

1 SUMMARY

2 *The following summarizes information from the Interstate Bridge Replacement (IBR) Program Draft*
3 *Supplemental Environmental Impact Statement (SEIS), including Program background, the*
4 *transportation problems the Program seeks to fix, the Modified Locally Preferred Alternative (LPA), and*
5 *the key benefits and impacts. It concludes with a brief discussion of the next steps and methods by*
6 *which the public can continue to be involved in the Program.*

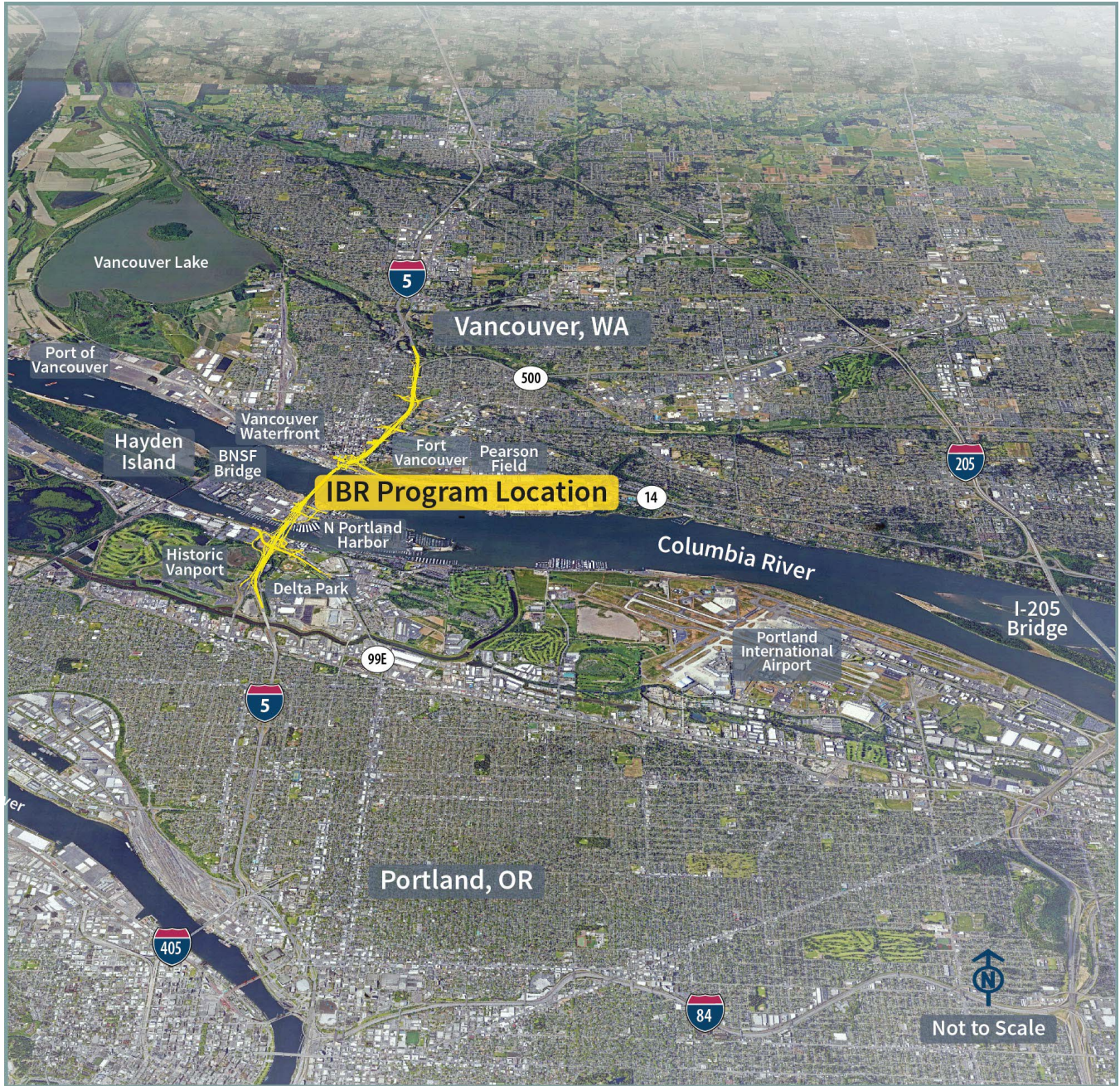
7 What is the IBR Program?

8 The IBR Program updates and supplements the Interstate 5 (I-5) Columbia River Crossing (CRC) project
9 (approved in 2011) and focuses on a 5-mile corridor that includes bridge, transit, active transportation, and
10 highway improvements to address safety and mobility in the I-5 corridor between Portland, Oregon, and
11 Vancouver, Washington (Figure 1).

12 I-5 is the main, and only continuous, north-south interstate highway on the west coast, linking the United
13 States, Canada, and Mexico. In the Vancouver-Portland metropolitan region, I-5 and I-205 are the only two
14 roadway crossings of the Columbia River and the major north-south highways that provide interstate
15 connectivity and mobility. While the I-205 crossing provides important connectivity for the region, I-5 directly
16 connects the central cities of Vancouver and Portland.

17 The 5-mile section of I-5 between State Route (SR) 500/39th Street in Vancouver and Columbia Boulevard in
18 Portland heavily influence the traffic conditions of I-5 crossing over the Columbia River. This section includes
19 seven interchanges that connect three state highways and several major arterial roadways. These
20 interchanges serve a variety of land uses and provide access to downtown Vancouver, two international
21 marine ports, industrial centers, residential neighborhoods, retail centers, and recreational areas.

1 Figure 1. IBR Program Area Map



2 Highway users and transit service within the IBR Program study area are currently constrained by outdated,
3 substandard highway design features, traffic congestion that increases travel times, and the frequency of
4 crashes that reduce reliability for vehicles and buses traveling between Vancouver and Portland. Additionally,
5 to access light-rail transit (LRT), users traveling to Portland from Hayden Island or Vancouver have to transfer
6 from buses, or walk, bike or drive to nearby park and rides/transit centers at Expo or Delta Park.

7 Who is leading the IBR Program?

8 The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) are the federal lead
9 agencies. Both agencies must comply with the National Environmental Policy Act (NEPA), including the

1 publication of this Draft SEIS, as well as a Final SEIS, before they approve or provide funding to construct the
2 improvements. Following the Final SEIS, FTA and FHWA will sign a Record of Decision (ROD) that will identify
3 the selected alternative. The ROD for the Program will amend the existing ROD for the CRC project that was
4 signed in 2011 (CRC 2011a). If a build alternative is selected, the ROD will describe the measures needed to
5 mitigate unavoidable environmental effects, as well as a monitoring and enforcement program to ensure that
6 the mitigation measures are carried out effectively. By signing the ROD, FTA and FHWA are affirming that
7 federal regulations have been met, thereby allowing the Program to proceed with property acquisitions and
8 the final design of the selected alternative.

9 State transportation agencies and local governments in the Vancouver-Portland region have joined together
10 to develop a strategy for addressing highway, freight, transit, bicycle, and pedestrian needs within the
11 Program study area. The nonfederal joint lead agencies include the Oregon Department of Transportation
12 (ODOT); Washington State Department of Transportation (WSDOT); local transit agencies Tri-County
13 Metropolitan Transportation District (TriMet) and Clark County Public Transportation Benefit Area (C-TRAN);
14 and regional metropolitan planning organizations Oregon Metro (Metro) and the Southwest Washington
15 Regional Transportation Council (RTC). These nonfederal joint lead agencies, together with the Cities of
16 Vancouver and Portland and Ports of Vancouver and Portland, comprise the state and local partner agencies
17 that make-up an Executive Steering Group leading the Program. WSDOT also serves as the lead agency for the
18 Washington State Environmental Policy Act review process.

19 WSDOT and ODOT are leading the preliminary highway design and Program management according to their
20 respective Federal-State Stewardship & Oversight agreements with FHWA. TriMet and C-TRAN are leading the
21 preliminary transit design and would operate the transit elements of the Program. Metro and RTC maintain
22 the regional and metropolitan transportation plans that would include the Modified LPA for the IBR Program.
23 The Program improvements are within the city limits of both Portland and Vancouver and would connect to
24 the local street networks in both cities. Therefore, the Cities of Portland and Vancouver have special expertise
25 on city facilities and operations as well as local permitting authority over some elements of the Program. The
26 Ports of Portland and Vancouver provide special expertise on regional and local freight movement, in
27 particular, along Marine Drive, Mill Plain Boulevard, and Fourth Plain Boulevard.

28 Other state and federal agencies, tribes, and community partners are also participating in technical,
29 regulatory, or advisory roles and government-to-government consultation.

30 The Program has worked with many other local, state, and federal agencies and tribes as well as many private
31 and public community partners during the planning and development of this Program. Details on agency
32 coordination and public involvement can be found in Appendices A and B.

33 How does the IBR Program build on prior studies and the CRC project?

34 Regional leaders identified the need to address the I-5 corridor, including the Interstate Bridge, through
35 previous bistate, long-range planning studies. Transportation deficiencies in the IBR Program corridor have
36 been evaluated for more than two decades. Prior studies identified a variety of transportation mobility and
37 safety problems (for additional details on this work, see the CRC Final Environmental Impact Statement (EIS)
38 [CRC 2011b]). For additional details on prior studies and their findings, as well as the development of the
39 Purpose and Need statement, see Chapter 1 of the *Interstate 5 Columbia River Crossing Project Final*
40 *Environmental Impact Statement and Final Section 4(f) Evaluation* (CRC 2011b).

1 The CRC project was active between 2005 and 2014. The Purpose and Need statement for the CRC project was
2 developed by the CRC Task Force¹ and the joint lead agencies.² During the screening process for the CRC
3 project, over 70 transportation components were screened to identify those that could meet the Purpose and
4 Need. The components that passed the screening were packaged into a range of alternatives and were
5 evaluated in the CRC Draft EIS, with an LPA identified and evaluated in the 2011 Final EIS and selected in the
6 2011 ROD. Subsequently, the selected alternative was modified by two signed reevaluations (one in 2012 that
7 raised the maximum vertical navigation clearance of the bridge from 95 feet to 116 feet and a second in 2013
8 that evaluated a phased construction approach). While the CRC project successfully completed the NEPA
9 environmental review process when FHWA and FTA issued the ROD in 2011 it did not secure adequate state
10 funding to advance to construction and was discontinued in 2014.

11 Recognizing that regional transportation issues and necessary improvements to the Interstate Bridge
12 remained unaddressed, on November 18, 2019, Oregon Governor Kate Brown and Washington Governor Jay
13 Inslee signed the Oregon-Washington Memorandum of Intent on Replacing the I-5 Bridge over the Columbia
14 River to express interest in restarting the project. Also in 2019, a bistate legislative committee requested that
15 ODOT and WSDOT reinstate the CRC project, now called the IBR Program.

16 As part of the NEPA process, in early 2021 the IBR Program began working with regional and local partner
17 agencies and the public to review the Purpose and Need that was adopted for the CRC project. The IBR
18 Program brought the Purpose and Need statement to partner agencies and the Program's three advisory
19 groups to discuss the transportation needs identified for the CRC project. These transportation needs were
20 also brought to the public for comment during an online open house, virtual community briefings, and an
21 online survey. In mid-2021, the Program announced that these efforts validated that the six transportation
22 needs identified in the CRC Purpose and Need statement still exist today, and that the values identified in the
23 Vision and Values document remain community values. **Thus, the Purpose and Need statement for the IBR
24 Program remains the same as documented in the 2011 Final EIS and 2011 ROD for the CRC project.**

25 In 2021, the IBR Program prepared a NEPA reevaluation to determine whether the previously approved Final
26 EIS and ROD are still valid for a federal action or need to be updated with current conditions and changes in
27 design. FHWA and FTA determined that, while the prior NEPA decision is still valid, a supplemental EIS is
28 necessary to identify and disclose new adverse impacts and mitigation.

29 What problems does the IBR Program seek to fix?

30 As noted above, the Purpose and Need statement for the IBR Program, provided below, remains the same as
31 documented in the 2011 Final EIS and 2011 ROD for the CRC project.

32 The text of the Purpose and Need has not been edited from its original wording, except for references to the
33 name of the Program. More recent data and supplemental information are provided in sidebars and
34 footnotes.³

¹ The CRC Task Force was a 39-member group formed in 2005 comprising leaders that represented a broad cross section of Washington and Oregon communities. Public agencies, businesses, civic organizations, neighborhoods, and freight, commuter, and environmental groups were represented on the task force. The group met 23 times over the course of the project development phase to advise the CRC project team and provide guidance and recommendations at key decision points. The task force concluded its work in summer 2008 after making its recommendation on the locally preferred alternative.

² FHWA, FTA, ODOT, WSDOT, Metro, RTC, TriMet, and C-TRAN.

³ Transportation data provided in the sidebars are from the IBR Transportation Technical Report. 2019 is used as the baseline year for most data as it provides a more accurate baseline than more recent years for forecasts, which are based on historical trends observed over a long period of time rather than short-term phenomena such as the COVID-19 pandemic or the rise in gas prices in mid-2022.

1 The **purpose** of the proposed action is to improve I-5 corridor
 2 mobility by addressing present and future travel demand and
 3 mobility needs in the Program area. The Program area extends
 4 from approximately Columbia Boulevard in the south to SR 500
 5 in the north.⁴ Relative to the No-Build Alternative, the proposed
 6 action of the IBR Program is intended to achieve the following
 7 objectives: (a) improve travel safety and traffic operations on
 8 the I-5 river crossing and associated interchanges; (b) improve
 9 connectivity, reliability, travel times, and operations of public
 10 transportation modal alternatives in the Program area; (c)
 11 improve highway freight mobility and address interstate travel
 12 and commerce needs in the Program area; and (d) improve the
 13 I-5 river crossing's structural integrity (seismic stability).

14 The specific **needs** to be addressed by the proposed action of
 15 the IBR Program are addressed in the following subsections.

16 Growing travel demand and congestion

17 Existing travel demand exceeds capacity in the Interstate Bridge
 18 and associated interchanges. This corridor experiences heavy
 19 congestion and delay lasting 4 to 6 hours daily⁵ during the
 20 morning and afternoon peak travel periods and when traffic
 21 crashes, vehicle breakdowns, or bridge lifts occur. Due to excess
 22 travel demand and congestion in the I-5 corridor, many trips
 23 take the longer, alternative I-205 route across the Columbia
 24 River. Spillover traffic from I-5 onto parallel arterials such as
 25 Martin Luther King Jr. Boulevard and Interstate Avenue
 26 increases local congestion. In 2005, the two crossings⁶ carried
 27 280,000 vehicle trips across the Columbia River daily. Daily
 28 traffic demand over the Interstate Bridge is projected to
 29 increase by more than 35% during the next 20 years, with stop-
 30 and-go conditions increasing to approximately 15 hours daily
 31 if no improvements are made.

32 Impaired freight movement

33 I-5 is part of the National Truck Network, and the most
 34 important freight highway on the West Coast, linking
 35 international, national, and regional markets in Canada,
 36 Mexico, and the Pacific Rim with destinations throughout the
 37 western United States. In the center of the Program area, I-5
 38 crosses over the Columbia River's deep-water shipping and

In 2005, there were 280,000 vehicle trips that crossed the Columbia River daily in the Portland-Vancouver metropolitan region, of which 134,000 used the Interstate Bridge. By 2019, the total number of vehicle trips that crossed the Columbia River had increased to 313,000 per day, of which 143,400 used the Interstate Bridge.³

Vehicle trips include those made in single-occupancy vehicles, high-occupancy vehicles, trucks, and transit vehicles (buses).

The duration of congestion on the Interstate Bridge has roughly doubled over the past 14 years. In 2019, the I-5 corridor experienced heavy congestion and delay in both directions lasting up to almost 12 hours daily (compared with 4 to 6 hours daily in 2005).

Daily traffic demand over the Interstate Bridge is projected to increase by more than 25% during the next 25 years.

In 2019, more than 14,000 freight trips carrying over \$132 million in commodities traveled across the Interstate Bridge each weekday. Over the next 25 years freight volumes moved by truck, to and from the area, are projected to more than double.

Deficiencies such as narrow lanes and shoulders, as well as short merging, diverging, and weaving distances, reduce the efficiency and safety of freight truck movement.

⁴ Traffic conditions on the Interstate Bridge are influenced by the 5-mile section of I-5 between SR 500/39th Street in Vancouver and Columbia Boulevard in Portland. The southern terminus of IBR's proposed improvements is just south of Interstate/Victory Boulevard, which is similar to the improvements identified in the CRC LPA.

⁵ The hours of congestion and delay refers to the total number of hours that the corridor experiences congestion. The IBR Program has defined congestion as speeds below 45 miles per hour per ODOT's definition of highway congestion. ODOT is coordinating this updated congestion definition with WSDOT.

⁶ The two crossings are the I-5 Interstate Bridge and the I-205 Glenn Jackson bridge.

1 barging channels and two river-level, transcontinental rail lines. The Interstate Bridge provides direct and
2 important highway connections to the Port of Vancouver and Port of Portland facilities located on the
3 Columbia River, as well as the majority of the area’s freight consolidation facilities and distribution terminals.
4 Freight volumes moved by truck to and from the area are projected to more than double over the next
5 25 years. Vehicle-hours of delay on truck routes in the Portland-Vancouver area are projected to increase by
6 more than 90% over the next 20 years. Growing demand and congestion will result in increasing delay, costs,
7 and uncertainty for all businesses that rely on this corridor for freight movement.

8 Limited public transportation operation, 9 connectivity, and reliability

10 Due to limited public transportation options, a number of
11 transportation markets are not well served. The key transit
12 markets include trips between Portland Central City and the city
13 of Vancouver and Clark County, trips between north/northeast
14 Portland and the city of Vancouver and Clark County, and trips
15 connecting the city of Vancouver and Clark County with the
16 regional transit system in Oregon. Current congestion in the
17 corridor adversely impacts public transportation service
18 reliability and travel speed. Southbound bus travel times across
19 the bridge are currently up to three times longer during parts of
20 the AM peak compared to off-peak. Travel times for public
21 transit using general purpose lanes on I-5 in the Program area
22 are expected to increase substantially by 2030.

23 Safety and vulnerability to incidents

24 The Interstate Bridge and its approach sections experience
25 crash rates more than two times higher than statewide
26 averages for comparable facilities. Incident evaluations
27 generally attribute these crashes to traffic congestion and
28 weaving movements associated with closely spaced
29 interchanges and short merge distances. Without breakdown
30 lanes or shoulders, even minor traffic accidents or stalls cause
31 severe delay or more serious accidents.

In 2005, southbound bus travel times across the bridges were up to three times longer during parts of the AM peak than during off-peak times. As of 2019, bus travel times are four times longer during the AM peak.

If the bridges are not replaced, travel times for public transit using general-purpose lanes on I-5 in the Program study area are expected to increase by 50% by 2045 because of increased congestion.

As of 2019, crash rates are three times higher than statewide averages for comparable facilities . Crashes in the IBR Program area could increase by over 50% by 2045 if no improvements are made.

There were seven fatal crashes in the Program area between 2015 and 2019.

1 Substandard bicycle and pedestrian facilities

- 2 The bicycle/pedestrian lanes on the Interstate Bridge are about 3.5 to 4 feet wide, narrower than the 10-foot
3 standard, and are located extremely close to traffic lanes, thus impacting safety for pedestrians and bicyclists.
4 Direct pedestrian and bicycle connectivity are poor in the Program area.

Compliance with the Americans with Disabilities Act (ADA) varies for the existing shared-use paths. The paths comply with the maximum gradient (4.7%) and there are no objects that overhang or protrude into the paths. However, the paths do not comply with guidelines for curb ramps (both in number and design), width, passing spaces, cross slope, or railing height (FHWA 2001; U.S. Access Board 2013). The paths are also near traffic lanes; this increases bicyclist and pedestrian exposure to vehicular traffic, noise, and emissions.

5

Seismic vulnerability

- 6 The existing Interstate Bridge is located in a seismically active zone. It does not meet current seismic
7 standards and is vulnerable to failure in an earthquake.

All new federally funded highway bridges are required to be designed to the current edition of the American Association of State Highway and Transportation Officials Guide Specifications for Load-and-Resistance Factor Design (LRFD) Seismic Bridge Design (AASHTO 2022). In addition, State Departments of Transportation (DOTs) typically adopt local practices to address potential regional geologic hazards (e.g., the Cascadia Subduction Zone). State DOTs may also prescribe elevated levels of seismic performance based on the importance of the structure as it relates to public safety, national defense, and economic investment, as is the case for the Interstate Bridge.

8

The existing bridges were designed before modern seismic design codes were established. The foundations are likely to displace during a strong earthquake, resulting in the collapse of the bridge spans into the Columbia River. In addition, the movable span lift towers will be overstressed due to the inertia of the concrete counterweights and will collapse onto the bridge, causing the adjacent spans to fail. This collapse potential is due to the fact that hundreds of timber bridge support piles sit within loose sand that can liquefy during an earthquake.

1 How is the public involved?

2 The IBR Program has been engaging with partner agencies, tribal governments, local communities and
3 organizations, and the public since late 2020 and has been conducting formal, targeted community
4 engagement since February 2021. Targeted engagement has included user-specific outreach to
5 representatives from the following groups: residents; commuters; transit users; business and freight industry;
6 neighborhood associations and community groups;
7 fishery management; low-income residents,
8 minorities, and limited English speakers; tribal
9 members; elected officials; and the maritime
10 industry. The IBR Program considers all comments
11 received across these engagement efforts and
12 incorporates recommendations as appropriate. In
13 effect, this engagement has helped shape the
14 communications strategy and implementation, the
15 environmental review process, and the design
16 options that are part of the Modified LPA. More
17 information about the IBR Program’s public
18 involvement efforts can be found in Appendix B.

ODOT and WSDOT convened the 12-member Executive Steering Group to provide regional leadership recommendations on key program issues of importance to the community. Members of the Executive Steering Group include representatives from the 10 bistate partner agencies with a direct delivery or operational role in the integrated, multimodal transportation system around the Interstate Bridge, as well as a community representative from each state who serves on the Community Advisory Group.

19 Program staff record and consider all comments
20 received at events and by phone, email, or mail.

21 Summaries or copies of these comments were provided to advisory leadership groups, such as the Executive
22 Steering Group, for their reference in making recommendations. In the fall of 2021, the IBR Program shared
23 design options with the public and sought feedback. The Community Engagement Report summarizes input
24 received from more than 9,600 survey responses and 1,700 survey comments, community briefings, listening
25 sessions, advisory groups, community working groups, and public comments (IBR Program 2021). While the
26 Program cannot report consensus on preferences for specific design options, community feedback confirms a
27 preference for design options that improve travel times, relieve congestion, improve safety, and mitigate
28 negative impacts to people and the environment. Additional comment themes from the community
29 engagement include:

- 30 • Number of auxiliary lanes
- 31 • Where on- and off-ramps are located
- 32 • Equitable implementation of tolling
- 33 • Integration of high-capacity transit
- 34 • Improved bicycle and pedestrian facilities
- 35 • LRT expansion into Vancouver
- 36 • Bridge replacement alternatives
- 37 • Funding details, including federal and state funding commitments
- 38 • Traffic flow disruptions during bridge construction
- 39 • Environmental impact mitigation
- 40 • Increased freight traffic capacity

1 What is the Modified LPA?

2 The Modified LPA was endorsed by WSDOT, ODOT, and all eight local partner agencies in summer 2022. The
3 Modified LPA includes a variety of transportation improvements throughout the 5-mile corridor. Chapter 2,
4 Description of Alternatives, contains a detailed IBR Program description. The basic components of the
5 Modified LPA include:

6 The basic components of the Modified LPA are:

- 7 • A new pair of Columbia River bridges—one for northbound and one for southbound travel—built west of
8 the existing bridge. The new bridges would include three through lanes, safety shoulders, and one
9 auxiliary lane (a ramp-to-ramp connection on the highway that reduces congestion by giving drivers more
10 space and time to merge safely) in each direction. When all highway, transit, and active transportation
11 would be moved to the new Columbia River bridges, the existing Interstate Bridge (both spans) would be
12 removed.
 - 13 – Three bridge configurations are under consideration: (1) double-deck truss bridges with fixed spans,
14 (2) single-level bridges with fixed spans, and (3) single-level bridges with movable spans over the
15 primary navigation channel. The fixed-span bridges would provide up to 116 feet of vertical navigation
16 clearance, and the movable spans would provide at least 178 feet of vertical navigation clearance
17 depending on the movable-span type (such as lift or double-leaf bascule). The primary navigation
18 channel would be relocated approximately 500 feet south (measured by channel centerline) of its
19 existing location near the Vancouver shoreline.
 - 20 – A two auxiliary lane design option (two ramp-to-ramp lanes connecting interchanges) across the
21 Columbia River is being evaluated. The second auxiliary lane in each direction of I-5 would be added
22 from approximately Marine Drive to Mill Plain Boulevard.
- 23 • A 1.9-mile LRT extension of the current Metropolitan Area Express (MAX) Yellow Line from the Expo Center
24 MAX Station in North Portland, where it currently ends, to a terminus near Evergreen Boulevard in
25 Vancouver. Improvements would include new stations at Hayden Island, downtown Vancouver
26 (Waterfront Station), and near Evergreen Boulevard (Evergreen Station), as well as revisions to the
27 existing Expo Center MAX Station. Park and rides to serve LRT riders in Vancouver could be included near
28 the Waterfront Station and Evergreen Station. TriMet, which operates the MAX system, would also operate
29 the Yellow Line extension.
 - 30 – Potential site options for park and rides include three site options near the Waterfront Station and two
31 near the Evergreen Station (up to one park and ride could be built for each station location in
32 Vancouver).
- 33 • Associated LRT improvements such as traction power substations, overhead catenary system, signal and
34 communications support facilities, an overnight light-rail vehicle (LRV) facility at the Expo Center, 19 new
35 LRVs, and an expanded maintenance facility at TriMet's Ruby Junction.
- 36 • Wider shoulders on I-5 from Victory/Interstate Boulevard to SR 500/39th Street to accommodate express
37 bus on shoulder service in each direction. Associated improvements would include three additional bus
38 bays for eight new electric double-decker buses at the C-TRAN operations and maintenance facility (see
39 Section 2.2.7, Transit Operating Characteristics, for more information about this service).
- 40 • Improvements to seven I-5 interchanges and I-5 mainline improvements between Victory/Interstate
41 Boulevard in Portland and SR 500/39th Street in Vancouver. Some adjacent local streets would be
42 reconfigured to complement the new interchange designs, and improve local east-west connections.
 - 43 – An option that shifts the I-5 mainline up to 40 feet westward in downtown Vancouver between the SR
44 14 interchange and Mill Plain interchange is being evaluated.

Interstate Bridge Replacement Program

- 1 – An option that eliminates the existing C Street ramps in downtown Vancouver is being evaluated.
- 2 • Six new adjacent bridges across North Portland Harbor: one on the east side of the existing I-5 North
- 3 Portland Harbor bridge and five on the west side or overlapping with the existing bridge (which would be
- 4 removed). The bridges would carry (from west to east) LRT tracks, southbound I-5 off-ramp to Marine
- 5 Drive, southbound I-5 mainline, northbound I-5 mainline, northbound I-5 on-ramp from Marine Drive, and
- 6 an arterial bridge for local traffic with a shared-use path for pedestrians and bicyclists.
- 7 • A variety of improvements for people who walk, bike, and roll throughout the study area, including a
- 8 system of shared-use paths, bicycle lanes, sidewalks, enhanced wayfinding, and facility improvements to
- 9 comply with the Americans with Disabilities Act. These are referred to in this document as *active*
- 10 *transportation* improvements.
- 11 • Integration of local bus transit service, including bus rapid transit, in addition to the proposed new LRT
- 12 service.
- 13 • Variable-rate tolling for motorists using the river crossing as a demand-management and financing tool.

14 The transportation improvements proposed for the Modified LPA and design options are shown in Figure 2.
15 Additional details (including differences between the IBR Modified LPA and the previously selected CRC LPA)
16 are available in Chapter 2.

17 Figure 2. Modified LPA Components



How would the Modified LPA be constructed?

The construction of bridges over the Columbia River is the most substantial element of the Modified LPA, and sets the sequencing for other Program components. Accordingly, construction of the main river crossing and the immediately adjacent highway connections and improvement elements would be timed early to aid the construction of other components. Demolition of the existing Interstate Bridge would take place after the new Columbia River bridges were opened to traffic.

Construction activities would require at least one large off-site location to stage equipment and materials. In addition, a large casting yard for fabricating elements of the bridges would likely be needed. Potential off-site locations have been evaluated and are described in detail in Chapter 2.

Electronic tolling infrastructure would be constructed and operational on the existing Interstate Bridge by the start of construction on the new Columbia River bridges. The toll rates and policies for pre-completion tolling would be determined after a more robust analysis and public process by the Oregon Transportation Commission and Washington State Transportation Commission.

Table 1 provides the estimated construction durations and additional information of Modified LPA components. The estimated durations are shown as ranges to reflect the potential for Program funding to be phased over time. Certain work below the ordinary high water mark of the Columbia River and North Portland Harbor would be restricted to minimize impacts to species listed under the Endangered Species Act and their designated critical habitat.

Table 1. Construction Activities and Estimated Duration

Component	Estimated Duration	Notes
Columbia River bridges	4 to 7 years	<ul style="list-style-type: none"> Construction would likely begin with the main river bridges. General sequence would include initial preparation and installation of foundation piles, shaft caps, pier columns, superstructure, and deck.
North Portland Harbor bridges	4 to 10 years	<ul style="list-style-type: none"> Construction duration for North Portland Harbor bridges is estimated to be similar to the duration for Hayden Island Interchange construction. The existing North Portland Harbor bridge would be demolished in phases to accommodate traffic during construction of the new bridges.
Hayden Island interchange	4 to 10 years	<ul style="list-style-type: none"> Interchange construction duration would not necessarily entail continuous active construction. Hayden Island work could be broken into several contracts, which could spread work over a longer duration.
Marine Drive interchange	4 to 6 years	<ul style="list-style-type: none"> Construction would need to be coordinated with construction of the North Portland Harbor bridges.
SR 14 interchange	4 to 6 years	<ul style="list-style-type: none"> Interchange would be partially constructed before any traffic could be transferred to the new Columbia River bridges.

Component	Estimated Duration	Notes
Demolition of the existing Interstate Bridge	1.5 to 2 years	<ul style="list-style-type: none"> Demolition of the existing Interstate Bridge could begin only after traffic is rerouted to the new Columbia River bridges.
Three interchanges north of SR 14	3 to 4 years for all three	<ul style="list-style-type: none"> Construction of these interchanges could be independent from each other and from construction of the Program components to the south. More aggressive and costly staging could shorten this timeframe.
Light-rail	4 to 6 years	<ul style="list-style-type: none"> The light-rail crossing would be built with the Columbia River bridges. This phase includes all the infrastructure associated with LRT (e.g., overhead catenary system, tracks, stations, park and rides).
Total construction timeline	9 to 15 years	<ul style="list-style-type: none"> Funding, as well as contractor schedules, regulatory restrictions on in-water work and river navigation considerations, permits and approvals, weather, materials, and equipment, could all influence construction duration.

1 **What are the effects of the Modified LPA and how do they compare to**
 2 **the No-Build Alternative?**

3 This section highlights how the Modified LPA compares to the No-Build Alternative in terms of transportation
 4 performance and community and environmental effects. Table 2 and Table 3 summarize the key performance
 5 and impact differences. Mitigation measures proposed for the effects are identified in Table 4. Chapter 3,
 6 Existing Conditions and Environmental Consequences, provides more detail on performance, impacts, and
 7 mitigation.

Table 2. Summary of Transportation Effects and Cost for the No-Build Alternative and Modified LPA and Design Options

All projections and forecasts are for the design year of 2045 unless otherwise stated. The description of effects under the Modified LPA design options are in comparisons to the Modified LPA with Double-Deck Fixed-Span Bridge, One Auxiliary Lane, C Street Ramps, and Centered I-5.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable- Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps ^b	Modified LPA Park-and-Ride Site Options
Hours of congestion/day at Interstate Bridge	SB: 16 hours. NB: 14 hours NB.	SB: Inconclusive due to congestion spillback from I-5/I-405 split NB: 9 hours.	SB: Inconclusive due to congestion spillback from I-5/I-405 split. NB: 6 hours.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Southbound weekday peak 2-hour average travel times from I-205 to I-405 in North Portland	AM: 58 minutes. PM: 29 minutes.	AM: 54 minutes (7% reduction). PM: 14 minutes (52% reduction).	AM: 50 minutes (14% reduction). PM: No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Northbound weekday peak 2-hour average travel times from I-405 in North Portland to I-205	AM: 18 minutes. PM: 42 minutes.	AM: 13 minutes (28% reduction). PM: 26 minutes (38% reduction).	AM: No change in effects. PM: 14 minutes (67% reduction).	No change in effects.	No change in effects.	No change in effects.	AM: No change in effects. PM: 25 minutes (40% reduction).	No change in effects.
Persons crossing over the Interstate Bridge per day	243,100 total: <ul style="list-style-type: none"> 196,600 via general-purpose vehicles. 30,100 via truck. 16,000 via transit. 400 via active transportation. 	252,000 total: <ul style="list-style-type: none"> 191,200 via general purpose vehicles. 29,200 via truck. 30,000 via transit. 740 to 1,600 via active transportation. 	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Vehicle trips over the I-5 bridge/day	180,000 (+26% compared to existing conditions).	175,000 (-3% compared to No-Build Alternative).	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Bridge trips by active transportation (walk, bicycle, roll)	400 trips per day (similar to existing conditions). No improvement to facilities or connections.	Between 740 and 1,600 trips per day. Improved capacity, access, safety, and user experience for trips across the bridge as well as along connecting facilities.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Total travel time by transit between downtown Vancouver and Hayden Island^a	AM SB: 36 minutes. ^c PM NB: 21 minutes.	AM SB: 17 minutes. PM NB: 17 minutes.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.

Work in Progress - Not for Public Distribution

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable- Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps ^b	Modified LPA Park-and-Ride Site Options
Total travel time by transit between downtown Vancouver and Lombard Transit Center^a	AM SB: 43 minutes. ^e PM NB: 41 minutes. ^e	AM SB: 25 minutes. ^d PM NB: 25 minutes. ^d	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Total travel time by transit between downtown Vancouver and Rose Quarter^{a, f}	Express Bus, AM SB: 43 minutes. Express Bus, PM NB: 62 minutes LRT: Service not available.	Express Bus, AM SB: 52 minutes. Express Bus, PM NB: 38 minutes. LRT: 37 minutes (both AM SB and PM NB).	Express Bus, AM SB: 52 minutes. Express Bus, PM NB: 26 minutes. LRT: No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Total travel time by transit between downtown Vancouver and Pioneer Square^{a, f, g}	Express Bus AM SB: 48 minutes Express Bus PM NB: 67 minutes LRT: Service not available.	Express Bus, AM SB: 59 minutes. Express Bus, PM NB: 45 minutes. LRT: 47 minutes (both AM SB and PM NB).	Express Bus, AM SB: 59 minutes. Express Bus, PM NB: 33 minutes. LRT: No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Freight mobility and access	No improvement.	Improved access, mobility, and safety with wider lanes and shoulders on the bridge and improved design at critical port access points at Mill Plain and Marine Drive.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Traffic safety <i>Note to Reviewers:</i> <i>Additional safety analysis is pending and will be incorporated into this row.</i>	No improvement.	Reduced congestion and improved highway design would reduce crashes.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Arterial and local street intersections operating below standards (AM/PM peaks)	6 intersections.	10 intersections.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	119 intersections.	No change in effects.
Transit safety and security	No improvement.	Light-rail stations provide a higher level of visibility and lighting than on-street bus stops. Stations would have additional safety measures incorporated into design.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable- Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps ^b	Modified LPA Park-and-Ride Site Options
Effect on river navigation	No improvement. Provides 263 feet of horizontal clearance and 178 feet of vertical clearance. Continue risk to navigation from potential earthquake events, including the potential for the bridge failing and blocking or obstructing the navigation channels.	Reduces the need for and severity of the S-curve maneuver and reduces number of piers. Increases horizontal clearance to 400 feet and reduces vertical clearance to 116 feet. Reduces length of the Vancouver Upper Turning Basin by 285 feet and the distance between the BNSF Railway Bridge and the Columbia River bridges would be reduced by the same amount, reducing the available distance for vessels to align with the openings of the Columbia River bridges and the BNSF Railway Bridge by approximately 6% Decreases navigation complexity for most users that do not require a bridge lift. Bridge Pier 7 may impact vessel use of Terminal 1 at the Port of Vancouver. Improved navigation through increased seismic resiliency in event of potential earthquake by reduction in the risk of bridge failure or collapse and blocking or obstructing the navigation channels.	No change in effects.	No change in effects.	Similar, except: • Would reduce the Vancouver Upper Turning Basin by 329 feet, with the same reduction in distance between the Columbia River bridges and the BNSF Railway Bridge.	Similar, except: • 178 feet of vertical navigation clearance in the open position. • Higher maximum vertical navigation clearance in the closed position compared to No-Build. • Decreased navigation complexity. • Movable-span operations, and thus river navigation operations, may need to be restricted to nighttime openings. • Would reduce the Vancouver Upper Turning Basin to 329 feet, with a similar reduction in distance between the Columbia River bridges and the BNSF Railway Bridge. • Would increase need for additional construction time, materials, and equipment.	No change in effects.	No change in effects.
Effect on aviation safety	No improvement.	Less intrusion into Pearson Field protected airspace. Reduced potential for bird nesting and roosting.	No change in effects.	No change in effects.	Less intrusion into Pearson Field protected airspace.	Penetration into Pearson Field protected airspace for longer duration.	No change in effects.	No change in effects.
Capital cost	\$0	(pending)	(pending)	(pending)	(pending)	(pending)	(pending)	(pending)

Notes:

- a) Total transit travel times include 10 minutes of walk access (1/4 mile walk on either end of the trip at 3 mph average walk speed) in addition to initial and transfer (if applicable) wait time. Wait times are based on half the headway.
 - b) The SR 14 Interchange Without C Street Ramps Design Option would require express bus transit to be rerouted to access downtown Vancouver via Mill Plain Boulevard. This would add more travel time for express bus transit trips in and out of downtown Vancouver on express bus because of added distance and congestion on the mainline.
 - c) Route 60 does not stop at Hayden Island southbound, so a trip from Vancouver to Hayden Island travels south to Delta Park and then back north to stop on Hayden Island.
 - d) Travel time is on Yellow Line LRT.
 - e) Route includes 60 Vancouver – Delta Park with transfer to Yellow Line LRT.
 - f) Express Bus includes Route 101 from downtown Vancouver – Rose Quarter or Pioneer Square.
 - g) Express Bus includes two stops between downtown Vancouver and Pioneer Square. LRT includes 16 stops between downtown Vancouver and Pioneer Square.
- I- = Interstate; LRT = light-rail transit; LPA = Locally Preferred Alternative; NB = northbound; SB = southbound; SR = State Route

Table 3. Summary of Community and Environmental Effects for the No-Build Alternative and the Modified LPA

All projections and forecasts are for the design year of 2045 unless otherwise stated. The description of effects under the Modified LPA design options are in comparisons to the Modified LPA with Double-Deck Fixed-Span Bridge, One Auxiliary Lane, C Street Ramps, and Centered I-5.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable-Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps	Modified LPA Park-and-Ride Site Options
Acquisitions and Displacements	None.	Approximately 47 acres of property acquired and displacement of: <ul style="list-style-type: none"> • 43 residential units.^a • 33 businesses.^b • 2 public use sites. 	Additional 0.1s acres of property acquired.	Additional 1 acre of property acquired, and an additional 33 residential units and 3 businesses displaced.	Additional 0.2 acres of property acquired.	No change in effects.	No change in effects.	Waterfront locations: <ul style="list-style-type: none"> • Site 1: no acquisition or displacement. • Site 2: 0.1 acres acquired, no displacement. • Site 3: 1.5 acres acquired, • 1 business displaced. Evergreen locations: <ul style="list-style-type: none"> • Site 1: 3.16 acres acquired, no displacement. • Site 2: no acquisition or displacement.
Land use and economics	<ul style="list-style-type: none"> • Would not address current deficiencies. • Existing land uses would remain vulnerable to high levels of congestion, unsafe conditions, and potential earthquake-induced failure. • No high-capacity transit, inconsistent with the stated policies and goals of regional transportation plans. • Congestion that would impair freight movement and reduce area productivity, which could indirectly impact the implementation of land use plans and goals for economic development. 	<ul style="list-style-type: none"> • Converts approximately 47 acres of land to transportation use; currently zoned industrial or commercial, with some land zoned residential. • High-capacity transit is consistent with state, regional, and local plans and policies. • Higher toll rates during peak periods would support regional and local policies for congestion and is not expected to change land use patterns. • Reduction in property tax revenues. • Business displacements have the potential to impact 587 employees, which would be provided relocation assistance. 	Similar, except: <ul style="list-style-type: none"> • Slightly more acquisition of property at Fort Vancouver National Historic Site. • Improved traffic operations (shorter duration times and length of congestion, reduced travel times, and improved mobility options) would result in improved mobility and access for freight and employment. 	Similar, except: <ul style="list-style-type: none"> • Larger areas of properties being permanently acquired. • Additional 2 acres of acquisitions and displacements. • Potential to impact 542 additional employees. 	Similar, except lower maximum height and reduced highway grade would benefit freight vehicle speed with corresponding economic benefits.	Similar, except openings would continue to cause delays and congestion for other modes. Lower bridge height would allow less marine traffic to pass without a bridge opening. Movable-span operations, and thus river navigation operations, may need to be restricted to nighttime openings, which could impact marine commerce by restricting movement for large vessels.	Similar, but additional traffic delay and travel times near the Mill Plain Boulevard interchange and in downtown Vancouver would have an economic impact to local businesses.	No change in effects.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable-Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps	Modified LPA Park-and-Ride Site Options
	<ul style="list-style-type: none"> Loss in job growth could lead to decreased housing prices, increased commercial vacancies, and reduced demand for downtown revitalization. 							
Neighborhoods	<ul style="list-style-type: none"> No change to existing neighborhoods, community facilities, or social resources. Future development might not be fully consistent with goals that assume improved mobility and expanded transit access. Neighborhoods would not benefit from reduced congestion, improved mobility, and access to employment. 	<ul style="list-style-type: none"> Would not adversely affect community cohesion in neighborhoods, except for Hayden Island. Could increase cohesion in neighborhoods near the Community Connector. Would affect the Hayden Island neighborhood's community cohesion, including displacement of floating homes and changes to views. Fourteen businesses would be displaced. However, neighborhood cohesion would be improved by a more continuous street system, improved pedestrian and bicycle facilities, and transit that increases connections for residents. Construction-related impacts such as traffic diversion noise, temporary reductions in air quality, and sidewalks disruptions. 	No change in effects.	Similar but with potential residential displacements in Esther Short neighborhood.	Similar, except: <ul style="list-style-type: none"> May help to maintain or improve neighborhood cohesion by providing additional transit station location options on Hayden Island, which would provide more opportunities for connection to residences and development. 	Similar to the single-level fixed-span bridges, except: <ul style="list-style-type: none"> Would cause backups that would reduce reliability for all travel modes, similar to the No-Build Alternative, which would negatively affect neighborhood cohesion. 	No change in effects.	No change in effects.
Equity	<ul style="list-style-type: none"> Equity priority communities would not benefit from increased mobility and accessibility. Would avoid short- and long-term displacement of residents and businesses. 	<ul style="list-style-type: none"> Increased access to high-capacity transit, increased availability of active transportation, and highway and driving travel time reductions. Distribution of benefits is not necessarily equitable. 	Similar, but: <ul style="list-style-type: none"> Would reduce delay and congestion on the Columbia River bridges to a greater extent, which would improve travel times for motorists, express bus riders, and emergency vehicles; slightly greater 	No change in effects.	Similar, except: <ul style="list-style-type: none"> Users would experience shorter distance to climb across the bridge. Users may feel safer due to the extra security from visibility from passing vehicles. 	Similar to the single-level fixed-span bridges, except: <ul style="list-style-type: none"> There may be travel delays for transit and active transportation users due to the movable span. 	No change in effects.	No change in effects.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable-Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps	Modified LPA Park-and-Ride Site Options
	<ul style="list-style-type: none"> Would avoid construction-related impacts such as traffic diversion noise, temporary reductions in air quality, and cost burdens of tolling. 	<ul style="list-style-type: none"> Increase in job access for all demographic groups due to faster travel times. Potential displacement of encampments of houseless populations, residential displacements, and the additional transportation cost from tolling. Construction-related impacts such as traffic diversion noise, temporary reductions in air quality, and cost burdens of tolling. Tolling would place a burden on low-income travelers. 	<p>increase in jobs access for all demographic groups.</p> <ul style="list-style-type: none"> Construction-related impacts such as traffic diversion noise, temporary reductions in air quality, and cost burdens of tolling. 					
Environmental justice	<ul style="list-style-type: none"> No displacement of residents, businesses, community resources, or jobs. Travel times would increase by approximately 50% compared to existing times. Would not bring light-rail to Hayden Island or downtown Vancouver. 	<ul style="list-style-type: none"> Increased access to high-capacity transit and active transportation, and reductions in vehicle travel time. Distribution of benefits is not necessarily equitable. Increase in job access due to faster travel times. Residential and business displacements. Increased traffic and noise impacts from construction. Improved air quality. Some adverse impacts to community cohesion. 	No change in effects.	Similar, but would increase residential and business displacements.	Similar, except shared-use path users would have more exposure to noise, but also have a shorter distance to climb and more “eyes on the path.”	Similar, but bridge openings could delay transit and active transportation users.	No change in effects.	No change in effects.
Public services and utilities	No change.	<ul style="list-style-type: none"> Improves emergency service response time with improved traffic conditions. Displacement of ODOT permit Station and Field Office. 	Similar, but further reduced congestion and multimodal operations would lead to improved response times.	No change in effects.	Similar, but response times to transit and shared-use path incidents could improve.	Delays and disruptions to emergency response due to bridge lifts would continue, but with less frequency than the No-Build.	No change in effects.	Utilities at the park-and-ride locations at W 4th Street and W 3rd Street could require relocation or replacement.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable-Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps	Modified LPA Park-and-Ride Site Options
Total acres of park and recreation resources acquired (approximate)	0 acres.	1.3 acres	Would require an additional 1,500 square feet of acquisitions.	Would require 200 square feet less of acquisitions.	Would require an additional 760 square feet of acquisitions.	Would require an additional 760 square feet of acquisitions.	No change in effects.	N/A
Linear feet of trails to be reconstructed and/or permanently realigned (approximate)	0 feet.	5,800 feet.	6,000 feet	5,800 feet	6,000 feet	6,000 feet	5,700 feet	N/A
Visual quality (changes to visual resources)	Constructed elements within the Area of Visual Effect (AVE) would not change. Project environment coherence would be negatively affected by increased traffic and congestion, however, natural and cultural elements are expected to be compatible with the existing visual environment.	Impacts would include new visual elements that could alter the visual character and quality in the AVE (e.g., new bridges across the Columbia River). Landscape units with a beneficial or neutral impact on visual quality would have a natural, cultural, and project environment that is compatible with existing visual conditions, except for increased visibility of the North Portland Harbor bridges to viewers in the floating homes. Adverse impacts to landscape units would result from blocking views of the natural environment and changes in visual experience from elevated bridge structures.	Additional width would contribute to a slightly increased visual mass for viewers in close proximity or beneath the structures in the Columbia River landscape unit.	Would include an improvement in perception of visual quality by shifting project elements slightly farther from sensitive viewers at Kanaka Village and other views from Fort Vancouver National Historic Site in the Greater Central Park landscape unit.	May become a beneficial feature from nearby views in the Columbia River landscape unit based on the chosen architectural design.	The height of the bridge decks would be lower, but the towers would protrude higher into the skyline for areas in Vancouver, Fort Vancouver, and Hayden Island.	Would eliminate project environment elements associated with the C Street Ramps that would be visible for sensitive recreational viewers in the Greater Central Park landscape unit.	Potential changes in the cultural visual environment in the Vancouver Downtown landscape unit.
Number of NRHP-listed or NRHP-eligible historic built environment resources affected	0	13	13	13	13	13	13	13
Number of archaeological sites affected	0	13	13	13	13	13	13	13

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Changes in VMT used to calculate air pollutant emissions	3,776,000 VMT in 2045 (37% increase compared to existing conditions).	3,680,000 VMT in 2045 (33% increase compared to existing conditions).	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Changes in air pollutant emissions	Future regional emissions would be substantially lower than existing emissions for all MSAT and criteria pollutants, except for total PM ₁₀ , which would only be about 1% lower, consistent with national trends.	Similar to No-Build Alternative (slightly lower emissions due to reduced VMT).	No change in effects.	No change in effects.	Similar, but may slightly reduce operational emissions due to the lower profile grade, which would reduce acceleration and braking of vehicles crossing the bridges.	Similar to the single-level fixed-span bridges, except for a minor increase in air quality pollutants due to vehicles idling during bridge openings. There would be fewer bridge openings than with the No-Build Alternative.	No change in effects.	No change in effects.
Changes in MSATs emissions (2045)	<ul style="list-style-type: none"> 1,3-Butadiene: 100% reduction Acetaldehyde: 84% reduction Acrolein: 91% reduction Benzene: 72% reduction Diesel Particulate Matter: 89% reduction Ethylbenzene: 32% reduction Formaldehyde: 88% reduction Naphthalene: 85% reduction Polycyclic Organic Matter: 96% reduction 	<ul style="list-style-type: none"> 1,3-Butadiene: 100% reduction Acetaldehyde: 87% reduction Acrolein: 92% reduction Benzene: 73% reduction Diesel Particulate Matter: 90% reduction Ethylbenzene: 33% reduction Formaldehyde: -90% reduction Naphthalene: -95% reduction Polycyclic Organic Matter: -96% 	No change in effects.	No change in effects.	Similar, but may slightly reduce operational emissions due to the lower profile grade, which would reduce acceleration and braking of vehicles crossing the bridges.	Similar to the single-level fixed-span bridges, except for a minor increase in air pollutants due to vehicles idling during bridge openings. There would be fewer bridge openings than with the No-Build Alternative.	No change in effects.	No change in effects.
Changes in regional criteria pollutant emissions	<ul style="list-style-type: none"> Carbon Monoxide: 68% reduction Nitrogen Dioxide: 78% reduction Sulfur Dioxide: 6% reduction Volatile Organic Compounds: 54% reduction Total PM₁₀^a: 16% reduction 	<ul style="list-style-type: none"> Carbon Monoxide: 70% reduction Nitrogen Dioxide: 81% reduction Sulfur Dioxide: 11% reduction Volatile Organic Compounds: 54% reduction Total PM₁₀^a: 1% reduction Total PM_{2.5}^b: 59% reduction 	No change in effects.	No change in effects.	Similar, but may slightly reduce operational emissions due to the lower profile grade, which would reduce acceleration and braking of vehicles crossing the bridges.	Similar to the single-level fixed-span bridges, except for a minor increase in air quality pollutants due to vehicles idling during bridge openings. There would be fewer bridge openings than with the No-Build Alternative.	No change in effects.	No change in effects.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable-Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps	Modified LPA Park-and-Ride Site Options
	<ul style="list-style-type: none"> Total PM_{2.5}^b: 52% reduction 							
Number of receptors that exceed highway noise thresholds^c	215	198	Similar, except: Highway noise impacts, before and after mitigation, would be slightly different because traffic lanes would be slightly closer to noise-sensitive land uses. No change to peak-hour traffic volumes, posted speed limit, or vehicle mix.	Similar, except for a barely perceptible increase in traffic noise west of I-5 near the southbound mainline and ramps.	Similar, except this option would result in a slight increase in highway noise impacts east and west of the bridge due to the wider bridge span (99 feet wider) and lower roadway deck (29 feet lower).	Similar to the single-level fixed-span bridges.	Similar, except with minor changes to noise impacts at a level near or below perceptible range.	No change in effects.
Number of receptors with moderate transit noise impact levels^c	0.	12 ^d	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Number of receptors with severe transit noise impact levels^c	0	0	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Number of receptors with transit vibration impacts^c	No vibration impacts without extension of light-rail.	12 residences and 1 theater	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Total Regional Transportation Energy Consumption (mmBtu/day)	<ul style="list-style-type: none"> 270,928 in 2045 without electric vehicles 155,446 in 2045 with electric vehicles 	<ul style="list-style-type: none"> 270,179 in 2045 without electric vehicles (-0.28% compared to No-Build Alternative) 155,037 in 2045 with electric vehicles (-0.28% compared to No-Build Alternative) 	Similar. Modeling results estimate a non-statistically significant difference of less than 0.1%.	No change in effects.	Similar, but would slightly reduce operational emissions due to the reduced profile grade of the new Columbia River bridges.	Similar to the single-level fixed-span bridges option, except it would increase energy consumption due to the electricity required to raise and lower the bridge and as a result of idling by queued vehicles on the freeway during bridge closures.	Similar, but would create additional congestion on local streets, which would decrease vehicle efficiency, resulting in increased energy consumption.	No change in effects.
EMF	No change.	Similar. EMF emissions would increase slightly at certain locations (but would remain well below exposure guidelines).	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.

Work in Progress - Not for Public Distribution

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Water Quality and Stormwater Management	No change, (area would remain untreated until stormwater treatment could be addressed according to state prioritization and available funding).	<ul style="list-style-type: none"> Beneficial effect on receiving water quality (due to BMPs to remove pollutants). Could cause changes in peak flows and stormwater runoff volumes. 	Similar, but would slightly increase pollutant loads.	No change in effects.	No change in effects.	Similar, but potential for additional minor impacts associated with the maintenance and operations of the lift span.	No change in effects.	No change in effects.
Contributing Impervious Area	178 acres total: <ul style="list-style-type: none"> 0 acres treated 21 acres infiltrated 157 acres untreated 	207 acres total: <ul style="list-style-type: none"> 190 acres treated 17 acres infiltrated 0 acres untreated 	Slight increase in the contributing impervious area(211 acres total).	No change in effects.	Slight increase (210 acres total).	Slight increase (214 acres total).	No change in effects.	No change in effects.
Total Suspended Solids	120,272 lbs/year.	16,694 lbs/year.	Similar, but would slightly increase pollutant loads.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.
Hydrology	No change (continued release of stormwater with degraded quality into receiving waters).	Potential to cause long-term hydrologic effects due to an increase of 30 acres of contributing impervious area.	Similar, but would result in a slight increase (1.9%)in the contributing impervious area.	No change in effects.	Similar, but would result in a slight increase in the contributing impervious area.	Similar, but would result in a slight increase in the contributing impervious area.	No change in effects.	No change in effects.
Wetland impacts (net fill/restoration)	No change.	<ul style="list-style-type: none"> +0.58 acres wetlands. +7.39 acres wetland buffers. -0.13 acres other waters (net restoration). 	No change in effects.	No change in effects.	+0.03 acres other waters. No change in effects to wetlands or wetland buffers.	+0.06 acres other waters. No change in effects to wetlands or wetland buffers.	No change in effects.	No change in effects.
Ecosystem - aquatic resources (total net change)	No change.	<ul style="list-style-type: none"> Benthic habitat impact: -0.13 acres (net restoration). Overwater Shading (Water Surface): +1.04 acres. Overwater Shading (Elevated Deck): +8.22 acres. 	Slight increase in elevated overwater shading. <ul style="list-style-type: none"> Overwater Shading (Elevated Deck): +13.02 acres. 	No change in effects.	<ul style="list-style-type: none"> Benthic habitat impact: +0.03 acres. Overwater Shading (Water Surface): +1.41 acres. Overwater Shading (Elevated Deck): +10.78 acres. 	<ul style="list-style-type: none"> Benthic habitat impact: +0.07 acres of in-water area. Overwater Shading (Water Surface): +1.58 acres. Overwater Shading (Elevated Deck): +10.78 acres. 	No change in effects.	No change in effects.
Ecosystems - permanent impacts to terrestrial resources in Oregon (acres)	No change.	<ul style="list-style-type: none"> “High” wildlife/riparian value habitats: 1.12 “Medium” wildlife/riparian value habitats: 6.20 Wetlands: 0.58 Wetland Buffers: 7.39 	No change in effects.	No change in effects.	No change in effects.	No change in effects.	Similar, except would slightly reduce impervious surface.	No change in effects.
Ecosystems - permanent impacts to terrestrial	No change.	<ul style="list-style-type: none"> Riparian buffers: 0.79 Biodiversity Areas: 0.15 Oak Woodlands: <0.01 	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.	No change in effects.

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resources in Washington (acres)		<ul style="list-style-type: none"> Wetlands: 0 Wetland Buffers: 0.06 						
Geology/Ground water	No change (seismic deficiencies remain, would not affect geologic resources, would sustain existing impacts to degradation of the groundwater quality).	<ul style="list-style-type: none"> Improved public safety, minimizing damage to infrastructure, and limiting economic disruption due to seismic improvements. Slight potential for increased use of materials that could spur expansion and/or opening of surface mines. Benefits to groundwater as a result of stormwater management and treatment. 	No change in effects.	No change in effects.	No change in effects.	Similar, but would require more substantial river piers and pier foundations to support the movable spans.	No change in effects.	No change in effects.
Hazardous Materials	<ul style="list-style-type: none"> No potential for adverse effects from acquisition of contaminated sites. No beneficial effects from the cleanup of contaminated sites. Untreated stormwater would continue to enter surface waterbodies and groundwater. No improvement in existing spill risks from traffic congestion and collisions. 	<ul style="list-style-type: none"> Moderate potential for increased liability for property owners (ODOT and WSDOT) from the acquisition of 4 contaminated sites. Beneficial effects on human health and safety and surface and groundwater quality from cleanup and remediation of contaminated areas on acquired sites and limiting the possible off-site migration of contamination. If residual contamination remains on acquired sites after cleanup, moderate potential for adverse effects on human health and safety if encountered during construction or with the possible off-site migration of contamination. Beneficial effects from updates in stormwater conveyance and treatment. Greater reduction in spill risk due to reduced traffic congestion and collisions. 	Same, except would require the acquisition of a slightly larger area of property with a potential source of contamination.	No change in effects.	<ul style="list-style-type: none"> Requires the acquisition of a slightly larger area of property with a potential source of contamination. Requires an increased area of in-water work due to larger bridge foundations, which could result in a comparatively greater potential risk of mobilizing hazardous materials in river sediments. 	Same, except would require the acquisition of a slightly larger area of property with a potential source of contamination.	No change in effects.	No change in effects.

	No-Build Alternative	Modified LPA Double-Deck Fixed-Span Bridges with One Auxiliary Lane, C Street Ramps, and Centered I-5	Modified LPA Two Auxiliary Lanes	Modified LPA I-5 Mainline Westward Shift	Modified LPA Single-Level Fixed-Span Bridges	Modified LPA Single-Level Movable-Span Bridges	Modified LPA SR 14 Interchange without C Street Ramps	Modified LPA Park-and-Ride Site Options
Climate	<ul style="list-style-type: none"> Substantially lower energy consumption and greenhouse gas (GHG) emissions in 2045 due to increased electric vehicles in fleet and decarbonized electricity sources. 	<ul style="list-style-type: none"> Lower energy consumption and GHG emissions in 2045 similar to No-Build Alternative. Increased mode share of low and no emissions modes (transit, active transportation). Improvements in climate resilience with materials and design. 	Similar, but would slightly reduce emissions due to improved congestion.	No change in effects.	Similar, but would slightly reduce operational emissions due to the reduced profile grade of the new Columbia River bridges.	Similar, but would increase energy consumption due to the longer construction duration, additional materials required for the larger bridge foundations, and electricity required to raise and lower the bridge and as a result of idling during bridge closures.	Similar, but additional congestion and idling would decrease vehicle efficiency, resulting in increased GHG emissions.	No change in effects.

Notes:

- a Does not include the displacement of houseless individuals.
- b Does not include the displacement of a billboard and cellular phone tower.
- c Information represents noise impacts without mitigation.
- d Does not include noise impacts at a hotel within range.

AVE = Area of Visual Effect; EMF = electric and magnetic fields; GHG = greenhouse gas; I- = Interstate; lbs = pounds; LPA = Locally Preferred Alternative; mmBtu = one million British thermal units; MSAT = mobile source air toxics; N/A = not applicable; NRHP = National Register of Historic Places; ODOT = Oregon Department of Transportation; PM10 = particulate matter less than or equal to 10 microns in diameter; VMT = vehicle miles traveled; WSDOT = Washington Department of Transportation

1

2 What mitigation or compensation is proposed for unavoidable adverse
3 impacts?

4 This section summarizes the mitigation measures proposed for the community and environmental effects
5 that would occur as a result of the Modified LPA. Table 4 highlights the mitigation or compensation measures
6 proposed for the effects described in Table 3. Chapter 3, Existing Conditions and Environmental
7 Consequences, provides more detail on proposed mitigation or compensation measures. Mitigation and
8 compensation would be adjusted as needed for differences in effects associated with the design options.

9 **Table 4. Summary of Mitigation or Compensation for Community and Environmental Effects**

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
Transportation	<p>Long-Term Effects</p> <p>No mitigation was identified for impacts related to regional transportation, freight mobility and access, bridge lifts, active transportation, safety, or transportation demand management (TDM) / transportation system management (TSM). Specific mitigation related to freeway operations and arterials and local streets could include the following:</p> <p><i>I-5 Operations:</i> Potential Mitigation to meet ODOT’s and/or WSDOT’s performance standards on I-5 could include:</p> <ul style="list-style-type: none"> • Provide an additional auxiliary lane between the Hayden Island on-ramp and the SR 14 off-ramp. • Implement more intensive demand reduction strategies beyond what the IBR Program already includes (variable-rate tolling, improved transit and active transportation systems, and enhanced TDM and TSM systems) to reduce northbound congestions. • Add an auxiliary lane to provide additional capacity between Columbia Boulevard and Going Street to alleviate the bottleneck approaching the I-5/I-405 split in North Portland. ODOT will continue to analyze solutions and identify other potential mitigation measures for this bottleneck in addition to the multimodal demand-management strategies included in the IBR Program. Even with a reduced or eliminated bottleneck, I-5 through the study area may still potentially need mitigation to meet WSDOT’s standards because the Columbia River bridges would continue to be a bottleneck, causing congestion on I-5 through Vancouver. • Braid the Mill Plain on-ramp and SR 14 off-ramp and provided a slip lane to increase access between the Mill Plain Interchange and SR 14. <p><i>Arterials and Local Streets:</i> Five intersection in the Modified LPA could require mitigation improvements. Final Mitigation would be determined and agreed upon by the IBR program and the affected agency.</p> <p><i>SR 14 Interchange Without C Ramps Design Option:</i> Twelve intersections could require mitigation improvements. Additional traffic analysis would be conducted to confirm and refine mitigation measures as needed. Final mitigation would be determined and agreed upon by the IBR Program and the affected agency</p> <p>Temporary Effects</p> <p><i>Regional Travel:</i> Prepare detailed construction plans and maintain traffic plans to address all affected facilities and their mode of transportation.</p> <p><i>Freight Mobility and Access:</i> Mitigation for freight and mobility would be an element of the Program construction plans identified above. In addition, the IBR Program would coordinate with all facility owners to notify them of facility or access closures. Construction information would be provided to affected local jurisdictions.</p>

Work in Progress - Not for Public Distribution

Interstate Bridge Replacement Program

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> • To minimize impacts to freight rail operations, the Program would coordinate with the railroad owners and rail operators and would obtain all applicable required permits. Critical work that would result in rail line shutdowns would be performed only at night and on weekends. Construction would be limited to the times approved and coordinated with freight rail operators. <p><i>Bridge Lifts:</i> During IBR construction, the IBR Program would work with WSDOT, ODOT, the U.S. Coast Guard, the ports, and other jurisdictions to minimize bridge lifts and gate closures to overnight periods to lessen the impact to all transportation modes. The construction plan would cover coordination and communication with agencies and the public for bridge lifts and gate closures.</p> <p><i>Arterials and Local Streets:</i> All avoidance and minimization measures associated with constructing the Modified LPA would comply with local regulations governing construction traffic control and construction truck routing. The IBR Program would finalize detailed construction plans in close coordination with local jurisdictions, WSDOT, and ODOT during the final design and permitting phases of the Program.</p> <p><i>Transit Operations:</i> Transit service and facility modifications would be coordinated with TriMet and C-TRAN to minimize temporary impacts and disruptions to bus and light-rail facilities and service during construction. Detailed construction plans and coordination/communication plans would be developed.</p> <p><i>Active Transportation:</i> Construction plans would include specific mitigation for impacts to active transportation facilities and users, in coordination with local jurisdictions. The Transportation Technical Report has additional detail on potential measures including protected facilities through construction areas, signage, lighting, communications, safety and maintenance.</p> <p><i>Safety:</i> The IBR Program would work with WSDOT and ODOT on implementing the latest safety technology during construction.</p> <p><i>Transportation Demand Management and Transportation System Management:</i> The IBR Program would work with WSDOT, ODOT, and partner agencies on adapting and implementing TDM and TSM treatments during construction. Potential strategies could include:</p> <ul style="list-style-type: none"> • Expanded transit service. • Vanpool/carpool program. • Telecommuting options. • Compressed work week/flexible work schedules. • Active transportation improvements and enhancements.
Aviation/Navigation	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Standards and regulatory measures have been evaluated and screened. These measures have been incorporated during the development of the Modified LPA to the extent possible and will continue to be refined as the design progresses. <p><i>Project-Specific Requirements</i></p> <ul style="list-style-type: none"> • The Modified LPA would include obstruction marking and lighting to make the river crossing structures visible to aircraft. Proposed roadway or accent lighting on the bridges and surrounding interchanges would be designed to limit light or glare that could affect aviation at Pearson Field or Portland International Airport. • The Modified LPA would have long-term effects for an estimated five vessels, serving three fabricators, that would be unable to transit beneath the new Columbia River bridges. The IBR Program would continue to coordinate with the affected vessel

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p>owners to reach mutually acceptable decisions and agreements to address these effects. Agreements between the IBR Program and vessel owners would be finalized prior to publication of the Final SEIS.</p> <p>Temporary Effects <i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • To protect and minimize temporary effects on aviation and navigation during construction, standard and regulatory mitigation measures such as best management practices (BMPs) would be implemented. Construction BMPs applicable to the Modified LPA are discussed in Section 3.14, Water Quality and Hydrology. • Standard and regulatory mitigation measures for aviation and navigation include: <ul style="list-style-type: none"> – Construction phasing and staging would help ensure that construction activities would be planned and maintain a minimum channel for navigation. A Construction Staging Plan would be reviewed and approved prior to construction. Closures or restrictions on river traffic would be communicated in advance, enabling river users to accommodate their schedules without undue interruption. – Temporary effects to aviation would result from demolition of the Interstate Bridge and construction activities for the Columbia River bridges and the SR 14 interchange. Mitigation of temporary hazardous effects to aviation would be required in these areas only. FAA would review proposed temporary effects that construction equipment and activities would have on aviation at Pearson Field and would ultimately approve proposed mitigation measures. In addition, FAA would identify requirements for marking equipment and all other obstructions during construction. – Dust control measures, such as watering exposed soil and using gravel surfacing on temporary construction roads, could effectively mitigate dust impacts to aviation from construction activities in the SR 14 area. Section 3.10.6, Air Quality lists dust control requirements in both Oregon and Washington. Construction materials and activities would likewise be managed to minimize glare and smoke. – Public involvement and education programs would be provided throughout construction to provide information to tug operators, pilots, and the public.
<p>Property Acquisitions and Displacements</p>	<p>Long-Term Effects <i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Purchase property at fair market value and provide relocation assistance per the Uniform Act. <p>Temporary Effects <i>Project-Specific Requirements</i></p> <ul style="list-style-type: none"> • Payment to property owners in exchange for temporary use of property during construction. Site impacts from temporary construction uses would be restored or compensated according to fair market or contributory value. • For areas where construction could block or impede residential or commercial building access, continued access to properties during construction would be maintained to the extent possible. Specific provisions may include signage to let the public know that businesses are open and conducting construction during non-peak business hours.
<p>Land use and Economic Activity</p>	<p>Long-Term Effects <i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Purchase property at fair market value and provide relocation assistance per the Uniform Relocation Act.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> No project-specific mitigation measures are proposed. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> Construction BMPs would be used to avoid or minimize indirect construction effects on land use and economics, such as dust, noise, and aesthetic impacts. These measures are discussed in the analyses of air quality (Section 3.10), noise and vibration (Section 3.11), and visual quality (Section 3.9). <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> Reduce impacts to local businesses by implementing a phased construction schedule that avoids complete closures of roads and access points to local businesses. A construction communication plan could be developed to inform travelers about detours and road closures and would direct them to businesses. Construction schedules would be designed to minimize temporary impacts to BNSF Railway lines and service frequency. Outreach to businesses affected by construction and assistance programs would be used to help mitigate potential negative construction-related effects. Offer various assistance programs to aid business development and growth. Coordinate with the Ports of Portland and Vancouver and associated businesses to identify ways to minimize delays for commercial freight vehicles during construction. Signs would be posted to encourage commercial freight vehicles not serving the Portland-Vancouver region to shift from I-5 onto I-205 during construction. To keep freight moving in the vicinity of the Marine Drive interchange during construction, the IBR Program would conduct outreach to the businesses in this area to determine access and site circulation needs and provide alternate access as needed. Noise variances would be secured as required by the City of Vancouver, and noise levels would be monitored on a regular basis during construction near potentially affected sensitive receptors. Construction hours would also be adjusted to minimize impacts during restaurant operating hours and other sensitive times. Work activities would be scheduled and managed to minimize community disruption as much as possible. Potential specific mitigation for temporary impacts on residents is discussed in Section 3.3, Property Acquisitions and Displacements.
Neighborhoods and Equity	<p>Long-Term effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> Purchase property at fair market value and provide relocation assistance per the Uniform Relocation Act and state statutes. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> Future design charrettes could be held during the design phase with residents and community members to help counter the long-term adverse neighborhood effects of the original freeway infrastructure and better integrate new facilities in the neighborhoods. Strategies to minimize impacts to neighborhood cohesion could include providing additional community gathering spaces such as park space and pedestrian and bicycle facilities. <p>Equity:</p>

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> • The IBR Program team is conducting additional research to determine the extent and degree of impacts related to property acquisitions and construction to equity priority communities; this research may inform potential strategies to avoid, minimize, and/or mitigate those impacts. • The IBR Program is also in the early stages of developing a Community Benefits Agreement. The agreement is likely to include a variety of investments and strategies to ensure workforce and contracting equity, enhance the local community, and offset burdens associated with construction and operation. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Construction BMPs would reduce impacts to neighborhoods and equity priority communities. These measures are used to address construction effects such as temporary easements, noise, dust, emissions from construction vehicles, and visual clutter. BMPs applicable to the potential impacts described above in Section 3.5.5 are discussed in Section 3.3, Acquisitions and Displacements; Section 3.09, Visual Quality; Section 3.10, Air Quality; and Section 3.11, Noise. • Implement nighttime construction schedules and shield nighttime lighting. • Hold community meetings before construction starts to inform residents of the construction timeline, relevant staging plans, ramp and road closures, and detour plans. • Install temporary signage to inform drivers of traffic delays because of construction and/or heavy equipment entering or leaving the highway may be installed. • Provide signs for local business assistance alerting customers of continued operation and a hotline for construction information. • Conduct regional outreach activities to provide information on construction impacts and detours that include communications to businesses, agencies, and community-based organizations within the greater Portland and Vancouver area, as well as to WSDOT and ODOT. Traffic advisories and updates would be made available to the public to help make travel choices. • Place communication and signage for temporary routes for pedestrians and biking well in advance of the detour areas. Wayfinding signage would be accessible, consistent, thorough, and maintained. • Coordinate with affected property owners to minimize potential impacts to structures and access points during construction. • Restore removed landscaping on properties following construction. • Pay property owners in exchange for the use of their property during construction.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
Public Services and Utilities	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • There are no specific regulatory requirements for mitigating long-term impacts to public services. For utilities, ODOT and WSDOT would develop agreements with affected utility owners to specify the locations of utilities within the right of way, access, and maintenance requirements, etc. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Implement mitigation strategies for increased travel times along emergency services routes as described in Section 3.1, Transportation, of this Draft SEIS. • Protect Utilities in place where feasible and cost effective. • Work with utility providers to relocate utilities when protection in place is not feasible, with the goal of relocating facilities only once to reduce service disruptions. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Measures to maintain traffic flow and access during construction and to avoid and minimize temporary utility service disruptions would be incorporated into contract specifications. • The IBR Program would comply with current federal Dig Once laws (23 CFR 645.307) and associated state regulations and guidelines, which require advanced coordination with the broadband/fiber industry to invite these providers to participate in highway improvement projects. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Develop a preconstruction communications plan with all affected emergency response agencies to detail how detour and road closure information would be communicated. • Provide advance notice of temporary access restrictions to highway on-ramps, off-ramps, and critical emergency access routes, particularly for emergency responders. • Before construction, evaluate the need for backup on-call emergency helicopter service to transport patients across the river during bridge construction to mitigation highway delays, especially for emergencies on Hayden Island during bridge construction. • If unacceptable emergency response delays occurred due to construction, meet with emergency service representatives to address their concerns and develop solutions. • Conduct public outreach campaigns before construction to ensure that detours and traffic rerouting plans during construction are available to public service providers and the communities they service. Provide detour signs on routes typically used to access public service locations. • Coordinate closely with utility owners during project design to identify temporary facility needs and minimize temporary construction disruptions.
Parks and Recreation	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • If tree removal is unavoidable, replace trees on site and in kind in compliance with applicable requirements of Portland and Vancouver City Code. • Evaluate the feasibility and reasonableness of sound walls in accordance with WSDOT or ODOT criteria to shield park visitors and trail users from increased noise levels. • If, as design progresses, the Modified LPA still requires the permanent conversion of Section 6(f)-protected land from East Delta Park and of Federal Lands to Parks Program-protected land at Marshall Park, identify replacement park land in accordance

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p>with the requirements of those acts.</p> <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Coordinate with the City of Vancouver to use vacated state right of way beneath the existing Interstate Bridge landings in Vancouver for park purposes. • Coordinate with the City of Vancouver to provide access across new state right of way beneath the new bridge alignment to provide a connection between Vancouver Waterfront Park, Waterfront Park, and existing and future waterfront uses west of the new bridges as envisioned in Vancouver’s plans. • If the acquired park land includes play equipment or other amenities, replace those features either in the same park or at one nearby. • Coordinate specific tree removal permitting process and tree replanting requirements (location and type) for each park with the City of Vancouver Urban Forester, Vancouver Parks Department, and Portland Parks and Recreation (PP&R) Urban Forestry. • To the extent practicable, replant trees in the same or similar location as the removed trees. • Screen the transportation improvements from view with trees, vegetation, or built screens. • Explore retaining wall façade treatments to improve the visual quality. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • In compliance with the City of Vancouver and Portland’s tree conservation requirements and codes, protect trees on park property that would be close to construction activities from adverse impacts as directed by the Urban Forestry divisions of the Vancouver Parks, Recreation and Cultural Services (VPR&C) and PP&R. • Employ BMPs, including those outlined in WSDOT and ODOT construction manuals, to minimize increased levels of noise, vibration, glare from construction lights, emissions from construction vehicles, or dust from demolition of existing structures. • Comply with local ordinance requirements to provide additional protection for park users. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Restore landscaping to its original condition once construction is complete. • Protect trees on park property that would be close to construction activities but not displaced from adverse impacts as directed by the Urban Forestry divisions of the VPR&C and PP&R and in compliance with the City of Vancouver’s tree conservation requirements. Restore landscaping to its original condition once construction is complete. • Establish detour routes in coordination with the appropriate jurisdictional authority. Appropriately sign detour routes and, if necessary, distribute information regarding these closures to the public beforehand. • Schedule construction-related closures at Vancouver Landing at Terminal 1, the Vancouver National Historic Reserve, Marshall and Luepke Centers, the Discovery Historic Loop Trail, and the Columbia River Renaissance Trail to minimize effects on large events. • Provide a public information campaign, to alert users of the Lower Columbia River Water Trail and Lewis and Clark National Historic Trail of the temporary limits on recreation in the Columbia River.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> • Provide signage to notify recreational anglers of temporary restrictions on access to fishing areas, and consider distributing this information at locations serving the fishing community. • Reroute or temporarily close bicycle and pedestrian facilities, or cover with temporary enclosures to minimize safety impacts associated with construction activities. • Provide additional signage and lighting to protect users of Waterfront Park and Old Apple Tree Park who are crossing Columbia Way, depending on the expected increase in traffic levels along Columbia Way during the closures at SR 14. • Design temporary detour facilities that provide separation from traffic and meet City of Portland and City of Vancouver standards. • Where detour routes for bikeways would also carry detouring vehicular traffic, identify locations for traffic calming measures to ensure the speed and volumes of traffic do not exceed neighborhood greenway thresholds. • Address potential bicycle/motor vehicle conflicts through proactive signage, lighting, striping, and signal phasing as applicable. • Provide physical and temporal separation between modes at higher risk intersections (i.e., ramp locations, double turn lanes, weaving bus, and bike lanes). • Review and, if necessary, remove adjacent on-street parking to improve stopping and intersection sight distance. Follow the City of Portland’s Vision Clearance Guidelines for uncontrolled intersections. • Verify that signal timing at bicycle and pedestrian crossings provides sufficient crossing time. • Provide protection and warning for bicycle and pedestrian movements during contraflow operations.
Cultural Resources	<p>Identification of the mitigation for adverse effects to historic properties assessed under NEPA will be completed through the National Historic Protection Act Section 106 process. FHWA and FTA, in consultation with WSDOT, ODOT, Oregon State Historic Preservation Office, Washington Department of Archaeology and Historic Preservation, consulting tribes, and other consulting parties, have chosen to complete the Section 106 process and resolve adverse effects on historic properties through the development of a Programmatic Agreement (PA) pursuant to 36 CFR 800.14(b). A Draft PA, with redactions for sensitive information as deemed appropriate by FHWA and FTA in consultation with consulting tribes and other consulting parties, will be made available to the public prior to publication of the Final SEIS. The Final PA will be executed prior to the issuance of the Record of Decision (ROD) and will be included as an appendix to the ROD.</p>
Visual Quality	<p>Long-Term Effects <i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Meet the design standards of the Cities of Vancouver and Portland and the Tri-County Metropolitan Transportation District and the Clark County Public Transit Benefit Area Authority for street furniture and transit stations. • Restore impacted roadsides in interchange and corridor areas in accordance with applicable WSDOT vegetation and tree mitigation requirements. To the extent possible, interchange design should visually provide a sense of gateway, use native plants, and use specific design criteria. • Design gateways in accordance with the Central Park Plan, adopted by the City of Vancouver, and consider input from the affected communities. Designs for landscaping, wall treatments, and other Program improvements, should be considered as part of a gateway at the following locations: the Mill Plain and Forth Plain

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p>interchanges, the Evergreen and McLoughlin crossings, and (to a lesser extent) the crossings at 39th, 33rd, and 29th Streets.</p> <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Mitigation Common to All Landscape Units: <ul style="list-style-type: none"> – For local streets and transit stations, restore damaged landscapes, replant street trees, and provide enhanced landscapes to integrate the facilities into the community. – Shield station and facility lighting. – Minimize structural bulk, such as for ramps and columns. – Design architectural features to blend with the surrounding community. • Mitigation for Transit Stops and Stations: <ul style="list-style-type: none"> – Transit structural and architectural elements should be context-sensitive, while system-related signage and transit patron cues should be consistent with other transit system elements within respective systems. – Design the signal pole color, location, and style in accordance with the lighting district standards of Portland and Vancouver. – Conduct public design charrettes during the final design phases to refine the plans for each station area. – Integrate transit facilities into the design of the community connector. – Establish an Urban Design Advisory Group (UDAG) composed of representatives from stakeholders such as cities, counties, departments of transportations, local tribes, and citizen groups to advise and guide the design process. Section 3.9.6 contains a list of guidelines developed to help the Modified LPA UDAG group in the design process. <p><i>Place-Specific Design Recommendations</i></p> <ul style="list-style-type: none"> • Columbia Slough Landscape Unit Mitigation <ul style="list-style-type: none"> – Marine Drive Interchange <ul style="list-style-type: none"> ▪ Improve waterfront access and interconnect adjacent spaces through alternative reconfigurations of the Marine Drive intersection. ▪ Improve transit alignment and access through a realignment of Marine Drive south of the Expo Center. ▪ Interconnect open spaces under the interchange. ▪ Create a local access network. Integrate direct and safe bicycle and pedestrian circulation trails through and between the interchange areas and develop a local street network to provide necessary access. • Columbia River Landscape Unit Mitigation <ul style="list-style-type: none"> – North Portland Harbor Crossings <ul style="list-style-type: none"> ▪ Improve waterfront trails and increase pedestrian and bicycle access and connectivity. ▪ Encourage other bridge types with fewer columns in the water. ▪ Make detached bridges light and elegant. ▪ Preserve views of Mount Hood. Preserve highway views toward Mount Hood. – Hayden Island <ul style="list-style-type: none"> ▪ Create an iconic entrance to Oregon for southbound motorists. ▪ Integrate transit and interchange structures with landscaped terraces connecting transit stations to ground level. ▪ Ensure Mount Hood views from the transit platform.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> ▪ Coordinate with tribal representatives in the design process and provide opportunities to include public art, historic education, plazas, indigenous canoe watercraft landing and taking off locations, or other cultural features. ▪ Locate transient boat docks for visitors under the highway to facilitate public boat access. – Hayden Island Bridgehead <ul style="list-style-type: none"> ▪ Separate structures to admit daylight. Maintain the separation between bridge structures across the island to ensure daylight and viable landscape at ground level. ▪ Preserve elements of historic bridgeheads. ▪ Coordinate with tribal representatives in the design process and provide opportunities to include public art, historic education, plazas, water access, or other cultural features. ▪ Explore public art opportunities to announce arrival in Oregon, including pylons, piers, and other structures. ▪ Keep banks clear of piers and other massive structures. Refer to applicable design guidelines in Section 3.9.6. – North Bank <ul style="list-style-type: none"> ▪ Reconfigure the under-bridge area as a destination public open space if the horizontal and vertical dimensions allow. ▪ Coordinate with tribal representatives in the design process and provide opportunities to include public art, historic education, plazas, water access, or other cultural features. ▪ Investigate different under-bridge designs. ▪ Include continuation of the Waterfront Renaissance Trail through the under-bridge area. ▪ Regrade land between the railroad embankment and the river bank. ▪ Restore a connection from downtown Vancouver along Main Street to the waterfront area and connect it with Columbia Way for vehicular, bicycle, and pedestrian traffic. ▪ Define active open spaces and other uses with appropriate easements that would flank the Main Street extension to the river. ▪ Introduce active and functional uses under the SR 14 interchange to treat but not detain stormwater runoff, integrate structures into the landscape, accommodate active open space, and provide integral security for structures. ▪ Organize and screen open spaces and structures with landscaping. • Vancouver Downtown Landscape Unit Mitigation <ul style="list-style-type: none"> – Transit Structure “Landing” in Vancouver <ul style="list-style-type: none"> ▪ Provide landscaping, public art, or other façade treatments for the walls of the light-rail landing structure. ▪ Coordinate and design transit structures and facilities in conjunction with the Community Connector. – Park-and-Ride Facilities <ul style="list-style-type: none"> ▪ During the final design phase, conduct public design charrettes to refine the plans for each park and ride. ▪ Incorporate design guidelines and consider input from Central Park and downtown stakeholders and the general public. ▪ Buffer the park and ride from adjacent uses, mainly with landscaping but

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p>potentially with public art, fencing, or other elements.</p> <ul style="list-style-type: none"> ▪ Comply with City of Vancouver Design Standards and have them reviewed by the Vancouver Design Review Committee. ▪ To the extent feasible, eliminate potential glare from the park-and-ride structure components. ▪ Incorporate public art reflective of the unique context at each park-and-ride facility. <ul style="list-style-type: none"> - Fourth Plain Interchange <ul style="list-style-type: none"> ▪ Improve safety and convenience for all travel modes across I-5. ▪ Improve sidewalks on both sides of the Fourth Plain overpass as stipulated by the Vancouver Central Park policy document. - McLoughlin Boulevard Crossing <ul style="list-style-type: none"> ▪ Keep underpass sidewalks level as the roadway dips. ▪ Accommodate transit, pedestrians, bicycles, and local vehicular traffic. ▪ Coordinate lighting under structures with city and I-5 lighting. ▪ Keep the spaces beneath freeway structures to be clear of activities to discourage encampments and other inappropriate uses. - Mill Plain Interchange <ul style="list-style-type: none"> ▪ Distinguish the Mill Plain interchange as the principal entrance to downtown through urban design strategies. ▪ Improve pedestrian and bicycle safety and passage under I-5. ▪ Design the gateways in accordance with the Central Park Plan and consider input from the affected communities. ▪ Create a memorable landscape around the Mill Plain interchange to ensure that it continues its current function as a gateway into Washington. ▪ Restore impacted roadsides in interchange and corridor areas in accordance with WSDOT’s vegetation and tree mitigation requirements. <ul style="list-style-type: none"> • Greater Central Park Landscape Unit Mitigation <ul style="list-style-type: none"> - SR 14 Interchange <ul style="list-style-type: none"> ▪ Maintain existing vegetation wherever possible, particularly between the Kanaka Village and SR 14 ramps. ▪ Restore local access under I-5 on 5th Street for pedestrians and vehicles to connect with trails to Old Apple Tree Park and the Vancouver Land Bridge. ▪ Provide visual and physical connections between under-bridge structures by combining improved sight lines, improved access, and integrated landscape design. ▪ Extend the Vancouver Land Bridge landscaping under the bridges. ▪ Organize and screen open spaces and structures with landscaping. ▪ Announce the bridges with markers. Use architecture or public art to mark entry and departure from each bridge. • Burnt Bridge Creek Landscape Unit Mitigation <ul style="list-style-type: none"> - Ensure compatibility of overpass approaches with neighborhoods with input from the neighborhood facing each end of the bridges. - Consider a local design theme for overpasses. - Calm traffic on 39th Street. • Ruby Junction Landscape Unit Mitigation

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	<ul style="list-style-type: none"> - No mitigation for construction impacts would be warranted in the Ruby Junction Landscape Unit. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • There are no regulatory requirements for temporary effects to visual quality. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Shield construction site lighting to reduce spillover light onto nearby residences and businesses. • Minimize visual obtrusiveness by locating construction equipment and stockpiling materials in less visually sensitive areas, when feasible, and in areas not visible from the road or to residents and businesses. • Provide public areas for observing the construction and demolition processes, using them as an opportunity for public education. • Revegetate areas where vegetation is removed or affected during construction.
Air quality	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • There are no regulatory requirements that would be directly implemented by the IBR Program. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • No mitigation proposed as long-term air quality impacts are not expected. <p>Temporary Effects</p> <p><i>Regulatory Requirements - Oregon</i></p> <ul style="list-style-type: none"> • Comply with Division 208 of OAR 340, which addresses visible emissions and nuisance requirements. • Comply with ODOT Standard Specifications Section 290, which has requirements for environmental protection, including air pollution control measures. • Comply with the Clean Diesel Construction Standard (OAR-731-005-0800) that requires public improvement contracts in the amount of \$20 million or more to include a percentage of nonroad diesel equipment that meet EPA Tier 4 Exhaust Emissions Standards for nonroad diesel equipment, depending on the year of construction. • Comply with Oregon House Bill 2007, known as the "Clean Diesel Bill," which authorizes the Environmental Quality Commission of the Department of Environmental Quality to adopt rules for certification of approved retrofit technologies of diesel engines that power medium- and heavy-duty trucks. <p><i>Regulatory Requirements- Washington</i></p> <ul style="list-style-type: none"> • Spray exposed soil with water or other dust palliatives. • Cover all trucks transporting materials, wetting materials in trucks, or providing adequate freeboard (space from the top of the material to the top of the truck). • Remove particulate matter deposited on paved public roads. • Minimize delays to traffic during peak travel times. • Place quarry spall aprons where trucks enter public roads. • Gravel or pave haul roads. • Plant vegetative cover as soon as possible after grading. • Minimize unnecessary idling of on-site diesel construction equipment. • Locate diesel engines, motors, or equipment as far away as possible from existing residential areas and other sensitive areas.

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	<ul style="list-style-type: none"> • Minimize hours of operation near sensitive receptor areas and rerouting diesel truck traffic away from sensitive receptor areas. • Educate vehicle operators to shut off equipment when not in active use to reduce idling. • Use cleaner fuels as appropriate. • Include detours and strategic construction timing (such as night work) on the traffic control plans to continue moving traffic through the area and reducing backups and delays to the traveling public to the extent possible. • Work with partners to promote ridesharing and other commute trip reduction efforts for employees working on the Modified LPA. <p>Project-Specific Mitigation</p> <ul style="list-style-type: none"> • Encourage all contractors to minimize impacts to surrounding communities such as using newer low-emitting construction equipment and electric equipment, and avoiding haul routes through residential areas.
Noise and Vibration	<p>Long-Term Effects</p> <p><i>Traffic noise:</i> Under ODOT and WSDOT policies, the following noise abatement measures must be considered:</p> <ul style="list-style-type: none"> • Traffic management measures. • Highway design measures. • Acquisition of property rights (either in fee or lesser interest) for construction of noise barriers. • Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development that would be adversely impacted by traffic noise. • Sound insulation of public use or nonprofit institutional structures. • Construction of sound barriers (including landscaping for aesthetic purposes), whether within or outside the highway right of way. Interstate construction funds may not participate in landscaping. <p>Noise mitigation was evaluated at all locations where traffic noise impacts were predicted. Noise walls were evaluated to mitigate noise impacts at 15 locations in Washington and three in Oregon. Of those evaluated, ten noise walls were determined to be feasible and reasonable by ODOT and WSDOT criteria (13 in Washington, 1 in Oregon).</p> <p><i>Light-rail noise:</i> Standard and regulatory mitigation measures for light-rail noise include:</p> <ul style="list-style-type: none"> • Noise Barriers • Track Lubrication at Curves <p>Additionally, a 3- to 4-foot acoustical absorbent wall or 6-foot reflective wall would be effective at reducing light-rail noise levels by 7 to 10 dBA at the following noise-sensitive locations.</p> <ul style="list-style-type: none"> • Five floating homes on Hayden Island (LRT-3) • Normandy Apartments (LRT-1) <p>All light-rail track curves with a radius of less than 300 feet would be equipped with wayside lubricators. After construction of the alignment, during the initial testing, if any additional curves are identified with wheel squeal, wayside track lubricators would be installed, as necessary.</p> <p><i>Light-rail vibration:</i> Potential standard and regulatory mitigation measures to avoid or minimize long-term effects from light-rail vibration includes resilient fasteners. Additional testing may be performed to ensure that the vibration levels at two sites for which impacts</p>

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	<p>were identified (LRV-1 and LRV-2) would be below FTA criteria.</p> <p>Temporary Effects</p> <p><i>Construction noise:</i> ODOT identifies several construction noise abatement measures in their standard project specifications, including the following.</p> <ul style="list-style-type: none"> • Do not perform construction within 1,000 feet of an occupied dwelling on Sundays or legal holidays, or between the hours of 10:00 p.m. and 6:00 a.m. on other days, without the approval of Engineer. • Use equipment with sound control devices no less effective than those provided on the original equipment. Equipment with un-muffled exhausts is prohibited. • Use equipment complying with pertinent equipment noise standards of the EPA. • Do not drive piling or perform blasting operations within 3,000 feet of an occupied dwelling on Sundays or legal holidays, or between the hours of 8:00 p.m. and 8:00 a.m. on other days, without the approval of the owner-agency’s engineer. • Mitigate the noise from rock crushing or screening operations performed within 3,000 feet of all occupied dwellings by placing material stockpiles between the operation and the affected dwellings, or by other means approved by the owner-agency’s engineer. • If a specific noise impact complaint occurs during the construction of the Modified LPA, implement noise mitigation measures outlined in 3.11.6 as directed by the engineer. <p>Although WSDOT does not have Noise Control provisions, WSDOT would voluntarily comply with the above measures for work completed in Washington.</p> <p>ODOT and WSDOT would also implement additional noise abatement methods, including:</p> <ul style="list-style-type: none"> • Limit activities that produce the highest noise levels (such as hauling, loading spoils, jack hammering, and using other demolition equipment) from 7:00 a.m. to 7:00 p.m. Maximum noise levels associated with pile driving could reach 105 dBA at distances of 50 feet. Mitigation of the noise associated with pile driving would, when possible, include drilled shafts or auguring rather than driving piles or limiting the times the activity could take place. Other less effective methods of reducing noise from pile driving include coating the piles, using pile pads, or using piston mufflers. If pile driving exceeds the limits set forth in Table 3.11-4 in Section 3.11, Noise and Vibration, a noise variance would be requested from the local jurisdiction. • A construction log would be kept for each of the construction staging areas. The log would contain general construction information such as the time an activity took place, type of equipment used, and any other information that might help with potential noise effects. • A complaint hotline would also be established to investigate noise complaints and compare them to the construction logs. A construction monitoring and complaint program would help to ensure that all equipment meets state, local, and any manufacturer’s specifications for noise emissions. Equipment not meeting the standards would be removed from service until proper repairs were made and the equipment retested for compliance. This procedure would apply to all haul trucks, loaders, excavators, and other equipment that would be used extensively at the construction sites and that would contribute to potential noise effects. • Use equipment complying with pertinent equipment noise standards of the EPA. <p><i>Construction vibration:</i> No specific mitigation measures are proposed for vibration levels during construction.</p> <ul style="list-style-type: none"> • Regulatory Requirements necessitate the monitoring of all activities that might produce vibration levels at or above 0.5 inches per second if structures are near the

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	<p>construction activity, in compliance with WSDOT and ODOT requirements. This would include pile driving, vibratory sheet installation, soil compacting, and other construction activities with the potential to cause high levels of vibration.</p> <ul style="list-style-type: none"> • Additional vibration mitigation measures intended to protect marine life are described in Section 3.16, Ecosystems.
Energy	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • There are no applicable regulatory requirements. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Use energy-efficient electrical systems for transit stations and other electrical needs to decrease energy consumption. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • In Oregon, comply with ODOT Standard Specifications Section 290, requiring measures to reduce vehicle and equipment idling, which would reduce energy usage. • In Washington, comply with WSDOT’s standard specifications to reduce energy use, including: <ul style="list-style-type: none"> – Minimize delays to traffic during peak travel times. – Minimize unnecessary idling of on-site diesel construction equipment. – Educate vehicle operators to shut off equipment when not in active use to reduce emissions from idling. – Prepare a traffic control plan with detours and strategic construction timing (e.g., night work) to move traffic through the area and reduce backups and delays to the traveling public to the extent practicable. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Project-specific mitigation is not proposed to reduce energy consumption during construction.
Water quality	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • As design progresses, complete a flood no-rise hydraulic analysis to determine the potential long-term impact of a rise in the flood elevation, per the regulatory requirement. If a rise in the base flood is predicted, the rise would be mitigated through floodplain excavation (cut/fill balance) activities. • Comply with ODOT and WSDOT stormwater management requirements and the Cities of Portland and Vancouver regulations for the portions of the Modified LPA along City-managed roads, to treat stormwater runoff prior to discharge into receiving waters. • Select and design water quality BMPs to follow each jurisdiction’s requirements for reducing suspended solids, particulates, and dissolved metals and reflect latest climate models and treatment for new pollutants like 6PPD-quinone. • Construct flow control facilities to infiltrate or reduce the flow rates of all study area runoff, pursuant to local regulatory requirements. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • <i>Hydrology:</i> Offset potential rise in the base flood elevation through floodplain excavation (cut/fill balance) activities as determined through a flood no-rise hydraulic analysis.

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	<ul style="list-style-type: none"> • In the Burnt Bridge Creek watershed, construct infiltration facilities to provide complete infiltration of all program-related runoff. As design progresses, select site-specific BMP facilities. • Prepare stormwater monitoring plan(s) to evaluate the long-term performance and effectiveness of the updated stormwater conveyance and treatment systems. Based on the findings, complete modifications or enhancements to the system(s) to meet discharge performance criteria. • <i>Water Quality:</i> Bioretention ponds/planters would provide water quality treatment via infiltration and the uptake of water by a soil medium and vegetation. • Biofiltration swales would provide water quality treatment via filtration through vegetation planted along the facility length. Swales are not intended to provide infiltration to groundwater. • In Washington, vegetated filter strips provide water quality treatment via filtration of runoff through plantings, typically along the sides of roads and receiving sheet flow from the road surface. • Bioslopes (Oregon), or media filter drains (Washington), would provide treatment of sheet flow from the adjacent impervious surfaces. • Proprietary facilities that have demonstrated effectiveness for enhanced treatment, as determined by Ecology’s Technology Assessment Protocol program will be available for water quality treatment in Washington. Due to high maintenance costs, such facilities are generally not recommended by ODOT or the City of Portland. Engineered wetlands are not preferred by WSDOT, but they are accepted for use by the City of Vancouver. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • The regulatory requirements for temporary effects would be the same as those listed for long-term effects with the addition of a spill prevention, control, countermeasure (SPCC) plan and pollution control plan (PCP), and temporary erosion and sediment control. • <i>Spill Prevention/Pollution Control Measures:</i> Contractor prepare an SPCC plan and PCP prior to beginning construction that identifies the appropriate spill containment materials, as well as the means and methods of implementation, response, and reporting. • Contractor designate at least one employee as the erosion and spill control (ESC) lead. The ESC lead would be responsible for the implementation of the SPCC plan and PCP. • Maintain applicable spill response equipment and material designated in the SPCC plan and PCP at the job site. • With the exception of barges and stationary large equipment (cranes, oscillators) operating from barges or work platforms, fuel and maintain equipment at least 150 feet from the ordinary high water mark (OHWM) of any waterbody using secondary containment to minimize potential for spills or leaks entering the waterway. • Clean and inspect all equipment to be used for construction activities prior to arriving at the project site to ensure that no potentially hazardous materials are exposed, no leaks are present, the equipment is free of noxious weeds, and the equipment is functioning properly. Daily inspection and cleanup procedures would be identified. • Should a leak be detected on heavy equipment used for the project, immediately remove the equipment from the area and do not use again until adequately repaired. Where off-site repair is not practicable, follow procedures in the SPCC plan and PCP to ensure that no contaminants escape containment to surface waters and cause a violation of applicable water-quality standards.

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	<ul style="list-style-type: none"> • Operate construction equipment from on top of floating barges, from the decks of temporary work bridges and platforms, the decks of the existing or replacement bridges, or from portions of the streambank above the OHWM. • Provide suitable containment measures for all equipment (including barges, work decks, stationary power equipment, and storage facilities in the SPCC plan and PCP to prevent and/or contain accidental spills to ensure no contaminants escape containment to surface waters and cause a violation of applicable water-quality standards. • Design and install temporary work bridges and platforms, cofferdams, and drilled shaft isolation casings consistent with the ODOT Hydraulics Manual. • Process water generated on site from construction, demolition or washing activities would be contained and treated to meet applicable water-quality standards before entering or re-entering surface waters. • Do not conduct paving, chip sealing, or stripe painting activities during periods of rain or wet weather. • In the SPCC plan and PCP, establish a concrete truck chute cleanout area to properly contain wet concrete as part of ODOT Standard Specification 00290.30(a). • <i>Site Erosion/Sediment Control Measures:</i> Contractor prepare and implement a temporary erosion and sediment control plan (TESCP) to minimize impacts associated with clearing, vegetation removal, grading, filling, compaction, or excavation. The BMPs identified in the TESCP would be used to control sediments from all vegetation removal or ground-disturbing activities. Additional temporary control measures may be required beyond those described in the TESCP if it appears pollution or erosion may result from weather, nature of the materials or progress on the work. • As part of the TESCP, delineate clearing limits with orange barrier fencing wherever clearing is proposed in or adjacent to a stream/wetland or its buffer and install perimeter protection/silt fence as needed to protect surface waters and other critical areas. • Contractor designate at least one employee as the ESC lead. The ESC lead would be responsible for the implementation of the SPCC plan and PCP, and would also be responsible for ensuring compliance with all local, state, and federal erosion and sediment control requirements. • All TESCP measures would be inspected and maintained as required by applicable permit requirements. • For landward construction and demolition, locate project staging and material storage areas a minimum of 150 feet from surface waters, in currently developed areas such as parking lots or managed fields, unless determined by ODOT/WSDOT biologist that the topographic features or other site characteristics allow for site use closer to the edge of surface waters. • Complete excavation activities under dry or dewatered conditions where practicable. All surface water flowing toward the excavation would be diverted through utilization of cofferdams and/or berms. • Limit bank shaping to the extent as shown on the approved grading plans. Minor adjustments made in the field would occur only after engineer's review and approval. • Install biodegradable erosion control blankets on areas of ground-disturbing activities on steep slopes (1V:3H or steeper) that are susceptible to erosion and within 150 feet of surface waters. Areas of ground-disturbing activities that do not fit the above criteria would implement erosion control measures as identified in the approved TESCP.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> • Cover erodible materials temporarily stored or stockpiled for use in project activities to prevent sediments from being washed from the storage area to surface waters. • Stabilize all exposed soils as directed in measures prescribed in the TESC. Hydro-seed all bare soil areas following grading activities and revegetate all temporarily disturbed areas with native vegetation indigenous to the location. • Where site conditions support vegetative growth, plant native vegetation indigenous to the location in areas temporarily disturbed by construction activities. Trees would be planted when consistent with highway safety standards. Riparian vegetation would be replanted with species native to geographic region. Planted vegetation would be maintained and monitored to meet regulatory permit requirements. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • <i>Hydrology:</i> Minimize impacts to groundwater hydrology by limiting groundwater pumping to areas where it cannot be avoided. • <i>Water Quality:</i> Prior to construction, the contractor would prepare a temporary TESC and implement a source control plan for clearing, vegetation removal, grading, ditching, filling, embankment compaction, or excavation. • Study, test, and remediate sites with existing soil or groundwater contamination near construction areas before any construction. See Section 3.18, Hazardous Materials for specific mitigation actions. • Conduct in-water work during approved periods for the Columbia River, as approved by WDFW, ODFW, NOAA Fisheries, and the USFWS. See Section 3.16, Ecosystems. • Contractor prepare a water quality sampling plan for conducting water quality monitoring for in-water work. This plan would identify a sampling methodology, as well as method of implementation. • Construction equipment used for in-water work activities would be staged above the OHWM. Only the operational portion of construction equipment would enter the active stream channel (below the OHWM). • Contain and treat process water generated on site from construction, demolition, or washing activities to meet applicable water quality standards before entering or re-entering surface waters. • If in-water dredging is required outside of a cofferdam, use a clamshell bucket. Dredging, handling, and disposal of dredged materials shall be conducted consistent with the requirements and conditions of the regulatory permits issued for the Modified LPA. • A mandatory “rest” period to allow turbidity to dissipate between dredging periods may be required.

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Wetlands	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Develop the Modified LPA consistent with the applicable federal, state, and local agency regulatory mitigation related to filling or removing material in wetlands and waters of the state. • Develop compensatory mitigation plans in compliance with Oregon and Washington statutory requirements. • In cooperation with federal, state, and local agencies, tribes, and conservation groups, identify agency-approved compensatory mitigation banks and potential permittee responsible mitigation (PRM) sites in both Oregon and Washington to fulfill the compensatory requirements for permanent, temporary, and indirect impacts. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Continue to evaluate mitigation to offset losses of wetland areas and wetland functions and values as the Modified LPA design progresses. • For unavoidable impacts to Vanport wetland, increased mitigation ratios would be required because it is an existing wetland mitigation site. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Implement appropriate sediment and erosion control procedures during construction activities. • Replace vegetation temporarily cleared for construction activity in accordance with local regulatory guidance. • Avoid working outside of the in-water work window when feasible. • Offset unavoidable temporary impacts that cannot be minimized through BMPs through the purchase of credits from a mitigation bank or PRM, similar to the mitigation used for certain long-term effects. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • There are no project-specific mitigation measures for temporary effects to wetlands and waters.
Ecosystems	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Provide stormwater quality and quantity treatment that meets or exceeds applicable regulatory requirements for all post-project contributing impervious area. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Avoid and minimize long-term impacts to ecosystem resources in final design to the extent practicable. • Provide compensatory mitigation for unavoidable impacts to ecosystem resources, consistent with applicable federal, state, and local regulatory requirements. • Prepare a compensatory mitigation plan that satisfies applicable federal, state, and local regulatory requirements, and that demonstrates no net loss of function of ecosystem resources. • Provide an alternate nesting structure, either on the new Columbia River bridges or within the vicinity, to offset removal of an existing peregrine falcon nest from demolition of the existing Interstate Bridge.

Temporary Effects

- *General Measures and Conditions:* Perform all work according to the requirements and conditions of the regulatory permits that are issued for the Modified LPA.
- Contractor prepare a Water Quality Protection and Monitoring Plan to satisfy the monitoring and reporting requirements of the 401 Water Quality Certifications that are ultimately issued for the project. If, in the future, a standard water-quality monitoring plan is adopted by ODOT and/or WSDOT, this plan, with the agreement of NOAA Fisheries, may replace the contractor plan.
- In compliance with WSDOT and ODOT policy and construction administration practice in Oregon and Washington, have one or more department of transportation inspectors on site during construction. The role of the inspector(s) would be to monitor compliance with contract and permit requirements.
- If in-water dredging is required outside of a cofferdam, use a clamshell bucket. Dredging and handling and disposal of dredged materials shall be conducted consistent with the requirements and conditions of the regulatory permits issued for the Modified LPA.
- Prohibit work barges from grounding out.
- Dispose of excess or waste materials in an appropriate manner consistent with applicable local, state, and federal regulations; do not dispose of or abandon waste materials waterward of the OHWM or allow them to enter waters of the state.
- All pumps must employ a fish screen that meets the specifications identified in Section 3.1.6.
- *Spill Prevention/Pollution Control Measures:* Contractor prepare a spill prevention, control, and countermeasure (SPCC) plan and pollution control plan (PCP) prior to beginning construction.
- Contractor designate at least one employee as the erosion and spill control (ESC) lead. The ESC lead would be responsible for the implementation of the SPCC plan and PCP.
- Maintain applicable spill response equipment and material designated in the SPCC plan and PCP at the job site.
- With the exception of barges and stationary large equipment (cranes, oscillators) operating from barges or work platforms, fuel and maintain equipment at least 150 feet from the OHWM of any waterbody using secondary containment to minimize potential for spills or leaks entering the waterway.
- Clean and inspect all equipment to be used for construction activities prior to arriving at the project site, to ensure no potentially hazardous materials are exposed, no leaks are present, free of noxious weeds, and the equipment is functioning properly. Daily inspection and cleanup procedures would be identified.
- Should a leak be detected on heavy equipment used for the project, immediately remove the equipment from the area and do not use again until adequately repaired. Where off-site repair is not practicable, the SPCC plan and PCP would document measures to be implemented to prevent and/or contain accidental spills in the work/repair area to ensure no contaminants escape containment to surface waters and cause a violation of applicable water-quality standards.
- Operate construction equipment from on top of floating barges, from the decks of temporary work bridges and platforms, the decks of the existing or replacement bridges, or from portions of the streambank above the OHWM.
- Provide suitable containment measures for all equipment in the SPCC plan and PCP to prevent and/or contain accidental spills to ensure that no contaminants escape containment to surface waters and cause a violation of applicable water-quality standards.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> • Design and install temporary work bridges and platforms, cofferdams, and drilled shaft isolation casings consistent with the ODOT Hydraulics Manual, which establishes criteria to avoid these structures being overtopped during high water events. • Process water generated on site from construction, demolition or washing activities would be contained and treated to meet applicable water-quality standards before entering or re-entering surface waters. • Do not conduct paving, chip sealing, or stripe painting activities during periods of rain or wet weather. • In the SPCC plan and PCP, establish a concrete truck chute cleanout area to properly contain wet concrete as part of ODOT Standard Specification 00290.30(a). • <i>Site Erosion/ Sediment Control Measures:</i> Contractor prepare and implement a temporary erosion and sediment control plan (TESCP) to minimize impacts associated with clearing, vegetation removal, grading, filling, compaction, or excavation. The BMPs identified in the TESCP would be used to control sediments from all vegetation removal or ground-disturbing activities. Additional temporary control measures may be required beyond those described in the TESCP if it appears pollution or erosion may result from weather, nature of the materials or progress on the work. • As part of the TESCP, delineate clearing limits with orange barrier fencing wherever clearing is proposed in or adjacent to a stream/wetland or its buffer and install perimeter protection/silt fence as needed to protect surface waters and other critical areas. Location would be specified in the field, based upon site conditions and the TESCP. • Contractor designate at least one employee as the ESC lead. The ESC lead would be responsible for the implementation of the SPCC plan and PCP and would also be responsible for ensuring compliance with all local, state, and federal erosion and sediment control requirements. • All TESCP measures would be inspected and maintained as required by applicable permit requirements. Contractor would also conduct maintenance and repair of TESCP measures as described in ODOT Standard Specifications 00280.60 to 00280.70. • For landward construction and demolition, locate project staging and material storage areas a minimum of 150 feet from surface waters, in currently developed areas such as parking lots or managed fields, unless determined by an ODOT/WSDOT biologist that the topographic features or other site characteristics allow for site use closer to the edge of surface waters. • Complete excavation activities under dry or dewatered conditions where practicable. All surface water flowing toward the excavation would be diverted through utilization of cofferdams and/or berms. Cofferdams and berms must be constructed of sandbags, clean rock, steel sheeting, or other non-erodible material. • Limit bank shaping to the extent as shown on the approved grading plans. Minor adjustments made in the field would occur only after engineer’s review and approval. • Install biodegradable erosion control blankets on areas of ground-disturbing activities on steep slopes (1V:3H or steeper) that are susceptible to erosion and within 150 feet of surface waters. Areas of ground-disturbing activities that do not fit the above criteria would implement erosion control measures as identified in the approved TESCP. • Cover erodible materials (material capable of being displaced and transported by rain, wind or surface water runoff) temporarily stored or stockpiled for use in project activities to prevent sediments from being washed from the storage area to surface waters. Temporary storage or stockpiles must follow measures as described in ODOT Standard Specification 00280.42.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> • Stabilize all exposed soils as directed in measures prescribed in the TЕСP. Hydro-seed all bare soil areas following grading activities and revegetate all temporarily disturbed areas with native vegetation indigenous to the location. • Where site conditions support vegetative growth, plant native vegetation indigenous to the location in areas temporarily disturbed by construction activities. Revegetation of construction easements and other areas would occur after the project is completed. Trees would be planted when consistent with highway safety standards. Riparian vegetation would be replanted with species native to geographic region. Planted vegetation would be maintained and monitored to meet regulatory permit requirements. For additional detail, consult ODOT Standard Specifications 01040.00 to 01040.90. • <i>Pile Installation and Removal BMPs:</i> Use a vibratory hammer to drive steel piles to the maximum extent practicable, to minimize noise levels. • Conduct impact pile driving below the OHWM between September 15 and April 15. Vibratory pile installation and removal (as well as certain other in-water construction activities) may occur on a year-round basis, provided they are conducted in compliance with all regulatory approvals. • No more than two impact pile drivers would be operated simultaneously within the same waterbody channel. • Employ a bubble curtain or other similarly effective noise attenuation device during all impact pile driving conducted in water depths greater than 2 feet (0.67 meters). • Develop and implement a hydroacoustic monitoring plan, based on the template developed by the Fisheries Hydroacoustic Working Group, in coordination with FHWA and FTA to confirm the effectiveness of the noise attenuation devices and that predicted noise levels adequately capture the area of the potential onset of injury. • Install cones or other anti-perching devices on open-ended pipe piles to discourage perching by piscivorous birds. • Remove temporary piles with a vibratory hammer, or by direct pulling, and prohibit intentionally breaking by twisting or bending. • If a temporary pile cannot be removed, cut or press the pile 3 feet below the mudline. At locations where hazardous materials are present or adjacent to utilities, temporary piles may be cut off at the mud line with underwater torches, if such activity would not conflict with navigation elements. • <i>Work Area Isolation and Fish Salvage BMPs:</i> Develop a temporary water management plan, consistent with the requirements of ODOT Special Provision Section 00245.03, and provide to NOAA Fisheries for review and approval prior to any work area isolation of fish salvage activities. • Install cofferdams and isolation casings in a manner that minimizes fish entrapment. Sheet piles would be installed from upstream to downstream, lowered slowly until contact with the substrate. • Screen drilled shaft isolation casings at the bottom, to minimize potential for fish entrapment during installation. Screen shall have maximum openings of approximately 3/32 inch (2.38 mm) measured on a diagonal (NOAA Fisheries 2022). • Conduct fish salvage according to the best practices established in the biological opinion for ODOT’s Federal Aid Highway Programmatic consultation. • Have a qualified fishery biologist¹ would conduct and supervise fish capture and release activity to minimize risk of injury to fish. • Prepare a fish salvage report and submit to NOAA Fisheries. • USFWS, ODFW, and WDFW following project completion.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> • Make a reasonable effort to capture Endangered Species Act-listed fish known or likely to be present in an in- water isolated work area using methods that minimize the risk of injury. Attempts to seine and/or net fish would precede the use of electrofishing equipment. • If electrofishing must be used, conduct consistent with NOAA Fisheries “Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act” (NOAA Fisheries 2000), or most recent version. • <i>Work Area Lighting BMPs:</i> Conduct construction activities consistent with local, state and federal permit restrictions for allowable work hours. If work occurs at night, temporary lighting may be required to provide better visibility for driver and worker safety. If temporary lighting is required, contractor would use directional lighting with shielded luminaries to control glare and direct light onto work area, not surface waters. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Avoid and minimize short-term impacts to ecosystem resources in final design to the extent practicable. • Restore temporarily disturbed terrestrial habitats consistent with applicable regulatory requirements. • Provide compensatory mitigation for unavoidable impacts to ecosystem resources, consistent with applicable federal, state, and local regulatory requirements. • Conduct activities with the potential to impact nesting migratory birds, such as nest removal, consistent with the provisions of the Migratory Bird Treaty Act, which requires nests of migratory birds to be removed only at times when nests are inactive.
Geology/Groundwater	<p>Long-Term Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Design structures to comply with federal, state, and city building seismic codes or standards and apply advancements in earthquake science and construction materials and updates in the conceptual model. • Design systems to minimize contamination of groundwater resources in compliance with Vancouver Municipal Code Chapter 14.26 Water and Sewers – Water Resources Protection and Portland City Code Title 21.35, Well Head Protection. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Design structures requirements to consider stormwater infiltration or other changed conditions near shallow footings, retaining walls, and/or other structures that could increase the potential for soil liquefaction during a seismic event. • Design the Modified LPA to accommodate a range of future conditions resulting from climate change to provide resilience for geologic concerns such as increased erosion and scour. • Conduct site-specific assessments of existing geologic hazards during design of the Modified LPA. Site-specific assessments should include the use of geotechnical drilling, test pitting, material testing, geophysical techniques, and/or subsurface displacement monitoring, and monitoring well installation. Assessment would include recommended options for avoiding or mitigating geologic hazards. • Assess soil stabilization techniques to minimize the potential for soil liquefaction during design of the Modified LPA. Stabilization techniques include, but not limited to, the use of soil mixing, compaction grouting, jet grouting, and stone columns. Locate stormwater treatment facilities, to the extent possible, away from City of Vancouver well head protection zones for WS-1 and WS-3.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Prepare and implement erosion control and stormwater pollution prevention plans and grading plans during construction. Plans would adhere to ODOT and WSDOT guidelines. • Prepare and implement stormwater discharge permits for construction. • Conduct inspection and observation monitoring of all Modified LPA elements during construction and long-term operations to ensure that appropriate construction and maintenance measures are being taken. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • Evaluate local geologic resources for future material needs. • Recycle or reuse aggregate, quarry rock, asphalt, and concrete materials to the extent practical.
Hazardous Materials	<p>Long-Term Effects</p> <p><i>Regulatory Requirements:</i></p> <ul style="list-style-type: none"> • In accordance with FTA and FHWA standard procedures, the IBR Program is preparing Phase I Environmental Site Assessments (ESAs) per U.S. Department of Transportation standard operating procedures to identify residual contamination on properties to be acquired. The results of the Phase I ESAs will be incorporated into the published version of the Draft SEIS. Following completion of the Draft SEIS, the IBR Program will prepare Phase II ESAs for properties where identified recognized environmental conditions indicate that a subsurface investigation is necessary to confirm the extent of contamination and define the specific measures and applicable regulatory agency approvals needed to address the contamination. The Phase II results will be incorporated into the Final SEIS to provide decision-makers with a more detailed understanding of cleanup obligations and costs associated with the program. • During the final design and as part of the property acquisition process, detailed hazardous materials management plans would be development, and necessary regulatory approvals would be obtained to address areas where cleanup and remediation are needed. The remediation or cleanup of hazardous material sites affected by the Modified LPA would be required prior to construction. <p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> • No project-specific mitigation measures are proposed for long-term effects related to hazardous materials. <p>Temporary Effects</p> <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> • Construction BMPs applicable to the Modified LPA are discussed in Section 3.14, Water Quality and Hydrology. Other required measures to reduce the risk of spills, leaks, or other releases during construction activities include: <ul style="list-style-type: none"> – Fueling, conducting maintenance, and cleaning in areas that are contained by measures such as berms or other containment. – Minimizing the production or generation of hazardous materials. – Labeling and storing hazardous waste according to federal regulations. – Locating hazardous waste storage away from storm drains or surface water. – Recycling materials such as used motor oil and water-based paint as appropriate. – Handling potential spills of hazardous materials in conformance with applicable regulatory requirements.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p><i>Project-Specific Mitigation</i></p> <ul style="list-style-type: none"> No project-specific mitigation measures are proposed for temporary effects related to hazardous materials.
Climate	<p>Long-Term Effects</p> <ul style="list-style-type: none"> Strategies to reduce operational GHG emissions are those that reduce vehicle travel demand, increase transit and nonmotorized mode shares, use transit technology that eliminates or reduces the use of fossil fuels (e.g., battery electric buses, light-rail), and improve traffic flow along I-5 between Vancouver and Portland. Considering the increasingly hot conditions expected in the future, the design could consider providing shade, and other treatments, for active transportation users. <p><i>Regulatory Requirements</i></p> <ul style="list-style-type: none"> State-level legislation and policy in Oregon and Washington support reducing emissions from transportation to minimize climate change. However, there are no specific requirements for mitigation actions in federal, state, or local regulations. <p>Temporary Effects</p> <ul style="list-style-type: none"> Strategies taken to reduce the energy consumed by the construction of the Modified LPA would encompass conservation of construction materials and fuels used during construction and implementing BMPs. Section 3.12, Energy, of this Draft SEIS includes a discussion of potential BMPs and their expected benefits.
Environmental Justice	<p>Long-Term Effects</p> <ul style="list-style-type: none"> Acquisition and Displacement Purchase property at fair market value and provide relocation assistance per the Uniform Relocation Act. <p>Traffic Impacts:</p> <ul style="list-style-type: none"> Monitor and adjust ramp meter rates. Prohibit on-street parking during peak periods. Add turn pockets at needed locations. Alter traffic signal timing. <p><i>Noise:</i></p> <ul style="list-style-type: none"> In compliance with ODOT and WSDOT standard specifications, conduct noise monitoring measures including: <ul style="list-style-type: none"> Establish a complaint hotline to investigate noise complaints. Utilize a construction monitoring and complaint program to help ensure that all equipment meets state, local, and any manufacturer’s specifications for noise emissions. Conduct vibration monitoring of all activities that might produce vibration levels at or above 0.5 inches per second where structures are near the construction activity. <p><i>Business Displacements and Loss of Service Industry Jobs.</i></p> <ul style="list-style-type: none"> Impacts to displaced workers would be provided in accordance with the Uniform Relocation Assistance and Real Property Policies Act. Provide mitigation for the loss of service industry jobs under a future Community Benefits Agreement. This agreement would be further defined as project design and planning progress, and would cover such topics as: <ul style="list-style-type: none"> Adopting goals for involvement of minority, women-owned, emerging, and disadvantaged businesses in program construction contracting.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<ul style="list-style-type: none"> - Developing workforce practices to provide experience and business opportunities for disadvantaged workers and companies, such as requiring contractors to have apprentices perform a percentage of construction labor. - Providing job training and establishing preferences in contracting for local services. - Implementing a monitoring and evaluation program to track these measures through final project design, construction, and operation to help ensure that the benefits of promoting participation from minority-owned businesses are realized. <ul style="list-style-type: none"> • Work with TriMet to maintain existing bus service that regularly connects Hayden Island with nearby grocery and other retail services and paratransit services for qualifying mobility-impaired Hayden Island residents. <p><i>Tolling</i></p> <ul style="list-style-type: none"> • Develop and implement low-income tolling policies to mitigate effects to Environmental Justice Populations. • Conduct ongoing public involvement and education efforts, provide information on how to obtain the transponders and transportation assistance, particularly for low-income drivers including. <ul style="list-style-type: none"> - Locate venues for acquiring transponders near lower-income neighborhoods. The IBR Program would partner with public agencies and public service providers to identify locations which would be convenient to low or lower-income neighborhoods and would be accessible by multiple modes of travel. - Enable populations without credit cards or checking accounts to obtain transponders by paying with cash or electronic bank transfer (Quest) cards issued by the Washington State Department of Social and Health Services. - Share information on tolling with and through other public service providers. - Include rideshare opportunities, such as local carpool and vanpool providers. <p>Temporary Effects</p> <ul style="list-style-type: none"> • Implement standard and regulatory measures such as BMPs. Construction BMPs as applicable to the Modified LPA are discussed in Section 3.3, Acquisitions and Displacements; Section 3.10, Air Quality; and Section 3.11, Visual Quality. <p><i>Acquisitions and Displacements:</i></p> <ul style="list-style-type: none"> • The construction team would meet with Property owners who be affected by temporary acquisitions to discuss details of the acquisition. Propose mitigation measures are described in the Acquisitions Technical Report. <p><i>Traffic:</i></p> <ul style="list-style-type: none"> • Mitigation measures for construction activity on Hayden Island are discussed in the Transportation Technical Report. • Impacts to commercial and public service activities from construction activity could be minimized through measures discussed in the Economics, Neighborhoods and Populations, and Public Services Technical Reports. Additionally, safe and accessible pathways could be maintained, especially near public housing, senior housing, and public services. <p><i>Noise:</i></p> <ul style="list-style-type: none"> • The construction team would comply with appropriate noise abatement measures to reduce noise and vibration impacts for Hayden Island residents living in floating homes. • Proposed mitigation measures are described in the Noise and Vibration Technical Report.

Resource Affected	Proposed Mitigation or Compensation for the Modified LPA
	<p><i>Air Quality:</i></p> <ul style="list-style-type: none"> • Construction impacts to air quality, and associated impacts to certain Hayden Island residents could be minimized through measures discussed in the Air Quality Technical Report.

1

2 The Program would comply with all environmental laws and obtain necessary permits that will outline
 3 protections for local air quality, water quality, fish and wildlife, and community livability (e.g., noise levels,
 4 light and glare, dust, etc.) during construction. Proposed mitigation for impacted Section 4(f) resources—
 5 historic, archaeological, and park and recreation resources—can be found in Chapter 5, Section 4(f)
 6 Evaluation.

7 How will the IBR Program address climate in design and construction?

8 Climate considerations guide planning for all areas of work on the IBR Program, including design,
 9 construction, operation, and maintenance. The effort falls into three broad categories of actions: reducing
 10 GHG emissions, managing risks, and building for resiliency. Approaches to these efforts are outlined below.

- 11 • Reduce GHG impacts by implementing Program components.
 - 12 – Improve transportation options (to facilitate mode shift).
 - 13 – Implement demand management (e.g., variable-rate tolling).
 - 14 – Optimize construction approaches.
 - 15 – Implement operation and maintenance efficiencies (e.g., auxiliary lanes, ramp meters).
- 16 • Evaluate risks to determine the consequences of climate hazards in the following categories: social
 17 (people, community), environmental (contamination, destruction), and economic (cost of repair, financial
 18 losses).
- 19 • Optimize the resiliency of the infrastructure by addressing vulnerability from natural hazards.

20 Local partners can support further GHG reductions by implementing complementary services and policies,
 21 such as:

- 22 • Providing higher frequency mass transit and deeper investments.
- 23 • Approving land uses and building permits in patterns that reduce single occupant vehicle trips.
- 24 • Providing mobility hub options.

25 Questions the IBR Program would continue to address in ongoing design include:

- 26 • How would future climate affect our natural systems and infrastructure?
- 27 • How would historically vulnerable people be affected by climate change?
- 28 • How can the IBR Program lessen the climate impacts for equity priority communities?
- 29 • How can we design resilient infrastructure?

1 How will the IBR Program address equity through process and 2 outcomes?

3 In tandem with the IBR Equity Advisory Group, the Program adopted an equity framework to guide the
4 processes and desired outcomes in terms of furthering equity. At the core of the framework is a Program-
5 specific equity definition and six equity objectives, which together form the basis for the analysis presented in
6 the Draft SEIS and other Program efforts.

7 Definition of equity

8 *The IBR Program defines equity in terms of both process and outcomes. Together, process equity and outcome*
9 *equity contribute to addressing the harmful impacts of and removing longstanding injustices experienced by*
10 *historically underserved communities.*

11 **Process Equity** means that the Program centers and prioritizes access, influence, and decision-making power for
12 equity priority communities throughout the Program in establishing objectives, design, implementation, and
13 evaluation of success.

14 **Outcome Equity** is the result of successful Process Equity and is demonstrated by tangible transportation,
15 community, and economic benefits for equity priority communities.

16 *Equity priority communities are those who experience and/or have experienced discrimination and exclusion*
17 *based on identity or status, such as:*

- 18 • Black, Indigenous, and People of Color
- 19 • People with disabilities
- 20 • Communities with limited English proficiency
- 21 • Persons with lower incomes
- 22 • Houseless individuals and families
- 23 • Immigrants and refugees
- 24 • Young people
- 25 • Older adults

26 Equity objectives

27 The IBR Program has established six equity objectives:

- 28 1. **Mobility and accessibility:** Improve mobility, accessibility, and connectivity, especially for lower-
29 income travelers, people with disabilities, and historically underserved communities who experience
30 transportation barriers.
- 31 2. **Physical design:** Integrate equity, area history, and culture into the physical design elements of the
32 Program including bridge aesthetics, artwork, amenities, and impacts to adjacent land uses.
- 33 3. **Community benefits:** Find opportunities for and implement local community improvements in
34 addition to required mitigations.

- 1 4. **Workforce equity and economic opportunity:** Ensure that economic opportunities generated by the
 2 Program benefit minority- and women-owned firms; Black, Indigenous, and People of Color (BIPOC)
 3 workers; workers with disabilities; and young people.
- 4 5. **Decision-making processes:** Prioritize access, influence, and decision-making power for Equity
 5 Priority Communities throughout the Program in establishing objectives, design, implementation, and
 6 evaluation of success.
- 7 6. **Avoid further harm:** Actively seek out options with a harm-reduction priority rather than simply
 8 mitigate disproportionate impacts on historically impacted and underserved communities and
 9 populations.

10 What are the next steps and how will a decision be made?

11 The community has an opportunity to review this Draft SEIS and provide feedback during the public review
 12 and comment period (dates to be added). The design of the Modified LPA may be further refined based on
 13 public input and findings. Following the public comment period, and in collaboration with the joint leads,
 14 cooperating and participating agencies, and tribes, the IBR Program will determine which design options are
 15 consistent with the Vision and Values (see Chapter 1), optimize tradeoffs and should be advanced to the Final
 16 SEIS and formally recommended by the Program. The design of the Modified LPA would be developed to a
 17 level of detail to allow the IBR Program to apply for permits and update cost estimates.

18 The IBR Program will continue to work and foster relationships with agencies, tribes, and the public through
 19 completion of the Program.

20 How can the public learn more about and be involved in the IBR 21 Program?

22 The project website (www.interstatebridge.org) provides more information, including background and the
 23 process that has led to the development of this Draft SEIS. The website also has information on upcoming
 24 public events, Program milestones, and how to obtain a copy of the Draft SEIS.

25 You are invited to submit your comments on the Draft SEIS between Date TBD through Date TBD. Comments
 26 received during this time will be reviewed and considered, and responses will be published in the Final SEIS.
 27 Comments **about the Draft SEIS** can be submitted by several methods:

- 28 • **Written comments** on the Draft SEIS can be submitted through the online comment form [a URL and
 29 hyperlink will be included when available], by email to DraftSEIScomment@interstatebridge.org [a
 30 hyperlink will be included when the email is confirmed], or by regular mail to the address below.
- 31 IBR Program Draft SEIS
 32 c/o Chris Regan
 33 500 Broadway Street, Suite 200
 34 Vancouver, WA 98660
- 35 • **Phone:** Leave a voice message on the IBR Program’s comment line at (888) 503-6735 (toll-free). Voice
 36 messages need to explicitly say “**Draft Supplemental EIS**” or “**Draft SEIS**” for them to be identified and
 37 addressed as comments on the Draft SEIS.
- 38 • **Attend a public open house and hearing:** Public open houses and hearings will be held in Portland and
 39 Vancouver at the dates and locations listed below.

40 *Note to Reviewers: Details about the public open houses will be determined at a later date in coordination*
 41 *with local partners.*

Work in Progress - Not for Public Distribution

Interstate Bridge Replacement Program

1 Oregon Location

2 Date

3 Time

4 Address

5

6 Washington Location

7 Date

8 Time

9 Address

10

11 In addition to submitting comments directly to the Program, comments can be submitted through the Notice
12 of Availability in the Federal Register [a hyperlink will be included when the URL is available].