



# Neighborhoods and Populations Technical Report

September 2024



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## ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
ADA	Americans with Disabilities Act
BRT	bus rapid transit
CRC	Columbia River Crossing
CTR	Commute Trip Reduction
C-TRAN	Clark County Public Transit Benefit Area Authority
FHWA	Federal Highway Administration
FSCR	Flood Safe Columbia River
FTA	Federal Transit Administration
GIS	Geographic Information System
I-5	Interstate 5
IBR	Interstate Bridge Replacement
LPA	Locally Preferred Alternative
LRT	light-rail transit
LRV	light-rail vehicle
MAX	Metropolitan Area Express
MAX	Metropolitan Area Express
NAVD 88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
ODOT	Oregon Department of Transportation
отс	Oregon Transportation Commission
PMLS	Portland Metro Levee System
PNCD	Preliminary Navigation Clearance Determination
ROD	Record of Decision



Acronym/Abbreviation	Definition
SEIS	Supplemental Environmental Impact Report
SOV	single-occupancy vehicle
SR	state route
SR	State Route
TOD	transit-oriented development
TriMet	Tri-County Metropolitan Transportation District
TriMet	Tri-County Metropolitan Transportation District of Oregon
U.S.	United States
UFSWQD	Urban Flood Safety and Water Quality District
Uniform Act	Uniform Relocation and Real Property Acquisition Act
URA	urban renewal area
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
VA	Veterans Affairs
WSDOT	Washington State Department of Transportation
WSTC	Washington State Transportation Commission



## 1. PROJECT OVERVIEW

This technical report identifies, describes, and evaluates short-term and long-term effects on neighborhoods resulting from the Interstate Bridge Replacement (IBR) Program. The construction and operation of transportation infrastructure has the potential to result in permanent and temporary impacts within the study area. The IBR Modified Locally Preferred Alternative (LPA) would be designed to avoid and/or minimize these effects to the greatest extent possible. This report provides mitigation measure for potential effects when avoidance is not feasible.

The purpose of this report is to satisfy applicable portions of the National Environmental Policy Act (NEPA) 42 United State Code (USC) 4321 "to promote efforts which will prevent or eliminate damage to the environment." Information and potential environmental consequences described in this technical report will be used to support the Draft Supplemental Environmental Impact Statement (SEIS) for the IBR Program pursuant to 42 USC 4332.

The objectives of this report are to:

- Define the Program study area and the methods of data collection and evaluation used for the analysis (Chapter 2).
- Describe existing neighborhood characteristics within the study area (Chapter 3).
- Discuss potential long-term, temporary, and indirect effects resulting from construction and operation of the Modified LPA in comparison to the No-Build Alternative (Chapters 4 through 6).
- Provide proposed avoidance and mitigation measures to help prevent, eliminate or minimize environmental consequences from the Modified LPA (Chapter 7).

The IBR Program is a continuation of the previously suspended Columbia River Crossing (CRC) project with the same purpose to replace the aging I-5 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 I-5 corridor that extends from approximately Victory Boulevard in Portland to State Route (SR) 500 in Vancouver as shown in Figure 1-1.

The Modified LPA is a modification of the CRC LPA, which completed the National Environmental Policy Act (NEPA) process with a signed Record of Decision (ROD) in 2011 and two re-evaluations that were completed in 2012 and 2013. The CRC project was discontinued in 2014. This Technical Report is evaluating the effects of changes in project design since the CRC ROD and re-evaluations, as well as changes in regulations, policy, and physical conditions.



Figure 1-1. IBR Program Location Overview





### 1.1 Components of the Modified LPA

The basic components of the Modified LPA include:

- A new pair of Columbia River bridges—one for northbound and one for southbound travel built west of the existing bridge. The new bridges would each include three through lanes, safety shoulders, and one auxiliary lane (a ramp-to-ramp connection on the highway that improves interchange safety by providing drivers with more space and time to merge, diverge, and weave) in each direction. When all highway, transit, and active transportation would be moved to the new Columbia River bridges, the existing Interstate Bridge (both spans) would be removed.
  - Three bridge configurations are under consideration: (1) double-deck truss bridges with fixed spans, (2) single-level bridges with fixed spans, and (3) single-level bridges with movable spans over the primary navigation channel. The fixed-span configurations would provide up to 116 feet of vertical navigation clearance, and the movable-span configuration would provide 178 feet of vertical navigation clearance in the open position. The primary navigation channel would be relocated approximately 500 feet south (measured by channel centerline) of its existing location near the Vancouver shoreline.
  - A two auxiliary lane design option (two ramp-to-ramp lanes connecting interchanges) across the Columbia River is also being evaluated. The second auxiliary lane in each direction of I-5 would be added from approximately Interstate Avenue/Victory Boulevard to SR 500/39th Street.
- A 1.9-mile light-rail transit (LRT) extension of the current Metropolitan Area Express (MAX) Yellow Line from the Expo Center MAX Station in North Portland, where it currently ends, to a terminus near Evergreen Boulevard in Vancouver. Improvements would include new stations at Hayden Island, downtown Vancouver (Waterfront Station), and near Evergreen Boulevard (Evergreen Station), as well as revisions to the existing Expo Center MAX Station. Park and rides to serve LRT riders in Vancouver could be included near the Waterfront Station and Evergreen Station. The Tri-County Metropolitan Transportation District of Oregon (TriMet), which operates the MAX system, would also operate the Yellow Line extension.
  - Potential site options for park and rides include three sites near the Waterfront Station and two near the Evergreen Station (up to one park and ride could be built for each station location in Vancouver).
- Associated LRT improvements such as traction power substations, overhead catenary system, signal and communications support facilities, an overnight light-rail vehicle (LRV) facility at the Expo Center, 19 new LRVs, and an expanded maintenance facility at TriMet's Ruby Junction.
- Integration of local bus transit service, including bus rapid transit (BRT) and express bus routes, in addition to the proposed new LRT service.
- Wider shoulders on I-5 from Interstate Avenue/Victory Boulevard to SR 500/39th Street to accommodate express bus-on-shoulder service in each direction.
- Associated bus transit service improvements would include three additional bus bays for eight new electric double-decker buses at the Clark County Public Transit Benefit Area Authority



(C-TRAN) operations and maintenance facility (see Section 1.1.7, Transit Operating Characteristics, for more information about this service).

- Improvements to seven I-5 interchanges and I-5 mainline improvements between Interstate Avenue/ Victory Boulevard in Portland and SR 500/39th Street in Vancouver. Some adjacent local streets would be reconfigured to complement the new interchange designs, and improve local east-west connections.
  - > An option that shifts the I-5 mainline up to 40 feet westward in downtown Vancouver between the SR 14 interchange and Mill Plain Boulevard interchange is being evaluated.
  - > An option that eliminates the existing C Street ramps in downtown Vancouver is being evaluated.
- Six new adjacent bridges across North Portland Harbor: one on the east side of the existing I-5 North Portland Harbor bridge and five on the west side or overlapping with the existing bridge (which would be removed). The bridges would carry (from west to east) LRT tracks, southbound I-5 off-ramp to Marine Drive, southbound I-5 mainline, northbound I-5 mainline, northbound I-5 on-ramp from Marine Drive, and an arterial bridge for local traffic with a shared-use path for pedestrians and bicyclists.
- A variety of improvements for people who walk, bike, and roll throughout the study area, including a system of shared-use paths, bicycle lanes, sidewalks, enhanced wayfinding, and facility improvements to comply with the Americans with Disabilities Act. These are referred to in this document as *active transportation* improvements.
- Variable-rate tolling for motorists using the river crossing as a demand-management and financing tool.

The transportation improvements proposed for the Modified LPA and the design options are shown in Figure 1-2. The Modified LPA includes all of the components listed above. If there are differences in environmental effects or benefits between the design options, those are identified in the sections below.







Section 1.1.1, Interstate 5 Mainline, describes the overall configuration of the I-5 mainline through the study area, and Sections 1.1.2, Portland Mainland and Hayden Island (Subarea A), through Section 1.1.5, Upper Vancouver (Subarea D), provide additional detail on four geographic subareas (A through D), which are shown on Figure 1-3. In each subarea, improvements to I-5, its interchanges, and the local roadways are described first, followed by transit and active transportation improvements. Design options are described under separate headings in the subareas in which they would be located.



Table 1-1 shows the different combinations of design options analyzed in this Technical Report. However, **any combination of design options is compatible**. In other words, any of the bridge configurations could be combined with one or two auxiliary lanes, with or without the C Street ramps, a centered or westward shift of I-5 in downtown Vancouver, and any of the park-and-ride location options. Figures in each section show both the anticipated limit of ground disturbance, which includes disturbance from temporary construction activities, and the location of permanent infrastructure elements.



#### Figure 1-3. Modified LPA – Geographic Subareas



Design Options	Modified LPA	Modified LPA with Two Auxiliary Lanes	Modified LPA Without C Street Ramps	Modified LPA with I-5 Shifted West	Modified LPA with a Single- Level Fixed- Span Configuration	Modified LPA with a Single- Level Movable-Span Configuration
Bridge Configuration	Double-deck fixed-span*	Double-deck fixed-span	Double-deck fixed-span	Double-deck fixed-span	Single-level fixed-span*	Single-level movable- span*
Auxiliary Lanes	One*	Two*	One	One	One	One
C Street Ramps	With C Street ramps*	With C Street ramps	Without C Street Ramps*	With C Street ramps	With C Street ramps	With C Street ramps
I-5 Alignment	Centered*	Centered	Centered	Shifted West*	Centered	Centered
Park-and-Ride Options	Waterfront:* 1 Arnold Way	. Columbia Way	r (below I-5); 2. (	Columbia Street	/SR 14; 3. Colum	bia Street/Phil

#### Table 1-1. Modified LPA and Design Options

Bold text with an asterisk (\*) indicates which design option is different in each configuration.

Evergreen:\* 1. Library Square; 2. Columbia Credit Union

### 1.1.1 Interstate 5 Mainline

Today, within the 5-mile corridor, I-5 has three 12-foot-wide through lanes in each direction, an approximately 6- to 11-foot-wide inside shoulder, and an approximately 10- to 12-foot-wide outside shoulder with the exception of the Interstate Bridge, which has approximately 2- to 3-foot-wide inside and outside shoulders. There are currently intermittent auxiliary lanes between the Victory Boulevard and Hayden Island interchanges in Oregon and between SR 14 and SR 500 in Washington.

The Modified LPA would include three 12-foot through lanes from Interstate Avenue/Victory Boulevard to SR 500/39th Street and a 12-foot auxiliary lane from the Marine Drive interchange to the Mill Plain Boulevard interchange in each direction. 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 between the Victory Boulevard and Hayden Island interchanges would be replaced with changes to on- and off-ramps and interchange reconfigurations. The Modified LPA would also include wider shoulders (12-foot inside shoulders and 10- to 12-foot outside shoulders) to be consistent with ODOT and WSDOT design standards. The wider inside shoulder would be used by express bus service to bypass mainline congestion, known as "bus on shoulder" (refer to Section 1.1.7, Transit Operating Characteristics). The shoulder would be available for express bus service when general-purpose speeds are below 35 miles per hour (mph).

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Figure 1-4 shows a cross section of the collector-distributor (C-D)<sup>1</sup> roadways, Figure 1-5 shows the location of the C-D roadways, and Figure 1-6 shows the proposed auxiliary lane layout. The existing Interstate Bridge over the Columbia River does not have an auxiliary lane; the Modified LPA would add one auxiliary lane in each direction across the new Columbia River bridges.

On I-5 northbound, the auxiliary lane that would begin at the on-ramp from Marine Drive would continue across the Columbia River bridge and end at the off-ramp to the C-D roadway, north of SR 14 (see Figure 1-5). The on-ramp from SR 14 westbound would join the off-ramp to the C-D roadway, forming the northbound C-D roadway between SR 14 and Fourth Plain Boulevard. The C-D roadway would provide access from I-5 northbound to the off-ramps at Mill Plain Boulevard and Fourth Plain Boulevard, and to the on-ramp to I-5 northbound.

On I-5 northbound, the Modified LPA would also add one auxiliary lane beginning at the on-ramp from the C-D roadway and ending at the on-ramp from 39th Street, connecting to an existing auxiliary lane from 39th Street to the off-ramp at Main Street. Another existing auxiliary lane would remain between the on-ramp from Mill Plain Boulevard to the off-ramp to SR 500.

On I-5 southbound, the off-ramp to the C-D roadway would join the on-ramp from Mill Plain Boulevard to form a C-D roadway. The C-D roadway would provide access from I-5 southbound to the off-ramp to SR 14 eastbound and from Mill Plain Boulevard to the off-ramp to SR 14 eastbound and the on-ramp to I-5 southbound.

On I-5 southbound, an auxiliary lane would begin at the on-ramp from the C-D roadway and would continue across the southbound Columbia River bridge and end at the off-ramp to Marine Drive. The combined on-ramp from SR 14 westbound and C Street would merge into this auxiliary lane.



#### Figure 1-4. Cross Section of the Collector-Distributor Roadways

<sup>&</sup>lt;sup>1</sup> A collector-distributer roadway parallels and connects the main travel lanes of a highway and frontage roads or entrance ramps.





C-D = collector-distributor; EB = eastbound; NB = northbound; SB = southbound; WB = westbound

#### 1.1.1.1 Two Auxiliary Lane Design Option

This design option would add a second 12-foot-wide auxiliary lane in each direction of I-5 with the intent to further optimize travel flow in the corridor. This second auxiliary lane is proposed from the Interstate Avenue/Victory Boulevard interchange to the SR 500/39th Street interchange.

On I-5 northbound, one auxiliary lane would begin at the combined on-ramp from Interstate Avenue and Victory Boulevard, and a second auxiliary lane would begin at the on-ramp from Marine Drive. Both auxiliary lanes would continue across the northbound Columbia River bridge, and the on-ramp



from Hayden Island would merge into the second auxiliary lane on the northbound Columbia River bridge. At the off-ramp to the C-D roadway, the second auxiliary lane would end but the first auxiliary lane would continue. A second auxiliary lane would begin again at the on-ramp from Mill Plain Boulevard. The second auxiliary lane would end at the off-ramp to SR 500, and the first auxiliary lane would connect to an existing auxiliary lane at 39th Street to the off-ramp at Main Street.

On I-5 southbound, two auxiliary lanes would begin at the on-ramp from SR 500. Between the onramp from Fourth Plain Boulevard and the off-ramp to Mill Plain Boulevard, one auxiliary lane would be added to the existing two auxiliary lanes. The second auxiliary lane would end at the off-ramp to the C-D roadway, but the first auxiliary lane would continue. A second auxiliary lane would begin again at the southbound I-5 on-ramp from the C-D roadway. Both auxiliary lanes would continue across the southbound Columbia River bridge, and the combined on-ramp from SR 14 westbound and C Street would merge into the second auxiliary lane on the southbound Columbia River bridge. The second auxiliary lane would end at the off-ramp to Marine Drive, and the first auxiliary lane would end at the combined off-ramp to Interstate Avenue and Victory Boulevard.

Figure 1-6 shows a comparison of the one auxiliary lane configuration and the two auxiliary lane configuration design option. Figure 1-7 shows a comparison of the footprints (i.e., the limit of permanent improvements) of the one auxiliary lane and two auxiliary lane configurations on a double-deck fixed-span bridge. For all Modified LPA bridge configurations (described in Section 1.1.3, Columbia River Bridges (Subarea B)), the footprints of the two auxiliary lane configurations differ only over the Columbia River and in downtown Vancouver. The rest of the corridor would have the same footprint. For all bridge configurations analyzed in this document, the two auxiliary lane option would add 16 feet (8 feet in each direction) in total roadway width compared to the one auxiliary lane option due to the increased shoulder widths for the one auxiliary lane option.<sup>2</sup> The traffic operations analysis incorporating both the one and two auxiliary lane design options applies equally to all bridge configurations in this Technical Report.

 $<sup>^2</sup>$  Under the one auxiliary lane option, the width of each shoulder would be approximately 14 feet to accommodate maintenance of traffic during construction. Under the two auxiliary lane option, maintenance of traffic could be accommodated with 12-foot shoulders because the additional 12-foot auxiliary lane provides adequate roadway width. The total difference in roadway width in each direction between the one auxiliary lane option and the two auxiliary lane option would be 8 feet (12-foot auxiliary lane – 2 feet from the inside shoulder – 2 feet from the outside shoulder = 8 feet).

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#### Figure 1-6. Comparison of Auxiliary Lane Configurations



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### 1.1.2 Portland Mainland and Hayden Island (Subarea A)

This section discusses the geographic Subarea A shown in Figure 1-3. See Figure 1-8 for highway and interchange improvements in Subarea A, including the North Portland Harbor bridge. Figure 1-8 illustrates the one auxiliary lane design option; please refer to Figure 1-6 and the accompanying description for how two auxiliary lanes would alter the Modified LPA's proposed design. Refer to Figure 1-3 for an overview of the geographic subareas.

Within Subarea A, the IBR Program has the potential to alter three federally authorized levee systems:

- The Oregon Slough segment of the Peninsula Drainage District Number 1 levee (PEN 1).
- The Oregon Slough segment of the Peninsula Drainage District Number 2 levee (PEN 2).
- The PEN1/PEN2 cross levee segment of the PEN 1 levee (Cross Levee).





#### Figure 1-8. Portland Mainland and Hayden Island (Subarea A)

LRT = light-rail transit; NB = northbound; SB = southbound; TBD = to be determined



The levee systems are shown on Figure 1-9, and intersections with Modified LPA components are described throughout Section 1.1.2, Portland Mainland and Hayden Island (Subarea A), where appropriate. Within Subarea A, the IBR Program study area intersects with PEN 1 to the west of I-5 and with PEN 2 to the east of I-5. PEN 1 and PEN 2 include a main levee along the south side of North Portland Harbor and are part of a combination of levees and floodwalls. PEN 1 and PEN 2 are separated by the Cross Levee that is intended to isolate the two districts if one of them fails. The Cross Levee is located along the I-5 mainline embankment, except in the Marine Drive interchange area where it is located on the west edge of the existing ramp from Marine Drive to southbound I-5.<sup>3</sup>

There are two concurrent efforts underway that are planning improvements to PEN1, PEN2, and the Cross Levee to reduce flood risk:

- The U.S. Army Corps of Engineers (USACE) Portland Metro Levee System (PMLS) project.
- The Flood Safe Columbia River (FSCR) program (also known as "Levee Ready Columbia").

The Urban Flood Safety and Water Quality District (UFSWQD)<sup>4</sup> is working with the USACE through the PMLS project, which includes improvements at PEN 1 and PEN 2 (e.g., raising these levees to elevation 38 feet North American Vertical Datum of 1988 [NAVD 88]).<sup>5</sup> Additionally, as part of the FSCR program, UFSWQD is studying raising a low spot in the Cross Levee on the southwest side of the Marine Drive interchange.

The IBR Program is in close coordination with these concurrent efforts to ensure that the IBR Program's design efforts consider the timing and scope of the PMLS and the FSCR proposed modifications. The intersection of the IBR Program proposed actions to both the existing levee configuration and the anticipated future condition based on the proposed PMLS and FSCR projects are described below, where appropriate.

<sup>&</sup>lt;sup>3</sup> The portion of the original Denver Avenue levee alignment within the Marine Drive interchange area is no longer considered part of the levee system by UFSWQD.

<sup>&</sup>lt;sup>4</sup> UFSWQD includes PEN 1 and PEN 2, Urban Flood Safety and Water Quality District No. 1, and the Sandy Drainage Improvement Company.

<sup>&</sup>lt;sup>5</sup> NAVD 88 is a vertical control datum (reference point) used by federal agencies for surveying.



#### Figure 1-9. Levee Systems in Subarea A





#### 1.1.2.1 Highways, Interchanges, and Local Roadways

#### VICTORY BOULEVARD/INTERSTATE AVENUE INTERCHANGE AREA

The southern extent of the Modified LPA would improve two ramps at the Victory Boulevard/Interstate Avenue interchange (see Figure 1-8). The first ramp improvement would be the southbound I-5 offramp to Victory Boulevard/ Interstate Avenue; this off-ramp would be braided below (i.e., grade separated or pass below) the Marine Drive to the I-5 southbound on-ramp (see the Marine Drive Interchange Area section below). The other ramp improvement would lengthen the merge distance for northbound traffic entering I-5 from Victory Boulevard and from Interstate Avenue.

The existing I-5 mainline between Victory Boulevard/Interstate Avenue and Marine Drive is part of the Cross Levee (see Figure 1-9). The Modified LPA would require some pavement reconstruction of the mainline in this area; however, the improvements would mostly consist of pavement overlay and the profile and footprint would be similar to existing conditions.

#### MARINE DRIVE INTERCHANGE AREA

The next interchange north of the Victory Boulevard/Interstate Avenue interchange is at Marine Drive. All movements within this interchange would be reconfigured to reduce congestion for motorists entering and exiting I-5. The new configuration would be a single-point urban interchange. The new interchange would be centered over I-5 versus on the west side under existing conditions. See Figure 1-8 for the Marine Drive interchange's layout and construction footprint.

The Marine Drive to I-5 southbound on-ramp would be braided over I-5 southbound to the Victory Boulevard/Interstate Avenue off-ramp. Martin Luther King Jr. Boulevard would have a new more direct connection to I-5 northbound.

The new interchange configuration would change the westbound Marine Drive and westbound Vancouver Way connections to Martin Luther King Jr. Boulevard. An improved connection farther east of the interchange (near Haney Street) would provide access to westbound Martin Luther King Jr. Boulevard for these two streets. For eastbound travelers on Martin Luther King Jr. Boulevard exiting to Union Court, the existing loop connection would be replaced with a new connection farther east (near the access to the East Delta Park Owens Sports Complex).

Expo Road from Victory Boulevard to the Expo Center would be reconstructed with improved active transportation facilities. North of the Expo Center, Expo Road would be extended under Marine Drive and continue under I-5 to the east, connecting with Marine Drive and Vancouver Way through three new connected roundabouts. The westernmost roundabout would connect the new local street extension to I-5 southbound. The middle roundabout would connect the I-5 northbound off-ramp to the local street extension. The easternmost roundabout would connect the new local street extension to an arterial bridge crossing North Portland Harbor to Hayden Island. This roundabout would also connect the local street extension to Marine Drive and Vancouver Way.

To access Hayden Island using the arterial bridge from the east on Martin Luther King Jr. Boulevard, motorists would exit Martin Luther King Jr. Boulevard at the existing off-ramp to Vancouver Way just west of the Walker Street overpass. Then motorists would travel west on Vancouver Way, through the intersection with Marine Drive and straight through the roundabout to the arterial bridge.



From Hayden Island, motorists traveling south to Portland via Martin Luther King Jr. Boulevard would turn onto the arterial bridge southbound and travel straight through the roundabout onto Vancouver Way. At the intersection of Vancouver Way and Marine Drive, motorists would turn right onto Union Court and follow the existing road southeast to the existing on-ramp onto Martin Luther King Jr. Boulevard.

The conceptual floodwall alignment from the proposed USACE PMLS project is located on the north side of Marine Drive, near two industrial properties, with three proposed closure structures<sup>6</sup> for property access. The Modified LPA would realign Marine Drive to the south and provide access to the two industrial properties via the new local road extension from Expo Road. Therefore, the change in access for the two industrial properties could require small modifications to the floodwall alignment (a potential shift of 5 to 10 feet to the south) and closure structure locations.

Marine Drive and the two southbound on-ramps would travel over the Cross Levee approximately 10 to 20 feet above the proposed elevation of the improved levee, and they would be supported by fill and retaining walls near an existing low spot in the Cross Levee.

The I-5 southbound on-ramp from Marine Drive would continue on a new bridge structure. Although the bridge's foundation locations have not been determined yet, they would be constructed through the western slope of the Cross Levee (between the existing I-5 mainline and the existing light-rail).

#### NORTH PORTLAND HARBOR BRIDGES

To the north of the Marine Drive interchange is the Hayden Island interchange area, which is shown in Figure 1-8. I-5 crosses over the North Portland Harbor when traveling between these two interchanges. The Modified LPA proposes to replace the existing I-5 bridge spanning North Portland Harbor to improve seismic resiliency.

Six new parallel bridges would be built across the waterway under the Modified LPA: one on the east side of the existing I-5 North Portland Harbor bridge and five on the west side or overlapping the location of the existing bridge (which would be removed). From west to east, these bridges would carry:

- The LRT tracks.
- The southbound I-5 off-ramp to Marine Drive.
- The southbound I-5 mainline.
- The northbound I-5 mainline.
- The northbound I-5 on-ramp from Marine Drive.
- An arterial bridge between the Portland mainland and Hayden Island for local traffic; this bridge would also include a shared-use path for pedestrians and bicyclists.

<sup>&</sup>lt;sup>6</sup> Levee closure structures are put in place at openings along the embankment/floodwall to provide flood protection during high water conditions.



Each of the six replacement North Portland Harbor bridges would be supported on foundations constructed of 10-foot-diameter drilled shafts. Concrete columns would rise from the drilled shafts and connect to the superstructures of the bridges. All new structures would have at least as much vertical navigation clearance over North Portland Harbor as the existing North Portland Harbor bridge.

Compared to the existing bridge, the two new I-5 mainline bridges would have a similar vertical clearance of approximately 7 feet above the proposed height of the improved levees (elevation 38 feet NAVD 88). The two ramp bridges and the arterial bridge would have approximately 15 feet of vertical clearance above the proposed height of the levees. The foundation locations for the five roadway bridges have not been determined at this stage of design, but some foundations could be constructed through landward or riverward levee slopes.

#### HAYDEN ISLAND INTERCHANGE AREA

All traffic movements for the Hayden Island interchange would be reconfigured. See Figure 1-8 for a layout and construction footprint of the Hayden Island interchange. A half-diamond interchange would be built on Hayden Island with a northbound I-5 on-ramp from Jantzen Drive and a southbound I-5 off-ramp to Jantzen Drive. This would lengthen the ramps and improve merging/diverging speeds compared to the existing substandard ramps that require acceleration and deceleration in a short distance. The I-5 mainline would be partially elevated and partially located on fill across the island.

There would not be a southbound I-5 on-ramp or northbound I-5 off-ramp on Hayden Island. Connections to Hayden Island for those movements would be via the local access (i.e., arterial) bridge connecting North Portland to Hayden Island (Figure 1-10). Vehicles traveling northbound on I-5 wanting to access Hayden Island would exit with traffic going to the Marine Drive interchange, cross under Martin Luther King Jr. Boulevard to the new roundabout at the Expo Road local street extension, travel east through this roundabout to the easternmost roundabout, and use the arterial bridge to cross North Portland Harbor. Vehicles on Hayden Island looking to enter I-5 southbound would use the arterial bridge to cross North Portland Harbor, cross under I-5 using the new Expo Road local street extension to the westernmost roundabout, cross under I-5 using the new Expo Road local street extension to the westernmost roundabout, cross under Marine Drive, merge with the Marine Drive southbound on-ramp, and merge with I-5 southbound south of Victory Boulevard.

Improvements to Jantzen Avenue may include additional left-turn and right-turn lanes at the interchange ramp terminals and active transportation facilities. Improvements to Hayden Island Drive would include new connections to the new arterial bridge over North Portland Harbor. The existing I-5 northbound and southbound access points from Hayden Island Drive would also be removed. A new extension of Tomahawk Island Drive would travel east-west through the middle of Hayden Island and under the I-5 interchange, thus improving connectivity across I-5 on the island.





#### Figure 1-10. Vehicle Circulation between Hayden Island and the Portland Mainland

NB = northbound; SB = southbound



#### 1.1.2.2 Transit

A new light-rail alignment for northbound and southbound trains would be constructed within Subarea A (see Figure 1-8) to extend from the existing Expo Center MAX Station over North Portland Harbor to a new station at Hayden Island. An overnight LRV facility would be constructed on the southeast corner of the Expo Center property (see Figure 1-8) to provide storage for trains during hours when MAX is not in service. This facility is described in Section 1.1.6, Transit Support Facilities. The existing Expo Center MAX Station would be modified to remove the westernmost track and platform. Other platform modifications, including track realignment and regrading the station, are anticipated to transition to the extension alignment. This may require reconstruction of the operator break facility, signal/communication buildings, and traction power substations. Immediately north of the Expo Center MAX Station, the alignment would curve east toward I-5, pass beneath Marine Drive, cross the proposed Expo Road local street extension and the 40-Mile Loop Trail at grade, then rise over the existing levee onto a light-rail bridge to cross North Portland Harbor. On Hayden Island, proposed transit components include northbound and southbound LRT tracks over Hayden Island; the tracks would be elevated at approximately the height of the new I-5 mainline. An elevated LRT station would also be built on the island immediately west of I-5. The light-rail alignment would extend north on Hayden Island along the western edge of I-5 before transitioning onto the lower level of the new double-deck western bridge over the Columbia River (see Figure 1-8). For the single-level configurations, the light-rail alignment would extend to the outer edge of the western bridge over the Columbia River.

After crossing the new local road extension from Expo Road, the new light-rail track would cross over the main levee (see Figure 1-9). The light-rail profile is anticipated to be approximately 3 feet above the improved levees at the existing floodwall (and improved floodwall), and the tracks would be constructed on fill supported by retaining walls above the floodwall. North of the floodwall, the lightrail tracks would continue onto the new light-rail bridge over North Portland Harbor (as described above).

The Modified LPA's light-rail extension would be close to or would cross the north end of the Cross Levee. The IBR Program would realign the Cross Levee to the east of the light-rail alignment to avoid the need for a closure structure on the light-rail alignment. This realigned Cross Levee would cross the new local road extension. A closure structure may be required because the current proposed roadway is a few feet lower than the proposed elevation of the improved levee.

#### 1.1.2.3 Active Transportation

In the Victory Boulevard interchange area (see Figure 1-8), active transportation facilities would be provided along Expo Road between Victory Boulevard and the Expo Center; this would provide a direct connection between the Victory Boulevard and Marine Drive interchange areas, as well as links to the Delta Park and Expo Center MAX Stations.

New shared-use path connections throughout the Marine Drive interchange area would provide access between the Bridgeton neighborhood (on the east side of I-5), Hayden Island, and the Expo Center MAX Station. There would also be connections to the existing portions of the 40-Mile Loop Trail, which runs north of Marine Drive under I-5 through the interchange area. The path would



continue along the extension of Expo Road under the interchange to the intersection of Marine Drive and Vancouver Way, where it would connect under Martin Luther King Jr. Boulevard to Delta Park.

East of the Marine Drive interchange, new shared-use paths on Martin Luther King Jr. Boulevard and on the parallel street, Union Court, would connect travelers to Marine Drive and across the arterial bridge to Hayden Island. The shared-use facilities on Martin Luther King Jr. Boulevard would provide westbound and eastbound cyclists and pedestrians with off-street crossings of the interchange and would also provide connections to both the Expo Center MAX Station and the 40-Mile Loop Trail to the west.

The new arterial bridge over North Portland Harbor would include a shared-use path for pedestrians and bicyclists (see Figure 1-8). On Hayden Island, pedestrian and bicycle facilities would be provided on Jantzen Avenue, Hayden Island Drive, and Tomahawk Island Drive. The shared-use path on the arterial bridge would continue along the arterial bridge to the south side of Tomahawk Island Drive. A parallel, elevated path from the arterial bridge would continue adjacent to I-5 across Hayden Island and cross above Tomahawk Island Drive and Hayden Island Drive to connect to the lower level of the new double-deck eastern bridge or the outer edge of the new single-level eastern bridge over the Columbia River. A ramp down to the north side of Hayden Island Drive would be provided from the elevated path.

### 1.1.3 Columbia River Bridges (Subarea B)

This section discusses the geographic Subarea B shown in Figure 1-3. See Figure 1-11 for highway and interchange improvements in Subarea B. Refer to Figure 1-3 for an overview of the geographic subareas.

#### 1.1.3.1 Highways, Interchanges, and Local Roadways

The two existing parallel I-5 bridges that cross the Columbia River would be replaced by two new parallel bridges, located west of the existing bridges (see Figure 1-11). The new eastern bridge would accommodate northbound highway traffic and a shared-use path. The new western bridge would carry southbound traffic and two-way light-rail tracks. Whereas the existing bridges each have three lanes with no shoulders, each of the two new bridges would be wide enough to accommodate three through lanes, one or two auxiliary lanes, and shoulders on both sides of the highway. Lanes and shoulders would be built to full design standards.







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As with the existing bridge (Figure 1-13), the new Columbia River bridges would provide three navigation channels: a primary navigation channel and two barge channels (see Figure 1-14). 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 congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side of the authorized channel) and the two barge channels would also each be 400 feet wide.

The existing Interstate Bridge has nine in-water pier sets,<sup>7</sup> whereas the new Columbia River bridges (any bridge configuration) would be built on six in-water pier sets, plus multiple piers on land (pier locations are shown on Figure 1-14).



#### Figure 1-12. Bridge Foundation Concept

Each in-water pier set would be supported by a foundation of drilled shafts; each group of shafts would be tied together with a concrete shaft cap. Columns or pier walls would rise from the shaft caps and connect to the superstructures of the bridges (see Figure 1-12).

#### **BRIDGE CONFIGURATIONS**

Three bridge configurations are being considered: (1) double-deck fixed-span (with one bridge type), (2) a single-level fixed-span (with three potential bridge types), and (3) a single-level movable-span (with one bridge type). Both the double-deck and single-level fixed-span configurations would provide 116 feet of vertical navigation clearance at their respective highest spans; the same as the CRC LPA. The CRC LPA included a double-deck fixed-span bridge configuration. The single-level fixed-span configuration was developed and is being considered as part of the IBR Program in response to physical and contextual changes (i.e., design and operational considerations) since 2013 that necessitated examination of a refinement in the double-deck bridge configuration (e.g., ingress and egress of transit from the lower level of the double-deck fixed-span configuration on the north end of the southbound bridge).

<sup>&</sup>lt;sup>7</sup> A pier set consists of the pier supporting the northbound bridge and the pier supporting the southbound bridge at a given location.




Figure 1-14. Profile and Navigation Clearances of the Proposed Modified LPA Columbia River Bridges with a Double-Deck Fixed-Span Configuration



Note: 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 congressionally or 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.





Consideration of the single-level movable-span configuration as part the IBR Program was necessitated by the U.S. Coast Guard's (USCG) review of the Program's navigation impacts on the Columbia River and issuance of a Preliminary Navigation Clearance Determination (PNCD) (USCG 2022). The USCG PNCD set the preliminary vertical navigation clearance recommended for the issuance of a bridge permit at 178 feet; this is the current vertical navigation clearance of the Interstate Bridge.

The IBR Program is carrying forward the three bridge configurations to address changed conditions, including changes in the USCG bridge permitting process, in order to ensure a permittable bridge configuration is within the range of options considered. The IBR Program continues to refine the details supporting navigation impacts and is coordinating closely with the USCG to determine how a fixed-span bridge may be permittable. Although the fixed-span configurations do not comply with the current USCG PNCD, they do meet the Purpose and Need and provide potential improvements to traffic (passenger vehicle and freight), transit, and active transportation operations.

Each of the bridge configurations assumes one auxiliary lane; two auxiliary lanes could be applied to any of the bridge configurations. All typical sections for the one auxiliary lane option would provide 14-foot shoulders to maintain traffic during construction of the Modified LPA and future maintenance.

#### Double-Deck Fixed-Span Configuration

The double-deck fixed-span configuration would be two side-by-side, double-deck, fixed-span steel truss bridges. Figure 1-15 is an example of this configuration (this image is subject to change and is shown as a representative concept; it does not depict the final design). The double-deck fixed-span 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. This bridge height would not impede takeoffs and landings by aircraft using Pearson Field or Portland International Airport.

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 two-way light-rail tracks on the lower level. Each bridge deck would be 79 feet wide, with a total out-to-out width of 173 feet.<sup>8</sup>

Figure 1-16 is a cross section of the two parallel double-deck bridges. Like all bridge configurations, the double-deck fixed-span 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 a 3.8% maximum grade on the Oregon side of the bridge and a 4% maximum grade on the Washington side.

<sup>&</sup>lt;sup>8</sup> "Out-to-out width" is the measurement between the outside edges of the bridge across its width at the widest point.



#### Figure 1-15. Conceptual Drawing of a Double-Deck Fixed-Span Configuration



Note: Visualization is looking southwest from Vancouver.

#### Single-Level Fixed-Span Configuration

The single-level fixed-span configuration would have two side-by-side, single-level, fixed-span steel or concrete bridges. This report considers three single-level fixed-span bridge type options: a girder bridge, an extradosed bridge, and a finback bridge. The description in this section applies to all three bridge types (unless otherwise indicated). Conceptual examples of each of these options are shown on Figure 1-17. These images are subject to change and do not represent final design.

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. This bridge height would not impede takeoffs and landings by aircraft using Pearson Field or Portland International Airport.

The eastern bridge would accommodate northbound highway traffic and the shared-use path; the bridge deck would be 104 feet wide. The western bridge would carry southbound traffic and two-way light-rail tracks; the bridge deck would be 113 feet wide. 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 with the double-deck configuration. The total out-to-out width of the single-level fixed-span configuration (extradosed or finback options) would be 272 feet at its widest point, approximately 99 feet wider than the double-deck configuration. The total out-to-out width of the single-level fixed-span configuration (girder option) would be 232 feet at its widest point. Figure 1-18 shows a typical cross section of the single-level configuration. This cross section is a representative example of an extradosed or finback bridge as shown by the 10-foot-wide superstructure above the bridge deck; the girder bridge would not have the 10-foot-wide bridge columns shown on Figure 1-18.

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 50 feet by 230 feet.

This bridge configuration would have a 3% maximum grade on both the Oregon and Washington sides of the bridge.

Figure 1-16. Cross Section of the Double-Deck Fixed-Span Configuration

# SOUTHBOUND





# NORTHBOUND

#### Figure 1-17. Conceptual Drawings of Single-Level Fixed-Span Bridge Types







Note: Visualizations are for illustrative purposes only. They do not reflect property impacts or represent final design. Visualization is looking southwest from Vancouver.



Figure 1-18. Cross Section of the Single-Level Fixed-Span Configuration (Extradosed or Finback Bridge Types)

Note: The cross section for a girder type bridge would be the same except that it would not have the four 10-foot bridge columns making the total out-to-out width 232 feet.





#### Single-Level Movable-Span Configuration

The single-level movable-span configuration would have two side-by-side, single-level steel girder bridges with movable spans between Piers 5 and 6. For the purpose of this report, the IBR Program assessed a vertical lift span movable-span configuration with counterweights based on the analysis in the *River Crossing Bridge Clearance Assessment Report – Movable-Span Options*, included as part of Attachment C in Appendix D, Design Options Development, Screening, and Evaluation Technical Report. A conceptual example of a vertical lift-span bridge is shown in Figure 1-19. These images are subject to change and do not represent final design.

A movable span must 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 500 feet south of the existing lift span, between Piers 5 and 6. To accommodate this location of the movable span, the IBR Program is coordinating with USACE to obtain authorization to change the location of the primary navigation channel, which currently aligns with the Interstate Bridge lift spans near the Washington shoreline.

The single-level movable-span configuration would provide 92 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. The 92-foot vertical clearance is based on achieving a straight, movable span and maintaining an acceptable grade for transit operations. In addition, it satisfies the requirement of a minimum of 72 feet of vertical navigation clearance (the existing Interstate Bridge's maximum clearance over the alternate (southernmost) barge channel when the existing lift span is in the closed position).

In the open position, the movable span would provide 178 feet of vertical navigation clearance over the proposed relocated primary navigation channel.

Similar to the fixed-span configurations, the movable span 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; this is shorter than the existing liftspan towers, which are 247 feet high. This height of the vertical lift-span towers would not impede takeoffs and landings by aircraft using Portland International Airport. At Pearson Field, the Federal Aviation Administration issues obstacle departure procedures to avoid the existing Interstate Bridge lift towers; the single-level movable-span configuration would retain the same procedures.

Similar to the single-level fixed-span configuration, the eastern bridge would accommodate northbound highway traffic and the shared-use path, and the western bridge would carry southbound traffic and two-way light-rail tracks. The I-5 highway, light-rail tracks, and shared-use path would be on the same level across the bridges instead of on two levels as with the double-deck configuration. Cross sections of the single-level movable-span configuration are shown in Figure 1-20; the top cross section depicts the vertical lift spans (Piers 5 and 6), and the bottom cross 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 other fixed spans of the bridges.

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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 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 (50 feet by 230 feet). The vertical lift-span configuration would have a total of 108 in-water drilled shafts.

This single-level movable-span configuration would have a 3% maximum grade on the Oregon side of the bridge and a 1.5% maximum grade on the Washington side.

Figure 1-19. Conceptual Drawings of Single-Level Movable-Span Configurations in the Closed and Open Positions



Note: Visualizations are for illustrative purposes only. They do not reflect property impacts or represent final design. Visualization is looking southeast (upstream) from Vancouver.

### Figure 1-20. 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)





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#### Summary of Bridge Configurations

This section summarizes and compares each of the bridge configurations. Table 1-2 lists the key considerations for each configuration. Figure 1-21 compares each configuration's footprint. The footprints of each configuration would differ in only three locations: over the Columbia River and at the bridge landings on Hayden Island and Vancouver. The rest of the I-5 corridor would have the same footprint. Over the Columbia River, the footprint of the double-deck fixed-span configuration would be 173 feet wide. Comparatively, the finback or extradosed bridge types of the single-level fixed-span configuration would be 272 feet wide (approximately 99 feet wider), and the single-level fixed-span configuration with a girder bridge type would be 232 feet wide (approximately 59 feet wider). The single-level movable-span configuration would be 252 feet wide (approximately 79 feet wider than the double-deck fixed-span configuration), except at Piers 5 and 6, where larger bridge foundations would require an additional 40 feet of width to support the movable span. The single-level 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 in the double-deck option.

Figure 1-22 compares the basic profile of each configuration. The lower deck of the double-deck fixed-span and the single-level fixed-span configuration would have similar profiles. The single-level movable-span configuration would have a lower profile than the fixed-span configurations when the span is in the closed position.







#### Figure 1-22. Bridge Configuration Profile Comparison



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



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### Table 1-2. Summary of Bridge Configurations

	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration <sup>a</sup>	Modified LPA with Single-Level Movable-Span Configuration
Bridge type	Steel through-truss spans.	Double-deck steel truss.	Single-level, concrete or steel girders, extradosed or finback.	Single-level, steel girders with vertical lift span.
Number of bridges	Two	Тwo	Two	Тwo
Movable-span type	Vertical lift span with counterweights.	N/A	N/A	Vertical lift span with counterweights.
Movable-span location	Adjacent to Vancouver shoreline.	N/A	N/A	Between Piers 5 and 6 (approximately 500 feet south of the existing lift span).
Lift opening restrictions	Weekday peak AM and PM highway travel periods. <sup>b</sup>	N/A	N/A	Additional restrictions to daytime bridge openings; requires future federal rulemaking process and authorization by USCG (beyond the assumed No-Build Alternative bridge restrictions for peak AM and PM highway travel periods). <sup>b</sup> Typical opening durations are assumed to be 9 to 18 minutes <sup>c</sup> 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.
Out-to-out width <sup>d</sup>	138 feet total width.	173 feet total width.	Girder: 232 feet total width. Extradosed/Finback: 272 feet total width.	<ul> <li>292 feet at the movable span.</li> <li>252 feet at the fixed spans.</li> </ul>



	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration <sup>a</sup>	Modified LPA with Single-Level Movable-Span Configuration
Deck widths	52 feet (SB) 52 feet (NB)	79 feet (SB) 79 feet (NB)	<ul> <li>Girder:</li> <li>113 feet (SB)</li> <li>104 feet (NB)</li> <li>Extradosed/Finback:</li> <li>133 feet (SB)</li> <li>124 feet (NB)</li> </ul>	113 feet SB fixed span. 104 feet NB fixed span.
Vertical navigation clearance	<ul> <li>Primary navigation channel:</li> <li>39 feet when closed.</li> <li>178 feet when open.</li> <li>Barge channel:</li> <li>46 feet to 70 feet.</li> <li>Alternate barge channel:</li> <li>72 feet (maximum clearance without opening).</li> </ul>	<ul> <li>Primary navigation channel:</li> <li>116 feet maximum.</li> <li>North barge channel:</li> <li>100 feet maximum.</li> <li>South barge channel:</li> <li>110 feet maximum.</li> </ul>	<ul> <li>Primary navigation channel:</li> <li>116 feet maximum.</li> <li>North barge channel:</li> <li>100 feet maximum.</li> <li>South barge channel:</li> <li>110 feet maximum.</li> </ul>	<ul> <li>Primary navigation channel:</li> <li>Closed position: 92 feet.</li> <li>Open position: 178 feet.</li> <li>North barge channel:</li> <li>99 feet maximum.</li> <li>South barge channel:</li> <li>90 feet maximum.</li> </ul>
Horizontal navigation clearance	263 feet for primary navigation channel. 511 feet for barge channel. 260 feet for alternate barge channel.	400 feet for all navigation channels (300-foot congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side).	400 feet for all navigation channels (300-foot congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side).	400 feet for all navigation channels (300-foot congressionally or USACE-authorized channel plus a 50-foot channel maintenance buffer on each side).
Maximum elevation of bridge component (NAVD 88) <sup>e</sup>	247 feet at top of lift tower.	166 feet.	Girder: 137 feet. Extradosed/Finback: 179 feet at top of pylons.	243 feet at top of lift tower.



	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration <sup>a</sup>	Modified LPA with Single-Level Movable-Span Configuration
Movable span length (from center of pier to center of pier)	278 feet.	N/A	N/A	450 feet.
Number of in-water pier sets	Nine	Six	Six	Six
Number of in-water drilled shafts	N/A	72	96	108
Shaft cap sizes	N/A	50 feet by 85 feet.	50 feet by 230 feet.	Piers 2, 3, 4, and 7: 50 feet by 230 feet. Piers 5 and 6: 50 feet by 312 feet (one combined footing at each location to house tower/equipment for the lift span).
Maximum grade	5%	4% on the Washington side. 3.8% on the Oregon side.	3% on the Washington side. 3% on the Oregon side.	1.5% on the Washington side. 3% on the Oregon side.
Light-rail transit location	N/A	Below highway on SB bridge.	West of highway on SB bridge.	West of highway on SB bridge.
Express bus	Shared roadway lanes.	Inside shoulder of NB and SB (upper) bridges.	Inside shoulder of NB and SB bridges.	Inside shoulder of NB and SB bridges.



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	No-Build Alternative	Modified LPA with Double-Deck Fixed-Span Configuration	Modified LPA with Single-Level Fixed-Span Configuration <sup>a</sup>	Modified LPA with Single-Level Movable-Span Configuration
Shared-use path location	Sidewalk adjacent to roadway in both directions.	Below highway on NB bridge.	East of highway on NB bridge.	East of highway on NB bridge.

a When different bridge types are not mentioned, data applies to all bridge types under the specified bridge configuration.

b The No-Build Alternative 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 analysis estimates the potential frequency for bridge openings for vessels requiring more than 99 feet of clearance.

c For the purposes of the transportation analysis (see the Transportation Technical Report), the movable-span opening time is assumed to be an average of 12 minutes.

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

e NAVD 88 (North American Vertical Datum of 1988) is a vertical control datum (reference point) used by federal agencies for surveying.

NB = northbound; SB = southbound; USCG = U.S. Coast Guard



### 1.1.4 Downtown Vancouver (Subarea C)

This section discusses the geographic Subarea C shown in Figure 1-3. See Figure 1-23 for all highway and interchange improvements in Subarea C. Refer to Figure 1-3 for an overview of the geographic subareas.

#### 1.1.4.1 Highways, Interchanges, and Local Roadways

North of the Columbia River bridges in downtown Vancouver, improvements are proposed to the SR 14 interchange (Figure 1-23).

#### SR 14 INTERCHANGE

The new Columbia River bridges would touch down just north of the SR 14 interchange (Figure 1-23). The function of the SR 14 interchange would remain essentially the same as it is now, although the interchange would be elevated. Direct connections between I-5 and SR 14 would be rebuilt. Access to and from downtown Vancouver would be provided as it is today, but the connection points would be relocated. Downtown Vancouver I-5 access to and from the south would be at C Street as it is today, while downtown connections to and from SR 14 would be from Columbia Street at 3rd Street.

Main Street would be extended between 5th Street and Columbia Way. Vehicles traveling from downtown Vancouver to access SR 14 eastbound would use the new extension of Main Street to the roundabout underneath I-5. If coming from the west or south (waterfront) in downtown Vancouver, vehicles would use the Phil Arnold Way/3rd Street extension to the roundabout, then continue to SR 14 eastbound. The existing Columbia Way roadway under I-5 would be realigned to the north of its existing location and would intersect both the new Main Street extension and Columbia Street with T intersections.

In addition, the existing overcrossing of I-5 at Evergreen Boulevard would be reconstructed.

#### Design Option Without C Street Ramps

Under this design option, downtown Vancouver I-5 access to and from the south would be through the Mill Plain interchange rather than C Street. There would be no eastside loop ramp from I-5 northbound to C Street and no directional ramp on the west side of I-5 from C Street to I-5 southbound. The existing eastside loop ramp would be removed. This design option has been included because of changes in local planning that necessitate consideration of design options that reduce the footprint and associated direct and temporary environmental impacts in Vancouver.





Figure 1-23. Downtown Vancouver (Subarea C)



#### Design Option to Shift I-5 Westward

This design option would shift the I-5 mainline and ramps approximately 40 feet to the west between SR 14 and Mill Plain Boulevard. The westward I-5 alignment shift could also be paired with the design option without C Street ramps. The inclusion of this design option is due to changes in local planning, which necessitate consideration of design options that that shifts the footprint and associated direct and temporary environmental impacts in Vancouver.

#### 1.1.4.2 Transit

#### LIGHT-RAIL ALIGNMENT AND STATIONS

Under the Modified LPA, the light-rail tracks would exit the highway bridge and be on their own bridge along the west side of the I-5 mainline after crossing the Columbia River (see Figure 1-23). The light-rail bridge would cross approximately 35 feet over the BNSF Railway tracks. An elevated light-rail station near the Vancouver waterfront (Waterfront Station) would be situated near the overcrossing of the BNSF tracks between Columbia Way and 3rd Street. Access to the elevated station would be primarily by elevator as the station is situated approximately 75 feet above existing ground level. A stairwell(s) would be provided for emergency egress. The number of elevators and stairwells provided

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would be based on the ultimate platform configuration, station location relative to the BNSF trackway, projected ridership, and fire and life safety requirements. Passenger drop-off facilities would be located at ground level and would be coordinated with the C-TRAN bus service at this location. The elevated light-rail tracks would continue north, cross over the westbound SR 14 on-ramp and the C Street/6th Street on-ramp to southbound I-5, and then straddle the southbound I-5 C-D roadway. Transit components in the downtown Vancouver area are similar between the two SR 14 interchange area design options discussed above.

North of the Waterfront Station, the light-rail tracks would continue to the Evergreen Station, which would be the terminus of the light-rail extension (see Figure 1-23). The light-rail tracks from downtown Vancouver to the terminus would be entirely on an elevated structure supported by single columns, where feasible, or by columns on either side of the roadway where needed. The light-rail tracks would be a minimum of 27 feet above the I-5 roadway surface. The Evergreen Station would be located at the same elevation as Evergreen Boulevard, on the proposed Community Connector, and it would provide connections to C-TRAN's existing BRT system. Passenger drop-off facilities would be near the station and would be coordinated with the C-TRAN bus service at this location.

#### PARK AND RIDES

Up to two park and rides could be built in Vancouver along the light-rail alignment: one near the Waterfront Station and one near the Evergreen Station. Additional information regarding the park and rides can be found in the Transportation Technical Report.

#### Waterfront Station Park-and-Ride Options

Park and rides can expand the catchment area of public transit systems, 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.

There are three site options for the park and ride near the Waterfront Station (see Figure 1-23). Each would accommodate up to 570 parking spaces.

- 1. Columbia Way (below I-5). This park-and-ride site would be a multilevel aboveground structure located below the new Columbia River bridges, immediately north of a realigned Columbia Way.
- 2. Columbia Street/SR 14. This park-and-ride site would be a multilevel aboveground structure located along the east side of Columbia Street. It could span across (or over) the SR 14 westbound off-ramp to provide parking on the north and south sides of the off-ramp.
- 3. Columbia Street/Phil Arnold Way (Waterfront Gateway Site). This park-and-ride site would be located along the west side of Columbia Street immediately north of Phil Arnold Way. This park and ride would be developed in coordination with the City of Vancouver's Waterfront Gateway program and could be a joint-use parking facility not constructed exclusively for park-and-ride users.

#### Evergreen Station Park-and-Ride Options

There are two site options for the park and ride near the Evergreen Station (see Figure 1-23).



- 1. Library Square. This park-and-ride site would be located along the east side of C Street and south of Evergreen Boulevard. It would accommodate up to 700 parking spaces in a multilevel belowground structure according to a future agreement on City-owned property associated with Library Square. Current design concepts suggest the park and ride most likely would be a joint-use parking facility for park-and-ride users and patrons of other uses on the ground or upper levels as negotiated as part of future decisions.
- 2. Columbia Credit Union. This park-and-ride site is an existing multistory garage that is located below the Columbia Credit Union office tower along the west side of C Street between 7th Street and 8th Street. The existing parking structure currently serves the office tower above it and the Regal City Center across the street. This would be a joint-use parking facility, not for the exclusive use of park-and-ride users, that could serve as additional or overflow parking if the 700 required parking spaces cannot be accommodated elsewhere.

#### 1.1.4.3 Active Transportation

Within the downtown Vancouver area, the shared-use path on the northbound (or eastern) bridge would exit the bridge at the SR 14 interchange, loop down on the east side of I-5 via a vertical spiral path, and then cross back below I-5 to the west side of I-5 to connect to the Waterfront Renaissance Trail on Columbia Street and into Columbia Way (see Figure 1-23). Access would be provided across state right of way beneath the new bridges to provide a connection between the recreational areas along the City's Columbia River waterfront east of the bridges and existing and future waterfront uses west of the bridges.

Active transportation components in the downtown Vancouver area would be similar without the C Street ramps and with the I-5 westward shift.

At Evergreen Boulevard, a community connector is proposed to be built over I-5 just south of Evergreen Boulevard and east of the Evergreen Station (see Figure 1-23). The structure is proposed to include off-street pathways for active transportation modes including pedestrians, bicyclists, and other micro-mobility modes, and public space and amenities to support the active transportation facilities. The primary intent of the Community Connector is to improve connections between downtown Vancouver on the west side of I-5 and the Vancouver National Historic Reserve on the east side.

### 1.1.5 Upper Vancouver (Subarea D)

This section discusses the geographic Subarea D shown in Figure 1-3. See Figure 1-24 for all highway and interchange improvements in Subarea D. Refer to Figure 1-3 for an overview of the geographic subareas.

#### 1.1.5.1 Highways, Interchanges, and Local Roadways

Within the upper Vancouver area, the IBR Program proposes improvements to three interchanges— Mill Plain, Fourth Plain, and SR 500—as described below.



#### MILL PLAIN BOULEVARD INTERCHANGE

The Mill Plain Boulevard interchange is north of the SR 14 interchange (see Figure 1-24). This interchange would be reconstructed as a tight-diamond configuration but would otherwise remain similar in function to the existing interchange. The ramp terminal intersections would be sized to accommodate high, wide heavy freight vehicles that travel between the Port of Vancouver and I-5. The off-ramp from I-5 northbound to Mill Plain Boulevard would diverge from the C-D road that would continue north, crossing over Mill Plain Boulevard, to provide access to Fourth Plain Boulevard via a C-D roadway. The off-ramp to Fourth Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross over Mill Plain Boulevard would be reconstructed and would cross ov

#### FOURTH PLAIN BOULEVARD INTERCHANGE

At the Fourth Plain Boulevard interchange (Figure 1-24), improvements would include reconstruction of the overpass of I-5 and the ramp terminal intersections. Northbound I-5 traffic exiting to Fourth Plain Boulevard would first exit to the northbound C-D roadway which provides off-ramp access to Fourth Plain Boulevard and Mill Plain Boulevard. The westbound SR 14 to northbound I-5 on-ramp also joins the northbound C-D roadway before continuing north past the Fourth Plain Boulevard and Mill Plain Boulevard off-ramps as an auxiliary lane. The southbound I-5 off-ramp to Fourth Plain Boulevard would be braided below the 39th Street on-ramp to southbound I-5. This change would eliminate the existing nonstandard weave between the SR 500 interchange and the off-ramp to Fourth Plain Boulevard. It would also eliminate the existing westbound SR 500 to Fourth Plain Boulevard offramp connection. The existing overcrossing of I-5 at 29th Street would be reconstructed to accommodate a widened I-5, provide adequate vertical clearance over I-5, and provide pedestrian and bicycle facilities.

#### SR 500 INTERCHANGE

The northern terminus of the I-5 improvements would be in the SR 500 interchange area (Figure 1-24). The improvements would primarily be to connect the Modified LPA to existing ramps. The off-ramp from I-5 southbound to 39th Street would be reconstructed to establish the beginning of the braided ramp to Fourth Plain Boulevard and restore the loop ramp to 39th Street. Ramps from existing I-5 northbound to SR 500 eastbound and from 39th Street to I-5 northbound would be partially reconstructed. The existing bridges for 39th Street over I-5 and SR 500 westbound to I-5 southbound would be retained. The 39th Street to I-5 southbound on-ramp would be reconstructed and braided over (i.e., grade separated or pass over) the new I-5 southbound off-ramp to Fourth Plain Boulevard.

The existing overcrossing of I-5 at 33rd Street would also be reconstructed to accommodate a widened I-5, provide adequate vertical clearance over I-5, and provide pedestrian and bicycle facilities.







BRT = bus rapid transit; TBD = to be determined



#### 1.1.5.2 Transit

There would be no LRT facilities in upper Vancouver. Proposed operational changes to bus service, including I-5 bus-on-shoulder service, are described in Section 1.1.7, Transit Operating Characteristics.

#### 1.1.5.3 Active Transportation

Several active transportation improvements would be made in Subarea D consistent with City of Vancouver plans and policies. At the Fourth Plain Boulevard interchange, there would be improvements to provide better bicycle and pedestrian mobility and accessibility; these include bicycle lanes, neighborhood connections, and a connection to the City of Vancouver's planned twoway cycle track on Fourth Plain Boulevard. The reconstructed overcrossings of I-5 at 29th Street and 33rd Street would provide pedestrian and bicycle facilities on those cross streets. No new active transportation facilities are proposed in the SR 500 interchange area. Active transportation improvements at the Mill Plain Boulevard interchange include buffered bicycle lanes and sidewalks, pavement markings, lighting, and signing.

### 1.1.6 Transit Support Facilities

#### 1.1.6.1 Ruby Junction Maintenance Facility Expansion

The TriMet Ruby Junction Maintenance Facility in Gresham, Oregon, would be expanded to accommodate the additional LRVs associated with the Modified LPA's LRT service (the Ruby Junction location relative to the study area is shown in Figure 1-25). Improvements would include additional storage for LRVs and maintenance materials and supplies, expanded LRV maintenance bays, expanded parking and employee support areas for additional personnel, and a third track at the northern entrance to Ruby Junction. Figure 1-25 shows the proposed footprint of the expansion.

The existing main building would be expanded west to provide additional maintenance bays. To make space for the building expansion, Eleven Mile Avenue would be vacated and would terminate in a new cul-de-sac west of the main building. New access roads would be constructed to maintain access to TriMet buildings south of the cul-de-sac.

The existing LRV storage yard, west of Eleven Mile Avenue, would be expanded to the west to accommodate additional storage tracks and a runaround track (a track constructed to bypass congestion in the maintenance yard). This expansion would require partial demolition of an existing TriMet building (just north of the LRV storage) and would require relocating the material storage yard to the properties just south of the south building.

All tracks in the west LRV storage yard would also be extended southward to connect to the proposed runaround track. The runaround track would connect to existing tracks near the existing south building. The connections to the runaround track would require partial demolition of an existing TriMet building plus full demolition of one existing building and partial demolition of another existing building on the private property west of the south end of Eleven Mile Avenue. The function of the existing TriMet building would either be transferred to existing modified buildings or to new replacement buildings on site.







EB = eastbound; LRV = light-rail vehicle; WB = westbound



The existing parking lot west of Eleven Mile Avenue would be expanded toward the south to provide more parking for TriMet personnel.

A third track would be needed at the north entrance to Ruby Junction to accommodate increased train volumes without decreasing service. The additional track would also reduce operational impacts during construction and maintenance outages for the yard. Constructing the third track would require reconstruction of Burnside Court east of Eleven Mile Avenue. An additional crossover would also be needed on the mainline track where it crosses Eleven Mile Avenue; it would require reconstruction of the existing track crossings for vehicles, bicycles, and pedestrians.

#### 1.1.6.2 Expo Center Overnight LRV Facility

An overnight facility for LRVs would be constructed on the southeast corner of the Expo Center property (as shown on Figure 1-8) to reduce deadheading between Ruby Junction and the northern terminus of the MAX Yellow Line extension. Deadheading occurs when LRVs travel without passengers to make the vehicles ready for service. The facility would provide a yard access track, storage tracks for approximately 10 LRVs, one building for light LRV maintenance, an operator break building, a parking lot for operators, and space for security personnel. This facility would necessitate relocation and reconstruction of the Expo Road entrance to the Expo Center (including the parking lot gates and booths). However, it would not affect existing Expo Center buildings.

The overnight facility would connect to the mainline tracks by crossing Expo Road just south of the existing Expo Center MAX Station. The connection tracks would require relocation of one or two existing LRT facilities, including a traction power substation building and potentially the existing communication building, which are both just south of the Expo Center MAX Station. Existing artwork at the station may require relocation.

#### 1.1.6.3 Additional Bus Bays at the C-TRAN Operations and Maintenance Facility

Three bus bays would be added to the C-TRAN operations and maintenance facility. These new bus bays would provide maintenance capacity for the additional express bus service on I-5 (see Section 1.1.7, Transit Operating Characteristics). Modifications to the facility would accommodate new vehicles as well as maintenance equipment.

### 1.1.7 Transit Operating Characteristics

#### 1.1.7.1 LRT Operations

Nineteen new LRVs would be purchased to operate the extension of the MAX Yellow Line. These vehicles would be similar to those currently used for the TriMet MAX system. With the Modified LPA, LRT service in the new and existing portions of the Yellow Line in 2045 would operate with 6.7-minute average headways (defined as gaps between arriving transit vehicles) during the 2-hour morning peak period. Mid-day and evening headways would be 15 minutes, and late-night headways would be 30 minutes. Service would operate between the hours of approximately 5 a.m. (first southbound train leaving Evergreen Station) and 1 a.m. (last northbound train arriving at the station), which is consistent with current service on the Yellow Line. LRVs would be deadheaded at Evergreen Station



before beginning service each day. A third track at this northern terminus would accommodate layovers.

#### 1.1.7.2 Express Bus Service and Bus on Shoulder

C-TRAN provides bus service that connects to LRT and augments travel between Washington and Oregon with express bus service to key employment centers in Oregon. Beginning in 2022, the main express route providing service in the IBR corridor, Route 105, had two service variations. One pattern provides service between Salmon Creek and downtown Portland with a single intermediate stop at the 99th Street Transit Center, and one provides service between Salmon Creek and downtown Portland with two intermediate stops: 99th Street Transit Center and downtown Vancouver. This route currently provides weekday service with 20-minute peak and 60-minute off-peak headways.

Once the Modified LPA is constructed, C-TRAN Route 105 would be revised to provide direct service from the Salmon Creek Park and Ride and 99th Street Transit Center to downtown Portland, operating at 5-minute peak headways with no service in the off-peak. The C-TRAN Route 105 intermediate stop service through downtown Vancouver would be replaced with C-TRAN Route 101, which would provide direct service from downtown Vancouver to downtown Portland at 10-minute peak and 30-minute off-peak headways.

Two other existing C-TRAN express bus service routes would remain unchanged after completion of the Modified LPA. C-TRAN Route 190 would continue to provide service from the Andresen Park and Ride in Vancouver to Marquam Hill in Portland. This route would continue to operate on SR 500 and I-5 within the study area. Route headways would be 10 minutes in the peak periods with no off-peak service. C-TRAN Route 164 would continue to provide service from the Fisher's Landing Transit Center to downtown Portland. This route would continue to operate within the study area only in the northbound direction during PM service to use the I-5 northbound high-occupancy vehicle lane in Oregon before exiting to eastbound SR 14 in Washington. Route headways would be 10 minutes in the peak and 30 minutes in the off-peak.

C-TRAN express bus Routes 105 and 190 are currently permitted to use the existing southbound inside shoulder of I-5 from 99th Street to the Interstate Bridge in Vancouver. However, the existing shoulders are too narrow for bus-on-shoulder use in the rest of the I-5 corridor in the study area. The Modified LPA would include inside shoulders on I-5 that would be wide enough (14 feet on the Columbia River bridges and 11.5 to 12 feet elsewhere on I-5) to allow northbound and southbound buses to operate on the shoulder, except where I-5 would have to taper to match existing inside shoulder widths at the north and south ends of the corridor. Figure 1-8, Figure 1-16, Figure 1-23, and Figure 1-24 show the potential bus-on-shoulder use over the Columbia River bridges. Bus on shoulder could operate on any of the Modified LPA bridge configurations and bridge types. Additional approvals (including a continuing control agreement), in coordination with ODOT, may be needed for buses to operate on the shoulder on the Oregon portion of I-5.

After completion of the Modified LPA, two C-TRAN express bus routes operating on I-5 through the study area would be able to use bus-on-shoulder operations to bypass congestion in the general-purpose lanes. C-TRAN Route 105 would operate on the shoulder for the full length of the study area. C-TRAN Route 190 would operate on the shoulder for the full length of the corridor except for the



distance required to merge into and out of the shoulder as the route exits from and to SR 500. These two express bus routes (105 and 190) would have a combined frequency of every 3 minutes during the 2045 AM and PM peak periods. To support the increased frequency of express bus service, eight electric double-decker or articulated buses would be purchased.

If the C Street ramps were removed from the SR 14 interchange, C-TRAN Route 101 could also use buson-shoulder operations south of Mill Plain Boulevard; however, if the C Street ramps remained in place, Route 101 could still use bus-on-shoulder operations south of the SR 14 interchange but would need to begin merging over to the C Street exit earlier than if the C Street ramps were removed. Route 101 would operate at 10-minute peak and 30-minute off-peak headways. C-TRAN Route 164 would not be anticipated to use bus-on-shoulder operations because of the need to exit to SR 14 from northbound I-5.

#### 1.1.7.3 Local Bus Route Changes

The TriMet Line 6 bus route would be changed to terminate at the Expo Center MAX Station, requiring passengers to transfer to the new LRT connection to access Hayden Island. TriMet Line 6 is anticipated to travel from Martin Luther King Jr. Boulevard through the newly configured area providing local connections to Marine Drive. It would continue west to the Expo Center MAX Station. Table 1-3 shows existing service and anticipated future changes to TriMet Line 6.

As part of the Modified LPA, several local C-TRAN bus routes would be changed to better complement the new light-rail extension. Most of these changes would reroute existing bus lines to provide a transfer opportunity near the new Evergreen Station. Table 1-3 shows existing service and anticipated future changes to C-TRAN bus routes. In addition to the changes noted in Table 1-3, other local bus route modifications would move service from Broadway to C Street. The changes shown may be somewhat different if the C Street ramps are removed.

Bus Route	Existing Route	Changes with Modified LPA
TriMet Line 6	Connects Goose Hollow, Portland City Center, N/NE Portland, Jantzen Beach and Hayden Island. Within the study area, service currently runs between Delta Park MAX Station and Hayden Island via I-5.	Route would be revised to terminate at the Expo Center MAX Station. Route is anticipated to travel from Martin Luther King Jr. Boulevard through the newly configured Marine Drive area, then continue west to connect via facilities on the west side of I-5 with the Expo Center MAX Station.

#### Table 1-3. Proposed TriMet and C-TRAN Bus Route Changes



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Bus Route	Existing Route	Changes with Modified LPA
C-TRAN Fourth Plain and Mill Plain bus rapid transit (The Vine)	Runs between downtown Vancouver and the Vancouver Mall Transit Center via Fourth Plain Boulevard, with a second line along Mill Plain Boulevard. In the study area, service currently runs along Washington and Broadway Streets through downtown Vancouver.	Route would be revised to begin/end near the Evergreen Station in downtown Vancouver and provide service along Evergreen Boulevard to Fort Vancouver Way, where it would travel to or from Mill Plain Boulevard or Fourth Plain Boulevard depending on clockwise/counterclockwise operations. The Fourth Plain Boulevard route would continue to serve existing Vine stations beyond Evergreen Boulevard.
C-TRAN #2 Lincoln	Connects the 99th Street Transit Center to downtown Vancouver via Lincoln and Kaufman Avenues. Within the study area, service currently runs along Washington and Broadway Streets between 7th and 15th Streets in downtown Vancouver.	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #25 St. Johns	Connects the 99th Street Transit Center to downtown Vancouver via St. Johns Boulevard and Fort Vancouver Way. Within the study area, service currently runs along Evergreen Boulevard, Jefferson Street/Kaufman Avenue, 15th Street, and Franklin Street in downtown Vancouver.	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #30 Burton	Connects the Fisher's Landing Transit Center with downtown Vancouver via 164th/162nd Avenues and 18th, 25th, 28th, and 39th Streets. Within the study area, service currently runs along McLoughlin Boulevard and on Washington and Broadway Streets between 8th and 15th Streets.	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #60 Delta Park Regional	Connects the Delta Park MAX station in Portland with downtown Vancouver via I-5. Within the study area, service currently runs along I-5, Mill Plain Boulevard, and Broadway Street.	Route would be discontinued.

# 1.1.8 Tolling

Tolling cars and trucks that would use the new Columbia River bridges is proposed as a method to help fund the bridge construction and future maintenance, as well as to encourage alternative mode choices for trips across the Columbia River. Federal and state laws set the authority to toll the I-5 crossing. The IBR Program plans to toll the I-5 river bridge under the federal tolling authorization



program codified in 23 U.S. Code Section 129 (Section 129). Section 129 allows public agencies to impose new tolls on federal-aid interstate highways for the reconstruction or replacement of toll-free bridges or tunnels. In 2023, the Washington State Legislature authorized tolling on the Interstate Bridge, with toll rates and policies to be set by the Washington State Transportation Commission (WSTC). In Oregon, the legislature authorized tolling giving the Oregon Transportation Commission the authority to toll I-5, including the ability to set the toll rates and policies. Subsequently, the Oregon Transportation Commission (OTC) is anticipated to review and approve the I-5 tollway project application that would designate the Interstate Bridge as a "tollway project" in 2024. At the beginning of 2024, the OTC and the WSTC entered into a bi-state tolling agreement to establish a cooperative process for setting toll rates and policies. This included the formation of the I-5 Bi-State Tolling Subcommittee consisting of two commissioners each from the OTC and WSTC and tasked with developing toll rate and policy recommendations for joint consideration and adoption by each state's commission. Additionally, the two states plan to enter into a separate agreement guiding the sharing and uses of toll revenues, including the order of uses (flow of funds) for bridge construction, debt service, and other required expenditures. WSDOT and ODOT also plan to enter into one or more agreements addressing implementation logistics, toll collection, and operations and maintenance for tolling the bi-state facility.

The Modified LPA includes a proposal to apply variable tolls on vehicles using the Columbia River bridges with the toll collected electronically in both directions. Tolls would vary by time of day with higher rates during peak travel periods and lower rates during off-peak periods. The IBR Program has evaluated multiple toll scenarios generally following two different variable toll schedules for the tolling assessment. For purposes of this NEPA analysis, the lower toll schedule was analyzed with tolls assumed to range between \$1.50 and \$3.15 (in 2026 dollars as representative of when tolling would begin) for passenger vehicles with a registered toll payment account. Medium and heavy trucks would be charged a higher toll than passenger vehicles and light trucks. Passenger vehicles and light trucks without a registered toll payment account would pay an additional \$2.00 per trip to cover the cost of identifying the vehicle owner from the license plate and invoicing the toll by mail.

The analysis assumes that tolling would commence on the existing Interstate Bridge—referred to as pre-completion tolling—starting April 1, 2026. The actual date pre-completion tolling begins would depend on when construction would begin. The traffic and tolling operations on the new Columbia River bridges were assumed to commence by July 1, 2033. The actual date that traffic and tolling operations on the new bridges begin would depend on the actual construction completion date. During the construction period, the two commissions may consider toll-free travel overnight on the existing Interstate Bridge, as was analyzed in the Level 2 Toll Traffic and Revenue Study, for the hours between 11 p.m. and 5 a.m. This toll-free period could help avoid situations where users would be charged during lane or partial bridge closures where construction delays may apply. Once the new I-5 Columbia River bridges open, twenty-four-hour tolling would begin.

Tolls would be collected using an all-electronic toll collection system using transponder tag readers and license plate cameras mounted to structures over the roadway. Toll collection booths would not be required. Instead, motorists could obtain a transponder tag and set up a payment account that would automatically bill the account holder associated with the transponder each time the vehicle crossed the bridge. Customers without transponders, including out-of-area vehicles, would be tolled by a license plate recognition system that would bill the address of the owner registered to that



vehicle's license plate. The toll system would be designed to be nationally interoperable. Transponders for tolling systems elsewhere in the country could be used to collect tolls on I-5, and drivers with an account and transponder tag associated with the Interstate Bridge could use them to pay tolls in other states for which reciprocity agreements had been developed. There would be new signage, including gantries, to inform drivers of the bridge toll. These signs would be on local roads, I-5 on-ramps, and on I-5, including locations north and south of the bridges where drivers make route decisions (e.g., I-5/I-205 junction and I-5/I-84 junction).

### 1.1.9 Transportation System- and Demand-Management Measures

Many well-coordinated transportation demandmanagement and system-management programs are already in place in the Portland-Vancouver metropolitan region. In most cases, the impetus for the programs comes from state regulations: Oregon's Employee Commute Options rule and Washington's Commute Trip Reduction law (described in the sidebar).

The physical and operational elements of the Modified LPA provide the greatest transportation demandmanagement opportunities by promoting other modes to fulfill more of the travel needs in the corridor. These include:

- Major new light-rail line in exclusive right of way, as well as express bus routes and bus routes that connect to new light-rail stations.
- I-5 inside shoulders that accommodate express buses.
- Modern bicycle and pedestrian facilities that accommodate more bicyclists and pedestrians and improve connectivity, safety, and travel time.
- Park-and-ride facilities.
- A variable toll on the new Columbia River bridges.

In addition to these fundamental elements of the Modified LPA, facilities and equipment would be implemented that could help existing or expanded transportation system management measures

## State Laws to Reduce Commute Trips

Oregon and Washington have both adopted regulations intended to reduce the number of people commuting in single-occupancy vehicles (SOVs). Oregon's Employee Commute Options Program, created under Oregon Administrative Rule 340-242-0010, requires employers with over 100 employees in the greater Portland area to provide commute options that encourage employees to reduce auto trips to the work site. Washington's 1991 Commute Trip Reduction (CTR) Law, updated as the 2006 CTR Efficiency Act (Revised Code of Washington §70.94.521) addresses traffic congestion, air pollution, and petroleum fuel consumption. The law requires counties and cities with the greatest traffic congestion and air pollution to implement plans to reduce SOV demand. An additional provision mandates "major employers" and "employers at major worksites" to implement programs to reduce SOV use.



maximize the capacity and efficiency of the system. These include:

- Replacement or expanded variable message signs in the study area. These signs alert drivers to incidents and events, allowing them to seek alternate routes or plan to limit travel during periods of congestion.
- Replacement or expanded traveler information systems with additional traffic monitoring equipment and cameras.
- Expanded incident response capabilities, which help traffic congestion to clear more quickly following accidents, spills, or other incidents.
- Queue jumps or bypass lanes for transit vehicles where multilane approaches are provided at ramp signals for on-ramps. Locations for these features will be determined during the detailed design phase.
- Active traffic management including strategies such as ramp metering, dynamic speed limits, and transit signal priority. These strategies are intended to manage congestion by controlling traffic flow or allowing transit vehicles to enter traffic before single-occupant vehicles.

# 1.2 Modified LPA Construction

The following information on the construction activities and sequence follows the information prepared for the CRC LPA. Construction durations have been updated for the Modified LPA. Because the main elements of the IBR Modified LPA are similar to those in the CRC LPA (i.e., multimodal river crossings and interchange improvements), this information provides a reasonable assumption of the construction activities that would be required.

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

Electronic tolling infrastructure would be constructed and operational on the existing Interstate Bridge by the start of construction on the new Columbia River bridges. The toll rates and policies for tolling (including pre-completion tolling) would be determined after a more robust analysis and public process by the OTC and WSTC (refer to Section 1.1.8, Tolling).

### 1.2.1 Construction Components and Duration

Table 1-4 provides the estimated construction durations and additional information of Modified LPA components. The estimated durations are shown as ranges to reflect the potential for Program funding to be phased over time. In addition to funding, contractor schedules, regulatory restrictions on in-water work and river navigation considerations, permits and approvals, weather, materials, and equipment could all influence construction duration and overlap of construction of certain components. Certain work below the ordinary high-water mark of the Columbia River and North

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Portland Harbor would be restricted to minimize impacts to species listed under the Endangered Species Act and their designated critical habitat.

Throughout construction, active transportation facilities and three lanes in each direction on I-5 (accommodating personal vehicles, freight, and buses) would remain open during peak hours, except for short intermittent restrictions and/or closures. Advanced coordination and public notice would be given for restrictions, intermittent closures, and detours for highway, local roadway, transit, and active transportation users (refer to the Transportation Technical Report, for additional information). At least one navigation channel would remain open throughout construction. Advanced coordination and notice would be given for restrictions or intermittent closures to navigation channels as required.

Component	Estimated Duration	Notes
Columbia River bridges	4 to 7 years	<ul> <li>Construction is likely to begin with the main river bridges.</li> </ul>
		<ul> <li>General sequence would include initial preparation and installation of foundation piles, shaft caps, pier columns, superstructure, and deck.</li> </ul>
North Portland Harbor bridges	4 to 10 years	• Construction duration for North Portland Harbor bridges is estimated to be similar to the duration for Hayden Island interchange construction. The existing North Portland Harbor bridge would be demolished in phases to accommodate traffic during construction of the new bridges.
Hayden Island interchange	4 to 10 years	<ul> <li>Interchange construction duration would not necessarily entail continuous active construction. Hayden Island work could be broken into several contracts, which could spread work over a longer duration.</li> </ul>
Marine Drive interchange	4 to 6 years	• Construction would need to be coordinated with construction of the North Portland Harbor bridges.
SR 14 interchange	4 to 6 years	<ul> <li>Interchange would be partially constructed before any traffic could be transferred to the new Columbia River bridges.</li> </ul>
Demolition of the existing Interstate Bridge	1.5 to 2 years	• Demolition of the existing Interstate Bridge could begin only after traffic is rerouted to the new Columbia River bridges.

#### Table 1-4. Construction Activities and Estimated Duration

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Component	Estimated Duration	Notes
Three interchanges north of SR 14	3 to 4 years for all three	<ul> <li>Construction of these interchanges could be independent from each other and from construction of the Program components to the south.</li> <li>More aggressive and costly staging could shorten this timeframe.</li> </ul>
Light-rail	4 to 6 years	• The light-rail crossing would be built with the Columbia River bridges. Light-rail construction includes all of the infrastructure associated with light-rail transit (e.g., overhead catenary system, tracks, stations, park and rides).
Total construction timeline	9 to 15 years	• Funding, as well as contractor schedules, regulatory restrictions on in-water work and river navigation considerations, permits and approvals, weather, materials, and equipment, could all influence construction duration.

### 1.2.2 Potential Staging Sites and Casting Yards

Equipment and materials would be staged in the study area throughout construction generally within existing or newly purchased right of way, on land vacated by existing transportation facilities (e.g., I-5 on Hayden Island), or on nearby vacant parcels. However, at least one large site would be required for construction offices, to stage the larger equipment such as cranes, and to store materials such as rebar and aggregate. Criteria for suitable sites include large, open areas for heavy machinery and material storage, waterfront access for barges (either a slip or a dock capable of handling heavy equipment and material) to convey material to the construction zone, and roadway or rail access for landside transportation of materials by truck or train.

Two potential major staging sites have been identified (see Figure 1-8 and Figure 1-23). One site is located on Hayden Island on the west side of I-5. A large portion of this parcel would be required for new right of way for the Modified LPA. The second site is in Vancouver between I-5 and Clark College. Other staging sites may be identified during the design process or by the contractor. Following construction of the Modified LPA, the staging sites could be converted for other uses.

In addition to on-land sites, some staging activities for construction of the new Columbia River and North Portland Harbor bridges would take place on the river itself. Temporary work structures, barges, barge-mounted cranes, derricks, and other construction vessels and equipment would be present on the river during most or all of the bridges' construction period. The IBR Program is working with USACE and USCG to obtain necessary clearances for these activities.

A casting or staging yard could also be required for construction of the overwater bridges if a precast concrete segmental bridge design is used. A casting yard would require access to the river for barges, a slip or a dock capable of handling heavy equipment and material, a large area suitable for a concrete



batch plant and associated heavy machinery and equipment, and access to a highway or railway for delivery of materials. As with the staging sites, casting or staging yard sites may be identified as the design progresses or by the contractor and would be evaluated via a NEPA re-evaluation or supplemental NEPA document for potential environmental impacts at that time.

# 1.3 No-Build Alternative

The No-Build Alternative illustrates how transportation and environmental conditions would likely change by the year 2045 if the Modified LPA is not built. This alternative makes the same assumptions as the Modified LPA regarding population and employment growth through 2045, and it assumes that the same transportation and land use projects in the region would occur as planned.

Regional transportation projects included in the No-Build Alternative are those in the financially constrained 2018 *Regional Transportation Plan* (2018 RTP) adopted in December 2018 by the Metro Council (Metro 2018) and in March 2019 (RTC 2019) by the Southwest Washington Regional Transportation Council (RTC) Board of Directors is referred to as the 2018 RTP in this report. The 2018 RTP has a planning horizon year of 2040 and includes projects from state and local plans necessary to meet transportation needs over this time period; financially constrained means these projects have identified funding sources. The Transportation Technical Report lists the projects included in the financially constrained 2018 RTP.

The implementation of regional and local land use plans is also assumed as part of the No-Build Alternative. For the IBR Program analysis, population and employment assumptions used in the 2018 RTP were updated to 2045 in a manner consistent with regional comprehensive and land use planning. In addition to accounting for added growth, adjustments were made within Portland to reallocate the households and employment based on the most current update to Portland's comprehensive plan, which was not complete in time for inclusion in the 2018 RTP.

Other projects assumed as part of the No-Build Alternative include major development and infrastructure projects that are in the permitting stage or partway through phased development. These projects are discussed as reasonably foreseeable future actions in the IBR Cumulative Effects Technical Report. They include the Vancouver Waterfront project, Terminal 1 development, the Renaissance Boardwalk, the Waterfront Gateway Project, improvements to the levee system, several restoration and habitat projects, and the Portland Expo Center.

In addition to population and employment growth and the implementation of local and regional plans and projects, the No-Build Alternative assumes that the existing Interstate Bridge would continue to operate as it does today. As the bridge ages, needs for repair and maintenance would potentially increase, and the bridge would continue to be at risk of mechanical failure or damage from a seismic event.



# 2. METHODS

# 2.1 Introduction

This chapter describes the methods that were used to support the IBR Program environmental evaluation. This report outlines the approach to identify and evaluate the beneficial and adverse impacts of the Modified LPA on local neighborhoods and associated populations.

This report includes a description of the study area, relevant laws and regulations, and methods for collecting data, assessing impacts, and evaluating possible mitigation measures. The analysis is designed to comply with the NEPA and relevant federal, state, and local laws. These methods are based on those developed for the CRC project, which completed the NEPA process with a signed ROD in 2011<sup>9</sup> and NEPA reevaluations in 2012 (to evaluate an increase in bridge clearance) and 2013 (to evaluate phased construction). The CRC project was discontinued in 2014; the IBR Program is evaluating changes in regulations, policy, and physical conditions that have occurred since the completion of the ROD. The updated methods were used to evaluate the potential environmental impacts associated with the Modified LPA and will be compared to the impacts disclosed in the CRC project ROD.

The methods have been updated for the IBR Program in the following ways:

- Updated effects guidelines to reflect current Social and Community Effects guidelines from section 458.04 of the Washington State Department of Transportation (WSDOT) Environmental Manual (June 2020).
- Included additional local and neighborhood plans that have been completed since the CRC project analysis:
  - > North Interstate Corridor Plan, adopted 2008.
  - > Rose Village Neighborhood Action Plan, accepted 2012.
  - > Hayden Island Plan, adopted 2009.
- Included additional local and neighborhood plans that were excluded from the CRC project analysis but are within the study area:
  - > Vancouver City Center Vision & Subarea Plan, adopted 2007.
  - > Kenton Downtown Plan, adopted 2001.
- Updated local and neighborhood plans that have been revised since the CRC project analysis:
  - > Interstate Corridor Urban Renewal Area (URA), amended 2011.
  - > Arnada Neighborhood Action Plan, updated 2009.

<sup>&</sup>lt;sup>9</sup> The ROD and supporting environmental documents can be found on the Washington Department of Transportation's website: <u>https://www.wsdot.wa.gov/accountability/ssb5806/environmental-process-and-permitting.htm</u>.



- > Central Park Neighborhood Action Plan, updated 2010.
- > Esther Short Neighborhood Action Plan, updated 2006.<sup>10</sup>
- > Hough Neighborhood Action Plan, updated 2009.
- > Lincoln Neighborhood Action Plan, updated 2011.
- > West Minnehaha Neighborhood Action Plan, updated 2011.

# 2.2 Study Area

The IBR Program study area runs along a 5-mile segment of Interstate 5 (I-5), approximately between the SR 500 interchange in Washington and the I-5/Columbia Boulevard interchange in Oregon. Most physical changes associated with the Program would occur in this area, though mitigation could still occur outside of it. Temporary construction easements would be established directly adjacent to the proposed construction areas, while larger staging areas and casting yards could be located upstream or downstream of the new Columbia River bridges. The CRC LPA and the IBR Modified LPA also include expansion of the Ruby Junction Maintenance Facility in Gresham, Oregon. The study area is shown in Figure 2-1 and is described in more detail below.

<sup>&</sup>lt;sup>10</sup> The CRC project analysis referenced the 1998 Esther Short Neighborhood Action Plan.


#### Figure 2-1. Neighborhoods Study Area





Analysis for the neighborhoods and population assessment is organized at a neighborhood level. The Program team conducted an in-depth analysis of neighborhoods that are expected to experience direct construction or operational effects due to the Program. The neighborhoods within the study area are listed below, and Figure 2-1 maps these neighborhoods. Neighborhoods not specified are not expected to experience direct construction or operational effects from the Modified LPA.

- Vancouver Neighborhoods
  - > Arnada
  - Central Park
  - Columbia Way
  - Esther Short
  - Hough
  - Hudson's Bay
  - Lincoln
  - > Rose Village
  - Shumway
  - West Minnehaha

- Portland Neighborhoods
  - Bridgeton
  - East Columbia
  - Hayden Island
  - Kenton
- Gresham Neighborhoods
  - Rockwood

The study area is the area most likely to experience direct impacts from construction and operation of the proposed Program. Most direct physical changes would occur in this area, though mitigation could still occur outside of it. The study area is based on the area of potential impact from the CRC project. The IBR analysis focuses on neighborhoods that intersect with or are located within the study area (see Figure 2-1 and the list above). Technical reports for related disciplines were also reviewed to determine whether any impacts would occur outside of the study area. Related disciplines are listed in Section 2.5.10.

### 2.3 Effects Guidelines

The Program team considered the following in evaluating the Modified LPA's potential effects on neighborhoods and populations:

- Will the Program displace people or community resources, including businesses?
- Will the Program create direct or indirect impacts to social services by displacing them?<sup>11</sup>
- Will the Program separate neighborhood residents from community resources such as educational, religious, health care, day care,<sup>11</sup> cultural, or recreational facilities, and/or commercial services?<sup>12</sup>

<sup>&</sup>lt;sup>11</sup> Updated to reflect current Social and Community Effects guidelines from section 458.04 of Washington State Department of Transportation's (WSDOT's) Environmental Manual (June 2020).

<sup>&</sup>lt;sup>12</sup> Separation of a neighborhood from its community resources may be caused by operational changes, such as rerouting traffic, pedestrian, or transit service, as well as physical barriers, such as new noise barriers or roadways.



- Will the Program change travel patterns, travel time, or accessibility for all modes, including public transit, bicycle, and pedestrian movement, such that it will affect access to community resources?<sup>11</sup>
- Will the Program change community cohesion?<sup>13</sup>
- Is the Program consistent with existing neighborhood plan goals?

Methods for analysis of these factors are described in Section 2.6.

### 2.4 Relevant Laws and Regulations

Federal and local laws and regulations that potentially affect the definition of impacts to neighborhoods and populations are listed below. Other laws and regulations relating to neighborhoods and population are addressed in the Land Use Technical Report, Environmental Justice Technical Report, and Acquisitions Technical Report. Those regulations are not included in this report, as they directly relate to other disciplines.

Some local plans, including Vancouver's neighborhood plans, are not officially adopted by a local jurisdiction. Both adopted and unadopted plans will be reviewed, with greater consideration given to adopted plans and policies.

### 2.4.1 Federal

#### 2.4.1.1 Federal Aid Highway Act. 1970 (Public Law 91-605, § 1713)

This act specifies the social and economic impacts that must be taken into account in federally funded highway projects:

- Air, noise and water pollution.
- Destruction or disruption of man-made resources, aesthetic values, community cohesion, and availability of public facilities and services.
- Adverse employment effects, and tax and property value losses.
- Injurious displacement of people, businesses, and farms.
- Disruption of desirable community and regional growth.

This technical report focuses specifically on potential impacts to community cohesion.

<sup>&</sup>lt;sup>13</sup> Changes in community cohesion may include major displacements, splitting or isolating a portion of a neighborhood or minority and/or low-income populations from community facilities, separation from services, impacts to traffic circulation, reduction in neighborhood activities, generating new development, or inconsistency with neighborhood plan goals. Updated to reflect current Social and Community Effects guidelines from section 458.04 of WSDOT's Environmental Manual (June 2020). Effects on minority and/or low-income populations are covered in the Environmental Justice Technical Report.



# Americans with Disabilities Act of 1990, (Public Law 101-336, 42 United States Code 12101-12213). July 26, 1990. Title II – Public Services; and Title III – Public Accommodations and Services Operated by Private Entities

This act states: "No qualified individual with a disability shall, by reason of such disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination by a department, agency, special purpose district, or other instrumentality of a State or local government." It provides enforceable standards to address discrimination against individuals with disabilities.

This technical report considers potential impacts to people with disabilities in its analyses.

#### 2.4.1.3 Age Discrimination Act of 1975, 42 United States Code 6101

This act provides that "No person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." It adds "age" as a protected group with wording similar to Title VI of the Civil Rights Act of 1964. It prohibits discrimination based on age. See also 10 Code of Federal Regulations 1040.1 et seq. and 45 Code of Federal Regulations 90.1 et seq.

This technical report considers potential impacts to elderly people in its analyses.

### 2.4.2 Local

Plans and policies that primarily entail goals and objectives related to land use planning are covered in the Land Use Technical Report.

#### 2.4.2.1 City of Portland, Bureau of Planning. 1993. Adopted Albina Community Plan

The Albina Community Plan, adopted in 1993, serves as a framework for the inner north and northeast Portland neighborhoods, including most of the neighborhoods within the study area. The Albina Community Plan provides guidance for neighborhoods within the district on land use, transportation, and public service strategies. The Albina Community Plan was consulted to determine whether the Modified LPA falls within the framework of the plan.

#### 2.4.2.2 City of Portland, Prosper Portland. Amended 2011. Interstate Corridor Urban Renewal Area

The Prosper Portland Interstate Corridor URA encompasses 3,990 acres of inner north and northeast Portland, with I-5 running through it. The URA occupies portions of 17 neighborhoods including Bridgeton and Kenton. The Interstate URA's goals and objectives related to neighborhoods and community (housing, transportation, parks and open space, and community facilities) were consulted to determine whether the Modified LPA complies with or contradicts them.

#### 2.4.2.3 City of Portland, Bureau of Planning. 2008. Adopted North Interstate Corridor Plan

The North Interstate Corridor Plan establishes a long-term vision for the Interstate Avenue corridor to fulfill community and regional aspirations along the then-recently built MAX light-rail line. The plan



was developed through a year-long public process. Its framework of implementation strategies includes urban design concepts, zoning and regulatory updates, transportation strategies, and community design guidelines. The North Interstate Corridor Plan was consulted to determine whether the Modified LPA supports or conflicts with the plan.

## 2.4.2.4 City of Vancouver, Community and Economic Development. 2007. Adopted Vancouver City Center Vision & Subarea Plan

The Vancouver City Center Vision & Subarea Plan is intended to "foster and guide continued growth of the approximately 130-block City Center area of Vancouver." The plan area overlaps with the neighborhoods of Arnada, Esther Short, and Hough. The plan defines a vision for this area of downtown Vancouver, along with land use and transportation policies and recommendations to achieve the vision. It includes policies specifically related to I-5 and the Columbia River bridges, with attention to how I-5 impacts downtown land use and multimodal transportation access. Among other things, the plan encourages residential development, support services, arts and culture, and improved transportation connections to support communities in the plan area. The Vancouver City Center Vision & Subarea Plan was consulted to determine whether the Modified LPA supports or conflicts with the plan.

#### 2.4.2.5 Neighborhood Plans

Neighborhood plans were reviewed and summarized for neighborhoods within the study area in Vancouver and Portland that have official plans: Arnada, Central Park, Esther Short, Hough, Hudson's Bay, Lincoln, Rose Village, Shumway, West Minnehaha, Bridgeton, Hayden Island, and Kenton. The Columbia Way neighborhood in Vancouver and the East Columbia neighborhood in Portland currently do not have official neighborhood plans.

Neighborhood plans were developed under the auspices of the Vancouver Office of Neighborhoods and the Portland Bureau of Planning. Within Vancouver, neighborhood plans are used as guidance but do not have the force of law, as comprehensive plans do. Within Portland, neighborhood plan goals are adopted as part of the comprehensive plan.

Section 2.5 lists the applicable goals for each neighborhood to help identify inconsistencies with plan goals once the Modified LPA is defined. The following neighborhood plans were reviewed:

- City of Vancouver:
  - > Arnada Neighborhood Action Plan. Office of Neighborhoods. 2009.
  - > Central Park Neighborhood Action Plan. Office of Neighborhoods. 2010.
  - > Esther Short Neighborhood Action Plan. Office of Neighborhoods. 2006.
  - > Hough Neighborhood Action Plan. Office of Neighborhoods. 2009.
  - > Hudson's Bay Neighborhood Action Plan. Office of Neighborhoods. 1998.
  - > Lincoln Neighborhood Action Plan. Office of Neighborhoods. 2011.
  - > Rose Village Neighborhood Action Plan. Office of Neighborhoods. 2012.
  - > Shumway Neighborhood Action Plan. Office of Neighborhoods. 1998.



- > West Minnehaha Neighborhood Action Plan. Office of Neighborhoods. 2011.
- City of Portland:
  - > Adopted Bridgeton Neighborhood Plan. Bureau of Planning. 1997.
  - > Adopted Hayden Island Plan. Bureau of Planning. 2009.
  - > Adopted Kenton Downtown Plan. Bureau of Planning. 2001.
  - > Adopted Kenton Neighborhood Plan. Bureau of Planning. 1993.

### 2.5 Data Collection Methods

### 2.5.1 Contacts

Analyses of neighborhood and population impacts were accomplished in part through consultation with representatives from the Office of Neighborhoods in Vancouver and the Office of Community and Civic Life in Portland. Representatives from these jurisdictions helped provide more-detailed information on neighborhood demographics, cohesion, and community resources. Planners from Vancouver and Portland were also contacted for information on long-range planning efforts taking place in the neighborhoods.

### 2.5.2 Neighborhood Associations

As part of the Program's ongoing community outreach effort, IBR Program staff have coordinated with neighborhood associations and their representatives to elicit input about the Modified LPA. Coordination with neighborhood associations in neighborhoods that intersect the study area is used to identify locally important community resources and discuss potential impacts to neighborhood cohesion due to project construction and/or operation.

### 2.5.3 Public Involvement Activities

The IBR Program team uses public events as an opportunity to learn more about the neighborhoods and populations expected to be impacted by the Program. This will be coordinated with outreach activities as the Program progresses. Outreach efforts include communities with limited English proficiency and other minority and/or low-income populations in the area.

### 2.5.4 Community Advisory Group and Equity Advisory Group

To achieve the goal of meaningful public involvement in the Program development process, the Program team formed two advisory groups: the Community Advisory Group and Equity Advisory Group. Group members represent the diverse interests and perspectives of Vancouver, Portland, and Hayden Island neighborhoods. Input from these groups has helped identify community resources, aspects important to neighborhood cohesion, and potential challenges to cohesion.





### 2.5.5 Community Resource Mapping

Community resources were identified through a combination of geographic analysis and community engagement. The Program team reviewed the community resources identified in the CRC project planning process, updated them to reflect current conditions, and then refined them based on input from community engagement.

Impact determinations are based on observations, local interviews, and professional judgment. The following is a list of potential community resources and neighborhood activities that could be impacted by the Program.

- Community Resources
  - > Parks and playgrounds
  - > Public and private schools
  - > Recreational facilities
  - Libraries
  - > Community centers
  - > Commercial areas such as eateries, cafés or shopping centers
  - Places of worship
  - > Day care facilities
  - > Health care facilities
  - Neighborhood Activities
    - > Fairs, block parties, or trash pickup
    - > Publication of neighborhood newsletters

#### 2.5.6 Spatial Analysis

Geographical information system (GIS) data from Metro's Regional Land Information System and Clark County's GIS service, ClarkView, provided the names, locations, and boundaries of neighborhoods within the study area.

### 2.5.7 Census Data

The following data from the most current U.S. Census helped to determine the population and demographics for each neighborhood within the study area:

- Total population.
- Percentage of minority and ethnicity populations compared to city and county percentages.
- Percentage of population with income below the poverty level compared to city and county percentages.
- Percentage of population with disabilities compared to city and county percentages.
- Median home value compared to city and county median home values.



- Percentage of households with five or more residents compared to city and county percentages.
- Percentage of owner-occupied housing compared to city and county percentages.
- Percentage of housing units with no vehicle compared to city and county percentages.
- Age distributions compared to city and county distributions.

Census data were considered alongside supplemental data, including input from public meetings and community outreach, to help the Program team better understand each neighborhood's character and which concerns are important to each community.

### 2.5.8 Additional Community Context

Historic context statements for the Hough District nomination to the Washington Heritage Register and the Esther Short Neighborhood Action Plan were reviewed, as well as other applicable documents describing neighborhood histories identified through interviews with Vancouver representatives or contained within neighborhood plans.

The Albina Community Plan was reviewed for information on the history of Portland's Black community.

TriMet's Community History Project, Intersections (2003), was referenced for oral histories of North Portland neighborhoods. The book discusses such events as the Vanport Floods, construction of the Memorial Coliseum, and development of Swan Island, as well as the impacts these events had on surrounding neighborhoods.

Carl Abbott's book *Greater Portland* was reviewed for further historical references, including information on the construction of I-5 and relevant demographic information about North Portland neighborhoods.

### 2.5.9 Crime Statistics

Crime rate statistics for the neighborhoods or precincts were determined by contacting the Clark County Sheriff's Office Crime Analysis Unit, City of Vancouver Police Department, City of Gresham Police Department, and the Portland Police Bureau.

### 2.5.10 Other Technical Reports

Data for this technical report were also sourced from other technical reports. The following technical reports were reviewed for neighborhoods and population information, as described below:

- The Acquisitions Technical Report describes the potential land acquisitions, displacements, and relocations necessary for the Program, as well as available housing in the area and the housing needs of displaced people.
- The Air Quality Technical Report estimates the effects of air pollution and air toxics in neighborhoods.



- The Economics Technical Report describes effects on local and regional businesses located in the neighborhoods.
- The Ecosystems Technical Report assesses effects on aquatic and terrestrial species and habitats including trees and vegetation.
- The Equity Technical Report describes the Program's efforts to center equity in the Program's process and outcomes.
- The Environmental Justice Technical Report evaluates high and adverse impacts to neighborhoods with low-income and minority populations.
- The Historic Built Environment Technical Report identifies historic resources within the neighborhoods that may contribute to neighborhood cohesion.
- The Land Use Technical Report identifies comprehensive plan designations, zoning codes, and other applicable land use laws for the neighborhoods.
- The Noise and Vibration Technical Report describes the effects of noise levels in the neighborhoods.
- The Parks and Recreation Technical Report identifies parks within neighborhoods that serve as resources to the community.
- The Public Services Technical Report identifies important resources within neighborhoods, such as hospitals and fire stations.
- The Transportation Technical Report identifies effects on traffic circulation patterns on local and collector streets. It also identifies effects on transit service, including changes to transit routes, level of service, ridership capacity, and frequency of stations. This report includes crash data for roadways within the study area.
- The Visual Quality Technical Report identifies viewsheds and visual resources within the neighborhoods.

### 2.5.11 Summary of Information Sources

Table 2-1 summarizes the information sources that were used to inform the analysis of neighborhood and population impacts.

Table 2-1. Summary of	Information Sources

Source	Information to Be Used
Metro Regional Land Information System	Names, locations, and boundaries of neighborhoods within the study area.
Clark County GIS	Names, locations, and boundaries of neighborhoods within the study area.

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Source	Information to Be Used			
U.S. Census Bureau year 2020 data if	Total population.			
available, otherwise 2010 data	Percentage of minority and ethnicity populations, compared to city and county percentages.			
	Age distributions, compared to city and county distributions.			
	Percentage of population with income below the poverty level, compared to city and county percentages.			
	Percentage of population with disabilities, compared to city and county percentages.			
	Median home value, compared to city and county median home values.			
	Percentage of households with five or more residents, compared to city and county percentages.			
	Percentage of owner-occupied housing, compared to city and county percentages.			
	Percentage of housing units with no vehicle, compared to city and county percentages.			
Clark County Sheriff's Office Crime Analysis Unit	Crime rate statistics.			
City of Gresham Police Department	Crime rate statistics.			
City of Portland Police Bureau	Crime rate statistics.			
City of Vancouver Police Department	Crime rate statistics.			
Vancouver Office of Neighborhoods	Information on neighborhood demographics, cohesion, and community resources.			
Portland Office of Community and Civic Life	Information on neighborhood demographics, cohesion, and community resources.			
City of Vancouver Office of Long-Range Planning	Information on neighborhood demographics, cohesion, and community resources.			
City of Portland Bureau of Planning	Information on neighborhood demographics, cohesion, and community resources.			
Alternatives Design	Alternatives designs in relation to neighborhoods and accessibility.			



Source	Information to Be Used
Traffic Models	Traffic counts for preconstruction traffic circulation patterns, modeled traffic circulation patterns for during and post construction.
Preconstruction Land Use Survey	Preconstruction land use survey to identify existing land use before potential displacement.

### 2.6 Analysis Methods Approach

This section describes the methods employed to measure impacts to neighborhoods and population. This approach is summarized in Table 2-2 with a list of performance measures. The subsections below provide additional detail.

#### Table 2-2. Summary of Analysis Approach

<b>Evaluation Category</b>	Measure	Data Sources			
Displacements	Assess short- and long-term property impacts to populations, businesses, and other community resources.	<ul><li>Preconstruction land use survey</li><li>Acquisitions Technical Report</li></ul>			
Access to Social Services	Assess short- and long-term impacts to access social services.	<ul> <li>Preconstruction land use survey</li> <li>Acquisitions Technical Report</li> <li>Public Services Technical Report</li> <li>Transportation Technical Report</li> </ul>			
Access to Community Resources	Assess short- and long-term impacts to access community services, including educational, religious, health care, day care, cultural, recreational facilities, commercial services, and other resources identified by community members. This includes operational barriers, such as rerouting, and physical barriers, such as new walls or roadways.	<ul> <li>Preconstruction land use survey</li> <li>Inventory of community resources</li> <li>Acquisitions Technical Report</li> <li>Historic Built Environment Technical Report</li> <li>Public Services Technical Report</li> <li>Transportation Technical Report</li> <li>Utilities Technical Report</li> <li>Visual Quality Technical Report</li> </ul>			
Travel Impacts	Assess short- and long-term transportation impacts to reach community resources, including impacts to transportation options, travel time, and accessibility for all modes. This includes operational barriers, such as rerouting, and physical barriers, such as new walls or roadways.	<ul> <li>Preconstruction land use survey</li> <li>Inventory of community resources</li> <li>Acquisitions Technical Report</li> <li>Historic Built Environment Technical Report</li> <li>Public Services Technical Report</li> <li>Transportation Technical Report</li> </ul>			



Evaluation Category	Measure	Data Sources
Community Cohesion	Assess preconstruction community cohesion based on neighborhood profiles. Identify potential impacts to community cohesion, which can include major displacements, separation of populations from community resources, reduction in neighborhood activity, and inconsistency with community plans.	<ul> <li>Preconstruction land use survey</li> <li>Inventory of community resources</li> <li>Acquisitions Technical Report</li> <li>Historic Built Environment Technical Report</li> <li>Public Services Technical Report</li> <li>Transportation Technical Report</li> <li>Local crime rate statistics</li> <li>Census data</li> <li>Local and neighborhood plans</li> </ul>
Community Benefits	Assess potential benefits to neighborhoods and populations based on — but not limited to — community cohesion, transportation access, economic opportunities, environmental effects, and health effects.	<ul> <li>Air Quality Technical Report</li> <li>Economics Technical Report</li> <li>Noise and Vibration Technical Report</li> <li>Parks and Recreation Technical Report</li> <li>Public Services Technical Report</li> <li>Transportation Technical Report</li> <li>Community input</li> </ul>
Plan Consistency	Assess consistency with existing local and neighborhood plan goals.	<ul> <li>Local and neighborhood plans</li> </ul>

### 2.6.1 Neighborhood Profiles

Profiles for each of the neighborhoods in the study area were prepared. These profiles included characteristics that help identify the neighborhoods and populations most susceptible to impacts from the Program. Some of the characteristics included:

- Total population.
- Household size.
- Percentage of minority and ethnicity populations compared to city and county.
- Age distribution compared to city and county.
- Percentage of households with incomes below the poverty level compared to city and county.
- Percentage of population with disabilities compared to city and county.
- Median assessed home value.
- Percentage of owner-occupied housing compared to city and county.
- Percentage of households without access to a vehicle.
- Crime rate statistics.
- Inventory of community resources.
- Neighborhood cohesion.



### 2.6.2 Long-Term Benefits and Effects

Long-term impacts may include major displacements, separation of a neighborhood from its community resources, impacts to traffic circulation patterns, impacts to cohesion, and inconsistencies with neighborhood plan goals. Separation of a neighborhood from its community resources may be caused by operational changes, such as rerouting traffic, pedestrians, or public transit service, as well as by physical barriers, such as new noise barriers or roadways. The methods used to determine impacts to neighborhoods and population vary depending on the impact being assessed, but in all cases, the analysis seeks to understand the affected community's perception of the severity of the impacts and proposed mitigation measures.

#### 2.6.2.1 Displacements

Information on displacements was sourced from the IBR Program's Acquisitions Technical Report. Program staff analyzed right of way data to determine whether or not major displacements of people or community resources would occur within the neighborhoods. The Environmental Justice Technical Report, by contrast, focuses on how expected displacement impacts would affect low-income or minority residents. Additional analyses were performed to identify day care facilities, senior housing facilities, and neighborhood resources that may be displaced or otherwise impacted.

#### 2.6.2.2 Separation of a Neighborhood from its Community Resources

Program staff analyzed the Modified LPA to determine if the project would separate neighborhoods from community resources. Separations can include both physical and operational barriers. The Acquisitions Technical Report was also referenced to determine whether community resources would be displaced.

#### 2.6.2.3 Impacts to Traffic Circulation

Impacts to traffic circulation patterns were determined by referencing the Transportation Technical Report, with particular attention to local or collector streets and the accessibility of surrounding land uses. If effects were considered substantial based on the thresholds for those disciplines, the same effects were considered potentially significant for the neighborhoods where the effects took place.

#### 2.6.2.4 Effects on Cohesion

Neighborhood cohesion describes the livability of a neighborhood, and more specifically, the opportunities for residents to connect to one another within the neighborhood. These opportunities can be offered through gathering places such as schools, community centers, parks, or shopping centers. High home ownership rates can also contribute to cohesion because there may be more long-term residents in neighborhoods with high home ownership rates than in neighborhoods with high rental rates. Crime rates may affect cohesion because they are important factors in determining how safe residents feel in their homes and neighborhoods. Urban form, the street grid, and the presence of sidewalks also help create opportunities for residents to connect while walking or recreating in the neighborhood. Smaller block sizes, sidewalks, and well-connected streets encourage neighborhood cohesion.



Displacements, separation of a neighborhood from its resources, impacts to traffic circulation, or inconsistencies with neighborhood goals could all impact cohesion. In addition to these factors, a reduction in neighborhood activities also could affect cohesion. These indicators of cohesion were assessed in the neighborhood profiles using input from the community resource mapping process, crime data, census data, tax assessor information, and information gathered through the public involvement process. See Section 2.5.5 for more information on the community resource mapping process and public involvement efforts.

#### 2.6.2.5 Inconsistencies with Neighborhood Plan Goals

Inconsistencies with neighborhood plan goals were determined through reviews of neighborhood plans to understand if the Modified LPA would conflict with plan goals or would prevent future implementation of the goals.

### 2.6.3 Temporary Effects

Short-term impacts to neighborhoods and population are most likely to result from temporary access changes to neighborhoods and community resources and from short-term construction activities that could increase noise levels and affect air quality. Data for access changes were sourced from the traffic analysis. Information regarding noise levels was obtained from the Noise and Vibration Technical Report, and air quality data were obtained from the Air Quality Technical Report.

### 2.6.4 Indirect Effects

Indirect impacts are potential effects related to the project, but not part of it, that may be separated by distance or time but are still reasonably foreseeable. For example, the IBR extension of light-rail across Hayden Island and into Vancouver may have the potential to encourage transit-oriented development (TOD) or redevelopment in light-rail station areas. Similarly, the project may encourage the completion of missing transportation links such as bicycle facilities, sidewalks, or trails, which although not part of the project, could be implemented by others to connect with project improvements. Both redevelopment and new active transportation links could affect nearby neighborhoods and community resources.

Local comprehensive plan policies and zoning would guide the types of indirect development that could occur in a given location; however, a major transportation infrastructure investment could affect such plans and zoning decisions over time. Redevelopment projects and non-IBR active transportation improvements would be separate actions from IBR and would be required to go through their own environmental review. The analysis of potential indirect effects on neighborhoods due to TOD has been coordinated with the analysis of land use and economic conditions, and the analysis of future mobility projects linking to the light-rail facility has been coordinated with the transportation analysis.

### 2.6.5 Cumulative Impact Analysis Approach

Cumulative impacts to neighborhoods and populations are evaluated in the Cumulative Effects Technical Report.



### 2.7 Approach to Mitigation Measures

Mitigation measures were identified to address Program impacts. For example, if the Modified LPA poses a barrier to neighborhood access, the Program team identified potential mitigation that could improve connectivity. These measures will be reviewed with the city of Portland, city of Vancouver, Clark County, federal lead agencies, affected neighborhoods, the Oregon Department of Transportation (ODOT), and WSDOT as the design and NEPA processes move forward. Final mitigation commitments will be dependent on regulations, feasibility, cost, effectiveness, and other considerations.



### 3. AFFECTED ENVIRONMENT

### 3.1 Introduction

This chapter presents the existing conditions of the neighborhoods and population most likely to experience effects from project-related construction or operational changes. The assessment describes the general characteristics of each neighborhood, including neighborhood cohesion and demographics, and identifies important community resources within the neighborhoods.

Neighborhood cohesion describes the livability of a neighborhood, and more specifically, the opportunities for residents to connect to one another within the neighborhood. These opportunities can be offered through gathering places such as schools, community centers, parks, or main street shops. High home ownership rates can also indicate longer tenure in the neighborhoods, which serves to strengthen cohesion. Crime rates may affect cohesion because they are important factors in determining how safe residents feel in their homes and neighborhoods. Urban form, the street grid, and the presence of sidewalks also help create opportunities for residents to connect while walking or recreating in the neighborhood. Smaller block sizes, sidewalks, and well-connected streets encourage neighborhood cohesion.

The study area and associated neighborhoods are divided into two sections: Oregon and Washington. Within each section, neighborhoods are described from north to south. The names and definitions of race/ethnicities and demographic categories analyzed were taken from those used by the U.S. Census Bureau. Because of rounding, percentages for demographics may not sum to 100.

### 3.2 Oregon Study Area

Neighborhoods within the Oregon study area are shown on Figure 3-1.

### 3.2.1 Hayden Island Neighborhood Profile

#### 3.2.1.1 Hayden Island Neighborhood Characteristics

The Hayden Island neighborhood is located on Hayden Island in the Columbia River and extends from the eastern end of the island west to the BNSF railroad tracks one mile west of I-5. I-5 bisects Hayden Island, separating land uses on either side of the corridor both visually and physically. The interchange and I-5 corridor create a barrier to travel in the neighborhood, and there are minimal travel connections across I-5. Traffic patterns associated with the interchange and regional traffic accessing the Jantzen Beach Center also reduce connectivity. The neighborhood is only accessible via I-5 or boat, and it is dominated by commercial uses lining both sides of I-5 including retail, service, and office space.





Figure 3-1. Neighborhoods in Oregon Study Area

The ODOT Commerce and Compliance Division operates a commercial vehicle licensing and permitting center on Hayden Island directly adjacent to I-5 on N Center Avenue. A large mall (Jantzen Beach Center) and other large retailers are located directly west of I-5, while single- and multifamily



residential uses are concentrated to the east of I-5. A large manufactured home community, called the Jantzen Beach RV Park, is also located on the central northwest side of the island. Both recreational vehicles and manufactured homes are currently located on the property. A second manufactured home community is located to the west of the Jantzen Beach Center on the south side of the island. Small marinas are located around the island with floating homes, boat houses, and small, marine-related commercial businesses concentrated on the south side of the island in North Portland Harbor. A number of hotels and restaurants are located on Hayden Island.

Recreational areas on Hayden Island include a private community center between Arbor Drive and Alder Avenue, as well as Lotus Isle Park on Tomahawk Island Drive. The community's only supermarket, Safeway, closed in 2018 leaving residents of Hayden Island without a full grocery store. However, groceries are available at the Target in the Jantzen Beach Shopping Center, and simple groceries are available at the Plaid Pantry on N Hayden Island Drive. The only bank in the neighborhood, Wells Fargo on Jantzen Drive, closed in 2020. Now, financial services on Hayden Island are limited to a handful of automated teller machine. Portland Fire & Rescue Station 17 on N Tomahawk Island Drive provides firefighting and emergency response services with a fire engine, fire boat, and rescue boat.

C-TRAN bus Routes 105 (I-5 Express) and 190 (Marquam Hill Express) cross Hayden Island via I-5, but they do not make any service stops within the community. C-TRAN Route 60 (Delta Park Regional) serves the Jantzen Beach Main Stop. It is the only C-TRAN service to the island, and it offers connections to the Delta Park/Vanport MAX Station to the south and downtown Vancouver to the north. TriMet Line 6 (Martin Luther King Jr. Boulevard), which has its northern terminus on Hayden Island, offers a local bus connection to North Portland neighborhoods and downtown Portland. A multiuse path along I-5 between Portland and Vancouver connects to Hayden Island; it provides a nonmotorized connection to the mainland on either side of the river.

In 2019, the Hayden Island neighborhood reported 727 criminal offenses (552 offenses per 1,000 residents), which include crimes against property, individuals, and society (PPB n.d.). This is nearly 6 times higher than Portland's overall rate of 93 per 1,000 residents. This high crime rate is mainly caused by a high volume of "Larceny Offenses" crimes (414 reported offenses). These crimes can likely be attributed to the large shopping center at Jantzen Beach where larcenies are reported by store officials. As a result, the overall crime rate probably does not accurately portray crime rates in areas outside of the shopping center.

In early 2009, the City of Portland Bureau of Planning and Sustainability published the *Hayden Island Plan* (City of Portland 2009). The plan includes goals, objectives, proposed comprehensive plan and zoning changes, and an implementation strategy. For an overview of goals for the neighborhood, please refer to Section 3.4. The Hayden Island Neighborhood Network board meets on the second Thursday of every month at the Oxford Suites Portland or online.

#### 3.2.1.2 Hayden Island Demographics

Table 3-1 compares race/ethnicity demographics for the Hayden Island neighborhood, Multnomah County, and Portland. The neighborhood has higher percentages of residents who identify as White, American Indian and Alaska Native, or Hispanic or Latino. Hayden Island has notably lower percentages of residents who identify as Black or African American, or Asian.



Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races (Not Hispanic)	Hispanic or Latino Alone
Hayden Island	2,373	76.5%	0.8%	2.1%	0.9%	0.4%	<0.1%	4.2%	15.0%
Multnomah County	809,869	68.9%	5.2%	0.7%	7.7%	0.6%	0.4%	4.7%	11.8%
Portland	650,380	69.5%	5.7%	0.6%	8.6%	0.6%	0.4%	4.8%	9.8%

#### Table 3-1. Hayden Island Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-2 presents additional neighborhood data for Hayden Island. Compared with the city and county, the neighborhood has a lower percentage of families living below the poverty level, a lower percentage of low-income residents, and a lower percentage of large families. Hayden Island has a relatively high percentage of residents with a disability compared with Multnomah County or Portland. The percentage of owner-occupied housing units is substantially higher than for the county or the city, while the home value index is substantially lower for Hayden Island. The percentage of households without access to a motor vehicle is less than a third of the percentage for Multnomah County or Portland. Table 3-3 displays age ranges for Hayden Island residents. Hayden Island has very few residents under 4 years old and a higher percentage of older residents than the city or the county.

#### Table 3-2. Hayden Island Demographics and Characteristics

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Hayden Island	3.0%	14.8%	17.3%	7.2%	76.2%	\$315,632	4.0%
Multnomah County	8.2%	28.3%	12.3%	12.3%	54.4%	\$474,991	12.9%
Portland	7.7%	27.2%	11.9%	11.1%	53.1%	\$508,250	14.0%

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>



Area	<b>Total Population</b>	0–4 Years	5–17 Years	18–64 Years	65 and Older
Hayden Island	2,371	<0.1%	8.6%	63.3%	26.0%
Multnomah County	809,869	5.5%	13.4%	67.9%	13.5%
Portland	650,380	4.9%	12.5%	69.4%	13.2%

#### Table 3-3. Hayden Island Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion on Hayden Island appears to be moderate based on the concentration of residential communities on the island and the shared resources for houseboats at the marinas. The beaches and natural spaces provide places for residents to connect. However, cohesion on Hayden Island may be hindered by the limited number of neighborhood-oriented businesses, the large buildings and parking lots, traffic impacts from the shopping centers, the lack of a grocery store, and the lack of schools. Cohesion may also be reduced by the street network, which is oriented toward large block sizes and a sparse street grid. This encourages auto use and provides fewer opportunities for residents to connect while walking or biking.

### 3.2.2 Bridgeton Neighborhood Profile

#### 3.2.2.1 Bridgeton Neighborhood Characteristics

The Bridgeton neighborhood is located east of I-5 on North Portland Harbor. Residential uses are concentrated at the eastern end of the neighborhood, both on land in rowhouses and detached single-family dwellings, and on the river in floating homes. Industrial uses can be found directly adjacent to I-5 around the Marine Drive interchange. There is a small commercial node at Marine Drive and I-5. The neighboring sloughs and the Columbia River are important community resources that provide recreational uses.

TriMet bus Line 11 (Rivergate and Marine Drive) serves the Bridgeton neighborhood along Marine Drive and points west such as the Port of Portland Terminal 6. C-TRAN bus Routes 105 (I-5 Express) and 190 (Marquam Hill Express) and TriMet Line 6 (Martin Luther King Jr. Boulevard) all run through the neighborhood via I-5, but they do not make any service stops within the community. There is a multiuse path and bicycle lane along Marine Drive, and there is a multiuse pathway along North Portland Harbor.

For 2019, Bridgeton reported 153 criminal offenses (50 offenses per 1,000 residents; PPB n.d.). This is roughly 54% of the Portland average of 93 offenses per 1,000 residents. The most prevalent type of offense in Bridgeton is "Larceny Offenses" (69 reported offenses), and the second highest is "Motor Vehicle Theft" (25 reported offenses).

The *Bridgeton Neighborhood Plan* was adopted by the Portland City Council in November 1997(City of Portland 1997). For an overview of neighborhood plan goals, please refer to Section 3.4. Bridgeton is also within the "impact area" of the *Albina Community Plan* (City of Portland 1993). The Bridgeton Neighborhood Association meets online on the second Tuesday of every month. The neighborhood association is active, and meetings are well attended.



#### 3.2.2.2 Bridgeton Demographics

Table 3-4 compares race/ethnicity demographics for the Bridgeton neighborhood, Multnomah County, and Portland. The percentage of residents who identify as Black or African American is approximately four times that found in Multnomah County or in Portland. The percentage of the population that is American Indian and Alaska Native is also higher in Bridgeton than in the county or city. There are substantially lower percentages of Asian Alone and Hispanic or Latino residents than in the county and city.

#### Table 3-4. Bridgeton Race/Ethnicity

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Bridgeton	701	69.4%	21.1%	1.9%	0.1%	<0.1%	0.0%	4.3%	3.1%
Multnomah County	809,869	68.9%	5.2%	0.7%	7.7%	0.6%	0.4%	4.7%	11.8%
Portland	650,380	69.5%	5.7%	0.6%	8.6%	0.6%	0.4%	4.8%	9.8%

Sources: USCB 2022, Table B03002.

Table 3-5 presents additional neighborhood data for Bridgeton. The percentages of families below the poverty level and residents with low incomes are lower for the neighborhood than for Multnomah County or Portland. Bridgeton also has a substantially lower percentage of large families. The home value index for the neighborhood is lower than for the county or the city. The percentage of homes that lack access to a motor vehicle is much lower for Bridgeton than for Multnomah County or Portland. Table 3-6 displays age characteristics for Bridgeton residents, which are similar to the county and the city.



Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Bridgeton	0.1%	18.9%	11.0%	2.5%	44.8%	\$385,931	2.1%
Multnomah County	8.2%	28.3%	12.3%	12.3%	54.4%	\$474,991	12.9%
Portland	7.7%	27.2%	11.9%	11.1%	53.1%	\$508,250	14.0%

#### Table 3-5. Bridgeton Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

- b Large family means five or more people per family household.
- c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>

#### Table 3-6. Bridgeton Age Characteristics

Area	<b>Total Population</b>	0–4 Years	5–17 Years	18–64 Years	65 and Older
Bridgeton	701	4.9%	12.2%	71.7%	11.7%
Multnomah County	809,869	5.5%	13.4%	67.9%	13.5%
Portland	650,380	4.9%	12.5%	69.4%	13.2%

Source: USCB 2022, Table B01001.

Cohesion in Bridgeton appears moderate based on the concentration of residences and shared resources for houseboats at the marinas. Recreational resources in the area provide residents with an opportunity to connect to one another. However, cohesion in Bridgeton may be hindered by the limited number of neighborhood-oriented businesses, the lack of a grocery store, and the lack of schools. The street network may also hinder cohesion, as sidewalks are not present on many streets and the street grid is sparse (many streets are dead ends), limiting opportunities for residents to connect.

### 3.2.3 East Columbia Neighborhood Profile

#### 3.2.3.1 East Columbia Neighborhood Characteristics

The East Columbia neighborhood is located directly east of I-5 and extends from Marine Drive south to the Columbia Slough. East Columbia contains a variety of land uses including residential, large recreational uses, industrial uses, retail, and large areas of wetlands.

Several residential pockets of single-family homes and manufactured homes are located in the neighborhood, including:



- Between NE Martin Luther King Jr. Boulevard and NE Vancouver Way at the south edge of the neighborhood.
- Along NE Gertz Road toward the east side of the neighborhood.
- Off NE 13th Avenue along NE Meadow Drive, NE South Shore Road, NE Faloma Road, and NE Mariner's Loop.
- Between NE Marine Drive and NE Mariner's Loop.
- Along NE Marine Drive east of the border of Bridgeton.

These residential areas are primarily on the east side of the neighborhood, while construction from the Program would occur along the west edge of the neighborhood. Residential areas are surrounded by large areas of park, industrial, and commercial land uses.

East Delta Park (the portion of Delta Park east of I-5) is on the western boundary of the neighborhood. Delta Park is nearly 90 acres and was acquired in 1950. It features the Delta Park – Owens Sports Complex with seven lighted softball fields and nine soccer fields (four with artificial turf). The complex also hosts eight sand volleyball courts, a playground, picnic tables, an off-leash dog area, and nature trails. Columbia Edgewater Country Club and Golf Course is on the east edge of the neighborhood.

Industrial and commercial areas in East Columbia include trucking companies, small industrial businesses, and large retailers. Along N Hayden Meadows Drive, south of Delta Park, is a Lowe's Home Improvement store, a Walmart, and a Dollar Tree, among other retailers. Portland Meadows had operated a horse racing venue in the neighborhood, but it closed in 2019 and the main building was demolished in 2020. An Amazon delivery station now operates in what had been the parking lot for the racetrack.

TriMet bus Lines 6 (ML King Jr. Boulevard) and 11 (Rivergate/Marine Dr) serve the East Columbia neighborhood. Line 6 runs on Vancouver Way and Hayden Meadows Drive, where it runs north to Hayden Island via I-5. The Line 11 northern terminus is the Jubitz Truck Stop, and the route connects East Columbia, the Expo Center, Smith and Bybee lakes, Rivergate, and St. Johns via Marine Drive, Lombard, Columbia, Fessenden, and Ivanhoe. C-TRAN bus Routes 105 (I-5 Express) and 190 (Marquam Hill Express) run through the neighborhood via I-5, but they do not make service stops within the community.

In 2019, East Columbia reported 560 criminal offenses (183 offenses per 1,000 residents; PPB n.d.). This is nearly double Portland's overall rate of 93 per 1,000 residents. The most frequent offense in East Columbia is "Larceny Offenses" (238 reported offenses) and second highest is "Assault Offenses" (73 reported offenses).

The East Columbia Neighborhood Association meets online quarterly or in person and has an active website. At this time, the neighborhood does not have a neighborhood plan. However, East Columbia is within the "impact area" of the 1993 *Albina Community Plan* (City of Portland 1993).

#### 3.2.3.2 East Columbia Demographics

Table 3-7 compares race/ethnicity demographics for the East Columbia neighborhood, Multnomah County, and Portland. The percentages of residents who identify as Black or African American or Asian are notably higher than for the county or the city. The percentages of residents who identify as White,



American Indian and Alaska Native, or Hispanic or Latino in East Columbia are lower than in Multnomah County or Portland.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
East Columbia	1,141	52.7%	16.8%	0.1%	16.2%	1.0%	0.0%	5.6%	7.7%
Multnomah County	809,869	68.9%	5.2%	0.7%	7.7%	0.6%	0.4%	4.7%	11.8%
Portland	650,380	69.5%	5.7%	0.6%	8.6%	0.6%	0.4%	4.8%	9.8%

#### Table 3-7. East Columbia Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-8 presents additional neighborhood data for East Columbia. The percentages of families below the poverty level and of low-income residents are lower than those for the county or the city. The percentage of large families is lower in East Columbia than in Multnomah County or Portland. The portion of owner-occupied housing units is higher in the neighborhood than in the county or city, while the home value index and the percentage of homes without access to a vehicle are lower. The age characteristics of East Columbia are similar to those of the county and the city (Table 3-9).

#### Table 3-8. East Columbia Demographics and Characteristics

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
East Columbia	6.3%	10.9%	11.0%	7.9%	76.6%	\$425,977	3.0%
Multnomah County	8.2%	28.3%	12.3%	12.3%	54.4%	\$474,991	12.9%
Portland	7.7%	27.2%	11.9%	11.1%	53.1%	\$508,250	14.0%

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>



Area	Total Population	0–4 Years	5–17 Years	18-64 Years	65 and Older
East Columbia	1,141	3.6%	15.5%	69.5%	11.1%
Multnomah County	809,869	5.3%	13.4%	67.9%	13.5%
Portland	650,380	4.9%	12.5%	69.4%	13.2%

#### Table 3-9. East Columbia Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in the East Columbia neighborhood appears to be moderate based on the urban form and neighborhood characteristics. Although cohesion within individual residential areas is likely high, these areas are separated by other large land uses and there are few community resources such as grocery stores, services, cafés, or restaurants, at which neighborhood residents can gather. Although Delta Park serves as a recreational resource, its large size makes it a regional attraction serving residents from around the Portland-Vancouver metropolitan area, rather than solely residents of East Columbia. The street grid is also oriented toward auto travel, limiting opportunities for residents to connect.

### 3.2.4 Kenton Neighborhood Profile

#### 3.2.4.1 Kenton Neighborhood Characteristics

The Kenton neighborhood is located between I-5 and the BNSF railroad tracks that parallel N Portland Road. It extends from N Portland Harbor on the north to N Lombard Street to the south. Kenton contains a wide range of uses including residential, commercial, industrial, and recreational. Single-family residential development is concentrated south of Columbia Boulevard with commercial, industrial, and recreational uses located to its north. Multifamily residential dwellings are scattered throughout the neighborhood, but a majority are found among densely packed commercial structures along Interstate Avenue and Lombard Street. The Columbia Boulevard Wastewater Treatment Plant is located on the Columbia Slough at the west edge of the neighborhood.

The northern portion of Kenton contains multiple regional resources, including Portland International Raceway, Heron Lakes Golf Course, and the Expo Center. The large Paul Bunyan statue at the intersection of N Interstate Avenue and N Argyle Street, the Kenton Neighborhood Rose Garden, and the Historic Kenton Firehouse are important cultural resources that provide identity to the community. Peninsula Elementary, Portland Village School, and Alliance High School at Kenton are all located within Kenton. West Delta Park (the portion of Delta Park west of I-5) and the Vanport Wetlands serve as natural resources, as does Kenton Park on Brandon Avenue. There are many historic resources including the historic site of Vanport, the Kenton commercial shopping district on N Denver Avenue, the Victorian Belle Mansion on N McClellan Street, and the Kenton Firehouse on N Brandon Avenue. The Multnomah County Library Kenton branch on N Denver Avenue provides a public service to the community, while the Wells Fargo Bank, Umpqua Bank, and Chase Bank provide financial services. Many religious institutions are in the neighborhood: Peninsula Open Bible Church, Celebration Tabernacle, Peninsula Baptist Church, Abundant Life Church, Kenton Church, and Interstate Bible Chapel.



Kenton is served by the TriMet MAX Yellow Line light-rail that runs along N Interstate Avenue and N Denver Avenue. TriMet operates multiple bus lines in Kenton including Line 4 (Fessenden) via N Lombard Street and N Willis Boulevard, 35 (Macadam/Greeley) via N Peninsular Avenue and N Willis Boulevard, and 75 (Cesar Chavez/Lombard) via Lombard Street. Line 6 enters the Kenton neighborhood on I-5 and stops at the Delta Park/Vanport MAX Station. C-TRAN bus Route 60 (Delta Park Regional) also stops in Kenton at the Delta Park/Vanport MAX Station. C-TRAN bus Routes 105 (I-5 Express) and 190 (Marquam Hill Express) run through Kenton via I-5, but they do not make service stops within the neighborhood.

Kenton has a network of bicycle routes. Dedicated bicycle lanes are located on N Denver Avenue, N Interstate Avenue, and N Expo Road. Multiuse paths run along N Columbia Boulevard, N Marine Drive, the Columbia Slough Trail, and N Portland Road. The more residential southern portion of Kenton is covered by a grid of Neighborhood Greenways including along N Terry Street, N Wabash Avenue, N Hamlin Avenue, N Fenwick Avenue, N Delaware Avenue, N Peninsular Avenue, N Chautauqua Boulevard, N Willis Boulevard, and N Kilpatrick Street. N Broadacre Street and N Force Avenue in the north portion of the neighborhood are designated bicycle routes, but they lack dedicated facilities for biking.

In 2019, the Kenton neighborhood reported 745 criminal offenses (288 per 1,000 residents; PPB n.d.). This is triple Portland's overall rate of 93 per 1,000 residents. The three most-reported offenses were "Larceny Offenses" (271), "Motor Vehicle Theft" (125) and "Assault Offenses" (115).

The *Kenton Neighborhood Plan* (City of Portland 2001) was adopted by the Portland City Council in October 1993 and amended by the Kenton Downtown Plan in January 2001. For an overview of neighborhood plan goals, please refer to Section 3.4. The Kenton Neighborhood Association meets on the second Wednesday of every month, either in person or online, and it has an active website. Kenton is also part of the *North Interstate Corridor Plan* (City of Portland 2008), and it is within the "impact area" of the *Albina Community Plan* (City of Portland 1993).

#### 3.2.4.2 Kenton Demographics

Table 3-10 compares race/ethnicity demographics for the Kenton neighborhood, Multnomah County, and Portland. The percentages of residents who identify as Black or African American or Two or More Races are higher for Kenton than for the county or the city, while the percentage of residents that identify as Asian is lower in the neighborhood than in Multnomah County or Portland.



Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Kenton	7,626	67.6%	8.7%	0.6%	2.2%	0.9%	<0.1%	8.6%	11.4%
Multnomah County	809,869	68.9%	5.2%	0.7%	7.7%	0.6%	0.4%	4.7%	11.8%
Portland	650,380	69.5%	5.7%	0.6%	8.6%	0.6%	0.4%	4.8%	9.8%

#### Table 3-10. Kenton Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-11 presents additional neighborhood data for Kenton. The percentages of families below the poverty level and residents with low incomes are somewhat lower than in the city and county. The portion of large families is also lower in the neighborhood. The percentage of homes that are owner-occupied is notably higher in Kenton than in Multnomah County or Portland. The home value index for Kenton is lower than for the county or city. Table 3-12 identifies age ranges for Kenton residents. Kenton has a higher percentage of residents between ages 18 and 64 than the city or county.

#### Table 3-11. Kenton Demographics and Characteristics

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Kenton	5.7%	23.4%	10.8%	6.9%	71.7%	\$457,029	10.2%
Multnomah County	8.2%	28.3%	12.3%	12.3%	54.4%	\$474,991	12.9%
Portland	7.7%	27.2%	11.9%	11.1%	53.1%	\$508,250	14.0%

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. https://www.zillow.com/research/data/,



Area	Total Population	0–4 Years	5–17 Years	18-64 Years	65 and Older
Kenton	7,626	6.6%	10.1%	75.4%	9.3%
Multnomah County	809,869	5.3%	13.4%	67.9%	13.5%
Portland	650,380	4.9%	12.5%	69.4%	13.2%

#### Table 3-12. Kenton Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in Kenton appears to be high based on urban form and places for residents to connect. With several schools, community gathering places, parks, and a compact urban form, residents have many opportunities to connect. A downtown shopping area and new streetscape improvements add to the cohesiveness of the community. In the residential areas, a compact street grid and an abundance of sidewalks provide many opportunities for residents to connect.

### 3.2.5 Rockwood Neighborhood Profile

#### 3.2.5.1 Rockwood Neighborhood Characteristics

Although the principal Modified LPA components would be located along I-5 and near the Columbia River bridges, expansion of the light-rail maintenance facility at Ruby Junction in Gresham, Oregon, would be necessary to support the expansion of light-rail service to Vancouver. The proposed maintenance facility is within the Rockwood neighborhood in Gresham.

Rockwood is bounded on the west by the Gresham city limits (approximately NE 162nd Avenue), on the north by NE Glisan Street, on the east by NE 202nd Avenue/Birdsdale Avenue, and on the south, beginning with NW Eleven Mile Avenue and continuing to SE Market Street. The Ruby Junction Maintenance Facility is in the southeast corner of the Rockwood neighborhood.

The Rockwood neighborhood has primarily residential land use with a mixture of single- and multifamily residences. Commercial land use is located along neighborhood arterials such as E Burnside Street, SE Stark Street, and SE 181st Street, and land use is industrial in the southeast corner. The neighborhood includes multiple parks such as Yamhill, Davis, Pat Pfeifer, Rockwood Central, and Vance. It also includes multiple schools such as Davis Elementary, H.B. Lee Middle School, Reynolds Middle School, and Reynolds High School. The neighborhood has a large number of places of worship including Ascension Lutheran Church, Kidane Mihret Ethiopian Orthodox Tewahedo Church, Rockwood United Methodist Church, Rockford Worship Center, St. Anne Catholic Church, and Unity Gresham, among others.

The neighborhood is served by the TriMet MAX Blue Line as well as bus Lines 25 (Glisan/Rockwood), 87 (Airport Way/181st), and 74 (162nd Ave).

In 2019, the Rockwood neighborhood reported 1,227 criminal offenses (89 per 1,000 residents; Gresham Police Department n.d.). This is nearly double Gresham's overall rate of 56 reported offenses per 1,000 residents. The three most-reported offenses in Rockwood were "Larceny Offenses" (276), "Assault Offenses" (269), and "Motor Vehicle Theft" (242).



The Rockwood Neighborhood Association board meets monthly. The neighborhood does not have a neighborhood or community plan.

#### 3.2.5.2 Rockwood Demographics

Table 3-13 compares race/ethnicity demographics for the Rockwood neighborhood, Multnomah County, and Portland. A much higher percentage of residents identify as Hispanic or Latino in Rockwood than in Multnomah County or in Portland. Also, there are higher percentages of residents who identify as Black or African American, American Indian and Alaska Native, or Native Hawaiian and Other Pacific Islander in the neighborhood compared with the county and city. The population of residents who identify as White is lower in the neighborhood.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Rockwood	13,712	40.0%	7.5%	1.6%	6.4%	2.1%	<0.1%	3.6%	38.7%
Multnomah County	809,869	68.9%	5.2%	0.7%	7.7%	0.6%	0.4%	4.7%	11.8%
Portland	650,380	69.5%	5.7%	0.6%	8.6%	0.6%	0.4%	4.8%	9.8%

#### Table 3-13. Rockwood Race/Ethnicity

Sources: USCB 2022, Table B03002

Table 3-14 presents additional neighborhood data for Rockwood. The portion of families that are below the poverty level is much higher in Rockwood than in Multnomah County or Portland, as is the percentage of low-income residents. The percentage of large families is higher in the neighborhood than in the county or city, and the percentage of housing units that is owner-occupied is lower in Rockwood. Table 3-15 displays age characteristics for Rockwood residents. Rockwood residents' age distribution is younger than the county or city.



Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families ª	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Rockwood	21.5%	49.6%	13.5%	23.3%	40.9%	\$353,825 <sup>d</sup>	12.7%
Multnomah County	8.2%	28.3%	12.3%	12.3%	54.4%	\$474,991	12.9%
Portland	7.7%	27.2%	11.9%	11.1%	53.1%	\$508,250	14.0%

#### Table 3-14. Rockwood Neighborhood Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

- b Large family means five or more people per family household.
- c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/</u>

d Neighborhood-specific value unavailable for Rockwood. Reported home value is for Zip code 97233, which includes Ruby Junction and much of Rockwood neighborhood.

#### Table 3-15. Rockwood Age Characteristics

Area	Total Population	0–4 Years	5–17 Years	18–64 Years	65 and Older
East Columbia	13,712	8.9%	19.4%	64.6%	8.9%
Multnomah County	809,869	5.3%	13.4%	67.9%	13.5%
Portland	650,380	4.9%	12.5%	69.4%	13.2%

Source: USCB 2022, Table B01001.

Neighborhood cohesion appears moderate in Rockwood based on the urban form and neighborhood characteristics. The neighborhood has multiple places for people to come together including parks, schools, churches, and neighborhood-oriented businesses. However, the neighborhood is large, is divided by busy arterial roads, and has many automobile-oriented businesses that can reduce the potential for neighborhood cohesion. The street grid also consists of larger block sizes, many dead ends, and inconsistent sidewalks, which promote travel by auto and reduce opportunities for residents to connect. It is possible that smaller areas of the neighborhood are better connected than the overall neighborhood.

### 3.3 Washington Study Area

Neighborhoods within the Washington study area are shown on Figure 3-2.









### 3.3.1 West Minnehaha Neighborhood Profile

#### 3.3.1.1 West Minnehaha Neighborhood Characteristics

West Minnehaha extends from SR 500 to NE Minnehaha Street at the city limits and is bordered by NE St. Johns Road to the east and I-5 and Highway 99 to the west. This mid-twentieth century neighborhood is composed primarily of single-family residential development with a concentration of multifamily and commercial uses at the eastern edge of the neighborhood between St. Johns and St. James Roads. Offices and power facilities for the Bonneville Power Administration are located at the 270-acre Ross Complex on the west side of the neighborhood. A large transmission line corridor runs from northwest to southeast through the neighborhood effectively creating two separate areas of residential development and a somewhat discontinuous street grid.

Schools in the neighborhood include Minnehaha Elementary, the private Lakeshore Montessori preschool and kindergarten, and the private Hosanna Christian School. The neighborhood is home to Leverich Park, Arnold Park, the Burnt Bridge Creek Greenway, and the Ellen Davis Trail. Other park resources include Arnold Park, West Minnehaha Neighborhood Park, and Ike Memorial Park, which is a well-used dog park between NE 15th and NE 18th Streets north of NE 49th Street. The Community of Christ Church: Garden Grove Branch, Connection Church, Minnehaha Church of Christ, and the First Evangelical Church also serve the West Minnehaha community.

The West Minnehaha neighborhood is served by C-TRAN bus Routes 25 (St. Johns), 71 (Highway 99), and 190 (Marquam Hill Express). Route 25 runs along NE St. James and St. Johns Roads at the eastern perimeter of the neighborhood, and Route 190 stops at the BPA/Ross Park and Ride on NE 15th and Ross Streets. Route 105 (I-5 Express) also runs along the perimeter of West Minnehaha via I-5, but it does not stop within the community. Bicycle facilities are mainly limited to the perimeter of the neighborhood. Multiuse paths include the Burnt Bridge Creek Greenway and Ellen Davis Trail. There are bicycle lanes along Minnehaha Street, Highway 99, NE 15th Avenue, and NE St. James Road. East-west roads NE 54th Street and NE 49th Street are designated bicycle routes, but they lack dedicated facilities.

In 2019, the West Minnehaha neighborhood reported 222 criminal offenses (120 offenses per 1,000 residents; VPD 2021). This is roughly 50% higher the Vancouver average of 79 per 1,000 residents. The three most-reported offenses were "Theft" (62 reported offenses), "Assault, Simple" (25 reported offenses), and "Violate No Contact Order" (24 reported offenses).

The *West Minnehaha Neighborhood Action Plan* (City of Vancouver 2011b) was endorsed by the Vancouver City Council in 1998 and amended in September 2011. For an overview of neighborhood plan goals, please refer to Section 3.4. The West Minnehaha Neighborhood Association holds occasional meetings.

#### 3.3.1.2 West Minnehaha Demographics

Table 3-16 compares race/ethnicity demographics in West Minnehaha to Clark County and Vancouver. Compared with the county and city, West Minnehaha has higher percentages of residents who identify as Black or African American, Native Hawaiian and Other Pacific Islander, or Two or More Races. West Minnehaha has lower percentages of people who identify as White or Asian.



Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
West Minnehaha	3,839	69.5%	2.9%	0.4%	1.3%	3.3%	0.0%	8.8%	13.8%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

#### Table 3-16. West Minnehaha Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-17 presents additional neighborhood data for West Minnehaha. The percentage of families below the poverty level is lower than the overall city or county; however, the percentage of people with low incomes is higher than the county and slightly higher than the city. The percentage of the population reporting a disability is similar to the percentages in Clark County and Vancouver. The percentage of households that have five or more people in West Minnehaha is substantially higher than in Clark County or Vancouver. The percentage of owner-occupied housing is lower than in Clark County and higher than in Vancouver. Table 3-18 displays age ranges for West Minnehaha residents, which generally follow trends for the county and city with the exception of a higher percentage of the population being 4 years and under. Home values are slightly less in the neighborhood than in Vancouver or Clark County.

#### Table 3-17. West Minnehaha Demographics and Characteristics

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
West Minnehaha	3.9%	30.9%	13.3%	26.6%	60.1%	\$389,650	2.7%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>



Area	<b>Total Population</b>	0–4 Years	5–17 Years	18–64 Years	65 and Older
West Minnehaha	3,839	8.6%	16.8%	61.4%	14.3%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

#### Table 3-18. West Minnehaha Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in West Minnehaha appears to be moderate. The schools, parks, and places to worship in the neighborhood help to foster cohesion. However, the large geographic area of the neighborhood, large Bonneville Power Administration site and transmission corridor, and limited connectivity within the neighborhood may limit cohesion. The street grid is sparse and consists of many dead ends as well as inconsistent sidewalks, resulting in fewer opportunities for residents to connect.

### 3.3.2 Lincoln Neighborhood Profile

#### 3.3.2.1 Lincoln Neighborhood Characteristics

The Lincoln neighborhood extends from I-5 to the BNSF railroad tracks and from NW 45th Street on the north to the alley between W 34th and 33rd Streets on the south. The border at the southeast corner is set back to Main Street and E 39th Street where it meets the Shumway neighborhood. Lincoln is the northernmost of the early Vancouver neighborhoods, with some homes dating back to the 1930s. Lincoln is almost entirely composed of single-family residential development, with higher-density multifamily residential development along Main Street and E 39th Street and a commercial center at their intersection.

Lincoln has many community resources including Lincoln Elementary School, Discovery Middle School, several preschools, and the Kiggins Bowl athletic field. PeaceHealth Urgent Care is located in Lincoln on Main Street and serves the entire downtown area with emergency medical care. WSDOT has a facility on Main Street. Historic resources in the neighborhood include the Covington House on Main Street and the City of Vancouver water tower located on NW 42nd and Washington Streets. There are two open spaces in Lincoln: a small neighborhood park called Hidden Park and the area where the water tower is located. The First Presbyterian Church, Unity of Vancouver, and Trinity Lutheran all serve the community.

C-TRAN bus Routes 2 (Lincoln), 6 (Fruit Valley/Grand), 31 (Hazel Dell), and 71 (Highway 99) serve the Lincoln neighborhood along NW Kauffman Avenue, W 39th Street, NW Lincoln Avenue, and Main Street, respectively (Routes 31 and 71 both serve Main Street). Route 105 (I-5 Express) runs along the eastern edge of Lincoln via I-5, but it does not stop within the neighborhood. There are bicycle lanes along W 39th Street, and Columbia Street. Bicycle routes are designated on shared roadways along NW 45th Street, W 33rd Street, and NW Kauffman Avenue.

The Lincoln neighborhood reported 198 criminal offenses in 2019 (156 offenses per 1,000 residents; VPD 2021). This is nearly double the Vancouver average of 79 per 1,000 residents. The three most-reported offenses were "Theft" (56 reported offenses), "Assault, Simple" (25 reported offenses), and "Burglary" (18 reported offenses).



The *Lincoln Neighborhood Action Plan* (City of Vancouver 2011a) was endorsed by the Vancouver City Council in 1998 and updated in June 2011. For an overview of neighborhood plan goals, please refer to Section 3.4. The Lincoln Neighborhood Association had been inactive from summer 2020 until March 2022 when they elected new officers and began scheduling events again. They have an active Facebook page and mailing list.

#### 3.3.2.2 Lincoln Demographics

Table 3-19 compares race/ethnicity demographics in the Lincoln neighborhood with those of Clark County and Vancouver. There is a higher percentage of residents who identify as White, Black or African American, or Two or More Races in the neighborhood than in the county or the city. Lincoln has lower percentages of Asian, Native Hawaiian and Other Pacific Islander, and Hispanic or Latino residents than either the county or city.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Lincoln	4,029	79.9%	2.9%	0.2%	2.8%	<0.1%	0.1%	6.6%	7.4%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

#### Table 3-19. Lincoln Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-20 presents additional neighborhood data for Lincoln. Home values in Lincoln are slightly lower than those in Clark County, but they are higher than those in Vancouver. The percentage of families living below the poverty line is similar to Vancouver, though the percentage of the population that is low income in the neighborhood is lower than that in the city, and higher than in the county (Table 3-20). The percentage of residents with a disability in Lincoln is higher than in Clark County and slightly higher than in Vancouver. The neighborhood has a lower percentage of large families and higher percentage of houses without a vehicle than Clark County and Vancouver. Home values in the neighborhood are lower than those in the county, but higher than in the city. The percentage of owner-occupied housing is higher than the city and lower than the county. Table 3-21 displays age ranges for Lincoln residents. The proportions of the population that are between 18 and 64 years and under 4 years old are higher compared to the county and the city, but the proportion of persons aged 5 to 17 years and 65 and older is lower.



Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Lincoln	8.6%	24.9%	14.3%	11.0%	58.7%	\$419,358	10.7%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

#### Table 3-20. Lincoln Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>

#### Table 3-21. Lincoln Age Characteristics

Area	Total Population	0–4 Years	5–17 Years	18–64 Years	65 and Older
Lincoln	4,029	7.2%	14.0%	64.5%	14.5%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

Source: USCB 2022, Table B01001.

Cohesion in Lincoln appears to be moderately high based on the presence of several schools, places of worship, and parks, as well as the well-connected street network, which helps to foster cohesion in the neighborhood. However, the relatively high crime rate and few neighborhood-oriented businesses may limit cohesion.

### 3.3.3 Shumway Neighborhood Profile

#### 3.3.3.1 Shumway Neighborhood Characteristics

The Shumway neighborhood is located immediately west of I-5 between E 39th Street and E Fourth Plain Boulevard, with a western boundary of Main Street. The northern portion of the neighborhood appears to be carved out of the Lincoln neighborhood. Shumway is one of the earliest neighborhoods in Vancouver with some homes dating back to the early twentieth century. Shumway consists mainly of single-family residential development with multifamily housing located along Main and 39th Streets. The intersections of Main Street with E Fourth Plain Boulevard and E 39th Street are zoned for commercial uses.

Many resources are located along Main Street including Vancouver Fire Department Station 1, the Knights of Pythias Retirement Center for low-income senior residents, and Clark County's only YWCA.


The Safeway in Shumway is one of the closest supermarkets to downtown Vancouver. The Oaks at Timberline is a rehabilitation center located on E 33rd Street. The Little Acorn Preschool and Kindergarten, the Vancouver School of Arts and Academics public high school, and the West Arts Academy School of Music draw students from the surrounding region interested in specific academic subjects and artistic pursuits. Shumway Park serves as a recreation resource for the community as do the athletic fields associated with the high school. There are many historic resources located in Shumway including historic houses such as the Bailey-Dickerson House at 2613 H Street and the Swan House across the street. Vancouver First United Methodist Church, First Church of Christ Scientist, Vancouver Lord Church (Korean), Church of Christ the Savior, and St. Luke's Episcopal Church all serve the neighborhood.

C-TRAN bus Route 6 (Fruit Valley/Grand) runs along the neighborhood's southern boundary on E Fourth Plain Boulevard. Routes 31 (Hazel Dell) and 71 (Highway 99) run through Shumway along Main Street. Routes 105 (I-5 Express) and 190 (Marquam Hill Express) run along the eastern boundary via I-5, but they do not stop within the community. There are bicycle lanes on E 39th Street and the western portion of E Fourth Plain Boulevard. Shumway has designated bicycle routes on shared streets along F Street, E 29th Street, and E 33rd Street.

Shumway reported 157 offenses in 2019 (156 offenses per 1,000 residents; VPD 2021). This is nearly double the Vancouver average of 79 per 1,000 residents. The three most-reported offenses were "Theft" (46 reported offenses), "Violate No Contact Order" (16 reported offenses), and "Assault, Simple" (14 reported offenses).

The *Shumway Neighborhood Plan* (City of Vancouver 1998b) was adopted by the Vancouver City Council in 1998. For an overview of neighborhood plan goals, please refer to Section 3.4. The Shumway Neighborhood Association had been active prior to 2020 with regular meetings, newsletters, and annual events. After a 2-year pause, the association has again been meeting regularly since March 2022.

### 3.3.3.2 Shumway Demographics

Table 3-22 compares race/ethnicity data for Shumway to Clark County and Vancouver. The percentages of residents who identified as White, Black or African American, Native Hawaiian and Other Pacific Islander, or Two or More Races are higher in Shumway than in Clark County or Vancouver. Meanwhile, the percentages of people who identify as Asian or Hispanic or Latino are lower than in the county or city.



Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Shumway	1,094	79.3%	2.3%	0.4%	3.0%	2.3%	0.2%	7.0%	5.4%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

### Table 3-22. Shumway Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-23 presents additional neighborhood data for Shumway. A much lower proportion of Shumway's families live below the poverty line than in the county or in the city. Approximately half of the housing units are owner-occupied, which is a lower rate than in the county or the city. The neighborhood median home value is lower than in Clark County and higher than in Vancouver. The rate of housing units with no vehicle is nearly three times higher in Shumway than in Clark County and nearly double that in Vancouver. Table 3-24 displays age ranges for Shumway residents. The neighborhood has a smaller percentage of residents under age 18 than the city or the county.

### Table 3-23. Shumway Demographics and Characteristics

Area	Families below Poverty Level	Low- Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index °	Housing Units with No Vehicle
Shumway	1.0%	24.9%	15.8%	5.7%	50.2%	\$394,907	13.4%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. https://www.zillow.com/research/data/



Area	Total Population	0-4 Years	5–17 Years	18–64 Years	65 and Older
Shumway	1,094	3.9%	9.6%	69.1%	16.6%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

#### Table 3-24. Shumway Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in Shumway appears to be moderately high based on the presence of schools, places of worship, parks, YWCA, and Safeway, as well as the well-connected internal street network, which helps to foster cohesion in the neighborhood. However, the relatively high crime rate and few neighborhood-oriented businesses may limit cohesion.

# 3.3.4 Rose Village Neighborhood Profile

## 3.3.4.1 Rose Village Neighborhood Characteristics

The Rose Village neighborhood (historically known as Rosemere) is bordered by I-5 to the west, Grand Boulevard to the east, SR 500 to the north, and E Fourth Plain Boulevard to the south. The neighborhood is composed almost entirely of single-family residences. However, high-density multifamily development and community commercial centers are found along the perimeter and along St. Johns Boulevard, which runs diagonally (southwest-northeast) through the neighborhood. The west end of Vancouver's International District — home to a variety of multicultural businesses and activities—begins at the southeast corner of Rose Village and runs along Fourth Plain Boulevard. Two cemeteries—Vancouver Barracks National Cemetery and Mother Joseph Catholic Cemetery—are at the southwest corner of the neighborhood.

Community resources include Washington Elementary School and neighborhood parks such as Ida Bell Jones Park and Leach Park. Many places of worship are located in the neighborhood including the Kingdom Hall of Jehovah's Witnesses, Iglesia Monte Sinai, Holy Apostles Orthodox Christian Church, Revival Tab Ministries, Memorial Lutheran Church-LCMS, The Way To Salvation Church, La Luz Del Mundo Vancouver, New Life Friends Church, River City Church, and United Pentecostal Church.

Rose Village is served by C-TRAN Connector: Rose Village, which has a scheduled route with dial-a-ride and connecting service in the neighborhood along E 33rd Street, Grand Boulevard, and E Fourth Plain Boulevard. Route 6 (Fruit Valley/Grand) and The Vine run along Fourth Plain Boulevard, and Route 25 (St. Johns) runs along St. Johns Boulevard. Routes 105 (I-5 Express) and 190 (Marquam Hill Express) run on the western edge of Rose Village via I-5, but they do not stop within the community. Route 190 also runs along the northern border of Rose Village on SR 500. Bicycle lanes run through Rose Village along E 33rd Street, St. Johns Boulevard, Fort Vancouver Way, and Grand Boulevard. There are designated bicycle routes on shared roadways along E 29th Street and the northern section of P Street.



Rose Village reported 493 criminal offenses in 2019 (85 offenses per 1,000 residents; VPD 2021). This is slightly higher than the Vancouver average of 79 per 1,000 residents.

The *Rose Village Neighborhood Action Plan* (City of Vancouver 2012) was accepted by the Vancouver City Council in 2012. The Rose Village Neighborhood Association had been active with meetings, newsletters, and Facebook posts prior to summer 2020. After a nearly 2-year hiatus, the Rose Village Neighborhood Association started holding monthly meetings again in May 2022.

# 3.3.4.2 Rose Village Demographics

Table 3-25 compares race/ethnicity data for Rose Village to Clark County and Vancouver. The percentages of residents in the neighborhood who identified as Native Hawaiian and Other Pacific Islander, Two or More Races, or Hispanic or Latino Alone are substantially higher in the neighborhood than in the county or city. The percentages of residents who identified as White or Asian in Rose Village are substantially lower for than Clark County or Vancouver.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Rose Village	5,780	55.3%	1.3%	0.6%	0.9%	2.4%	<0.1%	11.1%	28.5%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

### Table 3-25. Rose Village Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-26 presents additional neighborhood data for Rose Village. The neighborhood has notably higher percentages of families below the poverty level and low-income populations than in Clark County or Vancouver. The neighborhood also has a lower percentage of owner-occupied housing and a lower home value index. Rose Village has higher percentages of large families and housing units without access to a vehicle than in Clark County or Vancouver. Fewer than half of the housing units are owner-occupied compared to slightly more than half in the city and in the county. Table 3-27 displays age ranges for Rose Village residents. Compared to the city and the county, the neighborhood has higher percentages of 18 and 64.



Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Rose Village	14.0%	37.7%	15.1%	19.0%	46.7%	\$316,998	8.7%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

### Table 3-26. Rose Village Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>

### Table 3-27. Rose Village Age Characteristics

Area	Total Population	0–4 Years	5–17 Years	18–64 Years	65 and Older
Rose Village	5,780	8.5%	17.5%	68.3%	6.5%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

Source: USCB 2022, Table B01001.

Cohesion in Rose Village appears to be moderately high based on the presence of Washington Elementary School, neighborhood parks, places of worship, and an internally connected street grid, which helps to foster cohesion. The connection to Vancouver's International District, which has a community organization (Fourth Plain Forward<sup>14</sup>) and holds regular events, also provides opportunities for residents to interact. However, the relatively high crime rate and few neighborhood-oriented businesses may limit cohesion.

# 3.3.5 Hough Neighborhood Profile

### 3.3.5.1 Hough Neighborhood Characteristics

The Hough neighborhood is located west of Main Street between W 15th Street and W Fourth Plain Boulevard, with the BNSF tracks as its western boundary. It is one of the earliest neighborhoods in Vancouver with many homes dating back to the early twentieth century.

<sup>&</sup>lt;sup>14</sup> <u>https://www.fourthplainforward.org/</u>



Hough has a mix of single-and multifamily housing within a perimeter of largely nonresidential land uses. Main Street along the eastern boundary includes restaurants, specialty stores, and personal services. Along the western boundary (BNSF) are industrial uses and higher density housing. Mill Plain Boulevard, to the south, includes professional offices and runs along the edge of a campus of government buildings, while W Fourth Plain Boulevard, on the north, is mostly residential.

Hough Elementary School and John Ball Park are major community resources in this neighborhood. The commercial corridor on Main Street includes the Vancouver Housing Authority, Wells Fargo Bank, and businesses that serve the local area. Historic resources in Hough include the Steffan House and Charles Zimmerman House; both are located on Columbia Street. Hough is also home to a historic district that encompasses approximately 20 blocks north of W Mill Plain Boulevard between Daniels Street and Markle Avenue. The Renewed Hope Ministries, Word of Life Church-Vancouver, New Hope Center Vancouver Foursquare Church, Compass Church, Iona Community Anglican Church, and the First Christian Church-Disciples of Christ all serve the community.

The neighborhood is served by C-TRAN bus Routes 2 (Lincoln), which runs along Kauffman Avenue and W Mill Plain Boulevard; 6 (Fruit Valley/Grand), which runs along W Fourth Plain Boulevard; and 25 (St. Johns), which runs along W Mill Plain Boulevard. There are bicycle lanes on Columbia Street, W Fourth Plain Boulevard, W Mill Plain Boulevard, the east portion of W McLoughlin Boulevard, and W 15th Street. There are bicycle routes on shared roadways along Lincoln Avenue, Kauffman Avenue, Franklin Street, and Columbia Street.

The Hough neighborhood reported 196 criminal offenses in 2019 (122 offenses per 1,000 residents; VPD 2021). This is roughly 50% higher than the Vancouver average of 79 per 1,000 residents. The three most-reported offenses were "Theft" (45 reported offenses), "Assault, Simple" (32 reported offenses), and "Vandalism" (27 reported offenses).

The *Hough Neighborhood Action Plan* (City of Vancouver 2009b) was accepted by the Vancouver City Council in 1996 and updated in 2009. For an overview of neighborhood plan goals, please refer to Section 3.4. The Hough Neighborhood Association meets quarterly and has an active Facebook page.

# 3.3.5.2 Hough Demographics

Table 3-28 compares race/ethnicity demographics in Hough to those of Clark County and Vancouver. The percentage of residents who identified as White is higher in the neighborhood than in the county or the city. The proportions of almost all other races/ethnicities are lower among Hough residents than in Clark County or Vancouver, and the percentage of neighborhood residents who identify as Asian is less than a third of the percentage of county or city residents.



Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Hough	2,795	86.1%	1.8%	0.3%	1.5%	<0.1%	<0.1%	2.4%	7.9%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

### Table 3-28. Hough Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-29 provides additional demographic data for the Hough neighborhood. It has a higher percentage of families below the poverty level than either the county or the city, a higher percentage of residents with a disability, and a substantially higher percentage more households with no vehicle access. Table 3-30 displays age ranges for Hough residents. The percentage of neighborhood residents over age 65 is higher than the county or the city.

### Table 3-29. Hough Demographics and Characteristics

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Hough	11.4%	30.2%	18.9%	12.2%	45.2%	\$408,568	20.1%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>



Area	Total Population	0–4 Years	5–17 Years	18–64 Years	65 and Older
Hough	2,795	5.2%	11.0%	61.7%	22.2%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

### Table 3-30. Hough Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in Hough appears to be moderate based on the presence of neighborhood-oriented businesses along Main Street, Hough Elementary School, and John Ball Park, which provide opportunities for residents to connect. The dense street grid network supports non-auto travel, but some neighborhood streets do not have sidewalks, which may limit some opportunities for residents to connect. The relatively high crime rate may also adversely affect cohesion.

# 3.3.6 Arnada Neighborhood Profile

# 3.3.6.1 Arnada Neighborhood Characteristics

The Arnada neighborhood is located immediately west of I-5 between E Fourth Plain Boulevard and E 15th Street, with Main Street as its western boundary. It is one of the earliest neighborhoods in Vancouver.

Arnada is primarily composed of single-family residential development. Its commercial areas are along Main Street, Broadway Street, and E McLoughlin Boulevard. The business district, or Uptown Village, is located on Main Street, between E McLoughlin and Fourth Plain Boulevards. The blocks south of E McLoughlin Boulevard are in large part located in the commercial downtown district, which promotes a mix of retail, office, civic, and housing uses.

Arnada Park, the only park in the neighborhood, is located near the E Fourth Plain Boulevard interchange and serves as a recreational resource for the community. The historic Carnegie Library is on Main Street and has been converted into the Clark County Historical Museum. The Vancouver District United Methodist Church and Arnada Abbey serve the community.

C-TRAN bus Route 30 (Burton) runs through the heart of the neighborhood on E McLoughlin Boulevard. Route 6 (Fruit Valley/Grand) runs along the northern boundary of the neighborhood on E Fourth Plain Boulevard, while Routes 31 (Hazel Dell) and 71 (Battle Ground) run on Broadway and Washington Streets. Routes 2 (Lincoln), 37 (Mill Plain/Fisher's), 41 (SR 14), and 105 (I-5 Express) serve the community via E 15th Street on the southern boundary of the neighborhood. Route 30 (Burton) and The Vine serve the southeastern corner of the neighborhood via E McLoughlin Boulevard. Route 190 (Marquam Hill Express) runs along the eastern boundary via I-5, but does not stop in the neighborhood.



Bicycle lanes are on E McLoughlin Boulevard, E Fourth Plain Boulevard, the southern segment of C Street, and on E 15th Street; the E 15th Street bicycle lanes disappear between D Street and Main Street. F Street is a designated bicycle route on a shared roadway.

The Arnada neighborhood reported 134 offenses in 2019 (194 offenses per 1,000 residents; VPD 2021). The three most-reported offenses were "Theft" (28 reported offenses), "Burglary" (16 reported offenses), and "Violate No Contact Order" (15 reported offenses). This is roughly 2.5 times the Vancouver average of 79 per 1,000 residents.

The *Arnada Neighborhood Action Plan* (City of Vancouver 2009a) was endorsed by Vancouver City Council in 1996 and updated in 2009. For an overview of neighborhood plan goals, please refer to Section 3.4. The Arnada Neighborhood Association meets monthly, has an active Facebook page, and publishes a newsletter regularly.

## 3.3.6.2 Arnada Demographics

Table 3-31 compares race/ethnicity data for Arnada to Clark County and Vancouver. The neighborhood has a notably higher percentage of American Indian and Alaska Native residents than Clark County or Vancouver. The percentages of residents who identified as Some Other Race or Two or More Races are higher than in the county and city. Asian, Native Hawaiian and Other Pacific Islander, and Hispanic or Latino populations have lower percentages in the neighborhood than in the city or county.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Arnada	991	74.4%	1.5%	1.8%	1.7%	0.2%	1.4%	12.0%	7.0%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

### Table 3-31. Arnada Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-32 presents additional neighborhood data for Arnada. The neighborhood has higher percentages of households below the poverty level and residents with low incomes than Clark County or Vancouver. The percentage of owner-occupied housing is less than half of the percentage in the county. The percentage of large families in the neighborhood is far lower than in the city or county. The neighborhood home value is relatively high compared with the city overall, and similar to home value in the county. Arnada has a much higher percentage of housing units without vehicles than either the city or the county, with more than double the percentage of Vancouver and more than triple the percentage of Clark County. Table 3-33 displays age ranges for Arnada residents. The percentage



of neighborhood residents between ages 18 and 64 is higher than the city or county, and other age ranges are lower.

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Arnada	10.1%	38.1%	14.8%	1.2%	28.6%	\$429,085	16.5%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

### Table 3-32. Arnada Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/</u>

### Table 3-33. Arnada Age Characteristics

Area	Total Population	0–4 Years	5–17 Years	18–64 Years	65 and Older
Arnada	991	4.9%	12.2%	71.7%	11.7%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

Source: USCB 2022, Table B01001.

Cohesion in Arnada appears to be moderately high based on the presence of neighborhood-oriented businesses along Main Street that provide opportunities for residents to connect. The dense street grid and presence of sidewalks on many streets also foster neighborhood cohesion. However, the relatively high crime rate, limited park space, and lack of schools may limit cohesion.

# 3.3.7 Central Park Neighborhood Profile

### 3.3.7.1 Central Park Neighborhood Characteristics

The Central Park neighborhood is located immediately east of I-5 between E Mill Plain and E Fourth Plain Boulevards, with a western boundary of Grand Boulevard. It is an early Vancouver neighborhood. Some homes in this neighborhood were originally built for officers and soldiers based at Fort Vancouver.

East of Reserve Street, Central Park has a mix of single- and multifamily residential development. Land west of Reserve Street is primarily occupied by large campuses that combine open space, high concentrations of people, and activity centers: Clark College, Hudson's Bay High School, Marshall



Park, the Luepke Senior Center and Marshall Center, and the Vancouver Veterans Affairs (VA) Hospital. The hospital provides healthcare through its Medical Center and Center for Community Health. The Washington State School for the Blind and Lupine Experiential School are in the neighborhood. Vancouver Vineyard Church and The Potter's House of Christian Fellowship Church serve the Central Park neighborhood.

The Central Park neighborhood is served by C-TRAN bus Routes 6 (Fruit Valley/Grand) along E Fourth Plain Boulevard and Grand Boulevard, 30 (Burton) along E McLoughlin Boulevard, 37 (Mill Plain/Fisher's) along E Mill Plain Boulevard, 25 (St. Johns) along Fort Vancouver Way, and The Vine runs along E Mill Plain Boulevard, Fort Vancouver Way, and E Fourth Plain Boulevard. Routes 105 (I-5 Express) and 190 (Marquam Hill Express) run along the eastern perimeter via I-5, but they do not stop within the neighborhood.

Bicycle lanes are on Reserve Street, Fort Vancouver Way, and Grand Boulevard. Bicycle lanes are also west of Reserve Street on E McLoughlin Boulevard and E Mill Plain Boulevard. The Clark College campus has a network of multiuse paths.

The Central Park neighborhood reported 299 offenses in 2019 (152 offenses per 1,000 residents; VPD 2021). This is nearly double the Vancouver average of 79 per 1,000 residents. The three most-reported offenses were "Theft" (77 reported offenses), "Assault, Simple" (42 reported offenses), and "Violate No Contact Order" (30 reported offenses).

The *Central Park Neighborhood Action Plan* (City of Vancouver 2010) was adopted in 2000 and updated in April 2010. For an overview of neighborhood plan goals, please refer to Section 3.4. The Central Park Neighborhood Association has held regular meetings in the past, but the last record of a neighborhood meeting was in May 2021.

# 3.3.7.2 Central Park Demographics

Table 3-34 compares race/ethnicity demographics in Central Park to Clark County and Vancouver. The percentages of residents who identified as White or Black or African American are higher in the neighborhood than in the county or city overall with the percentage of Black residents in the neighborhood roughly triple the percentage in the county or in the city. The percentages for most other race/ethnicity categories are lower in Central Park than in Clark County or Vancouver.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Central Park	2,174	81.7%	6.0%	0.1%	1.5%	<0.1%	0.3%	1.5%	9.0%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%

### Table 3-34. Central Park Race/Ethnicity



Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

Source: USCB 2022, Table B03002.

Table 3-35 presents additional neighborhood data for Central Park. The percentage of owner-occupied housing is lower in the neighborhood than in Clark County or Vancouver. The home value index is also lower in the neighborhood than the county or city. The percentage of households without access to a vehicle is higher in Central Park than the county or city. Table 3-36 displays age ranges for Central Park residents. The percentage of neighborhood residents between ages 18 and 64 is higher than the city or county.

### Table 3-35. Central Park Demographics and Characteristics

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index °	Housing Units with No Vehicle
Central Park	7.2%	25.8%	12.7%	15.8%	39.4%	\$331,351	10.2%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>

### Table 3-36. Central Park Age Characteristics

Area	Total Population	0–4 Years	5–17 Years	18–64 Years	65 and Older
Central Park	2,174	6.7%	10.7%	70.4%	12.2%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

Source: USCB 2022, Table B01001.

Cohesion in Central Park appears to be moderately low based on the neighborhood association's limited recent activity. The parks and schools in the neighborhood provide places for residents to connect. However, the limited connectivity within the neighborhood, large institutions (Clark College



and VA hospital) on the west side of the neighborhood, few neighborhood-oriented businesses, and relatively high crime rate may limit neighborhood cohesion.

# 3.3.8 Esther Short Neighborhood Profile

# 3.3.8.1 Esther Short Neighborhood Characteristics

The Esther Short neighborhood is located immediately west of I-5 and extends from 15th Street to the Columbia River. The BNSF railroad tracks run along the western border of this neighborhood. Esther Short includes Vancouver's downtown core. It is one of the earliest neighborhoods in Vancouver. The southern edge of the neighborhood along the Columbia River is in the process of redevelopment as a relatively high-density mixed-use area known as the Columbia Waterfront.

Esther Short is primarily composed of commercial development, which is concentrated in the downtown area. Some light industry is located in the western portion of the neighborhood with heavy industry along the railroad tracks and a portion of the Columbia River. Most of the residential development is in the form of condominiums and apartments near Esther Short Park, in the northwest corner of the neighborhood, and in the mixed-use developments in the Columbia Waterfront.

Community facilities in the neighborhood include an Amtrak train station and the regionally important Esther Short Park. The park is the site of many festivals, concerts, and the Vancouver Farmers Market. Vancouver Waterfront Park, located on along the north shore of the Columbia River in the Esther Short neighborhood, is another regionally significant park and includes walking trails, park areas, and restaurants, as well as areas of mixed-use development. The Clark County Public Service Center, Washington State Patrol Forensics Building, and other government buildings are concentrated on a government campus along Franklin Street in the northwest corner of the neighborhood. City Hall is located by the intersection of Esther Street and W 6th Street. The Vancouver Community Library is located near the Regal Cinemas on C Street. Smith Tower offers senior and low-income housing.

This neighborhood has the highest concentration of historic resources in the county including the Lowell M. Hidden House, the Vancouver Telephone Exchange, the Evergreen Hotel, the Heritage Building, the Langsdorf House, the Elks Building, the House of Providence (also known as Providence Academy), the Lloyd DuBois House, the Chumasero-Smith House, and the Slocum House in Esther Short Park. St. Paul Lutheran Church, the Proto-Cathedral of St. James the Greater, the Christian Science Reading Room, Crown and Anchor Church, and Union Chapel all serve the community.

Esther Short is well connected to the C-TRAN transit network because it includes the downtown core. These bus routes make service stops in the neighborhood:

- 2 (Lincoln)
- 25 (St. Johns and Fruit Valley)
- 30 (Burton)
- 31 (Hazel Dell)
- 32 (Evergreen/Andresen)
- 37 (Mill Plain/Fisher's)



- 41 (SR 14)
- 60 (Delta Park Regional)
- 71 (Highway 99)
- 105 (I-5 Express)
- The Vine (Fourth Plain)

Route 190 (Marquam Hill Express) runs along the eastern perimeter via I-5, but it does not stop within the neighborhood.

The Columbia River Renaissance Trail runs along the Columbia River into the neighborhood from the east and continues west through the newly developed Waterfront Park to approximately W Columbia Way and Boise Place. The entrance to the Interstate Bridge southbound sidewalk/bicycle facility is at the southeast corner of the neighborhood near the intersection of Columbia Street and W Columbia Way. Bicycle lanes are on Columbia Street, C Street, and W 8th Street into the southern portion of Jefferson Street. E Mill Plain Boulevard and E 15th Street also have bicycle lanes, though they are not continuous through the neighborhood. There are designated bicycle routes on shared roadways along Franklin Street and Evergreen Boulevard.

Esther Short had 713 reported offenses in 2019 (690 offenses per 1,000 residents; VPD 2021). This is nearly 10 times the Vancouver average of 79 per 1,000 residents. The three most-reported offenses were "Theft" (153 reported offenses), "Assault, Simple" (90 reported offenses), and "Violate No Contact Order" (75 reported offenses). It is likely that this high crime rate poorly characterizes the neighborhood, as all of the crimes committed at the County Court House and Jail are recorded as taking place within this neighborhood.

The *Esther Short Neighborhood Action Plan* (City of Vancouver 2006) was accepted by Vancouver City Council in 2006. For an overview of neighborhood plan goals, please refer to Section 3.4. The Esther Short Neighborhood Association has an active Facebook page and had been meeting regularly through February 2020. After a 2-year pause, the Esther Short Neighborhood Association began meeting regularly again in May 2022. The association has an active Facebook page.

# 3.3.8.2 Esther Short Demographics

Table 3-37 compares race/ethnicity demographics in Esther Short to Clark County and Vancouver. Compared to Vancouver and Clark County, the neighborhood has a higher percentage of Black residents, American Indian and Native Alaskan residents, and residents who identify as Some Other Race. The neighborhood has lower percentages of Asian residents and Hispanic or Latino residents.



Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Esther Short	2,821	75.9%	6.1%	2.1%	2.5%	0.7%	0.9%	3.8%	8.0%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

### Table 3-37. Esther Short Race/Ethnicity

Source: USCB 2022, Table B03002.

Table 3-38 presents additional neighborhood data for Esther Short. The percentage of families below poverty level is nearly triple the percentage in Clark County and more than double the percentage in Vancouver. The percentage of low-income residents in the neighborhood is more than double the percentage in Clark County, and also substantially higher than in Vancouver overall. One quarter of Esther Short residents reported a disability, which is nearly double the percentage reported for the county or city. The percentage of large families in the neighborhood is less than half of the percentage in the county or the city. The percentage of owner-occupied households is far lower than the county or the city, and the percentage of housing units with no vehicle is far higher than the county or the city. The home value index is substantially lower in Esther Short than in Clark County or Vancouver. Table 3-39 displays age ranges for Esther Short residents. The percentage of neighborhood residents under age 18 is much lower than the city or county.

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Esther Short	17.2%	50.6%	25.0%	6.3%	19.0%	\$348,447	31.0%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

### Table 3-38. Esther Short Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

b Large family means five or more people per family household.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>



Area	Total Population	0–4 Years	5–17 Years	18–64 Years	65 and Older
Esther Short	2,821	1.5%	2.9%	73.4%	21.4%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

### Table 3-39. Esther Short Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in Esther Short appears to be moderately high based on the redeveloped waterfront, Esther Short Park, neighborhood-oriented businesses, library, and places of worship that all provide places for residents to connect. However, the neighborhood's high amount of commercial and industrial land use and relatively high crime rate may limit cohesion.

# 3.3.9 Hudson's Bay Neighborhood Profile

# 3.3.9.1 Hudson's Bay Neighborhood Characteristics

Hudson's Bay neighborhood is located east of I-5 between Mill Plain Boulevard and SR 14. The eastern edge is at Grand Boulevard. It is one of the earliest neighborhoods in Vancouver with many homes dating back to the 1820s through 1840s.

Hudson's Bay is home to large public facilities and open spaces such as Officers Row, Memory/Mill Plain Park, the Fort Vancouver National Historic Site, and a portion of Pearson Field. The southeast corner of the neighborhood has a mix of industrial and commercial land uses including a Fred Meyer, which is one of the closest supermarkets to downtown. Limited commercial uses are also located along E Evergreen Boulevard, east toward Grand Boulevard. Residential development is primarily east of Reserve Street with a few housing units in the restored vintage structures on Officers Row. High-density multifamily residential development is scattered throughout the neighborhood with a majority located south of Evergreen Boulevard. Hudson's Bay has relatively few single-family residential structures that are a combination of late nineteenth and early twentieth century two-story frame houses and 1930s style bungalows.

Additional resources in Hudson's Bay include the Fort Vancouver Regional Libraries' Mill Plain Library (temporarily closed at the time of writing) and district office at E Mill Plain Boulevard and Fort Vancouver Way. The Vancouver Police Department has a station at E Evergreen Boulevard and Anderson Street. Allen's Crosley Lanes bowling alley on E Evergreen Boulevard is the only bowling alley close to downtown Vancouver.

The Hudson's Bay neighborhood is served by C-TRAN bus Route 32 (Evergreen-Andresen) along E Evergreen Boulevard. Route 37 (Mill Plain/Fisher's) runs along the northern perimeter of Hudson's Bay on E Mill Plain Boulevard, and Route 41 (SR 41) runs along its southern boundary via SR 14. Route 6 (Fruit Valley/Grand) runs along the eastern boundary via Grand Boulevard. Route 25 (St. Johns and Fruit Valley) runs through the northwest corner of the neighborhood on Fort Vancouver Way and



E Evergreen Boulevard. Routes 105 (I-5 Express) and 190 (Marquam Hill Express) run along the western perimeter via I-5, but they do not stop within the neighborhood.

A multiuse path runs along the west edge of the Fort Vancouver National Historic Site (south of E 5th Street) and crosses SR 14 via the Vancouver Land Bridge into the Columbia Way neighborhood, where it connects with the Columbia River Renaissance Trail. Another multiuse path runs south from E 5th Street along the east edge of Pearson Field and crosses SR 14 into the Columbia Way neighborhood. Bicycle lanes are on Fort Vancouver Way, Grand Boulevard, E Evergreen Boulevard (between Reserve Street and X Street), and E Mill Plain Boulevard (west of Reserve Street). There are designated bicycle routes on shared roadways along E 5th Street and Columbia House Boulevard.

Hudson's Bay reported 229 offenses in 2019 (130 offenses per 1,000 residents; VPS 2021). This is 65% higher than the Vancouver average of 79 per 1,000 residents. The three most-reported offenses were "Theft" (76 reported offenses), "Assault, Simple" (22 reported offenses), and "Motor Vehicle Theft" (18 reported offenses).

The *Hudson's Bay Neighborhood Action Plan* (City of Vancouver 1998a) was accepted by Vancouver City Council in 1998. For an overview of neighborhood plan goals, please refer to Section 3.4. The Hudson's Bay Neighborhood Association is active but meets infrequently, and their Facebook page is updated only occasionally.

## 3.3.9.2 Hudson's Bay Demographics

Table 3-40 compares race/ethnicity demographics in Hudson's Bay to Clark County and Vancouver. Compared with the county and city, the neighborhood has lower percentages of residents that identified as Black or African American, American Indian and Alaska Native, Asian, or Native Hawaiian and Other Pacific Islander. The percentage of residents who identify as Two or More Races is more than double than in the city or county.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Hudson's Bay	2,034	76.5%	0.2%	<0.1%	2.5%	<0.1%	<0.1%	11.5%	9.2%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

### Table 3-40. Hudson's Bay Race/Ethnicity

Source: USCB 2022, Table B03002.



Table 3-41 presents additional neighborhood data for Hudson's Bay. A substantially lower percentage of families in Hudson's Bay are below the poverty level compared with Clark County or Vancouver. The neighborhood also has relatively lower percentages of large families and owner-occupied housing. The percentage of households without access to a motor vehicle is higher in Hudson's Bay than in the county or city. Table 3-42 displays age ranges for Hudson's Bay residents. The percentage of neighborhood residents under age 18 is lower than the city or county.

Area	Home Value Index <sup>c</sup>	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>♭</sup>	Owner- Occupied Housing	Housing Units with No Vehicle
Hudson's Bay	\$353,304	1.7%	29.4%	13.2%	8.1%	34.1%	9.9%
Clark County	\$428,582	6.0%	22.9%	12.1%	15.8%	67.1%	4.6%
Vancouver	\$402,113	8.4%	30.3%	14.0%	14.1%	51.7%	7.0%

### Table 3-41. Hudson's Bay Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

- a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.
- b Large family means five or more people per family household.
- c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>

Area	Total Population	0-4 Years	5–17 Years	18–64 Years	65 and Older
Hudson's Bay	2,034	4.2%	11.8%	65.0%	19.5%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

### Table 3-42. Hudson's Bay Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in Hudson's Bay appears to be moderately low based on land use and connectivity in the neighborhood, which limit opportunities for cohesion. Large land uses (Fort Vancouver and Pearson Field) and industrial and commercial areas occupy much of the west and south sides of the neighborhood, so the residential area is concentrated on the east side of the neighborhood. E Mill Plain Boulevard creates a barrier between the north and south portions of the neighborhood. There are few neighborhood-oriented businesses and gathering places. A relatively high crime rate also hinders cohesion.



# 3.3.10 Columbia Way Neighborhood Profile

## 3.3.10.1 Columbia Way Neighborhood Characteristics

The Columbia Way neighborhood is located east of I-5, between SR 14 and the Columbia River, and extends east to include Marine Park. Industrial and commercial uses comprise most of Columbia Way, with a mix of light and heavy industrial uses in the central portion of the neighborhood. Columbia Way is home to historically important parks and recreational resources including Waterfront Park, Marine Park, Old Apple Tree Park, and Surprise Beach. The Vancouver Water Resources Center is north of Marine Park at the east edge of the neighborhood. Residences are focused in a single area along the shoreline just east of Waterfront Park where there is a mix of single-family town homes and multifamily structures.

The Columbia Way neighborhood is served by C-TRAN bus Route 41 (SR 14) along SR 14. A multiuse path runs along the edge of the Columbia River through Fort Vancouver Waterfront Park and Marine Park; the path transitions to sidewalk on Columbia Way to avoid the industrial land use in the central part of the neighborhood.

Columbia Way reported 97 offenses in 2019 (68 offenses per 1,000 residents; VPD 2021). This is lower than the Vancouver average of 79 per 1,000 residents.

The Columbia Way Neighborhood Association is currently inactive, and has not published a neighborhood action plan.

# 3.3.10.2 Columbia Way Demographics

Table 3-43 compares race/ethnicity demographics in Columbia Way to Clark County and Vancouver. Columbia Way has a substantially higher proportion of residents who identify as Asian than in the county or city. The percentage of residents who identify as other races/ethnicity categories, except for White, are lower in the neighborhood than the county or city. The percentage of White residents in the neighborhood is similar to the percentage in Clark County and higher than in Vancouver.

Area	Total Population	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino Alone
Columbia Way	1,195	76.5%	1.1%	<0.1%	12.7%	<0.1%	<0.1%	2.1%	7.6%
Clark County	481,950	77.5%	1.7%	0.5%	4.7%	0.7%	0.2%	4.7%	10.0%
Vancouver	182,792	70.0%	2.1%	0.3%	5.5%	1.5%	0.2%	5.7%	14.6%

### Table 3-43. Columbia Way Race/Ethnicity

Source: USCB 2022, Table B03002.



Table 3-44 presents additional neighborhood data for Columbia Way. The percentage of families below the poverty level is much lower in Columbia Way than in Clark County or Vancouver. The percentage of large families is far lower than the county or the city. The home value index in Columbia Way is notably lower than in Clark County or Vancouver. The percentage of households without access to a vehicle is higher in the neighborhood than the county or city. Table 3-45 displays age ranges for Columbia Way residents. The percentage of neighborhood residents under age 18 is much lower than the city or county.

Area	Families below Poverty Level	Low-Income Population (<2x poverty level)	Disabled <sup>a</sup>	Large Families <sup>b</sup>	Owner- Occupied Housing	Home Value Index <sup>c</sup>	Housing Units with No Vehicle
Columbia Way	0.1%	22.9%	15.4%	<0.1%	49.0%	\$353,932	8.2%
Clark County	6.0%	22.9%	12.1%	15.8%	67.1%	\$428,582	4.6%
Vancouver	8.4%	30.3%	14.0%	14.1%	51.7%	\$402,113	7.0%

### Table 3-44. Columbia Way Demographics and Characteristics

Source: USCB 2022, Tables B17010, C17002, S1810, B11016, B25044.

a Disability is defined by the existence of a physical, mental, or emotional condition lasting 6 months or more in household members 5 years of age and older, that makes it difficult to perform activities including working and leaving home.

c Zillow Home Value Index, January 2021. <u>https://www.zillow.com/research/data/.</u>

Area	Total Population	0-4 Years	5–17 Years	18–64 Years	65 and Older
Columbia Way	1,195	<0.1%	3.2%	60.7%	38.6%
Clark County	481,950	6.1%	17.9%	60.6%	15.4%
Vancouver	182,792	6.6%	15.8%	61.5%	16.2%

### Table 3-45. Columbia Way Age Characteristics

Source: USCB 2022, Table B01001.

Cohesion in Columbia Way appears to be low based on the neighborhood's urban form and neighborhood characteristics. Although it has a low crime rate and contains several parks, the parks are not near the residential area. The large amount of industrial land use, few neighborhood-oriented businesses, and lack of schools or places of worship limit the potential for cohesion. A minimal street grid also results in few opportunities for residents to connect while walking or biking, further limiting cohesion.

b Large family means five or more people per family household.



# 3.4 Description of Relevant Neighborhood Plan Goals for Portland and Vancouver

This section is a general description of the goals and objectives listed in City of Portland and City of Vancouver neighborhood plans for the neighborhoods in the IBR study area. It is intended to offer an understanding of ways in which the project may help neighborhoods accomplish their goals or may hinder neighborhoods' abilities to meet their goals. Topics covered in each neighborhood's goals and objectives are listed in Table 3-46 and Table 3-47. Under each category shown in the tables, the following specific goals and objectives are common to many of the neighborhoods:

- Transportation and Traffic
  - > Reduce speeding in the neighborhood.
  - > Improve walking and biking connectivity and safety.
  - > Reduce transportation-related noises and odor.
  - > Reduce cut-through traffic.
  - > Maintain or enhance neighborhood on-street parking.
  - > Maintain or improve transit service for the neighborhood.
  - > Reduce truck traffic in the neighborhood.
  - > Support development of light-rail transit.
- Community Image and Character
  - > Support neighborhood amenities.
  - > Support cultural activities.
  - > Enhance attractiveness.
  - > Protect neighborhood trees and encourage tree planting and landscaping.
  - > Encourage property maintenance.
  - Create opportunities for people to interact, become acquainted, and strengthen their sense of community.
  - > Ensure new construction is consistent with the character of the neighborhood.
  - > Prevent and reduce graffiti and other vandalism.
- Land Use
  - > Maintain a balance between commercial and residential land uses.
  - > Support density adjacent to transit.
  - Minimize the adverse impact of new multifamily/small business developments in the neighborhood.
  - > Encourage owner-occupied housing and businesses.
  - > Provide services and jobs within walking distance of residences.
  - Encourage the IBR Program to restore land for urban uses as part of the Interstate Bridge replacement.



- Historic and Cultural
  - > Preserve the neighborhood's historic character.
  - > Encourage adaptive reuse of existing or historic structures.
  - > Ensure new construction is consistent with the neighborhood's historic character.
- Recreation and Open Space
  - > Establish safe and accessible recreational facilities.
  - > Develop and maintain open space within the residential areas of the neighborhood.
  - > Ensure that individuals, owners, and government agencies protect the Columbia River from contaminants including oil and other hazardous materials.
  - > Protect natural resource values of the Columbia and Bridgeton Sloughs.
  - > Maintain North Portland Harbor as a scenic corridor.
- Public Facilities
  - > Improve streets, storm drains, and lighting in the neighborhood to ensure safe travel.
  - > Improve multimodal facilities such as bus stops, sidewalks, and ADA infrastructure.
  - > Provide multimodal access to and within the neighborhood for all levels of ability.
- Noise Reduction
  - > Mitigate traffic noise from I-5.
- Economic Development
  - > Encourage businesses to stay in neighborhoods.
  - > Encourage new businesses to locate in the neighborhood.
  - > Support business and retail revitalization.
  - > Encourage owner-occupied businesses.
- Public Safety
  - > Improve neighborhood pedestrian safety and accessibility.
  - > Improve street lighting in the neighborhood.
  - > Improve and maintain sidewalks and street crossings.
- Housing
  - > Preserve the neighborhood's existing housing stock.
  - > Minimize the adverse impacts of new multifamily housing.
  - > Maintain housing affordability.
  - > Concentrate housing density near transit.
  - > Encourage diversity in housing types.



## Table 3-46. Summary of Portland Relevant Adopted Neighborhood and Community Plan Goals <sup>a</sup>

Neighborhood Action Plan, Year Adopted or Amended	Housing	Transportation and Traffic	Community Image and Character	Land Use	Historic and Cultural	Recreation and Open Space	Public Facilities	Noise Reduction	Economic Development	Public Safety
Albina Community Plan, 1993	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Bridgeton, 1997	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes
Hayden Island, 2009	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Kenton Neighborhood Plan, 2001	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
North Interstate Corridor Plan, 2008	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No

a Goals identified in applicable City of Portland Neighborhood Plans.



### Table 3-47. Summary of Vancouver Relevant Adopted Neighborhood Action Plan Goals and Objectives <sup>a</sup>

Neighborhood Action Plan, Year Adopted or Amended	Housing	Transportation and Traffic	Community Image and Character	Land Use	Historic and Cultural	Recreation and Open Space	Public Facilities	Noise Reduction	Economic Development	Public Safety
Arnada, 2009	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Central Park, 2010	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Esther Short, 2006	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
Hough, 2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Hudson's Bay, 1998	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Lincoln, 2011	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rose Village, 2012	Yes	Yes	Yes	No	No	No	Yes	No	No	Yes
Shumway, 1998	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes
West Minnehaha, 2011	No	Yes	Yes	No	No	Yes	No	No	Yes	Yes

a Goals and objectives identified in applicable City of Vancouver Neighborhood Action Plans.



# 4. LONG-TERM BENEFITS AND EFFECTS

# 4.1 Introduction

This chapter evaluates the potential long-term effects of the Modified LPA on each of the neighborhoods described in Chapter 3, Affected Environment. The Oregon and Washington sections of the chapter each begin with a description of how infrastructure changes resulting from the Modified LPA would affect local traffic in the study area. This is followed by an evaluation of project-related displacements, property impacts, and changes in circulation and access for individual neighborhoods and the resulting effects on community cohesion. Temporary effects are described in Chapter 5.

# 4.2 No-Build Alternative

Under the No-Build Alternative, existing neighborhoods, community facilities, and social resources would not be impacted by the IBR Program. Neighborhoods in the study area would continue to develop according to local and regional plans, although their development might not be fully consistent with the goals of plans that assume improved mobility and transit access in the I-5 corridor and expanded transit access; for example, the goals of the Hayden Island Plan would likely not be realized without the construction of a high-capacity transit station on the island. The Land Use Technical Report contains more information on local land use plans. Community cohesiveness would not be negatively impacted by construction activities such as noise, vibration, or transportation disruptions, but study area neighborhoods would not benefit from reduced congestion, improved mobility, increased transit connectivity, improved active transportation connections, or potentially improved access to employment opportunities.

# 4.3 Oregon Long-Term Benefits and Effects

# 4.3.1 Effects on Portland Local Streets

The Modified LPA would result in changes to intersection operations in the study area. In most locations, intersection operations on Portland local streets under the Modified LPA would be similar to or better than operations under the No-Build Alternative. Some intersections would experience reduced operations, primarily along arterials connecting to I-5. The Transportation Technical Report includes more-detailed information on transportation impacts. The anticipated changes in intersection operations would not be anticipated to impact neighborhood cohesion.

# 4.3.2 Overview of Effects on Oregon Neighborhoods

Six questions are posed in Section 2.3, Effects Guidelines, as ways to evaluate the Modified LPA's potential effects on neighborhoods and populations. Answers for these questions, applied to each Oregon neighborhood in the study area, are summarized in Table 4-1. As seen in the table, the Modified LPA is not anticipated to impact community cohesion in most neighborhoods, except for



Hayden Island. For the Hayden Island neighborhood, the Modified LPA is anticipated to bring substantial changes to the neighborhood that may affect community cohesion. This assessment is described in more detail in the following sections.

	Hayden Island	Bridgeton	East Columbia	Kenton	Rockwood
Will the Program displace people or community resources, including businesses?	Residential and business displacement	Business displacement	Impacts to Delta Park	Residential and business displacement	Business displacement
Will the Program create direct or indirect impacts to social services by displacing them?	No	No	No	No	No
Will the Program separate neighborhood residents from community resources?	No	No	No	No	No
Will the Program change travel such that it will affect access to community resources?	No	No	No	No	No
Will the Program change community cohesion?	Yes, positively and negatively	No	No	No	No
Is the Program consistent with existing neighborhood plan goals?	Yes	Yes	N/A	Yes	N/A

## Table 4-1. Overview of Potential Effects on Oregon Neighborhoods

# 4.3.3 Hayden Island

Because I-5 is such a prominent component of Hayden Island, this neighborhood would be affected by changes resulting from the Modified LPA. Hayden Island would have high-level visual impacts due to the reconfiguration of the Columbia River bridges, ramps, roadways, and the addition of a new light-rail transit line under the southbound bridge. Bridge, ramp, and elevated lane structures on Hayden Island would be higher and more visible to adjacent viewers, but existing land cover and vegetation would block most views for residential viewers. However, elements of the Modified LPA would be more visible to residential viewers from floating homes on North Portland Harbor who would perceive a decrease in natural harmony. (Visual changes are discussed in greater detail in the Visual Quality Technical Report.)



## 4.3.3.1 Displacements and Property Impacts

The Modified LPA would require the displacement of 32 floating homes in North Portland Harbor. Nineteen of these displacements would be in the Columbia Crossings moorage to the east of the bridge. The remaining 13 displacements would occur in the Jantzen Beach Moorage to the west of the bridge. Additionally, access at the east end of the Jantzen Beach Moorage property would be eliminated with the remaining access being at the far west end of the property. The displacements of the floating homes in North Portland Harbor could reduce cohesion within the floating home community.

The Modified LPA would also displace 15 commercial/retail businesses on Hayden Island. Many of these businesses are restaurants, including Denny's, BJ's Restaurant & Brewhouse, McDonald's, Café Del Toro, JayBee's Chicken Palace, and several more. Most of these restaurants are directly adjacent to the current location of the highway. Displacing restaurants within this island community would require residents to travel off the island to eat at similar restaurants either on the Oregon mainland or in Vancouver. While not a standard category of long-term effects on a neighborhood, this reduction in restaurant availability could impact neighborhood cohesion (the potential redevelopment of the Jantzen Beach Center could reduce this impact).

The displacement of these businesses also has the potential to affect wage-earning opportunities for those seeking service industry employment on Hayden Island. Food preparation and service-related employers are more likely to offer entry level positions (e.g., dishwashers, cooks, hosts, and counter attendants). According to the U.S. Bureau of Labor Statistics (2021), the average hourly wage of food preparation and service workers within the Portland-Vancouver-Hillsboro Metropolitan Statistical Area is \$16.70, which is a salary of approximately \$34,735 per year for a full-time employee. Some of these displaced businesses may choose to not relocate locally. Even with relocation assistance, some of the employees may be unable to retain their jobs. For example, an employee may be unable to make a longer commute or might have to accept a new job during the transition period of relocation for economic reasons. This could result in the displacement of neighborhood residents seeking employment in the food preparation and service-related industries; these residents may choose to relocate closer to employment opportunities if there are fewer opportunities on Hayden Island. This could result in impacts to neighborhood cohesion. In addition, bridge openings associated with the single-level movable-span configuration would cause backups that would reduce reliability for all travel modes, similar to the No-Build Alternative, which would negatively affect neighborhood cohesion on Hayden Island.

For a map of displacements on Hayden Island, please see Figure 4-1.





## Figure 4-1. Displacements Caused by the Modified LPA, Hayden Island



## 4.3.3.2 Transportation and Access

The Modified LPA would improve on-island traffic circulation through the improvement of local arterials and the connection of Tomahawk Island Drive under I-5. It would also reduce the duration of congestion in this area of I-5. The current substandard and difficult-to-navigate bicycle and pedestrian connection to the existing Interstate Bridge would be improved, and a light-rail transit station would serve the island. There would also be more options for access to the island because drivers, bicyclists, and pedestrians could travel between the island and the Portland mainland via the new local arterial bridge rather than being limited to I-5. Neighborhood cohesion would be improved by the additional opportunities for residents to connect via a more continuous street system, improved pedestrian and bicycle facilities, and transit connections.

# 4.3.4 Bridgeton

## 4.3.4.1 Displacements and Property Impacts

No residences would be displaced in the Bridgeton neighborhood as a result of the Modified LPA. Four marine-related businesses adjacent to the east side of I-5 would be displaced. Relocation of these businesses may be difficult because much of the Columbia River area in the vicinity of freeway access is built up for either residential or industrial/commercial use. ODOT would provide relocation assistance to displaced businesses. These businesses were not identified as a community resource. For a map of displacements in the Bridgeton neighborhood, please see Figure 4-2. The Program would not separate residents from any identified local community resources or impact the neighborhood's community cohesion.

# 4.3.4.2 Transportation and Access

The Marine Drive interchange improvements and associated surface street improvements included as part of the Modified LPA would improve traffic access to and from I-5. The improvements in the interchange area include a new multiuse bicycle and pedestrian path connecting the Bridgeton neighborhood to the existing Expo Center light-rail station. This would provide opportunities for residents to connect via improved pedestrian and bicycle facilities.

# 4.3.5 East Columbia

# 4.3.5.1 Displacements and Property Impacts

The Modified LPA would impact a portion of the off-leash area associated with East Delta Park to construct a roadway connection between OR 99E and N Denver Avenue. Approximately one acre of this area would be permanently removed; this would not prevent use of the remainder of the off-leash area, which is a community resource. Because use of the facility would remain, the reduction in size is not anticipated to impact neighborhood cohesion. One parcel currently occupied by a business (United Rentals) would be partially acquired to provide an access road and sidewalk from N Vancouver Way to OR 99E. The business would be able to operate on the remainder of the parcel, as well as an adjacent parcel on which it is located. For a map of displacements in the East Columbia neighborhood, please see Figure 4-2.





# Figure 4-2. Displacements Caused by the Modified LPA, Oregon Mainland

No residences or community resources would be displaced in the East Columbia neighborhood. The Modified LPA would not separate residents from any identified local community resources or impact the neighborhood's community cohesion.



## 4.3.5.2 Transportation and Access

The Marine Drive interchange improvements and associated surface street improvements included as part of the Modified LPA would improve traffic access to and from I-5. As noted for the Bridgeton neighborhood, the Modified LPA would create a new multiuse path connection to the Expo Center light-rail station that would also benefit the residents of East Columbia. These improvements could improve community cohesion by providing additional opportunities for residents to connect via the multiuse path and better access to the transit station.

# 4.3.6 Kenton

Long-term impacts in Kenton would be focused at the north end of the neighborhood near the Expo Center and North Portland Harbor.

## 4.3.6.1 Displacements and Property Impacts

The Modified LPA would displace several structures on the south shore of North Portland Harbor, including three floating homes and one residential unit on land. Three businesses would also be displaced. The Modified LPA would permanently displace approximately 386 parking spaces at the Expo Center; however, the Expo Center is not considered a neighborhood community resource. These displacements would not be anticipated to substantially affect neighborhood cohesion.

# 4.3.6.2 Transportation and Access

The Program would not separate neighborhood residents from community resources or decrease access to transit and bicycle or pedestrian opportunities. The new multiuse path connection would provide access from the Expo Center to the Bridgeton neighborhood; this would expand bicycle and pedestrian opportunities. The light-rail extension would improve transit connections from Kenton to Hayden Island and Vancouver. This could improve community cohesion by providing additional opportunities for residents to connect via expanded bicycle and pedestrian facilities.

# 4.3.7 Rockwood

Although the principal Modified LPA components would be located along I-5, expansion of the TriMet light-rail maintenance center at Ruby Junction in Gresham, Oregon, would be necessary to support the expansion of light-rail service to Vancouver. The maintenance center is within the Rockwood neighborhood in Gresham.

# 4.3.7.1 Displacements and Property Impacts

Four parcels would be impacted by the expansion of the maintenance center. Within those four parcels, three businesses would be displaced. The affected businesses are light industrial; one single-family home would also be displaced, but it is currently vacant. For a map of displacements in the Rockwood neighborhood, please see Figure 4-3. These displacements are not anticipated to substantially alter neighborhood cohesion.









## 4.3.7.2 Transportation and Access

The expansion of the Ruby Junction Maintenance Facility would occur within an area of existing light industrial development; it would not separate neighborhood residents from community resources or decrease access to transit and bicycle or pedestrian opportunities. No impacts to community cohesion are expected.

# 4.4 Washington Long-Term Benefits and Effects

# 4.4.1 Effects on Vancouver Local Streets

The Modified LPA would result in changes to intersection operations in the study area. In most locations, intersection operations on Vancouver local streets under the Modified LPA would be similar to or better than operations under the No-Build Alternative. Some intersections would experience reduced operations, primarily along arterials connecting to I-5 or near park-and-ride locations. The Transportation Technical Report includes more-detailed information on transportation impacts. The changes in intersection operations would not be anticipated to impact neighborhood cohesion.

# 4.4.2 Overview of Effects on Vancouver Neighborhoods

Six questions are posed in Section 2.3, Effects Guidelines, as ways to evaluate the Modified LPA's potential effects on neighborhoods and populations. Answers for these questions, applied to each Washington neighborhood in the study area, are summarized in Table 4-2. As seen in the table, the Modified LPA is not anticipated to impact community cohesion in the neighborhoods listed. This assessment is described in more detail in the following sections.

	Rose Village	Hough	Arnada	Central Park	Esther Short	Hudson's Bay	Columbia Way
Will the Program displace people or community resources, including businesses?	No	No	No	Impacts to Marshall Park	Business displacements Residential displacements (design options)	No	No
Will the Program create direct or indirect impacts to social services by displacing them?	No	No	No	No	No	No	No

### Table 4-2. Overview of Anticipated Effects on Vancouver Neighborhoods



	Rose Village	Hough	Arnada	Central Park	Esther Short	Hudson's Bay	Columbia Way
Will the Program separate neighborhood residents from community resources?	No	No	No	No	No	No	No
Will the Program change travel such that it will affect access to community resources?	No	No	No	No	No	No	No
Will the Program change community cohesion?	No	No	No	No	No	No	No
Is the Program consistent with existing neighborhood plan goals?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

# 4.4.3 West Minnehaha

The Modified LPA would not displace any people or businesses within the West Minnehaha neighborhood. No long-term impacts would occur to neighborhood cohesion, community resources, or bicycle and pedestrian facilities.

# 4.4.4 Lincoln

### 4.4.4.1 Displacements and Property Impacts

The Modified LPA would not displace residences, businesses, or community resources in the Lincoln neighborhood. The Modified LPA would require a partial acquisition along the eastern property edge of the Kiggins Sports Fields/Stadium at Discovery Middle School, but no structures would be displaced and long-term use of the site would not be affected by the construction of a retaining wall adjacent to the highway in the southeast corner of the property. The expanded I-5 corridor in this area would be closer to Discovery Middle School and could increase noise levels, but any such impacts are not anticipated to affect community cohesion since use of the property would remain unchanged and impacts would be minimal and/or mitigated. For more information about potential impacts at this location, please refer to the Parks and Recreation, Air Quality, and Noise and Vibration Technical Reports.



The E 39th Street interchange improvements would result in the off-ramp lanes being located closer to several homes that are adjacent to the corridor. These parcels would experience increases in noise; more details are in the Air Quality and Noise and Vibration Technical Reports. Because these impacts are isolated to a small number of housing units in the neighborhood, they are not anticipated to substantially alter neighborhood cohesion.

Figure 4-4 displays displacements in neighborhoods in the Upper Vancouver area.

### 4.4.4.2 Transportation and Access

The Modified LPA would not affect access to any community resources and would not have long-term impacts to bicycle or pedestrian facilities. No impacts to community cohesion are anticipated.

# 4.4.5 Shumway

### 4.4.5.1 Displacements and Property Impacts

The Modified LPA would require seven residential displacements and partial acquisitions from 10 other residential parcels for permanent right of way (see Figure 4-4). Residents along I-5 could experience additional noise impacts from the highway due to the closer proximity of travel lanes. If sound walls are installed to mitigate for increased noise, the walls could result in visual impacts compared to the existing low walls along I-5 in this area. Proximity to the highway could also result in high visual sensitivity for residences adjacent to the corridor. Given that this would be experienced by a small number of residential units in the neighborhood, it is unlikely that these changes would have a notable adverse effect on neighborhood cohesion. Additionally, light and glare would be anticipated to improve under the Modified LPA. Impacts from noise and vibration and visual impacts would be mitigated wherever feasible. For more information on noise and visual impacts and mitigation, please see the Noise and Vibration Technical Report and the Visual Quality Technical Report. No other residents or community resources would be impacted by the Program.

### 4.4.5.2 Transportation and Access

The Program would not increase traffic through the neighborhood or decrease access to bicycle or pedestrian facilities.





### Figure 4-4. Displacements Caused by the Modified LPA, Upper Vancouver Area


# 4.4.6 Rose Village

### 4.4.6.1 Displacements and Property Impacts

The Modified LPA would not displace any residences in the Rose Village neighborhood but would result in some partial acquisitions from eight residential parcels for permanent right of way as shown on Figure 4-4. This would not be anticipated to substantially alter neighborhood cohesion.

As in the Shumway neighborhood, residents near I-5 in Rose Village could experience additional noise impacts from the highway due to the closer proximity of travel lanes. If sound walls are installed to mitigate for increased noise, the walls would be evaluated for visual impacts. It is unlikely that these changes would have a notable adverse effect on neighborhood cohesion, as they would be experienced by only a small number of residential units in the neighborhood. Proximity to the highway would likely not result in notable visual impacts to residences, as vegetation and land cover would be anticipated to hide most views. Additionally, light and glare would be anticipated to improve under the Modified LPA. Impacts from noise and vibration and aesthetics would be mitigated wherever feasible. No other residents or community resources would be impacted by the Program. For more information on noise and visual quality impacts, please see the Noise and Vibration Technical Report and the Visual Quality Technical Report.

Rose Village is considered an equity priority area; for more information on the potential impacts of the Modified LPA to environmental justice populations, see the Environmental Justice Technical Report.

### 4.4.6.2 Transportation and Access

The Program would improve bicycle and pedestrian facilities within the neighborhood at the Fourth Plain interchange and undercrossings of I-5 at E 29th Street and E 33rd Street. This could improve neighborhood cohesion by providing additional opportunities for residents to connect via a better-connected street grid and improved bicycle and pedestrian facilities.

## 4.4.7 Hough

The Modified LPA would not displace any residences or community resources in the Hough neighborhood and would not require the acquisition of any property. The improvements would not separate residents from community resources or adversely impact community cohesion. There would be minimal noise and visual impacts, as the neighborhood is located farther from the corridor. For more information on noise, air quality, and visual quality impacts, please see the Noise and Vibration Technical Report, the Air Quality Technical Report, and the Visual Quality Technical Report.

### 4.4.8 Arnada

### 4.4.8.1 Displacements and Property Impacts

The Program would not displace any residences or community resources in the Arnada neighborhood and would not result in any permanent property acquisitions. Proximity to the highway could result in high visual sensitivity for residences adjacent to the corridor. Given the small number of residential



units in the neighborhood that would experience changes, it is unlikely that these changes would have a notable adverse effect on neighborhood cohesion. Additionally, light and glare would be expected to improve under the Modified LPA. Impacts from noise and vibration and aesthetics would be mitigated wherever feasible. Impacts to noise and vibration are expected to be similar to the No-Build conditions. Please see the Noise and Vibration Technical Report, the Air Quality Technical Report, and the Visual Quality Technical Report for more information.

Arnada is considered an equity priority area; for more information on the potential impacts of the Modified LPA to environmental justice populations, see the Environmental Justice Technical Report.

### 4.4.8.2 Transportation and Access

The Modified LPA would not separate residents from any community resources, and the introduction of light-rail in Vancouver would improve transit access to Portland. The Program is not anticipated to adversely affect community cohesion.

### 4.4.9 Central Park

### 4.4.9.1 Displacements and Property Impacts

In the Central Park neighborhood, no residences would be displaced by the Modified LPA. However, construction of a retaining wall along I-5 would require the acquisition of permanent right of way from part of one identified recreational community resource, Marshall Park, which includes the Marshall Community Center and the Luepke Senior Center. The retaining wall would displace horseshoe pits, landscaping, and trees that serve as a buffer between the community center and I-5. However, the community center and senior center would not be affected by the Modified LPA. Marshall Park and the Clark College sports fields could also be impacted by increased noise levels. Please refer to the Noise and Vibration Technical Report for details on noise levels and mitigation. These impacts would not be anticipated to substantially alter neighborhood cohesion.

### 4.4.9.2 Transportation and Access

The introduction of light-rail transit with a station southwest of the Central Park neighborhood would increase transit access to the neighborhood including access to Clark College, Marshall Park, and the community and senior centers. New bicycle facilities would also improve connections to and from Marshall Park. Residents would not be separated from any community resources by the project, and the changes would improve community cohesion by providing additional opportunities for residents to connect via improved bicycle and pedestrian facilities.

## 4.4.10 Esther Short

### 4.4.10.1 Displacements and Property Impacts

The Modified LPA would displace 10 businesses in Esther Short near the SR 14 interchange. No residences would be displaced in the neighborhood. The Modified LPA would also require partial acquisition of 16 parcels adjacent to I-5, E Evergreen Boulevard, and the SR 14 interchange. Figure 4-5

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shows acquisitions and displacements in neighborhoods in the downtown Vancouver area. Compared to the centered mainline, the shifting the I-5 mainline west would require two additional property acquisitions: the Normandy Apartments, where 33 residential units would be displaced, and the Regal City Center complex, where three businesses would be displaced. This is a notable effect, especially for those living in these units. However, these displacements are not anticipated to substantially alter neighborhood cohesion because the Normandy Apartments are located at the edge of the neighborhood in an otherwise nonresidential area. Moreover, the displaced businesses, which are not considered community resources, make up a small portion of overall commercial property in the neighborhood.

Each of the park-and-ride options would have similar impacts, but there would be varying numbers of acquisitions depending on which park-and-ride location is selected, as shown in Table 4-3. Three sites are being considered for the Waterfront Park and Ride; depending on the site selected, there would be between 0 and 4 parcels acquired with up to one business displacement. Two sites are being considered for the Evergreen Park and Ride; depending on the site selected, there would be between 0 and 5 parcels acquired. No businesses or residential units would be displaced for the Evergreen Park and Ride. The impacts associated with the park and rides would not negatively impact neighborhood cohesion.

Park and Ride	Site	Full Parcel Acquisitions	Partial Parcel Acquisitions	Displacements
Waterfront	1	0	0	0
	2	1	0	0
	3	4	0	1 business
Evergreen	1	5	0	0
	2	0	0	0

#### Table 4-3. Summary of Acquisitions and Displacements for Park and Rides

Under the Modified LPA, two multistory apartments—the Normandy Apartments at Seventh and C Streets and the Fort Apartments (previously the Fort Vancouver Motel) at the southwest corner of the Mill Plain interchange—are anticipated to experience a slight increase in noise levels due to the closer proximity of I-5 travel lanes. Noise levels exceeding the FHWA Noise Abatement Criteria already exist at these two buildings. The Evergreen Inn, immediately north of the SR 14 interchange, is also anticipated to experience noise impacts that cannot be mitigated. Please see the Noise and Vibration Technical Report for discussion of noise impacts and mitigation for the Modified LPA. These impacts are not anticipated to alter neighborhood cohesion.

The single-level fixed-span and single-level movable-span configurations would have a lower profile than the double-deck fixed-span configuration at the bridge landing in downtown Vancouver. The single-level configurations would provide more flexibility in potential locations for the Vancouver Waterfront Station compared to the double-deck fixed-span configuration.

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In addition, the single-level configuration would provide more opportunities for connection to residences and development, helping to maintain or improve neighborhood cohesion. However, bridge openings associated with the single-level movable-span configuration could cause backups that would reduce reliability for all travel modes similar to the No-Build Alternative. These backups could spill into neighborhood streets, limiting circulation within the neighborhood, impeding access to community facilities, and, thereby, negatively affecting neighborhood cohesion.

The design option eliminating the C Street ramps would redirect traffic from downtown Vancouver to the Mill Plain Boulevard interchange. This would result in additional traffic delay at intersections near the Mill Plain Boulevard interchange, which could reduce neighborhood cohesion in the Esther Short neighborhood by substantially increasing travel delay for residents and people accessing the neighborhood.

Esther Short is considered an equity priority area; for more information on the potential impacts of the Modified LPA to environmental justice populations, see the Environmental Justice Technical Report.

### 4.4.10.2 Transportation and Access

The introduction of light-rail transit adjacent to I-5 in the Esther Short neighborhood would not separate residents from any community resources and would increase access to transit for neighborhood residents. The Esther Short neighborhood is planned to become a part of a more densely developed urban core for downtown Vancouver, and the light-rail station would support that transition. The *Esther Short Neighborhood Action Plan* (City of Vancouver 2006) specifically states that the neighborhood supports the concept and development of light-rail transit.

The Modified LPA is not anticipated to adversely impact neighborhood community cohesion because residents would not be separated from identified resources, access to transit would increase, and planning for downtown density would be supported by the project.

## 4.4.11 Hudson's Bay

### 4.4.11.1 Displacements and Property Impacts

The Modified LPA would not displace any businesses or residences in the Hudson's Bay neighborhood. There would be partial acquisitions of five parcels that are part of Fort Vancouver. The western edge of the parcels on which the Vancouver Barracks Post Hospital and Western Federal Lands Headquarters buildings are located would be acquired to accommodate I-5 and associated on- and off-ramps (see Figure 4-5). It is anticipated that this would not impact either building. The parcel that the Vancouver Police Department is located on would also experience minor acquisitions to accommodate the expansion of I-5; similarly, this is not anticipated to displace the existing building or affect use of the site. On the south side of the Fort Vancouver property where the Vancouver Land Bridge is located, there would be some permanent acquisition of the parcel to accommodate the I-5 on-ramp from SR 14. This acquisition is not anticipated to affect the Vancouver Land Bridge or substantially alter use of the parcel. These impacts would not be anticipated to alter neighborhood cohesion.





#### Figure 4-5. Displacements Caused by the Modified LPA, Downtown Vancouver Area



### 4.4.11.2 Transportation and Access

The Modified LPA would not separate neighborhood residents from community resources and would not decrease access to bicycle or pedestrian facilities, including the Vancouver Land Bridge. The neighborhood would have increased access to transit and improved connection to the Portland region due to the introduction of light-rail.

### 4.4.12 Columbia Way

### 4.4.12.1 Displacements and Property Impacts

The Modified LPA would permanently acquire three parcels near the SR 14 interchange; these acquisitions would not displace any businesses or residences. The project would require partial acquisition of seven parcels adjacent to I-5 and the SR 14 interchange, as shown on Figure 4-5. There would be no residential or community resource displacements in the Columbia Way neighborhood; neighborhood cohesion would not be substantially altered.

### 4.4.12.2 Transportation and Access

The Modified LPA would not create separation between neighborhood residents and community resources. The neighborhood would have increased access to transit and improved connection to the Portland region due to the introduction of light-rail in Vancouver. No impacts to community cohesion are anticipated.

### 4.4.13 SR 14 Interchange without C Street Ramps

This design option would have similar impacts as the Modified LPA, except that traffic would be redirected from downtown Vancouver to the Mill Plain Boulevard interchange. This would result in additional traffic delay at intersections near the Mill Plain Boulevard interchange. The Transportation Technical Report includes additional information about the traffic impacts associated with this design option. The additional traffic delay near the Mill Plain Boulevard interchange could reduce neighborhood cohesion in Esther Short by substantially increasing travel delay for residents and people accessing the neighborhood.



# 5. TEMPORARY EFFECTS

# 5.1 Introduction

The Modified LPA would result in the types of temporary effects listed below, which have the potential to impact neighborhoods:

- Temporary property acquisitions for construction staging areas. These acquisitions would be returned to the landowner after construction is complete. The locations of staging areas are subject to change based on final engineering designs.
- Noise impacts due to construction.
- Vibration due to construction.
- Effects on air quality due to disturbance of soil and emissions from construction equipment.
- Traffic spillover during construction.
- Traffic detours and delays during construction.
- Detours and delays for bicyclists and pedestrians. Temporary routes could be narrower and require out-of-direction travel.

Most neighborhoods in the study area would not experience impacts as a result of temporary construction staging acquisitions for the Program. The Hayden Island neighborhood could experience some temporary impacts from the use of the Thunderbird Hotel site for staging because of its proximity to more densely populated areas. These could include noise from the movement of construction equipment and construction materials on the site. The neighborhood may also experience a temporary increase in truck traffic traveling to and from the site. All neighborhoods in the study area could experience temporary noise and increases in truck traffic during construction, particularly in the areas immediately adjacent to I-5. Given that the potential construction duration could be up to 15 years, neighborhood quality and cohesion could be negatively impacted during construction for neighborhoods adjacent to the corridor. However, construction effects in most neighborhoods are likely to be intermittent and temporary, since work would occur in different portions of the corridor at different times.

# 5.2 Oregon Temporary Effects

## 5.2.1 Hayden Island

Residents of Hayden Island are anticipated to experience noise and vibration impacts due to construction equipment, vibratory compaction equipment, and pile driving during bridge construction. Air quality would be affected on Hayden Island by emissions from construction equipment. Residents living in floating homes would be susceptible to construction-related noise and air quality effects due to their proximity to both the highway and transit alignments.

Construction activities for the highway and interchanges would result in traffic delays on I-5 during construction. Bicycle and pedestrian connections to the island would be maintained during



construction, but could have detours and could be narrower than they are today. These transportation impacts would have the greatest impact to Hayden Island residents as they have no route to bypass the construction activity. As a result, residents would experience increased travel times while construction activity is underway.

Construction noise, vibration, and dust would tend to discourage community activities and the use of social resources near construction areas. These impacts would reduce cohesion and neighborhood quality for the duration of construction on Hayden Island.

# 5.2.2 Bridgeton

The Bridgeton neighborhood would experience detours and delays due to construction on the Marine Drive interchange. Access to Delta Park and the Delta Park/Vanport MAX Station could be impacted during construction with delays or additional out-of-direction travel for people traveling from the north or east. Efforts would be made to maintain access and minimize disruption. Bridgeton may also experience traffic spillovers due to motorists traveling along Marine Drive to the I-205 bridge to avoid delays due to construction of the Columbia River bridges. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents.

Residents of Bridgeton and visitors in the hotels adjacent to the corridor are anticipated to experience noise and vibration impacts due to construction equipment, vibratory compaction equipment, and pile driving during bridge construction. Air quality would be affected by emissions from construction equipment.

# 5.2.3 East Columbia

The East Columbia neighborhood may experience detours and delays due to construction on the Marine Drive interchange. East Columbia may also experience traffic spillovers due to motorists traveling along Marine Drive to the I-205 bridge to avoid delays due to construction of the Columbia River bridges. Traffic impacts could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents. Residents in East Columbia would not experience impacts from noise, vibration, or changes in air quality.

# 5.2.4 Kenton

The Kenton neighborhood may experience traffic spillovers and traffic detours and delays due to construction on the Marine Drive interchange. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents. Residents in Kenton would not experience impacts from noise, vibration, or changes in air quality.



# 5.3 Washington Temporary Effects

# 5.3.1 West Minnehaha

Temporary effects are anticipated to be limited to the western border of the West Minnehaha neighborhood, as I-5 is its western boundary, and to Leverich Park in the southwest corner of the neighborhood. Temporary property acquisitions in West Minnehaha (temporary construction easements) may occur due to highway construction on I-5 and SR 500. The Program would require temporary easements adjacent to I-5 and E 39th Street for construction.

Residents are anticipated to experience noise and vibration impacts due to construction equipment and vibratory compaction. Air quality may be affected in the western portion of the neighborhood due to emissions from construction equipment. Construction activities for the transit and highway alignments would result in traffic delays and may create spillover traffic in other parts of the neighborhood. Construction noise, vibration, and dust could discourage community activities and the use of social resources near construction areas. These impacts would reduce cohesion and neighborhood quality for the duration of construction.

# 5.3.2 Lincoln

Minor temporary property acquisitions (construction easements) would occur in the Lincoln neighborhood at the Kiggins Bowl property due to construction of the highway alignment. People at Discovery Middle School and residents of Lincoln near the highway may experience noise and vibration impacts due to construction equipment and vibratory compaction. Air quality may be affected in the eastern portion of the neighborhood due to emissions from construction equipment. Construction activities would result in traffic delays and out-of-direction travel due to minimal east-west crossing opportunities of I-5; this would increase travel times for residents. Construction noise, vibration, and dust could discourage community activities and the use of social resources near construction areas. These impacts would reduce cohesion and neighborhood quality for the duration of construction. Traffic congestion and detours could also negatively impact neighborhood cohesion during construction by reducing access to community resources for residents.

# 5.3.3 Shumway

In Shumway, temporary effects would most likely be limited to the eastern and southern boundaries of the neighborhood. Minor temporary construction easements of several residential properties would occur to accommodate construction of the highway alignment on I-5, interchanges, and overcrossings. Residents are anticipated to experience noise and vibration impacts due to construction equipment and vibratory compaction. Air quality may be affected in the eastern portion of the neighborhood due to emissions from construction equipment. Construction noise, vibration, and dust could discourage community activities and the use of social resources near construction areas. These impacts would reduce cohesion and neighborhood quality for the duration of construction.



Construction activities would result in traffic delays and out-of-direction travel due to minimal eastwest crossing opportunities of I-5; this would increase travel times for residents. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents.

# 5.3.4 Rose Village

Temporary effects would be limited to the western border of the Rose Village neighborhood as I-5 is its western boundary. Temporary property acquisitions (construction easements) would occur to accommodate roadway improvements on E 29th Street at two residential properties. Residents in the western portion of the neighborhood would experience noise and vibration impacts due to construction equipment and vibratory compaction. Air quality may also be affected in the western portion of the neighborhood due to emissions from construction equipment. Construction noise, vibration, and dust could discourage community activities and the use of social resources near construction areas. These impacts would reduce cohesion and neighborhood quality for the duration of construction. Construction activities for the highway would result in traffic delays and out-of-direction travel due to minimal east-west crossing opportunities of I-5; this would increase travel times for residents. Additionally, construction on I-5 may create spillover traffic in other parts of the neighborhood. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents.

# 5.3.5 Hough

Construction activities for the highway could result in traffic delays and out-of-direction travel due to minimal east-west crossing opportunities of I-5; this would increase travel times for residents. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents.

# 5.3.6 Arnada

Minor temporary property acquisitions (construction easements) from commercial and public park (Arnada Park) properties would occur in the Arnada neighborhood to accommodate construction of I-5 and the E Mill Plain Boulevard Interchange. Residents near I-5 are likely to experience noise and vibration impacts due to construction equipment and vibratory compaction. Air quality may also be affected in the neighborhood due to emissions from construction equipment. Construction noise, vibration, and dust could discourage community activities and use of social resources near construction areas. These impacts would reduce cohesion and neighborhood quality for the duration of construction. Construction activity would result in traffic delays; this would increase travel times for residents. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents.

# 5.3.7 Central Park

There would be temporary property acquisitions (construction easements) at Marshall Community Park and Center, along the Clark College Recreation Fields, and at the Vancouver Veteran's Affairs



Hospital within the Central Park neighborhood. The neighborhood may experience traffic spillovers, delays, and detours due to roadway and transit construction along I-5. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents. Residents in the neighborhood would not experience impacts from noise, vibration, or changes in air quality because there are no homes in close proximity to the project construction.

# 5.3.8 Esther Short

Temporary property acquisitions (construction easements) would occur in the Esther Short neighborhood due to construction of the highway along the I-5 alignment, the interchanges, and the overcrossing at E Evergreen Boulevard.

Residents within the neighborhood would experience noise and vibration impacts due to construction equipment and vibratory compaction. Air quality may be affected in the neighborhood due to emissions from construction equipment. Construction noise, vibration, and dust could discourage community activities and the use of social resources near construction areas. These impacts would reduce cohesion and neighborhood quality for the duration of construction. Construction activities for the highway and transit alignments would result in traffic delays and out-of-direction travel due to minimal east-west crossing opportunities of I-5; this would increase travel times for residents. Additionally, construction on I-5 may create spillover traffic into other parts of the neighborhood. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents.

### 5.3.9 Hudson's Bay

Temporary property acquisitions (construction easements) would occur in the Hudson's Bay neighborhood due to construction of the highway along the I-5 alignment, the interchanges, and the overcrossing at E Evergreen Boulevard. The Hudson's Bay neighborhood may experience traffic spillovers and traffic delays, out-of-direction travel, and detours due to construction on I-5. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents. Residents in the neighborhood would not experience impacts from noise, vibration, or changes in air quality.

### 5.3.10 Columbia Way

Temporary property acquisitions (construction easements) would occur in the Columbia Way neighborhood due to construction of the highway along the I-5 alignment and the SR 14 interchange. The neighborhood may experience traffic detours and delays due to construction on I-5, which would increase travel times. The neighborhood would experience traffic spillovers as motorists may use SR 14 through Columbia Way to I-205 to avoid delays from construction on I-5. The Vancouver Land Bridge over SR 14 is not anticipated to be impacted. Traffic congestion and detours could negatively impact neighborhood cohesion during construction by reducing access to community resources for residents. Residents in the neighborhood would not experience impacts from noise, vibration, or changes in air quality.



# 6. INDIRECT EFFECTS

As described in Section 3.4.1, the Modified LPA would have the indirect effect of facilitating growth within the study area compared to No-Build by providing new light rail service and reducing traffic congestion for general-purpose and transit vehicles. The greatest potential effects on growth would be in proposed station areas, particularly in the Hayden Island and Esther Short neighborhoods, which have the greatest potential to support transit-oriented development. Such development is anticipated and encouraged in the adopted plans for these neighborhoods. Under the No-Build Alternative, light rail would not be extended to Vancouver, and transit-oriented development would not occur. Other indirect effects could include increased noise and pollution in neighborhoods directly adjacent to the corridor including in Esther Short, Arnada, and Rose Village, which have been identified as equity priority areas. For more information on impacts to equity priority areas, see the Equity Technical Report. Shumway and Lincoln, which are also adjacent to the corridor, could experience increased noise and pollution during construction.

The Hayden Island neighborhood would have the greatest potential to experience indirect effects from the Modified LPA because transit-oriented development is anticipated to replace some of the dispersed, auto-oriented shopping centers that exist today. The potential redevelopment of the Jantzen Beach Center into higher-density mixed-use development is perhaps the most significant change that could occur on the island, and this is consistent with the 2009 Hayden Island Plan (City of Portland 2009). This potential redevelopment would increase cohesion on the island by providing new opportunities for high-density housing and for smaller-scale commercial services. Developing housing options in the center of the island close to transit would allow people to live closer to commercial services and encourage them to walk, bicycle, or take light-rail to those services. Creating a less autooriented environment for residents to travel between home and their services provides more opportunities for residents to interact with one another and easily access potential new community resources. Similarly, if smaller-scale commercial services were to develop close to housing and transit, this would encourage residents to use services provided in their neighborhood rather than needing to travel off the island to access the same services. Though improved transit and the potential for transitoriented development are anticipated to bring benefits to neighborhood cohesion, the larger freeway is not likely to benefit neighborhood cohesion. The expansion of I-5 may encourage more automobile trips to Hayden Island for Washington residents to shop tax-free at the large retailers such as Target and Home Depot that are located on the island. This increase in auto access could reduce neighborhood cohesion due to increased traffic congestion and associated noise and air pollution. The Modified LPA would also enlarge the physical size of I-5, its ramps, and the number of vehicles on the bridge. Already a large presence in the neighborhood, a wider and taller freeway would be more visually imposing as seen from adjacent properties, and it noise may be louder in some locations as a result of the additional highway lanes and traffic. These changes would negatively impact neighborhood cohesion.

In Vancouver's Esther Short neighborhood, potential new TOD would add to cohesion in similar ways as on Hayden Island. New housing and commercial services, particularly around light-rail transit stations, would give residents the opportunity to walk, bicycle, or take transit to services close to their homes, therefore providing more chances for residents to interact with one another and use community resources. The Esther Short neighborhood has an action plan that is specifically



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supportive of TOD-like development. The *Esther Short Neighborhood Action Plan* (City of Vancouver 2006) Vision Statement calls for "mixed use development, like that developed around Esther Short Park since 1997," to "flourish throughout the downtown and on the waterfront." Similar to the Hayden Island neighborhood, these changes would be less likely to occur under the No-Build Alternative, making it inconsistent with current planning for the area. Recent mixed-use developments along the waterfront have been increasing density in the neighborhood.



# 7. PROPOSED MITIGATION FOR ADVERSE EFFECTS

# 7.1 Proposed Mitigation for Long-Term Adverse Effects

# 7.1.1 Regulatory Mitigation

• When displacement cannot be avoided, federal and state regulations require property to be purchased at fair market value and all displaced residents to be provided with replacement housing and relocation assistance. Federal regulations, such as the Uniform Relocation Act, and state statutes determine the standards and procedures for providing such replacement housing, based on the characteristics of individual households. Relocation benefit packages usually include replacement housing for owners and renters, moving costs, and assistance in locating replacement housing. Relocation benefits for businesses can include moving costs, site search expenses, and business re-establishment expenses.

# 7.1.2 Program-Specific Mitigation

- The Modified LPA is anticipated to have an overall neutral effect on visual quality in study area neighborhoods. The IBR Program would work with residents and community members to understand impacts and avoid, minimize, or mitigate those impacts.
- The IBR Program would avoid and minimize impacts to community resources and neighborhood cohesion wherever feasible. Strategies to minimize impacts to neighborhood cohesion could include providing additional community gathering spaces such as pedestrian and bicycle facilities.

# 7.2 Proposed Mitigation for Adverse Effects during Construction

## 7.2.1 Regulatory Mitigation

Required measures to minimize construction impacts overall, such as construction best management practices, would also reduce impacts to neighborhoods and equity priority communities. These measures are used to address construction effects such as temporary easements, noise, dust, emissions from construction vehicles, and visual clutter. Best management practices applicable to the potential impacts described above in Chapter 5 are discussed in the Acquisitions Technical Report, the Air Quality Technical Report, the Noise and Vibration Technical Report, and the Visual Quality Technical Report.

## 7.2.2 Program-Specific Mitigation

- Where feasible, implement nighttime construction schedules and shield nighttime lighting.
- Hold community meetings before construction starts to inform residents of the construction timeline, relevant staging plans, ramp and road closures, and detour plans.



- Use temporary signage, including variable message signs, to inform drivers of traffic delays because of construction or heavy equipment entering or leaving the highway.
- Provide signs for local business assistance alerting customers of continued operation and a hotline for construction information.
- Conduct regional outreach activities to provide information on construction-related impacts and detours that include communications to businesses, agencies, and community-based organizations within the greater Portland and Vancouver area. Traffic advisories and updates would be made available to the public to help make travel choices.
- Place communication and signage for temporary routes for pedestrians and biking well in advance of the detour areas. Wayfinding signage would be accessible, consistent, thorough, and maintained.
- Coordinate with affected property owners to minimize potential impacts to structures and access points during construction.
- Coordinate with local jurisdictions and other organizations offering services to people experiencing unsheltered houselessness in areas directly affected by construction activities. Services would be provided in advance of construction and could include harm reduction, access to health services, and emergency shelter or alternate housing options.
- Restore removed landscaping on properties following construction or as otherwise agreed within the property rights process.
- Pay property owners in exchange for the use of their property during construction.



# 8. PERMITS AND APPROVALS

The IBR Program would comply with the Uniform Relocation and Real Property Acquisitions Policies Act of 1970 as amended, as described in the Acquisitions Technical Report.



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