

## 2. DESCRIPTION OF ALTERNATIVES

*Note to Reviewers: Graphics in this section are under development and will be updated in subsequent drafts.*

### 2.1 Introduction

The Interstate Bridge Replacement (IBR) program is a renewal of the previously suspended Columbia River Crossing (CRC) project. The program will replace the aging Interstate 5 (I-5) Bridge across the Columbia River with a modern, seismically resilient multimodal structure. The IBR program's Modified Locally Preferred Alternative (Modified LPA) is a modification of the Locally Preferred Alternative (LPA) that was selected for the CRC Project, which completed the NEPA process with a signed Record of Decision (ROD) in 2011 (CRC 2011b) and two re-evaluations that were completed in 2012 and 2013. The CRC Project was discontinued in 2014.

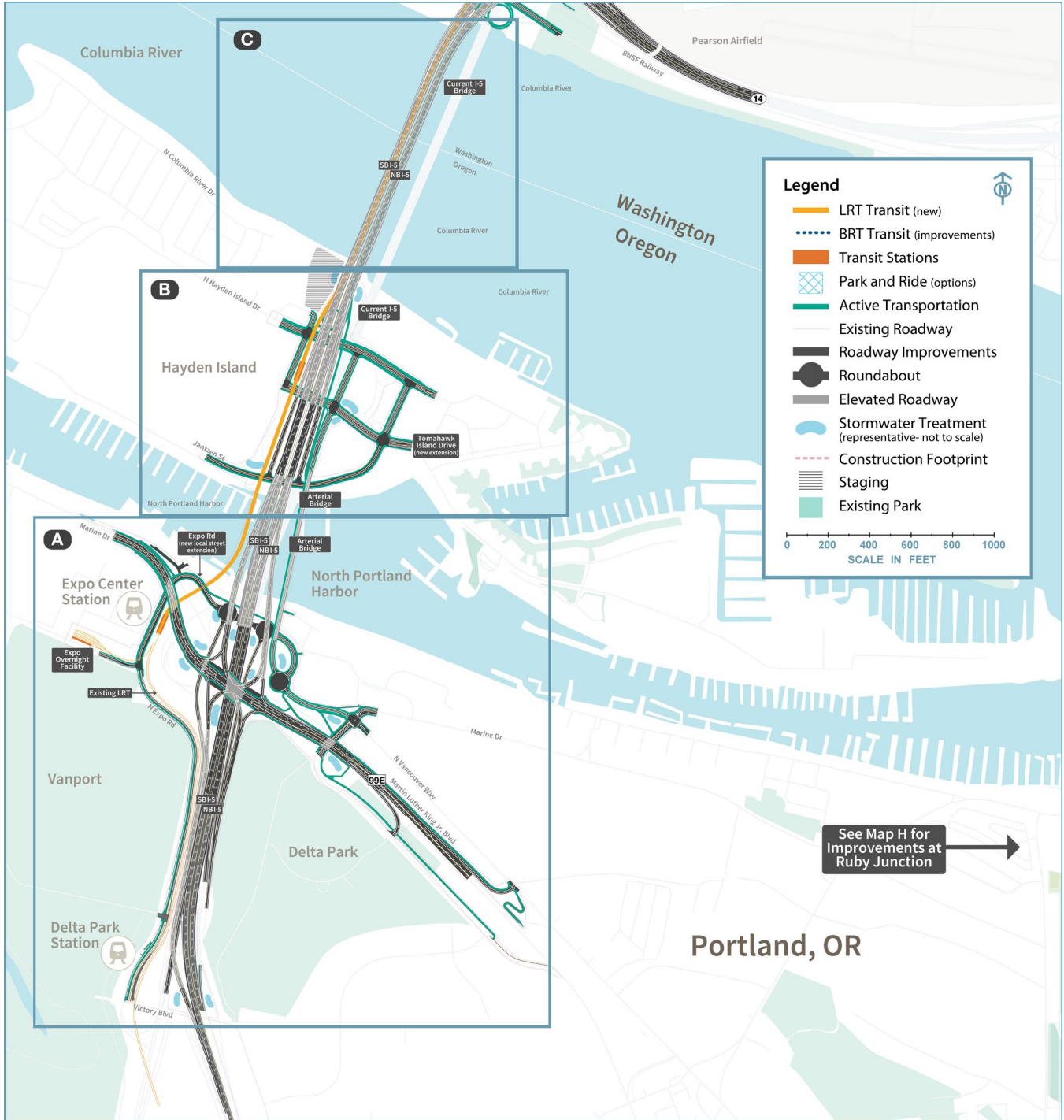
The Modified Locally Preferred Alternative (LPA) was developed through a collaborative process with the local and regional agencies sponsoring the IBR program.

The Modified LPA is a set of transportation components agreed upon by federal, tribal, state, regional, and local project partners. The proposed infrastructure improvements are located along a 5-mile stretch of the I-5 corridor in Portland, Oregon, and Vancouver, Washington, as shown in Figure 2-1 and Figure 2-2, respectively.

Sections 2.2 and 2.3 of this chapter describe specific components of the IBR program's Modified LPA and how they would be constructed. Section 2.4 describes the No-Build Alternative, which will serve as a baseline for evaluating environmental impacts. Section 2.5 a discusses how design options for the Modified LPA were developed and evaluated, and Section 2.6 addresses additional regulatory compliance that is underway for the Modified LPA.

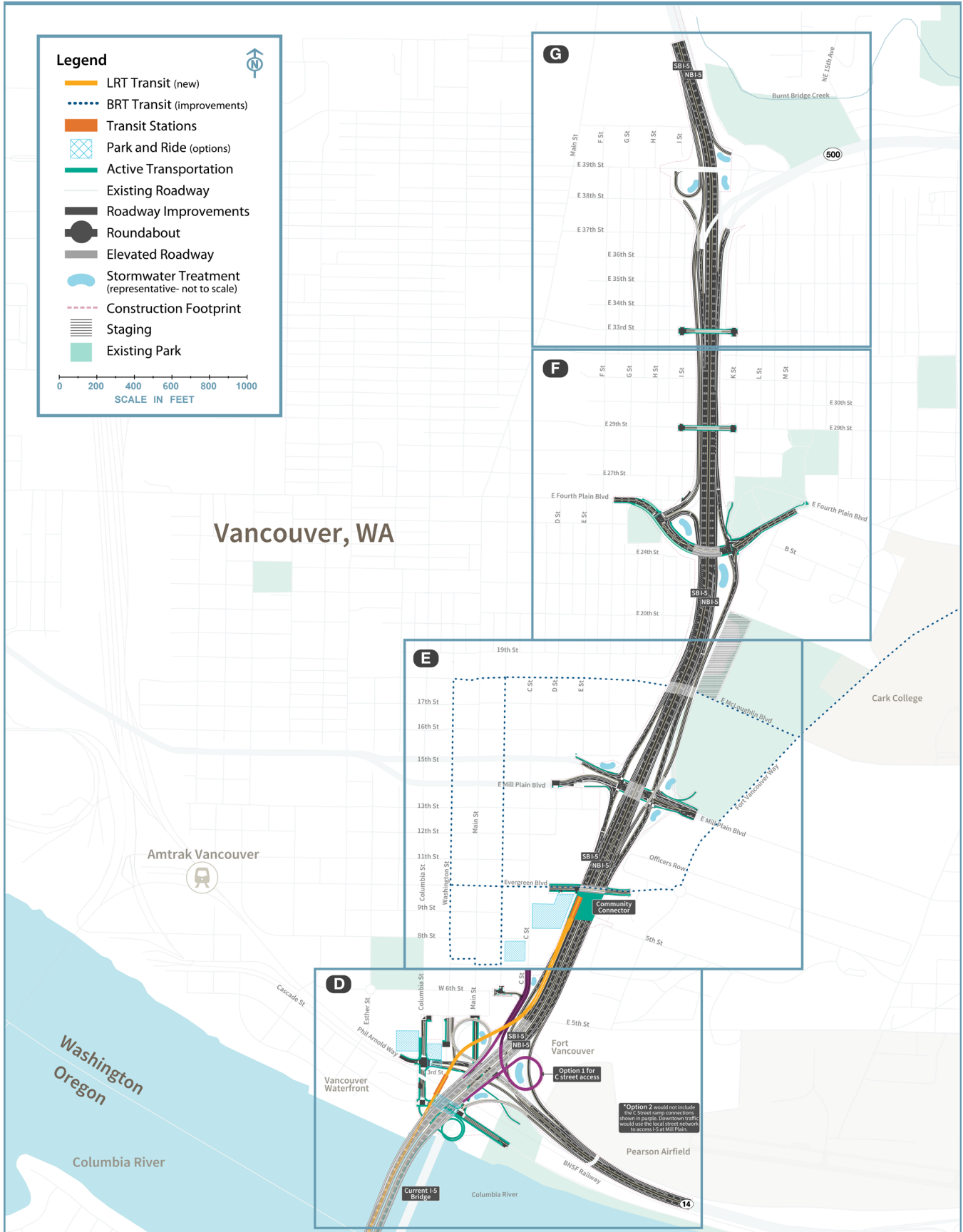
### Interstate Bridge Replacement Program

1 Figure 2-1. Overview of the IBR Modified LPA in Oregon



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1 Figure 2-2. Overview of the IBR Modified LPA in Washington



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## Interstate Bridge Replacement Program

## 2.2 Components of the Modified LPA

The components of the Modified LPA include:

- A new Interstate Bridge built west of the existing bridge. The new bridge would include safety shoulders and options for one or two auxiliary lanes in each direction.
- A 1.9-mile extension of light rail transit (LRT) from the current Metropolitan Area Express (MAX) Yellow Line light rail from the Expo Center station in North Portland, where it currently ends, to Evergreen Boulevard in Vancouver. Improvements would include new stations at Hayden Island, downtown Vancouver, and Evergreen Boulevard.
- Associated LRT improvements such as park and rides, an overnight light rail vehicle (LRV) facility at the Expo Center, and an expanded operations and maintenance facility at Ruby Junction.
- Improvements to seven interchanges along I-5 between N Victory Boulevard in Portland and SR 500 in Vancouver. Some adjacent local streets would be reconfigured to complement the new interchange designs.
- Wider shoulders on I-5 to accommodate express bus-on-shoulder service along I-5 from SR 500 to N Victory Boulevard.
- A variety of improvements for people who walk, bike, and roll throughout the program area, including improvements to comply with the Americans with Disabilities Act (ADA).
- Improvements to local bus transit service to integrate the proposed new LRT service and local bus routes.
- Variable-rate tolling for motorists using the river crossing as a demand-management and financing tool.

The transportation improvements proposed for the Modified LPA are described in the following sections from south to north. In each geographic subarea (shown in Figure 2-1 and Figure 2-2 as A through G), improvements to I-5, its interchanges, and the local roadways are described first, followed by transit and active transportation improvements. The figures show both the anticipated limit of ground disturbance, which includes disturbance from temporary construction activities, and the location of permanent infrastructure elements. Where applicable, text boxes briefly note differences between the IBR program's Modified LPA and the previously selected CRC LPA.

### 2.2.1 Portland Mainland (Area A)

#### Freeway, Interchanges, and Local Roadways

##### *North Victory Boulevard Interchange Area*

The southern extent of the proposed I-5 program improvements is two ramps associated with the N Victory Boulevard interchange in Portland (see Figure 2-3). The other ramp improvement would lengthen the merge distance for northbound traffic entering I-5 from N Victory Boulevard.

#### What's Changed with IBR?

The Victory Boulevard interchange design is similar to the CRC LPA, except that the IBR Modified LPA on-ramp to northbound I-5 would merge onto the highway rather than becoming an auxiliary lane that continues north across the river.

## 1 **Marine Drive Interchange Area**

2 The next interchange north of the N Victory Boulevard interchange is at Marine Drive. All movements within  
3 this interchange would be reconfigured to reduce congestion for motorists entering and exiting I-5 at this  
4 location. The new configuration would be a single-point urban interchange. See Figure 2-3 for the Marine  
5 Drive interchange's layout and construction footprint. With this  
6 configuration, all four legs of the interchange would converge at  
7 a point on Marine Drive over the I-5 mainline.

8 The Marine Drive to I-5 southbound on-ramp would be braided  
9 over I-5 southbound to the N Victory Boulevard/N Denver  
10 Avenue off-ramp. NE Martin Luther King Jr. Boulevard would  
11 have a new direct connection to I-5 northbound. Motorists  
12 traveling from Marine Drive eastbound to I-5 southbound and  
13 those traveling from NE Martin Luther King Jr. Boulevard  
14 westbound to I-5 northbound would access I-5 without stopping  
15 at the intersection unless the pedestrian signal crossing of the  
16 ramp entrance is activated.

17 The new interchange configuration would change the  
18 westbound Marine Drive and westbound N Vancouver Way connections to NE Martin Luther King Jr.  
19 Boulevard. An improved connection ramp farther east of the interchange would provide access to westbound  
20 NE Martin Luther King Jr. Boulevard for these two streets. The improvements to this connection would allow  
21 traffic to turn right from N Vancouver Way and accelerate onto NE Martin Luther King Jr. Boulevard. On the  
22 south side of NE Martin Luther King Jr. Boulevard, the existing loop connection would be replaced with a new  
23 connection farther east.

24 N Expo Road from N Victory Boulevard to the Expo Center would be reconstructed with improved active  
25 transportation facilities. North of Expo Center, N Expo Road would be extended under N Marine Drive and loop  
26 under I-5 to the east, connecting with N Vancouver Way through three roundabouts. Two of the new  
27 roundabouts would provide connections from the new local street extension to I-5 southbound and from I-5  
28 northbound. An arterial bridge crossing the North Portland Harbor would connect to the local road extension  
29 with a third roundabout.

## 30 **Transit**

31 A new light rail alignment for northbound and southbound trains would be constructed within Area A (see  
32 Figure 2-3) to extend from the existing Expo Center MAX station over North Portland Harbor to a new station at  
33 Hayden Island (see Section 2.2.2). The existing Expo Center MAX station would be modified to remove the  
34 westernmost track and platform. The other platform and two existing tracks would remain as they currently  
35 are. Immediately north of the Expo Center, the alignment would curve eastward toward I-5, pass beneath  
36 Marine Drive, cross a proposed local street and the 40-Mile Loop Trail at grade, then rise over the existing  
37 levee onto a light rail bridge to cross North Portland Harbor.

38 An overnight LRV facility would be constructed on the southeast corner of the Expo Center property (see  
39 Figure 2-3) to reduce “deadheading” between Ruby Junction and the northern terminus of the MAX Yellow  
40 Line extension. Deadheading occurs when LRVs travel without passengers to make the vehicles ready for  
41 service. The facility would provide a small number of LRV storage tracks, one small building for light LRV  
42 maintenance, an operator break building, and a parking lot for reporting operators. This facility would  
43 necessitate relocation and reconstruction of the N Expo Road entrance to the Expo Center (including the  
44 parking lot gates and booths). However, it would not affect any of the existing Expo Center buildings.

### **What's Changed with IBR?**

The IBR interchange design has four legs converging on Marine Drive rather than the three legs proposed in the CRC LPA, which would also have included a flyover ramp from Marine Drive eastbound to I-5 northbound. There were also two design options for connections to Hayden Island.

### Interstate Bridge Replacement Program

1 The overnight facility would connect to the mainline tracks by crossing N Expo Road just south of the existing  
2 Expo Center station. The connection tracks would require relocation of one or two existing LRT facilities,  
3 including a traction power substation building and potentially the existing communication building, which  
4 are both just south of the Expo Center station.

### 5 **Active Transportation**

6 In the N Victory Boulevard interchange area (see Figure 2-3), active transportation facilities would be provided  
7 along N Expo Road between N Victory Boulevard and the Expo Center; this would provide a direct connection  
8 between the N Victory Boulevard and Marine Drive interchange areas.

9 New shared-use path connections throughout the Marine Drive interchange area would provide access  
10 between the Bridgeton neighborhood, Hayden Island, and the Expo Center light rail station, in addition to  
11 providing connections to the existing portions of the 40-Mile Loop Trail.

1 Figure 2-3. Portland Mainland (Area A)



2

## Interstate Bridge Replacement Program

## 2.2.2 Hayden Island (Area B)

**Freeway, Interchanges, and Local Roadways**

To the north of the Marine Drive interchange is the Hayden Island interchange area, which is shown in Figure 2-4. The existing I-5 bridge spanning North Portland Harbor between the Oregon mainland and Hayden Island would be replaced to improve seismic resiliency. Six new parallel bridges would be built across the waterway: 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. From west to east, these bridges would carry:

- The LRT guideway.
- The off-ramp from southbound I-5.
- The southbound I-5 mainline.
- The northbound I-5 mainline.
- The northbound on-ramp to I-5.
- A new arterial bridge between the Portland mainland and Hayden Island that would also include a shared-use path for pedestrians and bicyclists.

All new structures would have at least as much vertical navigation clearance over North Portland Harbor as the existing North Portland Harbor bridge.

All traffic movements for the Hayden Island interchange would be reconfigured. See Figure 2-4 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. Both ramps would parallel the I-5 mainline, thus lengthening the ramps and improving merging speeds compared to the existing substandard ramps that require acceleration and deceleration in a short distance.

**What's Changed with IBR?**

The Modified LPA design for crossing North Portland Harbor includes six new bridges spanning the harbor. The CRC LPA would have retained the existing highway bridges to accommodate mainline I-5 traffic and added four new bridges to carry the LRT guideway, local traffic, and ramps from I-5 to and from the Marine Drive interchange.



1 Figure 2-4. Hayden Island (Area B)



2

3 There would not be a southbound I-5 on-ramp and northbound I-5 off-ramp on Hayden Island. Ramps for  
 4 those movements (shown in Figure 2-3) would be connected to the new local street extension of Expo Road  
 5 that would cross under I-5 just north of Marine Drive. Vehicles traveling northbound on I-5 wanting to access  
 6 Hayden Island would exit with traffic going to the Marine Drive interchange, cross under Marine Drive to the  
 7 new Expo Road local street, and use the arterial bridge to cross North Portland Harbor. Vehicles on Hayden  
 8 Island looking to enter I-5 southbound would use the new arterial bridge to cross North Portland Harbor,  
 9 cross under I-5 using the new Expo Road local street, cross under Marine Drive, merge with the Marine Drive  
 10 southbound on-ramp, and enter I-5 southbound south of the Victory Boulevard interchange.

11 Improvements to Jantzen Drive and Hayden Island Drive would include additional left-turn and right-turn  
 12 lanes at the interchange ramp terminals and active transportation facilities. A new extension of Tomahawk  
 13 Island Drive would travel east-west through the middle of Hayden Island and under the I-5 interchange, thus  
 14 improving connectivity across I-5 on the island.

## Interstate Bridge Replacement Program

1 **Transit**

2 Within the Hayden Island interchange area, proposed transit  
 3 components include northbound and southbound LRT tracks  
 4 over Hayden Island, which would be elevated at approximately  
 5 the height of the new I-5 mainline. A new LRT station would also  
 6 be built on the island immediately west of I-5. The light rail  
 7 alignment would extend northward on Hayden Island along the  
 8 western edge of I-5 before transitioning onto the lower level of  
 9 the new western bridge over the Columbia River (see  
 10 Figure 2-4).

11 **Active Transportation**

12 Within the Hayden Island interchange area, the new arterial  
 13 bridge would include active transportation components such as  
 14 a shared-use path for pedestrians and bicyclists (see Figure 2-4).  
 15 On Hayden Island, pedestrian and bicycle facilities would be  
 16 provided on Jantzen Drive, Hayden Island Drive, and Tomahawk  
 17 Island Drive. The shared-use path on the arterial bridge would  
 18 continue adjacent to I-5 across Hayden Island and connect to  
 19 the shared-use path on the lower level of the new eastern bridge  
 20 over the Columbia River. The shared-use path crossings of  
 21 Tomahawk Island Drive and Hayden Island Drive would be grade-separated with the path crossing over the  
 22 roadways.

23 **2.2.3 Interstate Bridge (Area C)**24 **Freeways, Interchanges, and Local Roadways**

25 North of Hayden Island, the I-5 mainline crosses the Columbia  
 26 River (see Figure 2-5, Area C). The parallel bridges that form the  
 27 existing I-5 crossing over the Columbia River would be replaced  
 28 by two new parallel bridges, which would be located west  
 29 (downstream) of the existing bridges. The eastern bridge would  
 30 accommodate northbound highway traffic on the upper level,  
 31 and there would be a bicycle and pedestrian path and utilities  
 32 underneath. The western bridge would carry southbound traffic  
 33 on the upper level and two-way light rail tracks below. Whereas  
 34 the existing bridges have only three lanes, each with virtually no  
 35 shoulders, each of the two new bridges would be wide enough  
 36 to accommodate three through lanes and one add/drop  
 37 (auxiliary) lane. Lanes and shoulders would be built to full  
 38 design standards.

39 Figure 2-6 shows a conceptual visualization of the two proposed  
 40 parallel bridges in cross section. The existing bridges over the  
 41 Columbia River have nine in-water pier sets, whereas each of  
 42 the new bridges would be built on six pairs of in-water piers, plus several pairs of piers on land. Each of these  
 43 pier sets would be supported by a foundation of approximately sixteen 10-foot-diameter drilled shafts; each  
 44 group of shafts would be tied together with a concrete cap measuring approximately 75 by 75 feet at the

**What's Changed with IBR?**

The Modified LPA includes a half-diamond interchange on Hayden Island, with an off-ramp from southbound I-5 and an on-ramp to northbound I-5. Vehicles traveling between Hayden Island and Portland mainland would use the new arterial bridge. The CRC LPA proposed a full interchange in a split tight-diamond configuration with access to and from both directions of I-5. Two design options were proposed for connections between Hayden Island and the mainland. Local roadways on Hayden Island are also configured somewhat differently in the two designs.

**What's Changed with IBR?**

The Modified LPA design for the Interstate Bridge is similar to the CRC LPA design. Two changes are that IBR's proposed bridges are straight while the CRC's bridges were curved, and the Modified LPA bridges would include one add/drop lane in each direction while the CRC bridges included two. In addition, the original CRC LPA design in the ROD had a vertical clearance of 95 feet above the Columbia River. The 116-foot clearance evaluated in this SDEIS was reviewed and approved through a NEPA re-evaluation in 2012.

1 water line. Columns or pier walls would rise from the shaft caps and connect to the superstructure of the  
 2 bridges. As with the existing bridges, the new bridges would provide three shipping channels: a primary  
 3 channel, a barge channel, and an alternate barge channel. However, the primary shipping channel in the  
 4 Modified LPA would be between the two barge channels and closer to the center of the river than its current  
 5 location, which is near the Vancouver shoreline where the existing lift spans are located. Each of the three  
 6 navigation channels would be 300 feet wide.

7 The new bridges would be tall enough to provide approximately 116 feet of vertical navigation clearance for  
 8 river traffic using the primary navigation channel. This height would not impede takeoffs and landings by  
 9 aircraft using Pearson Field or Portland International Airport to the east. Figure 2-7 compares the profile and  
 10 clearance of the Interstate Bridge under the Modified LPA with the profile of the existing Interstate Bridge  
 11 (shown in the background). The new bridges over the Columbia River would not include lift spans, and each  
 12 bridge would be supported by six piers in the water and two piers on land.

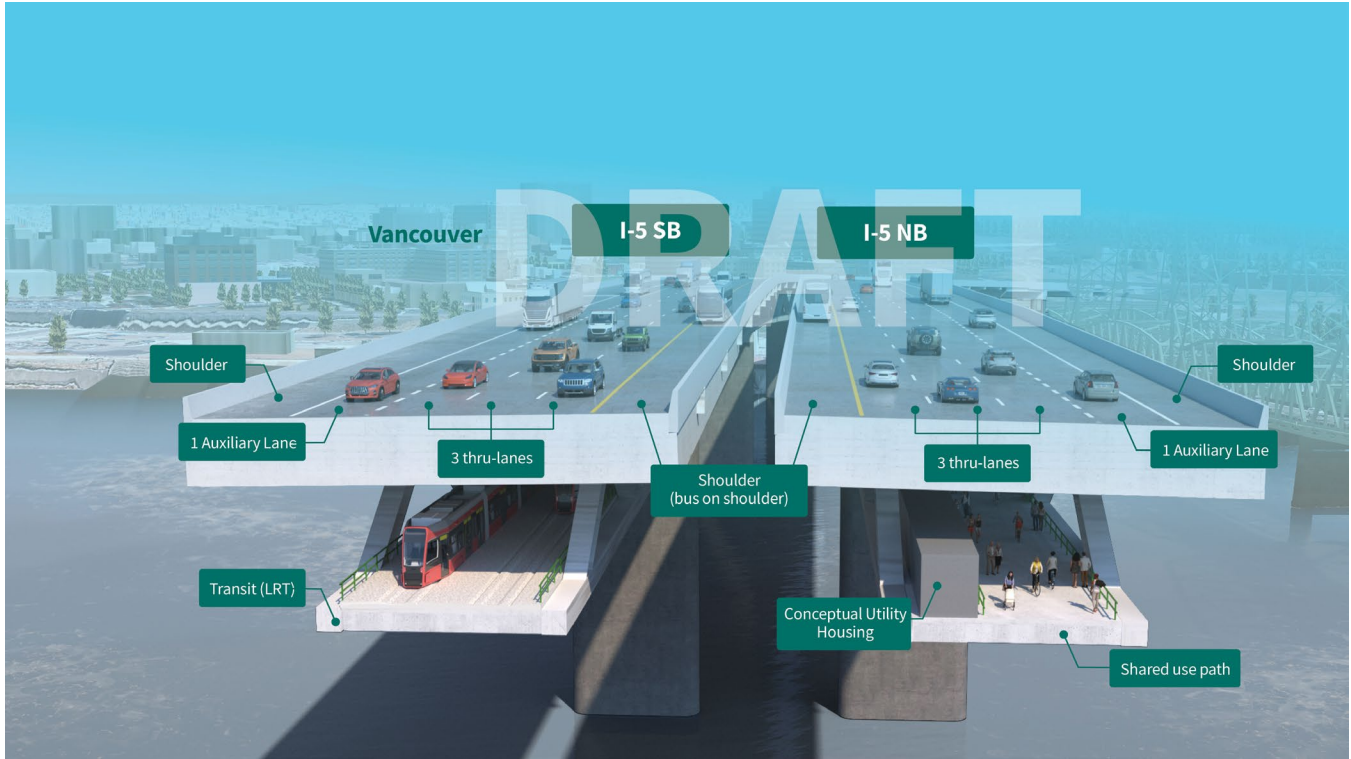
13 Figure 2-5. Interstate Bridge (Area C)



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Interstate Bridge Replacement Program

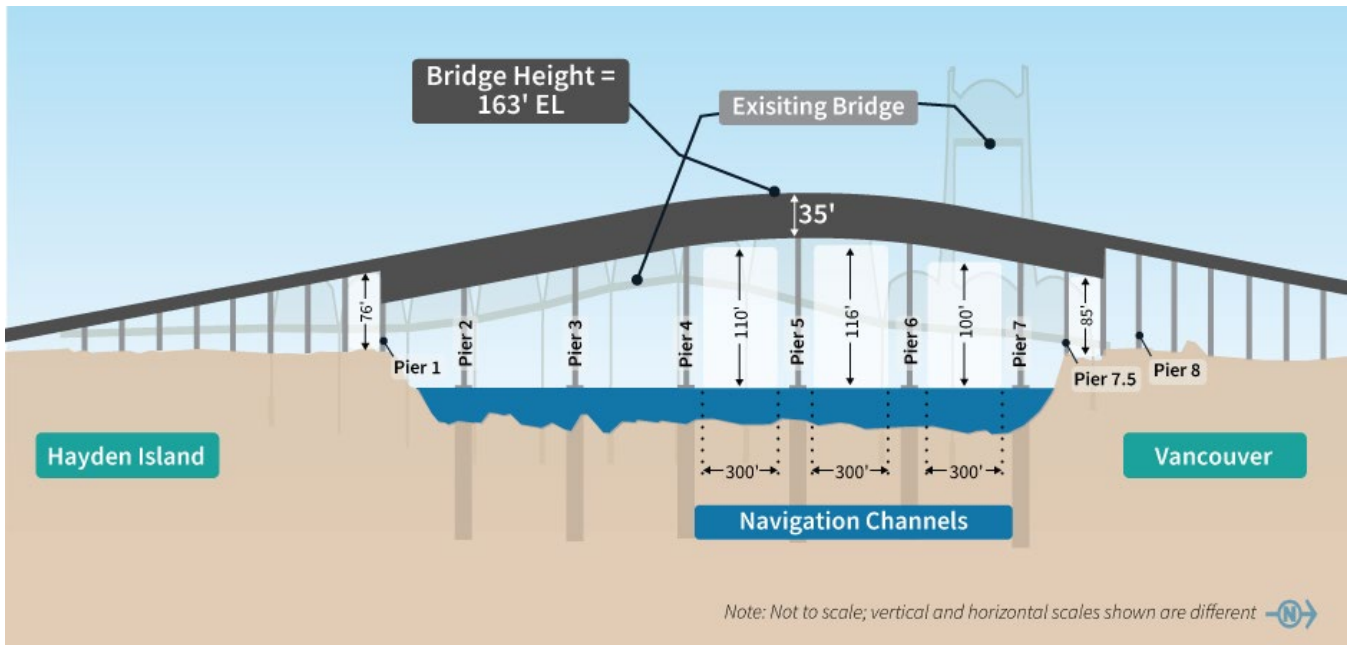
1 Figure 2-6. Conceptual Visualization of the Proposed Interstate Bridge Levels



2

3

4 Figure 2-7. Profile and Vertical Navigation Clearance of the Proposed Interstate Bridge



5

6 **Transit**

7 As shown in Figure 2-5 and Figure 2-6, the new western bridge would carry two-way light rail tracks on its  
8 lower level.

## 1 **Active Transportation**

2 Active transportation would be located on the new eastern bridge (Figure 2-5 and Figure 2-6) and would  
3 consist of a shared-use path for pedestrians and bicyclists on the lower level.

### 4 **2.2.4 Downtown Vancouver (Areas D and E)**

#### 5 **Freeways, Interchanges, and Local Roadways**

6 North of the Interstate Bridge in downtown Vancouver,  
7 improvements are proposed to the SR 14 and Mill Plain  
8 Boulevard interchanges (Figure 2-8 and Figure 2-9).

#### 9 ***SR 14 Interchange (Area D)***

10 The new Interstate Bridge would touch down just north of the  
11 SR 14 interchange (Figure 2-8). The function of the SR 14  
12 interchange would remain essentially the same as it is now.  
13 Direct connections between I-5 and SR 14 would be rebuilt.  
14 Access to and from downtown Vancouver would be provided as  
15 it is today, but the connection points would be relocated. Main  
16 Street would be extended between 5th Street and Columbia  
17 Way. Vehicles traveling from downtown Vancouver to access  
18 SR 14 eastbound would use the new extension of Main Street to  
19 the roundabout underneath I-5. If coming from the west or  
20 south (waterfront) in downtown Vancouver, vehicles would use  
21 the Phil Arnold Way/3rd Street extension to the roundabout,  
22 then continue to SR 14 eastbound.

23 There are two options for the interchange configuration access  
24 to and from I-5, described below. Both options are shown in  
25 Figure 2-8, with a purple line depicting the C Street access ramps in Option 1.

- 26 • **Option 1** – Downtown Vancouver I-5 access to and from the south would be at C Street, while downtown  
27 connections to and from SR 14 would be made by Columbia Street at 3rd Street.
- 28 • **Option 2** – Downtown Vancouver I-5 access to and from the south would be through the Mill Plain  
29 interchange rather than C Street. There would be no eastside loop ramp from I-5 northbound to C Street  
30 and no directional ramp on the west side of I-5 from C Street to I-5 southbound. The existing eastside loop  
31 ramp would be removed. Option 2 would also shift the I-5 mainline and ramps to the west. The westward  
32 I-5 alignment shift could also be incorporated into the design of Option 1 (with the C Street ramps).

33 Access to and from SR 14 would be identical between Options 1 and 2.

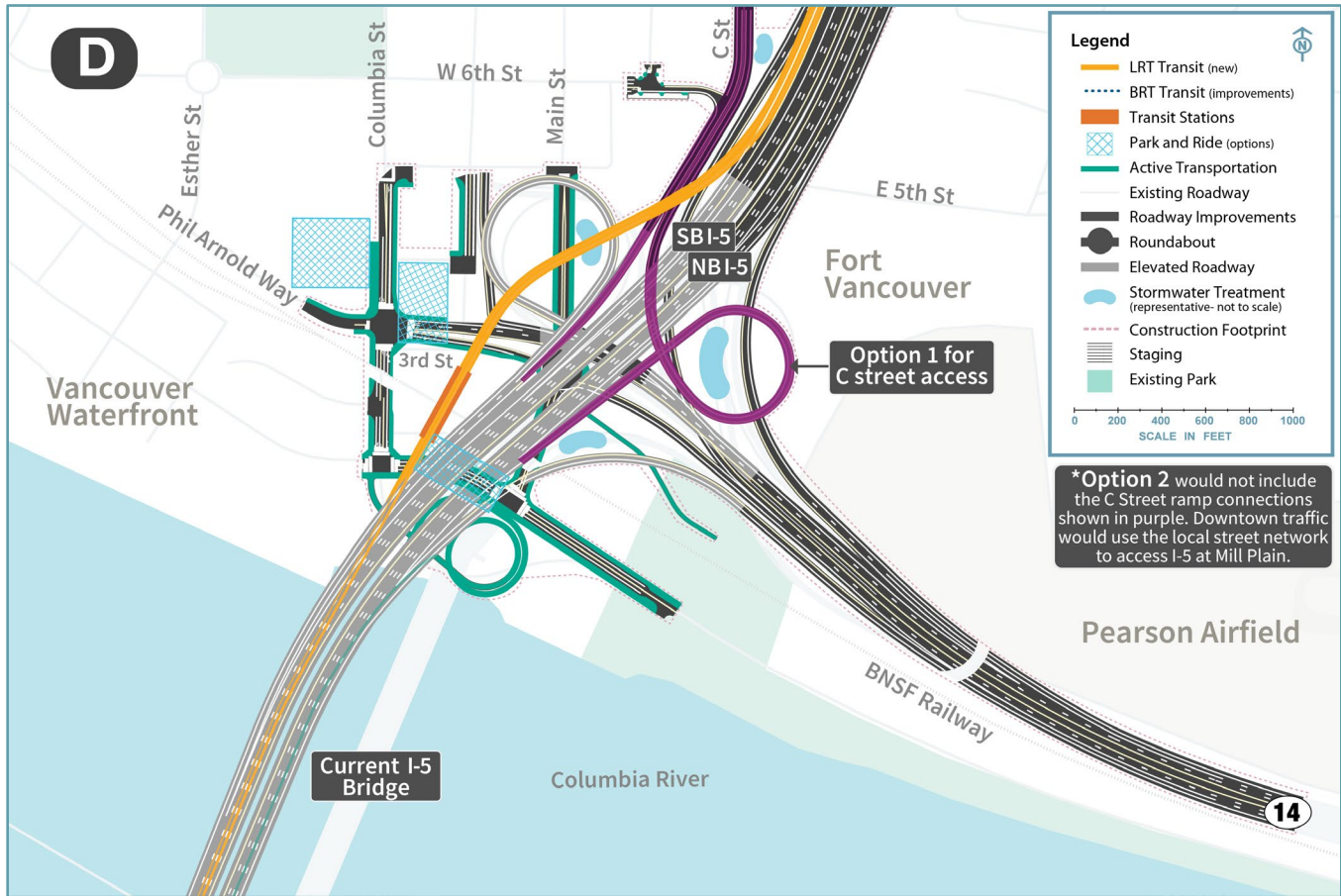
34 The existing Columbia Way roadway under I-5 would be realigned to the north of its existing location and  
35 would intersect both the new Main Street extension and Columbia Street with T-intersections.

#### **What's Changed with IBR?**

Option 1 of the Modified LPA in downtown Vancouver is similar to the CRC LPA, except that IBR's connections to and from SR 14 would be via Columbia Street at 3rd Street rather than 4th Street. Option 2, which would eliminate the C Street ramps and shift the I-5 mainline westward, was not included in the CRC LPA. In addition, the shared-use path in the Modified LPA would cross to the west side of I-5 to connect to the existing path on Columbia Street, whereas the CRC shared-use path would loop down from the Interstate Bridge to connect to Columbia Way.

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1 Figure 2-8. Downtown Vancouver, SR 14 Interchange (Area D)



2

3 **Mill Plain Boulevard Interchange (Area E)**

4 The Mill Plain Boulevard interchange is north of the SR 14  
 5 interchange (see Figure 2-9). This interchange would be  
 6 reconstructed as a tight-diamond configuration but would  
 7 otherwise remain similar in function to the existing interchange.  
 8 The intersections would be sized to accommodate the high,  
 9 wide, and heavy freight vehicles that travel between the Port of  
 10 Vancouver and I-5. The off-ramp from I-5 northbound to Fourth  
 11 Plain Boulevard would be reconstructed and would cross over  
 12 Mill Plain Boulevard east of I-5, similar to the way it functions  
 13 today. The interchange would also receive several improvements for bicyclists and pedestrians, as described  
 14 below. In addition, the existing overcrossing of I-5 at Evergreen Boulevard, south of Mill Plain Boulevard,  
 15 would be reconstructed.

**What's Changed with IBR?**

The Modified LPA is similar to the CRC LPA at Mill Plain, but includes a tight-diamond interchange configuration rather than a single-point interchange.

1 Figure 2-9. Downtown Vancouver, Mill Plain Interchange (Area E)



2

## Interstate Bridge Replacement Program

1 **Transit**2 ***Light Rail Alignment and Stations***

3 After crossing the Columbia River, the light rail alignment would  
4 exit the highway bridge and be supported by its own smaller  
5 bridge along the west side of the I-5 mainline (see Figure 2-8).

6 The light rail bridge would cross over the BNSF Railway tracks.

7 An elevated station near the Vancouver waterfront would be  
8 situated near the crossing of the BNSF tracks between Columbia

9 Way and 3rd Street. The elevated light rail alignment would

10 continue north, cross over the westbound SR 14 on-ramp and

11 the C Street/6th Street on-ramp to southbound I-5, and then

12 straddle the southbound I-5 collector-distributor roadway. (The

13 collector-distributor roadway separates freeway through-traffic  
14 from other vehicles that are exiting or entering the freeway.)

15 Transit components in the downtown Vancouver area are

16 similar between the two SR 14 interchange area design options.

17 North of the Vancouver waterfront transit station, the light rail

18 tracks would continue to the Evergreen Boulevard station,

19 which would be the terminus of the IBR program light rail extension (see Figure 2-9). The light rail tracks from

20 downtown Vancouver to the terminus would be entirely on an elevated structure supported by a single

21 column, where feasible, or by columns on either side of the roadway where needed. The light rail tracks would

22 be a minimum of 27 feet above the I-5 roadway surface. The Evergreen Boulevard station would be located at

23 the same elevation as Evergreen Boulevard.

24 ***Park and Rides***

25 Up to two park and rides could be built in Vancouver along the light rail alignment: one near the waterfront

26 station and one near the Evergreen Boulevard station. Park-and-ride sites in the downtown Vancouver area

27 are similar between Design Options 1 and 2 for the two SR 14 interchange areas. See Figure 2-8 for the

28 potential park-and-ride locations.

29 There are three options for the park and ride near the waterfront station. Each would accommodate up to

30 570 parking spaces:

31 1. Columbia Way (below I-5) – This potential park-and-ride site would be a multilevel aboveground structure  
32 located below the I-5 bridges immediately north of a realigned Columbia Way.

33 2. Columbia Street/SR 14 – This potential park-and-ride site would be a multilevel aboveground structure  
34 located along the east side of Columbia Street. It could span above the SR 14 westbound off-ramp to  
35 provide parking on the north and south sides of the off-ramp.

36 3. Columbia Street/Phil Arnold Way (Waterfront Gateway Site) – This potential park-and-ride site would be  
37 located along the west side of Columbia Street immediately north of Phil Arnold Way. This park and ride  
38 would be developed in coordination with the City of Vancouver's Waterfront Gateway program and would  
39 be a joint use parking facility not constructed exclusively for park-and-ride users.

40 There are two options for the park and ride near the Evergreen Boulevard station:

41 1. Library Square – This potential park-and-ride site is located along the east side of C Street and south of  
42 Evergreen Boulevard. This park and ride would accommodate up to 700 parking spaces in a multilevel  
43 belowground structure developed in coordination with the privately owned Library Square development.

**What's Changed with IBR?**

The light rail alignment proposed in the Modified LPA would remain close to the west side of I-5 in downtown Vancouver, with stations at the waterfront and at Evergreen Boulevard. In the CRC LPA, light rail would have turned west from I-5 after crossing the Interstate Bridge to run along Washington Street and Broadway, with stations in downtown Vancouver and Evergreen/15th. It would then have turned east on 17th Street to a terminus station east of I-5 at Clark College.



- 1 It would be a joint use parking facility for park-and-ride users and patrons of other uses on the ground or  
2 upper levels as determined by a potential future private developer.
- 3 2. Columbia Credit Union – This potential park-and-ride site is an existing multistory garage that is located  
4 below the Columbia Credit Union office tower along the west side of C Street between 7th Street and 8th  
5 Street. The existing parking structure currently serves the office tower above it as well as the Regal City  
6 Center across the street. This would be a joint use parking facility, not for the exclusive use of  
7 park-and-ride users, that could serve as additional or overflow parking if the 700 required parking spaces  
8 cannot be accommodated elsewhere.

## 9 **Active Transportation**

10 Within the downtown Vancouver area, the shared-use bicycle and pedestrian path on the eastern bridge  
11 would exit the bridge at the SR 14 interchange, loop down on the east side of I-5, and then cross back to the  
12 west side of I-5 to connect into the Waterfront Renaissance Trail on Columbia Street and into Columbia Way  
13 (see Figure 2-8). Active transportation components in the downtown Vancouver area are similar between  
14 Design Options 1 and 2 for the SR 14 interchange area.

15 At Evergreen Boulevard, active transportation improvements  
16 would include an overcrossing above I-5 just south of Evergreen  
17 Boulevard, which would be constructed as a wide pedestrian  
18 connection (referred to as the Community Connector) between  
19 the east and west sides of I-5 (see Figure 2-9). The light rail  
20 terminus at the Evergreen Boulevard station would be located  
21 just south of the Community Connector. Active transportation  
22 improvements at the Mill Plain interchange include bicycle  
23 lanes and sidewalks, pavement markings, lighting, and signing.

### **What's Changed with IBR?**

The Community Connector in the Modified LPA provides an active transportation connection across I-5 to the LRT terminus station. The connector was also included in the CRC LPA, but it was not at the terminus of the light rail line.

## 24 **2.2.5 Upper Vancouver (Areas F and G)**

### 25 **Freeways, Interchanges, and Local Roadways**

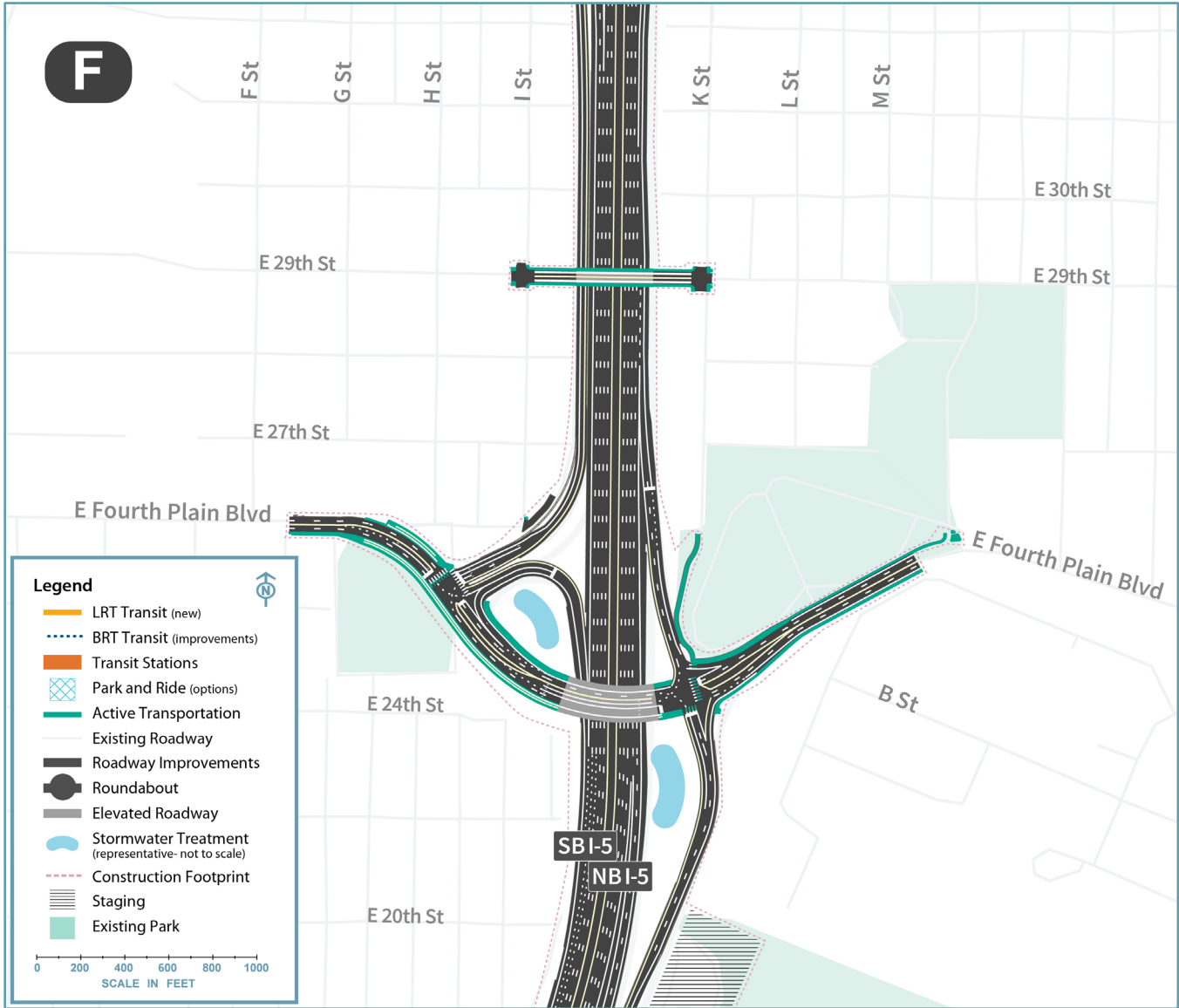
26 Within the Upper Vancouver area, the IBR program proposes improvements to two interchange—Fourth Plain  
27 and SR 500—as described below.

#### 28 ***Fourth Plain Boulevard Interchange***

29 At the Fourth Plain Boulevard interchange, improvements would enhance vehicle safety and better  
30 accommodate freight mobility (see Figure 2-10). Northbound I-5 traffic exiting to Fourth Plain would continue  
31 to use the off-ramp just south of the N Evergreen Boulevard overpass. This off-ramp would continue to be  
32 combined with the Mill Plain exit ramp, as it is today, as well as with the on-ramp from westbound SR 14 to  
33 northbound I-5. The southbound I-5 exit to Fourth Plain would be braided with the westbound SR 500  
34 connection to southbound I-5. This change would eliminate the nonstandard weave between the SR 500  
35 connection and the off-ramp to Fourth Plain. It would also eliminate the westbound SR 500 to Fourth Plain  
36 Boulevard connection.

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1 Figure 2-10. Upper Vancouver, Fourth Plain Interchange (Area F)



2

3 **SR 500 Interchange**

4 The northern terminus of the I-5 project improvements would  
 5 be in the SR 500 interchange area (Figure 2-11). The  
 6 improvements would be minor and primarily connect the  
 7 Modified LPA to existing ramps. The off-ramp from I-5  
 8 southbound to 39th Street would be reconstructed to establish  
 9 the beginning of the braided ramp to Fourth Plain and restore  
 10 the loop ramp to 39th Street. Ramps from existing I-5  
 11 northbound to SR 500 eastbound and 39th Street to I-5  
 12 northbound would be partially reconstructed. The existing  
 13 bridges for 39th Street over I-5 and SR 500 westbound to I-5  
 14 southbound would be retained. A new bridge would be  
 15 constructed from 39th Street to I-5 southbound over the new I-5  
 16 southbound to the Fourth Plain ramp.

**What's Changed with IBR?**

The Modified LPA proposes less extensive improvements to the SR 500 interchange than those proposed for the CRC LPA. The CRC LPA included new direct connections between I-5 and SR 500, new on- and off-ramps, and a tunnel beneath I-5. CRC's 2013 NEPA reevaluation also considered a phased construction option that would have temporarily retained the northern half of the interchange.

1 The existing overcrossings of I-5 at 29th Street and 33rd Street would also be reconstructed to accommodate  
2 a widened I-5, provide adequate vertical clearance over I-5, and provide pedestrian and bicycle facilities on  
3 those cross streets.

4 Figure 2-11. Upper Vancouver, SR 500 Interchange (Area G)



5

## 6 Transit

7 There would be no LRT facilities in Upper Vancouver. Proposed operational changes to bus service are  
8 described below in Section 2.2.7, Transit Operating Characteristics.

## Interstate Bridge Replacement Program

**Active Transportation**

Several improvements would be made at the Fourth Plain interchange to provide better bicycle and pedestrian mobility and accessibility; these include bicycle lanes, neighborhood connections, and a tie-in to the planned city of Vancouver road diet and two-way cycle track on Fourth Plain. The reconstructed overcrossings of I-5 at Evergreen Boulevard, 29th Street, and 33rd Street would provide pedestrian and bicycle facilities on those cross streets. No active transportation is proposed to be added in the SR 500 interchange area.

**2.2.6 Transit Support Facilities****Ruby Junction Operations and Maintenance Facility Expansion**

The Ruby Junction Operations and Maintenance Facility in Gresham, Oregon, would need to be expanded to accommodate the additional LRVs associated with the IBR program (the vicinity relative to the study area is shown in Figure 2-1). Improvements would include additional storage for LRVs and maintenance materials and supplies, expansion of LRV maintenance bays, expanded parking for additional personnel, and a third track at the northern entrance to Ruby Junction. Figure 2-12 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, NW 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. Vacating NW Eleven Mile Avenue would require acquiring properties not currently owned by TriMet near the south end of NW Eleven Mile Avenue.

The existing LRV storage yard, west of NW 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 impact the existing material storage yard. The material storage yard would be relocated 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 NW Eleven Mile Avenue. The function of the existing TriMet building would either be transferred to existing modified buildings or to new replacement buildings.

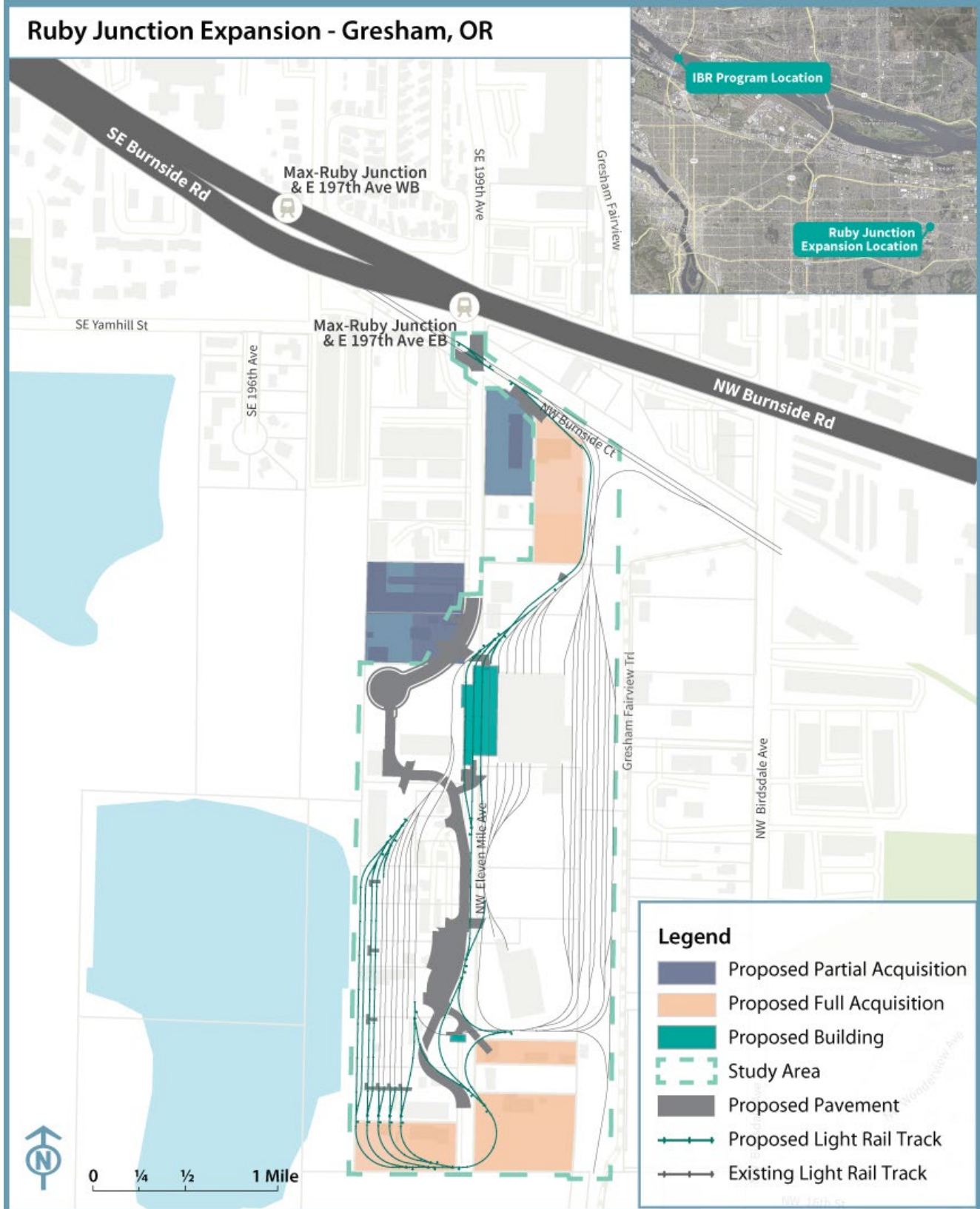
The existing parking lot west of NW Eleven Mile Avenue would be expanded toward the south to provide more parking for TriMet personnel.

A third throat track would be needed at the north entrance to Ruby Junction to accommodate increased train volumes without decreasing service. Adding the throat track would require the full acquisition of one private property, partial acquisition of another private property, and reconstruction of NW Burnside Court east of NW Eleven Mile Avenue. An additional crossover would also be needed on the mainline track where it crosses NW Eleven Mile Avenue; it would require reconstruction of the existing track crossings for vehicles, bicycles, and pedestrians.

**What's Changed with IBR?**

The Modified LPA's active transportation improvements in North Vancouver are similar to those proposed in the CRC LPA. However, the CRC LPA did not include the tie-in to the planned city of Vancouver road diet and two-way cycle track on Fourth Plain, as these had not yet been proposed when the FEIS was being prepared.

1 Figure 2-12. Ruby Junction Study Area



2

## Interstate Bridge Replacement Program

1 **2.2.7 Transit Operating Characteristics**2 **LRT Operations**

3 Nineteen new LRVs would be purchased to operate the extension of the MAX Yellow Line. These vehicles  
4 would be similar to those currently used for the TriMet MAX system. With the Modified LPA, LRT service in the  
5 new and existing portions of the Yellow Line would operate with 5.4-minute average headways (defined as  
6 gaps between arriving transit vehicles) during the peak hour and 6.3-minute average headways in the 2-hour  
7 peak period. Mid-day and evening headways would be 15 minutes, with late-night headways of 30 minutes.

8 **Bus on Shoulder**

9 Buses are currently permitted to use the existing southbound median shoulder of I-5 from 99th Street to the  
10 Interstate Bridge in Vancouver. However, existing shoulders are too narrow for bus-on-shoulder use on the  
11 rest of I-5 in the study area. The IBR program improvements would include median (inside) shoulders on I-5  
12 wide enough for northbound and southbound bus on shoulder (11.5 to 12 feet), except where I-5 must taper  
13 to match existing I-5 median shoulder widths at the north and south ends of the I-5 improvements. Figure 2-6  
14 shows the potential bus-on-shoulder use over the Interstate Bridge.

15 For express bus service in the IBR corridor, two routes (C-TRAN Routes 105 and 190) would operate on the  
16 shoulder for the full extent of the program area. These two routes would operate only in the AM and PM peak  
17 periods and have a combined frequency of every 3 minutes.

18 **Express Bus Service**

19 Two additional express bus routes would provide service in the I-5 corridor. One of these routes (C-TRAN  
20 Route 164) provides only PM peak northbound service with 10-minute headways between downtown Portland  
21 and Vancouver, exiting I-5 at SR 14 to continue service to Fisher's Landing. This route would not be expected  
22 to include bus-on-shoulder operations. The other route (C-TRAN Route 105) provides service between  
23 downtown Vancouver and downtown Portland all day with 6-minute peak headways and 30-minute off-peak  
24 headways. With Option 1 for the SR 14 interchange, which includes a C Street ramp, Route 105 would not be  
25 likely to use bus-on-shoulder operations because of the distance needed to merge from the inside shoulder  
26 lane through traffic to access the off-ramp for downtown. Under Option 2, in which the C Street ramp would  
27 not be included and access to downtown would occur via Mill Plain Boulevard, Route 105 would likely be able  
28 to use bus-on-shoulder operations to cross the Columbia River.

29 **Local Bus Route Changes**

30 As part of the IBR program, the TriMet Line 6 bus route would be changed to terminate at the Expo Center  
31 transit station, allowing passengers to access Hayden Island via the new LRT connection. The route is  
32 anticipated to travel from NE Martin Luther King Jr. Boulevard through the newly configured area providing  
33 local connections to Marine Drive. It would continue west to connect on the west side of I-5 with the Expo  
34 Center transit station. Table 2-1 shows anticipated future changes to TriMet bus routes.

35 As part of the IBR program, several C-TRAN bus routes would be changed to better complement the new light  
36 rail system. Most of these changes would re-route bus lines to provide a transfer opportunity near the new  
37 Evergreen Boulevard station. Express routes are expected to continue service between Clark County and  
38 downtown Portland. Table 2-1 shows anticipated future changes to C-TRAN bus routes. In addition to the  
39 changes noted in Table 2-1 below, other potential route modifications from Broadway to C Street are being  
40 considered.

1 **Table 2-1. Proposed TriMet and C-TRAN Bus Route Changes**

Bus Route	Route Changes
TriMet Line 6	Route would be revised to terminate at the Expo Center transit station. Route anticipated to travel from NE Martin Luther King Jr. Boulevard through the newly configured Marine Drive area, then continue west to connect to west side of I-5 with the Expo Center transit station.
C-TRAN Fourth Plain and Mill Plain bus rapid transit (The Vine) <sup>1</sup>	Route would be revised to begin/end near the Evergreen Boulevard station in downtown Vancouver and provide service along Evergreen to Fort Vancouver Way where it would travel to or from Mill Plain or Fourth Plain depending on clockwise/counterclockwise operations. The Fourth Plain route would continue to serve existing Vine stations beyond Evergreen Boulevard.
C-TRAN #2 Lincoln	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #25 Fruit Valley	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #30 Burton	Route would be modified to begin/end near C Street and 9th Street in downtown Vancouver.
C-TRAN #60 Delta Park Regional	Route would be discontinued.

2 1 Mill Plain bus rapid transit is currently under construction with operation anticipated to start in 2023.

3 **2.2.8 Tolling**

4 Tolling cars and trucks that use the I-5 river crossing is proposed as a method to help fund the IBR program  
 5 and encourage alternative modes of transportation. Federal and state laws set the authority to toll the I-5  
 6 crossing. Federal statutes permit a toll-free bridge on an interstate highway to be converted to a tolled facility  
 7 following the reconstruction or replacement of the bridge. State legislation in Washington permits WSDOT to  
 8 toll I-5 provided that the Washington Legislature first authorizes the tolling of the facility. Once authorized by  
 9 the legislature, the Washington State Transportation Commission has the authority to set the toll rates. In  
 10 Oregon, the Oregon Transportation Commission has the authority to toll a facility and to set the toll rate. It is  
 11 anticipated that prior to tolling I-5, ODOT and WSDOT would enter into a bi-state tolling agreement to  
 12 establish a cooperative process for setting toll rates and guiding the use of toll revenues. WSDOT and ODOT  
 13 would then enter into an agreement addressing implementation logistics for tolling the bi-state facility.

14 Tolls would be collected using an electronic toll collection system; toll collection booths would not be  
 15 required. Instead, motorists could obtain a transponder and set up a payment account that would  
 16 automatically bill the account holder associated with the transponder each time the vehicle crossed the  
 17 bridge. Cars without transponders would be tolled by a license-plate recognition system that would bill the  
 18 address of the owner registered to that license plate.

19 The Modified LPA proposes to apply a variable toll on vehicles using the I-5 crossing, to be collected  
 20 electronically in both directions. Tolls would vary by time of day with higher rates during peak travel periods  
 21 and lower rates during off-peak periods. Currently, there are two scenarios for the tolling assessment. For  
 22 purposes of this NEPA analysis, tolls are assumed to range between \$1.40 and \$2.90 (in 2022 dollars) for  
 23 passenger vehicles with a registered toll payment account. Medium and heavy trucks would be charged a

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1 higher toll than passenger vehicles. Vehicles without a registered toll payment account are assumed to pay an  
2 additional \$2.00 per trip to cover the cost of identifying the vehicle owner from the license plate and invoicing  
3 the toll by mail.

### 4 2.2.9 Transportation System and Demand-Management Measures

5 Many well-coordinated transportation demand management (TDM) and transportation system management  
6 (TSM) programs are already in place in the Portland-Vancouver metropolitan region and are supported by  
7 agencies and adopted plans. In most cases, the impetus for the programs are from state-mandated programs:  
8 Oregon's Employee Commute Options rule and Washington's Commute Trip Reduction law.

9 The physical and operational elements of the IBR program provide the greatest TDM opportunities by  
10 promoting other modes to fulfill more of the travel needs in the project corridor. These include:

- 11 • Major new light rail line in exclusive right of way, as well as express bus routes and bus routes that connect  
12 to new light rail stations.
- 13 • I-5 median shoulders that accommodate express buses.
- 14 • Modern bicycle and pedestrian facilities that accommodate more bicyclists and pedestrians and improve  
15 connectivity, safety, and travel time.
- 16 • Park-and-ride facilities.
- 17 • A variable toll on the highway crossing.

18 In addition to these fundamental elements of the project, facilities and equipment would be implemented  
19 that could help existing or expanded TSM programs maximize the capacity and efficiency of the system. These  
20 include:

- 21 • Replacement or expanded variable message signs or other traveler information systems in the IBR  
22 program area.
- 23 • Expanded incident response capabilities.
- 24 • Queue jumps or bypass lanes for transit vehicles where multilane approaches are provided at ramp  
25 signals for on-ramps.
- 26 • Expanded traveler information systems with additional traffic monitoring equipment and cameras.
- 27 • Active traffic management.

## 28 2.3 Modified LPA Construction

29 The following information on the program's construction activities and sequence follows the information  
30 prepared for the CRC LPA. Construction durations have been updated for the Modified LPA. Since the main  
31 elements of the IBR Modified LPA are similar to those in the CRC LPA (i.e., multimodal river crossings and  
32 interchange improvements), this information provides a reasonable assumption of the construction that  
33 would be required. As the design progresses, the information will be updated for the Modified LPA.

34 The construction of bridges over the Columbia River is the most substantial element of the program, and this  
35 element sets the sequencing for other program components. The main river crossing and immediately  
36 adjacent highway improvement elements would account for the majority of the construction activity  
37 necessary to complete this program.



### 1 2.3.1 Construction Components and Duration

2 Table 2-2 provides the expected duration and additional information on each element of the program. These  
3 estimates are preliminary and are subject to change as project design and planning progress.

4 **Table 2-2. Construction Activities and Estimated Duration**

Element	Estimated Duration	Notes
Interstate Bridge	4 to 7 years	<ul style="list-style-type: none"> <li>Construction is likely to begin with the main river bridges.</li> <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	<ul style="list-style-type: none"> <li>Construction duration for North Portland Harbor Bridges is expected to be similar to the duration for Hayden Island Interchange construction.</li> </ul>
Hayden Island Interchange	4 to 10 years	<ul style="list-style-type: none"> <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	<ul style="list-style-type: none"> <li>Construction would need to be coordinated with construction of the North Portland Harbor bridges.</li> </ul>
SR 14 Interchange	4 to 6 years	<ul style="list-style-type: none"> <li>Interchange would be partially constructed before any traffic could be transferred to the new structure.</li> </ul>
Demolition of the Existing Bridges	1.5 to 2 years	<ul style="list-style-type: none"> <li>Demolition of the existing bridges could begin only after traffic is rerouted to the new bridges.</li> </ul>
Three Interchanges North of SR 14	3 to 4 years for all three	<ul style="list-style-type: none"> <li>Construction of these interchanges could be independent from each other or from the southern half of the project.</li> <li>More aggressive and costly staging could shorten this timeframe.</li> </ul>
Light Rail	4 to 6 years	<ul style="list-style-type: none"> <li>The Columbia River crossing for light rail would be built with the main river bridges.</li> </ul>
Total Construction Timeline	7 to 13 years	<ul style="list-style-type: none"> <li>Funding, as well as contractor schedules, regulatory restrictions on in-water work, permits and approvals, weather, materials, and equipment, could all influence construction duration.</li> </ul>

### 5 2.3.2 Potential Major Staging Sites and Casting Yards

6 Staging of equipment and materials would occur in many areas along the program corridor throughout  
7 construction, generally within existing or newly purchased right of way, on land vacated by existing  
8 transportation facilities (i.e., I-5 on Hayden Island), or on nearby vacant parcels. However, at least one large  
9 site would be required for construction offices to stage the larger equipment, such as cranes, and to store  
10 materials, such as rebar and aggregate. Criteria for suitable sites include large and open areas to provide for  
11 heavy machinery and material storage, waterfront access for barges (either a slip or a dock capable of

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1 handling heavy equipment and material) to convey material to the construction zone, and roadway or rail  
2 access for landside transportation of materials by truck or train.

3 Two potential major staging sites have been identified (see Figure 2-1). One site is located on Hayden Island  
4 on the west side of I-5. A large portion of this parcel is already required for new right of way for the Modified  
5 LPA. The second site is located in Vancouver on the east side of I-5, west of Clark College. Other staging sites  
6 may be identified during the design process or by the contractor.

7 A casting or staging yard could also be required for construction of the overwater bridges if a precast concrete  
8 segmental bridge design is used. A casting yard would require access to the river for barges, including a slip or  
9 a dock capable of handling heavy equipment and material; a large area suitable for a concrete batch plant  
10 and associated heavy machinery and equipment; and access to a highway or railway for delivery of materials.  
11 As with the staging sites, casting or staging yard sites may be identified as the design progresses or by the  
12 contractor and would be evaluated for potential environmental impacts at that time.

## 13 2.4 No-Build Alternative

14 The No-Build Alternative illustrates how transportation and environmental conditions would likely change by  
15 the year 2045 if the IBR program is not built. This alternative makes the same assumptions as the Modified LPA  
16 regarding population and employment growth through 2045, and it also assumes that the same  
17 transportation and land use projects in the region would occur as planned. All traffic and transit projects  
18 within or near the IBR study area that are anticipated to be built by 2045 separately from this program are  
19 included in the No-Build Alternative and the Modified LPA. Additionally, the No-Build Alternative assumes  
20 bridge repair and continuing maintenance costs to the existing bridge that are not anticipated with the  
21 replacement bridge option.

## 22 2.5 Development of the Modified LPA

23 As described earlier in this chapter, the 2011 ROD for the CRC Project included a Selected Alternative (also  
24 referred to in this document as the CRC LPA) that was modified through NEPA re-evaluations in 2012 and  
25 2013. The project was discontinued in 2014. In 2019, a bi-state legislative committee requested that ODOT and  
26 WSDOT reinstate the CRC Project, renaming it the IBR program. This section provides information on the 2011  
27 Selected Alternative cleared through the CRC NEPA process, changes that have occurred since that NEPA  
28 process was completed, and the screening of new design options for the IBR program.

### 29 2.5.1 Selected Alternative in the 2011 ROD and Subsequent Modifications in 30 2012–2013

31 Substantial technical work was completed to support the development of the CRC Project. Multiple build  
32 alternatives were evaluated in the EIS documentation prepared for the project, and the results of these  
33 analyses were used to inform project planning, design, and preconstruction activities. FHWA and FTA issued a  
34 ROD for the project on December 7, 2011. The Selected Alternative identified in the ROD included the  
35 following primary components:

- 36 • A new river crossing over the Columbia River and I-5 highway improvements. Improvements to seven  
37 interchanges, from south to north: N Victory Boulevard, Marine Drive, Hayden Island, SR 14, Mill Plain,  
38 Fourth Plain and SR 500. Related enhancements to the local street network.
- 39 • Improvements to the existing I-5 mainline bridge over North Portland Harbor; three new bridges over this  
40 waterway associated with I-5; and one new multimodal bridge carrying LRT, local traffic, pedestrians and  
41 bicyclists.

- 1 • A variety of bicycle and pedestrian improvements throughout the project corridor, including a multiuse  
2 path connecting to the existing active transportation system. The path would allow users to travel  
3 between North Portland and downtown Vancouver over Hayden Island and the Columbia River.
- 4 • Extension of LRT from the Expo Center in Portland to Clark College in Vancouver and associated transit  
5 improvements. Three transit stations were proposed: one on Hayden Island, one in downtown Vancouver,  
6 and a terminus station near Clark College. Three park and rides were included: Columbia (near the SR 14  
7 interchange), Mill Plain (in uptown Vancouver) and Clark (near Clark College). Improvements would be  
8 made to retrofit the existing rails and electrical system on the Steel Bridge to allow trains to travel at a  
9 higher speed. The Selected Alternative also included bus route changes and the expansion of the Ruby  
10 Junction LRT maintenance facility.
- 11 • Transportation demand and system management measures to be implemented with the project,  
12 including the use of tolls, subject to the authority of the Washington and Oregon Transportation  
13 Commissions.
- 14 • After the ROD was issued in 2011, the project design was further refined, affecting the impacts associated  
15 with the project. With each potentially significant change, the CRC Project team completed a NEPA  
16 re-evaluation. Two re-evaluations were completed:
  - 17 – The Bridge Height NEPA Re-evaluation was signed by FHWA and FTA in December 2012. This  
18 re-evaluation considered an increase in the bridge’s maximum vertical navigation clearance height  
19 from 95 feet to 116 feet; no significant additional impacts were identified.
  - 20 – The Phased Construction NEPA Re-evaluation was signed by FHWA and FTA in September 2013. This  
21 re-evaluation considered the effects of phasing the construction of the Selected Alternative, which  
22 was disclosed as an option in the FEIS and ROD. The re-evaluation also included design refinements to  
23 the full Selected Alternative as described in the ROD to make the first phase operate better. Some of  
24 the design refinements included modifying the Hayden Island interchange in the Selected Alternative  
25 first phase to reduce the number of new bridges over North Portland Harbor and to reduce cost while  
26 still improving interchange performance. The September 2013 re-evaluation found that the impacts  
27 associated with the full Selected Alternative and the Selected Alternative first phase were similar and  
28 within the range of impacts reported in the FEIS and ROD.

## 29 2.5.2 Changes in Environmental Conditions since 2013

30 Since the issuance of the CRC ROD and subsequent re-evaluations, there have been changes in existing  
31 environmental conditions ranging from physical changes in development within the program footprint to  
32 regulatory changes to societal changes in community priorities and interests. This section briefly summarizes  
33 some of those changes.

- 34 • **Demographic changes** – The region added more than a quarter of a million residents between 2010 and  
35 2020, with the majority being Black, Indigenous or People of Color (BIPOC) and/or Hispanic/Latino.
- 36 • **Housing costs** – The cost of housing has increased significantly, forcing many households with lower  
37 incomes to move to neighborhoods where housing is more affordable, but that may be farther from job  
38 and activity centers. The combination of longer distances traveled and limited public transit service in  
39 these areas places an added transportation cost burden on these community members, including many  
40 who moved from Portland to Clark County but still need to travel to Portland for work, medical  
41 appointments, family or other needs. Related to rising housing costs is a growing houseless population  
42 throughout the region. The number of encampments has increased, including in the highway right of way  
43 and throughout the program area.

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- 1 • **Climate change** – In the past decade, there has been growing awareness and acceptance of the  
2 implications and impacts of climate change. Many communities, agencies and businesses are reassessing  
3 their behavior and operations to identify how they might be contributing to global warming and resultant  
4 climate change and examining how their environment is changing due to climate change. Both  
5 Washington and Oregon, as well as local governments in the project area, have established new climate  
6 policies since 2011. Additionally, recent exceptional weather events are driving changes in considerations  
7 and assumptions about climatic conditions and related community needs.
- 8 • **Traffic** – Changes have occurred since 2013 in traffic volumes and activities; the IBR program has updated  
9 traffic models to extend the forecast to 2045 (CRC used 2035).
- 10 • **Transit service** – Changes in existing transit services and activities include C-TRAN’s Fourth Plain Vine bus  
11 rapid transit route, which began service in 2017, and bus-on-shoulder operations on I-5 north of the  
12 Interstate Bridge, which began in 2020. TriMet has also expanded operations and planning for additional  
13 bus rapid transit service in the region.
- 14 • **Tolling** – Tolling programs are being studied and planned in Oregon. Tolling on the I-5 bridge was  
15 included in the CRC analysis and will also be included in the IBR analysis.
- 16 • **Land use** – Localized development includes limited construction or building permit applications in the  
17 CRC Project construction boundary; these include buildings developed since issuance of the CRC Project’s  
18 ROD.
- 19 • **Historic resources** – Multiple new, historic-aged structures potentially eligible for listing in the National  
20 Register of Historic Places have been identified since the previous historic period survey, which  
21 considered structures dating back to 1967. Assuming that construction of the IBR program will begin in  
22 2025, the historic resources period has been extended 15 years to consider buildings built in or prior to  
23 1982.
- 24 • **Endangered Species Act** – ESA listings and critical habitat designations have changed since the 2013  
25 consultations with the National Oceanic and Atmospheric Administration National Marine Fisheries  
26 Service (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS). The IBR program has consulted  
27 with NOAA Fisheries and USFWS to determine the Section 7 consultation approach and bring the  
28 consultations up to date with current species listings and critical habitat designations and to reflect  
29 changes in best available science.
- 30 • **Changes in other regulations** – Many environmental regulations, procedures, and permits have changed  
31 or been updated since the issuance of the CRC ROD and re-evaluations. The technical reports prepared to  
32 support this Supplemental Draft EIS (Attachments A through X) include additional detail on regulations  
33 specific to each technical discipline that have changed since 2013.

34 To evaluate the effect of changes in conditions and regulations since 2013, as well as potential design  
35 changes, the IBR program prepared a NEPA re-evaluation in 2021. Based on the information presented in the  
36 re-evaluation, FHWA and FTA concluded that the IBR program could include project design changes or  
37 refinements to the CRC Selected Alternative that would result in new or changed significant adverse impacts  
38 that were not evaluated in the CRC Project’s FEIS and ROD. In addition, they concluded that new information  
39 or circumstances (due to changes in the physical environment, community priorities, and regulations) since  
40 the CRC Project’s ROD could result in new or changed significant adverse impacts not previously evaluated.  
41 Therefore, in compliance with 23 CFR 771.130(a), FHWA and FTA determined that a supplemental EIS would  
42 be necessary to identify and disclose new adverse impacts and mitigation associated with the IBR program.

## 2.5.3 IBR Design Option Development and Screening

During the early planning phase for the IBR program, feedback from stakeholders (partner agencies, tribes, organizations, and the public) identified changes within the study area that had occurred since the selection of the CRC LPA. In response, the IBR program identified several components of the CRC LPA that could benefit from design modifications. Potential options for each of these components went through a multitiered screening process that included input from program partners, tribes, and community members. The components evaluated were:

- Hayden Island and Marine Drive
- Main Columbia River crossing
- Transit mode, general alignment, and termini
- Auxiliary lanes

The evaluation of each component is described briefly below. For more detailed information on the design options development and screening process, see the Design Options Development, Screening and Evaluation Technical Report (Appendix D to this Supplemental Draft EIS).

### Hayden Island and Marine Drive

The primary design considerations for Hayden Island and Marine Drive were the interchange type on Hayden Island and the resulting multimodal connections with Marine Drive and I-5. The IBR program evaluated multiple concepts, ultimately advancing five full, partial, and no-interchange options for Hayden Island into the screening process. All design options included a full interchange at I-5/Marine Drive; an arterial bridge across North Portland Harbor to serve local traffic; a shared-use path for active transportation connecting North Portland, Hayden Island, and the 40-mile loop; and the extension of N Tomahawk Island Drive under I-5 to provide an additional east-west local street connection on Hayden Island.

The Hayden Island/Marine Drive task force<sup>1</sup> identified the following five design options to advance for screening (refer to the Design Options Development, Screening and Evaluation Technical Report [Appendix D] for a complete description of each design option):

- Design Option 1 – Full Interchange
- Design Option 2 – Partial Interchange 1
- Design Option 3 – Partial Interchange 2
- Design Option 4 – No Interchange
- Design Option 5 – Partial Interchange 3

During screening, the task force collected data for approximately 90 metrics and scored each design option against the others for a given metric. Screening metrics were categorized as climate impacts/adaptation, natural environmental, built environment, active transportation, transit access, vehicles, freight, cost, and seismic. Design Options 1 and 5 performed best out of all design options. They had a similar freight/vehicle traffic performance on Marine Drive, including at ramp terminal intersections, and were both compatible with all transit investments currently under consideration.

Tradeoffs and benefits between Design Options 1 and 5 are listed in Table 2-3 to further differentiate between the two options.

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<sup>1</sup> The Hayden Island/Marine Drive Task Force met 18 times between late spring 2021 and early winter 2022. There was an average of 50 participants per meeting, with staff from 10 local partner agencies and technical staff from the IBR program

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1 **Table 2-3. Tradeoffs and Benefits Between Hayden Island/Marine Drive Design Options 1 and 5**

Design Option 1 – Full Interchange	Design Option 5 – Partial Interchange
<b>Larger</b> footprint over North Portland Harbor.	<b>Smaller</b> footprint over North Portland Harbor.
<b>More</b> floating home impacts.	<b>Fewer</b> floating home impacts.
<b>Larger</b> scale/complexity of I-5 over Hayden Island provides <b>lower</b> -quality experience for active transportation and transit access on east-west streets.	<b>Smaller</b> scale/complexity of I-5 over Hayden Island provides <b>higher</b> -quality experience for active transportation and transit access on east-west streets.
Hayden Island vehicle/freight access to/from Portland <b>via Hayden Island Drive I-5 ramps.</b>	Hayden Island vehicle/freight access to/from Portland <b>via local roads and I-5 ramps that cross under Marine Drive.</b>
Hayden Island vehicle/freight access to/from Vancouver via Jantzen Drive I-5 ramps.	Hayden Island vehicle/freight access to/from Vancouver via Jantzen Drive I-5 ramps.
Scores <b>medium-high</b> from a <b>climate</b> perspective.	Scores <b>high</b> from a <b>climate</b> perspective.
Scores <b>medium</b> from an <b>equity</b> perspective.	Scores <b>medium</b> from an <b>equity</b> perspective.

2 Based on the findings in Table 2-3, Design Option 5 (Partial Interchange) was advanced for further study and  
 3 refinement and inclusion in the Modified LPA. Design Option 5 would construct a partial interchange at  
 4 Hayden Island and a full interchange at Marine Drive, and would be designed to minimize impacts while  
 5 making improvements to freight and workforce traffic and active transportation on Hayden Island and Marine  
 6 Drive. Refer to the Design Options Development, Screening and Evaluation Technical Report (Appendix D) for  
 7 additional detail.

8 **Main River Crossing**

9 The river crossing area covers the main span of the Interstate Bridge over the Columbia River. This component  
 10 extends from where the bridge begins on Hayden Island to where the bridge touches down in Vancouver. The  
 11 design options considered ways to move all modes across the river, as well as the configuration of these  
 12 modes in relation to each other (e.g., the location of the shared-use path in relation to vehicle lanes and  
 13 transit lines). The design options included variations designed for a two-bridge or one-bridge river crossing  
 14 option, and they assumed a mid-level fixed span bridge that provides 116 feet of vertical clearance.<sup>2</sup>

15 Following agency and public input, the main River Crossing task force<sup>3</sup> identified three design options to  
 16 advance for screening (refer to the Design Options Development, Screening and Evaluation Technical Report  
 17 [Appendix D] for a complete description of each design option):

- 18 • Design Option 1 – Two Straight Bridges (Refined 2013 Design)
- 19 • Design Option 2 – One Bridge (Double Stacked)

<sup>2</sup> Additional analysis regarding the consideration of a tunnel and movable span bridge is included in Attachment C-1 of the Design Options Development, Screening and Evaluation Technical Report (Appendix D).

<sup>3</sup> The River Crossing task force met 11 times between summer 2021 and winter 2022. There was an average of 50 participants per meeting, with staff from nine partner agencies and technical staff from the IBR program.

1 • Design Option 3 – One Bridge (Hybrid Stacked)

2 During screening, the task force collected data for approximately 90 metrics and scored each design option  
 3 against the others for a given metric. Screening metrics were categorized as climate impacts/adaptation,  
 4 natural environment, built environment, active transportation, vehicles/freight, and cost. Design Options 1  
 5 and 3 performed the best of the design options during the screening.

6 Tradeoffs and benefits between Design Options 1 and 3 are listed in Table 2-4 to further differentiate between  
 7 the two options.

8 **Table 2-4. Tradeoffs and Benefits Between River Crossing Design Options 1 and 3**

Design Option 1 – Two Straight Bridges	Design Option 3 – One Bridge (Hybrid Stacked)
<b>Reduces</b> shared-use path users’ exposure to noise and elements.	<b>Increases</b> shared-use path users’ exposure to noise and elements.
Creates <b>visually uncluttered</b> structures on Hayden Island and scales them to surroundings.	Results in <b>complex</b> bridge approaches on Hayden Island and in Vancouver.
<b>Easier</b> to fund river crossing bridge because I-5 could be constructed and operational between Hayden Island and Evergreen Boulevard.	<b>Harder</b> to fund river crossing bridge because I-5 must be constructed and operational between Marine Drive and Evergreen Boulevard.
<b>No undesignated</b> space on upper deck.	<b>Creates undesignated</b> space on upper deck.
<b>Fewer</b> right-of-way acquisitions and impacts to Fort Vancouver.	<b>More</b> right-of-way acquisitions and impacts to Fort Vancouver.
<b>Smaller</b> footprint over land.	<b>Larger</b> footprint over land.
<b>Simpler</b> wayfinding on northbound I-5.	Overhead structure <b>complicates</b> wayfinding on northbound I-5 (requires approvals for signage smaller than standards).
<b>Can maintain</b> traffic on existing Interstate Bridge during construction.	<b>Cannot maintain</b> traffic on existing Interstate Bridge during construction.
Scores <b>medium-high</b> from an <b>equity</b> perspective.	Scores <b>medium</b> from an <b>equity</b> perspective.
Scores <b>medium-high</b> from a <b>climate</b> perspective.	Scores <b>medium-high</b> from a <b>climate</b> perspective.
<b>Longer</b> construction period.	<b>Shorter</b> construction period.
Emergency vehicles access shared-use path via <b>shared-use path ramps</b> on Hayden Island and downtown Vancouver.	Emergency vehicles access shared-use path via <b>northbound I-5 or shared-use path ramps</b> on Hayden Island and downtown Vancouver.
Likely uses <b>more</b> construction materials (based on the footprint, not expected tailpipe emissions)..	Uses marginally <b>fewer</b> construction materials (based on the footprint, not expected tailpipe emissions).
<b>More</b> in-water piers/obstructions: <ul style="list-style-type: none"> <li>• 12 in-water piers (each pair of piers measures ~200 feet combined in direction of river channel).</li> </ul>	<b>Fewer</b> in-water piers/obstructions: <ul style="list-style-type: none"> <li>• 6 in-water piers (each pier measures ~175 feet in direction of river channel).</li> </ul>
<b>Larger</b> footprint over aquatic habitat (~12 acres).	<b>Smaller</b> footprint over aquatic habitat (~10 acres).

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Design Option 1 – Two Straight Bridges	Design Option 3 – One Bridge (Hybrid Stacked)
Lower deck shared-use path <b>not visible</b> to vehicular traffic, does not benefit from “eyes on the path” (a safety concern for active transportation users).	<b>Allows some visibility</b> between shared-use path and vehicular traffic on lower deck.

1 Based on the findings in Table 2-4, Design Option 1 (Two Straight Bridges) was advanced for further study and  
 2 refinement. Design Option 1 would construct two bridges from Hayden Island to Vancouver on a straight  
 3 alignment. The eastern bridge would accommodate northbound highway traffic on the upper bridge deck,  
 4 with a bicycle and pedestrian path underneath; the western bridge would carry southbound traffic on the  
 5 upper bridge deck, with two-way transit below. Refer to the Design Options Development, Screening and  
 6 Evaluation Technical Report (Appendix D) for additional information.

7 **Transit – Mode, General Alignment, and Termini**

8 The IBR program and the partner agency transit technical teams developed 13 representative transit  
 9 investments (listed in Table 2-5) to better understand how different combinations of mode (bus rapid transit  
 10 [BRT], LRT), alignment, station locations, termini (end points), and park-and-ride locations could perform  
 11 relative to each other. Each of the representative transit investments was modeled through the Metro/RTC<sup>4</sup>  
 12 regional travel demand model to arrive at forecasts for the year 2045. Program partners and the IBR team  
 13 developed measures to better understand how the representative transit investments would perform relative  
 14 to each other.

15 The IBR program ultimately advanced the extension of LRT from the Expo Center in Portland north to a new  
 16 station on Hayden Island, continuing across the Columbia River on the new I-5 bridge, following I-5 to multiple  
 17 stations in the city of Vancouver with a northern terminus at Evergreen Station in Vancouver. The subsections  
 18 below describe how the transit mode, general alignment, and termini were selected. Also refer to the Design  
 19 Options Development, Screening and Evaluation Technical Report (Appendix D) for additional information.

20 **Table 2-5. Representative Transit Investment Descriptions**

Representative Transit Investment	General Description
No-Build	The No-Build scenario reflects planned systemwide increases in background transit service by both TriMet and C-TRAN as adopted by both Metro and RTC in their regional transportation plans but reflects no replacement of the current I-5 bridge, no reconstructed interchanges, no tolls on the I-5 bridge, and no extension of additional high-capacity transit service north from the existing MAX Yellow Line alignment into Vancouver.
2045 CRC ROD	2013 CRC LPA assuming fully dedicated LRT guideway extending from the Expo Center station to a terminus near McLoughlin/I-5 via the Vancouver central business district. Includes five new stations and three park and rides.
Bus on Shoulder	Express bus operates as bus on shoulder in program area (both directions). Route 60 operates in auxiliary lanes between the Vancouver central business district and Hayden Island, Delta Park. No new stations or park and rides.

<sup>4</sup> Southwest Washington Regional Transportation Council



Representative Transit Investment	General Description
BRT Turtle Place to Expo Center	Dedicated BRT guideway between the Expo Center station and a terminus at Turtle Place in downtown Vancouver. Includes three initial stations: Expo Center, Hayden Island, and Turtle Place.
BRT I-5 to Kiggins Bowl	Fully dedicated BRT guideway between the Expo Center station and a terminus near McLoughlin Blvd./I-5. Dedicated guideway on Vancouver segment assumed to be adjacent to I-5 with a dedicated connection to Hayden Island and the Expo Center Station similar to the 2013 LPA. Includes six initial stations: Kiggins Bowl, E 33rd Street, McLoughlin Blvd., Evergreen Blvd., Hayden Island, and Expo Center.
BRT in ROD Alignment	Fully dedicated BRT guideway between Expo Center station and a terminus near McLoughlin Blvd./I-5 to Expo Center station with alignment and station locations similar to 2013 ROD project. Includes six initial stations: I-5/McLoughlin, McLoughlin and Washington St. (southbound)/16th and Broadway (northbound), 12th and Washington (southbound)/13th and Broadway (northbound), Turtle Place, Hayden Island, and Expo Center.
Hybrid	Fully dedicated LRT guideway between Expo Center station and a new station at Hayden Island and fully dedicated BRT guideway between Hayden Island and Turtle Place. Includes two initial stations: Hayden Island and Expo Center.
LRT One Station in Vancouver	Fully dedicated LRT guideway between the Expo Center Station and a terminus near Turtle Place in downtown Vancouver. Includes two initial stations: Hayden Island and Turtle Place.
LRT I-5 to McLoughlin	Fully dedicated LRT guideway between the Expo Center station and a terminus near McLoughlin Blvd./I-5. Dedicated guideway on Vancouver segment assumed to be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center station similar to 2013 LPA. Includes three initial stations: I-5/McLoughlin, Evergreen, and Hayden Island.
LRT I-5 to Kiggins Bowl	Fully dedicated LRT guideway from the Expo Center station to a terminus near I-5/Kiggins Bowl. Dedicated guideway on Vancouver segment assumed to be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center station similar to 2013 LPA. Includes five initial stations: Kiggins Bowl, 33rd Street, I-5/McLoughlin, Evergreen, and Hayden Island.
LRT Delta Park to McLoughlin	Fully dedicated LRT Extension from Delta Park (joint Hayden Island/Expo Center station) to a terminus near McLoughlin/I-5 on an I-5 adjacent alignment (Center/West Side of I-5). This option was infeasible and removed from consideration early in the decision process.
LRT I-5 to McLoughlin with Columbia	Fully dedicated LRT guideway between Expo Center station to a terminus near McLoughlin Blvd./I-5. Dedicated guideway on Vancouver segment assumed to be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center station similar to 2013 LPA. Includes four initial stations: I-5/McLoughlin, Evergreen, Waterfront, and Hayden Island.

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Representative Transit Investment	General Description
LRT I-5 to Evergreen with Columbia	Fully dedicated LRT guideway between Expo Center station to a terminus near I-5/Evergreen. Dedicated guideway on Vancouver segment assumed to be adjacent to I-5 with a dedicated connection to Hayden Island and Expo Center station similar to 2013 LPA. Includes three initial stations: Evergreen, Waterfront, and Hayden Island.

1 BRT = bus rapid transit; LRT = light rail transit; RTC = Southwest Washington Regional Transportation Council

2 **Mode**

3 The program considered three transit modes to meet transit demand: express bus operating on the shoulder,  
 4 BRT, and LRT. A transit investment that serves the identified markets and attempts to serve demand would  
 5 need to include a combination of modes. Bus-on-shoulder capability in the program area was included in all  
 6 representative transit investments and was removed from consideration as a standalone transit option.

7 Based on analysis and coordination with partner agencies, the advantages and disadvantages listed in  
 8 Table 2-6 were identified for BRT and LRT. Based on these findings, and when considering the specific needs  
 9 of the high-capacity transit investment for the IBR program, LRT was advanced as the preferred transit mode.

10 **Table 2-6. Summary of Transit Mode Evaluation**

Light Rail Transit	Bus Rapid Transit
<ul style="list-style-type: none"> <li>• Higher vehicle capacity allows the program to carry more people across the river. (MA, ME)</li> <li>• Compared to existing conditions and BRT, would improve access to jobs and services for many residents, including BIPOC and low-income populations. (MA, EO)</li> <li>• Allows for preservation of the current and future C-TRAN Vine and express bus system while providing convenient connections to new LRT stations. (MA, ME)</li> <li>• Offers a more competitive travel time compared with trips that require a transfer at the Expo Center. (MA, ME)</li> <li>• Extension of the MAX Yellow Line from the Expo Center into Vancouver best integrates existing transit investment in the region in a manner that maintains both C-TRAN’s and TriMet’s approaches to operations of their transit systems.</li> <li>• Based on initial estimates of how investments might perform if submitted to the FTA CIG program, LRT is more competitive for FTA discretionary funding.</li> </ul>	<ul style="list-style-type: none"> <li>• Lower vehicle capacity than LRT and would require a transfer.</li> <li>• Less competitive travel time compared to LRT due to a required transfer at Expo Center.</li> <li>• Compared to existing conditions, would improve access to jobs for many residents, including BIPOC and low-income populations. (MA, EO)</li> <li>• Allows for preservation of the current and future C-TRAN Vine and express bus system. (ME)</li> <li>• Less competitive for FTA discretionary funding than LRT.</li> </ul>

11 Equity Objectives – EO = Economic opportunity; MA = Mobility and accessibility

12 Climate Objectives – ME = Multimodal environmental

13 BIPOC = Black, Indigenous or People of Color; BRT = bus rapid transit; CIG = capital investment grant; FTA = Federal Transit  
 14 Administration

## 1 **Alignment**

2 Twelve potential transit alignments were evaluated by the program and partner agencies. These potential  
3 alignments fell into two categories: accessing downtown Vancouver or aligning with the existing I-5 corridor.  
4 Detailed conceptual design work on the potential alignments (and their impacts) was brought to the advisory  
5 groups, community groups, and partner agencies.

6 When selecting an alignment, a key consideration for the program was the need to integrate new transit  
7 investments while considering the existing and planned transit networks of TriMet and C-TRAN. Since 2013,  
8 C-TRAN has developed a BRT system, The Vine, with one BRT line in operation, one under construction, and  
9 one in planning. The Vine and C-TRAN express bus service provide frequent and reliable service within Clark  
10 County and to downtown Portland, respectively. Any transit investment should be made with a desire to  
11 complement The Vine system, including existing and planned service.

12 The City of Vancouver has worked with C-TRAN to design station environments for The Vine system on  
13 Broadway and Washington Streets in the Central Business District. With these investments in mind, it is  
14 desirable to coordinate design elements of the alignment to provide more efficient functionality within the  
15 larger transit network and respective operating environments. The downtown Vancouver alignment would  
16 impact C-TRAN's BRT alignments in the downtown area. In addition to the existing and planned transit  
17 networks, there is existing development in the program area that potential alignments could impact. In  
18 comparison to the I-5 alignment, the downtown Vancouver alignment would require additional property and  
19 streetscape impacts.

20 Based on conversations with the community and partners, the I-5 general alignment was advanced for further  
21 study.

## 22 **Terminus**

23 The program evaluated terminus options for each alignment and mode (described above), including Hayden  
24 Island in Portland and Waterfront, Turtle Place, Evergreen/I-5, McLoughlin/I-5 and Kiggins Bowl in Vancouver.

25 The evaluation of Hayden Island as a terminus was a hybrid option that included the extension of LRT north  
26 from Expo Center to Hayden Island and the extension of BRT from Turtle Place south to Hayden Island. It was  
27 an exploratory option that did not perform as well as others in the evaluation process from a ridership  
28 standpoint and ultimately was removed from consideration in combination with the decision on mode.

29 On the Vancouver side, the five terminus options included two that would result in a single station just across  
30 the Columbia River (Waterfront and Turtle Place) and three that would extend farther north, including options  
31 for one additional station (Evergreen/I-5), two additional stations (McLoughlin/I-5), or four additional stations  
32 (Kiggins Bowl). The single station terminus options did not perform as well as others that extended farther  
33 into Vancouver from a ridership standpoint, regardless of which mode was considered. Alignments with  
34 stations north of Evergreen Boulevard offered more ridership, but with greater impacts to properties and  
35 increased costs.

36 Through analysis and conversations with partners, it was determined that an Evergreen Boulevard terminus  
37 would:

- 38 • Have fewer potential property impacts compared to other locations.
- 39 • Have lower operating and capital costs compared to other locations.
- 40 • Avoid impacts to Clark Community College as a result of the station, alignment, and park and ride that  
41 were included in options that assumed Mcloughlin/I-5 as a terminus.
- 42 • Avoid impacts to C-TRAN network and Vine service.

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- 1       • Avoid impacts to the City of Vancouver’s vision and downtown development.
- 2       • Provide increased transfer options to additional C-TRAN routes.
- 3       • Connect directly to downtown library, jobs, services and amenities.
- 4       • Support transit-oriented development opportunities at Library Square and on nearby City-owned
- 5       parcels.
- 6       • Maximize transfer opportunities given planned direct connections to several local routes, as well as
- 7       existing and planned BRT routes.
- 8       • Provide convenient access to Evergreen Boulevard, which connects east over I-5 to the Historic
- 9       Reserve, and west through downtown to Main Street and Esther Short Park via the planned 9th Street
- 10      pedestrian way.

11 Based on evaluation during screening along with feedback from partner agencies, the IBR program and  
12 partner agencies recommended advancing the terminus at Evergreen Boulevard for further study and  
13 refinement.

### 14 **Auxiliary Lanes**

15 Auxiliary lanes improve traffic safety and reliability by providing sufficient merge, diverge, and weaving space  
16 for vehicles entering and exiting the freeway while allowing the through traffic to maintain fuel-efficient  
17 driving speeds in the adjacent through lanes. In addition to maintaining the existing three through lanes in  
18 each direction across the bridge, the IBR program evaluated the addition of one and two auxiliary lanes in  
19 each direction. Two auxiliary lane options (one and two auxiliary lanes) were advanced for additional analysis  
20 and consideration. The results of the auxiliary lane evaluation are summarized in Table 2-7.

1 **Table 2-7. Summary of Auxiliary Lanes Evaluation Results**

Benefits of One or Two Auxiliary Lanes (Compared to No-Build)	Supplemental Benefits of One Auxiliary Lane	Supplemental Benefits of Two Auxiliary Lanes
<ul style="list-style-type: none"> <li>• Mode choice benefits (high-capacity transit, bus on shoulder and active transportation). (MA, ME)</li> <li>• Mode shift: the daily transit share is expected to increase from 7% to 11%. (ME)</li> <li>• Reduced overall congestion. (MA, RID)</li> <li>• Off-peak benefits including weekends.</li> <li>• Less diversion to local streets. (AH)</li> <li>• Faster congestion recovery from crashes and incidents. (RID)</li> <li>• Fewer lane changes required (i.e., lane balance).</li> <li>• Safety improvements realized due to fewer sideswipe crashes and improved visibility.</li> <li>• Lane widths to allow for current vehicle widths, turning, and comfort.</li> <li>• Anticipated greenhouse gas reduction due to less congestion. (RID)</li> </ul>	<ul style="list-style-type: none"> <li>• Travel time improvements compared to No-Build (MA, RID):                             <ul style="list-style-type: none"> <li>– Southbound AM travel time would be reduced by 3 minutes (5% faster) between I-5/I-205 split and I-405.</li> <li>– Northbound PM travel time would be reduced by 11 minutes (30% faster) between Broadway Avenue and SR 500.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Travel time improvements compared to No-Build (MA, RID):                             <ul style="list-style-type: none"> <li>– Southbound AM travel time would be reduced by 6 minutes (10% faster) between I-5/I-205 split and I-405.</li> <li>– Northbound PM travel time would be reduced by 25 minutes (70% faster) between Broadway Avenue and SR 500.</li> </ul> </li> <li>• Reduced congestion compared to No-Build (RID):                             <ul style="list-style-type: none"> <li>– Congestion would be reduced by 20% during the 8-hour AM/PM peak period.</li> </ul> </li> </ul>

2 Equity Objectives – AH = Avoid further harm; MA = Mobility and accessibility; PD = Physical design

3 Climate Objectives – ME = Multimodal environmental; RID = Reduces idling

4 Based on initial results and feedback from the partner agencies, one auxiliary lane northbound and one  
 5 auxiliary lane southbound between Marine Drive and Mill Plain Boulevard was recommended to be advanced.  
 6 The addition of auxiliary lanes can help optimize the existing three through lanes and allow for more efficient  
 7 movement through the corridor, thus improving safety, helping to relieve congestion with better traffic flow,  
 8 and reducing emissions from vehicles idling in congestion. Studying one auxiliary lane in each direction  
 9 recognizes the desire to balance all of the regional needs and priorities, including safe, efficient, and reliable  
 10 travel, as well as equity and climate goals. Refer to the Design Options Development, Screening and  
 11 Evaluation Technical Report (Appendix D) for additional information.

## 12 2.5.4 Adopting Foundational Components of the Modified LPA

13 The Modified LPA consists of recommendations for four key program components: the interchanges on  
 14 Hayden Island and Marine Drive; transit mode, general alignment and termini; the number of auxiliary lanes;  
 15 and variable-rate tolling. The guiding bodies of each of the eight IBR program partners, including the regional  
 16 transit agencies, cities, metropolitan planning organizations and ports, met between June 22 and July 14,  
 17 2022, to consider the IBR program's recommendation for the Modified LPA. These boards, councils, and  
 18 commissions voted to endorse the IBR program's Modified LPA through their agency's resolution. However, in

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1 addition to the Modified LPA resolutions, many partners included conditions reflecting their priorities and  
2 requests for additional work, considerations, and analysis. The IBR program acknowledges that the analysis  
3 to support the Modified LPA was conceptual; more design refinement, transportation and transit analysis,  
4 financial analysis, and environmental evaluation is needed to better understand the impacts and benefits of  
5 the Modified LPA as the program continues to develop a multimodal corridor solution. Therefore, the IBR  
6 program is committed to further refinements and analysis, as well as sharing the results to gather additional  
7 input on the Modified LPA.

8 Environmental analyses for this Supplemental Draft EIS have been conducted to evaluate benefits and  
9 impacts to environmental and community resources (e.g., air quality, climate, land use, transportation) and to  
10 identify potential mitigation for adverse impacts. Agencies, stakeholders, advisory groups, and the public will  
11 have additional opportunities to provide input and feedback on the Modified LPA, environmental analyses,  
12 and proposed mitigation. The opportunities include a public comment period, public hearings held for the  
13 Supplemental Draft EIS, and other options to be identified.

## 14 2.6 Additional Compliance Underway

15 In addition to compliance with NEPA through development of this Supplemental Draft EIS, the IBR program  
16 will comply with a number of other federal and state regulatory requirements, which are summarized below  
17 and described in more detail in Appendix A.

- 18 • **Endangered Species Act** – The IBR program is consulting with NOAA Fisheries and USFWS to comply with  
19 Section 7. A new biological assessment was prepared to address changes since the 2013 consultation. It is  
20 expected that NOAA Fisheries will issue a new biological opinion and the USFWS will issue a new letter of  
21 concurrence prior to the publication of the combined Supplemental Final EIS and ROD.
- 22 • **U.S. Army Corps of Engineers Section 408** – When alterations to a USACE Civil Works project are  
23 proposed, Section 14 of the Rivers and Harbors Act of 1899 (codified as 33 USC §408 and referenced as  
24 Section 408) requires a determination that these alterations will not be injurious to the public interest nor  
25 impair the usefulness of the USACE Civil Works project. The IBR program is coordinating with USACE to  
26 complete the permitting process started by the CRC Project; anticipated activities include developing and  
27 submitting a 60 percent design package to address proposed alterations to the federally authorized  
28 navigation channel. Permits would be issued by USACE following publication of the ROD for IBR and prior  
29 to the beginning of construction.
- 30 • **U.S. Army Corps of Engineers Section 404** – The IBR program will submit a new permit application to  
31 obtain a permit from the USACE for impacts to designated waters of the United States. Program activities  
32 underway to support the permit application include wetland delineation, coordination with USACE to  
33 provide jurisdictional determination, and evaluation of potential impacts to wetlands and other waters  
34 from development of the Modified LPA. As with Section 408 compliance, permits would be issued by  
35 USACE following publication of the ROD for IBR and prior to the beginning of construction.
- 36 • **U.S. Coast Guard Section 9** – A permit under Section 9 of the Rivers and Harbors Act is required for any  
37 authority planning to construct or modify a bridge or causeway across a navigable waterway under the  
38 jurisdiction of the USCG. The USCG issued a bridge permit in September 2013 for the CRC Project.  
39 However, this authorization has expired, and a new permit process is required. The USCG issued new  
40 bridge permit application guidance (COMDTPUB P16591.3D) in July 2016. The IBR program has prepared a  
41 new Navigation Impact Report to support the USCG's Preliminary Navigation Clearance Determination  
42 and will submit new bridge permit applications for bridges proposed over the Columbia River and North  
43 Portland Harbor in accordance with the 2016 bridge permit application guidance. In addition, the IBR  
44 program will comply with the 2014 USCG/FHWA/FTA/Federal Railroad Administration Memorandum of

- 1 Understanding and the 2014 USCG/FHWA Memorandum of Agreement (MOA). The bridge permit would be  
2 issued after publication of the ROD and prior to the start of construction.
- 3 • **Section 106 of the National Historic Preservation Act** – Under the CRC Project, cultural resource  
4 studies, consultations, surveys, testing, and evaluations were completed and culminated in a signed MOA  
5 to address adverse effects on historic properties. In the spring of 2021, the FHWA’s Federal Preservation  
6 Officer in Washington, D.C., and the Advisory Council on Historic Preservation informed the IBR team that  
7 the signed 2011 MOA was no longer valid due to current policy and guideline standards. The IBR program  
8 is therefore updating the previous inventories, evaluating additional historic properties, and consulting  
9 with consulting parties and tribes to develop one or more mitigation plans for adversely affected historic  
10 properties. Any design changes or refinements proposed outside of the CRC Project’s Area of Potential  
11 Effects would also require updates to the Section 106 consultation process. A new Programmatic  
12 Agreement will be developed and signed by applicable federal, state, and local agencies and tribes prior  
13 to the publication of the combined Supplemental Final EIS and ROD.
  - 14 • **Other regulatory compliance for cultural resources** – Changes in the historic property inventory,  
15 significance, effects and mitigation will be subject to compliance with the Archaeological Resources  
16 Protection Act of 1979 and the Native American Graves Protection and Repatriation Act. Section 4(f) of the  
17 U.S. Department of Transportation Act of 1966 will also take into consideration any identified historic sites  
18 considered to have national, state, or local significance that are within the Project’s Area of Potential  
19 Effects. The program is also subject to state cultural resources laws. In Oregon, these statutes include  
20 Archaeological Sites and Objects (ORS 358.905 to 358.955); Permit and Conditions for Excavation or  
21 Removal of Archaeological or Historical Material on Public Lands (ORS 390.235); and Indian Graves and  
22 Protected Objects (ORS 97.740-97.760). In Washington, these laws include Archaeological Sites and  
23 Resources (RCW 27.53), Indian Graves and Records (RCW 27.44), and Abandoned and Historic Cemeteries  
24 and Historic Graves (RCW 68.60). Compliance with these regulations will occur during the NEPA process  
25 and/or as project elements advance into detailed design.
  - 26 • **Tribal consultation** – Government-to-government consultation was reinitiated in September of 2020.  
27 This included outreach to 21 tribes, four of which have adjudicated treaty fishing access rights along the  
28 Columbia River. In February 2022, following consultation with the National Park Service, the IBR program  
29 conducted outreach to an additional 17 tribes. Based on that outreach and previous participation, the  
30 program has identified 10 consulting tribes. Consultation was also initiated with the Columbia River  
31 Intertribal Fish Commission, which will be actively engaged in natural resource discussions pertaining to  
32 fisheries.

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## 2.7 References

*Note to Reviewers: Section 2.7, References, will not be in Chapter 2. It is included here until references for all the chapters are combined into the final references list.*

CRC (Columbia River Crossing). 2011a. Interstate 5 Columbia River Crossing Project Final Environmental Impact Statement and Final Section 4(f) Evaluation. Available at: <https://www.wsdot.wa.gov/accountability/ssb5806/environmental-process-and-permitting.htm>. Accessed January 12, 2023.

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