	Package Name	Assumed Delivery Method
9	Hayden Island Package A (Hayden Island Center)	DBB
10	Hayden Island Surface Streets	DBB
11	Light Rail Overnight Facility	CM/GC
12	LRV Procurement	2-step Sealed Bid
13	Marine Drive Interchange	CM/GC
14	Marine Drive Package A	CM/GC
15	Mill Plain Interchange	DB
16	North Expo Road	DBB
17	North Portland Harbor Bridge Removal	DBB
18	North Portland Harbor Transit Bridge	CM/GC
19	Oregon I-5 Northbound	CM/GC
20	Oregon I-5 Southbound	CM/GC
21	Oregon Station Finishes	DBB
22	Pre-Completion Tolling Signage	DBB
23	Ruby Junction TriMet Facility Expansion	CM/GC
24	SR-14 Package A	DBB
25	Track, Systems & Stations	CM/GC
26	Washington Station Finishes	DBB
27	Washington North	DB
28	Waterfront Park & Ride	DB
29	West Hayden Island Mitigation	DBB

CM/GC = contract manager / general contractor; C-TRAN = Clark County Public Transportation Benefit Area; DB = design-build; DBB = design-bid-build; I-5 = Interstate 5; LRV = light-rail vehicle; O&M = operation and maintenance; PDB = progressive design-build; SR = state route

The base Program completion date (prior to consideration of risk) is **June 2045**. The base completion dates for additional key schedule milestones are summarized in Table 3-2.

Table 3-2. Base Milestone Schedule Completion Dates

Milestone	Base Targeted Completion Date
Issue Record of Decision	April 2026
Pre-Completion Tolling Go Live	April 2027
FTA Full Funding Grant Agreement	September 2028
Start of Columbia River Bridge In-Water Work	March 2028
New I-5 Southbound Bridge Complete	July 2032
Shift I-5 to New Southbound Bridge	October 2032
Light-Rail Transit Revenue Service Date	January 2036
Interstate Bridge, Approaches, and Demo Complete	May 2036
Program Complete	June 2045

FTA = Federal Transit Administration; I-5 = Interstate 5

The schedule flowchart is shown in Appendix C. The red on the flowchart reflect the base critical path to Program completion.

3.2 Base Cost

3.2.1 Deterministic Base Program Cost

The Program cost estimate used in the CEVP analysis was developed by the Program team and reviewed by SMEs during and following the CEVP workshop. Comments provided by estimate reviewers were addressed and incorporated into a final CEVP estimate. The estimate is organized into 29 discrete packages and a separate programmatic cost component.

The estimate is based on available design documents and reference materials current as of May 2025, with designer input through September 2025. The design of the river crossing bridge and approaches was advanced to a detail sufficient to pursue a PDB contract (approximately 15% to 30% design), and the transit portions were advanced to 30% design in support of the Project Development Phase of the Capital Investment Grant program. Where design information was limited, assumptions were informed by engineering judgment, historical benchmarks, applicable agency standards, and benchmarking against comparable large-scale infrastructure programs.

Unit costs were developed using a variety of sources, including RSMeans 2025 Construction Cost Data, adjusted for local market conditions; recent WSDOT and ODOT bid tabulations; supplier quotes;

vendor pricing; and historical cost databases for major transit, bridge, and highway improvement projects. Unit costs were developed to reflect the low end of the ranges found in the bid tabs to account for possible savings with economy of scale from the large quantities compared to other area projects from which unit costs were derived.

Allowances have been included in the estimate to account for elements of scope and costs that are not fully defined at this stage of design, consistent with project estimates ranging from Class 3 to Class 5 for different elements of the Program, as defined by the Association for the Advancement of Cost Engineering International (AACE International 2025), meaning a 1% to 30% level of project definition. Construction-based allowances retained in the base estimate include mobilization, construction phasing and sequencing, maintenance of traffic, and miscellaneous items. Such allowances are typically retained in the base estimate in CEVP analyses.

Contingencies totaling **$3,269 million** were removed from the Program 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.

The deterministic base estimate is **$7,812 million** expressed in July 2025 dollars, excluding uncertainty and future cost inflation. Costs are divided by category (PE, ROW, and CN, and program management [PM]) and by contract package. A summary of the deterministic base cost is provided in Table 3-3.

Table 3-3. Deterministic Base Cost Summary

Cost Category	July 2025 Millions of Dollars		
	Estimate with Contingency	Contingency Removed	Base Estimate without Contingency
PE	1,409	443	966
ROW	386	79	307
CN	8,407	2,563	5,845
PM [a]	879	184	694
Total	**11,081**	**3,269**	**7,812**

[a] The PM cost total includes $238.2 million spent prior to July 2025. No risk or inflation is applied to this cost in the risk analysis.

3.2.2 Base Program 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.

- Uncertainty ranges for unit prices were individually established for most significant cost items, collectively constituting 66% of the base construction cost. Unit price ranges were established based on independent review of the estimate using the professional judgment of the estimate reviewers. Because unit price ranges for major cost items were adjusted to the low end of the bid tab ranges, the deterministic estimate was generally assessed to represent the 10th percentile value, with the most likely and 90th percentile values being higher than the deterministic base value. A generic range of -10% to +10% was assessed for the remaining cost items. The cost ranges were then mapped to each construction package based on the cost item allocation in the base estimate.
- Uncertainty ranges for quantities were developed for each package based on the level of design development and estimator judgment. Packages with greater design development were assigned lower uncertainty ranges.
- Uncertainty ranges for percentage markups, including construction phasing/interface, maintenance of traffic, delivery method, and miscellaneous items, were established for each package, generally following the ranges documented in the basis of estimate for each category.
- Uncertainty ranges for PE, programmatic costs, and ROW were established by the cost estimating SMEs and discipline leads.
- The cost model recognizes that many cost items are connected to each other, not independent. For example, bridges and retaining walls may appear as separate line items in the estimate, but they are affected by common forces, such as labor costs and equipment rates. When those underlying factors change, multiple items may increase or decrease together. Correlations were included in the model to account for these relationships with the following general assumptions.
  - Correlation among individual unit price ranges was assumed to be high.
  - Correlation for each component range (unit price, quantity, individual markups, PE, and ROW) across packages is assumed to be high.
  - Correlation among component ranges for a given package was assumed to be low.

Table 3-4 summarizes the base cost estimate and includes both the deterministic estimate and the characteristics of the base uncertainty range. Because the uncertainty ranges for certain cost items are asymmetrical relative to the deterministic base, the mean value for the ranged estimate differs from the deterministic value. Thus, the mean value of the ranged base estimate, **$8,571 million**,

exceeds the deterministic base value of **$7,812 million** by **$759 million**. The base uncertainty ranges, along with the risks, contribute to the overall risk-based contingency as described in Section 4.2.

Table 3-4. Base Cost Uncertainty

Parameter	Value (millions of July 2025 dollars)	Difference from Deterministic Base (millions of July 2025 dollars)	Difference from Deterministic Base Estimate (percent)
Deterministic Base Estimate	7,812	0	0.0%
Base Estimate: 10th Percentile	7,658	-154	-2.0%
Base Estimate: Mean	8,571	759	+9.7%
Base Estimate 90th Percentile	9,509	1,697	+21.7%

3.2.3 Inflation

IBR Program–specific inflation forecasts were developed to inform the 2026 CEVP risk analysis. Inflation forecasts serve two key, interrelated purposes:

- Escalate the base cost estimate from constant (current) dollars to year-of-expenditure (YOE) dollars based on the Program's delivery schedule.
- Inform the CEVP of risks pertaining to market conditions in developing risk-loaded cost estimates.

The IBR Program–specific inflation forecasts capture several factors: the residual impacts of supply chain disruptions from the COVID-19 pandemic; recent, above-average general cost inflation; the latest economic conditions and outlook impacting global commodity prices; and energy cost impacts in production and transportation of construction materials and equipment.

This report presents the results in three scenarios: "High," "Low," and "Probable," for three cost inflation indices:

- Construction Cost Index (CCI):
  - The CCI provides a composite outlook of construction costs based on five separate cost components, informed by third-party projections, macroeconomic data analysis, and regional trends informed by industry SME interviews.[1] The five separate commodity

[1] The "High" CCI forecast was adjusted to remove more explicit impacts of trade tariffs to avoid duplication with the risk register.

inflation forecasts weighted in the overall CCI are structural steel, concrete, construction equipment, labor, and other materials and services.

- Right-of-Way Cost Index (ROWI)
  - The ROWI provides an outlook on ROW acquisition costs and related real estate services, such as property appraisals, negotiations, relocations, as well as title and escrow services. The ROWI uses separate econometric forecast models for Multnomah County and Clark County parcel "real market values" (RMVs), paired with Oregon and Washington statewide economic forecasts, including personal income and building permits. The two county-level RMV forecasts, which capture cost increases due to both real estate market conditions and parcel development activities, are combined into a single index.
- Preliminary Engineering Cost Index (PEI):
  - The PEI provides the costs of the full range of professional services needed to deliver the IBR Program, including PE phase activities, ongoing PM services not embedded within construction contracts, and any other costs not specifically captured in the CCI or PEI. It is based largely on third-party data in which four separate cost index forecasts are combined to yield a raw weighted average index, and like the CCI, is informed by interviews with SMEs from consultant firms and transportation agencies.

In general, the "high" forecasts reflect a strong economy and a tight labor market, combined with a higher inflationary outlook, including the potential effects that additional tariffs and trade policies may have across all economic sectors.

The "low" forecasts reflect a softer economy with slower economic growth and a higher probability for a recessionary period over the forecast horizon, along with a return to lower tariffs and greater availability of labor.

The IBR Probable CCI forecasts and underlying assumptions are intended as a reasonable basis for escalating IBR Program capital cost projections to YOE dollars, whereas the low and high CCI forecasts are provided to inform the construction cost inflation probability distribution considered in the CEVP risk analysis. The PEI, ROWI, and CCI values used in the analysis are summarized in Table 3-5.

Table 3-5. Inflation Assumptions

Fiscal Year	Preliminary Engineering			Right of Way			Construction		
	Low	Probable	High	Low	Probable	High	Low	Probable	High
2025	-	**3.26%**	-	-	**2.54%**	-	-	**3.23%**	-
2026	3.11%	**3.72%**	3.94%	-1.20%	**0.30%**	1.55%	2.98%	**5.20%**	6.25%
2027	2.82%	**3.16%**	3.75%	2.80%	**4.05%**	6.80%	2.15%	**2.89%**	3.68%
2028	2.60%	**3.46%**	4.05%	4.22%	**5.47%**	6.47%	2.35%	**3.23%**	3.69%
2029	2.38%	**3.46%**	4.15%	4.03%	**5.28%**	6.28%	2.24%	**3.29%**	3.71%
2030	2.40%	**3.25%**	4.17%	4.38%	**5.88%**	6.63%	2.27%	**3.36%**	3.80%
2031	2.39%	**3.13%**	4.16%	4.36%	**5.86%**	6.61%	2.29%	**3.26%**	3.67%
2032	2.39%	**3.01%**	4.16%	4.16%	**5.66%**	6.41%	2.41%	**3.20%**	3.62%
2033	2.39%	**3.03%**	4.16%	3.96%	**5.21%**	6.21%	2.41%	**3.19%**	3.53%
2034	2.35%	**3.06%**	3.99%	3.92%	**5.17%**	5.92%	2.45%	**3.17%**	3.78%
2035	2.35%	**2.94%**	3.97%	3.42%	**4.42%**	5.67%	2.44%	**3.22%**	3.86%
2036	2.35%	**2.99%**	4.02%	3.87%	**4.62%**	5.62%	2.41%	**3.17%**	3.81%
2037	2.35%	**3.08%**	4.01%	3.84%	**4.59%**	5.59%	2.40%	**3.20%**	3.83%
2038	2.35%	**3.06%**	3.99%	4.12%	**4.87%**	5.87%	2.42%	**3.22%**	3.83%

The low, probable, and high forecasts for each fiscal year were first converted to equivalent calendar year values and programmed into the risk model as annual probability distributions using the beta-PERT distribution form, which is defined by three points including a low (10th percentile), high (90th percentile), and most likely value. High correlation is assumed among the annual distributions such that the low and high forecasts represent uncertainty in multiyear trends rather than uncertainty in values for a given year. Moderate correlation among the PEI, ROWI, and CCI ranges is also assumed.

The base cost estimate was allocated to the base schedule activities to develop a summary-level cost-loaded schedule. Costs were then inflated to the midpoint of each activity per the PEI, ROWI, and CCI forecasts and schedule model (considering potential delays due to risk events).

The deterministic base cost escalated to the base schedule using the probable inflation rates is **$10,207 million** (prior to inclusion of base uncertainty ranges or risks). The base cost inflation is summarized in Table 3-6.

Table 3-6. Base Cost Inflation

Deterministic Base Cost	Total Cost	PE Cost	ROW Cost	CN Cost	PM Cost
July 2025 (millions of dollars)	7,812	966	307	5,845	695
Inflation (millions of dollars)	2,395	169	54	2,004	167
Escalated to Year of Expenditure (millions of dollars)	10,207	1,135	361	7,849	862

CN = construction; PE = preliminary engineering; PM = program management; ROW = right of way

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

4. RISK ASSESSMENT

4.1 Risk Register

Prior to and during the risk workshop, the participants reviewed and developed a risk register for the Program, which included identification and characterization of specific threats and opportunities to the Program cost and schedule (Appendix E). The risk register is organized around specific categories based on the WSDOT Risk Breakdown Structure (RBS). 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) for the Program. The risks are complementary to the base cost and schedule described in Appendices C and D (including base uncertainty ranges). Therefore, the risk register should be used in conjunction with the base cost and schedule and the key Program assumptions summarized in Section 2-1 and Section 3-1.

The risk register includes some risks that are identified as "minor" because the expected (mean) value of those risks falls below the established threshold screening criteria (see notes in Appendix E). For the Program assessment, the combined effect of the minor risk issues was accounted for using an "aggregated minor risk" item. Similarly, a category of "unidentified risks" attempts to account for any issues that were not explicitly identified by the workshop participants. The same approach was used (separately) for minor and unidentified cost and schedule threats and opportunities.

A total of 486 risks (threats and opportunities) were identified, of which 135 were determined to be significant and 351 were determined to be minor (the remainder either are classified as "watch list" items, were specifically excluded, or have been resolved and retired). Risks were characterized and quantified primarily based on collective professional judgment of the SMEs assembled for the workshop.

The risk register is summarized by RBS category in Table 4-1.

Table 4-1. Summary of Risk Register

RBS Category	Number of Significant Risks	Number of Minor Risks	Number of Identified Risks
Construction	16	46	62
Contracting and Procurement	20	23	43
Design	12	48	60
Environmental	19	43	62
Management / Funding	12	45	57
External [a]	5	25	30
Railroad	5	3	8
Right of Way	9	28	37
Structural and Geotechnical	9	19	28
Transit [b]	18	45	63
Utilities	7	25	32
Other	3	1	4
Total	**135**	**49**	**486**

a External is not a category in the WSDOT RBS.

b Transit is not a category in the WSDOT RBS.

RBS = Risk Breakdown Structure; WSDOT = Washington State Department of Transportation

4.2 Risk Analysis

The inputs developed in the 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.

4.2.1 Key Results

Probability distributions for Program cost are shown in Figure 4-1 as overlain probability mass functions (PMFs) and cumulative distribution functions (CDFs) in YOE dollars. Figure 4-2 shows the

probability distribution for the program 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 results for Program cost are presented in Tables 4-2 and 4-3 in the form of tabular CDFs. Table 4-2 provides cost results in both July 2025 and YOE dollars, along with base, risk, and escalation cost components. Table 4-3 includes a breakdown of PE, ROW, CN, and programmatic costs. The statistics for key milestone completion dates are provided in Table 4-4. Additional cost and schedule statistical results are provided in Appendix B.

Figure 4-1. Probability Distribution for IBR Program Cost in YOE Dollars

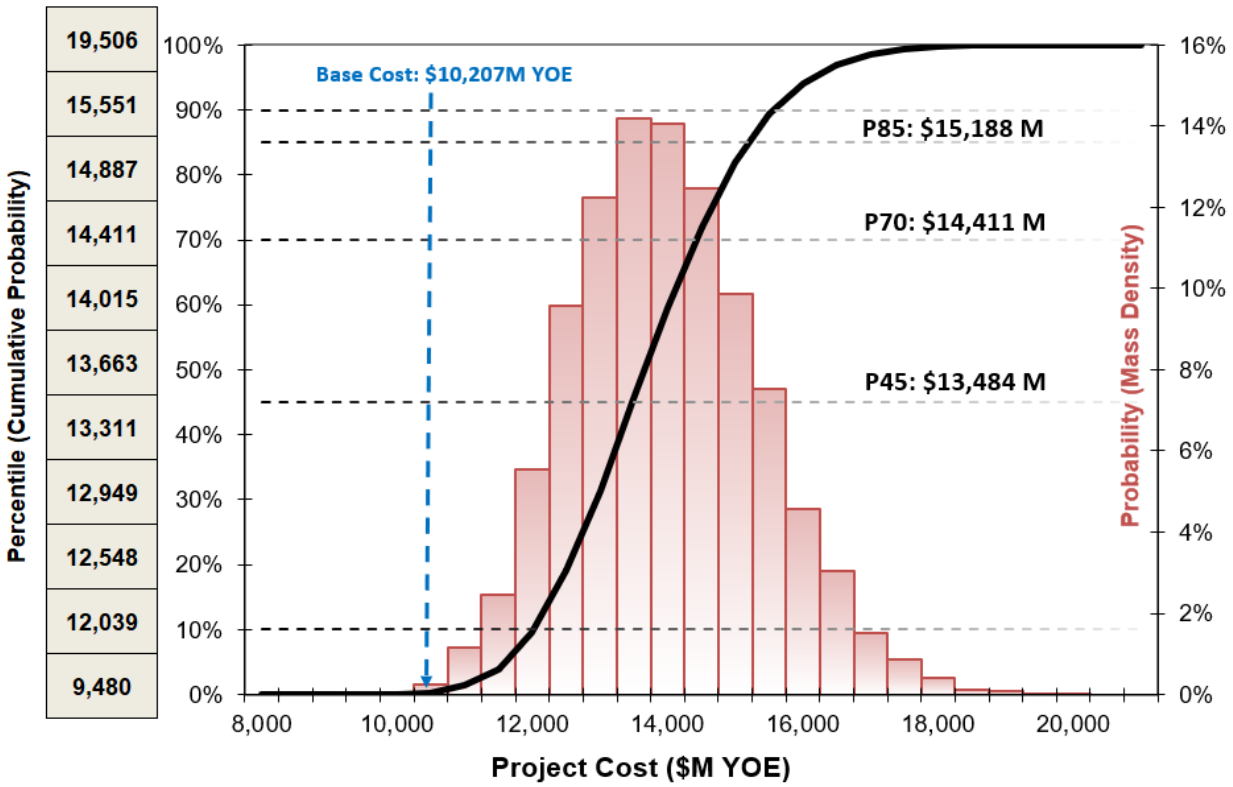
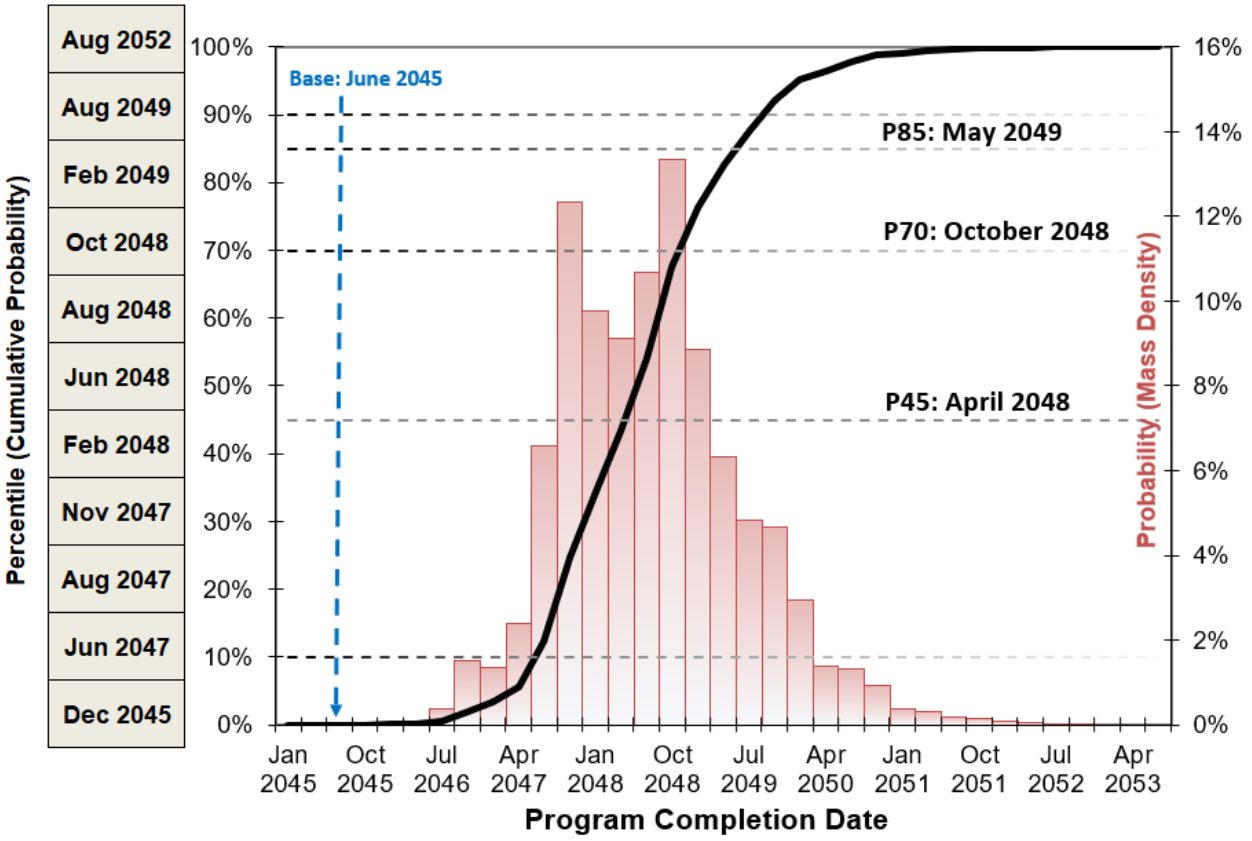


Figure 4-2. Probability Distribution for IBR Program Completion Date



The following notes apply to Table 4-2 through Table 4-4:

1. Table 4-2 and Table 4-3: The *mean* component costs may be added to obtain the *mean* total Program cost. In general, however, the sum of the *x*th percentile for component costs *is not* the *x*th percentile of the total Program 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 Program cost (in YOE dollars).
2. Table 4-2 and Table 4-3: "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 4-2 and Table 4-3: The total Program cost includes $238.2 million of PM cost incurred prior to July 2025.
4. Table 4-4: "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 4-4: Standard deviation is in calendar months.

Table 4-2. IBR Program Cost Statistics

Cost Parameter	Program Cost (July 2025, millions of dollars)	Program 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	**7,812**	**10,207**	**7,812**	**0**	**2,396**
Mean	9,909	13,738	8,571	1,338	3,829
Standard Deviation	930	1,378	711	509	484
1%	7,956	10,844	7,129	233	2,847
5%	8,470	11,623	7,448	530	3,108
10%	8,751	12,039	7,658	691	3,244
20%	9,103	12,548	7,947	894	3,416
25%	9,245	12,766	8,061	978	3,481
30%	9,380	12,949	8,160	1,053	3,556
40%	9,623	13,311	8,351	1,193	3,674
45%	9,744	13,484	8,449	1,261	3,731
50%	9,865	13,663	8,546	1,328	3,791
60%	10,103	14,015	8,735	1,457	3,915
65%	10,234	14,203	8,834	1,528	3,983
70%	**10,370**	**14,411**	**8,945**	**1,603**	**4,053**
75%	10,517	14,637	9,056	1,684	4,132
80%	10,684	14,887	9,171	1,778	4,220

Cost Parameter	Program Cost (July 2025, millions of dollars)	Program 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)
85%	10,890	15,188	9,328	1,875	4,328
90%	11,136	15,551	9,509	2,008	4,471
95%	11,517	16,143	9,795	2,194	4,685
99%	12,255	17,214	10,260	2,567	5,100
Contingency at P70 (%)	**32.7%**	**41.2%**	**14.5%**	**-**	**69.2%**

YOE = year of expenditure

Table 4-3. IBR Program 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	**1,135**	**361**	**7,849**	**862**
Mean	1,386	401	10,904	1,047
Standard Deviation	108	48	1,271	82
1%	1,168	306	8,252	883
5%	1,221	327	8,945	924
10%	1,250	340	9,338	947
20%	1,292	359	9,807	978
25%	1,309	367	9,994	989
30%	1,324	374	10,177	1,001

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)
40%	1,352	386	10,513	1,021
45%	1,365	392	10,666	1,031
50%	1,379	398	10,827	1,041
60%	1,406	410	11,163	1,062
65%	1,421	417	11,327	1,073
70%	**1,437**	**424**	**11,525**	**1,085**
75%	1,456	432	11,733	1,099
80%	1,479	441	11,972	1,115
85%	1,503	451	12,251	1,134
90%	1,531	465	12,583	1,157
95%	1,573	484	13,122	1,192
99%	1,659	518	14,136	1,256
Contingency at P70 (%)	**26.6%**	**17.5%**	**46.8%**	**25.9%**

CN = construction; PE = preliminary engineering; ROW = right of way; YOE = year of expenditure

Table 4-4. IBR Program Milestone Statistics

Schedule Parameter	Issue ROD	Pre-completion Tolling Go Live	FTA FFGA	CRB Start of In-Water Work	New I-5 SB Bridge Complete	Shift I-5 Traffic to New SB Bridge	LRT Revenue Service Date	Interstate Bridge Demo Complete	Program Complete
Deterministic Base	**Apr 2026**	**Apr 2027**	**Sep 2028**	**Mar 2028**	**Jul 2032**	**Oct 2032**	**Jan 2036**	**May 2036**	**Jun 2045**
Mean	Aug 2026	Sep 2027	Sep 2030	Jun 2029	Aug 2034	Feb 2035	Jan 2039	Apr 2039	Jun 2048
Standard Deviation	3.4	4.9	11.3	7.7	10.3	9.7	10.2	10.3	10.6
1%	May 2026	Apr 2027	Dec 2028	Sep 2028	Dec 2032	Aug 2033	May 2037	Jun 2037	Aug 2046
5%	May 2026	Apr 2027	Apr 2029	Sep 2028	May 2033	Dec 2033	Oct 2037	Jan 2038	Mar 2047
10%	May 2026	Apr 2027	Jun 2029	Sep 2028	Aug 2033	Mar 2034	Jan 2038	Apr 2038	Jun 2047
20%	May 2026	Apr 2027	Oct 2029	Oct 2028	Oct 2033	Jun 2034	Apr 2038	Jun 2038	Aug 2047
25%	May 2026	Apr 2027	Dec 2029	Nov 2028	Dec 2033	Jul 2034	Jun 2038	Sep 2038	Oct 2047
30%	Jun 2026	Apr 2027	Jan 2030	Dec 2028	Jan 2034	Aug 2034	Jul 2038	Oct 2038	Nov 2047
40%	Jun 2026	Jun 2027	May 2030	Jan 2029	Apr 2034	Oct 2034	Oct 2038	Dec 2038	Feb 2048
45%	Jun 2026	Jul 2027	Jul 2030	Mar 2029	May 2034	Nov 2034	Nov 2038	Feb 2039	Apr 2048
50%	Jun 2026	Aug 2027	Aug 2030	Apr 2029	Jul 2034	Jan 2035	Dec 2038	Mar 2039	Jun 2048
60%	Jul 2026	Oct 2027	Dec 2030	Sep 2029	Sep 2034	Mar 2035	Mar 2039	Apr 2039	Aug 2048
65%	Aug 2026	Oct 2027	Feb 2031	Sep 2029	Oct 2034	Apr 2035	Apr 2039	May 2039	Sep 2048
70%	**Aug 2026**	**Nov 2027**	**Apr 2031**	**Sep 2029**	**Dec 2034**	**Jun 2035**	**Jun 2039**	**Sep 2039**	**Oct 2048**

Schedule Parameter	Issue ROD	Pre-completion Tolling Go Live	FTA FFGA	CRB Start of In-Water Work	New I-5 SB Bridge Complete	Shift I-5 Traffic to New SB Bridge	LRT Revenue Service Date	Interstate Bridge Demo Complete	Program Complete
75%	Sep 2026	Dec 2027	Jun 2031	Sep 2029	Feb 2035	Aug 2035	Jul 2039	Nov 2039	Dec 2048
80%	Oct 2026	Jan 2028	Jul 2031	Nov 2029	Apr 2035	Sep 2035	Sep 2039	Dec 2039	Feb 2049
85%	Nov 2026	Mar 2028	Oct 2031	Dec 2029	Jul 2035	Dec 2035	Nov 2039	Feb 2040	May 2049
90%	Dec 2026	Apr 2028	Dec 2031	Mar 2030	Oct 2035	Mar 2036	Feb 2040	Apr 2040	Aug 2049
95%	Mar 2027	Jun 2028	Apr 2032	Sep 2030	Mar 2036	Aug 2036	Jul 2040	Nov 2040	Dec 2049
99%	Aug 2027	Oct 2028	Nov 2032	Mar 2031	Jan 2037	Jun 2037	Jun 2041	Oct 2041	Nov 2050
Contingency at P70 (%)	**50.4%**	**33.7%**	**81.0%**	**55.8%**	**34.6%**	**36.6%**	**32.7%**	**30.7%**	**16.7%**

CRB = Columbia River Bridge; FTA = Federal Transit Administration; FFGA = Full Funding Grant Agreement; I-5 = Interstate 5; LRT = light-rail transit; ROD = record of decision; SB = southbound

4.2.2 Contingency

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 Program contingency can be determined by subtracting the deterministic base YOE cost from the P70 YOE cost. Based on this Program risk analysis, the Program contingency at P70 equals **$4,203 million**, or 41.2% of the deterministic base cost. The IBR Program will refine this contingency through future evaluations of Program phasing and sequencing options.

The major components contributing to the contingency amount are summarized in Table 4-5, 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 17.7% of the base YOE cost, with market conditions and base uncertainty comprising the remainder of the contingency amount.

Table 4-5. Components of Program Contingency

Component	Amount (millions of YOE dollars)	% of Contingency	% of Base YOE Cost
Base Uncertainty	1,562	37.2%	15.3%
Market Conditions	831	19.8%	8.1%
Risk Register Events	1,810	43.1%	17.7%
Total	**4,203**	**100.0%**	**41.2%**

4.2.3 Sensitivity Analysis

The most significant cost risk and uncertainty factors are presented graphically in Figures 4-3 and 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 key program milestones, in calendar months.

The rankings in Figures 4-3 through 4-5 also provide an indication of 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.

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.
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

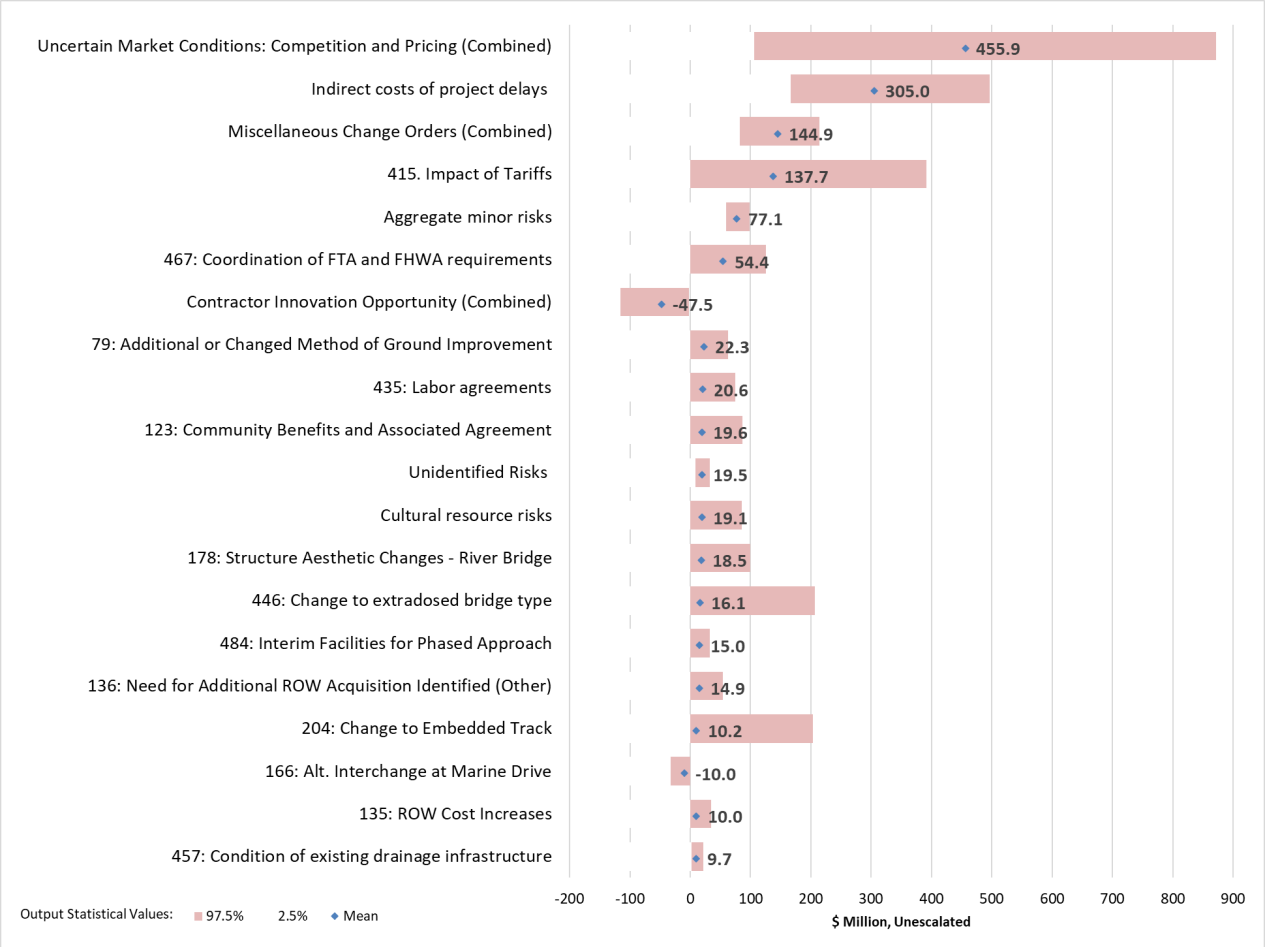


Figure 4-4. Most Significant Program Base Cost Uncertainties

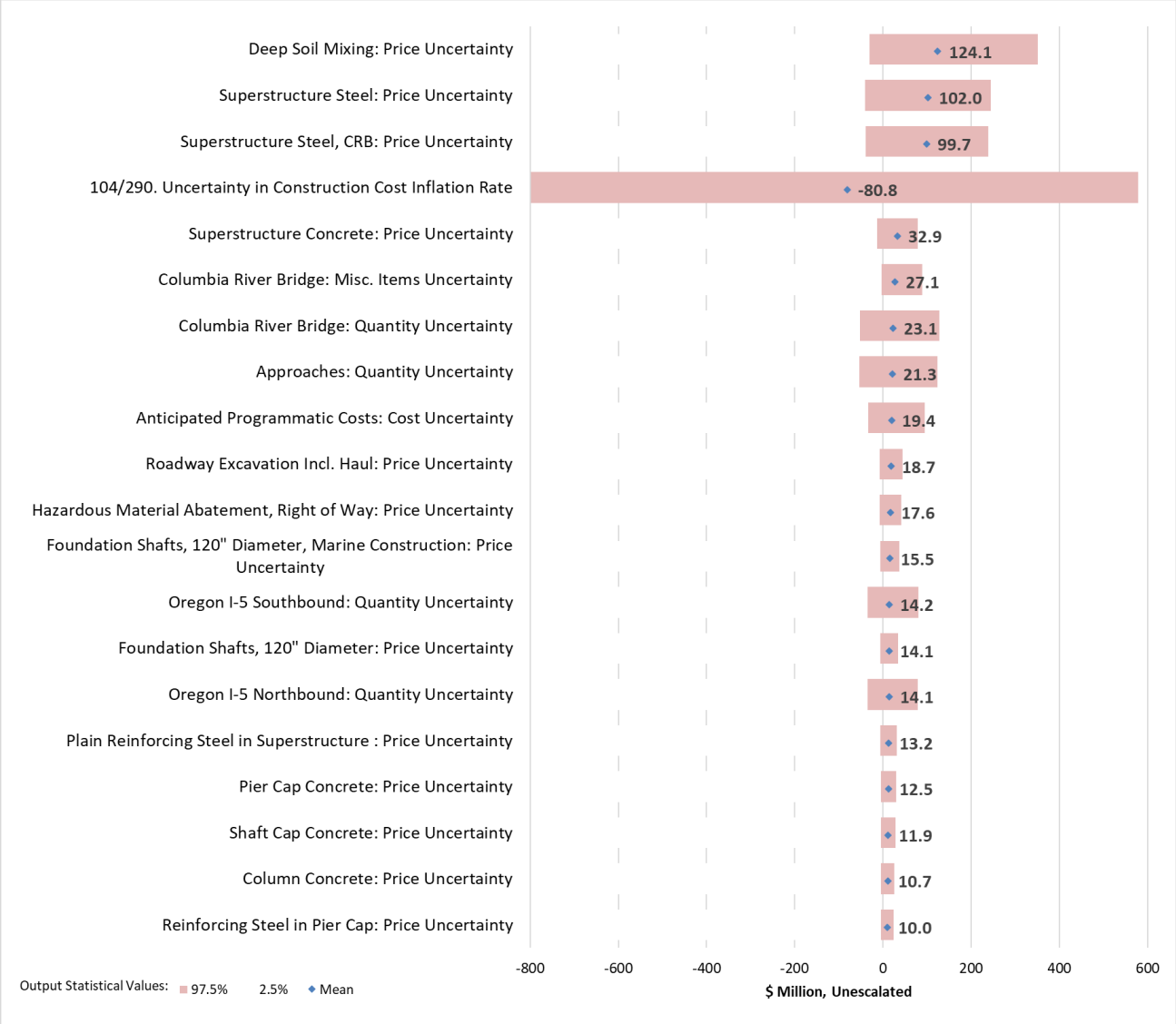
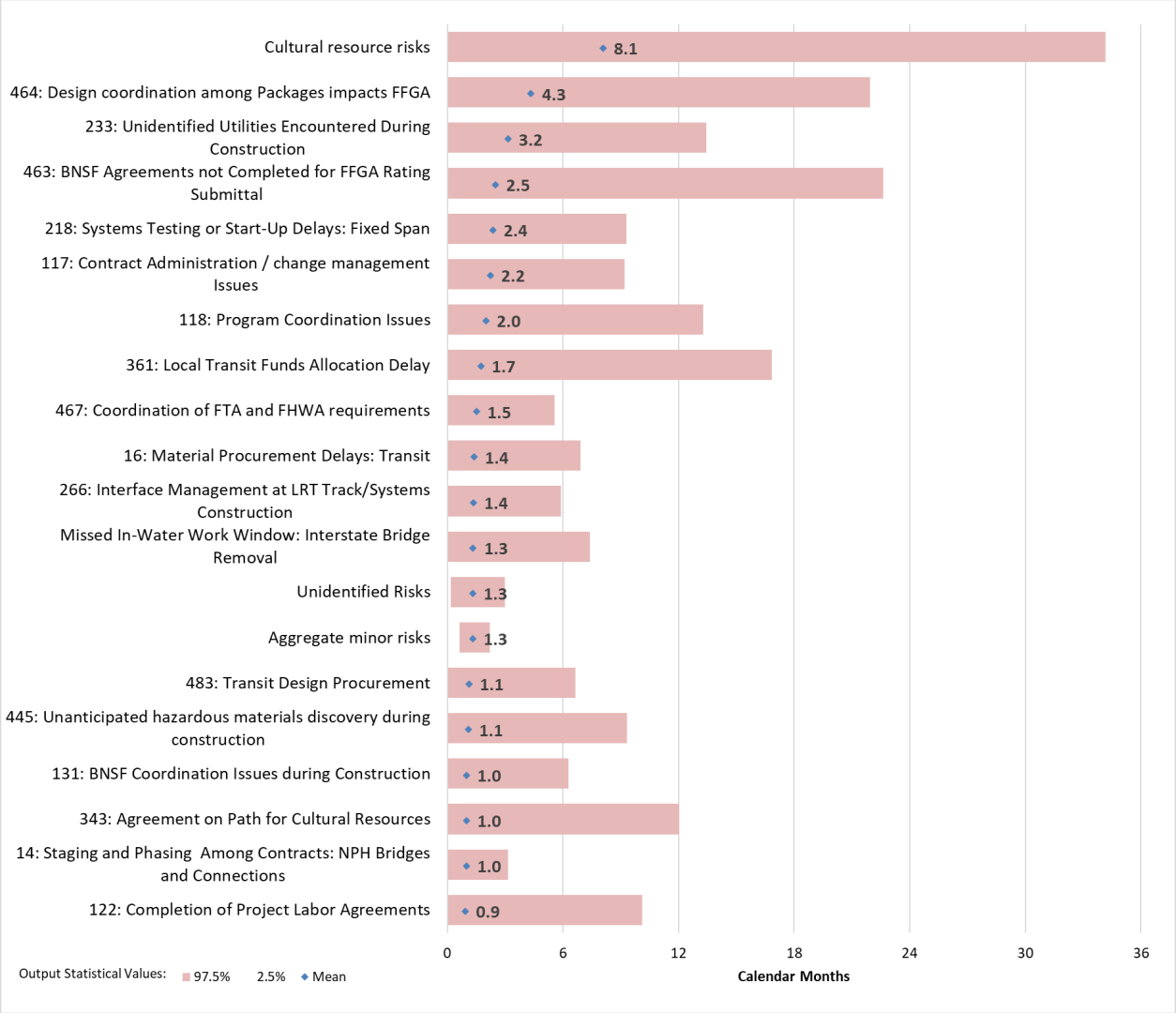


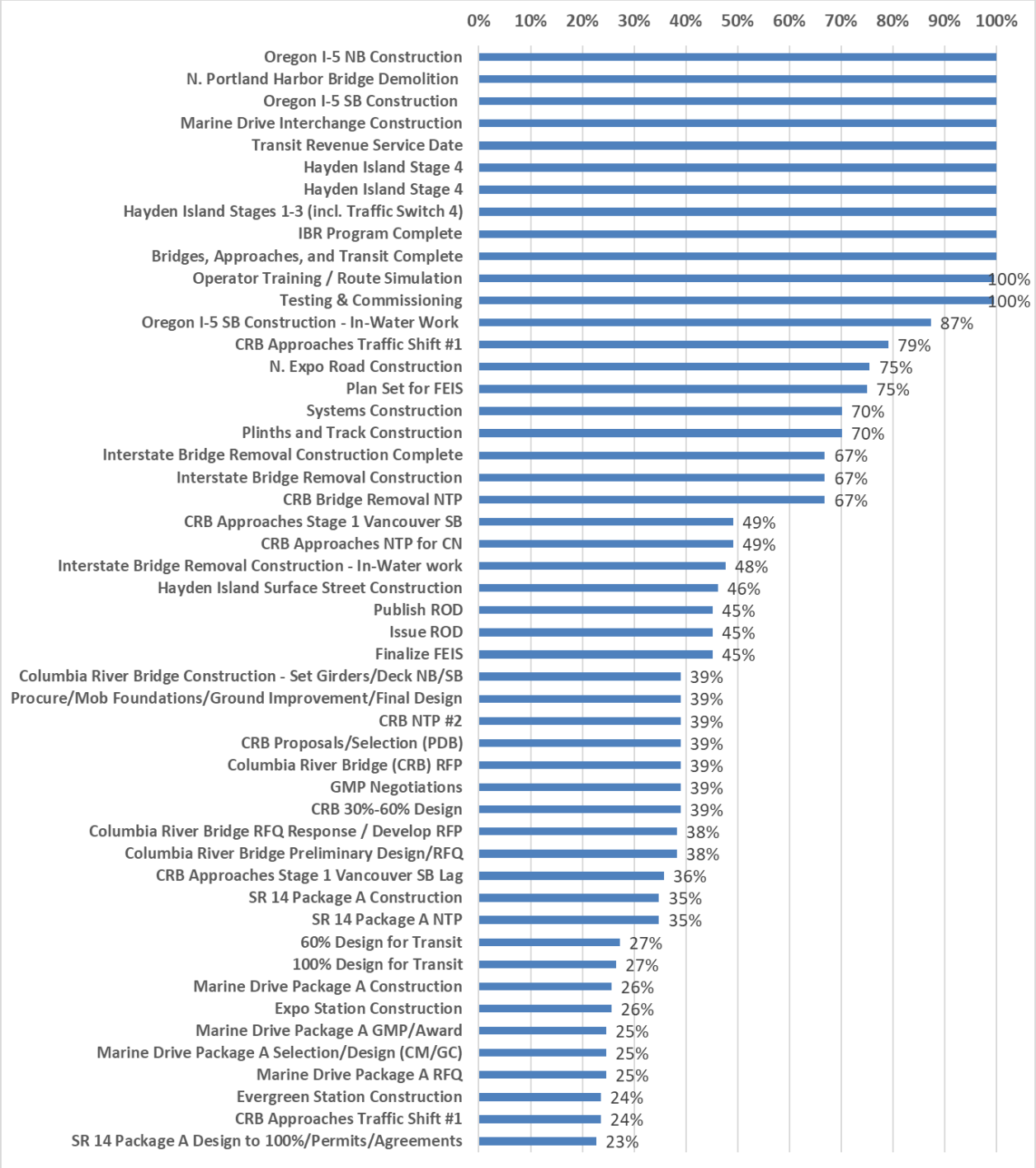
Figure 4-5. Most Significant Program Schedule Threats and Opportunities



4.2.4 Schedule Critical Path Analysis

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 the completion of one or more key Program milestones (Program complete, LRT revenue service date, and/or Interstate Bridge demolition complete). For example, the milestone “Publish ROD” falls on the critical path to one or more of these milestones on 45% 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



4.2.5 Movable-Span Scenario

A separate scenario was analyzed in the CEVP corresponding to a movable-span option for CRB. A separate cost estimate and separate schedule were developed for this option and differences in risks were assessed during the workshop. The movable-span option includes a movable lift span and lift towers on each of the northbound and southbound bridges. The lift span would be placed over the primary Columbia River navigation channel. The lift span and towers would provide a minimum of 178 feet of vertical clearance when raised and would meet USCG navigation standards.

The deterministic base estimate for the movable-span option is **$8,392 million** expressed in July 2025 dollars, excluding uncertainty and future cost inflation (Table 4-6). This estimate is **$580 million** higher than the fixed-span option.

Table 4-6. Deterministic Base Cost Summary: Movable-Span Option

Cost Category	July 2025 Millions of Dollars		
	Estimate with Contingency	Contingency Removed	Base Estimate without Contingency
PE	1,511	478	1,033
ROW	386	79	307
CN	9,225	2,868	6,357
PM [a]	879	184	694
Total	**12,001**	**3,609**	**8,392**

[a] The PM cost total includes $238.2 million spent prior to July 2025. No risk or inflation is applied to this cost in the risk analysis.

CN = construction; PE = preliminary engineering; PM = program management; ROW = right of way

The Program base schedule was adjusted for the movable-span option as follows:

- The CRB package base preliminary design duration was increased by six months to account for additional time needed to issue a request for qualifications (RFQ) for this option.
- The base design duration for the CRB package was increased by six months to reflect additional time needed for the PDB contractor to design the more complex lift span.
- The CRB base construction duration was increased by 16 months to reflect additional time needed to construct the lift span.

With these changes, the base Program completion date for the movable-span option is **June 2047**, or **24 months** later than the fixed-span option. The CRB package has two months of float in the base

program schedule (Appendix C); thus, the net Program delay does not exactly reflect the sum of the activity base duration increases.

The risk register was reviewed for the movable-span option and modifications were made based on the judgment of the SMEs in the workshop. Some new risks were added, and the risk probability and/or impacts were adjusted for selected risks for this scenario.

Figure 4-7 and Figure 4-8 compare the YOE cost and Program completion schedule results for the fixed-span and movable-span options. The movable-span option is projected to cost **$16,139 million** at the 70th percentile, or an additional **$1,728 million** compared to the fixed-span option. The 70th percentile Program completion date for the movable-span option is **October 2050**, or an additional **24 months** compared to the fixed-span option.

Figure 4-7. Comparison of Program Cost Results for Movable-Span Option

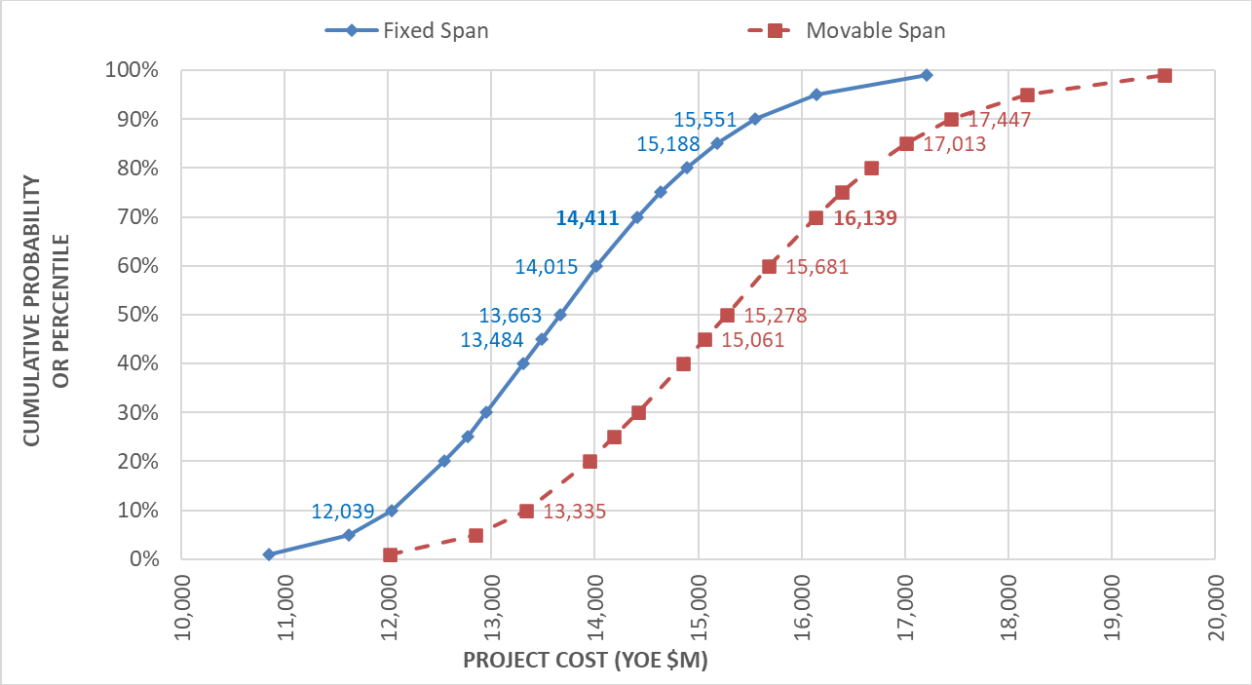
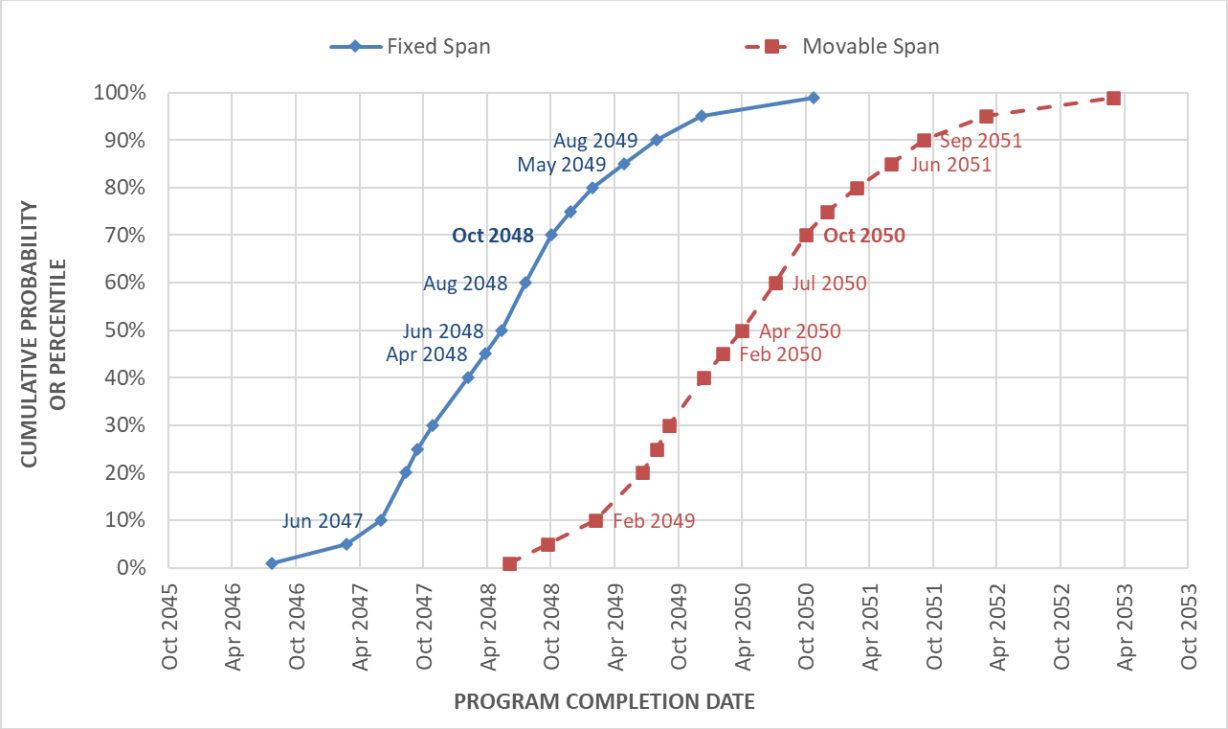


Figure 4-8. Comparison of Program Schedule Results for Movable-Span Option



Similar to the fixed-span scenario, the movable-span scenario includes the following key Program cost risks:

- Uncertain market conditions: competition and pricing
- Indirect cost of Program delay
- Miscellaneous change orders following award of construction contracts
- Impact of tariffs
- Coordination of technical provisions and administrative requirements for both FTA and FHWA

Key Program estimating uncertainties (related to base cost) for this scenario include the following:

- Price uncertainty: deep soil mixing
- Price uncertainty: superstructure steel (marine and upland)
- Uncertainty in the construction cost inflation rate
- Price uncertainty: superstructure concrete
- Quantity uncertainty: Columbia River Bridge

Key schedule risks to key Program milestones for the movable-span scenario include the following:

- Cultural resource risks

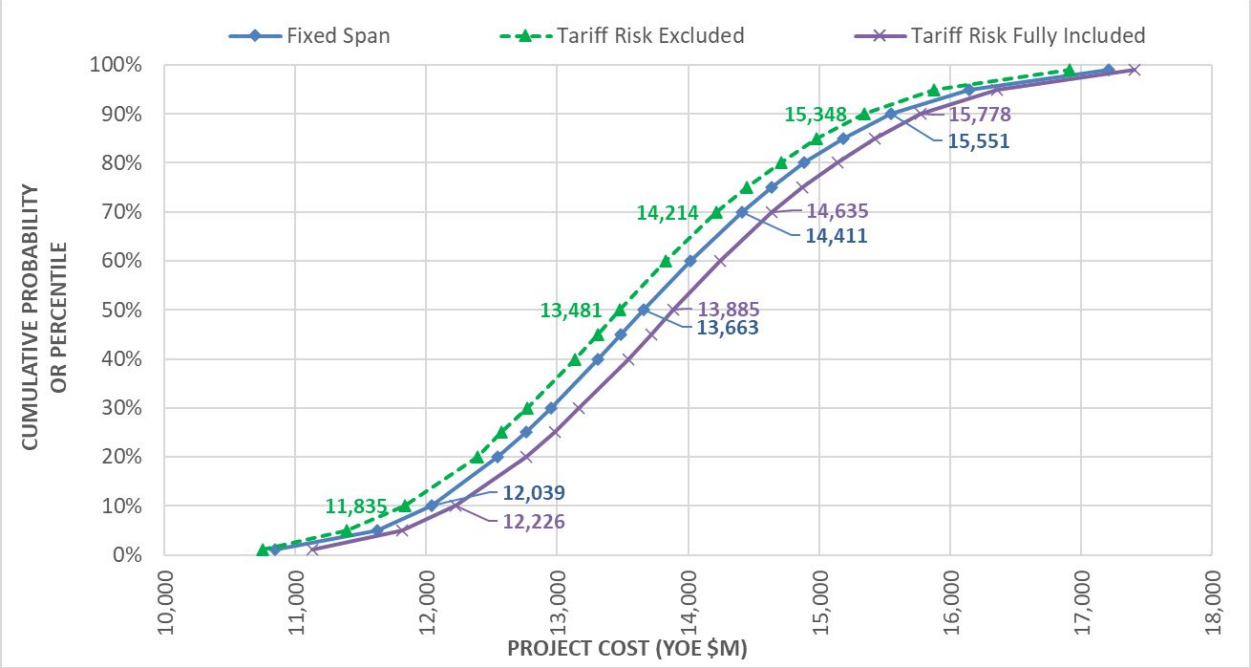
- Guaranteed maximum price negotiation delays: CRB package
- Systems testing or start-up delays
- Missed in-water work window: Oregon southbound package construction
- Owner agency coordination following movable-span PNCD

4.2.6 Tariff Scenarios

Figure 4-9 compares Program cost results for the tariff scenarios described in Section 2.3. The difference in Program cost between the scenarios is summarized below. Tariffs are assumed to have no impact on Program schedule. Tariff impacts are addressed as a risk with 50% probability in the base model run for the fixed-span option.

- Program cost at P70 is reduced by **$196.8 million** with future tariff impacts excluded.
- Program cost at P70 is increased by **$224.2 million** with future tariff impacts fully included.

Figure 4-9. Comparison of Program Cost Results for Tariff Scenarios



5. RISK MANAGEMENT

The IBR Program will continue to engage in active risk management to minimize the threats to the Program and maximize its opportunities. Continuing to use the risk management process to identify, analyze, respond to, monitor, and control risk will support effective program management and provide a source of information for action in the proper handling of risk effects. If action to manage risk is not taken and decisions are not made in a timely fashion, the impacts of the risks may be incurred, particularly in the form of schedule delays; however, if the necessary risk response strategies and action plans are proactively deployed, the impacts of the associated risks can be minimized to the extent feasible.

Risk management is a collaborative, continuous, and cyclical process that requires input from key program partners. Future risk management activities will include continued focus on risks with the highest relative risk severity identified and monitoring of the risks at consistent intervals. Should risks begin to materialize, execution of risk response strategies as early as possible is imperative. The Program team should also monitor for the emergence of new risks and identify and evaluate potential impacts and appropriate response mechanisms as documented in the Program's risk register. It is important to clarify that this phase is continued throughout Program implementation so that each project risk is managed until it can be retired or until the Program completes.

To facilitate the continuous application of proactive risk response planning, the IBR Program technical leads will provide frequent risk register updates and the IBR Program team will meet, at a minimum, on a quarterly basis to review and update the risks and action plans. Routine risk monitoring and control will ensure timely decision-making and aid in the continued acknowledgment of uncertainties that may significantly impact the Program's progression and cost.

6. REFERENCES

AACE International (Advancement of Cost Engineering International). 2025. Cost Estimate Classification System (Recommended Practice 17R-97), Ed. Rev. February 17, 2025. Available at <https://web.aacei.org/docs/default-source/rps/17R-97.pdf>. Accessed February 3, 2026.

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.

WSDOT (Washington State Department of Transportation). 2018. Project Risk Management Guide. Available at <https://wsdot.wa.gov/publications/fulltext/CEVP/ProjectRiskManagementGuide.pdf.> Accessed January 28, 2026.

Appendix A – Workshop Agenda and Participation

CEVP® WORKSHOP AGENDA

Interstate Bridge Replacement Program

August 18-22, 2025
In-Person Participation:
IBR Office Large Conference Room
IBR Office 500 Broadway Suite 200 Vancouver WA 98660
Virtual Participation:
Microsoft Teams

Workshop Objectives:

1. Establish collective understanding among participants of the CEVP® Process.
2. Describe Project scope, characteristics, and key assumptions/exclusions.
3. Validate schedule flow-chart logic and base activity durations.
4. Validate base cost estimates and quantify estimating uncertainties.
5. Develop comprehensive and non-overlapping project risk register and quantify all significant risks.

NOTE: Sequence and durations of agenda items in the workshop process may vary somewhat from those planned.

Participants: Core attendees (or representatives) attend all sessions. Other participants attend sessions as noted on agenda.

Core Attendees (attend for the duration):
CEVP Risk Lead/Facilitator: Alan Keizur
CEVP Risk Modeler/Assistant: Victor Brinic
IBR Program Leadership (WSDOT): Casey Liles or designee
IBR Program Leadership (ODOT): Shilpa Mallem or designee
IBR Design and Construction: Cesar Lopez, Nathan Potter, Ken Stockett
IBR Program Leadership (TriMet): Jeb Doran or designee
IBR Program Leadership (Program Manager): Christina Martinez or designee, Daryl Wendle, Michael Oborn, Amanda Ishikawa
IBR Risk Management: Greg Brink, Kelly Martin, Ana Toupik
IBR Cost Estimate: Alex Mannion, Mathers Heuck, Ashraf Aly
IBR Schedule: Greg Kolb

Date/Time	Topic	Leading	Additional Participants
Day 1 – Monday, August 18, 2025			
8:00 am	**Kickoff/Introduction** ▪ Welcome, Sign-in, Introductions ▪ Safety Orientation ▪ Agenda review ▪ Brief CEVP/CRA process overview	Program Leadership / Risk Lead	All
8:30 am	**Project Key Assumptions** ▪ Packaging and delivery assumptions ▪ Key project assumptions in the base cost and schedule ▪ Scenarios and exclusions	Project Team	All
9:15 am	**Base Schedule / Flowchart Overview** ▪ Presentation of summary schedule ▪ Summary of pre-workshop schedule working session outcomes	Risk Lead Schedule SMEs Project Team	All
10:00 am	**BREAK**		
10:15 am	**Base Cost Overview** ▪ Overview of cost estimate basis/structure ▪ Base cost uncertainty ranges ▪ Summary of pre-workshop cost working session outcomes	Risk Lead Cost SMEs Project Team	All
11:00 am	**Risk Brainstorming by Project Element** ▪ Interdisciplinary brainstorm identification of the most significant risks for each major program element o River Bridge ▪ Fixed span scenario ▪ Movable span scenario o Critical Roadway Packages (Approaches/SR 14/Hayden Island A) o Transit	Risk Lead	All
12:00- 1:00	**LUNCH**		
Remainder of Workshop	**Begin discipline-specific cost/risk reviews** • Review/validate any remaining discipline-specific cost items • Identify discipline-specific risks • Quantify risks determined to exceed significance threshold	Risk Lead	See below

Date/Time	Topic	Leading	Additional Participants
1:00 pm	**Environmental** ▪ NEPA/ESA/Environmental Justice ▪ Environmental Mitigation ▪ Section 4(f) ▪ Section 106 ▪ Hazardous materials ▪ etc.	Risk Lead	Core Team, Environmental SMEs,Tribal Coordination SMEs
3:00 pm	**BREAK**		
3:15 pm	**Permitting** ▪ USACE, USGC Permits (with emphasis on fixed span concept) ▪ Other Key Permits (e.g., bridge demo)	Risk Lead	Core Team, Environmental SMEs, Permitting SMEs
4:15 pm	**Civil/Drainage Design: Roadway/Transit** ▪ Hydraulic/Stormwater Design ▪ Flow Control / Water Quality	Risk Lead	Core Team, Hydraulic Design SMEs
4:55 pm	**Daily wrap-up** ▪ Additional information ▪ Clarifications ▪ Improvements ▪ Tomorrow's plan	Risk Lead	Core Team
5:00 pm	**ADJOURN**		
Day 2 – Tuesday, August 19, 2025			
8:00 am	**Roadway/Traffic Design** ▪ Roadway/geometric, interchange design ▪ Deviations, exceptions, approvals ▪ Traffic Design (TDM, ITS, ATMS, etc.) ▪ Traffic Design (Tolling)	Risk Lead	Core Team, Roadway Design SMEs, Traffic Design SMEs
10:00 am	**BREAK**		
10:15 am	**Right of Way: Roadway/Transit** ▪ ROW Plans ▪ Access management ▪ Appraisals & Acquisitions	Risk Lead	Core Team, ROW SMEs
12:00 – 1:00	**LUNCH**		

Date/Time	Topic	Leading	Additional Participants
1:00 pm	**Structural/Geotechnical Risk Review: Roadway/Transit** ▪ Bridge substructure & superstructure design ▪ Retaining Walls ▪ Ground conditions	Risk Lead	Core Team, Structural SMEs, Geotechnical SMEs, Cultural Resources SMEs
2:45 pm	**BREAK**		
3:00 pm	**Movable Span Option: Interdisciplinary Risk Discussion** ▪ Risks specific to the movable span option ▪ Increases or decreases to other project risks	Risk Lead	Core Team, Selected SMEs (structural, geotechnical, environmental, utility, public affairs, transit operations, etc.)
4:55 pm	**Daily wrap-up** ▪ Additional information ▪ Clarifications ▪ Improvements ▪ Tomorrow's plan	Risk Lead	Core Team
5:00 pm	**ADJOURN**		
Day 3 – Wednesday, August 20, 2025			
8:00 am	**Utilities: Roadway/Transit** ▪ Utility agreements ▪ Utility Relocations ▪ Unidentified utilities	Risk Lead	Core Team, Utility SMEs, Construction SMEs
9:15 am	**Railroad: Roadway/Transit** ▪ Railroad agreements ▪ Railroad coordination during construction	Risk Lead	Core Team, Railroad SMEs, Construction SMEs
10:00 am	**BREAK**		
10:15 am	**Public Involvement, Public Affairs, Local Agency Agreements** ▪ Public Involvement ▪ Public Affairs ▪ Interagency coordination ▪ Local agency agreements	Risk Lead	Core Team, Public Involvement, Public Affairs SMEs, Program Leadership
12:00 – 1:00	**LUNCH**		

Date/Time	Topic	Leading	Additional Participants
1:00 pm	**Contract Procurement / Delivery Method / Market Conditions** ▪ Inflation/Escalation and Market Conditions ▪ Delivery methods ▪ Contracting and packaging ▪ Procurement ▪ CWA/PLA ▪ TERO	Risk Lead	Core Team, Finance SMEs, Program Leadership, Contracting SMEs, Civil Rights/Tribal SMEs
2:45 pm	**BREAK**		
3:00 pm	**Columbia River Bridge Contract** ▪ Progressive Design-Build Contracting ▪ Interdisciplinary review/discussion of key preconstruction and construction risks specific to the CRB contract	Risk Lead	Core Team, Program Leadership, Contracting SMEs, Selected SMEs (Environmental, ROW, Utilities, Structures, Roadway, Construction, etc.)
4:55 pm	**Daily wrap-up** ▪ Additional information ▪ Clarifications ▪ Improvements ▪ Tomorrow's plan	Risk Lead	Core Team
5:00 pm	**ADJOURN**		
Day 4 – Thursday, August 21, 2025			
8:00 am	**Transit: Track, Stations, and Systems** ▪ SCC 10 (Guideway and Track) cost elements and associated risks ▪ SCC 20 (Stations, Intermodal) cost elements and associated risks ▪ SCC 50 (Systems) cost elements and associated risks: train control, signals, traction power, communications, central control, etc. ▪ Express Bus-on-Shoulder ▪ Express Bus Transit Centers and Support Facilities	Risk Lead	Core Team, Transit SMEs, Civil SMEs, Structural/Geotechnical SMEs
10:15 am	**BREAK**		

Date/Time	Topic	Leading	Additional Participants
10:30 am	**Transit: Vehicles and Support Facilities** ▪ SCC 30 (Support Facilities) cost elements and associated risks ▪ SCC 70 (Vehicles) cost elements and associated risks ▪ Express Bus Vehicles and Systems	Risk Lead	Core Team, Transit SMEs (Vehicles, Support Facilities)
12:00 – 1:00	**LUNCH**		
1:00 pm	**Transit: Professional services** ▪ SCC 80 cost elements and associated risks: engineering, PM/CM ▪ Express Bus Programmatic Issues ▪ FTA CIG Process	Risk Lead	Core Team, Transit SMEs (Management, FTA), Program Leadership
1:45 pm	**Transit: Sitework/Construction** ▪ SCC 40 (Sitework and Special Conditions) cost elements and associated risks ▪ Elevated guideway construction ▪ Track installation ▪ Systems installation and commissioning ▪ Station construction ▪ Etc.	Risk Lead	Core Team, Transit SMEs, Construction SMEs
2:30 pm	**BREAK**		
2:45 pm	**Construction/MOT: Roadway/General** ▪ Constructability ▪ Construction staging ▪ Construction phasing ▪ Maintenance of access & services ▪ Traffic control	Risk Lead	Core Team, Construction SMEs, Traffic/MOT SMEs
4:55 pm	**Daily wrap-up** ▪ Additional information ▪ Clarifications ▪ Improvements ▪ Tomorrow's plan	Risk Lead	Core Team
5:00 pm	**ADJOURN**		
Day 5 – Friday, August 22, 2025			
8:00 am	**Finance/Tolling** ▪ Funding ▪ Tolling	Risk Lead	Core Team, Finance and Tolling SMEs, Program Leadership

Date/Time	Topic	Leading	Additional Participants
9:30 am	**Program Management** ▪ Project Management / Resources ▪ Partner agency coordination ▪ Etc.	Risk Lead	Core Team, Program Leadership
10:45 am	**BREAK**		
11:00 am	**Cultural Resources** ▪ Cultural resources	Risk Lead	Core Team, Cultural Resource/ Tribal Coordination SMEs
12:00 pm	**LUNCH**		
1:00 pm	**Leadership Debrief** ▪ Summary of most significant risks ▪ Action items ▪ Next Steps	Risk Lead	Core Team, Program Leadership
2:00 pm	**Hold for Risk Register Review / Parking Lot Items (as needed)**	Risk Lead	Core Team
3:00 pm	**Adjourn**		

Table A-1. Workshop Participants

Name	Organization	August 18	August 19	August 20	August 21	August 22
Aaron Deas	IBR GEC	—	—	Virtual	—	—
Aidan Gronauer	WSDOT	Virtual	—	In-Person	—	—
Alan Keizur	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Alex Mannion	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Amanda Ishikawa	IBR GEC	Virtual	Virtual	Virtual	Virtual	Virtual
Amy Leland	WSDOT	—	In-Person	—	—	—
Amy Lewis	IBR GEC	Virtual	Virtual	Virtual		
Ana Toupik	IBR GEC	Virtual	Virtual	Virtual	Virtual	Virtual
Andrew Fiske	WSDOT	Virtual	Virtual	—	—	—
Angela Findley	IBR GEC	Virtual	Virtual	Virtual	—	Virtual
Angela Kargel	ODOT	Virtual	Virtual	—	—	—
Anne Pressentin	IBR GEC	In-Person	In-Person	In-Person	—	—
Ashraf Aly	IBR GEC	Virtual	Virtual	Virtual	Virtual	Virtual
Atousa Gorg	IBR GEC	Virtual	In-Person	Virtual	In-Person	Virtual

Name	Organization	August 18	August 19	August 20	August 21	August 22
Ben Haines	USDOT	—	Virtual	—	—	—
Brent Baker	IBR GEC	Virtual	—	Virtual	—	Virtual
Brian Wood	ODOT	Virtual	Virtual	Virtual	—	—
Brittany Cowgill	IBR GEC	In-Person	In-Person	In-Person	—	—
Calvin Lee	TriMet	Virtual	In-Person	In-Person	Virtual	—
Caroline Brabrook	IBR GEC	Virtual	Virtual	Virtual	—	—
Caryn Urata	TriMet	In-Person	In-Person	In-Person	In-Person	In-Person
Casey Kramer	IBR GEC	Virtual	Virtual	Virtual	Virtual	—
Casey Liles	WSDOT	In-Person	In-Person	In-Person	In-Person	In-Person
Cesar Lopez	ODOT	In-Person	In-Person	In-Person	In-Person	In-Person
Charla Skaggs	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Charlene Byrd	WSDOT	Virtual	Virtual	Virtual	—	—
Cheryl Mareno	IBR GEC	—	—	—	—	Virtual
Chris Dunster	WSDOT	In-Person	In-Person	In-Person	In-Person	In-Person
Chris Nutakor	FTA	Virtual	—	—	Virtual	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Chris Primm	ODOT	Virtual	Virtual	—	—	—
Chris Regan	WSDOT	In-Person	In-Person	—	—	In-Person
Chris Woods	USDOT	—	—	Virtual	—	—
Christi McDaniel-Wilson	USDOT	Virtual	Virtual	—	—	—
Christina Martinez	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Chuck Holt	WSDOT	—	—	—	Virtual	—
Chuck Meade	WSDOT	In-Person	In-Person	In-Person	In-Person	—
Cindy Clark	IBR GEC	Virtual	Virtual	Virtual	—	—
Coery McManus	TriMet	—	—	—	Virtual	—
Cole Heiden	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Colleen Vaughn	USDOT	—	—	—	—	Virtual
Connie Lelack	ODOT	Virtual	—	Virtual	—	—
Coral Egnew	TriMet	Virtual	—	In-Person	—	Virtual
Corey Walker	FTA	Virtual	—		—	—
Courtney Gianturco	USDOT	Virtual	—	—	—	Virtual

Name	Organization	August 18	August 19	August 20	August 21	August 22
Dan Backman	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Daniele Dunjic	WSDOT	Virtual	In-Person	Virtual	Virtual	Virtual
Daryl Wendle	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Dave Unsworth	TriMet	Virtual	—	—	—	Virtual
David Nicolardi	TriMet	Virtual	Virtual	Virtual	—	Virtual
David Rodriguez	IBR GEC	Virtual	Virtual	Virtual	Virtual	—
Dianna McKeon	USDOT	Virtual	Virtual	Virtual	—	—
Doug Spencer	ODOT	—	Virtual	—	—	—
Elisa Albury	USDOT	Virtual	Virtual	Virtual	—	Virtual
Emilee Thomas Peralta	IBR GEC	Virtual	Virtual	Virtual	Virtual	—
Enrique Mariscal	TriMet	In-Person	Virtual	In-Person	In-Person	—
Eric Beckman	IBR GEC	In-Person	—	—	In-Person	In-Person
Eric Forsyth	TriMet	Virtual	Virtual	Virtual	Virtual	—
Erin Parker	USDOT	Virtual	Virtual	—	—	—
Evan Garich	IBR GEC	Virtual	Virtual	Virtual	Virtual	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Frank Green	WSDOT	In-Person	In-Person	In-Person	In-Person	In-Person
Gaby Zhu	ODOT	Virtual	Virtual	Virtual	—	Virtual
Garrett Helm	TriMet	In-Person	—	In-Person	Virtual	Virtual
Gary Martindale	USDOT	Virtual	—	Virtual	—	—
Grace Crunican	IBR GEC	Virtual	Virtual	Virtual	In-Person	Virtual
Greg Brink	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Greg Kolb	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Guadalupe Gonzalez	IBR GEC	Virtual	—	Virtual	Virtual	—
Hayli Ballentine-Reff	ODOT	Virtual	—	—	—	Virtual
Heidi Shoblom	ODOT	Virtual	—	—	—	—
Holli Pick	ODOT	Virtual	—	Virtual	—	—
Irina Leschuk	IBR GEC	Virtual	Virtual	Virtual	—	—
Jaime Viramontes	ODOT	Virtual	Virtual	Virtual	Virtual	—
Jamal Grainawi	IBR GEC	Virtual	Virtual	—	—	—
January Tavel	IBR GEC	Virtual	Virtual	—	—	Virtual

Name	Organization	August 18	August 19	August 20	August 21	August 22
Jason Lukasik	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Jason Shaddix	ODOT	—	Virtual	—	—	—
Jayson Buchholz	ODOT	Virtual	—	Virtual	—	—
Jeb Doran	TriMet	In-Person	In-Person	In-Person	In-Person	In-Person
Jeff Horton	USDOT	In-Person	In-Person	In-Person	In-Person	In-Person
Jenn Allaire	USDOT	—	—	Virtual	—	—
Jennifer Charlebois	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Jill Marilley	IBR GEC	In-Person	In-Person	In-Person	—	Virtual
Jim Bauman	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Joe Recker	TriMet	Virtual	—	—	—	—
Joe Wolf	ODOT	Virtual	Virtual	Virtual	Virtual	—
Joel Barnett	USDOT	—	Virtual	Virtual	Virtual	—
John Horne	IBR GEC	In-Person	In-Person	In-Person	In-Person	—
John Messina	IBR GEC	Virtual	Virtual	Virtual	Virtual	Virtual
Johnell Bell	IBR GEC	Virtual	—	Virtual	—	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Jose Canales	IBR GEC	Virtual	Virtual	—	—	—
Joshua Tax	ODOT	In-Person	In-Person	In-Person	In-Person	In-Person
Julie Heilman	WSDOT	Virtual	Virtual	Virtual	Virtual	—
Julie Meredith	WSDOT	Virtual	—	—	—	—
Justin King	ODOT	Virtual	—	—	Virtual	—
Karen Scott	ODOT	Virtual	—	Virtual	—	—
Kassandra Rippee	ODOT	In-Person	In-Person	In-Person	—	In-Person
Kat Halpenny	ODOT	Virtual	Virtual	In-Person	—	—
Kate Elliott	IBR GEC	Virtual	Virtual	Virtual	—	Virtual
Katy Belokonny	IBR GEC	In-Person	In-Person	In-Person	—	—
Kelley Dolan	USDOT	Virtual	—	—	—	—
Kelly Martin	IBR GEC	Virtual	Virtual	Virtual	Virtual	—
Ken Stockett	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Kevin Haas	ODOT	Virtual	In-Person	—	—	—
Kimberly Pincheira	WSDOT	In-Person	In-Person	Virtual	—	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Kris Bellenbaum	ODOT	Virtual	Virtual	Virtual	Virtual	—
Kristen Leonard	IBR GEC	Virtual	Virtual	Virtual	—	Virtual
Kyle Wachter	WSDOT	Virtual	Virtual	—	—	—
Leah Robbins	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Liantao Xu	ODOT	In-Person	In-Person	—	—	—
Lisa Gavin	FTA	Virtual	—	—	—	—
LisaRene Schilperoort	WSDOT	Virtual	Virtual	—	—	—
Loren Wilson	USDOT	—	Virtual	—	—	—
Louis Alcorn	IBR GEC	Virtual	—	Virtual	Virtual	Virtual
Lucas Johnson	TriMet	Virtual	—	—	Virtual	—
Makenzie (ZZ) Lundburg	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Marcelo Suarez	IBR GEC	—	—	Virtual	—	—
Marian Rule	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Maribel Cruz	IBR GEC	In-Person	In-Person	In-Person	—	—
Marjorie Hughes	USDOT	Virtual	—	—	—	Virtual

Name	Organization	August 18	August 19	August 20	August 21	August 22
Mark Gabel	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Mark Sujka	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Mathers Heuck	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Matthew Freitag	ODOT	Virtual	—	—	—	—
Megan McIntyre	IBR GEC	Virtual	—	Virtual	—	—
Meghan Hodges	WSDOT	In-Person	Virtual	In-Person	—	Virtual
Melissa Garr	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Michael Oborn	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Michael Oldroyd	IBR GEC	Virtual	Virtual	Virtual	—	—
Michael Pyszka	IBR GEC	In-Person	In-Person	—	In-Person	—
Mike Fleming	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Mike Kimlinger	ODOT	Virtual	Virtual	Virtual	Virtual	—
Mike Lev	IBR GEC	Virtual	Virtual	Virtual	Virtual	Virtual
Mike Schoeff	IBR GEC	In-Person	Virtual	Virtual	Virtual	Virtual
Mike Southwick	WSDOT	Virtual	Virtual	—	Virtual	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Mohammad Sheikhabadi	WSDOT	Virtual	Virtual	Virtual	Virtual	—
Molly Fandrich	IBR GEC	Virtual	Virtual	Virtual	Virtual	Virtual
Morgan Stumpf	IBR GEC	Virtual	—	Virtual	Virtual	—
Nathan Potter	ODOT	In-Person	In-Person	In-Person	In-Person	In-Person
Nick Fortey	USDOT	Virtual	Virtual	—	Virtual	—
Paige Schlupp	TriMet	In-Person	—	In-Person	In-Person	In-Person
Patrick Forza	IBR GEC	Virtual	—	Virtual	—	—
Patty Rubstello	IBR GEC	—	—	—	—	Virtual
Paula Johnson	IBR GEC	—	Virtual	—	—	—
Phil Crowley	ODOT	—	Virtual	Virtual	—	—
Prashaant Kulkarni	TriMet	—	—	—	Virtual	
Ralph Salamie	IBR GEC	Virtual	Virtual	Virtual	Virtual	—
Ray Bottenberg	ODOT	In-Person	In-Person	Virtual	—	—
Ray Smith	WSDOT	—	—	—	Virtual	—
Regina Thompson	ODOT	Virtual	Virtual	Virtual	—	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Rick Judd	USDOT	Virtual	Virtual	Virtual	—	Virtual
Rob Brusseau	WSDOT	Virtual	Virtual	—	—	—
Robert Algazi	IBR GEC	Virtual	Virtual	—	—	—
Robert Turton	IBR GEC	Virtual	Virtual	Virtual	Virtual	
Roger Flint	IBR GEC	Virtual	Virtual	Virtual	Virtual	In-Person
Rosa Chen	IBR GEC	Virtual	Virtual	Virtual	Virtual	Virtual
Ryan LeProwse	IBR GEC	Virtual	Virtual	—	Virtual	—
Samone Stinson	ODOT	Virtual	—	Virtual	—	—
Sarah Espinosa	TriMet	In-Person	In-Person	In-Person	In-Person	In-Person
Sarah Touey	IBR GEC	—	—	—	Virtual	—
Scott Cramer	ODOT	Virtual	Virtual	—	—	—
Scott Mercer	WSDOT	Virtual	Virtual	—	—	—
Scotty Ireland	IBR GEC	Virtual	Virtual	Virtual	Virtual	—
Sean Nikkila	ODOT	Virtual	—	—	—	Virtual
Serin Bussell	ODOT	Virtual	—	Virtual	—	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Shae McCulloch	IBR GEC	Virtual	In-Person	In-Person	In-Person	Virtual
Shawn Ellis	IBR GEC	Virtual	—	Virtual	—	—
Shawn Rapp	ODOT	Virtual	—	—	—	—
Shay Witucki	USDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Shelli Romero	ODOT	Virtual	—	—	—	—
Shilpa Mallem	ODOT	In-Person	In-Person	In-Person	In-Person	In-Person
Shin-Che Huang	USDOT	Virtual	Virtual	Virtual	Virtual	—
Stephanie Miller	IBR GEC	—	—	Virtual	—	—
Steve Katko	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Steven Witter	C-TRAN	In-Person	In-Person	In-Person	In-Person	In-Person
Susan Fletcher	FTA	—	—	—	—	Virtual
Susan Ortiz	ODOT	Virtual	Virtual	Virtual	Virtual	—
Tammy Saldivar	WSDOT	Virtual	Virtual	In-Person	—	—
Thomas Parker	USDOT	In-Person	In-Person	—	—	In-Person
Thomas Walther	TriMet	—	—	—	Virtual	—

Name	Organization	August 18	August 19	August 20	August 21	August 22
Tiffany Bennett	ODOT	Virtual	Virtual	Virtual	—	Virtual
Tom Goldstein	FHWA	In-Person	In-Person	In-Person	In-Person	In-Person
Tom Grummon	ODOT	Virtual	Virtual	Virtual	Virtual	—
Tomer Curiel	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Trent Eakin	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Troy Wilson	ODOT	Virtual	Virtual	Virtual	Virtual	—
Tyler Patterson	WSDOT	Virtual	Virtual	Virtual	Virtual	Virtual
Veronica Raub	WSDOT	Virtual	Virtual	—	—	—
Victor Brinic	IBR GEC	In-Person	In-Person	In-Person	In-Person	In-Person
Zach Davis	ODOT	In-Person	Virtual	Virtual	Virtual	—
Zoie Wesenberg	IBR GEC	—	In-Person	In-Person	—	In-Person

Appendix B – Package-Level Results

Tables B-1 and B-2 provide statistical results for each of the 29 contract packages plus programmatic costs. The package level costs shown in Table B-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 P67.5 package costs sum approximately to the Program P70 cost of **$14,411 million**. These values are shown in Table B-1.

Table B-1. Package-Level Cost Results

Package Number	Package Name	Millions of YOE dollars									
		Deterministic Base	Mean	P10	P45	P50	P65	P67.5	P70	P85	P90
0	Programmatic Costs	862	1,047	947	1,031	1,041	1,073	1,079	1,085	1,134	1,157
1	65th Street CTRAN O&M Bus Facility	15	17	14	16	16	17	17	18	19	19
2	Bus Procurement	12	14	12	14	14	15	15	15	16	16
3	Bus Shelters	2	2	2	2	2	2	2	2	2	2
4	Approaches	1,700	2,396	2,002	2,337	2,375	2,500	2,523	2,547	2,730	2,819
5	Columbia River Bridge	2,133	3,148	2,667	3,069	3,123	3,281	3,311	3,342	3,562	3,664
6	Columbia River Bridge Removal	315	406	340	395	402	422	426	431	462	478
7	Evergreen Park & Ride	103	121	105	119	120	125	126	127	134	137
8	Hayden Island Guideway	153	204	173	198	201	210	212	214	229	237
9	Hayden Island Package A (Hayden Island Center)	46	61	51	59	60	64	64	65	71	74
10	Hayden Island Surface Streets	161	202	166	196	200	211	213	216	232	240
11	Light Rail Overnight Facility	91	114	97	112	113	119	120	121	128	132
12	LRV Procurement	195	234	209	230	233	241	242	244	255	260
13	Marine Drive Interchange	646	828	685	804	819	867	875	884	949	980
14	Marine Drive Package A	201	250	212	246	250	262	264	266	281	289

Package Number	Package Name	Millions of YOE dollars									
		Deterministic Base	Mean	P10	P45	P50	P65	P67.5	P70	P85	P90
15	Mill Plain Interchange	312	400	334	389	396	416	421	425	455	470
16	North Expo Road	36	45	37	43	44	47	47	48	51	53
17	North Portland Harbor Bridge Removal	53	73	59	71	72	77	78	79	84	87
18	North Portland Harbor Transit Bridge	107	157	126	144	147	155	157	158	189	213
19	Oregon I-5 Northbound	874	1,173	972	1,142	1,163	1,227	1,239	1,250	1,340	1,387
20	Oregon I-5 Southbound	716	954	799	932	947	996	1,005	1,015	1,084	1,121
21	Oregon Station Finishes	0	0	0	0	0	0	0	0	0	0
22	Pre-Completion Tolling Signage	49	56	49	55	55	57	58	58	61	62
23	Ruby Junction TriMet Facility Expansion	381	475	412	465	472	493	496	500	528	542
24	SR-14 Package A	134	186	161	182	184	192	193	195	206	213
25	Track, Systems & Stations	489	641	548	628	637	666	671	677	720	741
26	Washington Station Finishes	0	0	0	0	0	0	0	0	0	0
27	Washington North	326	423	360	412	418	438	442	446	476	491
28	Waterfront Park & Ride	91	106	91	104	106	110	111	112	118	122
29	West Hayden Island Mitigation	2	6	3	3	3	4	4	4	13	13
	Total	**10,207**	**13,738**	**-**	**-**	**-**		**14,411**	**-**	**-**	**-**

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	Jul 2031	Jul 2032	Jul 2031	Apr 2032	Jun 2032	Nov 2032	Jan 2033	Jul 2033	Oct 2033
2	Bus Procurement	Jul 2031	Aug 2032	Aug 2031	Apr 2032	Jun 2032	Nov 2032	Jan 2033	Jul 2033	Oct 2033
3	Bus Shelters	Nov 2030	Nov 2031	Nov 2030	Jul 2031	Sep 2031	Mar 2032	May 2032	Nov 2032	Jan 2033
4	Approaches	Apr 2036	Aug 2038	Aug 2037	Jun 2038	Jul 2038	Nov 2038	Dec 2038	Jun 2039	Sep 2039
5	Columbia River Bridge	Oct 2032	Nov 2034	Nov 2033	Aug 2034	Oct 2034	Jan 2035	Mar 2035	Sep 2035	Jan 2036
6	Columbia River Bridge Removal	May 2036	Apr 2039	Apr 2038	Feb 2039	Mar 2039	May 2039	Sep 2039	Feb 2040	Apr 2040
7	Evergreen Park & Ride	Feb 2035	Oct 2037	Aug 2036	Jul 2037	Aug 2037	Jan 2038	Feb 2038	Sep 2038	Jan 2039
8	Hayden Island Guideway	Jul 2032	May 2034	Apr 2033	Mar 2034	Apr 2034	Sep 2034	Nov 2034	May 2035	Aug 2035
9	Hayden Island Package A (Hayden Island Center)	Jul 2030	May 2032	Apr 2031	Feb 2032	Apr 2032	Sep 2032	Nov 2032	May 2033	Aug 2033
10	Hayden Island Surface Streets	Jun 2045	May 2048	May 2047	Mar 2048	May 2048	Aug 2048	Sep 2048	Apr 2049	Jul 2049
11	Light Rail Overnight Facility	Feb 2033	Nov 2034	Oct 2033	Aug 2034	Oct 2034	Mar 2035	Apr 2035	Nov 2035	Jan 2036
12	LRV Procurement	Oct 2033	Jul 2035	May 2034	Apr 2035	Jun 2035	Nov 2035	Dec 2035	Jul 2036	Sep 2036
13	Marine Drive Interchange	Mar 2045	Feb 2048	Feb 2047	Dec 2047	Jan 2048	May 2048	Jun 2048	Jan 2049	Apr 2049
14	Marine Drive Package A	Dec 2031	Mar 2034	Mar 2033	Jan 2034	Feb 2034	Jul 2034	Aug 2034	Feb 2035	May 2035
15	Mill Plain Interchange	Feb 2040	Sep 2042	Aug 2041	Jun 2042	Jul 2042	Dec 2042	Jan 2043	Aug 2043	Dec 2043

Package Number	Package Name	Package Completion Date								
		Deterministic Base	Mean	P10	P45	P50	P65	P70	P85	P90
16	North Expo Road	Jun 2045	May 2048	Jun 2047	Mar 2048	May 2048	Aug 2048	Sep 2048	Apr 2049	Jul 2049
17	North Portland Harbor Bridge Removal	Dec 2039	Sep 2042	Oct 2041	Aug 2042	Sep 2042	Dec 2042	Dec 2042	Aug 2043	Nov 2043
18	North Portland Harbor Transit Bridge	Dec 2039	Sep 2042	Oct 2041	Aug 2042	Sep 2042	Dec 2042	Dec 2042	Aug 2043	Nov 2043
19	Oregon I-5 Northbound	Aug 2038	Oct 2038	May 2045	Feb 2046	Apr 2046	Jun 2046	Aug 2046	Mar 2047	Jun 2047
20	Oregon I-5 Southbound	Dec 2037	Aug 2040	Sep 2039	Jun 2040	Aug 2040	Dec 2040	Dec 2040	Jul 2041	Oct 2041
21	Oregon Station Finishes	Sep 2034	Nov 2036	Nov 2035	Aug 2036	Oct 2036	Mar 2037	May 2037	Oct 2037	Jan 2038
22	Pre-Completion Tolling Signage	Apr 2027	Sep 2027	Apr 2027	Jul 2027	Aug 2027	Oct 2027	Nov 2027	Mar 2028	Apr 2028
23	Ruby Junction TriMet Facility Expansion	Nov 2031	Dec 2033	Nov 2032	Oct 2033	Nov 2033	Apr 2034	Jun 2034	Dec 2034	Feb 2035
24	SR-14 Package A	Jan 2031	May 2032	Jul 2031	Mar 2032	Apr 2032	Jul 2032	Sep 2032	Feb 2033	Apr 2033
25	Track, Systems & Stations	Sep 2035	Oct 2038	Sep 2037	Aug 2038	Sep 2038	Jan 2039	Mar 2039	Aug 2039	Dec 2039
26	Washington Station Finishes	Dec 2034	Sep 2037	Jul 2036	Jun 2037	Jul 2037	Dec 2037	Jan 2038	Sep 2038	Dec 2038
27	Washington North	Dec 2040	Jul 2043	Jun 2042	May 2043	Jun 2043	Oct 2043	Dec 2043	Jul 2044	Nov 2044
28	Waterfront Park & Ride	Nov 2034	Apr 2037	Apr 2036	Jan 2037	Feb 2037	Jun 2037	Aug 2037	Feb 2038	May 2038
29	West Hayden Island Mitigation	Jul 2028	Nov 2028	Aug 2028	Sep 2028	Sep 2028	Nov 2028	Nov 2028	Feb 2029	Mar 2029

Appendix C – Schedule Summary

2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036

Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4

Reference Date: July 1, 2025

Interstate Bridge Replacement Project
Fixed Span Option
DRAFT Flowchart for Schedule Risk Analysis
November 6, 2025

Notes:
1. Activities and milestones highlighted in red are on the base critical path for a given project (prior to consideration of risk) to project or critical mileseone completion.
2. Durations shown are in calendar months.
3. Allowable in-water work windows extend from September 15 to April 15 (yellow highlights)
4. All schedule linkages are finish to start (F-S) unless otherwise noted.
5. Based on program master schedule update 29 (draft) dated July 11, 2025, with the following modifications:
   a. Progressive Design-Build delivery for Columbia River Bridge package
   b. Evergreen/ Waterfront PnR preconstruction activities moved closer to construction start
   c. West Hayden Island Mitigation package added
   d. Bi-state and TriMet agreement schedules revised

Bridge, Approaches, and Transit Completion 5/25/2036

ENV-3 - Sec. 106 Programmatic Agrmt. & Mitigation Plan
4
ENV-4a - Finalize FEIS
8.3
ENV-4b - Finalize ROD
0.9
[ENV-5] Publish ROD
[FIN-3'] Start Pre-Completion Tolling
ENV-7 - USACE 401/404/408 Permits (incl. mitigation plans)
14
EXT-1 - USCG Revised PNCD (Incl. mitig. agr.)
4.3
CRB-2 - USCG Section 9 Bridge Permit
12.9
[WHM-5"] W. Hayden Island Mitigation Complete
FIN-1 - CRB State/Federal Funding (incl. BIP)
9.2
[FIN-2] CRB Funding Secured
DES-1a - Plan Set for FEIS
2.3
DES-1b - 30% Design
2.8
AGR-1 - Bi-State (OR/WA) IGA
8
CRB-3 - Third-Party Agrmts: CRB
13.1
CRB-6a - CRB Critical ROW
30
CRB-6b - CRB Remaining ROW
11.3
CRB-1a - Prelim. Design/RFQ
4.6
CRB-1b - Develop RFP
3.7
[CRB-4] Issue RFP
CRB-5 - Proposals/ Selection (PDB)
7.5
[CRB-7] NTP #1
CRB-8a - 30%-60% Design/ Permitting
12
CRB-9 - GMP Negotiations
4.1
CRB-12 - Procure/Mob Foundations/GI/ Final Design
9
CRB-8b - Design/ Negotiate Early Works
12
[CRB-11] NTP #2
CRB-15 - Columbia River Bridge Construction - Set Girders/Deck NB/SB
41.2
CRB-17 - CRB Closeout
3
ENV-9 - Cultural Resources Agrmt/Survey: CRB
11.3
[CIG-6] Issue LONP
CRB-10 - Prep for Early Works
2.4
CRB-13 - In-Water Early Works (Install Trestle/ Shaft Reaction Pile)
4
CRB-14 - Columbia River Bridge In-Water Work
12.9
In-Water Work
CIG-5 - FTA Prepare LONP for Bridge CN
8.9
[CIG-2'] FTA Entry into Engr.
[CIG-4'] FTA FFGA
ROW-1 - Limited Access Waiver / Finalize ROW Plans
7.4
[PRG-2] Bridge, Approaches, and Transit Complete
HIA-3 - Hayden Island ROW
32
HIA-0 - Hayden Island Pkg A Design to 100%/Permits/Agrmts/Utilities
31.3
[HIA-1] Ad
HIA-2 - Bid
4.1
[HIA-4] NTP
HIA-5 - Hayden Island Pkg A Construction
12
ENV-11 - Cultural Resources Agrmt/Survey: Hayden Island
24.1
[PHT-4b'] USACE Permits: NPH Transit
ENV-10 - Cultural Resources Agrmt/Survey: Vancouver Approaches
24.2
[CBA-8.1] Vancouver SB Stage 2 Lag (ties to Waterfront P&R)
[CBA-7] CRBA Traffic Shift #1
CBA-4 - CBA ROW
CBA-1 - CBA Design/Argmts.
16.1
[CBA-2] RFQ
CBA-3a - Proposals/Selection (PDB)
12.9
53
[CBA-3b] NTP #1
CBA-3c - 30%-60% Design/ Permitting
16.1
CBA-3d - Final Design
9.6
[CBA-5] NTP for CN
CBA-6 - Approaches Stage 1 Vancouver SB
24
CBA-8 - Vancouver Stages 2/3
39.4
CBA-11 - CRA Approaches Closeout
2.7
CBA-3e - BNSF Agrmts.
4.3
SRA-3 - SR-14 ROW (incl. BNSF)
27.1
SRA-5 - Bid (DBB)
3.9
[SRA-4] Ad
[SRA-6] NTP
SRA-7 - SR-14 Pkg A: Construction
23
SRA-8 - SRA Closeout
3.2
SRA-1 - SR-14 Pkg A Design to 100%/Permits/Agreements
31.7
SRA-2 - Advance Utilities
5
SRA-9 - Evergreen Bridge Construction
10.1
[HIG-6'] Hayden Island Guideway Complete
CBA-9 - Hayden Island Stages 1-3 / TS 4
16.4
CBA-10 - Hayden Island Stage 4
3
[CBR-8] Demo Complete
CBR-2 - CBR ROW
30.2
[CBR-5] NTP
CBR-6 - Interstate Bridge Removal Construction
27
CBR-1 - CRB Bridge Removal Design/Permits/Utilities/Cult. Res.
42.3
[CBR-3] Ad
CBR-4 - Bid (DBB)
4.1
CBR-7 - In-Water Work
13.5
In-Water Work

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A1

2024 Q4 | 2025 Q1 Q2 Q3 Q4 | 2026 Q1 Q2 Q3 Q4 | 2027 Q1 Q2 Q3 Q4 | 2028 Q1 Q2 Q3 Q4 | 2029 Q1 Q2 Q3 Q4 | 2030 Q1 Q2 Q3 Q4 | 2031 Q1 Q2 Q3 Q4 | 2032 Q1 Q2 Q3 Q4 | 2033 Q1 Q2 Q3 Q4 | 2034 Q1 Q2 Q3 Q4 | 2035 Q1 Q2 Q3 Q4 | 2036 Q1 Q2 Q3 Q4

[DES-1a'] Plan Set for FEIS
DES-2 - 30% Design for Transit
2.8
[ENV-5'] Publish ROD
LRT-4a - ROW for Transit (Track/Systems/Stations): Oregon
26.1
LRT-4b - ROW for Transit (Track/Systems/Stations): Washington
26.1
[HIA-5'] Hayden Island Pkg A Complete
[CBA-6'] Vancouver Stage 1 Lag
[CBA-7'] CRBA Traffic Shift 1
[LRT-14] Transit Revenue Service Date
LRT-13 - Operator Training / Route Simulation
6.5
[LRT-1] Program-Wide Transit RFQ
LRT-0 - RFQ Prep
5
LRT-2 - Selection/Prep (CM/GC) (Includes Agreements, Utilities, Permits, etc.)
32.5
[LRT-3] Program-Wide Transit GMP/Award
LRT-11 - Systems Construction
18.1
LRT-6 - Plinths and Track Construction
12
LRT-12 - Testing & Commissioning
15
DES-3 - 60% Design for Transit
14.9
DES-4 - 100% Design for Transit
9.1
LRT-7 - Waterfront Station Construction
16
AGR-2 - TriMet Delivery Agreement Decision
4
LRT-8 - Evergreen Station Construction
14
AGR-4 - WSDOT/TriMet Design/CN IGA
9.9
AGR-3 - Other Critical Transit Agreements for FFGA
13.1
[CIG-2] FTA Entry to Engineering
CIG-3 - FTA Readiness Reviews for FFGA
[CIG-4] FTA FFGA
CIG-1 - FTA CIG Process to 30% (incl. critical PD agrmts.)
18.1
19.3
PHT-3 - NPH Transit ROW
40.2
PHT-1 - RFQ Prep
5
[PHT-2] RFQ
PHT-5 - Selection/Prep/Permitting/Utilities/CR (CM/GC)
43.5
[PHT-6] GMP/Award
PHT-7 - North Portland Harbor Transit Construction
27
PHT-9 - Closeout
3
PHT-8 - NPH In-Water Work
10.9
In-Water Work
[PHT-4b] NPH Transit Permit (USACE)
PHT-4a - USACE/USCG Permits for NPH / Marine Drive
38.4
HIG-4 - Hayden Island Guideway ROW
32.1
HIG-1 - RFQ Prep
5
[HIG-2] RFQ
HIG-3 - Hayden Island Guideway Selection/Permitting/Prep (CM/GC)
38.1
[HIG-5] GMP/Award
HIG-6 - Hayden Island Guideway Construction
24.1
MDA-3 - Marine Drive A ROW
38.3
LRT-10 - Hayden Island Station Construction
12
MDA-0 - RFQ Prep
5
[MDA-1] Marine Drive RFQ
MDA-2 - Marine Drive Pkg A Selection/Permitting/Prep (CM/GC)
41.4
[MDA-4] GMP/Award
MDA-5 - Marine Drive Pkg A Construction
24.1
LRT-9 - Expo Station Construction
10
WAF-1 - WA Station Finishes Design/Utilities
39.5
[WAF-2] Ad
WAF-3 - Bid (DBB)
[WAF-4] Award
WAF-5 - WA Station Finishes
12.1
ORF-1 - OR Station Finishes Design/Utilities
39.6
[ORF-2] Ad
ORF-3 - Bid (DBB)
7/12
4
[ORF-4] Award
ORF-5 - OR Station Finishes
14.1
LRF-0 - RFQ Prep
5
[LRF-1] RFQ
LRF-2 - Selection/Prep (CM/GC)
26.9
[LRF-3] GMP/Award
LRF-4 - LRT Overnight Facility Construction
18.1
LRF-5 - LRF TriMet Move
6.1
RJT-4 - Ruby Junction ROW
31.9
RJT-1 - RFQ Prep
5
[RJT-2] RFQ
RJT-3 - Selection/Prep (CM/GC)
35.2
[RJT-5] GMP/Award
RJT-6 - Ruby Junction Tri-Met Facility / TriMet Move
30.9
[LRV-2] RFP
LRV-1 - Develop LRV Specs
19
11/1
LRV-3 - LRV Procurement
16.2
[LRV-4] NTP
LRV-5 - LRV Manufacture, Deliver Group 1
38.8
LRV-6 - LRV Test/ Commission Group 1
8.1
LRV-7 - LRV Deliver/Commission Remaining 17 Vehicles
8.9
CBF-1 - 65th St. O&M Design
28.2
[CBF-3] Ad
CBF-4 - Bid (DBB)
7/10
4.1
[CBF-5] Award
CBF-6 - 65th St. CTRAN O&M Bus Facility
19.8
Tied to program completion milestone PRG-3
CBP-1 - Bus Procurement Design
23
[CBP-2] Ad
CBP-3 - Bid (DBB)
4.1
[CBP-4] Award
CBP-5 - Bus Procurement - Fabricate/Deliver/Test
40.1
Tied to program completion milestone PRG-3
CBS-1 - Bus Shelter Design / Utilities
39.6
[CBS-2] Ad
CBS-3 - Bid (DBB)
4
[CBS-4] Award
CBS-5 - Bus Shelters Construction
12
Tied to program completion milestone PRG-3

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NetPoint® 5.3. Release 5.3.1.5. Build 9768. (Sep 4 2019 08:27:26) Schedule Unit: Days Criticality Factor: Total Float (%: 0.0/5.0)

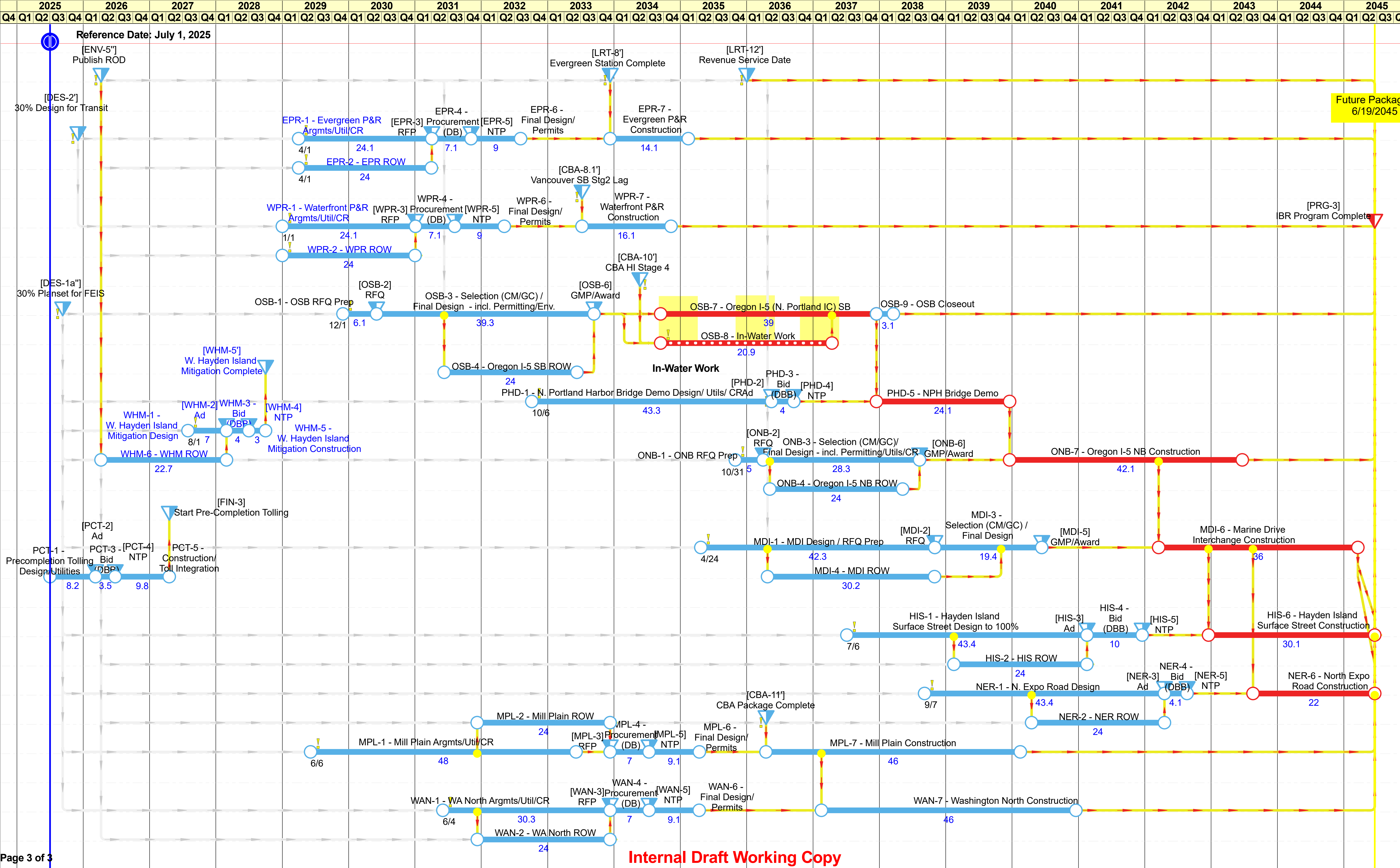
2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045
Reference Date: July 1, 2025
[ENV-5"] Publish ROD
[DES-2'] 30% Design for Transit
[LRT-8'] Evergreen Station Complete
[LRT-12'] Revenue Service Date
Future Packages 6/19/2045
EPR-1 - Evergreen P&R Argmts/Util/CR
4/1
24.1
[EPR-3] RFP
EPR-4 - Procurement (DB)
7.1
[EPR-5] NTP
9
EPR-6 - Final Design/ Permits
EPR-7 - Evergreen P&R Construction
14.1
EPR-2 - EPR ROW
24
[CBA-8.1'] Vancouver SB Stg2 Lag
WPR-1 - Waterfront P&R Argmts/Util/CR
1/1
24.1
[WPR-3] RFP
WPR-4 - Procurement (DB)
7.1
[WPR-5] NTP
9
WPR-6 - Final Design/ Permits
WPR-7 - Waterfront P&R Construction
16.1
[PRG-3] IBR Program Complete
WPR-2 - WPR ROW
24
[CBA-10'] CBA HI Stage 4
[DES-1a"] 30% Planset for FEIS
OSB-1 - OSB RFQ Prep
12/1
6.1
[OSB-2] RFQ
OSB-3 - Selection (CM/GC) / Final Design - incl. Permitting/Env.
39.3
[OSB-6] GMP/Award
OSB-7 - Oregon I-5 (N. Portland IC) SB
39
OSB-9 - OSB Closeout
3.1
OSB-8 - In-Water Work
20.9
[WHM-5'] W. Hayden Island Mitigation Complete
OSB-4 - Oregon I-5 SB ROW
24
In-Water Work
PHD-1 - N. Portland Harbor Bridge Demo Design/ Utils/ CRAd
10/6
43.3
[PHD-2]
PHD-3 - Bid (DBB)
4
[PHD-4] NTP
PHD-5 - NPH Bridge Demo
24.1
WHM-1 - W. Hayden Island Mitigation Design
[WHM-2] Ad
8/1 7
WHM-3 - Bid (DBB)
4
3
[WHM-4] NTP
WHM-5 - W. Hayden Island Mitigation Construction
WHM-6 - WHM ROW
22.7
ONB-1 - ONB RFQ Prep
10/31
5
[ONB-2] RFQ
ONB-3 - Selection (CM/GC)/ Final Design - incl. Permitting/Utils/CR
28.3
[ONB-6] GMP/Award
ONB-7 - Oregon I-5 NB Construction
42.1
ONB-4 - Oregon I-5 NB ROW
24
[FIN-3] Start Pre-Completion Tolling
[PCT-2] Ad
PCT-1 - Precompletion Tolling Design/Utilities
8.2
PCT-3 - Bid (DBB)
3.5
[PCT-4] NTP
9.8
PCT-5 - Construction/ Toll Integration
MDI-1 - MDI Design / RFQ Prep
4/24
42.3
[MDI-2] RFQ
MDI-3 - Selection (CM/GC) / Final Design
19.4
[MDI-5] GMP/Award
MDI-6 - Marine Drive Interchange Construction
36
MDI-4 - MDI ROW
30.2
HIS-1 - Hayden Island Surface Street Design to 100%
7/6
43.4
[HIS-3] Ad
HIS-4 - Bid (DBB)
10
[HIS-5] NTP
HIS-6 - Hayden Island Surface Street Construction
30.1
HIS-2 - HIS ROW
24
NER-1 - N. Expo Road Design
9/7
43.4
[NER-3] Ad
NER-4 - Bid (DBB)
4.1
[NER-5] NTP
NER-6 - North Expo Road Construction
22
NER-2 - NER ROW
24
[CBA-11'] CBA Package Complete
MPL-2 - Mill Plain ROW
24
MPL-1 - Mill Plain Argmts/Util/CR
6/6
48
[MPL-3] RFP
MPL-4 - Procurement (DB)
7
[MPL-5] NTP
9.1
MPL-6 - Final Design/ Permits
MPL-7 - Mill Plain Construction
46
WAN-1 - WA North Argmts/Util/CR
6/4
30.3
[WAN-3] RFP
WAN-4 - Procurement (DB)
7
[WAN-5] NTP
9.1
WAN-6 - Final Design/ Permits
WAN-7 - Washington North Construction
46
WAN-2 - WA North ROW
24
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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"	
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 FEIS		SRA-1 FS,"CBR-1 FS","DES-1a' FS","CRB-1a FS","ENV-9 FS","CBA-1 FS","HIA-0 FS","ENV-4a FF184","DES-1b FS", DES-1a''
DES-1a'	Plan Set for FEIS	DES-1a FS	DES-2 FS,"LRV-1 FS"
DES-1a''	Plan Set for FEIS	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"
DES-2	30% Design for Transit	DES-1a' FS	CIG-5 FS,"PHT-2 FS","PHT-1 FS","LRF-1 FS","ORF-1 FS","WAF-1 FS","RJT-1 FS","CBF-1 FS","CBS-1 FS","CBP-1 FS","LRT-4a FS","LRT-4b FS","PHT-3 FS","LRT-0 FS","HIG-1 FS","HIG-4 FS","MDA-0 FS","LRF-0 FS","RJT-4 FS","MDA-3 FS","CRB-7 FS","DES-3 FS", DES-2'
DES-2'	30% Design for Transit	DES-2	EPR-1 FS,"WPR-1 FS"
DES-3	60% Design for Transit	DES-2 FS,"CIG-2 FF","AGR-4 FS"	CIG-3 FF404,"DES-4 FS"
DES-4	100% Design for Transit	DES-3 FS	CIG-4 FS,"LRT-2 FF327","HIG-3 FF577","MDA-2 FF600","LRF-2 FF90","RJT-3 FF346","PHT-4a FF418"
ENV-1	Publish Draft SEIS		
ENV-2	ESA Section 7 / BO		
ENV-3	Section 106 Programmatic Agreement & Mitigation Plan		ENV-9 FS,"ENV-4a FF9","ENV-11 FS","ENV-10 FS"
ENV-4a	Finalize FEIS	ENV-3 FF9,"DES-1a FF184","EXT-1 FF94"	ENV-4b FS
ENV-4b	Issue ROD	ENV-4a FS	ENV-5 FS

Activity ID	Activity Name	Predecessor(s)	Successor(s)
ENV-5	Publish ROD	ENV-4b FS	CRB-4 FS,"SRA-3 FS","HIA-3 FS","ENV-5' FS","FIN-2 FS","ENV-7 FF","SRA-4 FS","CBA-4 FS","MDA-3 FS","CIG-5 FS","CBR-2 FS","CRB-6a FF626","ENV-9 FF183","ENV-11 FF564","ENV-10 FF567","FIN-3' FS", ENV-5a, ENV-5'', PRF-1a FF
ENV-5'	Publish ROD	ENV-5 FS	LRT-4a FS,"LRT-4b FS","CIG-2 FS","RJT-4 FS","PHT-3 FS","PHT-4a FS","HIG-4 FS","LRV-2 FS","LRT-1 FS","PHT-2 FS","HIG-2 FS","MDA-1 FS","LRF-1 FS","RJT-2 FS","CBP-2 FS"
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-8a FF, CRB-8b FF, SRA-6
ENV-7	USACE 401/404/408 Permits	ENV-5 FF	CRB-2 FF99,"CRB-14 FS"
ENV-9	Cultural Resources Agrmt/Survey: CRB	DES-1a FS,"ENV-3 FS","ENV-5 FF183"	CRB-8a FF183,"CRB-8b FF183"
ENV-10	Cultural Resources Agrmt/Survey: Vancouver Approaches	ENV-3 FS,"DES-1b FS","ENV-5 FF567"	SRA-4 FS,"CBA-3c FF449"
ENV-11	Cultural Resources Agrmt/Survey: Hayden Island	ENV-3 FS,"DES-1b FS","ENV-5 FF564"	HIA-1 FS
EXT-1	USCG PNCD		CRB-2 FS,"ENV-4a FF94"
ROW-1	Limited Access Waiver (WA) / Finalize Right of Way Plans		CBA-4 FS,"CBR-2 FS","CRB-6b FS"
AGR-1	Bi-State (OR/WA) Intergovernmental Agreement (incl. governance)		CRB-4 FS,"CRB-3 FF153","AGR-4 FF"
AGR-2	TriMet Delivery Agreement Decision		LRT-0 FS,"PHT-1 FS","HIG-1 FS","MDA-0 FS","LRF-0 FS","RJT-1 FS","AGR-4 FF179"
AGR-3	Critical Transit Agreements for FFGA	AGR-4 FF98	CIG-3 FF288
AGR-4	WSDOT/TriMet Design/Construction IGA	AGR-2 FF179,"AGR-1 FF"	CRB-5 FF85,"AGR-3 FF98","DES-3 FS","PHT-2 FS","HIG-2 FS","MDA-1 FS","LRF-1 FS","RJT-2 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'

Activity ID	Activity Name	Predecessor(s)	Successor(s)
FIN-3'	Start Pre-Completion Tolling	ENV-5 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-2' FS","DES-3 FF"
CIG-2'	FTA Approval for Entry into Engineering	CIG-2 FS	CIG-5 FF
CIG-3	FTA Readiness Reviews for FFGA	CIG-2 FS,"AGR-3 FF288","DES-3 FF404"	CIG-4 FS
CIG-4	FTA FFGA	CIG-3 FS,"DES-4 FS"	PHT-6 FS,"RJT-5 FS","LRV-4 FS","CBF-5 FS","CBS-4 FS","LRT-3 FS","WAF-4 FS","ORF-4 FS","CIG-4' FS","LRF-3 FS"
CIG-4'	FTA FFGA	CIG-4 FS	CBA-5 FS,"HIA-1 FS"
CIG-5	FTA Prepare LONP for Bridge Construction	ENV-5 FS,"DES-2 FS","CIG-2' FF"	CIG-6 FS
CIG-6	Issue LONP	CIG-5 FS	CRB-8b FF,"CRB-8a FF"
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 FF99"	CRB-8a FF183,"CRB-8b FF183"
CRB-3	Third-Party Agreements: CRB	AGR-1 FF153	CRB-8a FF183,"CRB-8b FF183"
CRB-4	Columbia River Bridge (CRB) RFP	ENV-5 FS,"CRB-1b FS","AGR-1 FS"	CRB-5 FS
CRB-5	CRB Proposals/Selection (PDB)	CRB-4 FS,"AGR-4 FF85"	CRB-7 FS
CRB-6a	CRB Critical Right of Way	ENV-5 FF626	CRB-6b FS,"CRB-8b FF","CRB-11 FS"
CRB-6b	CRB Remaining Right of Way	CRB-6a FS,"ROW-1 FS"	CRB-15 FF715
CRB-7	Issue CRB NTP #1	CRB-5 FS,"DES-2 FS"	CRB-8b FS,"CRB-8a FS"
CRB-8a	CRB 30%-60% Design	CRB-2 FF183,"CRB-3 FF183","ENV-9 FF183","CIG-6 FF","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-6a FF","CIG-6 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-6a FS"	CRB-12 FS
CRB-12	Procure/Mob Foundations/Ground Improvement/Final Design	CRB-11 FS	CRB-14 FS,"CRB-15 FS"
CRB-13	In-Water Early Works (Install Trestle/ Shaft Reaction Pile)	CRB-10 FS	CRB-14 FS, CRB-18 SS

Activity ID	Activity Name	Predecessor(s)	Successor(s)
CRB-14	Columbia River Bridge In-Water Work	CRB-12 FS,"ENV-7 FS","CRB-13 FS"	CRB-15 FF558
CRB-15	Columbia River Bridge Construction - Set Girders/Deck NB/SB	CRB-12 FS,"CRB-14 FF558","CRB-6b FF715","WHM-5'' FF"	CBA-7 FS,"CRB-17 FS"
CRB-16	Complete CRB NB		
CRB-17	CRB Closeout	CRB-15 FS	PRG-2 FS
CBA-1	CRB (Vancouver) Approaches Design/Agreements	DES-1a FS	CBA-2 FS
CBA-2	CRB (Vancouver) Approaches RFQ	CBA-1 FS	CBA-3a FS
CBA-3a	Approaches Proposals/Selection (PDB)	CBA-2 FS	CBA-3b FS
CBA-3b	Approaches NTP #1	CBA-3a FS	CBA-3c FS
CBA-3c	Approaches 30%-60% Design / Permitting	ENV-10 FF449,"CBA-3b FS"	CBA-3d 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-4	CRB (Vancouver) Approaches Right of Way (incl. BNSF)	ENV-5 FS,"ROW-1 FS"	CBA-6 FF350
CBA-5	CRB Approaches NTP for CN	CIG-4' FS,"SRA-7 FS","CBA-3d FS","CBA-3e FS", CBA-3f	CBA-6 FS
CBA-6	CRB Approaches Stage 1 Vancouver SB	CBA-5 FS,"CBA-4 FF350"	CBA-7 FS,"CBA-6' SS602"
CBA-6'	CRB Approaches Stage 1 Vancouver SB Lag	CBA-6 SS602	LRT-6 FS,"LRT-7 FS"
CBA-7	CBRA Traffic Shift #1	CRB-15 FS,"CBA-6 FS","HIA-5 FS"	CBA-7' FS,"CBA-8 FS","CBA-9 FS"
CBA-7'	CBRA Traffic Shift #1	CBA-7 FS	LRT-8 FS
CBA-8	CRBA Vancouver Stages 2/3	CBA-7 FS	CBA-11 FS,"CBA-8.1 SS269","CBA-9 SF499"
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-9	Hayden Island Stages 1-3 (incl. Traffic Switch 4)	CBA-7 FS,"HIG-6' FS","CBA-8 SF499"	CBA-10 FS,"CBR-5 FS"
CBA-10	Hayden Island Stage 4	CBA-9 FS	CBA-11 FS, CBA-10'
CBA-10'	Hayden Island Stage 4	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		

Activity ID	Activity Name	Predecessor(s)	Successor(s)
SRA-1	SR 14 Package A Design to 100%/Permits/Agreements	DES-1a FS	SRA-4 FS,"SRA-2 FS"
SRA-2	SR 14 Package A Advance Utilities	SRA-1 FS	SRA-6 FS
SRA-3	SR 14 Right of Way (incl. BNSF)	ENV-5 FS	SRA-4 FS
SRA-4	SR 14 Package A Ad	ENV-10 FS,"SRA-3 FS","SRA-1 FS","ENV-5 FS"	SRA-5 FS
SRA-5	SR 14 Bid (DBB)	SRA-4 FS	SRA-7 FS,"SRA-6 FS"
SRA-6	SR 14 Package A NTP	SRA-5 FS,"SRA-2 FS", ENV-5a	SRA-7 FS,"SRA-9 FS"
SRA-7	SR 14 Package A Construction	SRA-5 FS,"SRA-6 FS","SRA-9 FF"	SRA-8 FS,"CBA-5 FS"
SRA-8	SR 14 Package A Closeout	SRA-7 FS	PRG-2 FS
SRA-9	Evergreen Bridge Construction	SRA-6 FS	SRA-7 FF
HIA-0	Hayden Island Package A Design to 100%/Permits/Agrmts/Utilities	DES-1a FS	HIA-1 FS
HIA-1	Hayden Island Package A Ad	CIG-4' FS,"HIA-0 FS","ENV-11 FS","HIA-3 FS","PHT-4b' FS"	HIA-2 FS
HIA-2	Hayden Island Package A Bid/Award (DBB)	HIA-1 FS	HIA-4 FS
HIA-3	Hayden Island Right of Way	ENV-5 FS	HIA-1 FS
HIA-4	Hayden Island Package A NTP	HIA-2 FS	HIA-5 FS
HIA-5	Hayden Island Package A Construction	HIA-4 FS	CBA-7 FS,"LRT-10 FS","HIA-5' FS"
HIA-5'	Hayden Island Package A Construction	HIA-5 FS	HIG-6 FS
HIG-1	Hayden Island Guideway RFQ Prep/CPARB	DES-2 FS,"AGR-2 FS"	HIG-2 FS
HIG-2	Hayden Island Guideway Transit RFQ	HIG-1 FS,"ENV-5' FS","AGR-4 FS", Date: 9/27/2026	HIG-3 FS
HIG-3	Hayden Island Guideway Transit Selection/Final Design	HIG-2 FS,"HIG-4 FF29","PHT-4b FF119","DES-4 FF577"	HIG-5 FS
HIG-4	Hayden Island Guideway Transit Right of Way	ENV-5' FS,"DES-2 FS"	HIG-3 FF29
HIG-5	Hayden Island Guideway Transit GMP/Award	HIG-3 FS	HIG-6 FS
HIG-6	Hayden Island Guideway Transit Construction	HIG-5 FS,"HIA-5' FS"	LRT-10 FS,"HIG-6' FS"
HIG-6'	Hayden Island Guideway Transit Construction	HIG-6 FS	CBA-9 FS

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-2 SS481"
CBR-2	CRB Bridge Removal Right of Way	ENV-5 FS,"CBR-1 SS481","ROW-1 FS"	CBR-3 FS
CBR-3	CRB Bridge Removal Ad	CBR-1 FS,"CBR-2 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-9 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 Construction	CBR-6 FS,"CBR-7 FS"	PRG-2 FS
LRT-0	Program-Wide Transit RFP Prep/CPARB	DES-2 FS,"AGR-2 FS"	LRT-1 FS
LRT-1	Program-Wide Transit RFQ	LRT-0 FS,"ENV-5' FS", Date: 7/8/2026	LRT-2 FS
LRT-2	Program-Wide Transit Selection/ Permits/ Utilities/ Negotiations (CM/GC)	LRT-1 FS,"DES-4 FF327"	LRT-3 SS912
LRT-3	Program-Wide Transit GMP/Award (GC/CM)	CIG-4 FS,"LRT-2 SS912"	LRT-6 FS,"LRT-7 FS","LRT-8 FS","LRT-9 FS","LRT-10 FS"
LRT-4a	Right of Way for Transit (Track/Systems/Stations): Oregon	ENV-5' FS,"DES-2 FS"	LRT-6 FS,"LRT-9 FS","LRT-10 FS"
LRT-4b	Right of Way for Transit (Track/Systems/Stations): Washington	ENV-5' FS,"DES-2 FS"	LRT-6 FS,"LRT-7 FS"
LRT-6	Plinths and Track Construction	LRT-3 FS,"LRT-4b FS","LRT-4a FS","CBA-6' FS","PHT-9 FS","LRT-9 SS60","LRF-5 FF91"	LRT-11 SS180,"LRT-12 FS"
LRT-7	Waterfront Station Construction	LRT-3 FS,"LRT-4b FS","CBA-6' FS"	WAF-5 FS,"LRT-12 FS"
LRT-8	Evergreen Station Construction	LRT-3 FS,"CBA-7' 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,"MDA-5 FS","LRT-4a FS"	ORF-5 FS,"LRT-12 FS","LRT-6 SS60"
LRT-10	Hayden Island Station Construction	LRT-4a FS,"PHT-9 FS","HIA-5 FS","HIG-6 FS","LRT-3 FS"	LRT-12 FS,"ORF-5 FS"
LRT-11	Systems Construction	LRT-6 SS180	LRT-12 FS
LRT-12	Testing & Commissioning	LRT-11 FS,"LRT-7 FS","LRT-8 FS","LRT-9 FS","LRT-10 FS","LRT-6 FS","LRV-7 FS"	LRT-14 FS,"LRT-13 SS365"

Activity ID	Activity Name	Predecessor(s)	Successor(s)
LRT-13	Operator Training / Route Simulation	LRT-12 SS365	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-0	Marine Drive Package A RFQ Prep/CPARB	DES-2 FS,"AGR-2 FS"	MDA-1 FS
MDA-1	Marine Drive Package A RFQ	MDA-0 FS,"ENV-5' FS","AGR-4 FS", Date: 7/10/2026	MDA-2 FS
MDA-2	Marine Drive Package A Selection/Design (CM/GC)	MDA-1 FS,"MDA-3 FF120","DES-4 FF600"	MDA-4 FS
MDA-3	Marine Drive Package A Right of Way	ENV-5 FS,"DES-2 FS"	MDA-2 FF120
MDA-4	Marine Drive Package A GMP/Award	MDA-2 FS	MDA-5 FS
MDA-5	Marine Drive Package A Construction	MDA-4 FS,"PHT-7 SS"	LRT-9 FS,"LRF-4 SS121"
LRF-0	LRF Overnight Facility RFQ Prep/CPARB	DES-2 FS,"AGR-2 FS"	LRF-1 FS
LRF-1	LRT Overnight Facility RFQ	DES-2 FS,"LRF-0 FS","ENV-5' FS","AGR-4 FS"	LRF-2 FS
LRF-2	LRT Overnight Facility Selection/Design (CM/GC)	LRF-1 FS,"DES-4 FF90"	LRF-3 FS
LRF-3	LRT Overnight Facility GMP/Award	LRF-2 FS,"CIG-4 FS"	LRF-4 FS
LRF-4	LRT Overnight Facility Construction	LRF-3 FS,"MDA-5 SS121"	LRF-5 FS
LRF-5	LRT Overnight Facility TriMet Move	LRF-4 FS,"LRV-6 FF"	LRT-6 FF91
LRF-6	LRT Overnight Facility Right of Way		
PHT-1	North Portland Harbor Transit RFQ Prep/CPARB	DES-2 FS,"AGR-2 FS"	PHT-2 FS
PHT-2	North Portland Harbor Transit RFQ	DES-2 FS,"PHT-1 FS","ENV-5' FS","AGR-4 FS"	PHT-5 FS
PHT-3	North Portland Harbor Transit Right of Way	ENV-5' FS,"DES-2 FS"	PHT-5 FF123
PHT-4a	USACE / USCG Permits for NPH Transit / Marine Drive	ENV-5' FS,"DES-4 FF418"	PHT-6 FS,"PHT-4b SS1063"
PHT-4b	North Portland Harbor Transit Permit (USACE)	PHT-4a SS1063	PHT-4b' FS,"HIG-3 FF119","PHT-5 FF123"
PHT-4b'	North Portland Harbor Transit Permit (USACE)	PHT-4b FS	HIA-1 FS
PHT-5	North Portland Harbor Transit Selection/ Design/ Permitting/ Utilities, Cultural Resources	PHT-2 FS,"PHT-3 FF123","PHT-4b FF123"	PHT-6 FS
PHT-6	North Portland Harbor Transit GMP/Award	PHT-5 FS,"CIG-4 FS","PHT-4a FS"	PHT-7 FS,"PHT-8 FS"

Activity ID	Activity Name	Predecessor(s)	Successor(s)
PHT-7	North Portland Harbor Transit Construction	PHT-6 FS,"PHT-8 FF329"	MDA-5 SS,"PHT-9 FS"
PHT-8	North Portland Harbor Transit Construction - In-Water Work	PHT-6 FS	PHT-7 FF329
PHT-9	North Portland Harbor Transit Construction Closeout	PHT-7 FS	LRT-10 FS,"LRT-6 FS"
WAF-1	WA Station Finishes Design/Utilities	DES-2 FS	WAF-2 FS
WAF-2	WA Station Finishes Ad	WAF-1 FS, Date: 7/12/2029	WAF-3 FS
WAF-3	WA Station Finishes Bid (DBB)	WAF-2 FS	WAF-4 FS
WAF-4	WA Station Finishes NTP	WAF-3 FS,"CIG-4 FS"	WAF-5 FS
WAF-5	WA Station Finishes Construction	LRT-7 FS,"WAF-4 FS","LRT-8 FS"	LRT-14 FS
ORF-1	OR Station Finishes Design/Utilities	DES-2 FS	ORF-2 FS
ORF-2	OR Station Finishes Ad	ORF-1 FS, Date: 7/12/2029	ORF-3 FS
ORF-3	OR Station Bid (DBB)	ORF-2 FS	ORF-4 FS
ORF-4	OR Station Finishes NTP	ORF-3 FS,"CIG-4 FS"	ORF-5 FS
ORF-5	OR Station Finishes Construction	LRT-9 FS,"ORF-4 FS","LRT-10 FS"	LRT-14 FS
RJT-1	Ruby Junction TriMet Facility RFQ Prep	DES-2 FS,"AGR-2 FS"	RJT-2 FS
RJT-2	Ruby Junction TriMet Facility RFQ	RJT-1 FS,"ENV-5' FS","AGR-4 FS"	RJT-3 FS
RJT-3	Ruby Junction TriMet Facility Selection/Final Design (GC/CM)	RJT-2 FS,"DES-4 FF346"	RJT-5 FS
RJT-4	Ruby Junction Right of Way	ENV-5' FS,"DES-2 FS"	RJT-5 FS
RJT-5	Ruby Junction GMP/Award	RJT-3 FS,"CIG-4 FS","RJT-4 FS"	RJT-6 FS
RJT-6	Ruby Junction Construction / TriMet Move	RJT-5 FS	LRT-14 FS,"LRV-5 FF"
CBF-1	65th St. CTRAN O&M Bus Facility Design	DES-2 FS	CBF-3 FS
CBF-2	65th St. CTRAN O&M Bus Facility Right of Way		
CBF-3	65th St. CTRAN O&M Bus Facility Ad	CBF-1 FS, Date: 7/12/2029	CBF-4 FS
CBF-4	65th St. CTRAN O&M Bus Facility Bid (DBB)	CBF-3 FS	CBF-5 FS,"CBF-6 FS"
CBF-5	65th St. CTRAN O&M Bus Facility NTP	CBF-4 FS,"CIG-4 FS"	CBF-6 FS
CBF-6	65th St. CTRAN O&M Bus Facility Construction	CBF-4 FS,"CBF-5 FS"	CBP-5 FF
LRV-1	Develop LRV Specifications	DES-1a' FS	LRV-2 FS

Activity ID	Activity Name	Predecessor(s)	Successor(s)
LRV-2	Light Rail Vehicles RFP	LRV-1 FS,"CIG-2 FS","ENV-5' FS", Date: 11/1/2027	LRV-3 FS
LRV-3	Light Rail Vehicles Procurement	LRV-2 FS	LRV-4 FS
LRV-4	Light Rail Vehicles NTP	LRV-3 FS,"CIG-4 FS"	LRV-5 FS
LRV-5	Light Rail Vehicles Manufacture, Deliver Group One	LRV-4 FS,"RJT-6 FF"	LRV-6 FS
LRV-6	Light Rail Vehicles Test, Commission Group One	LRV-5 FS	LRF-5 FF,"LRV-7 FS"
LRV-7	Light Rail Vehicles Deliver/Commission Remaining 17 Vehicles	LRV-6 FS	LRT-12 FS
CBP-1	Bus Procurement Design	DES-2 FS	CBP-2 FS
CBP-2	Bus Procurement Ad	CBP-1 FS,"ENV-5' FS"	CBP-3 FS
CBP-3	Bus Procurement Bid (DBB)	CBP-2 FS	CBP-4 FS
CBP-4	Bus Procurement NTP	CBP-3 FS	CBP-5 FS
CBP-5	Bus Procurement Fabrication/Delivery/Testing	CBP-4 FS,"CBF-6 FF"	
CBS-1	Bus Shelters Design / Utilities	DES-2 FS	CBS-2 FS
CBS-2	Bus Shelters Ad	CBS-1 FS, Date: 7/12/2029	CBS-3 FS
CBS-3	Bus Shelters Bid (DBB)	CBS-2 FS	CBS-4 FS
CBS-4	Bus Shelters NTP	CBS-3 FS,"CIG-4 FS"	CBS-5 FS
CBS-5	Bus Shelters Construction	CBS-4 FS	
CBS-6	Bus Shelters Right of Way		
MDI-1	Marine Drive Interchange Design / RFQ Prep	DES-1a'' FS, Date: 4/24/2035	MDI-2 FS,"MDI-4 SS367"
MDI-2	Marine Drive Interchange RFQ	MDI-1 FS, Date: 4/24/2039	MDI-3 FS
MDI-3	Marine Drive Interchange Selection (CM/GC) / Final Design	MDI-2 FS,"MDI-4 FF224"	MDI-5 FS
MDI-4	Marine Drive Interchange Right of Way	ENV-5'' FS,"MDI-1 SS367"	MDI-3 FF224
MDI-5	Marine Drive Interchange GMP/Award	MDI-3 FS	MDI-6 FS
MDI-6	Marine Drive Interchange Construction	MDI-5 FS,"ONB-7 SS820"	NER-6 SS520,"NER-6 FF","HIS-6 FF","HIS-6 SS275"
NER-1	N. Expo Road Design	DES-1a'' FS, Date: 9/7/2038	NER-3 FS,"NER-2 SS589"
NER-2	N. Expo Road Right of Way	ENV-5'' FS,"NER-1 SS589"	NER-3 FS
NER-3	N. Expo Road Ad	NER-1 FS,"NER-2 FS"	NER-4 FS
NER-4	N. Expo Road Bid (DBB)	NER-3 FS	NER-5 FS

Activity ID	Activity Name	Predecessor(s)	Successor(s)
NER-5	N. Expo Road NTP	NER-4 FS	NER-6 FS
NER-6	N. Expo Road Construction	NER-5 FS,"MDI-6 SS520","MDI-6 FF"	PRG-3 FS
OSB-1	Oregon I-5 SB RFQ Prep	DES-1a'' FS, Date: 12/1/2029	OSB-2 FS
OSB-2	Oregon I-5 SB RFQ	OSB-1 FS	OSB-3 FS
OSB-3	Oregon I-5 SB Selection/Final Design (CM/GC) - incl. permitting, env.	OSB-2 FS	OSB-6 FS,"OSB-4 SS372"
OSB-4	Oregon I-5 SB Right of Way	ENV-5'' FS,"OSB-3 SS372"	OSB-6 FS
OSB-6	Oregon I-5 SB GMP/Award	OSB-3 FS,"OSB-4 FS"	OSB-7 FS,"OSB-8 FS"
OSB-7	Oregon I-5 SB Construction	OSB-6 FS,"CBA-10' FS","OSB-8 FF245"	PHD-5 FS,"OSB-9 FS"
OSB-8	Oregon I-5 SB Construction - In-Water Work	CBA-10' FS,"OSB-6 FS"	OSB-7 FF245
OSB-9	Oregon I-5 SB Closeout	OSB-7 FS	PRG-3 FS
PHD-1	N. Portland Harbor Bridge Demo Design / Utilities / Cultural Resources	DES-1a'' FS, Date: 10/6/2032	PHD-2 FS
PHD-2	N. Portland Harbor Bridge Demo Ad	PHD-1 FS	PHD-3 FS
PHD-3	N. Portland Harbor Bridge Demo Bid (DBB)	PHD-2 FS	PHD-4 FS
PHD-4	N. Portland Harbor Bridge Demo NTP	PHD-3 FS	PHD-5 FS
PHD-5	N. Portland Harbor Bridge Demolition	OSB-7 FS,"PHD-4 FS"	ONB-7 FS
PHD-6	N. Portland Harbor Bridge Demo Right of Way		
ONB-1	Oregon I-5 NB RFQ Prep	DES-1a'' FS, Date: 10/31/2035	ONB-2 FS
ONB-2	Oregon I-5 NB RFQ	ONB-1 FS	ONB-3 FS
ONB-3	Oregon I-5 NB Selection (CM/GC) / Final Design - incl. Permitting, Utilities, Cultural Resources	ONB-2 FS	ONB-6 FS,"ONB-4 SS37"
ONB-4	Oregon I-5 NB Right of Way	ONB-3 SS37	ONB-6 FS
ONB-6	Oregon I-5 NB GMP/Award	ONB-3 FS,"ONB-4 FS"	ONB-7 FS
ONB-7	Oregon I-5 NB Construction	ONB-6 FS,"PHD-5 FS"	MDI-6 SS820,"PRG-3 FS"
HIS-1	Hayden Island Surface Street Design to 100%	DES-1a'' FS, Date: 7/6/2037	HIS-3 FS,"HIS-2 SS589"
HIS-2	Hayden Island Surface Street Right of Way	ENV-5'' FS,"HIS-1 SS589"	HIS-3 FS
HIS-3	Hayden Island Surface Street Ad	HIS-1 FS,"HIS-2 FS"	HIS-4 FS

Activity ID	Activity Name	Predecessor(s)	Successor(s)
HIS-4	Hayden Island Surface Street Bid (DBB)	HIS-3 FS	HIS-5 FS
HIS-5	Hayden Island Surface Street NTP	HIS-4 FS	HIS-6 FS
HIS-6	Hayden Island Surface Street Construction Complete	HIS-5 FS,"MDI-6 FF","MDI-6 SS275"	PRG-3 FS
EPR-1	Evergreen P&R Agreements/Utilities/Cultural Resources	DES-2' FS, Date: 4/1/2029	EPR-3 FS
EPR-2	Evergreen P&R Right of Way	ENV-5'' FS, Date: 4/1/2029	EPR-3 FS
EPR-3	Evergreen P&R RFP	EPR-1 FS,"EPR-2 FS"	EPR-4 FS
EPR-4	Evergreen P&R Procurement (DB)	EPR-3 FS	EPR-5 FS
EPR-5	Evergreen P&R NTP	EPR-4 FS	EPR-6 FS
EPR-6	Evergreen P&R Final Design/ Permits	EPR-5 FS	EPR-7 FS
EPR-7	Evergreen P&R Construction	EPR-6 FS,"LRT-8' FS"	PRG-3 FS
WPR-1	Waterfront P&R Agreements/Utilities/Cultural Resources	DES-2' FS, Date: 1/1/2029	WPR-3 FS
WPR-2	Waterfront P&R Right of Way	ENV-5'' FS, Date: 1/1/2029	WPR-3 FS
WPR-3	Waterfront P&R RFP	WPR-1 FS,"WPR-2 FS"	WPR-4 FS
WPR-4	Waterfront P&R Procurement (DB)	WPR-3 FS	WPR-5 FS
WPR-5	Waterfront P&R NTP	WPR-4 FS	WPR-6 FS
WPR-6	Waterfront P&R Final Design/ Permits	WPR-5 FS	WPR-7 FS
WPR-7	Waterfront P&R Construction	WPR-6 FS,"CBA-8.1' FS"	PRG-3 FS
MPL-1	Mill Plain Agreements/Utilities/Arch.	DES-1a'' FS, Date: 6/6/2029	MPL-3 FS,"MPL-2 SS917"
MPL-2	Mill Plain Right of Way	ENV-5'' FS,"MPL-1 SS917"	MPL-3 FS
MPL-3	Mill Plain RFP	MPL-2 FS,"MPL-1 FS"	MPL-4 FS
MPL-4	Mill Plain Procurement (DB)	MPL-3 FS	MPL-5 FS
MPL-5	Mill Plain NTP	MPL-4 FS	MPL-6 FS
MPL-6	Mill Plain Final Design/ Permits	MPL-5 FS	MPL-7 FS
MPL-7	Mill Plain Construction	MPL-6 FS,"CBA-11' FS"	WAN-7 SS305,"PRG-3 FS"
WAN-1	Washington North Agreements/Utilities/CR	DES-1a'' FS, Date: 6/4/2031	WAN-3 FS,"WAN-2 SS190"
WAN-2	Washington North Right of Way	ENV-5'' FS,"WAN-1 SS190"	WAN-3 FS
WAN-3	Washington North RFP	WAN-1 FS,"WAN-2 FS"	WAN-4 FS
WAN-4	Washington North Procurement (DB)	WAN-3 FS	WAN-5 FS
WAN-5	Washington North NTP	WAN-4 FS	WAN-6 FS

Activity ID	Activity Name	Predecessor(s)	Successor(s)
WAN-6	Washington North Final Design/ Permits	WAN-5 FS	WAN-7 FS
WAN-7	Washington North Construction	WAN-6 FS,"MPL-7 SS305"	PRG-3 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	DES-1a'' FS, 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	CRB-15 FF
WHM-6	West Hayden Island Mitigation Right of Way	ENV-5'' FS	WHM-2 FS
CRB-18	River Bridge Mitigation Cost	, CRB-13 SS	

Appendix D – Cost Estimate Summary

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

- Figure D-1: Cost Estimate Summary
- Table D-1: Base Unit Price Uncertainty Ranges by Cost Item
- Figure D-2: Base Uncertainty Ranges by Package (Unit Price and Quantity)
- Figure D-3: Base Uncertainty Ranges by Package (Percentage Markups)
- Figure D-4: Base Uncertainty Ranges by Package (PE and Right of Way)
- Figure D-5: Correlation Matrices
- Table D-2: Summary of Base Cost-Loaded Schedule

Figure D-1. Cost Estimate Summary

Program	Interstate Bridge Replacement				Date	11/5/2025
Location:	Portland, OR & Vancouver, WA				Estimator	GEC Team
Description:	The IBR Program is a multi-modal infrastructure initiative spanning Oregon and Washington, focused on replacing the aging I-5 bridge and improving safety, mobility, and seismic resilience along a critical five-mile stretch of the West Coast's primary north-south corridor. With 29 integrated work packages, the program includes new fixed-span bridges over the Columbia River, expanded highway interchanges, a light rail extension with new stations, and major transit and active transportation enhancements.				Estimate Purpose	Scoping Estimate; 2025 CEVP
Estimated Costs Below Represent the: Escalated Base Year Dollars, No Risk Contingency						
Programmatic Cost Estimate						
(Pkg. 0)	**Programmatic Costs**		**Unit**	**Quantity**	**Unit Cost**	**$692,881,728**
	IBR Costs To date (Actuals)		*LS*	*1*	*$236,591,728*	$236,591,728
	Anticipated Programmatic Costs		*MO*	*231*	*$1,975,281*	$456,290,000
CONSTRUCTION AND PROCUREMENT PACKAGE COSTS						
Package No.	**Package Name**	**PCT**	**Construction (CN)**	**Preliminary Engineering (PE)**	**Right-of-Way (ROW)**	**Total**
	Packages (1-29)	**100.0%**	**$5,844,510,000**	**$965,702,000**	**$307,153,000**	**$7,117,365,000**
1	65th Street CTRAN O&M Bus Facility	0.2%	$10,124,000	$2,466,000	$0	**$12,590,000**
2	Bus Procurement	0.2%	$9,823,000	$874,000	$0	**$10,697,000**
3	Bus Shelters	0.0%	$1,024,000	$361,000	$0	**$1,385,000**
4	Approaches	18.7%	$1,130,943,000	$148,050,000	$50,447,000	**$1,329,440,000**
5	Columbia River Bridge	25.9%	$1,584,642,000	$222,268,000	$36,999,000	**$1,843,909,000**
6	Columbia River Bridge Removal	3.3%	$207,503,000	$24,715,000	$1,374,000	**$233,592,000**
7	Evergreen Park & Ride	1.1%	$57,879,000	$12,639,000	$7,940,000	**$78,458,000**
8	Hayden Island Guideway	1.8%	$80,878,000	$16,320,000	$34,192,000	**$131,390,000**
9	Hayden Island Package A (Hayden Island Center)	0.6%	$18,792,000	$2,543,000	$19,644,000	**$40,979,000**
10	Hayden Island Surface Streets	1.3%	$66,556,000	$15,864,000	$7,142,000	**$89,562,000**
11	Light Rail Overnight Facility	1.1%	$63,820,000	$12,460,000	$0	**$76,280,000**
12	LRV Procurement	2.3%	$150,497,000	$9,805,000	$0	**$160,302,000**
13	Marine Drive Interchange	5.2%	$289,771,000	$71,332,000	$10,976,000	**$372,079,000**
14	Marine Drive Package A	2.4%	$113,508,000	$25,255,000	$33,803,000	**$172,566,000**
15	Mill Plain Interchange	3.0%	$174,253,000	$36,404,000	$2,037,000	**$212,694,000**
16	North Expo Road	0.3%	$16,634,000	$3,391,000	$135,000	**$20,160,000**
17	North Portland Harbor Bridge Removal	0.5%	$28,905,000	$6,349,000	$0	**$35,254,000**
18	North Portland Harbor Transit Bridge	1.3%	$53,488,000	$10,410,000	$28,251,000	**$92,149,000**
19	Oregon I-5 Northbound	7.4%	$429,863,000	$82,103,000	$16,209,000	**$528,175,000**
20	Oregon I-5 Southbound	7.2%	$430,556,000	$81,960,000	$0	**$512,516,000**
21	Oregon Station Finishes	0.0%	$148,000	$72,000	$0	**$220,000**
22	Pre-Completion Tolling Signage	0.7%	$36,240,000	$10,138,000	$0	**$46,378,000**
23	Ruby Junction TriMet Facility Expansion	4.6%	$260,103,000	$51,329,000	$15,448,000	**$326,880,000**
24	SR-14 Package A	1.7%	$81,884,000	$12,905,000	$23,311,000	**$118,100,000**
25	Track, Systems & Stations	5.4%	$318,377,000	$64,862,000	$0	**$383,239,000**
26	Washington Station Finishes	0.0%	$155,000	$50,000	$0	**$205,000**
27	Washington North	3.0%	$170,579,000	$31,085,000	$14,499,000	**$216,163,000**
28	Waterfront Park & Ride	1.0%	$57,565,000	$9,692,000	$2,383,000	**$69,640,000**
29	West Hayden Island Mitigation	0.0%	$0	$0	$2,363,000	**$2,363,000**
	Construction and Procurement Package Total	**100%**	**$5,844,510,000**	**$965,702,000**	**$307,153,000**	**$7,117,365,000**
	Total Program Costs (Rounded)					**$7,810,250,000**
PROGRAM SUMMARIES						
	Description	**PCT**	**Construction (CN)**	**Preliminary Engineering (PE)**	**Right-of-Way (ROW)**	**Total**
	Washington Total	40.4%	$2,663,850,162	$389,417,000	$105,511,000	$3,158,778,162
	Oregon Total	50.7%	$3,180,660,000	$576,285,000	$201,642,000	$3,958,587,000
	Programmatic Costs	8.9%	$0	$0	$0	$692,881,728
All	**Total (Rounded)**	**100%**	**$5,844,510,162**	**$965,702,000**	**$307,153,000**	**$7,810,250,000**
	Description	**PCT**	**Construction (CN)**	**Preliminary Engineering (PE)**	**Right-of-Way (ROW)**	**Total**
	Highway Total	67.5%	$4,404,215,906	$718,137,292	$151,397,489	$5,273,750,686
	Transit Total	23.6%	$1,440,294,256	$247,564,708	$155,755,511	$1,843,614,476
	Programmatic Costs	8.9%	$0	$0	$0	$692,881,728
All	**Total (Rounded)**	**100%**	**$5,844,510,162**	**$965,702,000**	**$307,153,000**	**$7,810,250,000**

Notes:

1. CEVP base cost includes an additional $1.6 million in prior costs.
2. Values exclude inflation and contingency.

Table D-1. Base Unit Price Uncertainty Ranges by Cost Item

Item Number	Description	Total Cost (millions of July 2025 dollars)	Percentage of Direct Construction Cost Total	Unit Price (July 2025 dollars)	Lower Range (10th Percentile)	Most Likely Value	Upper Range (90th Percentile)
9930	Superstructure Steel, CRB	436.6	11.2%	8.03	0.0%	16.6%	33.1%
9930	Superstructure Steel	393.8	10.1%	4.75	0.0%	17.4%	34.7%
4325	Superstructure Concrete	200.6	5.1%	1,673.10	0.0%	11.0%	22.0%
4092	Foundation Shafts, 120" Diameter	158.0	4.0%	4,943.75	0.0%	6.0%	12.0%
8000	Light Rail Vehicle, Type 7 -- 19 EA	142.0	3.6%	7,471,750.00	0.0%	1.5%	3.0%
0	Mitigation	141.1	3.6%	1.00	0.0%	0.0%	0.0%
4092	Foundation Shafts, 120" Diameter, Marine Construction	129.6	3.3%	5,842.50	0.0%	8.0%	16.0%
0	Deep Soil Mixing	129.0	3.3%	225.00	0.0%	33.3%	140.0%
0	Temporary Structures - Maintenance of Way	97.7	2.5%	540.97	0.0%	0.0%	0.0%
4327	Pier Cap Concrete	83.9	2.1%	1,705.00	0.0%	10.0%	20.0%
4149	Shaft Cap Concrete	80.0	2.0%	1,705.00	0.0%	10.0%	20.0%
4327	Column Concrete	71.9	1.8%	1,705.00	0.0%	10.0%	20.0%
8034	Steel Span Removal - Marine (>200')	55.1	1.4%	4,590,000.00	-10.0%	0.0%	10.0%
5767	HMA CL. 1/2 IN. PG	51.1	1.3%	120.00	0.0%	4.0%	8.0%

Item Number	Description	Total Cost (millions of July 2025 dollars)	Percentage of Direct Construction Cost Total	Unit Price (July 2025 dollars)	Lower Range (10th Percentile)	Most Likely Value	Upper Range (90th Percentile)
8034	Pier Removal - Marine	48.9	1.2%	800,000.00	0.0%	5.0%	10.0%
8000	Heavy Maintenance Facility Building, Ruby Junction Main Expansion	46.4	1.2%	1,300.00	0.0%	5.0%	10.0%
4269	Prestressed Concrete Girders - WF74/74G	46.3	1.2%	725.00	0.0%	5.0%	10.0%
7169	Retaining Wall, MSE	46.2	1.2%	137.00	0.0%	6.0%	12.0%
4232	Modified Concrete Overlay	44.2	1.1%	98.00	0.0%	5.0%	10.0%
71	Bridge Removal Support (Equipment, Temp Structures, Protection Systems)	37.0	0.9%	76.67	0.0%	5.0%	10.0%
310	Roadway Excavation Incl. Haul	35.3	0.9%	38.00	0.0%	35.5%	71.0%
0	Hazardous Material Abatement, Right of Way	33.3	0.9%	38.00	0.0%	35.5%	71.0%
4084	Foundation Shafts, 48" Diameter	29.7	0.8%	1,195.00	0.0%	5.0%	10.0%
5095	Crushed Surfacing Base Course	29.6	0.8%	52.00	0.0%	5.0%	10.0%
4380	Abutment / Wingwall Concrete	28.9	0.7%	1,705.00	0.0%	7.0%	14.0%
4415	42 In Type "F" Traffic Barrier Coping with Moment Slab	24.7	0.6%	643.00	0.0%	6.0%	12.0%
4149	Plain Reinforcing Steel in Superstructure	24.2	0.6%	1.22	0.0%	36.4%	72.8%
4149	Reinforcing Steel in Pier Cap	18.4	0.5%	1.22	0.0%	36.4%	72.8%
4149	Reinforcing Steel in Column	16.4	0.4%	1.22	0.0%	36.4%	72.8%

Item Number	Description	Total Cost (millions of July 2025 dollars)	Percentage of Direct Construction Cost Total	Unit Price (July 2025 dollars)	Lower Range (10th Percentile)	Most Likely Value	Upper Range (90th Percentile)
4148	Epoxy Coated Reinforcing Steel in Superstructure	15.6	0.4%	1.92	0.0%	5.0%	10.0%
4149	Reinforcing Steel in Shaft Cap	14.6	0.4%	1.22	0.0%	36.4%	72.8%
4149	Reinforcing Steel in Abutment	3.2	0.1%	1.22	0.0%	36.4%	72.8%
4230	PT Reinforcement Steel	1.7	0.0%	2.47	-10.0%	0.0%	10.0%
4149	Reinforcing Steel in Pier Strut	1.2	0.0%	1.22	0.0%	36.4%	72.8%
4149	Reinforcing Steel in Substructure	0.1	0.0%	1.22	0.0%	36.4%	72.8%
0	Other Cost Items	1195.2	30.6%	-	-10.0%	0.0%	10.0%

Lower range, probable (most likely), and upper range values represent percentage adjustments, relative to the estimate unit price, for each cost item.

Oregon unit prices are shown.

Figure D-2. Base Uncertainty Ranges by Package (Unit Price and Quantity)

				Unit Price			Quantity			
Package No.	Package Name	PCT	Construction Cost Estimate	10th	Most Likely	90th	Design %	10th	Most Likely	90th
	Programmatic Costs (Package 0)	**100.0%**	**$0**							
0	IBR Costs To date (Actuals)	34.1%								
0	Anticipated Programmatic Costs	65.9%								
	Packages (1-29)	**100.0%**	**$5,844,510,162**							
1	65th Street CTRAN O&M Bus Facility	0.2%	$10,124,000	-10.0%	0.0%	10.0%	1%	-8.0%	0.0%	18.0%
2	Bus Procurement	0.2%	$9,823,000	-10.0%	0.0%	10.0%	1%			
3	Bus Shelters	0.0%	$1,024,000	-10.0%	0.0%	10.0%	5.0%			
4	Approaches	18.7%	$1,130,943,000	-4.0%	8.8%	27.3%	25.0%	-3.0%	0.0%	7.0%
5	Columbia River Bridge	25.9%	$1,584,642,162	-0.4%	12.7%	30.5%	25.0%	-2.0%	0.0%	5.0%
6	Columbia River Bridge Removal	3.3%	$207,503,000	-6.1%	2.0%	10.1%	25.0%	-5.0%	0.0%	15.0%
7	Evergreen Park & Ride	1.1%	$57,879,000	-10.0%	0.0%	10.0%	1.0%			
8	Hayden Island Guideway	1.8%	$80,878,000	-0.4%	15.4%	33.8%	25.0%	-2.0%	0.0%	5.0%
9	Hayden Island Package A (Hayden Islar	0.6%	$18,792,000	-4.8%	16.8%	38.3%	20.0%	-5.0%	0.0%	10.0%
10	Hayden Island Surface Streets	1.3%	$66,556,000	-6.1%	6.7%	19.6%	10.0%	-5.0%	0.0%	12.0%
11	Light Rail Overnight Facility	1.1%	$63,820,000	-9.0%	2.9%	14.8%	10.0%	-5.0%	0.0%	12.0%
12	LRV Procurement	2.3%	$150,497,000	0.0%	1.5%	3.0%	1.0%			
13	Marine Drive Interchange	5.2%	$289,771,000	-4.3%	5.1%	14.5%	10.0%	-5.0%	0.0%	12.0%
14	Marine Drive Package A	2.4%	$113,508,000	-3.5%	6.3%	16.2%	25.0%	-3.0%	0.0%	7.0%
15	Mill Plain Interchange	3.0%	$174,253,000	-3.5%	6.2%	15.9%	10.0%	-5.0%	0.0%	12.0%
16	North Expo Road	0.3%	$16,634,000	-7.3%	1.7%	10.8%	10.0%	-5.0%	0.0%	12.0%
17	North Portland Harbor Bridge Removal	0.5%	$28,905,000	-0.5%	5.3%	11.0%	10.0%	-4.0%	0.0%	10.0%
18	North Portland Harbor Transit Bridge	1.3%	$53,488,000	-0.4%	16.0%	32.4%	25.0%	-2.0%	0.0%	5.0%
19	Oregon I-5 Northbound	7.4%	$429,863,000	-0.9%	10.3%	21.5%	10.0%	-5.0%	0.0%	12.0%
20	Oregon I-5 Southbound	7.2%	$430,556,000	-1.3%	10.9%	23.2%	10.0%	-5.0%	0.0%	12.0%
21	Oregon Station Finishes	0.0%	$148,000	-10.0%	0.0%	10.0%	15.0%	-5.0%	0.0%	10.0%
22	Pre-completion tolling signage	0.7%	$36,240,000	-5.0%	0.0%	5.0%	20.0%	-5.0%	0.0%	10.0%
23	Ruby Junction TriMet Facility Expansior	4.6%	$260,103,000	-7.0%	2.5%	12.0%	15.0%	-5.0%	0.0%	10.0%
24	SR-14 Package A	1.7%	$81,884,000	-3.7%	6.4%	16.4%	25.0%	-4.0%	0.0%	9.0%
25	Track, Systems & Stations	5.4%	$318,377,000	-10.0%	0.0%	10.0%	30.0%	-4.0%	0.0%	8.0%
26	Washington Station Finishes	0.0%	$155,000	-10.0%	0.0%	10.0%	15.0%	-5.0%	0.0%	10.0%
27	Washington North	3.0%	$170,579,000	-6.4%	5.2%	16.8%	10.0%	-5.0%	0.0%	12.0%
28	Waterfront Park & Ride	1.0%	$57,565,000	-10.0%	0.0%	10.0%	1.0%			
29	West Hayden Island Mitigation	0.0%	$0	-5.0%	0.0%	5.0%	5.0%			
	Construction and Procurement Package T	**100%**	**$5,844,510,162**							
	Total Program Costs (Rounded)		**$5,844,510,162**	**-3.2%**	**8.3%**	**22.2%**		**-3.4%**	**0.0%**	**8.0%**

Figure D-3. Base Uncertainty Ranges by Package (Percentage Markups)

		Construction Phasing/Interface					MOT					Delivery Method Adjustment					Misc. Items Allowance			
Package No.	Package Name	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%	0.0%	0.0%	0.0%	NA	0.0%	0.00%	0.00%	0.00%	2-step Sealed Bid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%
3	Bus Shelters	NA	0.0%	0.0%	0.0%	0.0%	Low	1.5%	1.00%	1.50%	2.00%	DBB	0.0%	0.0%	0.0%	0.0%	10.0%	6.0%	10.0%	14.0%
4	Approaches	Complex	13.0%	10.0%	13.0%	16.0%	Complex	11.0%	9.00%	11.00%	14.00%	PDB	10.0%	5.0%	10.0%	15.0%	7.0%	4.0%	7.0%	10.0%
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	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%	2.0%	2.0%	2.0%	5.0%
7	Evergreen Park & Ride	Moderate	5.0%	3.0%	5.0%	7.0%	Moderate	4.0%	2.00%	4.00%	5.00%	DB	3.0%	2.0%	3.0%	5.0%	15.0%	10.0%	15.0%	20.0%
8	Hayden Island Guideway	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%	10.0%	6.0%	10.0%	14.0%
9	Hayden Island Package A (Hayden Isla	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%	5.0%	2.0%	5.0%	8.0%
10	Hayden Island Surface Streets	Moderate	5.0%	3.0%	5.0%	7.0%	Moderate	4.0%	2.00%	4.00%	5.00%	DBB	0.0%	0.0%	0.0%	0.0%	7.0%	4.0%	7.0%	10.0%
11	Light Rail Overnight Facility	Minimal	1.0%	0.5%	1.0%	1.5%	Low	1.5%	1.00%	1.50%	2.00%	CMGC	7.0%	5.0%	7.0%	12.0%	12.0%	8.0%	12.0%	16.0%
12	LRV Procurement	NA	0.0%	0.0%	0.0%	0.0%	NA	0.0%	0.00%	0.00%	0.00%	2-step Sealed Bid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	10.0%
13	Marine Drive Interchange	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%	10.0%	6.0%	10.0%	14.0%
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%	6.0%	9.0%	11.0%	High	7.0%	5.00%	7.00%	9.00%	DB	3.0%	2.0%	3.0%	5.0%	10.0%	6.0%	10.0%	14.0%
16	North Expo Road	Moderate	5.0%	3.0%	5.0%	7.0%	Moderate	4.0%	2.00%	4.00%	5.00%	DBB	0.0%	0.0%	0.0%	0.0%	7.0%	4.0%	7.0%	10.0%
17	North Portland Harbor Bridge Removal	Minimal	1.0%	0.5%	1.0%	1.5%	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	North Portland Harbor Transit Bridge	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%	10.0%	13.0%	16.0%	High	7.0%	5.00%	7.00%	9.00%	CMGC	7.0%	5.0%	7.0%	12.0%	3.0%	2.0%	3.0%	5.0%
20	Oregon I-5 Southbound	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%	3.0%	2.0%	3.0%	5.0%
21	Oregon Station Finishes	Minimal	1.0%	0.5%	1.0%	1.5%	NA	0.0%	0.00%	0.00%	0.00%	DBB	0.0%	0.0%	0.0%	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%	0.5%	1.0%	1.5%	Moderate	4.0%	2.00%	4.00%	5.00%	CMGC	7.0%	5.0%	7.0%	12.0%	12.0%	8.0%	12.0%	16.0%
24	SR-14 Package A	High	9.0%	6.0%	9.0%	11.0%	Complex	11.0%	9.00%	11.00%	14.00%	DBB	0.0%	0.0%	0.0%	0.0%	3.0%	2.0%	3.0%	5.0%
25	Track, Systems & Stations	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%	0.5%	1.0%	1.5%	NA	0.0%	0.00%	0.00%	0.00%	DBB	0.0%	0.0%	0.0%	0.0%	15.0%	10.0%	15.0%	20.0%
27	Washington North	Complex	13.0%	10.0%	13.0%	16.0%	High	7.0%	5.00%	7.00%	9.00%	DB	3.0%	2.0%	3.0%	5.0%	10.0%	6.0%	10.0%	14.0%
28	Waterfront Park & Ride	Low	2.0%	1.0%	2.0%	3.0%	Low	1.5%	1.00%	1.50%	2.00%	DB	3.0%	2.0%	3.0%	5.0%	12.0%	8.0%	12.0%	16.0%
29	West Hayden Island Mitigation	Minimal	1.0%	0.5%	1.0%	1.5%	Minimal	0.5%	0.25%	0.50%	1.00%	DBB	0.0%	0.0%	0.0%	0.0%	7.0%	4.0%	7.0%	10.0%
	Construction and Procurement Package Total																			
	Total Program Costs (Rounded)			**6.0%**	**8.4%**	**10.6%**			**3.9%**	**5.4%**	**6.9%**			**4.2%**	**7.3%**	**11.6%**		**3.5%**	**5.6%**	**9.1%**

Figure D-4. Base Uncertainty Ranges by Package (PE and Right of Way)

		Preliminary Engineering				Right-of-Way			
Package No.	Package Name	Estimate	10th	Most Likely	90th	Estimate	10th	Most Likely	90th
	Programmatic Costs (Package 0)	**$692,881,728**				**$0**			
0	IBR Costs To date (Actuals)	$236,591,728	0.0%		0.0%				
0	Anticipated Programmatic Costs	$456,290,000	-5.0%	0.0%	15.0%				
	Packages (1-29)	**$965,702,000**				**$307,153,000**			
1	65th Street CTRAN O&M Bus Facility	$2,466,000	-5.0%	0.0%	12.5%	$0	-20.0%	0.0%	20.0%
2	Bus Procurement	$874,000	-5.0%	0.0%	12.5%	$0	-20.0%	0.0%	20.0%
3	Bus Shelters	$361,000	-5.0%	0.0%	12.5%	$0	-20.0%	0.0%	20.0%
4	Approaches	$148,050,000	-5.0%	0.0%	12.5%	$50,447,000	-10.0%	0.0%	10.0%
5	Columbia River Bridge	$222,268,000	-5.0%	0.0%	12.5%	$36,999,000	-10.0%	0.0%	10.0%
6	Columbia River Bridge Removal	$24,715,000	-5.0%	0.0%	12.5%	$1,374,000	-10.0%	0.0%	10.0%
7	Evergreen Park & Ride	$12,639,000	-5.0%	0.0%	12.5%	$7,940,000	-20.0%	0.0%	20.0%
8	Hayden Island Guideway	$16,320,000	-5.0%	0.0%	12.5%	$34,192,000	-10.0%	0.0%	10.0%
9	Hayden Island Package A (Hayden Islar	$2,543,000	-5.0%	0.0%	12.5%	$19,644,000	-10.0%	0.0%	10.0%
10	Hayden Island Surface Streets	$15,864,000	-5.0%	0.0%	12.5%	$7,142,000	-15.0%	0.0%	15.0%
11	Light Rail Overnight Facility	$12,460,000	-5.0%	0.0%	12.5%	$0	-15.0%	0.0%	15.0%
12	LRV Procurement	$9,805,000	-5.0%	0.0%	12.5%	$0	-20.0%	0.0%	20.0%
13	Marine Drive Interchange	$71,332,000	-5.0%	0.0%	12.5%	$10,976,000	-15.0%	0.0%	15.0%
14	Marine Drive Package A	$25,255,000	-5.0%	0.0%	12.5%	$33,803,000	-10.0%	0.0%	10.0%
15	Mill Plain Interchange	$36,404,000	-5.0%	0.0%	12.5%	$2,037,000	-15.0%	0.0%	15.0%
16	North Expo Road	$3,391,000	-5.0%	0.0%	12.5%	$135,000	-15.0%	0.0%	15.0%
17	North Portland Harbor Bridge Removal	$6,349,000	-5.0%	0.0%	12.5%	$0	-15.0%	0.0%	15.0%
18	North Portland Harbor Transit Bridge	$10,410,000	-5.0%	0.0%	12.5%	$28,251,000	-10.0%	0.0%	10.0%
19	Oregon I-5 Northbound	$82,103,000	-5.0%	0.0%	12.5%	$16,209,000	-15.0%	0.0%	15.0%
20	Oregon I-5 Southbound	$81,960,000	-5.0%	0.0%	12.5%	$0	-15.0%	0.0%	15.0%
21	Oregon Station Finishes	$72,000	-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 Expansior	$51,329,000	-5.0%	0.0%	12.5%	$15,448,000	-12.5%	0.0%	12.5%
24	SR-14 Package A	$12,905,000	-5.0%	0.0%	12.5%	$23,311,000	-10.0%	0.0%	10.0%
25	Track, Systems & Stations	$64,862,000	-5.0%	0.0%	12.5%	$0	-10.0%	0.0%	10.0%
26	Washington Station Finishes	$50,000	-5.0%	0.0%	12.5%	$0	-12.5%	0.0%	12.5%
27	Washington North	$31,085,000	-5.0%	0.0%	12.5%	$14,499,000	-15.0%	0.0%	15.0%
28	Waterfront Park & Ride	$9,692,000	-5.0%	0.0%	12.5%	$2,383,000	-20.0%	0.0%	20.0%
29	West Hayden Island Mitigation	$0	-5.0%	0.0%	12.5%	$2,363,000	-20.0%	0.0%	20.0%
	Construction and Procurement Package T	**$965,702,000**				**$307,153,000**			
	Total Program Costs (Rounded)	**$1,658,583,728**	**-5.0%**	**0.0%**	**12.5%**	**$307,153,000**	**-11.4%**	**0.0%**	**11.4%**

Figure D-5. 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 D-2. Base Cost-Loaded Schedule Summary

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
0	Prior/Fixed Costs: Program	7/1/2025	7/1/2025	238.2	238.2
PRG-1a	Program Management Pre-ROD (F-F with ROD, ENV-5)	7/1/2025	4/8/2026	25.8	26.1
PRG-1b	Program Management Post-ROD (F-F with program completion, PRG-3)	4/8/2026	6/20/2045	430.5	597.7
PRG-2	Bridges, Approaches, and Transit Complete	5/25/2036	5/25/2036	0.0	0.0
PRG-3	IBR Program Complete	6/20/2045	6/20/2045	0.0	0.0
DES-1a	Plan Set for FEIS	7/1/2025	9/9/2025	0.0	0.0
DES-1a'	Plan Set for FEIS	9/9/2025	9/9/2025	0.0	0.0
DES-1a''	Plan Set for FEIS	9/9/2025	9/9/2025	0.0	0.0

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
DES-1b	30% Design	9/9/2025	12/2/2025	0.0	0.0
DES-2	30% Design for Transit	9/9/2025	12/2/2025	0.0	0.0
DES-2'	30% Design for Transit	12/2/2025	12/2/2025	0.0	0.0
DES-3	60% Design for Transit	4/28/2026	7/27/2027	0.0	0.0
DES-4	100% Design for Transit	7/27/2027	4/30/2028	0.0	0.0
ENV-1	Publish Draft SEIS	7/1/2025	7/1/2025	0.0	0.0
ENV-2	ESA Section 7 / BO	7/1/2025	7/1/2025	0.0	0.0
ENV-3	Section 106 Programmatic Agreement & Mitigation Plan	7/1/2025	10/30/2025	0.0	0.0
ENV-4a	Finalize FEIS	7/1/2025	3/12/2026	0.0	0.0
ENV-4b	Issue ROD	3/12/2026	4/8/2026	0.0	0.0
ENV-5	Publish ROD	4/8/2026	4/8/2026	0.0	0.0
ENV-5'	Publish ROD	4/8/2026	4/8/2026	0.0	0.0
ENV-5''	Publish ROD	4/8/2026	4/8/2026	0.0	0.0
ENV-5a	Post-ROD	4/8/2026	4/8/2026	0.0	0.0
ENV-7	USACE 401/404/408 Permits	7/1/2025	9/1/2026	0.0	0.0
ENV-9	Cultural Resources Agrmt/Survey: CRB	10/30/2025	10/9/2026	0.0	0.0
ENV-10	Cultural Resources Agrmt/Survey: Vancouver Approaches	12/2/2025	12/8/2027	0.0	0.0
ENV-11	Cultural Resources Agrmt/Survey: Hayden Island	12/2/2025	12/5/2027	0.0	0.0
EXT-1	USCG PNCD	7/1/2025	11/10/2025	0.0	0.0
ROW-1	Limited Access Waiver (WA) / Finalize Right of Way Plans	7/1/2025	2/12/2026	0.0	0.0
AGR-1	Bi-State (OR/WA) Intergovernmental Agreement (incl. governance)	7/1/2025	3/2/2026	0.0	0.0
AGR-2	TriMet Delivery Agreement Decision	7/1/2025	10/31/2025	0.0	0.0

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
AGR-3	Critical Transit Agreements for FFGA	7/1/2025	8/4/2026	0.0	0.0
AGR-4	WSDOT/TriMet Design/Construction IGA	7/1/2025	4/28/2026	0.0	0.0
FIN-1	CRB State/Federal Funding (incl. BIP)	7/1/2025	4/8/2026	0.0	0.0
FIN-2	CRB Funding Secured	4/8/2026	4/8/2026	0.0	0.0
FIN-3	Start Pre-Completion Tolling	4/19/2027	4/19/2027	0.0	0.0
FIN-3'	Start Pre-Completion Tolling	4/19/2027	4/19/2027	0.0	0.0
CIG-1	FTA CIG Process to 30%	7/1/2025	1/4/2027	0.0	0.0
CIG-2	FTA Approval for Entry into Engineering	1/4/2027	1/4/2027	0.0	0.0
CIG-2'	FTA Approval for Entry into Engineering	1/4/2027	1/4/2027	0.0	0.0
CIG-3	FTA Readiness Reviews for FFGA	1/4/2027	9/3/2028	0.0	0.0
CIG-4	FTA FFGA	9/3/2028	9/3/2028	0.0	0.0
CIG-5	FTA Prepare LONP for Bridge Construction	4/8/2026	1/4/2027	0.0	0.0
CIG-6	Issue LONP	1/4/2027	1/4/2027	0.0	0.0
CRB-1a	Columbia River Bridge Preliminary Design/RFQ	9/9/2025	1/26/2026	31.9	32.3
CRB-1b	Columbia River Bridge RFQ Response / Develop RFP	1/26/2026	5/18/2026	25.7	26.4
CRB-2	USCG Bridge Permit	11/10/2025	12/9/2026	0.0	0.0
CRB-3	Third-Party Agreements: CRB	7/1/2025	8/3/2026	0.0	0.0
CRB-4	Columbia River Bridge (CRB) RFP	5/18/2026	5/18/2026	0.0	0.0
CRB-5	CRB Proposals/Selection (PDB)	5/18/2026	1/1/2027	52.3	54.6
CRB-6a	CRB Critical Right of Way	7/1/2025	12/31/2027	26.9	27.5
CRB-6b	CRB Remaining Right of Way	12/31/2027	12/9/2028	10.1	11.2
CRB-7	Issue CRB NTP #1	1/1/2027	1/1/2027	0.0	0.0
CRB-8a	CRB 30%-60% Design	1/1/2027	1/1/2028	83.7	89.8

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
CRB-8b	Design / Negotiations for Early Work Packages	1/1/2027	1/1/2028	0.0	0.0
CRB-9	GMP Negotiations	1/1/2028	5/5/2028	28.7	31.4
CRB-10	Prep for Early Works	1/1/2028	3/13/2028	0.0	0.0
CRB-11	CRB NTP #2	5/5/2028	5/5/2028	0.0	0.0
CRB-12	Procure/Mob Foundations/Ground Improvement/Final Design	5/5/2028	2/2/2029	243.4	272.9
CRB-13	In-Water Early Works (Install Trestle/ Shaft Reaction Pile)	3/13/2028	12/12/2028	0.0	0.0
CRB-14	Columbia River Bridge In-Water Work	2/2/2029	12/29/2030	0.0	0.0
CRB-15	Columbia River Bridge Construction - Set Girders/Deck NB/SB	2/2/2029	7/11/2032	1,119.0	1,342.6
CRB-16	Complete CRB NB	7/1/2025	7/1/2025	0.0	0.0
CRB-17	CRB Closeout	7/11/2032	10/10/2032	81.1	103.2
CBA-1	CRB (Vancouver) Approaches Design/Agreements	9/9/2025	1/11/2027	40.3	41.6
CBA-2	CRB (Vancouver) Approaches RFQ	1/11/2027	1/11/2027	0.0	0.0
CBA-3a	Approaches Proposals/Selection (PDB)	1/11/2027	2/7/2028	32.3	34.7
CBA-3b	Approaches NTP #1	2/7/2028	2/7/2028	0.0	0.0
CBA-3c	Approaches 30%-60% Design / Permitting	2/7/2028	6/11/2029	40.4	45.2
CBA-3d	Approaches Final Design	6/11/2029	3/30/2030	24.1	27.9
CBA-3e	BNSF Agreements (C&M, ROE)	3/30/2030	8/9/2030	10.9	12.9
CBA-3f	Approaches GMP Negotiations	3/30/2030	3/30/2030	0.0	0.0
CBA-4	CRB (Vancouver) Approaches Right of Way (incl. BNSF)	4/8/2026	9/6/2030	50.4	55.8
CBA-5	CRB Approaches NTP for CN	10/10/2030	10/10/2030	0.0	0.0
CBA-6	CRB Approaches Stage 1 Vancouver SB	10/10/2030	10/11/2032	411.3	509.4

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
CBA-6'	CRB Approaches Stage 1 Vancouver SB Lag	6/3/2032	6/3/2032	0.0	0.0
CBA-7	CBRA Traffic Shift #1	10/11/2032	10/11/2032	0.0	0.0
CBA-7'	CBRA Traffic Shift #1	10/11/2032	10/11/2032	0.0	0.0
CBA-8	CRBA Vancouver Stages 2/3	10/11/2032	1/23/2036	673.6	907.3
CBA-8.1	CRBA Vancouver Stage 2 Lag (ties to Waterfront P&R)	7/7/2033	7/7/2033	0.0	0.0
CBA-8.1'	CRBA Vancouver Stage 2 Lag (ties to Waterfront P&R)	7/7/2033	7/7/2033	0.0	0.0
CBA-9	Hayden Island Stages 1-3 (incl. Traffic Switch 4)	10/11/2032	2/23/2034	0.0	0.0
CBA-10	Hayden Island Stage 4	2/23/2034	5/24/2034	0.0	0.0
CBA-10'	Hayden Island Stage 4	5/24/2034	5/24/2034	0.0	0.0
CBA-11	Vancouver Approaches Closeout	1/23/2036	4/14/2036	46.1	65.6
CBA-11'	Vancouver Approaches Closeout	4/14/2036	4/14/2036	0.0	0.0
CBA-12a	Prep for CRB Partial Demo	7/1/2025	7/1/2025	0.0	0.0
CBA-12b	CRB Partial Demo	7/1/2025	7/1/2025	0.0	0.0
SRA-1	SR 14 Package A Design to 100%/Permits/Agreements	9/9/2025	5/1/2028	10.1	10.6
SRA-2	SR 14 Package A Advance Utilities	5/1/2028	9/29/2028	1.6	1.7
SRA-3	SR 14 Right of Way (incl. BNSF)	4/8/2026	7/12/2028	23.3	24.5
SRA-4	SR 14 Package A Ad	7/12/2028	7/12/2028	0.0	0.0
SRA-5	SR 14 Bid (DBB)	7/12/2028	11/9/2028	1.3	1.4
SRA-6	SR 14 Package A NTP	11/9/2028	11/9/2028	0.0	0.0
SRA-7	SR 14 Package A Construction	11/9/2028	10/10/2030	72.0	83.6
SRA-8	SR 14 Package A Closeout	10/10/2030	1/14/2031	9.9	11.9
SRA-9	Evergreen Bridge Construction	11/9/2028	9/13/2029	0.0	0.0
HIA-0	Hayden Island Package A Design to 100%/Permits/Agrmts/Utilities	9/9/2025	4/18/2028	2.2	2.4
HIA-1	Hayden Island Package A Ad	3/6/2029	3/6/2029	0.0	0.0

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
HIA-2	Hayden Island Package A Bid/Award (DBB)	3/6/2029	7/8/2029	0.3	0.3
HIA-3	Hayden Island Right of Way	4/8/2026	12/7/2028	19.6	20.9
HIA-4	Hayden Island Package A NTP	7/8/2029	7/8/2029	0.0	0.0
HIA-5	Hayden Island Package A Construction	7/8/2029	7/8/2030	18.8	22.0
HIA-5'	Hayden Island Package A Construction Complete	7/8/2030	7/8/2030	0.0	0.0
-	-	-	-	-	-
HIG-1	Hayden Island Guideway RFQ Prep/CPARB	12/2/2025	5/3/2026	1.9	1.9
HIG-2	Hayden Island Guideway Transit RFQ	9/27/2026	9/27/2026	0.0	0.0
HIG-3	Hayden Island Guideway Transit Selection/Final Design	9/27/2026	11/30/2029	14.4	15.9
HIG-4	Hayden Island Guideway Transit Right of Way	4/8/2026	12/10/2028	34.2	36.3
HIG-5	Hayden Island Guideway Transit GMP/Award	11/30/2029	11/30/2029	0.0	0.0
HIG-6	Hayden Island Guideway Transit Construction	7/8/2030	7/10/2032	80.9	99.4
HIG-6'	Hayden Island Guideway Transit Construction Complete	7/10/2032	7/10/2032	0.0	0.0
-	-	-	-	-	-
CBR-1	CRB Bridge Removal Design/Permits/Utilities/Cultural Resources	9/9/2025	3/20/2029	22.5	24.1
CBR-2	CRB Bridge Removal Right of Way	1/3/2027	7/11/2029	1.4	1.5
CBR-3	CRB Bridge Removal Ad	7/11/2029	7/11/2029	0.0	0.0
CBR-4	CRB Bridge Removal Bid/Award (DBB)	7/11/2029	11/14/2029	2.2	2.5
CBR-5	CRB Bridge Removal NTP	2/23/2034	2/23/2034	0.0	0.0
CBR-6	Interstate Bridge Removal Construction	2/23/2034	5/25/2036	207.5	286.9
CBR-7	Interstate Bridge Removal Construction - In-Water work	9/19/2034	4/4/2036	0.0	0.0

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
CBR-8	Interstate Bridge Removal Construction Complete	5/25/2036	5/25/2036	0.0	0.0
-	-	-	-	-	-
LRT-0	Program-Wide Transit RFP Prep/CPARB	12/2/2025	5/2/2026	8.6	8.8
LRT-1	Program-Wide Transit RFQ	7/8/2026	7/8/2026	0.0	0.0
LRT-2	Program-Wide Transit Selection/ Permits/ Utilities/ Negotiations (CM/GC)	7/8/2026	3/24/2029	56.3	61.0
LRT-3	Program-Wide Transit GMP/Award (GC/CM)	1/5/2029	1/5/2029	0.0	0.0
LRT-4a	Right of Way for Transit (Track/Systems/Stations): Oregon	4/8/2026	6/9/2028	0.0	0.0
LRT-4b	Right of Way for Transit (Track/Systems/Stations): Washington	4/8/2026	6/9/2028	0.0	0.0
-	-	-	-	-	-
LRT-6	Plinths and Track Construction	6/16/2032	6/15/2033	53.0	68.1
LRT-7	Waterfront Station Construction	6/3/2032	10/2/2033	24.9	32.2
LRT-8	Evergreen Station Construction	10/11/2032	12/10/2033	24.9	32.4
LRT-8'	Evergreen Station Construction	12/10/2033	12/10/2033	0.0	0.0
LRT-9	Expo Station Construction	12/25/2031	10/24/2032	27.3	34.4
LRT-10	Hayden Island Station Construction	7/10/2032	7/10/2033	27.3	35.1
LRT-11	Systems Construction	12/13/2032	6/16/2034	80.1	105.3
LRT-12	Testing & Commissioning	6/16/2034	9/16/2035	66.5	91.3
LRT-13	Operator Training / Route Simulation	6/16/2035	1/1/2036	14.5	20.3
LRT-14	Transit Revenue Service Date	1/1/2036	1/1/2036	0.0	0.0
-	-	-	-	-	-
MDA-0	Marine Drive Package A RFQ Prep/CPARB	12/2/2025	5/3/2026	2.7	2.8
MDA-1	Marine Drive Package A RFQ	7/10/2026	7/10/2026	0.0	0.0
MDA-2	Marine Drive Package A Selection/Design (CM/GC)	7/10/2026	12/22/2029	22.5	24.7

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
MDA-3	Marine Drive Package A Right of Way	4/8/2026	6/16/2029	33.8	36.3
MDA-4	Marine Drive Package A GMP/Award	12/22/2029	12/22/2029	0.0	0.0
MDA-5	Marine Drive Package A Construction	12/22/2029	12/25/2031	113.5	136.9
-	-	-	-	-	-
LRF-0	LRF Overnight Facility RFQ Prep/CPARB	12/2/2025	5/3/2026	2.0	2.0
LRF-1	LRT Overnight Facility RFQ	5/3/2026	5/3/2026	0.0	0.0
LRF-2	LRT Overnight Facility Selection/Design (CM/GC)	5/3/2026	7/29/2028	10.5	11.2
LRF-3	LRT Overnight Facility GMP/Award	9/3/2028	9/3/2028	0.0	0.0
LRF-4	LRT Overnight Facility Construction	4/22/2030	10/24/2031	47.8	57.8
LRF-5	LRT Overnight Facility TriMet Move	10/24/2031	2/2/2033	16.1	20.3
LRF-6	LRT Overnight Facility Right of Way	7/1/2025	7/1/2025	0.0	0.0
-	-	-	-	-	-
PHT-1	North Portland Harbor Transit RFQ Prep/CPARB	12/2/2025	5/2/2026	1.1	1.1
PHT-2	North Portland Harbor Transit RFQ	5/2/2026	5/2/2026	0.0	0.0
PHT-3	North Portland Harbor Transit Right of Way	4/8/2026	8/13/2029	28.3	30.5
PHT-4a	USACE / USCG Permits for NPH Transit / Marine Drive	4/8/2026	6/22/2029	0.0	0.0
PHT-4b	North Portland Harbor Transit Permit (USACE)	3/6/2029	3/6/2029	0.0	0.0
PHT-4b'	North Portland Harbor Transit Permit (USACE)	3/6/2029	3/6/2029	0.0	0.0
PHT-5	North Portland Harbor Transit Selection/ Design/ Permitting/ Utilities, Cultural Resources	5/2/2026	12/15/2029	9.3	10.2

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
PHT-6	North Portland Harbor Transit GMP/Award	12/15/2029	12/15/2029	0.0	0.0
PHT-7	North Portland Harbor Transit Construction	12/15/2029	3/16/2032	48.1	58.2
PHT-8	North Portland Harbor Transit Construction - In-Water Work	12/15/2029	4/12/2031	0.0	0.0
PHT-9	North Portland Harbor Transit Construction Closeout	3/16/2032	6/16/2032	5.4	6.8
-	-	-	-	-	-
WAF-1	WA Station Finishes Design/Utilities	12/2/2025	3/18/2029	0.0	0.0
WAF-2	WA Station Finishes Ad	7/12/2029	7/12/2029	0.0	0.0
WAF-3	WA Station Finishes Bid (DBB)	7/12/2029	11/11/2029	0.0	0.0
WAF-4	WA Station Finishes NTP	11/11/2029	11/11/2029	0.0	0.0
WAF-5	WA Station Finishes Construction	12/10/2033	12/13/2034	0.2	0.2
-	-	-	-	-	-
ORF-1	OR Station Finishes Design/Utilities	12/2/2025	3/21/2029	0.1	0.1
ORF-2	OR Station Finishes Ad	7/12/2029	7/12/2029	0.0	0.0
ORF-3	OR Station Bid (DBB)	7/12/2029	11/11/2029	0.0	0.0
ORF-4	OR Station Finishes NTP	11/11/2029	11/11/2029	0.0	0.0
ORF-5	OR Station Finishes Construction	7/10/2033	9/12/2034	0.1	0.2
-	-	-	-	-	-
RJT-1	Ruby Junction TriMet Facility RFQ Prep	12/2/2025	5/4/2026	6.4	6.6
RJT-2	Ruby Junction TriMet Facility RFQ	5/4/2026	5/4/2026	0.0	0.0
RJT-3	Ruby Junction TriMet Facility Selection/Final Design (GC/CM)	5/4/2026	4/11/2029	44.9	48.6
RJT-4	Ruby Junction Right of Way	4/8/2026	12/5/2028	15.4	16.4
RJT-5	Ruby Junction GMP/Award	4/11/2029	4/11/2029	0.0	0.0
RJT-6	Ruby Junction Construction / TriMet Move	4/11/2029	11/9/2031	260.1	309.5
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Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
CBF-1	65th St. CTRAN O&M Bus Facility Design	12/2/2025	4/8/2028	2.2	2.3
CBF-2	65th St. CTRAN O&M Bus Facility Right of Way	7/1/2025	7/1/2025	0.0	0.0
CBF-3	65th St. CTRAN O&M Bus Facility Ad	7/10/2029	7/10/2029	0.0	0.0
CBF-4	65th St. CTRAN O&M Bus Facility Bid (DBB)	7/10/2029	11/11/2029	0.3	0.4
CBF-5	65th St. CTRAN O&M Bus Facility NTP	11/11/2029	11/11/2029	0.0	0.0
CBF-6	65th St. CTRAN O&M Bus Facility Construction	11/11/2029	7/8/2031	10.1	12.1
-	-	-	-	-	-
LRV-1	Develop LRV Specifications	9/9/2025	4/9/2027	5.3	5.5
LRV-2	Light Rail Vehicles RFP	11/1/2027	11/1/2027	0.0	0.0
LRV-3	Light Rail Vehicles Procurement	11/1/2027	3/8/2029	4.5	5.0
LRV-4	Light Rail Vehicles NTP	3/8/2029	3/8/2029	0.0	0.0
LRV-5	Light Rail Vehicles Manufacture, Deliver Group One	3/8/2029	6/1/2032	104.7	125.7
LRV-6	Light Rail Vehicles Test, Commission Group One	6/1/2032	2/2/2033	21.8	27.9
LRV-7	Light Rail Vehicles Deliver/Commission Remaining 17 Vehicles	2/2/2033	10/30/2033	23.9	31.3
-	-	-	-	-	-
CBP-1	Bus Procurement Design	12/2/2025	11/3/2027	0.7	0.8
CBP-2	Bus Procurement Ad	11/3/2027	11/3/2027	0.0	0.0
CBP-3	Bus Procurement Bid (DBB)	11/3/2027	3/6/2028	0.1	0.1
CBP-4	Bus Procurement NTP	3/6/2028	3/6/2028	0.0	0.0
CBP-5	Bus Procurement Fabrication/Delivery/Testing	3/6/2028	7/9/2031	9.8	11.4
-	-	-	-	-	-
CBS-1	Bus Shelters Design / Utilities	12/2/2025	3/20/2029	0.3	0.4
CBS-2	Bus Shelters Ad	7/12/2029	7/12/2029	0.0	0.0
CBS-3	Bus Shelters Bid (DBB)	7/12/2029	11/11/2029	0.0	0.0
CBS-4	Bus Shelters NTP	11/11/2029	11/11/2029	0.0	0.0

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
CBS-5	Bus Shelters Construction	11/11/2029	11/11/2030	1.0	1.2
CBS-6	Bus Shelters Right of Way	7/1/2025	7/1/2025	0.0	0.0
-	-	-	-	-	-
MDI-1	Marine Drive Interchange Design / RFQ Prep	4/24/2035	11/2/2038	48.9	70.4
MDI-2	Marine Drive Interchange RFQ	11/2/2038	11/2/2038	0.0	0.0
MDI-3	Marine Drive Interchange Selection (CM/GC) / Final Design	11/2/2038	6/13/2040	22.4	34.8
MDI-4	Marine Drive Interchange Right of Way	4/25/2036	11/1/2038	11.0	19.2
MDI-5	Marine Drive Interchange GMP/Award	6/13/2040	6/13/2040	0.0	0.0
MDI-6	Marine Drive Interchange Construction	3/18/2042	3/19/2045	289.8	521.8
-	-	-	-	-	-
NER-1	N. Expo Road Design	9/7/2038	4/19/2042	3.1	4.9
NER-2	N. Expo Road Right of Way	4/18/2040	4/19/2042	0.1	0.3
NER-3	N. Expo Road Ad	4/19/2042	4/19/2042	0.0	0.0
NER-4	N. Expo Road Bid (DBB)	4/19/2042	8/22/2042	0.3	0.5
NER-5	N. Expo Road NTP	8/22/2042	8/22/2042	0.0	0.0
NER-6	N. Expo Road Construction	8/20/2043	6/20/2045	16.6	30.7
-	-	-	-	-	-
OSB-1	Oregon I-5 SB RFQ Prep	12/1/2029	6/4/2030	11.0	12.9
OSB-2	Oregon I-5 SB RFQ	6/4/2030	6/4/2030	0.0	0.0
OSB-3	Oregon I-5 SB Selection/Final Design (CM/GC) - incl. permitting, env.	6/4/2030	9/13/2033	71.0	88.0
OSB-4	Oregon I-5 SB Right of Way	6/11/2031	6/11/2033	0.0	0.0
OSB-6	Oregon I-5 SB GMP/Award	9/13/2033	9/13/2033	0.0	0.0
OSB-7	Oregon I-5 SB Construction	5/24/2034	12/16/2037	399.3	568.3
OSB-8	Oregon I-5 SB Construction - In-Water Work	9/19/2034	4/15/2037	0.0	0.0
OSB-9	Oregon I-5 SB Closeout	12/16/2037	3/19/2038	31.3	47.3
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Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
PHD-1	N. Portland Harbor Bridge Demo Design / Utilities / Cultural Resources	10/6/2032	5/17/2036	5.8	7.8
PHD-2	N. Portland Harbor Bridge Demo Ad	5/17/2036	5/17/2036	0.0	0.0
PHD-3	N. Portland Harbor Bridge Demo Bid (DBB)	5/17/2036	9/17/2036	0.5	0.8
PHD-4	N. Portland Harbor Bridge Demo NTP	9/17/2036	9/17/2036	0.0	0.0
PHD-5	N. Portland Harbor Bridge Demolition	12/16/2037	12/19/2039	28.9	44.9
PHD-6	N. Portland Harbor Bridge Demo Right of Way	7/1/2025	7/1/2025	0.0	0.0
-	-	-	-	-	-
ONB-1	Oregon I-5 NB RFQ Prep	10/31/2035	4/1/2036	12.4	17.3
ONB-2	Oregon I-5 NB RFQ	4/1/2036	4/1/2036	0.0	0.0
ONB-3	Oregon I-5 NB Selection (CM/GC) / Final Design - incl. Permitting, Utilities, Cultural Resources	4/1/2036	8/10/2038	69.7	101.5
ONB-4	Oregon I-5 NB Right of Way	5/8/2036	5/9/2038	16.2	28.2
ONB-6	Oregon I-5 NB GMP/Award	8/10/2038	8/10/2038	0.0	0.0
ONB-7	Oregon I-5 NB Construction	12/19/2039	6/22/2043	429.9	727.1
-	-	-	-	-	-
HIS-1	Hayden Island Surface Street Design to 100%	7/6/2037	2/17/2041	12.9	19.8
HIS-2	Hayden Island Surface Street Right of Way	2/15/2039	2/16/2041	7.1	14.1
HIS-3	Hayden Island Surface Street Ad	2/17/2041	2/17/2041	0.0	0.0
HIS-4	Hayden Island Surface Street Bid (DBB)	2/17/2041	12/18/2041	3.0	4.9
HIS-5	Hayden Island Surface Street NTP	12/18/2041	12/18/2041	0.0	0.0
HIS-6	Hayden Island Surface Street Construction	12/18/2042	6/20/2045	66.6	121.7
-	-	-	-	-	-

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
EPR-1	Evergreen P&R Agreements/Utilities/Cultural Resources	4/1/2029	4/4/2031	7.6	8.9
EPR-2	Evergreen P&R Right of Way	4/1/2029	4/2/2031	7.9	9.7
EPR-3	Evergreen P&R RFP	4/4/2031	4/4/2031	0.0	0.0
EPR-4	Evergreen P&R Procurement (DB)	4/4/2031	11/6/2031	2.2	2.7
EPR-5	Evergreen P&R NTP	11/6/2031	11/6/2031	0.0	0.0
EPR-6	Evergreen P&R Final Design/ Permits	11/6/2031	8/5/2032	2.8	3.5
EPR-7	Evergreen P&R Construction	12/10/2033	2/13/2035	57.9	78.2
-	-	-	-	-	-
WPR-1	Waterfront P&R Agreements/Utilities/Cultural Resources	1/1/2029	1/4/2031	5.8	6.8
WPR-2	Waterfront P&R Right of Way	1/1/2029	1/2/2031	2.4	2.9
WPR-3	Waterfront P&R RFP	1/4/2031	1/4/2031	0.0	0.0
WPR-4	Waterfront P&R Procurement (DB)	1/4/2031	8/8/2031	1.7	2.1
WPR-5	Waterfront P&R NTP	8/8/2031	8/8/2031	0.0	0.0
WPR-6	Waterfront P&R Final Design/ Permits	8/8/2031	5/7/2032	2.2	2.7
WPR-7	Waterfront P&R Construction	7/7/2033	11/9/2034	57.6	76.9
-	-	-	-	-	-
MPL-1	Mill Plain Agreements/Utilities/Arch.	6/6/2029	6/6/2033	27.2	33.2
MPL-2	Mill Plain Right of Way	12/10/2031	12/11/2033	2.0	2.9
MPL-3	Mill Plain RFP	12/11/2033	12/11/2033	0.0	0.0
MPL-4	Mill Plain Procurement (DB)	12/11/2033	7/13/2034	4.0	5.3
MPL-5	Mill Plain NTP	7/13/2034	7/13/2034	0.0	0.0
MPL-6	Mill Plain Final Design/ Permits	7/13/2034	4/16/2035	5.2	7.0
MPL-7	Mill Plain Construction	4/14/2036	2/13/2040	174.3	264.1
-	-	-	-	-	-
WAN-1	Washington North Agreements/Utilities/CR	6/4/2031	12/11/2033	20.3	25.7
WAN-2	Washington North Right of Way	12/11/2031	12/10/2033	14.5	20.5

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
WAN-3	Washington North RFP	12/11/2033	12/11/2033	0.0	0.0
WAN-4	Washington North Procurement (DB)	12/11/2033	7/13/2034	4.7	6.2
WAN-5	Washington North NTP	7/13/2034	7/13/2034	0.0	0.0
WAN-6	Washington North Final Design/ Permits	7/13/2034	4/15/2035	6.1	8.2
WAN-7	Washington North Construction	2/13/2037	12/15/2040	170.6	265.4
-	-	-	-	-	-
PCT-1	Preconstruction Tolling Design/Utilities	7/1/2025	3/9/2026	7.1	7.2
PCT-2	Preconstruction Tolling Ad	3/9/2026	3/9/2026	0.0	0.0
PCT-3	Preconstruction Tolling Bid (DBB)	3/9/2026	6/25/2026	3.0	3.1
PCT-4	Preconstruction Tolling NTP	6/25/2026	6/25/2026	0.0	0.0
PCT-5	Preconstruction Tolling Construction / Toll Integration	6/25/2026	4/19/2027	36.2	38.4
-	-	-	-	-	-
WHM-1	West Hayden Island Mitigation Design/Utilities	8/1/2027	2/29/2028	0.0	0.0
WHM-2	West Hayden Island Mitigation Ad	2/29/2028	2/29/2028	0.0	0.0
WHM-3	West Hayden Island Mitigation Bid (DBB)	2/29/2028	7/1/2028	0.0	0.0
WHM-4	West Hayden Island Mitigation NTP	7/1/2028	7/1/2028	0.0	0.0
WHM-5	West Hayden Island Mitigation Construction	7/1/2028	10/1/2028	0.0	0.0
WHM-5'	West Hayden Island Mitigation Construction Complete	10/1/2028	10/1/2028	0.0	0.0
WHM-5''	West Hayden Island Mitigation Construction Complete	10/1/2028	10/1/2028	0.0	0.0
WHM-6	West Hayden Island Mitigation Right of Way	4/8/2026	2/28/2028	2.4	2.5
-	-	-	-	-	-
CRB-18	Mitigation	3/13/2028	3/14/2029	141.1	141.1
-	-	-	-	-	-

Activity ID	Activity Name	Base Start Date	Base Completion Date	Base Cost (July 2025, millions of dollars)	Base Cost (millions of YOE dollars)
CIG-4'	FTA FFGA	9/3/2028	9/3/2028	0.0	0.0
-	**Total**	-	-	**7,811.9**	**10,207.4**

Appendix E – Risk Register

The full Program 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 Program 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 months OR the 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 for 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.

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)						
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
1	Civil / Drainage	Stormwater Facilities	Threat	$5 M	$10 M	$15 M				10%	Minor	All construction activities	Both Fixed & Movable
3	Civil / Drainage	Lack Of Downstream Conveyance Capacity	Threat	$0.5 M	$1 M	$3 M				20%	Minor		Both Fixed & Movable
4	Construction	Damage to Adjacent Structures (Other)	Threat	$1 M	$5 M	$10 M				15%	Minor		Both Fixed & Movable
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		Both Fixed & Movable
8	Construction	Complex Bridge Approach MOT & Staging	Threat	$5 M	$10 M	$20 M				25%	Modeled	CBA-6 - Approaches Stage 1 (Assign)	Both Fixed & Movable
9	Construction	Arterial Bridge Sequencing	Threat	$10 M	$20 M	$30 M				20%	Modeled	ONB-7 - Oregon NB Construction	Both Fixed & Movable
10	Construction	River Conditions Impact In-Water Construction	Threat	$0 M	$1 M	$5 M	0.5	1.0	3.0	15%	Minor		Both Fixed & Movable
13	Construction	Approach MOT Scope	Threat	$0 M	$3 M	$6 M				20%	Minor		Both Fixed & Movable
14	Construction	Staging and Phasing Among Contracts: NPH Bridges and Connections	Threat	$5 M	$8 M	$10 M	1.0	2.0	3.0	50%	Modeled	PHD-5 - NPH Bridge Demo	Both Fixed & Movable
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	Both Fixed & Movable
16	Construction	Material Procurement Delays: Transit	Threat				3.0	4.0	6.0	20%	Modeled	LRT-6, 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 (Major transit construction activities)	Both Fixed & Movable
19	Construction	Construction Noise and Vibration	Threat								Minor		Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis – Post-Managed State							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)						
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
21	Construction	Construction Staging	Opportunity	-$22 M	-$5 M	$0 M				25%	Minor		Both Fixed & Movable
25	Construction	Civil and Systems Contractor Interface / Coordination	Threat	$4 M	$6 M	$12 M	1.0	2.0	3.0	50%	Elsewhere		Both Fixed & Movable
26	Contract Procurement	CRB: Failure to reach GMP results in Re-Procurement	Threat	$2 M	$4 M	$8 M	12.0	15.0	18.0	1%	Minor		Both Fixed & Movable
27	Contract Procurement	Limited Bid Responses Results in Re-Procurement: Other Contracts	Threat	$2 M	$4 M	$8 M	12.0	15.0	18.0	10%	Modeled	EPR-4, WPR-4, MPL-4, WAN-4 (DB Procurement activities)	Both Fixed & Movable
28	Contract Procurement	Bid Protest	Threat				0.5	1.0	2.0	50%	Minor		Both Fixed & Movable
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		Both Fixed & Movable
38	Environmental	Environmental Regulations Change	Threat				0.0	3.0	6.0	10%	Minor		Both Fixed & Movable
39	Environmental	Section 106 - Analysis and Programmatic Agreement	Threat	$0 M	$0 M	$1 M	1.0	2.0	4.0	20%	Elsewhere	ENV-3	Both Fixed & Movable
40	Environmental	Inadvertent Discoveries	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	Both Fixed & Movable
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		Both Fixed & Movable
44	Environmental	Final Supplemental EIS (FSEIS)	Threat				1.0	3.0	6.0	30%	Modeled	ENV-4a Finalize EIS	Both Fixed & Movable
45	Environmental	Public Comments on Draft Supplemental EIS (DSEIS)	Threat				1.0	2.0	3.0	10%	Minor		Both Fixed & Movable
46	Environmental	External Agency NEPA Reviews	Threat				1.0	3.0	6.0	30%	Modeled	Split between ENV-4a (finalize FSEIS) and ENV-4b (Issue ROD)	Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)			Likelihood			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
47	Environmental	FHWA and FTA NEPA Review/Participation	Threat				3.0	6.0	9.0	50%	Elsewhere	covered by #46	Both Fixed & Movable
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)	Both Fixed & Movable
51	Environmental	USACE Permitting Delays (Nav Channel)	Threat				1.0	3.0	6.0	10%	Minor		Both Fixed & Movable
52	Environmental	USACE Permitting Delays (Levee)	Threat				3.0	6.0	9.0	15%	Modeled	PHT-4a - North Portland Harbor Transit Permits MDA-2 - Marine Drive Design/ Permitting	Both Fixed & Movable
53	Environmental	USCG Bridge Permit Delay	Threat				1.0	2.0	3.0	25%	Modeled	CRB-8a (CRB 60% design) PHT-4a (NPH Bridge Permit)	Fixed Span
54	Environmental	State Agency Land Use Permit Delays	Threat				3.0	4.5	6.0	10%	Minor		Both Fixed & Movable
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	Both Fixed & Movable
58	Environmental	FEMA Flood Map Revisions	Threat				9.0	12.0	18.0	Fixed Span: 10% Movable Span: 15%	Modeled	CRB-8a - 30%-60% design, CBR-8b - Prep for early works (apply to both)	Both Fixed & Movable
60	Environmental	Hazardous Materials - Liability Associated with Property Acquisition	Threat	$3 M	$5 M	$10 M				50%	Minor		Both Fixed & Movable
63	Environmental	Additional Measures to Achieve Climate Conditions	Threat	$5 M	$15 M	$25 M				35%	Elsewhere		Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)			Likelihood			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
65	Civil / Drainage	Relocation of 60" Culvert Beneath I-5	Threat								In the Base		Both Fixed & Movable
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%	Both Fixed & Movable
68	Finance	Transit O&M Funding: Fixed Span	Threat				3.0	6.0	12.0	40%	Modeled	AGR-3 - Other Critical Transit Agreements	Fixed Span
77	Geotechnical	Bridge Foundation Changes - Design	Threat								Minor		Fixed Span
78	Geotechnical	Bridge Foundation Changes - Construction	Threat	$1 M	$10 M	$25 M	2.0	3.0	6.0	20%	Modeled	CRB-15 - Columbia River Bridge Construction - Set Girders/Deck NB/SB	Both Fixed & Movable
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	Both Fixed & Movable
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	Both Fixed & Movable
84	Geotechnical	Damage/ Settlement of Post Hospital	Threat	$1 M	$2 M	$3 M	0.0	1.0	3.0	10%	Minor		Both Fixed & Movable
86	Roadway Design	Partner Agency Design Review Processes - 30% Design Package	Threat				0.0	1.0	2.0	20%	Minor		Both Fixed & Movable
87	Roadway Design	Partner Agency Design Review Processes - Subsequent Packages, 60%, 90%	Threat				1.0	2.0	3.0	20%	Modeled	CBA-3c, SRA-1, HIA-0, LRT-2, PHT-5, HIG-3, MDA-2, LRF-2	Both Fixed & Movable
88	Interagency Coord.	Partner Agency Agreement Delays: Roadway	Threat				1.0	3.5	6.0	20%	Modeled	CRB-3, CBA-1, SRA-1, HIA-0 (Design/ Agreements activities for each package)	Both Fixed & Movable
89	Interagency Coord.	Aesthetics Support with Partner Agencies	Threat				1.0	3.0	6.0	15%	Elsewhere		Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)						
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
90	Interagency Coord.	Local Parking	Threat	$5 M	$10 M	$20 M				25%	Elsewhere		Both Fixed & Movable
91	Interagency Coord.	Loss of Alignment with Partner Agencies	Threat				1.0	4.0	9.0	30%	Elsewhere		Fixed Span
93	Interagency Coord.	Partner Requests - Data/Analysis	Threat				1.0	1.5	2.0	10%	Minor		Both Fixed & Movable
99	Right-of-Way	Additional Cost Associated with Expo Center Construction Impacts	Threat								Elsewhere		Both Fixed & Movable
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	Both Fixed & Movable
102	Construction	Conflicts Among IBR Contracts (SR-14 Package A and Approaches)	Threat				1.0	3.0	6.0	50%	Modeled	SRA-7 -SR-14 construction	Both Fixed & Movable
104	Market Conditions	Uncertainty in Construction Cost Inflation Rate	Threat	$0 M	$0 M	$500 M				50%	Modeled	All construction activities	Both Fixed & Movable
105	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (River Bridge Contract, Fixed Span Option)	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)	Fixed Span
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	Both Fixed & Movable
107	Market Conditions	Skilled Labor Availability	Threat	$0 M	$10 M	$19 M				20%	Minor		Both Fixed & Movable
108	Market Conditions	DBE/FSBE Requirements	Threat	$0 M	$1 M	$10 M				50%	Minor		Both Fixed & Movable
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	Both Fixed & Movable
117	Program Management	Contract Administration / change management Issues	Threat				1.0	3.0	6.0	50%	Modeled	CBR-15, CBA-6, LRT-6 (River Bridge, Approaches, Transit construction)	Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)			Likelihood			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
118	Program Management	Program Coordination Issues	Threat	$0.5 M	$2 M	$10 M	3.0	6.0	12.0	40%	Modeled	CRB-1b - Develop CRB RFP, CBA-1 - CBA Design/RFQ, DES-3 - 60% design for transit	Both Fixed & Movable
121	Public Affairs	Turnover of Current Local Elected	Threat				1.0	3.0	6.0	10%	Elsewhere		Both Fixed & Movable
122	Contract Procurement	Completion of Project Labor Agreements	Threat				1.0	3.0	12.0	25%	Modeled	CRB-5 - CRB PDB Proposals/ Selection CBA-3a - Approaches PDB Proposals/ Selection	Both Fixed & Movable
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: 12.5%), LRT-8 (Evergreen Station: 12.5%), LRT-10 (Hayden Island Station: 12.5%), LRT-9 (Expo Station: 12.5%)	Both Fixed & Movable
124	Public Affairs	Tolling Policies	Threat				1.0	3.0	6.0	5%	Minor		Both Fixed & Movable
127	Public Involvement	Additional Community Engagement	Threat				1.0	2.0	3.0	20%	Minor		Both Fixed & Movable
129	Railroad	BNSF Agreement Delays	Threat				1.0	3.0	12.0	15%	Modeled	CBA-3e - BNSF Agreements	Both Fixed & Movable
130	Railroad	Railroad Agreement Term Sheets Delays	Threat				1.0	3.0	6.0	25%	Modeled	CIG-1 - FTA CIG Process to 30%	Both Fixed & Movable
131	Railroad	BNSF Coordination Issues during Construction	Threat				0.0	3.0	6.0	20%	Modeled	SRA-7, CBA-6, LRT-6, PCT-5	Both Fixed & Movable
135	Right-of-Way	ROW Cost Increases	Threat	$10 M	$20 M	$30 M				50%	Modeled	All ROW activities	Both Fixed & Movable
136	Right-of-Way	Need for Additional ROW Acquisition Identified (Other)	Threat	$10 M	$30 M	$50 M				50%	Modeled	All ROW activities	Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)						
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
138	Right-of-Way	Additional Condemnation - Washington	Threat				6.0	12.0	18.0	5%	Modeled	CRB-6a, CRB-6b, SRA-3, CBA-4 - WA key ROW activities	Both Fixed & Movable
139	Right-of-Way	Lack of Appraisers	Threat				1.0	1.5	2.0	25%	Minor		Both Fixed & Movable
140	Right-of-Way	Relocation Delays - Oregon	Threat				1.0	2.0	3.0	10%	Minor		Both Fixed & Movable
141	Right-of-Way	Relocation Delays - Washington	Threat				1.0	2.0	6.0	10%	Minor		Both Fixed & Movable
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	Both Fixed & Movable
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-3 - Portland Harbor Transit ROW, HIG-4 - Hayden Island Guideway ROW	Both Fixed & Movable
146	Railroad	BNSF Property Rights Resolution	Threat				0.0	6.0	12.0	10%	Modeled	CBA-4 - CBA ROW	Both Fixed & Movable
151	Right-of-Way	Uncertainty in ROW Cost Inflation Rate	Threat	$0 M	$0 M	$25 M				50%	Modeled	All ROW activities	Both Fixed & Movable
160	Roadway Design	Additional Full Depth Reconstruction	Threat	$5 M	$10 M	$20 M				15%	Modeled	MPL-7, WAN-7, OSB-7, ONB-7	Both Fixed & Movable
161	Roadway Design	Local Street Scope, Vancouver	Threat	$0.5 M	$2 M	$5 M				15%	Minor		Both Fixed & Movable
165	Roadway Design	Change to Design/Configuration of Hayden Island Interchange	Threat				6.0	12.0	18.0	10%	Modeled	OSB-3 - Oregon SB Design, OSB-7 - Oregon SB Construction	Both Fixed & Movable
166	Roadway Design	Alt. Interchange at Marine Drive	Opportunity	-$30 M	-$20 M	-$10 M				50%	Modeled	MDA-5 - Marine Drive Pkg A CN	Both Fixed & Movable
169	Roadway Design	USACE Levee Project Coordination	Threat				1.0	2.0	3.0	10%	Minor		Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
170	Roadway Design	Shared-Use Bike/Ped Path Design (OR)	Threat	$1 M	$20 M	$40 M				10%	Minor		Both Fixed & Movable
171	Roadway Design	Local Street Scope - Portland	Threat	$20 M	$30 M	$40 M				5%	Modeled	MDI-6 - Marine Drive Interchange Construction	Both Fixed & Movable
173	Roadway Design	Contractor Innovation: River Bridge PDB Package	Opportunity	-$30 M	-$20 M	-$10 M	-6.0	-3.0	-1.0	35%	Modeled	CRB-15 - Columbia River Bridge Construction - Set Girders/Deck NB/SB	Fixed Span
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	Both Fixed & Movable
175	Roadway Design	Opposition for Single Aux Lane	Threat	$80 M	$94 M	$110 M	3.0	6.0	12.0	10%	Minor		Both Fixed & Movable
176	Structures	Navigational Clearance - Construction Impacts	Threat	$100 M	$200 M	$300 M	0.0	6.0	12.0	50%	In the Base		Movable Span
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	Both Fixed & Movable
179	Structures	Structure Aesthetic Changes - NPH Bridges	Threat	$25 M	$50 M	$100 M				15%	Modeled	PHT-7 - North Portland Harbor Transit Construction	Both Fixed & Movable
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	Both Fixed & Movable
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	Both Fixed & Movable
189	Traffic	Additional ATMS Infrastructure	Threat	$0 M	$2 M	$4 M				30%	Minor		Both Fixed & Movable
190	Traffic	Approval of ARR / Intersection Control Decisions	Threat								Elsewhere		Both Fixed & Movable
192	Transit	Expo Center Station Modifications	Opportunity	-$30 M	-$20 M	-$5 M				25%	Excluded	LRT-9 - Expo Center Station Construction	Both Fixed & Movable
194	Transit	Hayden Island Station/NPH Design Changes	Opportunity	-$15 M	-$10 M	-$5 M				50%	Modeled	LRT-10 - Hayden Island Station Construction	Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
195	Transit	Eliminate/Reduce Separate LRT Overnight Facility at Expo Center	Opportunity	-$64 M	-$15 M	$0 M				50%	Excluded	LRF-4 - LRT Overnight Facility Construction	Both Fixed & Movable
202	Transit	Evergreen Park-and-Ride Design/Scope Changes	Opportunity	-$58 M	-$29 M	$0 M				25%	Excluded	EPR-7 - Evergreen Park & Ride Construction	Both Fixed & Movable
203	Transit	Waterfront Park-and-Ride Design/Scope Changes	Opportunity	-$57 M	-$28 M	$0 M				25%	Excluded	WPR-7 - Waterfront Park & Ride Construction	Both Fixed & Movable
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, HIG-6 (Guideway construction activities) DES-3, CRB-8a (Transit 60% design, CRB 60% design)	Both Fixed & Movable
210	Transit	Existing Yellow Line Intersection Improvements	Threat	$5 M	$10 M	$15 M				10%	Minor		Both Fixed & Movable
214	Transit	C-TRAN Express Bus Vehicle Procurement	Opportunity	-$12 M	-$10 M	-$8.0 M				60%	Excluded	CBP-5 - Bus Procurement	Both Fixed & Movable
215	Transit	Transit LRT O&M Agreement	Threat				3.0	6.0	9.0	20%	Modeled	AGR-3 - Other Critical Transit Agreements	Both Fixed & Movable
216	Transit	Delay to FTA Letter of No Prejudice (LONP)	Threat				3.0	6.0	12.0	25%	Modeled	CIG-6 - Issue LONP	Both Fixed & Movable
217	Transit	Additional Elements Required to Facilitate Future Transit O&M	Threat								Elsewhere		Both Fixed & Movable
218	Transit	Systems Testing or Start-Up Delays: Fixed Span	Threat				3.0	6.0	9.0	40%	Modeled	LRT-12 - LRT Testing & Commissioning	Fixed Span
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)	Both Fixed & Movable

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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
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	Both Fixed & Movable
223	Utilities Relocation	Scope of Utilities Required is Greater than Anticipated	Threat	$5 M	$8 M	$10 M	3.0	4.5	6.0	75%	Minor		Both Fixed & Movable
224	Utilities Relocation	Utility Service Connection Uncertainty	Opportunity								Minor		Both Fixed & Movable
225	Utilities Relocation	Delayed Completion of Utility Agreements and Permits	Threat				0.0	3.0	6.0	5%	Elsewhere		Both Fixed & Movable
226	Utilities Relocation	Utilities Take Longer Than Anticipated to Implement Relocation Plan (CRB)	Threat				2.0	4.0	6.0	30%	Minor		Both Fixed & Movable
227	Utilities Relocation	Utility Relocation Delays (Program-Wide)	Threat				1.0	3.0	6.0	20%	Modeled	HIA-0, CBA-3d, SRA-2, PHT-5, HIG-3, MDA-2 (advance utility or final design activities)	Both Fixed & Movable
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 (construction activities)	Both Fixed & Movable
241	Other	Indirect Cost of Project Delays (Owner, PM)	Threat								Modeled		Both Fixed & Movable
243	Other	Aggregate minor risks / opportunities	Threat	$0 M	$63 M	$126 M				99%	Modeled	All	Both Fixed & Movable
244	Other	Unidentified risks / opportunities	Threat	$0 M	$63 M	$126 M	0.0	3.0	6.0	50%	Modeled	All	Both Fixed & Movable
249	Construction	Work Package Interface	Threat							75%	Elsewhere		Both Fixed & Movable
251	Environmental	NEPA Delays - Movable Bridge	Threat				1.0	3.0	4.0	10%	Minor		Movable Span

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252	Environmental	Section 4(f) - All Parks (Except Delta Park)	Threat				1.0	2.0	6.0	5%	Minor		Both Fixed & Movable
253	Structures	Design Delays - Movable Bridge	Threat	$1 M	$2 M	$3 M	0.0	2.0	4.0	25%	Elsewhere		Movable Span
255	Construction	FAA Notification (Moveable Bridge)	Threat							15%	Elsewhere		Movable Span
257	Finance	Delay to OR/WA Tolling Finance (Flow of Funds) Agreement	Threat				3.0	6.0	12.0	5%	Excluded		Both Fixed & Movable
261	Construction	Contract Interfaces	Threat				3.0	6.0	12.0	50%	Elsewhere		Both Fixed & Movable
262	Finance	State Funding Timing	Threat				3.0	12.0	24.0	40%	Excluded		Both Fixed & Movable
264	Transit	Ruby Junction Expansion	Threat				1.0	3.0	6.0	10%	Modeled	RJT-6 - Ruby Junction Facility Construction	Both Fixed & Movable
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-6 - Plinths and Track Construction	Both Fixed & Movable
267	Tribal Coord.	Tribal Workforce Engagement & Employment Rights	Threat				1.0	2.0	3.0	25%	Modeled	CRB-1b - Develop CRB RFP	Both Fixed & Movable
271	Construction	River User MOT During CRB Construction	Threat	$0 M	$1.5 M	$3 M	0.0	1.0	2.0	10%	Minor		Both Fixed & Movable
272	Environmental	Federal Lands to Parks	Threat				1.0	3.0	6.0	5%	Minor		Both Fixed & Movable
273	Right-of-Way	Trestle Connection to Hayden Island	Threat	$5 M	$10 M	$20 M				5%	Minor		Both Fixed & Movable
274	Finance	IBR Program Seeks Federal Funding - CIG	Threat				12.0	24.0	48.0	30%	Excluded		Both Fixed & Movable
275	Contract Procurement	Approaches: Failure to Reach GMP Results in Re-Procurement	Threat	$2 M	$4 M	$8 M	12.0	15.0	18.0	5%	Modeled	CBA-3f - Approaches GMP Negotiations	Both Fixed & Movable

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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
276	Utilities Relocation	Design Changes impact utility relocations	Threat				0.0	3.0	18.0	20%	Elsewhere		Both Fixed & Movable
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	Both Fixed & Movable
280	Utilities Relocation	Utilities Relocation Delays - Double Moves	Threat				2.0	4.0	6.0	40%	Minor		Both Fixed & Movable
285	Environmental	Unanticipated Mitigations Needed	Threat	$1 M	$2 M	$3 M				75%	Minor		Both Fixed & Movable
288	Right-of-Way	Relocation Delays - (Hayden Island)	Threat				1.0	2.0	6.0	10%	Minor	HIA-5 - Hayden Island Pkg A Construction	Both Fixed & Movable
289	Right-of-Way	Uncertainty in ROW Cost Inflation Rate	Opportunity	-$25 M	$0 M	$0 M				50%	Modeled	All ROW activities	Both Fixed & Movable
290	Market Conditions	Uncertainty in Construction Cost Inflation Rate	Opportunity	-$500 M	$0 M	$0 M				50%	Modeled		Both Fixed & Movable
291	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (River Bridge Contract)	Opportunity								Minor		Both Fixed & Movable
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)	Both Fixed & Movable
293	Market Conditions	Uncertain Market Conditions: Number of Bidders and Pricing (Approaches Contract)	Opportunity								Minor		Both Fixed & Movable
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	Both Fixed & Movable
295	Roadway Design	Partner Agency Design Review Processes - 30% Design Package (River Bridge)	Threat				0.0	1.0	2.0	20%	Minor		Both Fixed & Movable
296	Roadway Design	Partner Agency Design Review Processes - Subsequent Packages, 60%, 90% (River Bridge)	Threat				1.0	2.0	3.0	10%	Minor		Both Fixed & Movable
297	Transit	Track / Systems Design	Threat	$0.5 M	$0.75 M	$1 M	1.0	3.0	6.0	50%	Elsewhere		Both Fixed & Movable

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299	Environmental	Revised PNCD for Fixed-Span Bridge	Threat				1.0	2.0	3.0	35%	Elsewhere		Fixed Span
301	Structures	Decision on Evergreen Complex	Threat								Minor		Both Fixed & Movable
302	Construction	Expiration of Manufactured Products Waiver	Threat								In the Base		Both Fixed & Movable
303	Construction	Conflicting BABAA Requirements	Threat								Elsewhere		Both Fixed & Movable
304	Construction	BABAA-Defined Steel & Iron Products	Threat								Elsewhere		Both Fixed & Movable
305	Construction	BABAA-Defined (Permanently Installed) Construction Materials	Threat								Elsewhere		Both Fixed & Movable
306	Construction	BABAA-Defined Fabricated Materials	Threat								Elsewhere		Both Fixed & Movable
307	Construction	Non-Domestic Materials Waivers	Threat								Minor		Both Fixed & Movable
311	Right-of-Way	Early ROW Acquisition	Opportunity				-5.0	-3.0	-1.0	25%	Minor		Both Fixed & Movable
312	Construction	Maintenance of On/Off Ramps (Marine Drive Interchange)	Threat								Minor		Both Fixed & Movable
313	Roadway Design	Maintenance of On/Off Ramps (Marine Drive Package A)	Threat				3.0	6.0	9.0	5%	Elsewhere		Both Fixed & Movable
317	Environmental	Negotiations with Impacted Vessels and Fabricators (Affected River Users)	Threat				3.0	6.0	9.0	90%	Elsewhere		Both Fixed & Movable
319	Environmental	Other Interested Parties / River Users	Threat				3.0	6.0	9.0	30%	Elsewhere		Both Fixed & Movable
320	Environmental	Comments During USCG Public Notice Period	Threat				3.0	6.0	12.0	30%	Elsewhere		Movable Span
321	Environmental	Waterway Capacity	Threat				6.0	12.0	18.0	50%	In the Base		Movable Span

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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
322	Environmental	Duration for USCG to Issue New PNCD	Threat				2.0	2.5	3.0	100%	Modeled	EXT-1 Revised PNCD	Both Fixed & Movable
323	Environmental	Support from External Parties	Opportunity				-6.0	-4.0	-2.0	60%	Elsewhere		Fixed Span
324	Environmental	Definition of "Reasonable Navigation"	Threat				6.0	9.0	12.0	40%	Elsewhere		Movable Span
325	Roadway Design	COV Pump Station/WSDOT Real Estate Restrictions	Threat								Minor		Both Fixed & Movable
326	Contract Procurement	CRB RFP Review Periods Reduced or Removed	Threat							25%	N/A		Both Fixed & Movable
327	Utilities Relocation	Condition of COV Waterlines	Threat				2.0	3.0	4.0	50%	Elsewhere		Both Fixed & Movable
329	Program Management	Bridge Configuration and Type Selection - Multiple Options	Uncertainty								Elsewhere		Both Fixed & Movable
330	Program Management	RFP Timeline Results in Multiple NTPs and Increased Risk of Monetary Penalties	Threat								N/A		Both Fixed & Movable
333	Public Affairs	Opposition to LRT Results in Changed Program Definition	Threat				1.0	2.0	3.0	5%	Excluded		Both Fixed & Movable
334	Finance	State Funding Timing: change to transit-eligible	Threat	$1 M	$2 M	$4 M	3.0	12.0	18.0	50%	Modeled	CIG-3 (Readiness for FFGA)	Both Fixed & Movable
335	Transit	Delay to OCS Design	Threat				1.0	3.0	5.0	50%	Modeled	DES-2 - 30% Design for Transit	Both Fixed & Movable
336	Program Management	Agencies Reject RFQ Issuance Pre-ROD	Threat				3.0	3.0	3.0	90%	Modeled	CRB-1 - CRB Prelim. Design/RFQ	Both Fixed & Movable
337	Program Management	RFP Before ROD Results in Request for Extension	Threat								N/A		Both Fixed & Movable
338	Delivery Method	Compressed Design Schedule Results in Increased Contractor Price	Threat	$2 M	$5 M	$10 M				50%	In the Base		Both Fixed & Movable

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339	Program Management	RFP Before ROD Results in Federal Non-Compliance	Threat								N/A		Both Fixed & Movable
340	Program Management	RFP Before ROD Affects Bid Responses	Threat								N/A		Both Fixed & Movable
341	Utilities Relocation	Utility Agreements Incomplete for Procurement	Threat								Elsewhere		Both Fixed & Movable
343	Environmental	Agreement on Path for Cultural Resources	Threat	$0 M	$0 M	$1 M	6.0	9.0	18.0	20%	Modeled	ENV-3 - Sec. 106 Programmatic Agrmt. & Mitigation Plan	Both Fixed & Movable
348	Environmental	Bridge Permit Delay Results in Changed Conditions	Threat								N/A		Both Fixed & Movable
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		Both Fixed & Movable
350	Program Management	Federal Staffing Reductions Impact Federal Reviews and Project Schedule	Threat				0.0	1.0	2.0	20%	Elsewhere		Both Fixed & Movable
351	Right-of-Way	Floating Homes	Threat				6.0	10.0	12.0	5%	Modeled	PHT-3 - Portland Harbor Transit ROW	Both Fixed & Movable
352	Right-of-Way	WA Limited Access Hearing Findings and Order	Threat				6.0	10.0	12.0	25%	Modeled	ROW-1 - Limited Access Waiver / Finalize ROW Plans	Both Fixed & Movable
353	Transit	Expo Overnight Facility Substantial Completion Delay	Threat				6.0	9.0	12.0	10%	Modeled	LRF-4 - LRT Overnight Facility Construction	Both Fixed & Movable
354	Transit	Denial of Design Exception Request for Expo LRT Station	Threat								Elsewhere		Both Fixed & Movable
355	Transit	30% Transit Design Excluded from RFP	Threat								N/A		Both Fixed & Movable
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		Both Fixed & Movable
357	Transit	PD Extension Denied	Threat								Minor		Both Fixed & Movable

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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
358	Transit	ROD Delayed Beyond Maximum Extension	Threat								Elsewhere		Both Fixed & Movable
359	Roadway Design	Mill Plain Interchange Upgrades	Opportunity								Minor		Both Fixed & Movable
361	Finance	Local Transit Funds Allocation Delay	Threat				6.0	12.0	24.0	25%	Modeled	DES-3 - 60% Design for Transit	Both Fixed & Movable
362	Transit	Power Service Needs	Threat	$1 M	$2 M	$3 M				50%	Minor		Both Fixed & Movable
363	Public Affairs	Local, State, and Federal Partner Misalignment	Threat				3.0	6.0	9.0	40%	Elsewhere		Both Fixed & Movable
365	Utilities Relocation	Power Service to Existing NB Bridge	Threat	$5 M	$10 M	$15 M				20%	Modeled	CBA-12b - CRB Partial Demo	Both Fixed & Movable
366	Contract Procurement	Third-Party Agreements Process	Threat				0.0	1.0	2.0	30%	Minor		Both Fixed & Movable
367	Right-of-Way	West Hayden Island Mitigation Parcel Legal Description	Threat				1.0	2.0	3.0	50%	Minor		Both Fixed & Movable
368	Right-of-Way	30% Design for Transit Elements	Threat				1.0	3.0	6.0	10%	Minor		Both Fixed & Movable
369	Right-of-Way	DNR Aquatic Easements for Permanent and Temporary Bridge Footprints	Threat				6.0	10.0	12.0	25%	Elsewhere		Both Fixed & Movable
370	Right-of-Way	Harbor Commission Permits	Threat				6.0	10.0	12.0	25%	Elsewhere		Both Fixed & Movable
372	Transit	Head-End System Upgrades at TriMet OCC	Threat								In the Base		Both Fixed & Movable
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	Both Fixed & Movable
374	Transit	Existing System Expansion vs System-Wide Upgrades	Threat								Elsewhere		Both Fixed & Movable

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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
376	Transit	Sole Sourcing for Specialty Items & Long Lead Times	Threat								Elsewhere		Both Fixed & Movable
377	Transit	Transit Station Elevator Delivery	Threat								Minor		Both Fixed & Movable
378	Transit	TriMet SME Involvement in Cost Estimating Effort	Opportunity								Minor		Both Fixed & Movable
380	Transit	Public Art Delivery and Responsibility	Threat							10%	Minor		Both Fixed & Movable
381	Interagency Coord.	Loss of Alignment with Partner Agencies - Movable Span	Threat				3.0	6.0	9.0	40%	Elsewhere		Movable Span
382	Utilities Relocation	Power Supply for Movable Span Bridge	Threat	$10 M	$20 M	$30 M	6.0	9.0	12.0	50%	Modeled	CRB-15 - Columbia River Bridge Construction	Movable Span
383	Environmental	Section 106 – Post-ROD Analysis and Implementation	Threat	$5 M	$10 M	$15 M	9.0	12.0	18.0	30%	Modeled	ENV-9, ENV-10, ENV-11 - Cultural Resources Survey CRB, HI, CRBA/SR-14	Both Fixed & Movable
384	Environmental	Local Agency Land Use Permit Delays	Threat				2.0	4.0	6.0	20%	Modeled	CRB-8a, CBA-3c, DES-3 (60% design of key packages)	Both Fixed & Movable
385	Maint. Of Traffic	Median Width for CRB (Fixed Span)	Opportunity	-$30 M	-$20 M	-$10 M				80%	Modeled	Cost split between: CRB-15, CBA-8	Fixed Span
386	Railroad	Railroad Facilities Impact	Threat	$0 M	$0.5 M	$1 M				10%	Minor		Both Fixed & Movable
387	Program Management	Legal Descriptions Delay Start of ROW	Threat								Minor		Both Fixed & Movable
388	Construction	Approach MOT Scope: Jantzen Drive	Threat	$5 M	$10 M	$15 M				25%	Modeled	HIA-5- Hayden Island Pkg. A Construction	Both Fixed & Movable
389	Construction	Seismic Design Criteria Impacts for Movable-Span Bridge Alternative	Threat								In the Base		Movable Span
390	Maint. Of Traffic	Improvements to Local Roads	Threat								Elsewhere		Both Fixed & Movable
391	Traffic	Interim ITS Elements	Threat								Minor		Both Fixed & Movable

Interstate Bridge Replacement (IBR) - PROJECT RISK MANAGEMENT PLAN

Risk Identification				Quantitative Analysis (Post-Managed State)							CEVP Workshop		
				Direct Cost Impact ($M)			Schedule Impact (months)						
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
392	Traffic	Interim Tolling Elements	Threat	$5 M	$10 M	$20 M				20%	Minor		Both Fixed & Movable
393	Construction	Combined Demolition Under One Contract	Opportunity	-$8 M	-$4 M	-$2 M	0.0	0.0	0.0	25%	Elsewhere		Both Fixed & Movable
394	Environmental	Demolition Permit	Threat	$0 M	$1 M	$2 M	6.0	18.0	24.0	15%	Minor		Both Fixed & Movable
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	Both Fixed & Movable
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	Both Fixed & Movable
397	Construction	Perform Demo Without Coffer Dams	Opportunity	-$8 M	-$4 M	-$2 M	0.0	0.0	0.0	10%	Minor		Both Fixed & Movable
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		Both Fixed & Movable
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		Both Fixed & Movable
400	Structures	Structure Aesthetic Changes - Extradosed Bridge Type	Threat	$12 M	$24 M	$36 M	0.0	0.0	0.0	10%	Elsewhere		Fixed Span
401	Construction	Restrictions on Navigation Channel Openings	Threat	$0 M	$1 M	$2 M	3.0	6.0	9.0	20%	Modeled	CRB-15 - Columbia River Bridge Construction	Both Fixed & Movable
402	Construction	Hazardous Materials Spill	Threat								Minor		Both Fixed & Movable
403	Public Affairs	Loss of Funding Support - Movable Span	Threat								Excluded		Movable Span
404	Public Affairs	Loss of Public Support - Movable Span	Threat				1.0	2.0	3.0	25%	Elsewhere		Movable Span
405	Construction	CRB Demo / Pier 8 Conflict	Threat	$2 M	$4 M	$6 M				50%	Minor		Movable Span
406	Program Management	Bridge Lift Operations Risk	Threat								Excluded		Movable Span

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				Direct Cost Impact ($M)			Schedule Impact (months)			Likelihood			
ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
407	Construction	Movable Span Testing & Commissioning	Threat				1.0	2.0	3.0	50%	Modeled	CRB-15 - Columbia River Bridge Construction	Movable Span
408	Construction	Procurement Delays (BABA)	Threat								Elsewhere		Movable Span
409	Contract Procurement	Specialty Contractor / Design Expertise Availability	Threat								Elsewhere		Movable Span
410	Roadway Design	West Hayden Island Mitigation	Threat	$8 M	$9 M	$10 M				25%	Modeled	WHM-5 - W. Hayden Island Mitigation Construction	Both Fixed & Movable
411	Finance	Annual FFGA Disbursements Amounts / Timing	Threat								Elsewhere		Both Fixed & Movable
412	Roadway Design	Design coordination between CRB, Approaches Packages	Threat				2.0	3.0	4.0	90%	Modeled	CBA-3c - Approaches 30% to 60% design	Both Fixed & Movable
413	Environmental	USCG Revised PNCD Precludes Fixed Span	Threat	$583 M	$700 M	$840 M	15.0	27.0	39.0	50%	By Scenario		Fixed Span
414	Railroad	BNSF property not available for Waterfront Station Access	Threat	$20 M	$30 M	$40 M				20%	Modeled	LRT-7 - Waterfront Station Construction	Both Fixed & Movable
415	Contract Procurement	Impact of tariffs	Threat	$202 M	$265 M	$359 M				50%	Modeled	All construction activities	Both Fixed & Movable
416	Finance	FTA Approval Delayed for FFGA	Threat				2.0	4.0	8.0	40%	Modeled	CIG-3 - FTA Readiness Reviews for FFGA	Both Fixed & Movable
417	Roadway Design	Additional preliminary design required to support Movable Span RFQ	Threat								In the Base		Movable Span
418	Program Management	Owner agency decision making following PNCD: Movable Span Scenario	Threat				3.0	6.0	12.0	50%	Modeled	CRB-1A - CRB Prelim. Design / Develop RFQ	Movable Span
419	Public Affairs	Third party agreements with transit, City of Vancouver, on future IBR infrastructure ownership and maintenance									Minor		Both Fixed & Movable

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ID #	Discipline Category	Risk Event Title	Threat or Opportunity	Low (10% CI)	Most Likely	High (90% CI)	Low (10% CI)	Most Likely3	High (90% CI)	Likelihood of Impact Occurring	Disposition	Impacted Activities	Bridge Span Scenario
420	Roadway Design	Non-Approval of Assumed Design Deviations/ Exceptions: Movable Span	Threat								Minor		Movable Span
421	Structures	Delayed decision on interstate bridge type									Minor		Both Fixed & Movable
422	Roadway Design	Contractor Innovation: River Bridge Movable Span	Opportunity								Minor		Movable Span