Appendix K

IBR PROGRAM RECOMMENDED DESIGN OPTIONS REPORT

IBR Program Recommended Design Options Report

March 2026

Oregon

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CONTENTS

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
AVE	Area of visual effect
C-TRAN	Clark County Public Transportation Benefit Area
CRC	Columbia River Crossing
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-5	Interstate 5
IBR	Interstate Bridge Replacement
LPA	Locally Preferred Alternative
LRT	Light-rail transit
MMBtu	metric million British thermal units
MSAT	Mobile source air toxic
NB	northbound
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NHS	National Historic Site
PM	Particulate matter
ROD	Record of Decision
RTC	Southwest Washington Regional Transportation Council
SB	southbound
SEIS	Supplemental Environmental Impact Statement
SR	State Route
TriMet	Tri-County Metropolitan Transportation District
USACE	U.S. Army Corps of Engineers
VMT	Vehicle miles traveled
VNHR	Vancouver National Historic Reserve

1. INTRODUCTION

The Interstate Bridge Replacement (IBR) Program is a continuation of the previously suspended Columbia River Crossing (CRC) project with the same purpose to replace the aging Interstate Bridge across the Columbia River with a modern, seismically resilient multimodal structure. The proposed infrastructure improvements are located along a 5-mile stretch of the Interstate 5 (I-5) corridor that extends from approximately Victory Boulevard in Portland to State Route (SR) 500 in Vancouver.

The alternatives evaluated to address the CRC project's Purpose and Need were presented in the CRC Draft Environmental Impact Statement (EIS) (CRC 2008) and Final EIS (CRC 2011a). The 2008 CRC Draft EIS evaluated a No-Build Alternative and four build alternatives.[1] The alternatives analysis in the CRC Draft EIS included design components (e.g., river crossing type, transit mode) that had passed a Purpose and Need screening process (CRC 2007, 2008) and had been bundled with additional improvements for freight, active transportation, highway traffic, and transportation system management and transportation demand management. The 2011 CRC Final EIS (CRC 2011a) identified a locally preferred alternative (LPA), which was based on Alternative 3, and included design options[2] of stacked transit/highway bridges and a high-capacity transit northern terminus at Clark College. The CRC project completed its National Environmental Policy Act (NEPA) compliance with the identification of a Selected Alternative in a Record of Decision (ROD) in 2011 (CRC 2011b) and was revised by two NEPA re-evaluations that were completed in 2012 and 2013. The CRC Selected Alternative identified in the 2011 ROD, as revised by the 2012 and 2013 re-evaluations, is referred to in this document as the "CRC LPA."[3] In 2014, the CRC project was suspended because it did not secure adequate state funding to advance to construction.

In 2019, a bi-state legislative committee requested that the Oregon Department of Transportation and the Washington State Department of Transportation restart the CRC project, renaming it the *IBR Program*. The CRC project was never constructed, and the overall problems—the needs that the CRC project sought to address—still remained unresolved. Some detailed characteristics of those problems had evolved and, in some cases, worsened over time. The alternatives analysis from the CRC EIS is unchanged. The CRC LPA was identified as the starting point for IBR Program.

After completing an evaluation of the Purpose and Need, as discussed in Chapter 1 of this Final SEIS, the IBR Program began evaluating whether past design assumptions still addressed today's changed conditions, including physical environment, community priorities, and regulations, or whether

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[1] A build alternative includes a set of corridor-wide multimodal improvements defined to address the project's purpose and need.

[2] Design options are refinements to an alternative being considered for a specific project component. The design options for each component represent a range of potential options for the design of the component. Identifying design options allows for the analysis and disclosure of the range of potential impacts for that specific component.

[3] The Federal Highway Administration and the Federal Transit Administration published a notice to prepare a Supplemental Environmental Impact Statement for the Interstate Bridge Replacement Program in the Federal Register (Volume 88, Number 65) on April 5, 2023. This notice referred to the Selected Alternative from the 2011 CRC Project's ROD, which was also known as the Locally Preferred Alternative. For the purpose of this memorandum, the CRC LPA refers to the CRC Selected Alternative from the 2011 ROD, as revised by the 2012 and 2013 re-evaluations.

updates would be needed. Design modifications were identified to address the changed conditions, resulting in the IBR Program advancing a Modified LPA. In 2021, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued a NEPA re-evaluation that assessed the extent of changes in conditions and determined that a supplemental EIS (SEIS) should be prepared to identify and disclose new adverse impacts and mitigation associated with changes in conditions affecting the CRC LPA that occurred since 2013 (IBR 2021).

The CRC LPA was updated in close coordination with federal, tribal, state, regional, and local partner agencies,[4] to establish the Modified LPA. The development of the Modified LPA is detailed in Chapter 2 of the Draft and Final SEIS, as well as in Appendix D. Local partner agencies, via their respective boards, councils, and commissions, endorsed the foundational elements[5] of the Modified LPA through resolutions in 2022 (IBR 2022).

The Modified LPA includes five basic components with several design options (see Table 1). The Draft SEIS further identified the differences between the CRC LPA and the Modified LPA as part of Chapter 2, Description of Alternatives. Appendix D of the SEIS details the identification and development of the Modified LPA design options. The Draft SEIS was published on September 20, 2024, and was then followed by a 60-day public comment period. Following the public comment period, the Modified LPA was further refined in response to public comments, as well as design progression, continued coordination with regulatory agencies, and continued consultation with tribes.

The analysis of the Modified LPA (including all design options) and No-Build Alternative from the Draft SEIS has been updated in the Final SEIS. Additionally, the Final SEIS identifies the **IBR Program Recommended Design Options** for the Modified LPA (herein referred to as the Recommended Design Options).

This memorandum provides an overview of the Modified LPA design options evaluated in the Draft and Final SEIS, a summary of the reasonably foreseeable environmental effects and benefits of each design option, and a summary of public feedback. After reviewing the reasonably foreseeable environmental effects, benefits, and public feedback, this memorandum identifies the Recommended Design Options for the Modified LPA.

[4] Local partner agencies include the Tri-County Metropolitan Transportation District (TriMet), Clark County Public Transportation Benefit Area (C-TRAN), Oregon Metro, Southwest Washington Regional Transportation Council (RTC), City of Portland, City of Vancouver, Port of Portland, and Port of Vancouver.

[5] The "foundational elements" of the Modified LPA are based on what the local partner agencies endorsed through resolution and conditions in 2022. Endorsement by local partner agencies of these foundational elements did not preclude consideration of other reasonable design options. For example, since endorsements occurred and the IBR Program advanced, details of the Modified LPA have progressed and evolved. As a result, several design options that were not included in the partners' endorsement are included and analyzed in this SEIS. The 2022 Modified LPA recommendations and each of the partners' resolutions and conditions regarding the Modified LPA that reflect the formalized partner process are found in Attachment F to Appendix D of the SEIS.

Table 1. Modified LPA Proposed Components and Design Options Studied in the Draft and Final SEIS

Modified LPA Component	Design Options
Auxiliary lanes	• One auxiliary lane in each direction on the new Columbia River bridges and nearby sections of I-5* • Two auxiliary lanes in each direction would extend across the Columbia River bridges in addition to and in combination with existing auxiliary lanes from approximately Interstate Avenue/Victory Boulevard to SR 500/39th Street
Bridge configuration	• Double-deck fixed-span bridge configuration • Single-level fixed-span bridge configuration* • Single-level movable-span bridge configuration
C Street ramps	• With C Street ramps* • Without C Street ramps
I-5 Alignment in Downtown Vancouver	• Centered I-5 alignment* • Westward shift of I-5 alignment
Park and Rides	• Provide parking capacity to accommodate 1,270 vehicles distributed across two park and rides: one park and ride with 570 parking spaces near the Waterfront Station and another park and ride with 700 parking spaces near the Evergreen Station. The locations for park and rides that were evaluated include: • Potential Waterfront Station park and rides • Columbia Way (below I-5) • Columbia Street/SR 14 • Columbia Street/Phil Arnold Way • Potential Evergreen Station park and rides • Library Square • Columbia Credit Union • Provide parking capacity to accommodate1,270 vehicles dispersed among five park and rides listed above* [a]

Notes:

* **Recommended Design Options are in bold.**

a Depending on final design considerations, the decision may be made to use fewer than the five sites, The analysis assumes all five sites as it encompasses all physical impacts.

2. RECOMMENDED DESIGN OPTIONS ANALYSIS

The following sections describe the design options under consideration (see Table 1), the technical and environmental differences among those options (as documented in the Draft and Final SEIS), and agency and public feedback received pertaining to the design options. As detailed below, all design options would meet the Program's Purpose and Need, however some would do so more effectively than others, and some would have greater adverse impacts or benefits to the environment and community. In addition, some options have more support from Program partners because they are more consistent with their regional and local goals and plans and/or more consistent with community values. Following a discussion of these considerations for each component of the Modified LPA, the IBR Program Recommended Design Option is identified.

2.1 Auxiliary Lanes

The auxiliary lanes design options evaluated in the Draft and Final SEIS include:

- One auxiliary lane in each direction across the Columbia River bridges between the Marine Drive interchange and the Mill Plain Boulevard interchange .
- Two auxiliary lanes from the Interstate Avenue/Victory Boulevard interchange and the SR 500/39th Street interchange, including on the Columbia River bridges.

It is possible that there could be a combination of the two options (e.g., two auxiliary lanes in one direction and one auxiliary lane in the other direction). One and two auxiliary lanes were evaluated in the Draft and Final SEIS in order to capture the full spectrum of benefits and impacts associated with the addition of auxiliary lanes.

2.1.1 One Auxiliary Lane Design Option

The one auxiliary lane design option would include one approximately 12-foot auxiliary lane in each direction across the Columbia River bridges from the Marine Drive interchange and the Mill Plain Boulevard interchange (Figure 1). There are existing auxiliary lanes on I-5 in each direction in the study area. Many of the existing auxiliary lanes on I-5 between the SR 14 and Main Street interchanges in Vancouver would remain, although they would be reconfigured. The existing auxiliary lanes in Portland between the Victory Boulevard and Hayden Island interchanges would be replaced with changes to on- and off-ramps and interchange reconfigurations.

On northbound I-5:

- The auxiliary lane would extend from the Marine Drive on-ramp to the Hayden Island off-ramp to continue across the Columbia River bridge, and end at the combined off-ramp to Mill Plain Boulevard/Fourth Plain Boulevard, north of SR 14.
- The existing auxiliary lane from the SR 14 on-ramp to the Mill Plain/Fourth Plain off-ramp would be extended to connect to the existing auxiliary lane from the 39th Street on-ramp to the Main Street off-ramp, creating an auxiliary lane beginning at the SR 14 on-ramp and ending at the Main Street off-ramp.
- The existing auxiliary lane located between the Mill Plain Boulevard on-ramp to the SR 500 off-ramp would remain.

On southbound I-5:

- The two existing auxiliary lanes between SR 500/39th Street and Mill Plain Boulevard would remain, with some reconfiguration due to the braided ramps between the SR 500/39th Street and Fourth Plain Boulevard interchanges.
- The new auxiliary lane across the Columbia River would begin at the Mill Plain Boulevard on-ramp, continue across the Columbia River bridge, and end at the Marine Drive off-ramp.
- The existing southbound auxiliary lane between Marine Drive and Victory Boulevard/Interstate Avenue would be removed due to ramp reconfigurations as part of the Marine Drive braided ramp with the Victory Boulevard/Interstate Avenue off-ramp.

2.1.2 Two Auxiliary Lanes Design Option

This design option would include the same improvements as described under the one auxiliary lane design option and would add a second 12-foot-wide, auxiliary lane in each direction of I-5 across the Columbia River bridges to further improve safety and operations in the corridor. This second auxiliary lane would extend from the Interstate Avenue/Victory Boulevard interchange to the SR 500/39th Street interchange (Figure 1).

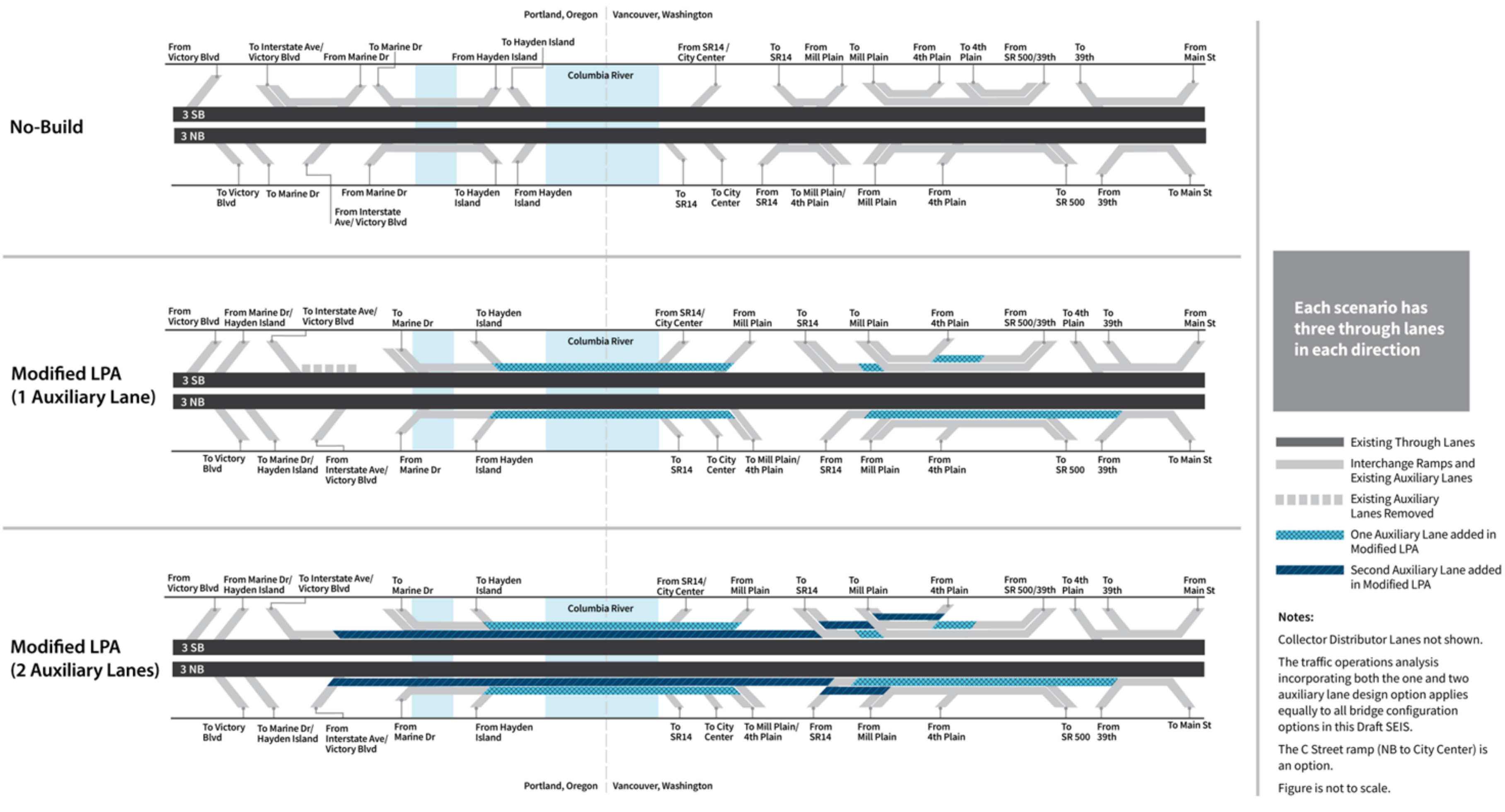
On northbound I-5:

- The inside auxiliary lane would extend from the combined Interstate Avenue/Victory Boulevard on-ramp, continue across the Columbia River bridge, and end at the SR 500/39th Street interchange, connecting to the existing auxiliary lane between the SR 14 on-ramp and Mill Plain on-ramp and the existing auxiliary lane between the 39th Street on-ramp and the Main Street off-ramp.
- The outside auxiliary lane would extend from the Marine Drive on-ramp across the Columbia River bridge and end at the Mill Plain/4th Plain Boulevard off-ramp. A new outside auxiliary lane would begin at the SR 14 on-ramp connecting to the existing auxiliary lane between then Mill Plain Boulevard on-ramp and the SR 500/39th Street off-ramp.

On southbound I-5:

- The two existing auxiliary lanes between SR 500/39th Street and Mill Plain Boulevard would remain, with some reconfiguration due to the braided ramps between the SR 500/39th Street and Fourth Plain Boulevard interchanges. In addition, there would be a third auxiliary lane between the Fourth Plain Boulevard on-ramp and the Mill Plain Boulevard off-ramp to improve operations and safety between these two closely spaced ramps.
- The existing auxiliary lane between the SR 500/39th Street on-ramp would extend to the SR 14 collector-distributor off-ramp. This auxiliary lane would then continue across the Columbia River bridge to the Interstate Avenue/Victory Boulevard off-ramp.
- The outside auxiliary lane would extend from the Mill Plain on-ramp across the Columbia River bridge to connect to the existing auxiliary lane between Hayden Island and the Marine Drive off-ramp.

Figure 1. Comparison of Auxiliary Lane Configurations

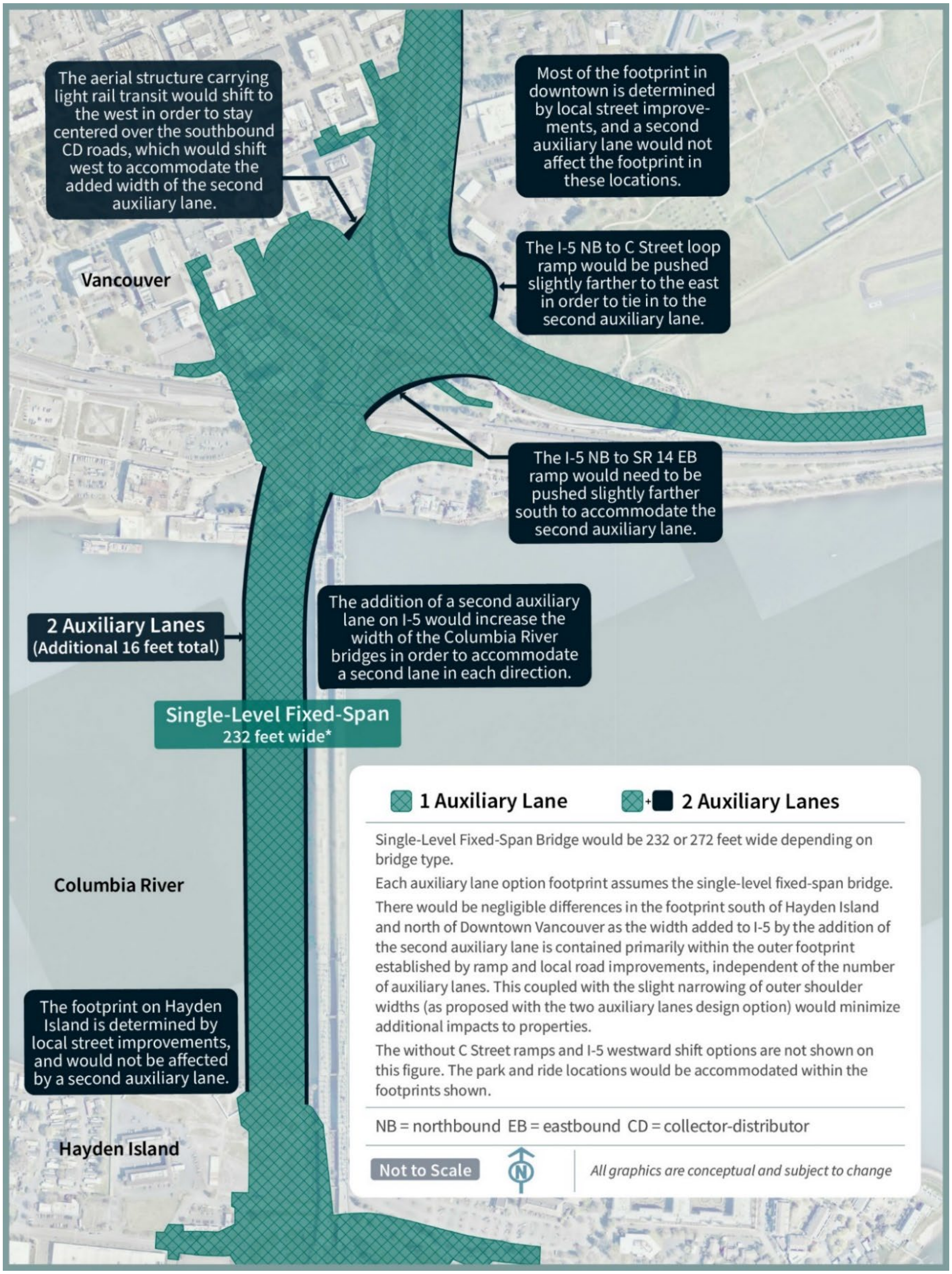


2.1.3 Technical and Environmental Considerations

The scale of the physical impacts (footprint, or limit of permanent improvements) would be similar for the Modified LPA with one auxiliary lane and the Modified LPA with two auxiliary lanes. Figure 2 compares the permanent footprints of the one auxiliary lane and two auxiliary lanes design options, assuming a single-level fixed-span bridge configuration for comparison purposes. The bridge configuration options would vary the footprint over the Columbia River and in downtown Vancouver. For all bridge configuration design options analyzed in the Final SEIS, the two auxiliary lane design option would add a net of approximately 16 feet (8 feet in each direction) in total roadway width to the Columbia River bridges compared to the one auxiliary lane design option.

Table 2 compares the transportation performance and community and environmental effects of the Modified LPA with one auxiliary lane in each direction of I-5 and the Modified LPA with two auxiliary lanes in each direction of I-5, to the No-Build Alternative. Where an increase or reduction is noted for the Modified LPA, this is in comparison to the No-Build Alternative unless otherwise specified. This comparison is based on the detailed technical analysis presented in Chapter 3 of the SEIS. For technical areas or resources not listed below, there were no substantial differences between the one auxiliary lane and two auxiliary lanes design options. Section 2.1.5 identifies key similarities and differences between the design options.

Figure 2. Auxiliary Lane Configuration Footprint Differences



Note: All dimensions are approximate.

Table 2. Comparison of Auxiliary Lane Design Options

Technical Area/Component	No-Build Alternative	Modified LPA with One Auxiliary Lane[(a)]	Modified LPA with Two Auxiliary Lanes[(a)]
Transportation[(b)]			
Hours of congestion/day at Interstate Bridge	• Southbound: 16 hours. Northbound: 14 hours.	• Southbound: 4.75 hours (70% reduction). Northbound: 9 hours (36% reduction).	• Southbound: 4.5 hours (72% reduction). Northbound: 6 hours (57% reduction).
Southbound weekday peak 2-hour average travel times on I-5 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: 14 minutes (52% reduction).
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: 13 minutes (28% reduction). PM: 14 minutes (67% reduction).
Total travel time by transit between downtown Vancouver and Rose Quarter	• 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: 37 minutes (both AM SB and PM NB).
Total travel time by transit between downtown Vancouver and Pioneer Square	• 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: 47 minutes (both AM SB and PM NB).
Traffic safety	• Compared to existing conditions, crashes forecast to increase 28% for I-5 mainline, ramps, and ramp terminal intersections. •	• Compared to the No-Build, crashes forecast to decrease 13% for I-5 mainline, ramps, and ramp terminal intersections. This forecasted decrease in crashes would have less benefit to traffic safety compared to the two auxiliary lane design option.	• Compared to the No-Build, crashes forecast to decrease 17% for I-5 mainline, ramps, and ramp terminal intersections. This forecasted decrease in crashes would have more benefit to traffic safety compared to the one auxiliary lane design option.

Technical Area/Component	No-Build Alternative	Modified LPA with One Auxiliary Lane[a]	Modified LPA with Two Auxiliary Lanes[a]
Acquisitions			
Permanent property acquisitions (for all improvements excluding the Park and Rides)	• None.	• 120.9 acres.	• 120.9 acres.
Land Use and Economics			
Local and regional economy	• Congestion and impaired mobility affecting commercial activity, land use plans and goals for economic development.	• Benefits due to reduced congestion, improved mobility (including facilitating growth by providing light-rail service and reducing traffic congestion).	• Similar to benefits of one auxiliary lane design option, but with higher improvement in traffic operations and mobility.
Induced growth	• Over-capacity transportation facilities could inhibit the region from effectively accommodating planned levels of growth consistent with local and regional lands use and transportation plans.	• There is limited potential for transportation improvements and improved mobility to cause induced growth. Furthermore, regional and local land use and transportation plans already anticipate the demand related to the Program's transportation improvements.	• Similar to benefits of one auxiliary lane design option.
Neighborhoods			
Community cohesion and access to community resources	• No change to existing neighborhoods, community facilities, or social resources. Travel times would increase , which would reduce access to community resources.	• Neighborhood residents would experience reduced congestion, improved travel times for vehicles and emergency services, increased transit connections for residents, and improved street system and active transportation facilities; all of these would benefit community cohesion and access to community resources.	• Similar to effects with one auxiliary lane design option, with additional benefits due to greater reductions in congestion.

Technical Area/Component	No-Build Alternative	Modified LPA with One Auxiliary Lane[a]	Modified LPA with Two Auxiliary Lanes[a]
Public Services			
Emergency response	• Increased congestion on I-5 would increase delays in emergency response.	• Emergency service response time would be faster due to improved traffic conditions and reduced congestion.	• Similar to benefits of the one auxiliary lane design option compared to the No-Build Alternative, but this option would further reduce congestion and multimodal operations would further improve response times.
Visual Quality			
Changes to visual quality	• No changes.	• New visual elements (e.g., new bridges across the Columbia River) could alter the existing visual character and quality.	• Compared to one auxiliary lane design option, additional width would contribute to a slightly increased visual mass for viewers in proximity or beneath the structures in the Columbia River landscape unit.
Noise and Vibration			
Number of receptors that exceed highway noise thresholds	• 216	• With mitigation: 113 (195 without mitigation).	• Same or similar to the one auxiliary lane option. The noise at these receptors would be negligibly louder as traffic lanes would be slightly closer to noise-sensitive land uses.
Parks and Recreation			
Total acres of park and recreation resources acquired (approximate)	• None.	• 0.9 acres (2,260 square feet less than with two auxiliary lanes).	• 0.9 acres (2,260 square feet more than with one auxiliary lane).
Linear feet of trails to be reconstructed and/or permanently realigned (approximate)	• None.	• 6,000 feet.	• 6,200 feet.
Air Quality and Energy			
Air quality (MSAT emissions and regional criteria pollutants)	• Increased travel would still result in pollutant emissions, but the level of air pollutants would be lower than	• Lower pollutant levels than No-Build due to increased mode share	• Lower pollutant levels than No-Build due to increased mode share of low and no air pollutant modes and reduced VMT.

Technical Area/Component	No-Build Alternative	Modified LPA with One Auxiliary Lane[(a)]	Modified LPA with Two Auxiliary Lanes[(a)]
	today due to more stringent regulation of fuels and emissions.	of low and no air pollutant modes and reduced VMT.	• Modeling shows no statistical difference in pollutant emissions (i.e., within the margin of error) compared to the one auxiliary lane design option.
Total regional transportation energy consumption (mmBtu/day)	• 271,933 in 2045	• 271,187 in 2045 (-0.27% compared to No-Build Alternative).	• Modeling results estimate a non-statistically significant difference (i.e., is within the margin of error) of less than 0.1% compared to the one auxiliary lane design option.
Stormwater			
Contributing impervious area	178 acres total: • 0 acres treated • 21 acres infiltrated • 157 acres untreated	215 acres total (37 acres more than No-Build Alternative): • 197 acres treated • 18 acres infiltrated • 0 acres untreated	215 acres total (37 acres more than No-Build Alternative): • 198 acres treated • 17 acres infiltrated • 0 acres untreated

Notes:
All numbers and values are approximate.
Findings for the No-Build Alternative and the Modified LPA are provided for year 2045.
a Where an increase or reduction is noted, this is in comparison to the No-Build Alternative, unless otherwise specified. The findings provided are for the Modified LPA with C Street ramps, double-deck fixed-span bridge configuration, and centered I-5.
b The traffic operations analysis (for AM and PM peak periods) for each auxiliary lane option results in the same findings regardless of bridge configuration, C Street ramps design option, and I-5 alignment design option.
Key: I = Interstate; LPA = Locally Preferred Alternative; LRT = light-rail transit; mmBtu = metric million British thermal units; MSAT = Mobile Source Air Toxic; NA = not applicable; NB = northbound; SB = southbound; VMT = vehicle miles traveled

2.1.4 Public Feedback

Comments received during the public comment period on the Draft SEIS identified additional factors to consider when comparing and contrasting the auxiliary design options. These comments include:

- References to state and local agency plans and policies that prioritize multimodal solutions over the addition of new lanes to address transportation needs in urban areas. These plans and policies encourage highway design improvements coupled with public transportation, active transportation, and other transportation demand management strategies.
- Preferences for one or no auxiliary lane(s) because of concerns that additional lanes would lead to an increased number of highway trips and a perceived higher potential for increased air pollutants.
- Concerns that latent demand, such that more travelers would choose to make additional highway trips due to faster travel times and reduced congestion, could increase vehicle miles traveled with two auxiliary lanes compared to one auxiliary lane in each direction of I-5.
- Preferences for two auxiliary lanes due to the higher level of transportation benefits.
- Concerns about the additional construction and maintenance costs associated with adding lanes to the current highway facility.

2.1.5 Recommended Auxiliary Lane Design Option

The one auxiliary lane and two auxiliary lane design options share similar impacts and benefits to some community and environmental resources, including:

- Each design option would outperform the No-Build Alternative on highway traffic operations, including congestion, travel time, and traffic safety.
- Southbound express bus travel time would increase for both design options compared to the No-Build Alternative, due in large part to downstream bottlenecks outside the study area.
- Minor or no differences between the two design options for the following areas:
    - Acquired acreage of property, parks, and trails to be acquired
    - Benefits to the local economy
    - Improved response times for emergency responders
    - Changes to viewsheds
    - Number of receptors sensitive to noise impacts
    - Reduction in air pollutants
    - Energy consumption
    - Acreage of impervious areas to have stormwater treated
- Public feedback was mixed, with some preferences for one auxiliary lane generally due to perceptions about induced demand and increased air pollutants associated with more lanes and some preferences for two auxiliary lanes due to the higher level of transportation benefits.

However, there are several notable differences between the one auxiliary lane and two auxiliary lane design options, including:

- The one auxiliary lane design option would reduce overall environmental impacts while improving transportation operations and safety.
- The two auxiliary lanes design option would reduce congestion, travel times, and crashes more than the one auxiliary lane design option.
    - The two auxiliary lanes design option would provide more reduction in the number of hours of congestion to northbound travelers (6 hours) than the one auxiliary lane design option, which would reduce the hours of congestion to 9 hours; both would have fewer hours of congestion than the No-Build Alternative (14 hours).
    - Northbound 2-hour peak weekday travel times would be reduced to 14 minutes with the two auxiliary lanes design option and 26 minutes with the one auxiliary lane design option; both would be faster than the No-Build Alternative (42 minutes).
    - To a lesser degree, southbound 2-hour peak weekday travel times would be reduced to 50 minutes with the two auxiliary lanes design option and 54 minutes with the one auxiliary lane design option; both would be slightly faster than the No-Build Alternative (58 minutes).
    - Express bus travel times in the northbound PM would be faster with the two auxiliary lanes design option (26 minutes) compared to the one auxiliary design option (38 minutes); both would be faster than the No-Build Alternative (62 minutes).
    - The two auxiliary lanes design option is predicted to reduce crashes by up to 4% more than the one auxiliary lane design option.
- While both options would meet the Purpose and Need, two auxiliary lanes would perform slightly better in addressing safety.

In summary, the one and two auxiliary lane design options would provide important benefits to highway operations and safety. Both options received a mix of positive and negative feedback from the public. The one auxiliary lane design option is recommended because it would reduce overall environmental impacts while improving transportation operations and safety. The one auxiliary lane design option is also supported by local transportation agencies.

In consideration of the overall improvements of the Modified LPA with either of the auxiliary lane design options compared to the No-Build Alternative, notable differences between the two design options in policy, operational performance, and environmental impacts and benefits, and feedback received during the public comment period, **the Program Recommended Design Option is one auxiliary lane in each direction of I-5**.

2.2 Bridge Configuration

The Draft and Final SEIS evaluated a new pair of Columbia River bridges—one for northbound and one for southbound travel—built west of the existing bridges. When all highway, transit, and active transportation has been moved to the new Columbia River bridges, the existing Interstate Bridge (both spans) would be removed. Three bridge configuration design options are under consideration:

- Double-deck fixed-span bridge configuration

- Single-level fixed-span bridge configuration
- Single-level movable-span bridge configuration with the movable spans located over the primary navigation channel

This section provides a brief description of each design option, a comparison of the technical and environmental impacts/benefits relevant for the design options, a summary of the key public feedback for consideration, and, after reviewing these elements, the identification of the Recommended Design Option for the bridge configuration.

The double-deck and single-level fixed-span bridge configurations would provide up to 116 feet of vertical navigation clearance. The movable-span bridge configuration would provide 178 feet of vertical navigation clearance. The location and number of pier sets would be the same for each configuration.

As with the existing bridge, the new Columbia River bridges would provide three navigation channels: a primary navigation channel and two barge channels. The current location of the primary navigation channel is near the Vancouver shoreline where the existing lift spans are located. Under the Modified LPA, the primary navigation channel would be shifted south approximately 500 feet (measured by channel centerlines), and the existing center barge channel would shift north and become the north barge channel. The new primary navigation channel would be 400 feet wide (this width includes a 300-foot channel authorized by the U.S. Army Corps of Engineers (USACE) plus a 50-foot channel maintenance buffer on each side of the authorized channel). The two barge channels would also each be 400 feet wide. The IBR Program is coordinating with USACE to obtain authorization to change the location of the primary navigation channel.

All bridge configurations would continue to accommodate takeoffs and landings by aircraft using nearby Pearson Field, with similar flight operations standards that are in place today. Airspace for Portland International Airport would not be affected by the bridge configurations evaluated in the Draft and Final SEIS.

2.2.1 Double-Deck Fixed-Span Bridge Configuration

The double-deck fixed-span bridge configuration would be two side-by-side, double-deck fixed-span steel truss bridges. Figure 3 shows an example of this configuration. The double-deck fixed-span bridge configuration would provide 116 feet of vertical navigation clearance for river traffic using the primary navigation channel and 400 feet of horizontal navigation clearance at the primary navigation channel. The two barge channels would each provide 100 feet of vertical navigation clearance and 400 feet of horizontal navigation clearance.

The eastern bridge would accommodate northbound highway traffic on the upper level and the shared-use path and utilities on the lower level. The western bridge would carry southbound traffic on the upper level and light-rail tracks on the lower level. Each bridge deck would typically be 79 feet wide, with a total out-to-out width of approximately 173 feet. [6] Figure 4 shows a typical cross section of the two parallel double-deck bridge configuration.

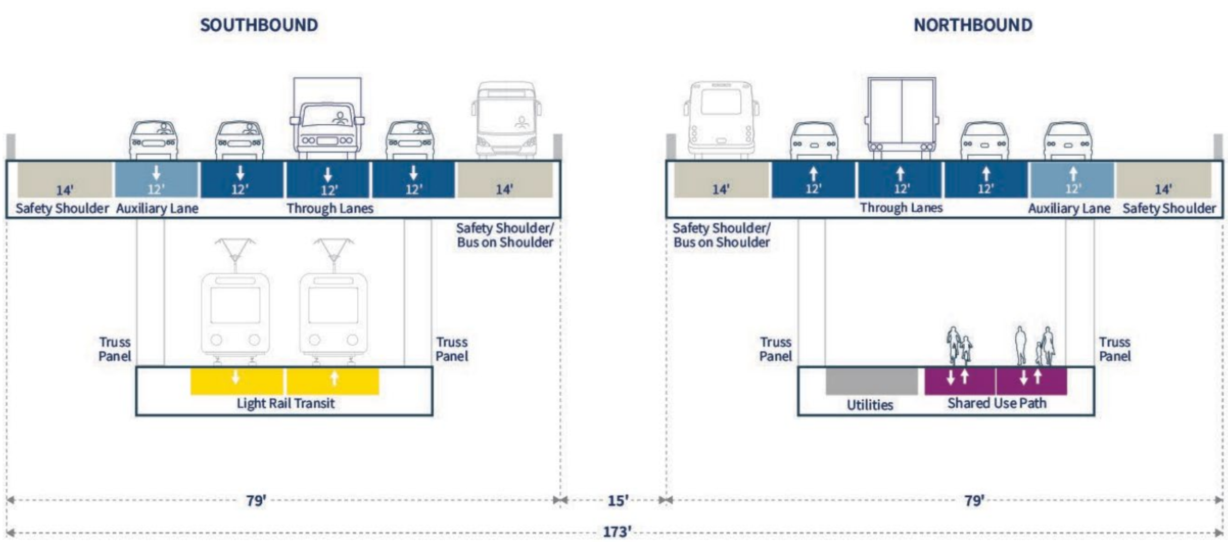
[6] "Out-to-out width" is the measurement between the outside edges of the bridge across its width at the widest point.

Like all bridge configuration design options under consideration, the double-deck fixed-span bridge configuration would have six in-water pier sets. Each pier set would require 12 in-water drilled shafts for a total of 72 in-water drilled shafts. Each individual shaft cap would be approximately 50 feet by 85 feet. This bridge configuration would have up to a 4% maximum grade on both the Oregon and Washington sides. All vertical profiles would follow AASHTO, WSDOT, and ODOT design standards.

Figure 3. Conceptual Drawing of the Double-Deck Fixed-Span Bridge Configuration

View is to the southeast (upstream) from Vancouver.
This image is subject to change and is shown as a representative concept; it does not depict the final design.

Figure 4. Typical Cross Section of the Double-Deck Fixed-Span Bridge Configuration



Note: The one auxiliary lane design option is used for illustration purposes. The two auxiliary lane design option would add approximately 8 feet to each bridge (i.e., 16 feet to the total width).

2.2.2 Single-Level Fixed-Span Bridge Configuration

The single-level fixed-span bridge configuration would have two side-by-side, single-level fixed-span steel or concrete bridges. The single-level fixed-span bridge configuration would allow a variety of bridge types (e.g., girder, extradosed), which would be determined later in final design. Figure 5 shows conceptual examples of these options.

This configuration would provide 116 feet of vertical navigation clearance for river traffic using the primary navigation channel and 400 feet of horizontal navigation clearance at the primary navigation channel, as well as barge channels.

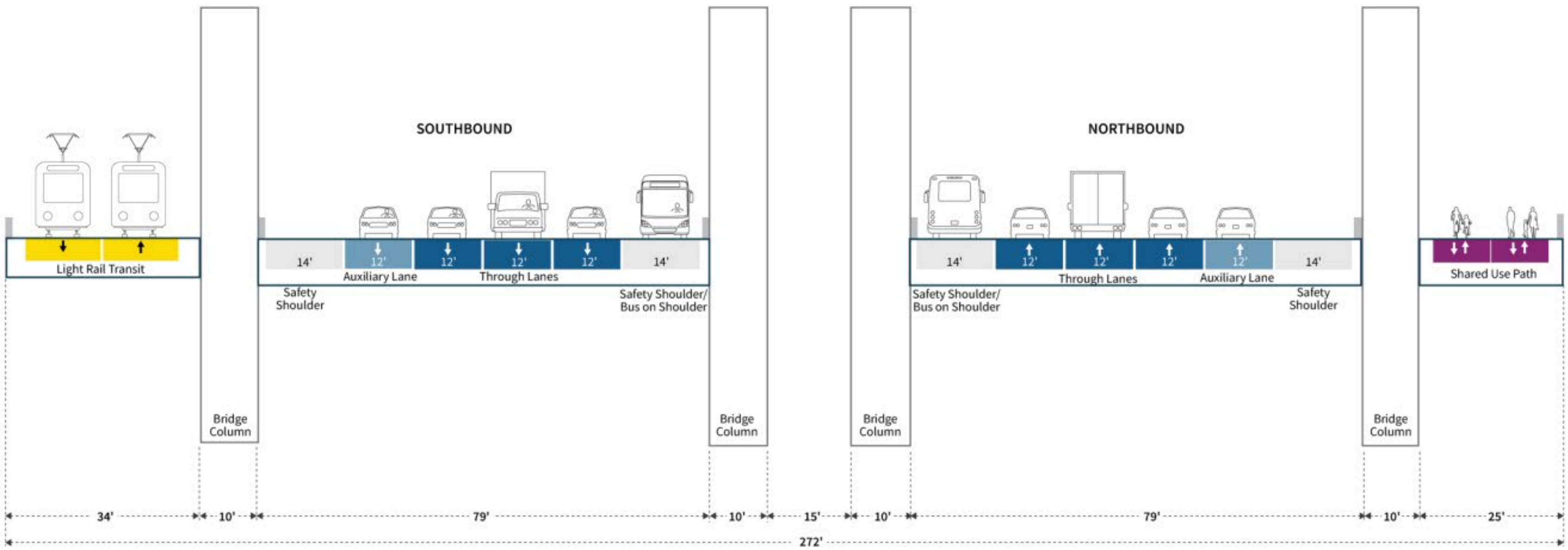
The eastern bridge would accommodate northbound highway traffic and the shared-use path. The western bridge would carry southbound traffic and two-way light-rail tracks. The I-5 highway, light-rail tracks, and the shared-use path would be on the same level across the two bridges instead of being divided between two levels as is the case with the double-deck configuration. Figure 6 shows a typical cross section of the single-level configuration with an extradosed bridge as shown by the 10-foot-wide bridge columns.

There would be six in-water pier sets with 16 in-water drilled shafts on each combined shaft cap, for a total of 96 in-water drilled shafts. The combined shaft caps for each pier set would be approximately 50 feet by 230 feet. This bridge configuration is expected to have an approximate grade of 3% on both the Oregon and Washington sides of the bridge. All vertical profiles would follow AASHTO, WSDOT and ODOT design standards.

Figure 5. Conceptual Drawings of Single-Level Fixed-Span Bridge Types

View is to the southeast (upstream) from Vancouver.
This image is subject to change and is shown as a representative concept; it does not depict the final design.

Figure 6. Typical Cross Section of the Single-Level Fixed-Span Bridge Configuration



Note: The cross section for a girder bridge type would be the same except that it would not have the four 10-foot bridge columns, making the total out-to-out width approximately 232 feet rather than the 272 feet shown in Figure 6. The one auxiliary lane design option is used for illustration purposes. The two auxiliary lane design option would add approximately 8 feet to each bridge width and 16 feet to the total width.

2.2.3 Single-Level Movable-Span Bridge Configuration

The single-level movable-span bridge configuration would have two side-by-side, single-level steel girder bridges with movable spans. For the purpose of the Draft and Final SEIS, the IBR Program assumed that the movable-span bridge configuration would be a vertical lift span with counterweights. Figure 7 shows a conceptual example of a vertical lift-span bridge.

A movable span needs to be located on a straight and flat bridge section (i.e., without curvature and with minimal slope). To comply with these requirements, and for the bridge to maintain the highway, transit, and active transportation connections on Hayden Island and in Vancouver while minimizing property acquisitions and displacements, the movable span is proposed to be located approximately 500 feet south of the existing lift span, between Piers 5 and 6.

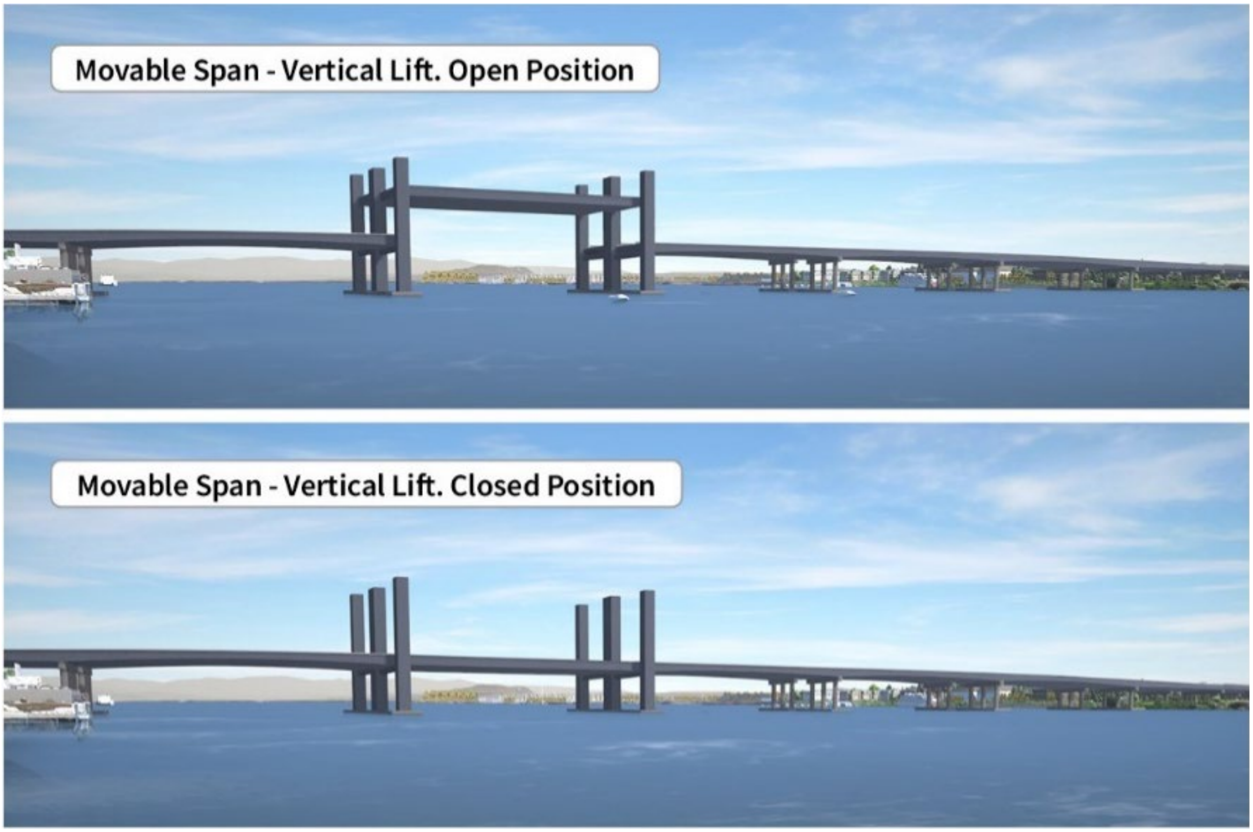
The single-level movable-span configuration would provide approximately 90 feet of vertical navigation clearance over the proposed relocated primary navigation channel when the movable spans are in the closed position, with 99 feet of vertical navigation clearance available over the north barge channel. It satisfies the USCG's requirement of a minimum of 72 feet of vertical navigation clearance (equal to the existing Interstate Bridge's maximum clearance over the southernmost barge channel when the existing lift span is in the closed position). In the open position, the vertical lift span would provide 178 feet of vertical navigation clearance over the relocated primary navigation channel. The single-level movable-span bridge configuration would provide 400 feet of horizontal navigation clearance for the primary navigation channel and for each of the two barge channels. The vertical lift-span towers would be approximately 243 feet high, whereas the existing lift-span towers are 247 feet high.

Similar to the single-level fixed-span bridge configuration, the eastern bridge would accommodate northbound highway traffic and the shared-use path, while the western bridge would carry southbound traffic and two-way light-rail tracks. Typical cross sections of the single-level movable-span configuration are shown in Figure 8; the top section depicts the vertical lift spans (Piers 5 and 6), and the bottom section depicts the fixed spans (Piers 2, 3, 4, and 7). The movable and fixed cross sections are slightly different because the movable span requires lift towers, which are not required for the fixed spans of the bridges.

There would be six in-water pier sets and two piers on land per bridge. The vertical lift span would have 22 in-water drilled shafts each for Piers 5 and 6; the shaft caps for these piers would be approximately 50 feet by 312 feet to accommodate the vertical lift spans. Piers 2, 3, 4, and 7 would have 16 in-water drilled shafts each; the shaft caps for these piers would be the same as for the fixed-span options (approximately 50 feet by 230 feet). The single-level movable-span bridge configuration (with a vertical lift-span) would have a total of 108 in-water drilled shafts.

The single-level movable-span bridge configuration is expected to have an approximate grade of 3% on the Oregon side of the bridge and an approximate grade of 1.5% on the Washington side. All vertical profiles would follow AASHTO, WSDOT, and ODOT design standards.

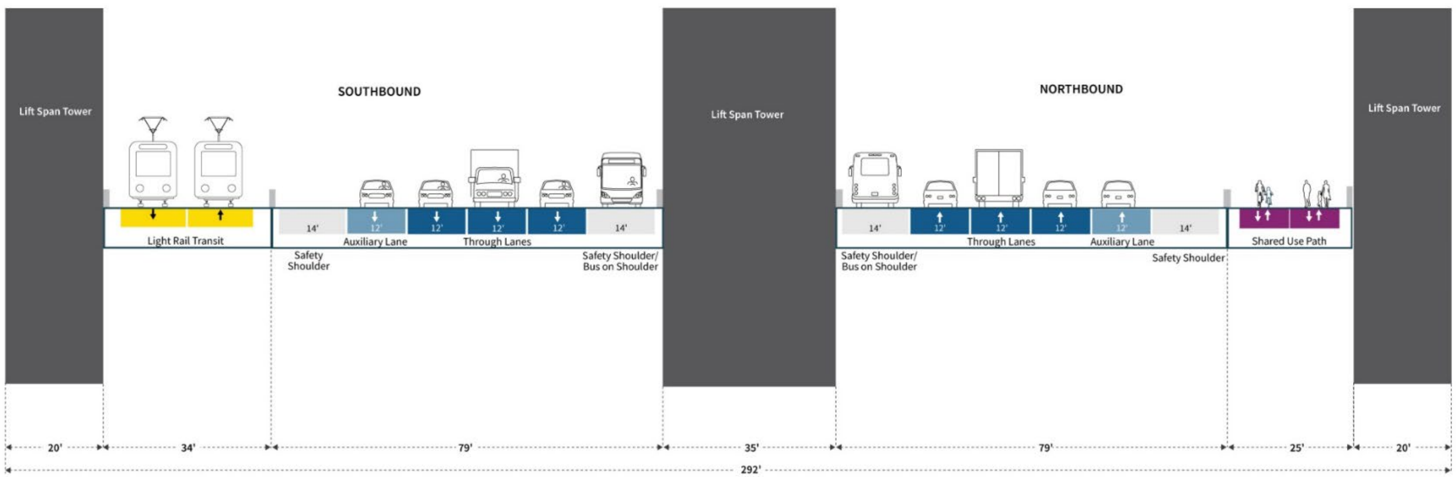
Figure 7. Conceptual Drawings of Single-Level Movable-Span Bridge Configuration in the Open and Closed Positions



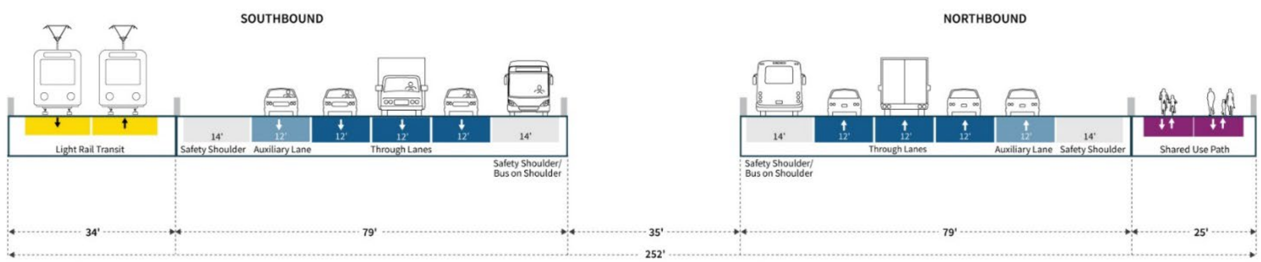
View is to the southeast (upstream) from Vancouver.
This image is subject to change and is shown as a representative concept; it does not depict the final design.

Figure 8. Typical Cross Section of the Single-Level Movable-Span Bridge Type

Single-level Bridge with Movable Span - Vertical Lift Span Cross-section (Piers 5 and 6)



Single-level Bridge with Movable Span - Fixed Spans Cross-section (Piers 2, 3, 4, and 7)



Notes: Design is not final and subject to change. Widths may vary with final design. The one auxiliary lane design option is used for illustration purposes. The two auxiliary lane design option would add approximately 8 feet to each bridge width (i.e., 16 feet to the total width).

2.2.4 Technical and Environmental Considerations

The horizontal dimensions (or "footprints") of each bridge configuration would differ in three locations: over the Columbia River, the Hayden Island landing, and the Vancouver landing. The rest of the I-5 corridor would have the same footprint for all three bridge configurations. Figure 9 compares each of the three bridge configurations' footprint with one auxiliary lane (refer to Figure 2 for a comparison of one and two auxiliary lane footprints). Key differences in the footprints would be as follows:

- The double-deck fixed-span bridge configuration would be approximately 173 feet wide.
- For the single-level fixed-span, the extradosed bridge type would likely be approximately 272 feet wide (approximately 99 feet wider than the double-deck configuration), and the girder bridge type would likely be approximately 232 feet wide (approximately 59 feet wider than the double-deck configuration).
- The single-level movable-span would be approximately 252 feet wide (approximately 79 feet wider than the double-deck fixed-span bridge configuration), except at Piers 5 and 6, where larger bridge foundations would require an additional width of approximately 40 feet to support the movable span.
- The single-level bridge configurations would have a wider footprint at the bridge landings on Hayden Island and Vancouver because transit and active transportation would be located adjacent to the highway, rather than below the highway as in the double-deck option.

Figure 10 shows the profile and elevation of the existing Interstate Bridge and Figure 11 compares the basic profile and elevation of each bridge configuration option for the Modified LPA. The single-level fixed-span bridge configuration and the lower deck of the double-deck fixed-span bridge configuration would have similar elevations, but the double-deck bridge configuration would have a more prominent profile (side view) because it would have two levels. The single-level movable-span bridge configuration would have a lower elevation than the fixed-span bridge configurations when the movable spans are in the closed position.

Table 3 compares the transportation performance and community and environmental effects of the double-deck fixed-span, single-level fixed-span, and single-level movable-span bridge configurations to the No-Build Alternative. Where an increase or reduction is noted for the Modified LPA, this is in comparison to the No-Build Alternative unless otherwise specified. This comparison is based on the detailed technical analysis presented in Chapter 3 of the SEIS. For technical areas or resources not listed below, there were no substantial differences among the bridge configuration design options. Section 2.2.6 identifies key similarities and differences among the bridge configurations.

Figure 9. Bridge Configuration Footprint Comparison

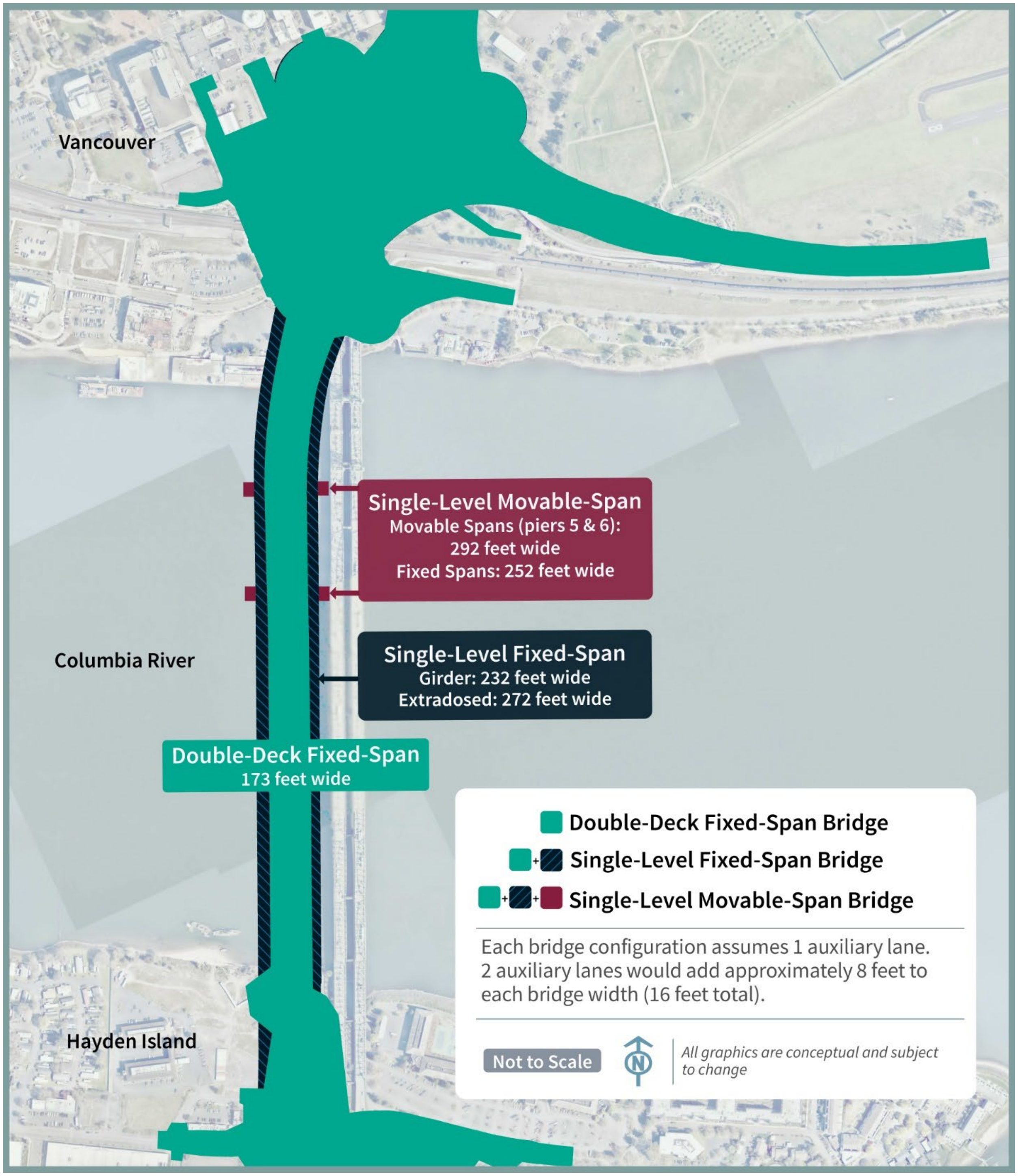
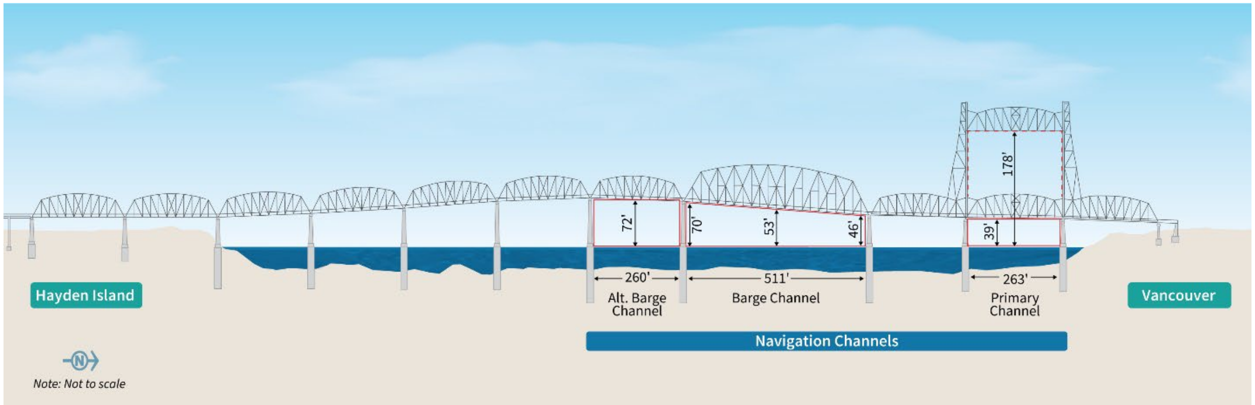
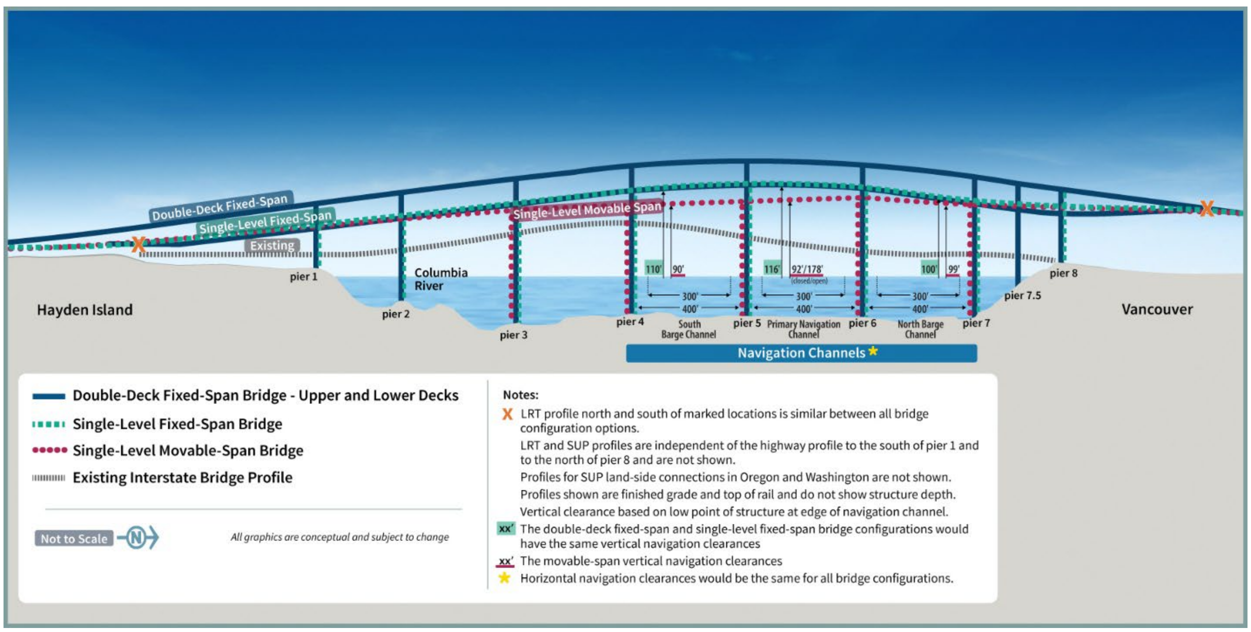


Figure 10. Existing Interstate Bridge Profile



Note: All vertical navigation clearances are measured in 0 Columbia River Datum (CRD). The top of the lift towers of the existing Interstate Bridge is 247 feet (NAVD 88).

Figure 11. Bridge Configuration Profile Comparison



Notes: All vertical navigation clearances are measured in 0 CRD. The top of the lift towers for the single-level movable-span bridge configuration would be approximately 243 feet (NAVD 88). The location and widths of the proposed navigation channels would be same for all bridge configuration and bridge type options. The three navigation channels would each be 400 feet wide (this width includes a 300-foot USACE-authorized channel (shown in dotted lines) plus a 50-foot channel maintenance buffer on each side of the authorized channel). The vertical navigation clearance would vary.

LRT = light-rail transit; SUP = shared-use path

Table 3. Comparison of Bridge Configurations

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
Transportation				
Traffic safety	• Crashes forecast to increase 28% by 2045 for I-5 mainline, ramps, and ramp terminal intersections compared to existing conditions.	• Crashes forecast to decrease 13% for I-5 mainline, ramps, and ramp terminal intersections compared to No-Build Alternative.	• Crashes forecast to decrease 13% for I-5 mainline, ramps, and ramp terminal intersections compared to No-Build Alternative.	The movable-span bridge configuration would perform worse (experience more crashes) than the fixed-span configurations but better (experience fewer crashes) than the No-Build Alternative.[b]
Transit	• Bridge openings would continue to cause disruptions and delays for bus service. LRT service would not be extended from Portland, OR to Vancouver, WA.	• Travel times by express bus and LRT would be reduced compared to the No-Build.	• Travel times by express bus and LRT would be reduced compared to the No-Build.	• Travel times by express bus and LRT would be reduced compared to the No-Build Alternative. • Bridge openings would cause a system-level disruption in service, affecting operations for the MAX Yellow Line LRT to downtown Portland. • Bus operations for express bus trips using the I-5 Columbia River bridges would also be disrupted when there are bridge openings, increasing overall travel times for riders. • Depending on when the disruptions occur, it could take hours for the transit system to recover.
Active transportation	• The shared-use path (SUP) is at a maximum elevation of approximately 84 feet above the river.	• The SUP path would be at a maximum elevation of approximately 138 feet above the river.	• The SUP (located on the lower deck) would be at a maximum elevation of approximately 128 feet above the river.	• The SUP would be at a maximum elevation of approximately 114 feet above the river.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
	• The maximum grade on the bridge is 5%. • Active transportation users would continue to be interrupted during bridge lifts. • Active transportation users would remain near vehicles, with exposure to noise, dust, and debris. • The substandard SUP widths are narrow and the SUP was constructed prior to enactment of the ADA; therefore it does not meet modern ADA requirements.	• The maximum grade would be approximately 3% on both sides of the river, which is approximately 2% lower than the No-Build. • Active transportation users would experience similar travel changes as the double-deck fixed-span although the grades would be less. • Compared to a double-deck configuration, potential for more exposure to noise, dust, and debris from vehicles adjacent to the SUP, but higher sense of security due to more “eyes on the path.” • No interruption due to bridge lifts. • The SUP and ramps would be wider than the No-Build and would be ADA compliant.	• The maximum grade would be approximately 4% on both sides of the river, and active transportation users would experience a higher grade than the single-level options. • Users may have a lower sense of personal safety and security due to fewer “eyes on the path” due to SUP location on lower deck. • Potential for less exposure to noise, dust, and debris from vehicles due to SUP location on lower deck. • No interruption due to bridge lifts. • The SUP and ramps would be wider than the No-Build and would be ADA compliant.	• The maximum grades would be approximately 1.5% on the Washington side and approximately 3% on the Oregon side of the river. • Active transportation users would experience similar travel changes as the double-deck and single-level fixed-spans although the grades would be less. • Compared to a double-deck configuration, potential for more exposure to noise, dust, and debris from vehicles adjacent to the SUP, but higher sense of security due to more “eyes on the path.” • Active transportation users’ travel would be interrupted during bridge lifts. • The SUP and ramps would be wider than the No-Build and would be ADA compliant.
Bridge openings	• Openings/gate closures would continue to temporarily stop traffic, freight, transit, and active transportation on the Interstate Bridge. [c]	None	None	• Openings would temporarily stop traffic, freight, transit, and active transportation on the new Columbia River bridges. • Daytime bridge openings could impact traffic congestion for an hour or more. • Considering 2007-2024 trends in vessels transiting under the Interstate Bridge, there would be

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [(a)]	Modified LPA with Double-Deck Fixed-Span[(a)]	Modified LPA with Single-Level Movable-Span [(a)]
	• Typical bridge opening/gate closure durations are approximately 9 to 27 minutes depending on the purpose of the bridge lift (i.e., maintenance or vessel traffic) and lift elevation (i.e., partial lift or full lift). • Daytime bridge openings can impact traffic congestion for an hour or more. • From 2007-2024, there was an average of 152 lifts per year (IBR 2025). • At present, no lifts are allowed on weekdays from 6:30 a.m. to 9:00 a.m. and 2:30 p.m. to 6:00 p.m. There are no restrictions on weekends.[(d)]			fewer bridge lifts compared to the No-Build Alternative due to increased vertical navigation clearance in the closed position (99 feet compared to 72 feet). • Typical opening durations are assumed to be 9 to 18 minutes [c] for the purposes of impact analysis but would ultimately depend on various operational considerations related to vessel traffic and river and weather conditions. Additional time would also be required to stop traffic prior to opening and restart traffic after the bridge closes. • Additional restrictions to daytime bridge openings would be requested to consolidate fewer bridge openings outside of morning, midday, and evening peak hours when vehicle and transit demand is high in order to improve LRT on-time performance and system reliability and reduce highway congestion. [(d)]
Navigation				
Horizontal Navigation Clearance	• Primary Navigation Channel: 263 • North Barge Channel: 511 feet • South Barge Channel: 260 feet	• 400 feet for all navigation channels (300-foot USACE authorized channel plus a 50-foot channel maintenance buffer on each side)	• 400 feet for all navigation channels (300-foot USACE authorized channel plus a 50-foot channel maintenance buffer on each side)	• 400 feet for all navigation channels (300-foot USACE authorized channel plus a 50-foot channel maintenance buffer on each side)

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [(a)]	Modified LPA with Double-Deck Fixed-Span[(a)]	Modified LPA with Single-Level Movable-Span [(a)]
Vertical Navigation Clearance (VNC)	• Primary Navigation Channel: 39 feet (closed) to 178 feet (open) • North Barge Channel: 46-70 feet • South Barge Channel: 72 feet • Vessels with a VNC requirement greater than 72 feet would continue to wait for bridge lifts and be subject to timing restrictions (i.e., when bridge lifts can occur). • Horizontal navigation clearance (HNC) for all navigation channels would remain unchanged; primary navigation channel would continue to present safety hazards due to narrow HNC (263 feet). • No existing fabricator shipments and vessels permanently restricted from transiting under the Interstate Bridge.	• Primary Navigation Channel: 116 feet • North Barge Channel: 100 feet • South Barge Channel: 110 feet • Reduced safety hazards due to increased HNC (400 feet) for primary (center) and alternate barge (south) channels. • 4 existing fabricator shipments and vessels permanently restricted from transiting under the new Columbia River bridges.	• Primary Navigation Channel: 116 feet • North Barge Channel: 100 feet • South Barge Channel: 110 feet • Reduced safety hazards due to increased HNC (400 feet) for primary (center) and alternate barge (south) channels. • 4 existing fabricator shipments and vessels permanently restricted from transiting under the new Columbia River bridges.	• Primary Navigation Channel: 92 feet (closed) to 178 feet (open) • North Barge Channel: 99 feet • South Barge Channel: 90 feet • All vessels that currently transit the existing Interstate Bridge would be able to transit the movable-span configuration. • Vessels with a VNC requirement greater than 99 feet would wait for bridge openings and be subject to timing restrictions; however, the VNC in the closed position would be higher than the No-Build and would allow more vessels to transit without a bridge opening. • Reduced safety hazards due to increased HNC (400 feet) for barge (north), new primary (center) and alternate barge (south) channels. • No existing fabricator shipments and vessels permanently restricted from transiting under the new Columbia River bridges.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
Navigation through Interstate Bridge/Columbia River Bridges and the BNSF Railway Bridge	• No improvement.	• Most vessels would be able to use the North Barge Channel, which provides 100 feet VNC and the straightest alignment between the new Columbia River bridges and the BNSF Railway Bridge, thereby reducing the extent of maneuvers between the bridges. • Vessels requiring 100 feet to 116 feet VNC would use the Primary (center) Navigation Channel.	• Most vessels would be able to use the North Barge Channel, which provides 100 feet VNC and the straightest alignment between the new Columbia River bridges and the BNSF Railway Bridge, thereby reducing the extent of maneuvers between the bridges. • Vessels requiring 100 feet to 116 feet VNC would use the Primary (center) Navigation Channel.	• Most vessels would be able to use the North Barge Channel, which provides the straightest alignment between the new Columbia River bridges and the BNSF Railway Bridge, thereby reducing the extent of maneuvers between the bridges. • Vessels requiring over 99 feet VNC would require a bridge opening and would use the Primary (center) Navigation Channel.
Upper Vancouver Turning Basin	• No change to existing Upper Vancouver Turning Basin.	• Shifts the Upper Vancouver Turning Basin to the west by approximately 300-325 feet, which would continue to support turning of deep-draft vessels.	• Same as the single-level fixed-span.	• Similar to the single-level fixed-span, but with an approximate shift of 350 feet.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
Navigation safety	• HNC for all navigation channels remain unchanged • VNC remains unchanged • Primary navigation channel (north location) would provide straightest route to/from the BNSF Railway Bridge compared to existing barge (center) and alternate barge (south) channels • Unchanged navigation visibility associated with HNC (263–511 feet) and VNC (39–72 feet in the closed position; 178 feet in the open position)	• Increased HNC (400 feet) for primary (center) and alternate barge (south) channels • Reduced VNC for new primary navigation channel (center)Increased VNC for the north barge channel and south barge channel • Improved alignment with the BNSF Railway Bridge • Increased navigation visibility	• Same as the single-level fixed-span.	• Increased HNC for all channels • Same or increased VNC for all channels • Improved alignment with the BNSF Railway Bridge • Increased navigation visibility
River navigation operations	• River navigation for certain vessels would remain subject to restrictions in the timing of bridge lifts.	• NA	• NA	• River navigation for certain vessels would be subject to restrictions in the timing of bridge openings; however, the Modified LPA would have a higher VNC than the existing bridge in the closed position.
Aviation				
Aviation safety	• 98 vertical feet penetration by south lift tower, illuminated to increase visibility. • Existing open-truss framing continues to provide bird roosting and nesting areas, existing ODOT deterrence measures continue; aircraft wildlife strike risk continues at existing level.	• No penetration into Pearson Field protected airspace. • Reduced potential for bird nesting and roosting compared to the No-Build.	• Up to 12.5 vertical feet penetration by signs and lighting, illuminated to increase visibility. • Same reduced potential for bird nesting and roosting as the single-level fixed-span.	• 64 vertical feet penetration by lift towers, illuminated to increase visibility. • Same reduced potential for nesting and roosting as the single-level fixed-span.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [(a)]	Modified LPA with Double-Deck Fixed-Span[(a)]	Modified LPA with Single-Level Movable-Span [(a)]
Acquisitions and Displacements				
Permanent property acquisition (for all improvements excluding the Park and Rides)	• None	• 120.9 acres	• 120.6 acres	• 120.9 acres
Economics				
Economics	• No change. Existing river users/vessels would not be affected.	• Business operations, including decreased revenue, job loss, and diminished future market entry, for four river users (2 upstream metal fabricators, 1 vessel owner, and 1 marine services company) would be adversely affected due to some of their manufactured products or vessels being height-constrained by a 116-foot fixed-span bridge. The IBR Program has negotiated agreements with these river users modify their operations and offset those impacts. • Compared to the double-deck configuration, the lower bridge height and reduced highway grade would benefit freight vehicle speed, with slightly less increase in transportation costs. • If new marine-based businesses were to develop upstream of the new	• Business operations, including decreased revenue, job loss, and diminished future market entry, for four river users (2 upstream metal fabricators, 1 vessel owner, and 1 marine services company) would be adversely affected due to some of their manufactured products or vessels being height-constrained by a 116-foot fixed-span bridge. The IBR Program has negotiated agreements with these river users modify their operations and offset those impacts. • Compared to either single-level configuration, higher bridge height and highway grade would reduce freight vehicle speed, with corresponding increased transportation costs. • If new marine-based businesses were to develop upstream of the new Columbia River bridges over their 100+ year service life, the fixed-span bridge configuration would limit their activities to a maximum VNC of 116.	• Similar bridge height and highway grade as the single-level fixed-span, with corresponding transportation costs. • Bridge openings could interrupt vehicle and truck highway travel, transit service, and active transportation across the new Columbia River bridges. • No existing or future vessels or large project manufactured by upstream fabricators would be excluded from passage. • Movable-span operations, and thus river navigation operations, may have increased restrictions on bridge openings, which could impact marine commerce by restricting the times of day for large vessel movements. • If new marine-based businesses were to develop upstream of the new Columbia River bridges over their 100+ year service life, the single-level movable-span configuration would continue to provide at least 178 feet of VNC and therefore would pose no additional limitations to future activities or marine development.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [(a)]	Modified LPA with Double-Deck Fixed-Span[(a)]	Modified LPA with Single-Level Movable-Span [(a)]
		Columbia River bridges over their 100+ year service life, the fixed-span bridge configuration would limit their activities to a maximum VNC of 116.		
Neighborhoods				
Community cohesion	• No change to existing neighborhoods, community facilities, or social resources.	• Would not include bridge openings and associated backups that could affect neighborhood cohesion. • Substantial changes on Hayden Island may affect community cohesion.	• Would not include bridge openings and associated backups that could affect neighborhood cohesion. • Substantial changes on Hayden Island may affect community cohesion.	• Bridge openings would cause backups during non-peak commuting hours that would reduce reliability for vehicles and active transportation which may negatively affect neighborhood cohesion. • Substantial changes on Hayden Island may affect community cohesion.
Public Services				
Emergency response	• Increased congestion on I-5 would increase delays in emergency response times. • Delays and disruptions to emergency response would continue to occur due to bridge openings.	• Reduced congestion on I-5 would improve emergency response times. • Delays and disruptions to emergency response would not occur due to bridge openings. • Compared to the double-deck configuration, emergency response times to transit and shared-use path incidents could improve because emergency vehicles would have better access to transit and active transportation facilities.	• Reduced congestion on I-5 would improve emergency response times. • Delays and disruptions to emergency response would not occur due to bridge openings.	• Reduced congestion on I-5 would improve emergency response times. • Delays and disruptions to emergency response times due to bridge openings would continue, but with less frequency than the No-Build Alternative. • Compared to the double-deck configuration, emergency response times to transit and shared-use path incidents could improve because emergency vehicles would have better access to transit and active transportation facilities.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
Visual Quality				
Changes to visual quality	• Constructed elements within the AVE would not change.	• Would allow for bridge architecture options, which would provide the opportunity for the bridge to become a beneficial feature from nearby views. • Compared to the double-deck configuration, the single-level bridge deck would reduce the visual mass in profile, such as from views from the Vancouver waterfront. • Would eliminate lift towers, which could open views above the bridge deck, and the higher bridge height and wider spacing between piers would open views below the bridge deck. • Would open views of the Columbia River and downtown Vancouver for pedestrians, cyclists, and transit riders without the overhead deck.	• New visual elements, and the higher overall bridge deck compared to the existing Interstate Bridge, could alter the existing visual character and quality in the AVE (e.g., new bridges across the Columbia River) and alter, or potentially block views, such as from the floating homes on the North Portland Harbor. • Compared to the existing Interstate Bridge, the depth of the double-deck of the bridge would increase the structure's visual mass as viewed in profile, such as from the Vancouver waterfront. • Would eliminate lift towers, which could open views above the bridge deck, and the higher bridge height and wider spacing between piers would open views below the bridge deck. • Pedestrians, cyclists and transit riders would have views with the visual weight of an overhead structure and of mechanical and structural elements in the middle of the bridge.	• In the closed position, the visibility and visual mass of the bridges would be similar to the existing Interstate Bridge. • Compared to fixed-span configurations, the towers needed for the movable span would protrude higher into the skyline and be visible from the Vancouver, Fort Vancouver, and Hayden Island areas. • In an open position, which would be intermittent and limited, the increased visibility of the bridge deck may obstruct additional views and skylines, and likely intensify visual impacts, especially for sensitive recreational viewers. Congestion on I-5 that could result during a bridge opening would have a negative visual effect on the visual quality of the project environment. • Compared to the fixed-span configurations, the overall bridge deck would be lower, visually more similar to the existing bridge deck.
Noise and Vibration				
Number of receptors that exceed highway noise thresholds	• 216	• With mitigation: 113 • Without mitigation: 195	• Similar noise and vibration impacts to the single-level fixed-span bridge configuration.	• Similar noise and vibration impacts to the single-level fixed-span configuration.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
Noise/vibration impacts	• No receptors would have moderate or severe transit noise impact levels without the extension of LRT. • No vibration impacts without the extension of LRT.	• With mitigation, 8 existing noise walls in Vancouver would be replaced as necessary along with two new noise walls in Vancouver and one new noise wall in Portland, which collectively would reduce the number of traffic noise impacts to 113. • Transit vibration impacts would occur at 12 receptors in downtown Vancouver. • Compared to the double-deck configuration, users on the shared-use path would have less shielding and more exposure to noise from highway vehicles.	• Compared to the single-level fixed-span, same or similar highway and transit noise impacts would occur near the Program improvements . • Same transit vibration impacts as the single-level fixed-span. • Compared to both single-level options, users on the shared-use path across the Columbia River bridges would have more shielding and less exposure to noise from highway vehicles.	• Similar to the single-level fixed-span.
Air Quality				
Changes in MSAT emissions (2045)	Compared to existing conditions and considering more stringent future regulation of fuels and emissions: • 1,3-Butadiene: 100% reduction • Acetaldehyde: 82% reduction • Acrolein: 89% reduction • Benzene: 69% reduction • Diesel Particulate Matter: 86% reduction • Ethylbenzene: 29% reduction	Compared to existing conditions and considering more stringent future regulation of fuels and emissions: • 1,3-Butadiene: 100% reduction • Acetaldehyde: 85% reduction • Acrolein: 90% reduction • Benzene: 70% reduction • Diesel Particulate Matter: 88% reduction • Ethylbenzene: 29% reduction	• Similar to single-level fixed-span, but may slightly increase operational emissions due to the higher profile grade, which would increase acceleration and braking of vehicles crossing the bridges.	• Similar to single-level fixed-span, 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.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
	• Formaldehyde: 86% reduction • Naphthalene: 93% reduction • Polycyclic Organic Matter: 93% reduction	• Formaldehyde: 88% reduction • Naphthalene: 83% reduction • Polycyclic Organic Matter: 94% reduction		
Changes in regional criteria pollutant emissions	Compared to existing conditions and considering more stringent future regulation of fuels and emissions: • Carbon Monoxide: 61% reduction • Nitrogen Dioxide: 75% reduction • Volatile Organic Compounds: 26% increase • Total PM_{10}:[b] 46% increase • Total $PM_{2.5}$:[c] 39% reduction	Compared to existing conditions and considering more stringent future regulation of fuels and emissions: • Carbon Monoxide: 63% reduction • Nitrogen Dioxide: 79% reduction • Volatile Organic Compounds: 25% increase • Total PM_{10}:[b] 21% increase • Total $PM_{2.5}$:[c] 48% reduction	• Similar to single-level fixed-span, but may slightly increase operational emissions due to the higher profile grade, which would increase acceleration and braking of vehicles crossing the bridges.	• Similar to single-level fixed-span, 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.
Energy				
Total regional transportation energy consumption (mmBtu/day)	• 271,933 in 2045	• 271,187 in 2045 (-0.27% compared to No-Build Alternative).	• Similar to single-level fixed-span but would slightly increase operational energy consumption due to the increased profile grade of the new Columbia River bridges.	• Similar to effects of single-level fixed-span but would increase energy consumption due to the electricity required to open the bridge and as a result of idling by queued vehicles on the freeway during bridge openings.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [a]	Modified LPA with Double-Deck Fixed-Span[a]	Modified LPA with Single-Level Movable-Span [a]
Water Quality				
Stormwater runoff	• No change from existing conditions. Stormwater within the area would remain untreated until addressed according to state prioritization and available funding.	• Beneficial effect on receiving water quality (due to BMPs to remove pollutants). • Could cause changes in peak flows and stormwater runoff volumes.	• Same as the single-level fixed-span.	• Similar to the single-level fixed-span, with slight increase to pollutant loads. Potential for additional and accidental minor spills of materials and pollutants used for maintenance and operation of the movable-span configuration.
Stormwater treatment for contributing impervious areas	• 0 acres treated • 21 acres infiltrated • 157 acres untreated	• 197 acres treated • 18 acres infiltrated • 0 acres untreated	• 194 acres treated • 17 acres infiltrated • 0 acres untreated	• 201 acres treated • 17 acres infiltrated • 0 acres untreated
Hydrology				
Hydrology	• No change from existing conditions (continued release of stormwater with degraded quality into receiving waters).	• Potential to cause long-term hydrologic effects due to an increase of 33 acres of contributing impervious area.	• Potential to cause long-term hydrologic effects due to an increase of 30 acres of contributing impervious area.	• Potential to cause long-term hydrologic effects due to an increase of 37 acres of contributing impervious area.
Ecosystems				
Aquatic resources	• Continued impacts from untreated stormwater from approximately 157 acres of existing contributing impervious area. • Potential for injury and habitat degradation in the case of a bridge failure during/after a seismic event.	• Additional overwater shading (water surface): +1.24 acres. • Additional overwater shading (elevated deck): +9.09 acres. • Decreased potential for injury and habitat degradation due to a bridge failure, as bridges would meet current seismic standards.	• Additional overwater shading (water surface): +1.05 acres. • Additional overwater shading (elevated deck): +8.22 acres. • Decreased potential for injury and habitat degradation due to a bridge failure, as bridges would meet current seismic standards.	• Additional overwater shading (water surface): +1.58 acres. • Additional overwater shading (elevated deck): +13.23 acres. • Decreased potential for injury and habitat degradation due to a bridge failure, as bridges would meet current seismic standards.

Technical Area/Component	No-Build Alternative	Modified LPA with Single-Level Fixed-Span [(a)]	Modified LPA with Double-Deck Fixed-Span[(a)]	Modified LPA with Single-Level Movable-Span [(a)]
Hazardous Materials				
Hazardous materials	• No potential for adverse effects from acquisition of contaminated sites.	Potential for adverse effects from acquisition of contaminated sites. Compared to double-deck configuration: • 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.	Potential for adverse effects from acquisition of contaminated sites. Compared to both single-level configurations: • Smaller area of in-water work due to smaller bridge foundations, which could result in a comparatively smaller potential risk of mobilizing hazardous materials in river sediments.	Potential for adverse effects from acquisition of contaminated sites. Compared to both fixed-span configurations: • 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. • Requires the acquisition of a slightly larger area of property with a potential source of contamination.

Notes:

All numbers and values are approximate. Findings for the No-Build Alternative and the Modified LPA are provided for year 2045.

a Where an increase or reduction is noted, this is in comparison to the No-Build Alternative, unless otherwise specified. Findings are for the Modified LPA with one auxiliary lane, C Street ramps, and centered I-5.

b The effect on traffic safety from eliminating the movable-span cannot be quantified within the predictive analysis. Qualitative statements are provided by subject matter experts and based on technical expertise.

c In addition to bridge openings, traffic on the bridge is affected by gate closure events, where traffic is stopped to allow for bridge-related activity without the bridge being raised. These gate closure events occur for several reasons, including bridge maintenance and on-site training of department of transportation personnel. Training and practice openings are performed during the day and overnight periods. Depending on the reason for the event, traffic may be stopped in one or both directions.

d The No-Build Alternative and movable-span bridge configuration design option assumes existing conditions that restrict bridge openings during weekday peak periods (Monday through Friday 6:30 a.m. to 9 a.m.; 2:30 p.m. to 6 p.m., excluding federal holidays). This Final SEIS analysis estimates the potential frequency for bridge openings for vessels requiring more than 99 feet of clearance with the movable-span bridge configuration design option. If the demand for bridge lifts were to increase in the future under the No-Build Alternative, there is potential for bridge opening restrictions to change. Under either the No-Build Alternative or the Modified LPA with a movable-span bridge configuration, new bridge opening restrictions would require coordination with the U.S. Coast Guard and mariners. A federal rulemaking process would need to occur to modify current restrictions for long-term operations of the Modified LPA with a single-level movable-span configuration.

Key: AVE = Area of Visual Effect; HNC = horizontal navigation clearance; LRT = light-rail transit; mmBtu = metric million British thermal units; MSAT = Mobile Source Air Toxic; NA = not applicable; PM = particulate matter; SUP = shared-use path; VNC = vertical navigation clearance

2.2.5 Public Feedback

Comments received during the public comment period on the Draft SEIS identified additional factors to consider when comparing and contrasting the bridge configurations. These comments include:

- Concerns about permanent reduction in vertical navigation clearance and the potential vessel and cargo size limits under a fixed-span bridge configuration.
- Concerns about disruptions to highway traffic, transit service, and active transportation from bridge openings associated with the movable-span bridge configuration.
- Acknowledgment that the U.S. Coast Guard is coordinating with the IBR Program and has the regulatory authority to set the navigation clearance (vertical and horizontal) and issue a bridge permit, which is required for the Columbia River bridges.
- Perceptions about the advantages and disadvantages of the user experience traveling the shared-use path based on grade and location, specifically on a separate bridge deck (double-deck bridge configuration) versus on the same bridge deck (single-level fixed-span and single-level movable-span configurations).

2.2.6 Recommended Bridge Configuration

The three bridge configurations would share similar benefits to some community and environmental resources, including:

- Fewer in-water pier sets (six sets) compared to the No-Build Alternative (nine sets)
- Wider horizontal navigation clearances, which would improve navigation safety and enable downstream vessels to position earlier for turning movements needed to transit both the new Columbia River bridges and the BNSF Railway Bridge.
- Shifted location of the primary navigation channel to the center channel (the existing location is the north channel) and the barge channel to the north channel (the existing location is the center channel), which would provide wider horizontal navigation clearances and have noticeable improvements in the safety for pilots/captains transiting the bridge and positioning for transiting the BNSF Railway bridge.
- Westward shift of the Upper Vancouver Turning Basin by approximately 250 to 300 feet, which would continue to support turning of deep-draft vessels.

However, there are several notable differences among the bridge configurations, including:

- Double-deck fixed-span configuration:
    - Compared to the single-level movable-span configuration, it would introduce a permanent and complete obstruction to navigation upstream of the new Columbia River bridges for vessels or cargo loads with vertical clearance requirements greater than 116 feet.
    - Compared to both single-level configurations, it would:
        - Expose active transportation users to less noise and provide more cover from elements but may have lower level of perceived personal safety and security due to separate path location not visible from vehicle traffic. "Eyes on the path" is an important consideration for active transportation users, especially on long isolated

pathways. A sheltered pathway with limited visibility and access/egress points may also elicit other undesirable activity - even if actively managed.

- Result in less overwater shading impacts to aquatic species and habitat.
- Present challenges associated with maintenance of traffic during construction. In particular, the transition of traffic from the existing spans/approaches to the new spans and approaches would be less efficient due to differences in grades and geometry.

- Single-level configurations (fixed-span and movable-span)
  - *Both single-level* configurations*:* Compared to the double-deck configuration, both single-level configurations would:
    - Benefit freight vehicle speed due to a lower bridge height and reduced grade.
    - Expose active transportation users to more noise, but provide a shorter distance to cross the bridge, and provide a feeling of greater personal safety due to the extra security of path visibility from passing vehicles.
    - Improve emergency response times to transit and shared-use path incidents because emergency vehicles would have better access to transit and active transportation facilities located at same level as the roadway.
    - Require an additional estimated 760 square feet of park or recreation acquisitions than the double-deck configuration.
    - Slightly reduce MSAT emissions due to the lower profile grade of the bridge, which would reduce acceleration and braking of vehicles crossing the bridge.
    - Slightly increase 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).
    - Result in more overwater shading to aquatic species and habitat compared to the double-deck configuration.
  - *Single-level fixed-span configuration:* Compared to the single-level movable-span configuration, the single-level fixed-span configuration would introduce a permanent and complete obstruction to navigation upstream of the new Columbia River bridges for vessels or cargo loads with vertical clearance requirements greater than 116 feet.
  - *Single-level movable-span:* Compared to both fixed-span configurations, the single-level movable-span configuration would:
    - Maintain vertical navigation clearance at 178 feet in the open position (i.e., the same as the current clearance), so no existing maritime vessels or cargo freight would be excluded from passage.
    - Likely increase restrictions on the timing of bridge openings (the days and/or times of day when openings are allowed) compared to the No-Build Alternative. Restrictions could, in turn, impact marine commerce by restricting the days and/or times of day for large vessel movements. Restrictions would benefit non-maritime modes of transportation (transit, active transportation, and motor vehicles), which would be subject to fewer interruptions compared to the No-Build Alternative.

- Interrupt highway travel, transit service, and active transportation across the new Columbia River bridges during bridge openings for river vessels and for maintenance. The number of bridge openings would be fewer than under the No-Build Alternative, based on existing marine vessels transiting the Interstate Bridge, due to the increased vertical navigation clearance in the closed position (99 feet when transiting the north channel of the new bridges compared to 72 feet with the No-Build Alternative south channel). However, the number of bridge openings could vary over time as maritime activities evolve over the 100+ year service life of the bridge.
- Cause traffic backups during non-peak commuting hours due to bridge openings that would reduce reliability for vehicles and active transportation (similar to the No-Build Alternative). Traffic backups may also negatively affect neighborhood cohesion.
- Expose active transportation users to more noise but provide a shorter distance to cross the bridge and provide a feeling of greater personal safety due to the extra security of path visibility from passing vehicles ("eyes on the path").
- Continue to delay and disrupt emergency response due to bridge openings but with less frequency than the No-Build Alternative.
- Require larger bridge piers and pier foundations at Piers 6 and 7 to support the movable spans compared to the double-deck and single-level fixed-span configurations.
- Increase energy consumption due to the longer construction duration, additional materials required for the larger bridge foundations, electricity required to raise and lower the bridge, and idling during bridge closures.
- Have potential for minor impacts to water quality associated with the maintenance and operations of the movable span.

In summary, all bridge configurations would provide important benefits to highway operations and safety and have similar impacts to many resources. The main differences between either of the fixed-span configurations and the movable-span configuration are that the latter would provide more vertical clearance to accommodate larger vessels and a lower grade for all surface modes of transportation (including personal vehicles and transit and benefit freight and active transportation users in particular), but would also periodically disrupt these modes of transportation due to bridge openings. The main differences between the double-deck and single-level fixed-span configurations are that the slightly higher grade of the former would impact freight traffic and active transportation users, and the latter would give users of the shared-use path a greater sense of security due to "eyes on the path" and faster emergency response times (although there would also be more exposure to vehicles). The fixed-span configurations received generally positive comments from the public, while there was mixed feedback on the movable-span due to the tradeoffs given above.

In consideration of the overall improvements of the Modified LPA with any of the three bridge configurations compared to the No-Build Alternative, notable differences among the bridge configurations in operational performance, environmental impacts and benefits, and feedback received during the public comment period, **the IBR Program Recommended Design Option is the single-level fixed-span configuration**.

2.3 C Street Ramps

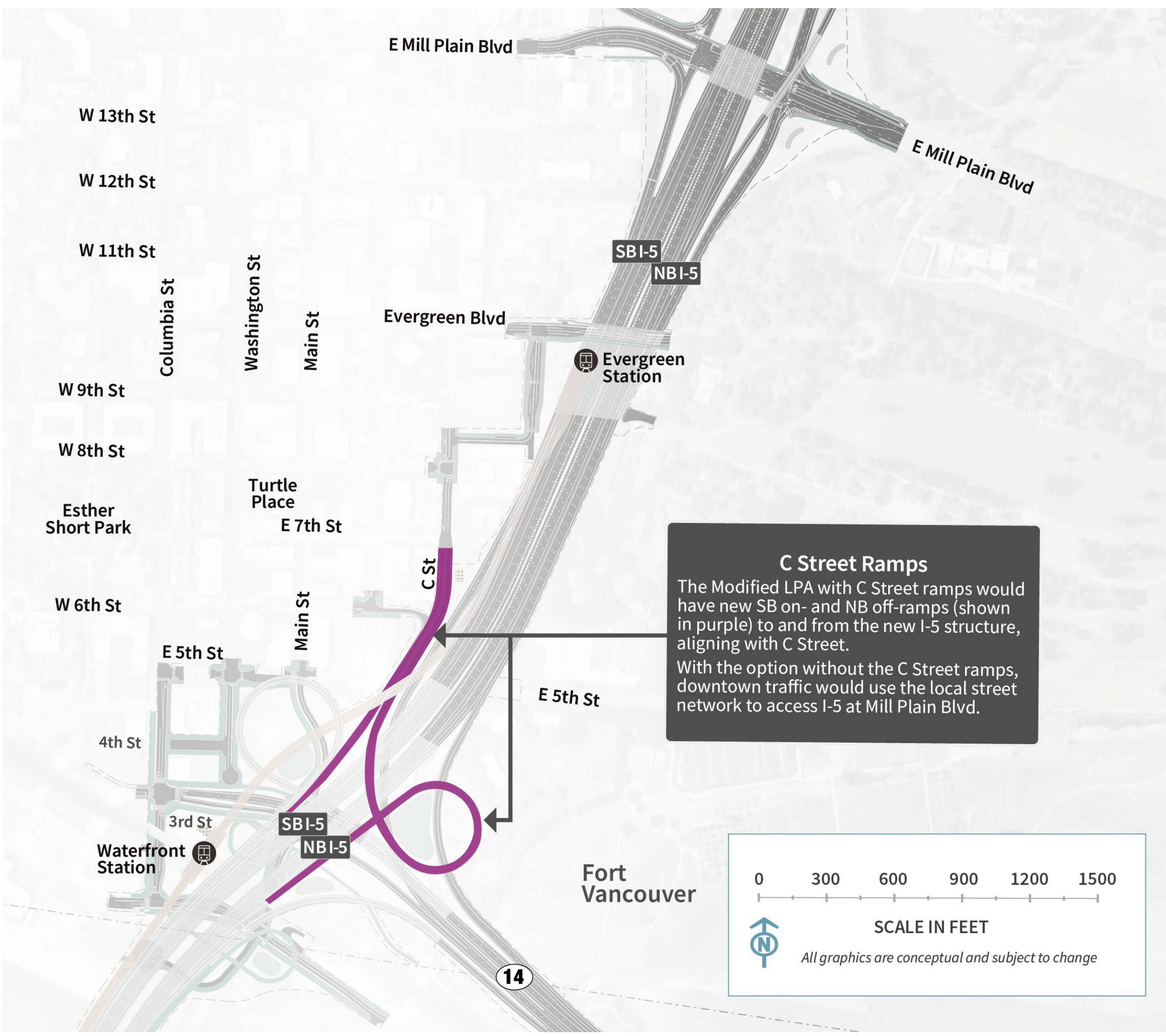
The Draft and Final SEIS evaluated two options for the Modified LPA regarding the I-5 ramp to and from C Street in downtown Vancouver:

- With C Street ramps – provides I-5 ramp connections to and from C Street in downtown Vancouver.
- Without C Street ramps – removes the I-5 ramp connections to and from C Street ramps.

Figure 12 shows the Modified LPA with the new southbound on-ramps and northbound off-ramps at C Street.

This section provides a brief description of each design option, a comparison of the technical and environmental impacts/benefits relevant for the design options, a summary of the key public feedback for consideration, and, after reviewing these elements, the identification of the Recommended Design Option for C Street ramps.

Figure 12. Modified LPA With C Street Ramps



2.3.1 With C Street Ramps Design Option

The design option with C Street ramps would provide access to and from downtown Vancouver similar to the existing conditions but with some of the connection points relocated. Access from northbound I-5 to downtown Vancouver would be rebuilt in the same location as today's connection. Downtown Vancouver I-5 access to and from the south would be consolidated at C Street with SR 14 connections to and from downtown at Columbia Street/W 3rd Street.

With this design option, the Clark County Public Transportation Benefit Area (C-TRAN) local bus route modifications would move service from Broadway to C Street, and C-TRAN express bus Route 101 could use bus-on-shoulder operations south of the SR 14 interchange.

2.3.2 Without C Street Ramps Design Option

Under this design option, downtown Vancouver I-5 access to and from the south would be via the Mill Plain Boulevard interchange instead of via C Street. The existing eastside loop ramp from I-5 northbound to C Street would be removed, and no directional ramp on the west side of I-5 for a southbound I-5 connection from C Street would be constructed. This design option was included in the SEIS because it could reduce the footprint and associated environmental impacts at this location.

With this design option, C-TRAN would need to reroute its express bus Route 101 connection to downtown Vancouver through the Mill Plain Boulevard interchange and could access bus-on-shoulder operations south of Mill Plain Boulevard.

2.3.3 Technical and Environmental Considerations

Table 4 compares the transportation performance and community and environmental effects of the No-Build Alternative and the Modified LPA with and without C Street ramps. Where an increase or reduction is noted for the Modified LPA, this is in comparison to the No-Build Alternative unless otherwise specified. This comparison is based on the detailed technical analysis presented in Chapter 3 of the SEIS. For technical areas or resources not listed below, there were no substantial differences between the C Street ramps design options. Section 2.3.5 identifies key similarities and differences between the design options.

Table 4. Comparison of C Street Ramps Design Options

Technical Area/ Component	No-Build Alternative	Modified LPA With C Street Ramps[a]	Modified LPA Without C Street Ramps[a]
Transportation			
Northbound weekday peak 2-hour average travel times from I-405 in North Portland to I-205 in Vancouver	• AM: 18 minutes PM: 42 minutes	• AM: 13 minutes (28% reduction from No-Build) PM: 26 minutes (38% reduction from No-Build)	• AM: 13 minutes (28% reduction from No-Build) • PM: 25 minutes (40% reduction from No-Build)
Arterial and local street intersections operating below standards (AM/PM peaks)	• 10 intersections	• 6 intersections	• 13 intersections
Land Use and Economics			
Downtown Vancouver local businesses	• No business displacements. • Increasing congestion could result in increased transportation costs and could adversely affect the regional economy. • Freight reliability would decrease. • Customers could elect to shop in areas with better access and mobility.	• 15 business displacements. • Would not impact local businesses related to traffic delay and increased travel times near the Mill Plain Boulevard interchange and in downtown Vancouver associated with removal of C Street ramps.	• 15 business displacements. • Traffic delay and increased travel times on local streets near the Mill Plain Boulevard interchange and in downtown Vancouver associated with removal of C Street ramps would have an economic impact on local businesses.
Parks and Recreation			
Linear feet of trails to be reconstructed and/or permanently realigned (approximate)	• None.	• 6,000 feet.	• 5,900 feet.
Aviation			
Aviation safety	• No change.	• Would decrease westbound departure procedures climb gradient compared to the No-Build.	• Would further reduce the westbound departure procedures climb gradient compared to with C Street ramps.

Technical Area/ Component	No-Build Alternative	Modified LPA With C Street Ramps[(a)]	Modified LPA Without C Street Ramps[(a)]
Visual Quality			
Changes to visual resources	• Constructed elements within the AVE would not change compared to existing conditions.	• The C Street ramps would be elevated and integrated with the elevated section of I-5 and the reconstructed SR 14 interchange compared to the No-Build in the vicinity of Fort Vancouver NHS and VNHR, increasing the visibility for sensitive recreational viewers in the Greater Central Park landscape unit.	• Would eliminate the existing C Street ramps, which would reduce the visibility of the Modified LPA as seen by sensitive recreational viewers in the Greater Central Park landscape unit.
Energy			
Total regional transportation energy consumption (mmBtu/day)	• 271,933 in 2045 •	• 271,187 in 2045 (0.27% reduction from No-Build)	• Compared to with C Street ramps, there would be additional congestion on local streets, which would decrease vehicle efficiency, resulting in increased energy consumption. (b)
Water Quality and Stormwater			
Impervious surface	• No change from existing conditions. Stormwater within the area would remain untreated until addressed according to state prioritization and available funding.	• Would add 33 acres of impervious surface compared to the No-Build. Water quality treatment would be provided for stormwater runoff from all new contributing impervious area, including from over 150 acres of existing pavement that is currently untreated.	• Similar to effects listed with C Street ramp, except would slightly reduce impervious surface. However, because all generated stormwater runoff would be treated, the long-term effects of this option would be similar.

Notes:

All numbers and values are approximate. Findings for the No-Build Alternative and the Modified LPA are for year 2045.

a Where an increase or reduction is noted, this is in comparison to the No-Build Alternative, unless otherwise specified. Findings are for the Modified LPA with a single-level fixed-span bridge configuration, centered I-5, and one auxiliary lane. The traffic operations analysis (for AM and PM peak periods) for each C Street ramps design option results in the same findings regardless of bridge configuration, auxiliary lane option and I-5 alignment design option.

b Because the energy analysis is based on the regional travel demand model, the potential increase in energy consumption cannot be quantified. Operations of individual local roadways in ramps are not evaluated using the regional travel demand model.

Key: AVE = Area of Visual Effect; mmBtu = million British thermal units; NHS = National Historic Site; VNHR = Vancouver National Historic Reserve.

2.3.4 Public Feedback

Comments received during the public comment period on the Draft SEIS identified additional factors to consider when comparing and contrasting the C Street ramps design options for the Modified LPA. These comments include:

- Acknowledgment that the C Street ramps would provide more direct connections and accessibility between I-5 and the Vancouver waterfront; whereas, the design option without C Street ramps would route traffic through the Mill Plain Interchange and create a longer travel route between I-5 and the Waterfront.
- Concerns that the local street network in downtown Vancouver would experience increased congestion under the design option without C Street ramps, which could impair the downtown street network as well as the Mill Plain Boulevard and 15th Street couplet, which serves as a freight corridor and primary route to/from the Port of Vancouver.
- Concerns about congestion, noise and air quality that could occur with implementation of the with C Street ramps design option on the local street network, which has adjacent active transportation corridors, parks, and commercial and residential areas in downtown Vancouver.
- Acknowledgment that direct impacts to the Fort Vancouver National Historic Site (NHS) and Vancouver National Historic Reserve (VNHR) would be less than the design option without C Street ramps.

2.3.5 Recommended C Street Ramps Design Option

The two design options would share similar benefits to some community and environmental resources, including:

- Each design option would outperform the No-Build Alternative on highway traffic operations, including congestion, travel time, and traffic safety.
- Minor or no differences between the two design options for the following areas:
  - Acquired acreage of property, parks, and trails to be acquired
  - Benefits to the local economy, but with some displacements
  - Improved response times for emergency responders
  - Noise impacts
  - Reduction in air pollutants.

However, there are several notable differences between the design options, including:

- Compared to the design option without C Street ramps, the Modified LPA with C Street ramps would:
  - Meet operating standards for seven local intersection operations that would not meet operating standards without the C Street ramps. These intersections are in downtown Vancouver and the Mill Plain Boulevard corridor, as well as the new C Street and Mill Plain Boulevard interchanges.

  - Increase the elevated elements of the Modified LPA, which would be visible to sensitive recreational viewers at Fort Vancouver NHS and VNHR in the Greater Central Park landscape unit.
  - Have a larger project footprint with potential environmental impacts, but largely in areas that currently have a transportation use.
- Compared to the design option with C Street ramps, the Modified LPA without C Street ramps would:
  - Have higher traffic impacts to the local street network, ramps, and collector/distributor operations near the Mill Plain Boulevard interchange. Seven intersections and the I-5 southbound collector/distributor lanes would be affected; these impacts would require mitigation.
  - Lengthen traffic delay and increase travel times on local streets including the Mill Plain Boulevard interchange and would have an economic impact on local businesses in downtown Vancouver.
  - Reduce visual impacts for sensitive recreational viewers in the Greater Central Park landscape unit.
  - Create additional congestion and idling on local streets, which would decrease vehicle fuel efficiency and result in increased energy consumption.
  - Result in construction cost savings, but those savings would potentially be offset by the added cost for mitigating the resulting traffic impacts.
  - Meet the Purpose and Need but would perform less well than with C Street ramps in meeting the needs to address safety and reduce congestion.

In summary, the Modified LPA with either C Street ramp design option would provide important benefits to highway operations and safety and have similar impacts to many other resources, particularly the natural environment. While there would be some short-term construction cost savings and reduced visual impacts without C Street ramps, there would be greater impacts to local traffic as traffic that would have used the C Street ramps would be routed to the Mill Plain interchange, thereby increasing traffic volumes on the local street network and requiring additional mitigation. Both design options received a mix of positive and negative feedback from the public, however there were more comments in support of the With C Street Ramps design option. The With C Street Ramps design option also has more support from the local partner agencies.

In consideration of the overall improvements of the Modified LPA compared to the No-Build Alternative, notable differences between the two C Street ramps design options in operational performance, environmental impacts and benefits, and feedback received during the public comment period, the **IBR Program Recommended Design Option is with C Street ramps**.

2.4 I-5 Mainline Alignment Through Downtown Vancouver

The Draft and Final SEIS evaluated two alignment options for I-5 through downtown Vancouver between the SR 14 interchange and the Mill Plain Boulevard interchange:

- Centered I-5 Alignment – centers the I-5 improvements by acquiring new right-of-way on both sides of I-5.

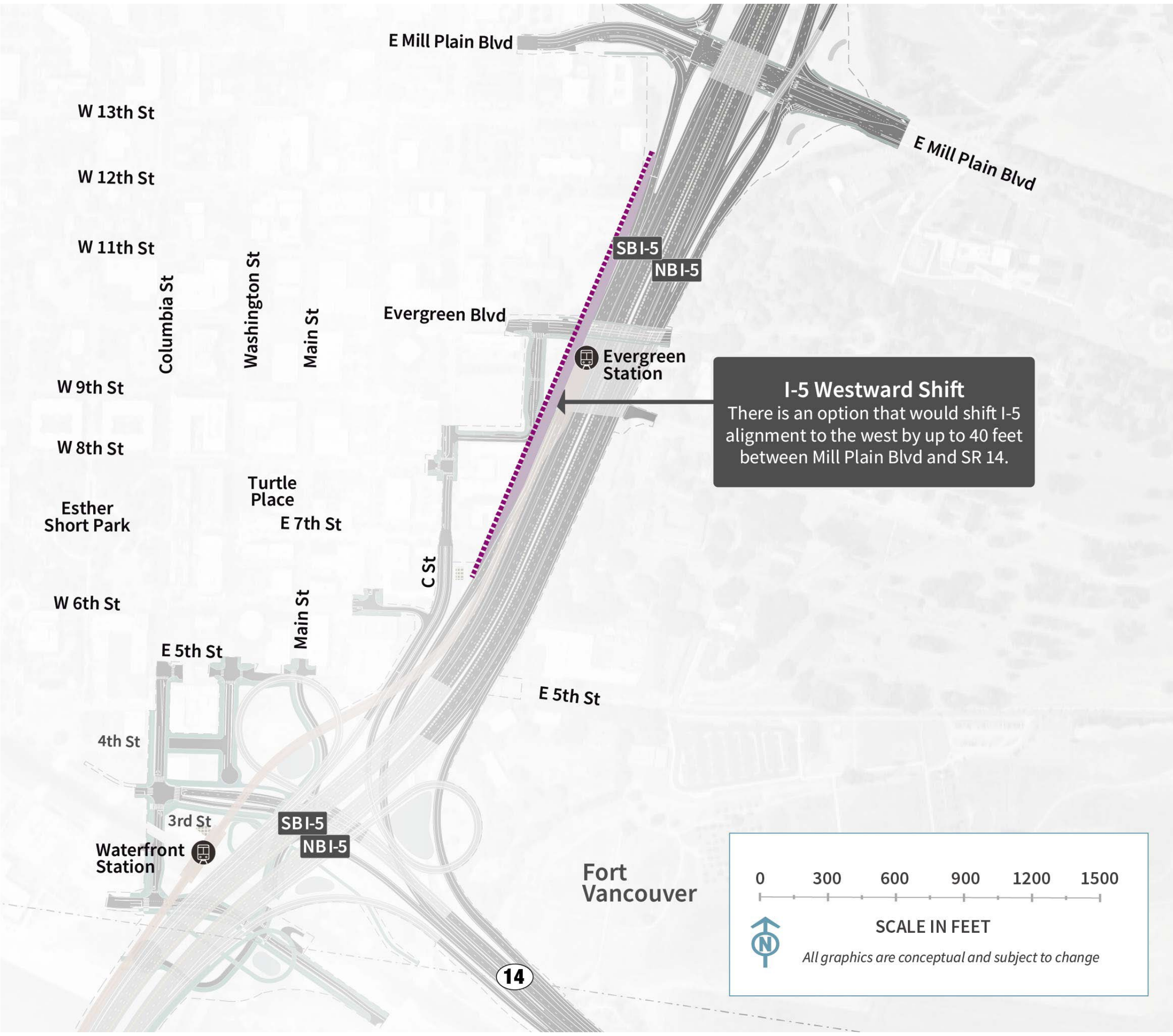
- I-5 Westward Shift Alignment – shifts the I-5 mainline and ramps approximately 40 feet to the west. New right-of-way acquisition would be required on both sides of I-5, but more acquisition would occur on the west side compared to the centered I-5 alignment.

This section provides a brief description of each design option, a comparison of the technical and environmental impacts/benefits relevant for the design options, a summary of the key public feedback for consideration, and, after reviewing these elements, the identification of the Recommended Design Option for I-5 alignment through downtown Vancouver.

2.4.1 I-5 Mainline Alignment Design Options

The Centered I-5 Alignment design option and the I-5 Westward Shift design option are illustrated in Figure 13. The I-5 Westward Shift design option was developed to minimize acquisition from the VNHR Historic District and Fort Vancouver NHS. The VNHR and Fort Vancouver NHS include resources that, if adversely affected by the IBR Program, would require additional regulatory processes and approvals.

Figure 13. I-5 Centered Alignment and I-5 Westward Shift Alignment



2.4.2 Technical and Environmental Considerations

Table 5 compares the community and environmental effects of the Modified LPA with each I-5 alignment design option to the No-Build Alternative. Where an increase or reduction is noted for the Modified LPA, this is in comparison to the No-Build Alternative unless otherwise specified. This comparison is based on the detailed technical analysis presented in Chapter 3 of the SEIS. For technical areas or resources not listed below, there were no substantial differences between the I-5 alignment design options. Section 2.4.4 identifies key similarities and differences between the design options.

Proposed improvements and resulting impacts associated with the I-5 alignment design options would be independent of the C Street Ramp design options.

Table 5. Comparison of I-5 Alignment Design Options

Technical Area/ Component	No-Build Alternative	Modified LPA with Centered I-5 Alignment	Modified LPA with I-5 Westward Shift Alignment
Acquisitions			
Permanent property acquisitions (for all improvements excluding the park and rides)	• None.	Approximately 120.9 acres of property acquired and displacement of: • 59 residential units • 58 businesses	Approximately 122.8 acres of property acquired and displacement of: • 59 single-family residences, 33 multifamily residences • 61 businesses
Historic Built Environment			
Impacts to Normandy Apartments	• None.	• Would contribute to an adverse effect through changes to the property's setting.	• Would result in physical destruction of the property.
Impacts to Vancouver National Historic Reserve (VNHR) Historic District (includes Fort Vancouver National Historic Site [NHS])	• None.	• Approximately 29,100 square feet permanent acquisition. • Physical destruction or damage to part of the property by demolishing a portion of the contributing Army Road System. • Noise and vibration effects would affect contributing components of the historic district.	• Approximately 20,400 square feet permanent acquisition. • Would not require demolition of a portion of the contributing Army Road System. • Noise and vibration effects would be similar to the centered I-5 alignment.
House of Providence	• None.	• Would reconstruct and widen the I-5 corridor to the east of the House of Providence. The widened roadway would remain within the existing boundary of the interstate right of way, but would remove the sloped embankment along the western edge of I-5 and construct a new retaining wall parallel with the eastern boundary. • There would be a finding of No Adverse Effect.	• Similar to the centered I-5 option, but would expand the I-5 corridor into the eastern portion of the historic property boundary. However, no features that contribute to the property's significant historic character would be altered, and there would also be a finding of No Adverse Effect finding.

Technical Area/ Component	No-Build Alternative	Modified LPA with Centered I-5 Alignment	Modified LPA with I-5 Westward Shift Alignment
Land Use and Economics			
Land use conversion	• Land use would remain the same, but would remain vulnerable to high levels of congestion, unsafe conditions, and potential earthquake-induced bridge failure.	• Would convert approximately 128.4 acres[a] of land to transportation use; currently primarily zoned industrial or commercial, with some land zoned residential.	• Would convert approximately 130.8 acres[a] of land to transportation use; currently primarily zoned industrial or commercial, with some land zoned residential.
Business displacements and employment	• None.	• 33 business displacements have the potential to impact 521 employees.	• 36 business displacements have the potential to impact 656 employees.
Neighborhoods			
Residential displacements	• None.	• No residential displacements in Esther Short neighborhood.	• Displacement of the Normandy Apartments in the Esther Short neighborhood (33 units).
Visual Quality			
Changes to visual resources	• None.	• Due to the higher elevation of the Columbia River bridges and I-5 mainline through downtown Vancouver (compared to the No-Build), elements of the Modified LPA would be more visible to sensitive viewers at Kanaka Village and Fort Vancouver NHS than under the No-Build Alternative.	• Compared to the centered I-5 alignment, would increase visual quality for sensitive recreational viewers in the Greater Central Park landscape unit (which includes Kanaka Village and other views from Fort Vancouver NHS) by shifting project elements slightly farther away.

Notes: All numbers and values are approximate. Findings for the Modified LPA are shown with the double-deck fixed-span bridge configuration, one auxiliary lane, and with C Street ramps.

a Inclusive of the West Hayden Island mitigation site, the park and rides, and any subsurface easements that are not overlapped by surface acquisitions.

Key: LPA = Locally Preferred Alternative; NHS = National Historic Site; VNHR = Vancouver National Historic Reserve

2.4.3 Public Feedback

Comments received during the public comment period on the Draft SEIS identified additional factors to consider when comparing and contrasting the I-5 alignment design options. These comments include:

- Concerns about the residential and business displacements that would occur with the I-5 Westward Shift design option.
- Acknowledgment that reasonably foreseeable impacts to the Fort Vancouver NHS and VNHR would be lessened under the I-5 Westward Shift design option.

2.4.4 Recommended I-5 Alignment through Downtown Vancouver

The I-5 alignment design options share similar impacts and benefits to the community and environment, including:

- Both would impact historic properties, which would require specific federal regulatory approvals and agreements under Section 4(f) and Section 106 of the National Historic Preservation Act (NHPA).
- Changes in visual quality that would affect viewers in the Greater Central Park Landscape Unit east of I-5.

Compared to the Centered I-5 Alignment design option, the I-5 Westward Shift design option would have different impacts in the following environmental areas:

- An additional 0.9 acres of property would need to be acquired, and additional residential units would be displaced (33 units from the Normandy Park apartments in the Esther Short neighborhood).
- An additional three businesses would be displaced, which could displace approximately 150 jobs.
- Impacts to the House of Providence (Providence Academy), a historic resource and a Section 4(f) property, would result in permanent incorporation of approximately 9,800 square feet and a Section 4(f) use of the resource.
- A historic residential building (Normandy Apartments) would be physically impacted, increasing the severity of a Section 106 “Adverse Effect” on the property; the building grounds would be adversely affected by the centered I-5 alignment as well.
- Would reduce but not avoid permanent incorporation of the VNHR Historic District and the Fort Vancouver NHS and, therefore, would also have a Section 4(f) use of the VNHR Historic District and the Fort Vancouver NHS.
- Would increase design challenges because it would require realigning the centerline of I-5, which also would increase constructability risks and maintenance of traffic challenges during construction. In addition, the western retaining wall construction would increase potential effects to adjacent properties and their infrastructure.

In summary, both I-5 mainline alignments would provide important benefits to highway operations and safety and have similar impacts to many other resources, particularly the natural environment. The westward shift design option would notably increase acquisitions resulting in the displacement of an additional three businesses (with approximately 140 employees) and 33 residential units, and the physical removal of the historic Normandy Apartments. However, the westward shift would reduce the area of acquisition and other impacts to the VNHR Historic District (which includes the Fort Vancouver NHS). While some public comments noted the reduced impacts to the VNHR Historic District from the westward shift design option, others raised concerns about its effects on safety, congestion, and increased residential and business displacements.

In consideration of the overall improvements of the Modified LPA with either I-5 alignment design option compared to the No-Build Alternative, notable differences in impacts and benefits between the two design options, and feedback received during the public comment period, **the IBR Program Recommended Design Option is the centered I-5 alignment**.

2.5 Park and Rides

Park and rides can expand the catchment area of public transit systems (the geographic area from which a station draws ridership), making transit more accessible to people who live farther away from fixed-route transit service, and attracting new riders who might not have considered using public transit otherwise. Depending on the location of spaces, there could be minor localized differences in traffic patterns and transit ridership.

Studies that led to the development of the Modified LPA (see Appendix D to the Draft and Final SEIS), evaluated a mix of light-rail station sites and park and rides and found that 1,270 spaces serving the Waterfront and Evergreen Stations, combined with bus and active transportation improvements, would attract the most riders.

As presented in the Draft SEIS, the Modified LPA would provide parking capacity for LRT riders by locating a single park and ride near the Waterfront Station with approximately 570 parking spaces; three sites were considered for this facility. Similarly, a single park and ride near the Evergreen Station would provide approximately 700 parking spaces; two sites were considered.

Based on further design analysis and public comment received on the Draft SEIS and coordination with local agencies, a variation on the Draft SEIS approach was considered. This new approach would provide the same level of parking capacity for LRT riders (1,270 parking spaces) but was adjusted to focus on dispersed parking across more facilities, including using all three sites previously identified near the Waterfront Station and both sites previously identified near the Evergreen Station. The approach to disperse parking capacity across more sites would correlate to smaller sites in terms of structure size above or below ground.

The two approaches considered to provide parking capacity to accommodate approximately 1,270 vehicles included:

- Identify two park and rides: one park and ride with 570 parking spaces near the Waterfront Station and another park and ride with 700 parking spaces near the Evergreen Station.
- Disperse parking capacity among five park and rides. Three park and rides with a combined total of 570 parking spaces would be located near the Waterfront Station, and two park and rides with a combined total of 700 parking spaces would be located near the Evergreen Station.

The sites under consideration are described below and shown in Figure 14. This section provides a brief description of each potential park and ride, a comparison of the technical and environmental impacts/benefits relevant for the park and rides and design options, a summary of the key public feedback for consideration, and, after reviewing these elements, the identification of the Recommended Design Option for park and rides.

2.5.1 Waterfront Park and Rides

Studies included in Appendix D of the Draft and Final SEIS have shown the need for park-and-ride capacity to accommodate approximately 570 vehicles in the vicinity of the Waterfront Station. The Draft and Final SEIS evaluated three possible sites:

- Site 1a – Columbia Way (below I-5). This 0.75 acre site could be developed as a new above-ground one-level parking structure. Access would be via Columbia Way. It could support approximately 70 parking spaces.
- Site 1b – Columbia Street/SR 14. This 0.50-acre site could be developed as a new aboveground six-level structure along the east side of Columbia Street and north of the SR 14 westbound off-ramp. Access would be via Washington Street. It could accommodate approximately 250 parking spaces. To provide all 570 parking spaces at this site, the structure would need to be 10 to 12 levels.
- Site 1c – Columbia Street/Phil Arnold Way (Waterfront Gateway Site). This 1.5-acre site could be developed as a new surface lot along the west side of Columbia Street, north of Phil Arnold Way. Access would be via Phil Arnold Way. A surface lot would provide approximately 250 parking spaces. To provide all 570 parking spaces at this site, a new four-level structure would be needed.

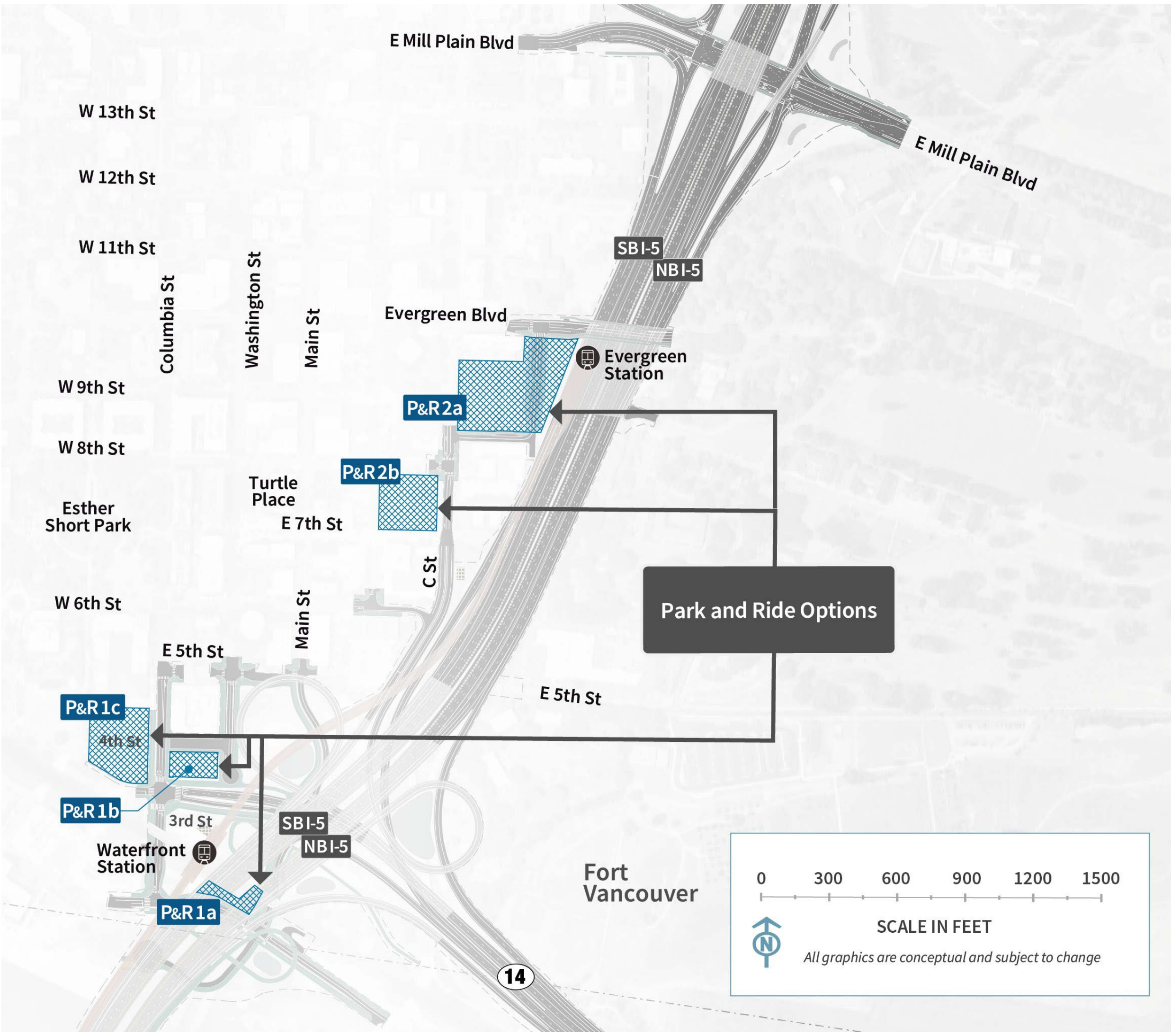
2.5.2 Evergreen Park and Rides

Studies included in Appendix D of the Draft and Final SEIS have shown the need for park and rides to accommodate approximately 700 vehicles in the vicinity of the Evergreen Station. Two possible sites were analyzed in the Draft and Final SEIS:

- Site 2a – Library Square. This 3.2-acre site could be developed as a new underground three to four level structure east of C Street and south of Evergreen Boulevard. It could accommodate approximately 400 parking spaces. To provide all 700 parking spaces at this site, the structure would require seven or more levels below ground.[7] This site could be combined with Site 2b to provide a total of 700 spaces.
- Site 2b – Columbia Credit Union. This approximately 1-acre site is an existing parking structure/commercial building and provides an estimated 400 parking spaces to current users on four levels aboveground. The parking capacity would not be exclusively available for transit users; however, up to 300 spaces could be used for transit riders. This site could be combined with Site 2a to provide a total of 700 spaces.

[7] The maximum depth of an underground parking structure at Library Square is provided for comparative purposes only. An underground parking structure would likely not exceed 3 or 4 levels due to engineering and environmental constraints.

Figure 14. Potential Park and Rides



2.5.3 Technical and Environmental Considerations

Table 6 and Table 7 compare the community and environmental effects among the Waterfront Park and Rides and the Evergreen Park and Rides, respectively. This comparison is based on the detailed technical analysis presented in Chapter 3 of the SEIS. For technical areas or resources not listed below, no substantial differences among the park and rides were identified in the Draft or Final SEIS analysis.

Table 6. Comparison of the Waterfront Park and Rides

Technical Area/Component	No-Build Alternative	Modified LPA Waterfront 1a	Modified LPA Waterfront 1b	Modified LPA Waterfront 1c	Modified LPA All Sites
Acquisitions					
Acquisitions	• None	• None	• 0.5 acres	• 1.5 acres	• 2 acres
Land Use and Economics					
Business displacements and employment	• None	• None	• 7 businesses displaced with approximately 67 employees	• 1 business displaced with approximately 52 employees	• 8 businesses displaced with approximately 119 employees
Clark County Property Tax Reduction (% of budgeted 2023 Property Tax Revenues)	• None	• $0 (0.0%)	• $25,900 (0.04%)	• $0 (0.0%)	• $25,900 (0.04%)
Visual Quality					
Changes in cultural visual environment	• None	• Would add to the urban elements and structures in the Vancouver Downtown landscape unit, which would change some existing views but would be compatible with the existing visual character.	• Same as Site 1a.	• Same as Site 1a.	• Greater visual impacts due to the development of three park and rides, rather than one.

Table 7. Comparison of the Evergreen Park and Rides

Technical Area/Component	No-Build Alternative	Evergreen 2a	Evergreen 2b	Modified LPA Both Sites
Acquisitions				
Acquisitions	• None	• 3.2 acres	• 1 acre	• 4.2 acres
Land Use and Economics				
Business displacements and employment	• None	• None	• None	• None
Clark County Property Tax Reduction (% of budgeted 2023 Property Tax Revenues)	• None	• $0 (0.0%)	• $0 (0.0%)	• $0 (0.0%)
Visual Quality				
Changes in cultural visual environment	• None	• For most viewers within the Greater Central Park landscape unit, the park and ride would be behind or under the I-5 mainline or the Columbia River bridges and would not be visible.	• Same as Site 2a.	• Greater visual impacts due to the development of two park and rides, rather than one.

2.5.4 Public Feedback

Comments received during the public comment period on the Draft SEIS identified additional factors to consider when comparing and contrasting the park and rides. These comments include:

- Interest in exploring opportunities to meet transit parking demand using existing parking inventory near the stations or through joint-use parking strategies.
- Statements emphasizing the importance of any park and ride to remain consistent with the goals of adopted plans, developments, and planned projects. These goals emphasize multiuse development, smaller and dispersed parking sites rather than singular large parking structures, attractive public spaces, and a multimodal transportation network that supports more walkable, bikeable, and transit-oriented districts of downtown Vancouver.
- Concern about property acquisitions needed for several of the park and ride.

2.5.5 Recommended Park and Rides

The two design options (selecting two sites or dispersed parking across five sites) would share similar benefits to some community and environmental resources, including:

- Provide 1,270 total parking spaces serving the Waterfront Station (570 parking spaces) and Evergreen Station (700 parking spaces).
- Support transit ridership.
- Promote station access by walking, biking, rolling, and transit.
- Support City of Vancouver objectives to increase mobility and access for a vibrant downtown.
- Include existing parking facilities in downtown Vancouver to help meet the projected demand for park-and-ride activity in areas where City of Vancouver studies show that surplus parking supply would be available.

However, there are several notable differences between the two options, including:

- Dispersing the parking rather than concentrating the spaces at two locations would promote compatibility with local planning goals and plans for multiuse development, multimodal access, and attractive public spaces.
- Dispersing the parking spaces would better align with local jurisdictional sentiment regarding compatibility with local planning goals for walkability and the City of Vancouver's recent studies showing that the city has a surplus of parking facilities throughout the downtown area. However, that area-wide supply has pre-existing uses that depend on their parking, and none have been specifically offered or identified for use for transit riders.
- Dispersing the parking spaces would better reflect design analysis, public comments received on the Draft SEIS, and coordination with local agencies.
- In comparison to selecting two sites, dispersing the parking spaces may further expand the catchment area and attract new riders.
- The approach to disperse parking capacity across more sites would correlate to smaller sites in terms of area and structure height above ground or depth below ground.

In summary, all of the park and rides would provide similar benefits to the community by increasing the transit stations' catchment areas and making transit more accessible. Depending on the location of spaces, there could be minor localized differences in traffic patterns and transit ridership. Dispersing the 1,270 parking spaces across five park and rides rather than concentrating the spaces at a single location each near the Waterfront Station and Evergreen Station would promote compatibility with local planning goals and plans for multiuse development, multimodal access, and attractive public spaces. As the FTA's Capital Investment Grant process progresses, the IBR Program team will refine the Program's transit components, which will contribute to further information on parking needs to support transit ridership.

In consideration of the overall improvements of the Modified LPA compared to the No-Build Alternative, environmental impacts and benefits, and feedback received during the public comment period, **the IBR Program Recommended Design Option includes 1,270 park-and-ride spaces dispersed across five sites** in Vancouver along the light-rail alignment, including three sites near the Waterfront Station and two sites near the Evergreen Station.

3. SUMMARY

The No-Build Alternative and the Modified LPA (and all design options) were evaluated in the Draft and Final SEIS. Following publication of the Draft SEIS, the Modified LPA and design options were updated, where appropriate, to address design refinements, continued agency coordination, consultation with tribes, and public feedback received during the 60-day public comment period for the Draft SEIS.

Based on the findings detailed in the Draft and Final SEIS, and summarized in this report, the IBR Program Recommended Design Options for the Modified LPA are:

- One auxiliary lane in each direction of I-5
- Single-level fixed-span bridge configuration
- With C Street ramps
- Centered I-5 alignment
- 1,270 parking spaces dispersed across five park-and-rides in Vancouver along the light rail alignment.

4. REFERENCES

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