

# **INTERSTATE 5 COLUMBIA RIVER CROSSING PROJECT**

## **Record of Decision**

**FHWA-WA-EIS-08-01-F**



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# INTERSTATE 5 COLUMBIA RIVER CROSSING PROJECT

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### Decision

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), pursuant to 23 CFR Part 771.127, find that the requirements of the National Environmental Policy Act (NEPA) have been satisfied for the construction and operation of the Selected Alternative of the Interstate 5 (I-5) Columbia River Crossing (CRC) Project (Project). This Record of Decision (ROD) also provides findings on other environmentally-related federal statutory requirements.

This ROD is based on FHWA's and FTA's close monitoring and independent evaluations of the process followed by the Columbia River Crossing Project and its project sponsors in setting forth and considering the effects of the Project and the available alternatives. This process included the preparation of the Draft Environmental Impact Statement (DEIS) (May 2008), the 17th Street Technical Memorandum (March 2010), Composite Deck Truss Bridge Type NEPA Re-evaluation (March 2011), Steel Bridge Documented Categorical Exclusion (November 2010), Environmental NEPA Re-evaluation (May 2011), and the Columbia River Crossing Final Environmental Impact Statement (FEIS) (September 2011) (the DEIS and FEIS are sometimes collectively referred to as "EIS") and the Final Section 4(f) Evaluation (September 2011) (all collectively referred to as the "Environmental Review Documents"), and the determinations and evaluations made therein.

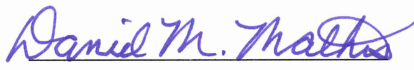
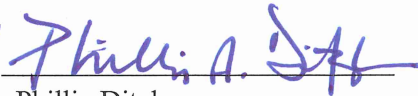

This ROD describes the basis for the decision and the alternatives considered, identifies the environmentally preferred alternative, and documents the mitigation measures that will be implemented. The public's comments on the FEIS and responses thereto are also included in the document and accompanying appendices. The summary descriptions included herein do not supersede or negate any of the information, descriptions, or evaluations provided in the Environmental Review Documents, except as may be expressly noted below. This ROD and the associated published Environmental Review Documents, incorporated herein by reference, constitute the FHWA and FTA environmental record for the project.

The Project is the Selected Alternative (SA), identified in the FEIS as the Locally Preferred Alternative (LPA), which, in summary, provides transportation improvements throughout the 5-mile project corridor, including:

- A new river crossing over the Columbia River and I-5 highway improvements including improvements to seven interchanges, north and south of the river, as well as related enhancements to the local street network. Add new structures and improve the existing I-5 mainline bridge over North Portland Harbor.

- A variety of bicycle and pedestrian improvements throughout the project corridor.
- Extension of light rail from the Expo Center in Portland to Clark College in Vancouver, along with associated transit improvements, including transit stations, park and rides, bus route changes, and expansion of a light rail transit maintenance facility.
- Transportation demand and system management measures to be implemented with the project, including the use of tolls.

This I-5 Columbia River Crossing Project Record of Decision is hereby approved.

		
Daniel M. Mathis FHWA Washington Division Administrator	Phillip Ditzler FHWA Oregon Division Administrator	R.F. Krochalis FTA Regional Administrator, Region 10
<u>12/07/2011</u>	<u>12/07/2011</u>	<u>12/07/11</u>
Date of Approval	Date of Approval	Date of Approval

# TABLE OF CONTENTS

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**RECORD OF DECISION..... 1**

**Introduction ..... 1**

**Selected Alternative..... 1**

**Purpose and Need ..... 3**

**Development of the Alternatives Considered in the EIS..... 5**

**Basis for Decision..... 9**

**Potential Construction Phasing..... 21**

**Project Mitigation Commitments..... 21**

**Mitigation Monitoring and Enforcement ..... 25**

**Determinations and Findings ..... 25**

**Public Opportunity to Comment..... 43**

**Comments Received on the Final EIS and Responses..... 44**

**Agency and Tribal Coordination ..... 57**

## ATTACHMENTS

- Appendix A: Project Mitigation Commitments
- Appendix B: Maps of Selected Alternative
- Appendix C: Anticipated Local, State and Federal Permits and Approvals
- Appendix D: FEIS Errata
- Appendix E:\* Public Comments Received during FEIS Review Period and CRC Responses
- Appendix F:\* Biological Opinion
- Appendix G:\* Section 106 Memorandum of Agreement

\*electronic appendices



## ACRONYMS

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AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
BIA	Bridge Influence Area
BMP	Best Management Practice
CEJG	Community and Environmental Justice Group
CMP	Congestion Management Program
CPTED	Crime Prevention Through Environmental Design
CRC	Columbia River Crossing
DEIS	Draft Environmental Impact Statement
DOT	Department of Transportation
EJ	Environmental Justice
EMS	Emergency Management System
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FWG	Freight Working Group
GHG	Greenhouse Gas
GMA	Growth Management Act
HiNooN	Hayden Island Neighborhood Network
IAMP	Interchange Area Management Plan
LEED	Leadership in Energy and Environmental Design
LPA	Locally Preferred Alternative
LRT	Light Rail Transit
MDSG	Marine Drive Stakeholders Group
MOVES	Motor Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
ODOT	Oregon Department of Transportation

OIPP	Oregon Innovative Partnerships Program
PBAC	Pedestrian Bicycle Advisory Committee
PMAG	Performance Measures Advisory Group
PSC	Project Sponsors Council
PWG	Portland Working Group
RCW	Revised Code of Washington
ROD	Record of Decision
RTC	Southwest Washington Regional Transportation Council
RTP	Regional Transportation Plan
SA	Selected Alternative
SOV	Single-Occupancy Vehicle
TDM	Transportation Demand Management
TMA	Transportation Management Assessment
TOD	Transit-Oriented Development
TSM	Transportation System Management
TSMO	Transportation System Management and Operational
UDAG	Urban Design Advisory Group
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
VMS	variable message sign
VMT	vehicle miles traveled
VWG	Vancouver Working Group
WSDOT	Washington State Department of Transportation



# Record of Decision

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## Introduction

The Columbia River Crossing (CRC) project (“CRC project” or “Project”) is a bridge, transit, highway, and bicycle and pedestrian improvement project led by the project sponsors: Oregon and Washington Departments of Transportation (ODOT, WSDOT), Southwest Washington Regional Transportation Council (RTC), Metro, Clark County Public Transportation Benefit Area (C-TRAN), and Tri-County Metropolitan Transportation District (TriMet), (collectively, hereinafter also referred to as “Project Sponsors”) on behalf of the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA) to improve safety and mobility in the Interstate-5 (I-5) corridor between Portland, Oregon and Vancouver, Washington. FHWA and FTA are the lead federal agencies for preparing the required documentation under the compliance with the National Environmental Policy Act (NEPA). I-5 is the main interstate corridor on the west coast from Canada to Mexico and one of only two roadway crossings of the Columbia River in the Portland-Vancouver metropolitan area. The Project focuses on a 5-mile segment of the I-5 corridor extending from State Route (SR) 500 in Vancouver to approximately Columbia Boulevard in Portland (project area). The Project seeks to address six problems (as described further in the Purpose and Need statement): growing travel demand and congestion; impaired freight movement; limited public transportation operation, connectivity, and reliability; safety and vulnerability to incidents; substandard bicycle and pedestrian facilities; and seismic vulnerability. Alternatives considered in the Draft Environmental Impact Statement (DEIS) included a No-Build Alternative and four multimodal build alternatives. The alternatives either replaced or rehabilitated the existing bridge structures over the river, provided highway improvements, either extended light rail or provided bus rapid transit with several transit alignment and length options, improved bicycle and pedestrian facilities, considered tolling, and implemented transportation demand and system management measures.

During preparation and following publication of the DEIS, the Project solicited public and stakeholder feedback through public comments, hearings and workshops to gather input and discuss the Purpose and Need, screening criteria and process, range of alternatives for the DEIS and ultimately the Selected Alternative (SA). (The term SA, used herein, also refers to the term “Locally Preferred Alternative (LPA)” used in the Environmental Review Documents as they are one and the same.) In July 2008, following the release of the DEIS, the project sponsors adopted the LPA as a refined version of Alternative 3 in the DEIS. The LPA is defined in the Final Environmental Impact Statement (FEIS) and summarized in this ROD.

## Selected Alternative

FTA and FHWA approve the alternative referred to as the LPA in the FEIS as the Selected Alternative. The SA includes a variety of transportation improvements throughout the 5-mile project corridor, including:

- A new river crossing over the Columbia River and I-5 highway improvements.
  - Improvements to seven interchanges, from south to north: Victory Boulevard, Marine Drive,

Hayden Island, SR-14, Mill Plain, Fourth Plain and SR 500. Related enhancements to the local street network.

- Improvements to the existing I-5 mainline bridge over North Portland Harbor; three new structures over this waterway associated with I-5; and one new multi-modal bridge carrying light rail transit, local traffic, pedestrians and bicyclists.
- A variety of bicycle and pedestrian improvements throughout the project corridor. A multi-use path connecting to the existing system. The path would allow users to travel from north Portland, over Hayden Island and the Columbia River into downtown Vancouver.
- Extension of light rail transit from the Expo Center in Portland to Clark College in Vancouver and associated transit improvements. Transit stations would be built on Hayden Island, in downtown Vancouver, and a terminus near Clark College. Three park and rides are to be built, Columbia (near the SR 14 interchange), Mill (in uptown Vancouver) and Clark (near Clark College). Improvements would be made to the tracks on the Steel Bridge. Also, bus route changes and the expansion of the Ruby Junction light rail transit maintenance facility.
- Transportation demand and system management measures to be implemented with the project, including the use of tolls, subject to the authority of the Washington and Oregon Transportation Commissions.

See Appendix B for an illustration of the SA. A detailed description of the SA is included in Chapter 2 of the FEIS.

### **Environmentally Preferable Alternative**

40 CFR Section 1505.2(b) of the Council of Environmental Quality's regulations that implement NEPA require that the ROD shall "identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable." The environmentally preferable alternative is generally the alternative that has the least impact to the environment, as described in the EIS.

The Environmental Review Documents evaluate the environmental effects of the SA and the other build alternatives. The analysis finds that, among the build alternatives, the SA provides the greatest benefit to traffic safety, bicycle and pedestrian access and mobility, land use and development. The SA has the fewest impacts to Section 4(f) resources, fish, wetlands, geology and soils, and traffic noise. Other build alternatives have fewer displacements and fewer transit noise impacts. However, all transit noise impacts can be mitigated by the measures described in this document. The SA would have similar impacts as the other build alternatives in the other environmental metrics analyzed in the FEIS.

Compared to the other build alternatives, the SA has the most environmental categories in which it is the least impactful alternative. FTA and FHWA find that the SA is the alternative with the least adverse environmental effects and the most feasible and prudent alternative in meeting the project Purpose and Need. Therefore, FHWA and FTA consider the SA to be the environmentally preferred alternative and it is the selected alternative because it best addresses the Purpose and Need of the Project.

## Background

Major transportation improvements in the project area have been studied for over a decade. In 2001, the Washington and Oregon governors appointed a bi-state task force, called the I-5 Trade and Transportation Task Force, to address concerns about congestion on I-5 between Portland and Vancouver. The task force adopted a final strategic plan on June 18th, 2002. The plan made recommendations for transportation improvements between the Interstate 405 (I-405) interchange in Portland and the Interstate 205 (I-205) interchange north of Vancouver. The recommendations included:

- Expand I-5 to include three through lanes in each direction, including the area through Delta Park.
- Introduce a phased light rail loop in Clark County in the vicinity of the I-5, SR 500/Fourth Plain, and I-205 corridors.
- Provide an additional bridge or a replacement crossing for the I-5 crossing of the Columbia River, with up to two additional lanes in each direction for merging traffic and two light rail tracks.
- Improve interchanges and add merging lanes between SR 500 in Vancouver and Columbia Boulevard in Portland, including a full interchange at Columbia Boulevard.
- Improve capacity for freight rail
- Encourage bi-state coordination of land use and transportation issues to reduce highway demand and protect corridor investments.
- Involve communities along the corridor to ensure that the final project outcomes are equitable.

The Project was developed to further study, develop and implement solutions to several of these recommendations.

In 1993, local agencies began studying high-capacity transit in the “South/North Corridor,” which extended from Clackamas and Milwaukie, Oregon, to Vancouver, Washington. FTA and Metro published the South/North Corridor Project DEIS in 1998. This identified a variety of alignment and length options for a light rail corridor connecting Milwaukie, downtown Portland, north Portland, and downtown Vancouver. One of the options that has since been constructed is the TriMet Yellow Line, or Interstate MAX. The Yellow Line extends from the Rose Quarter near downtown Portland to the Expo Center in North Portland.

## Purpose and Need

As described in the DEIS and FEIS, the Purpose and Need statement is provided below.

### Project Purpose

The purpose of the proposed action is to improve I-5 corridor mobility by addressing present and future travel demand and mobility needs in the CRC Bridge Influence Area (BIA). The BIA extends from approximately Columbia Boulevard in the south to SR 500 in the north. Relative to the No-Build Alternative, the proposed action is intended to achieve the following objectives: a) improve travel safety and traffic operations on the I-5 crossing’s bridges and associated

interchanges; b) improve connectivity, reliability, travel times, and operations of public transportation modal alternatives in the BIA; c) improve highway freight mobility and address interstate travel and commerce needs in the BIA; and d) improve the I-5 river crossing's structural integrity (seismic stability).

### Project Need

The specific needs to be addressed by the proposed action include:

- **Growing travel demand and congestion:** Existing travel demand exceeds capacity in the I-5 Columbia River crossing and associated interchanges. This corridor experiences heavy congestion and delay lasting 4 to 6 hours daily during the morning and afternoon peak travel periods and when traffic accidents, vehicle breakdowns, or bridge lifts occur. Due to excess travel demand and congestion in the I-5 bridge corridor, many trips take the longer, alternative I-205 route across the river. Spillover traffic from I-5 onto parallel arterials such as Martin Luther King Jr. Boulevard and Interstate Avenue increases local congestion. In 2005, the I-5 and I-205 crossings carried 280,000 vehicle trips across the Columbia River daily. Daily traffic demand over the I-5 crossing is projected to increase by more than 35 percent during the next 20 years, with stop-and-go conditions increasing to approximately 15 hours daily if no improvements are made.
- **Impaired freight movement:** I-5 is part of the National Truck Network, and the most important freight highway on the West Coast, linking international, national and regional markets in Canada, Mexico and the Pacific Rim with destinations throughout the western United States. In the center of the project area, I-5 intersects with the Columbia River's deep water shipping and barging as well as two river-level, transcontinental rail lines. The I-5 crossing provides direct and important highway connections to the Port of Vancouver and Port of Portland facilities located on the Columbia River as well as the majority of the area's freight consolidation facilities and distribution terminals. Freight volumes moved by truck to and from the area are projected to more than double over the next 25 years. Vehicle-hours of delay on truck routes in the Portland-Vancouver area are projected to increase by more than 90 percent over the next 20 years. Growing demand and congestion will result in increasing delay, costs and uncertainty for all businesses that rely on this corridor for freight movement.
- **Limited public transportation operation, connectivity, and reliability:** Due to limited public transportation options, a number of transportation markets are not well served. The key transit markets include trips between the Portland Central City and the city of Vancouver and Clark County, trips between north/northeast Portland and the city of Vancouver and Clark County, and trips connecting the city of Vancouver and Clark County with the regional transit system in Oregon. Current congestion in the corridor adversely impacts public transportation service reliability and travel speed. Southbound bus travel times across the bridge are currently up to three times longer during parts of the a.m. peak compared to off-peak. Travel times for public transit using general purpose lanes on I-5 in the BIA are expected to increase substantially by 2030.
- **Safety and vulnerability to incidents:** The I-5 river crossing and its approach sections experience crash rates more than 2 times higher than statewide averages for comparable facilities. Incident evaluations generally attribute these crashes to traffic congestion and weaving movements associated with closely spaced interchanges and short merge distances.

Without breakdown lanes or shoulders, even minor traffic accidents or stalls cause severe delay or more serious accidents.

- **Substandard bicycle and pedestrian facilities:** The bike/pedestrian lanes on the I-5 Columbia River bridges are about 3.5 to 4 feet wide, narrower than the 10-foot standard, and are located extremely close to traffic lanes, thus impacting safety for pedestrians and bicyclists. Direct pedestrian and bicycle connectivity are poor in the BIA.
- **Seismic vulnerability:** The existing I-5 bridges are located in a seismically active zone. They do not meet current seismic standards and are vulnerable to failure in an earthquake.

## Development of the Alternatives Considered in the EIS

As part of development of the EIS, the project sponsors evaluated a wide range of potential solutions for addressing the identified problems in the CRC corridor. Elements of the Project have been proposed and studied since the early 1990s. In 2002, the I-5 Transportation and Trade Partnership produced an evaluation of multiple highway, transit, and river crossing improvements in this corridor and other parts of I-5. This process gathered public and stakeholder input on issues and potential solutions for transportation problems in the I-5 corridor. Starting in October 2005, and consistent with Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the Project began working closely with the public, stakeholders, and local jurisdictions to develop the Project's Purpose and Need.

Following the adoption of the Project Purpose and Need, the Project developed an Evaluation Framework that is based on the Purpose and Need and set forth the criteria by which project components would be evaluated and screened for further consideration. The Project began soliciting ideas and identifying possible transportation components (for example, various transit technologies and river crossing types and locations) and over 70 such components were identified. With public and agency input, the Project performed two rounds of evaluation and screening, as well as conducted additional evaluation and research, to narrow these options and assemble these components into the 12 alternative packages. The Project then analyzed how well each alternative would address the criteria from the Evaluation Framework. In January 2007, the Project launched an intensive public involvement effort to present the results of this evaluation and invite comments on which alternatives should move forward into the DEIS.

Following the public process to develop and screen potential solutions, the DEIS stated the Project's Purpose and Need statement and included the detailed assessment of the reasonable range of alternatives most likely to meet the Project's Purpose and Need. All build alternatives assessed in the DEIS included transit, highway, bicycle, and pedestrian improvements. Some of these were physical improvements, such as adding highway capacity or building transit facilities. Others were operational improvements to help the system function more efficiently.

Four build alternatives were analyzed in detail in the DEIS, in addition to a No-Build Alternative. The SA is a refined version of Alternative 3. Each alternative was composed of several components that, when combined, created a particular multimodal alternative to address the problems this project seeks to fix. All build alternatives include the following components:

- Multimodal river crossing and highway improvements
  - Bridges over the Columbia River carrying transit, highway, bicycle, and pedestrian traffic

## 6 Columbia River Crossing Record of Decision

- Bicycle and pedestrian improvements between north Portland and downtown Vancouver
- Highway and interchange improvements from Marine Drive in north Portland to SR 500 in Vancouver
- High-capacity transit
- Transit terminus and alignment options
  - Transit terminus (endpoint) options
  - Transit alignment options
- Transit park and ride locations
- Transit operations options (frequency of train or bus rapid transit service)
- Bridge tolls
- Transportation system management (TSM) and transportation demand management (TDM) measures

Between the publication of the DEIS and the publication of the FEIS, a locally preferred alternative was selected. The FEIS includes analysis of the locally preferred alternative, a no-build option, and the four build options analyzed in the DEIS (as described in the tables below). The FEIS includes refinements in design, impacts and mitigation measures compared to the DEIS. To facilitate development of mitigation measures and compliance with other environmental laws, the project developed the LPA in the FEIS to a higher level of detail than the other alternatives.

Exhibit A summarizes the components included in each alternative. Exhibit B identifies the key features of each alternative. Appendix B illustrates the SA and the build alternatives evaluated in the EIS.

### Exhibit A

#### Comparison of EIS Alternatives

Components	Alternative 1 (No-Build)	SA (refined Alternative 3)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Multimodal River Crossing and Highway	Existing	<b>Replacement</b>	Replacement	Replacement	Supplemental	Supplemental
Transit Mode	None	<b>Light Rail</b>	Bus Rapid Transit	Light Rail	Bus Rapid Transit	Light Rail
Transit Terminus	N/A	<b>Clark College</b>	Kiggins Bowl, Lincoln, Clark College MOS, or Mill Plain MOS	Kiggins Bowl, Lincoln, Clark College MOS, or Mill Plain MOS	Kiggins Bowl, Lincoln, Clark College MOS, or Mill Plain MOS	Kiggins Bowl, Lincoln, Clark College MOS, or Mill Plain MOS
TDM/TSM Measures	Current Programs	<b>Similar to DEIS</b>	Expanded TDM/TSM programs			
I-5 Bridge Toll	None	<b>Standard rate</b>	Standard rate	Standard rate	Higher rate	Higher rate
Transit Operations	Existing	<b>Efficient (refined)</b>	Efficient	Efficient	Increased	Increased

Exhibit B

**Key Transit and Highway Features of the EIS Alternatives**

Alternative	Transit Features	Highway Features
<b>No-Build Alternative</b>	<ul style="list-style-type: none"> <li>Increases to C-TRAN service hours for bus routes throughout Vancouver and Clark County to keep pace with anticipated changes in congestion.</li> <li>Increases to TriMet's services hours for bus routes throughout north and northeast Portland to keep pace with anticipated changes in congestion.</li> <li>Completion of the first phase of the South Corridor light rail project on the Portland Transit Mall and I-205.</li> </ul>	<ul style="list-style-type: none"> <li>I-5 widening and improvements around Delta Park.</li> </ul>
<b>Locally Preferred Alternative (Refinement of Alternative 3)</b>	<ul style="list-style-type: none"> <li>Extension of the light rail guideway from the Expo Center over Hayden Island and across the Columbia River to a terminus at Clark College in Vancouver. The light rail guideway would extend 2.9 miles north from the Expo Center, and would include seven transit stations and three structured park and rides with 2,900 spaces.</li> <li>Expansion of TriMet's Ruby Junction light rail maintenance facility in Gresham.</li> <li>19 light rail vehicles (LRVs) would be included in this alternative.</li> <li>Changes to C-TRAN local bus routes to connect with the new light rail stations and park and rides.</li> </ul>	<ul style="list-style-type: none"> <li>A new replacement crossing over the Columbia River, with a "stacked transit/highway bridge" design that would include transit beneath the western highway bridge deck and a bicycle and pedestrian path beneath the eastern highway deck. Each bridge would have 5 traffic lanes and full design shoulders.</li> <li>Improvements to the following I-5 interchanges: Victory Boulevard, Marine Drive, Hayden Island, SR 14, Mill Plain, Fourth Plain, and SR 500. With highway phasing, certain portions of the improvements at the Victory Boulevard, Marine Drive, and SR 500 interchanges would be deferred.</li> <li>Auxiliary lanes for traffic entering and/or exiting I-5 between Victory Boulevard and SR 500.</li> <li>A toll would be charged on the I-5 crossing, with higher rates during peak travel periods.</li> </ul>
<b>Replacement crossing with bus rapid transit</b>	<ul style="list-style-type: none"> <li>Changes to C-TRAN local bus routes to connect with the new BRT stations and park and rides.</li> <li>Expansion of TriMet's Ruby Junction light rail maintenance facility in Gresham.</li> <li>Changes to C-TRAN local bus routes to connect with the new bus guideway and park and rides.</li> <li>27 bus rapid transit vehicles (60' articulated buses) and 12 standard buses would be included in this alternative.</li> </ul>	<ul style="list-style-type: none"> <li>A new replacement crossing over the Columbia River, with either three separate bridges (two for interstate traffic and a third for buses, bicycles, and pedestrians) or a "stacked highway/transit bridge" design that would include transit beneath the western highway bridge deck and a bicycle and pedestrian path beneath the eastern highway deck.</li> <li>Improvements to the following I-5 interchanges: Marine Drive, Hayden Island, SR 14, Mill Plain, Fourth Plain, and SR 500.</li> <li>Additional auxiliary lanes for traffic entering and/or exiting I-5 between Marine Drive and SR 500.</li> <li>A toll would be charged on the I-5 crossing, with higher rates during peak travel periods.</li> </ul>
<b>Replacement crossing with light rail</b>	<ul style="list-style-type: none"> <li>Extension of the light rail guideway from the Expo Center over Hayden Island and across the Columbia River to a terminus in Vancouver. Depending on transit terminus, the light rail guideway would extend between 2.07 and 4.22 miles north from the Expo Center, and would include five to seven transit stations and three to five structured or surface park and rides with up to 2,410 spaces.</li> <li>Changes to C-TRAN local bus routes to connect with the new light rail stations and park and rides.</li> <li>Expansion of TriMet's Ruby Junction light rail maintenance facility in Gresham.</li> <li>14 LRVs and 27 standard buses would be included in this alternative.</li> </ul>	<ul style="list-style-type: none"> <li>Same highway features as Alternative 2.</li> <li>This alternative was also modeled without a toll to determine the potential effects of tolling on traffic patterns.</li> </ul>

Alternative	Transit Features	Highway Features
<b>Supplemental crossing with bus rapid transit</b>	<ul style="list-style-type: none"> <li>• Same transit features as Alternative 2, but higher frequency operations of bus rapid transit and local bus routes.</li> <li>• This alternative would include 38 bus rapid transit vehicles and 143 standard buses.</li> </ul>	<ul style="list-style-type: none"> <li>• A new, supplemental crossing for southbound interstate traffic and exclusive lanes for buses.</li> <li>• Both existing I-5 bridges would be re-stripped for two lanes each to carry northbound I-5 traffic.</li> <li>• Seismic retrofits to the existing bridges.</li> <li>• Improvements to the following I-5 interchanges: Marine Drive, Hayden Island, SR 14, Mill Plain, Fourth Plain, and SR 500.</li> <li>• Additional auxiliary lanes (generally one less additional lane than Alternatives 2 and 3) for traffic entering and/or exiting I-5 between Marine Drive and SR 500.</li> <li>• A toll would be charged on the I-5 crossing, with higher rates during peak travel periods. During these peak travel periods, the toll would be higher than with Alternatives 2 or 3.</li> </ul>
<b>Supplemental crossing with light rail</b>	<ul style="list-style-type: none"> <li>• Same transit features as Alternative 3, but higher frequency operations for light rail and for local bus routes.</li> <li>• This alternative would include 18 LRVs and 147 standard buses.</li> </ul>	<ul style="list-style-type: none"> <li>• Same highway features as Alternative 4.</li> </ul>

### Alternatives Considered but Rejected

A wide range of transportation alternatives and improvements were considered during screening and subsequent evaluation. Exhibit C summarizes the alternatives, options and components that were considered but rejected.

Exhibit C

### Alternatives Considered but Rejected

Transit	River Crossing
Express Bus in general purpose lanes	Replacement Bridge-Downstream/Low-level/Movable
Express Bus in managed lanes	Replacement Bridge-Upstream/Low-level/Movable
Bus Rapid Transit (BRT) – Lite <sup>a</sup>	Replacement Bridge-Upstream/Mid-level
Bus Rapid Transit (BRT) – Full <sup>b</sup>	Replacement Bridge-Downstream/High-level
Streetcar	Replacement Bridge-Upstream/High-level
High Speed Rail	Supplemental Bridge-Downstream/Low-level/Movable
Ferry Service	Supplemental Bridge-Upstream/Low-level/Movable
Monorail System	Supplemental Bridge-Downstream/Mid-level
Magnetic Levitation Railway	Supplemental Bridge-Upstream/Mid-level
Commuter Rail	Supplemental Bridge-Downstream/High-level
Heavy Rail	Supplemental Bridge-Upstream/High-level
Personal Rapid Transit	Tunnel to supplement I-5
People Mover/Automated Guideway Transit	New Corridor Crossing
	New Corridor Crossing plus widen existing I-5 Bridges
	New Western Highway (I-605)
	New Eastern Columbia River Crossing
	I-205 Improvements
	Arterial Crossing to supplement I-5



Transit	River Crossing
	Replacement Tunnel
	33rd Avenue Crossing
	Non-Freeway Multimodal Columbia River Crossing
	Arterial Crossing with I-5 Improvements

- a Bus rapid transit-lite is an all-day bus rapid transit service that operates in exclusive, managed or general purpose lanes, which may or may not have in-line stations and special vehicles.
- b Bus rapid transit-full is an all-day bus rapid transit service with an exclusive right-of-way, in-line stations, special vehicles, and a unique branded identity.

## Other Components Considered but Rejected

Exhibit D

### Other Components Considered but Rejected

Transit	River Crossing/Highway
Increased Transit Operations	Three-bridge Design over the Columbia, Replacement
Kiggins Bowl Terminus	12 Lanes on River Crossing
Lincoln Terminus	8 Lanes on River Crossing
Mill Plain MOS	Marine Drive Southern Realignment
16th Street Alignment	Marine Drive Diagonal Realignment
McLoughlin Boulevard Alignment	Replacing North Portland Harbor Bridge
Two-way on Broadway Street	SR 14 to I-5 Northbound Second Collector-Distributor Lane
Two-way on Washington Street	SR 14 Left Loop Interchange design
Washington Street/Main Street Couplet	
Washington Street/Columbia Street Couplet	
Offset Hayden Island Alignment	
Ross Park and Ride	
Kiggins Bowl Park and Ride	
SR 14 Park and Ride	
Mill Plain Park and Ride Bounded by Broadway, Main, 16th and 17th	
Surface Park and Ride Lots	
39th and Main Park and Ride	

## Basis for Decision

The following summarizes the basis for selection of the LPA as the SA in this ROD over other alternative designs and mode choices. This section describes how the SA best meets the Purpose and Need of the Project.

### Key Findings Regarding how the Selected Alternative Best meets the Purpose and Need

Below is a list of each “need” from the Project Purpose and Need statement with a description of how the SA (a replacement river crossing with two bridges and light rail transit (LRT) to Clark College) best meets each “need” compared to all other alternatives evaluated.

## **Growing Travel Demand and Congestion**

A replacement river crossing would provide more congestion relief than the supplemental river crossing or No-Build Alternative. The No-Build Alternative would accommodate about 56,000 people (person trips) during the southbound morning and northbound evening peak periods, and under this alternative, congestion is predicted to increase to 15 hours a day by the year 2030. The replacement crossing would accommodate the more than 78,000 people predicted to cross the bridge during peak commute periods and congestion would last for approximately 5 hours each day in 2030. The supplemental crossing would accommodate approximately 66,000 people to cross the river during peak periods, but 11 hours of congestion would remain each day.

Local streets would experience more traffic with a supplemental crossing than with a replacement crossing, especially in lower downtown Vancouver and near the Marine Drive interchange, as described in the FEIS and DEIS. The intersection at 6th and Washington in downtown Vancouver would have to be closed with the supplemental crossing, which would cause increased traffic congestion on lower downtown streets. The replacement crossing would not require this closure. It would also allow the City of Vancouver to realize its planned extension of Main Street to the waterfront, reducing congestion in lower downtown Vancouver and increasing connectivity to the waterfront. The supplemental crossing would preclude the City from extending Main Street.

The supplemental crossing would split northbound traffic between the two existing bridges. By splitting northbound traffic on two separate structures, northbound motorists exiting at Hayden Island, SR 14, downtown Vancouver, Mill Plain, or Fourth Plain would have to get into the right two lanes around the Marine Drive area, which would cause last-second weaving, a major safety issue. Additionally, northbound motorists accessing I-5 from Marine Drive or Hayden Island toward destinations north of Fourth Plain would enter these right two lanes and then either weave quickly left to access the through lanes on the western bridge or cross on the eastern bridge, which is expected to be more congested with traffic exiting the freeway at the various Vancouver interchanges. The multiple weaving, merging, and diverging sections along this two-lane segment of I-5 would result in substantial congestion, and cause traffic to back up on on-ramps and local streets around Marine Drive and on Hayden Island. In contrast, the replacement crossing would not require splitting northbound I-5 traffic onto two structures and would avoid these problems.

Across the North Portland Harbor, the mainline I-5 traffic would use the existing North Portland Harbor Bridge. Three new structures over the harbor would carry ramp traffic and a new local multimodal bridge would carry transit, cars, bicyclists and pedestrians; providing access between Hayden Island and the Oregon mainland separate from I-5 traffic.

## **Impaired Freight Movement**

### ***Truck Freight***

I-5 in the Project area provides connections to two major ports, deep-water shipping, up-river barging, two transcontinental rail lines, and a major international airport. It also provides critical infrastructure to support the movement of truck-hauled freight that is vital to the economy of the Portland-Vancouver region as well as to the Oregon and Washington state economies. As discussed above, the replacement river crossing would improve freight reliability compared to the No-Build and supplemental alternatives by providing fewer hours of congestion throughout

the day. The replacement bridge also improves conditions reliability by eliminating the bridge lifts that would continue to occur with the supplemental and No-Build alternatives.

The replacement river crossing greatly improves freight movement compared to the supplemental river crossing and No-Build. The I-5 corridor is the backbone of a network of roads that provide access to the greater Vancouver and Portland region. Trade capacity studies conclude that while all modes are important, the roadway system links all of the other modes and links land uses critical to business.

Five industries in the Portland-Vancouver region are particularly sensitive to road congestion: lumber/wood/paper, distribution/wholesale trade, transportation equipment/steel, farm and food products and high-tech. These industries accounted for approximately 70 percent of the commodity tonnage that crossed the I-5 and I-205 bridges and for 31 percent of Oregon and Washington's gross regional output in 2000. These industries would benefit greatly by the congestion relief improvements offered by the SA.

### ***Marine Freight Navigation Safety***

Marine vessels traveling this section of the Columbia River must navigate under one of the fixed spans or through the lift span of the I-5 bridges, and must also navigate through the swing span of the Burlington Northern Santa Fe (BNSF) railroad bridge one mile downstream. Navigation safety for these vessels, especially when traveling downstream (with the current), would be substantially improved with a replacement river crossing but worsened by a supplemental river crossing. Currently, vessels making this trip must make a difficult S-curve maneuver to navigate between the high span of the existing bridges and the swing-span of the BNSF rail bridge, because these channels are not in alignment—the existing I-5 crossing high span is roughly in the center of the river, but the BNSF swing span is closer to the north bank. When the river runs high, this maneuver is especially difficult, frequently forcing vessels to wait to use the I-5 lift span that is closer to the north bank and better aligned with the swing span of the BNSF railroad bridge.

A supplemental crossing would make the current navigational situation worse by adding more piers between the existing I-5 crossing and the BNSF railroad bridge. A supplemental crossing would also narrow the high-span and lift-span channels by 40 to 60 feet, because the existing bridge piers would need to be widened to improve seismic safety. These changes would increase the navigational difficulty and hazards of the river.

A replacement crossing would improve navigation safety and efficiency. The new crossing would require fewer piers, creating less of an obstacle to river navigation than either the No-Build Alternative or a supplemental crossing. Taller vessels would not be restricted by the hours of lift span operation. In addition, the new primary channel under the I-5 crossing would have a better alignment with the channel through the BNSF railroad bridge, and this would improve navigation even though the two crossings would be slightly closer together. With the SA, the available clearance of the primary channel would be a minimum of 95 feet above 0 on the Columbia River Datum, over a 300-foot width.

**Limited Public Transportation Operation, Connectivity and Reliability**

Light rail would provide quicker and more direct access to key destinations and provide greater capacity, which would help attract more daily and peak period transit riders than bus rapid transit. Bus rapid transit would cost less to construct, but would cost more to operate each year. Although light rail would be more expensive to build initially, it would attract more riders and would have lower operating costs over the project lifetime. Additionally, research suggests that light rail is likely to attract more investment around transit stations, which would better allow the cities of Vancouver and Portland to attain locally and regionally adopted land use goals for managing growth and promoting compact, transit-oriented development.

***Travel Times and Reliability***

Light rail would provide better travel times and reliability than bus rapid transit. Bus rapid transit buses would travel in exclusive lanes in the project area but would be mixed with general traffic outside the project area, and therefore would be subject to congestion-induced delays. Such delays would increase travel times and reduce reliability. Light rail would also travel faster than bus rapid transit within the project area (averaging 17 mph versus 14.5 mph, including stops) because it would have signal priority, shorter wait times at stations, and quicker acceleration.

***Transit Ridership***

Either transit mode would at least double transit ridership across the Columbia River compared to the No-Build Alternative. Light rail would attract more riders than bus rapid transit. According to FEIS analysis, the SA would carry 6,100 people over the I-5 crossing northbound during the peak period, while the alternatives with bus rapid transit would only carry 5,150 to 5,350 people. Integration with the existing MAX system would allow transit users to travel between Vancouver and Portland without a transfer. Transfers add travel time, unreliability, and inconvenience to potential transit users' trips.

**Safety and Vulnerability to Incidents**

The SA would improve non-standard geometric and safety design features on the I-5 mainline and ramps within the project area. Improvements would be made to the existing short on-ramp merges/acceleration lanes and off-ramp diverges/deceleration distances, short weaving areas, substandard lane widths, vertical and horizontal curves that limit sight distance, and narrow or non-existent shoulders.

As the number of vehicular collisions in the main project area is related to the presence of non-standard geometric design and safety features, which is exacerbated when traffic levels are at or near congested conditions, the SA would substantially improve traffic safety in this area. Analysis in the FEIS estimated that the project would reduce average annual yearly collisions in the main project area from 750 under the No-Build to between 210 and 240 in the SA.

As stated above, the existing traffic safety hazards on I-5 in the project area include lack of shoulders, narrow lanes, poor sight distances, short ramps, short merge lanes, and bridge lifts. These hazards would be corrected with a replacement river crossing. None of these safety problems would be solved with the No-Build Alternative. A supplemental river crossing would improve safety for southbound I-5 traffic and transit because those vehicles would be placed on a new bridge built to current safety standards, but would only provide partial safety improvements for northbound I-5 traffic. Northbound traffic would remain on the existing bridges, and would

still be subjected to bridge lifts and poor sight distances due to the “hump” in the current crossing. A supplemental crossing would create a new safety issue between Marine Drive and Fourth Plain Boulevard by dividing and separating northbound lanes approaching the crossing. As explained earlier, northbound traffic exiting the highway at Hayden Island, SR 14, Mill Plain, or Fourth Plain would need to merge into the two right lanes as the highway crosses Hayden Island. The multiple weaving, merging, and diverging sections along this two-lane segment of I-5 would result in substantial congestion, and cause traffic to back up on on-ramps and local streets around Marine Drive and on Hayden Island. Creating the additional conflict points could result in an increase in crashes. The need to make this choice so early could cause last-second weaving between lanes and would likely increase collision rates. Fewer auxiliary lanes with the supplemental alternative would provide less safety improvement than the replacement alternative.

### **Substandard Bicycle and Pedestrian Facilities**

The existing pedestrian and bicycle facilities throughout the Project main project area are outdated, potentially unsafe, and confusing to navigate. Several pedestrian and bicycle forecasting scenarios predict that pedestrian and bicycle travel demands would increase substantially if a new I-5 bridge is constructed with sufficient multimodal facilities. The SA provides wider, safer pedestrian and bicycle facilities and connections. The existing 3- to 4-foot wide paths on each side of the current structures would be replaced with a new multi-use pathway under the highway deck.

The bicycle and pedestrian connection between Portland and Vancouver would differ between replacement and supplemental river crossings. Both river crossings would provide a wide, well-marked path separated from vehicles, but the replacement crossing would provide better connections and safety for bicyclists and pedestrians on Hayden Island and over North Portland Harbor. With a replacement river crossing, the multi-use path would be a continuous pathway, separated from cars and trucks, between downtown Vancouver and the Marine Drive interchange area. The supplemental river crossing would require pedestrians and bicyclists to leave the multi-use trail on Hayden Island and navigate several busy streets to complete the crossing between Vancouver and Marine Drive.

### **Seismic Vulnerability**

The SA would replace the existing I-5 bridges with new and retrofitted structures built to modern seismic standards. It would also apply modern seismic safety standards to the other interchange and highway improvements constructed as a part of the Project. This would improve public safety and structure stability during earthquake seismic events.

The existing facilities would be retained under the No-Build and supplemental alternative options. The existing facilities were built with the understandings of earthquake science in 1917 and 1958 and have greater seismic vulnerability than a replacement structure.

## **Other Key Findings**

### **Land Use**

#### ***Accommodating Future Waterfront Development***

Plans for waterfront development in downtown Vancouver would be better supported by a replacement river crossing. A replacement crossing would open up the waterfront underneath the existing bridges. A replacement crossing would vacate the existing I-5 right-of-way underneath the BNSF railroad berm, thus allowing Vancouver's planned extension of Main Street south to Columbia Way. The supplemental river crossing would leave the existing highway in place, which would not afford space for extending Main Street or provide the opportunity to open up the waterfront area beneath the existing bridges. Extending Main Street would strengthen the connection between downtown Vancouver and the riverfront, and it is important for traffic circulation needed by planned development.

#### ***Transit Oriented Development***

Both bus rapid transit and light rail have the potential to attract development around transit stations (often referred to as transit-oriented development) that is generally sought after by many local and regional land use plans. However, light rail is likely to attract more transit-oriented development than bus rapid transit; therefore, it is more consistent with local and regional land use plans. Rail lines have greater visibility and appeal than buses, and studies have shown that because of this, some riders prefer trains over buses. These factors, in addition to the perception that rail infrastructure is a more permanent and fixed public investment than bus routes, indicate that developers are more likely to invest around light rail stations than around bus rapid transit stations. Transit-oriented development is generally pedestrian-oriented. Medium- and high-density commercial and residential mixed uses that support the nearby transit service also help advance community goals of managing growth and reducing reliance on automobiles.

#### **Capital and Maintenance Costs for River Crossing**

Cost estimates indicate that the supplemental river crossing would be less expensive to construct, but would be more expensive to maintain and operate. Reusing the existing bridges would reduce capital costs, but would require repairs to these structures, such as resurfacing the bridge decks and repairing the lift span equipment. These repairs are the primary contributor to the substantially higher maintenance and operation cost of a supplemental river crossing. The existing bridges also require staffing 24 hours per day to operate the lift spans, adding to their operating cost.

#### **Capital and Maintenance and Operation Costs for Transit**

Relative to bus rapid transit, light rail costs more to build, but has lower operating and maintenance costs, and attracts more transit riders. Light rail transit is about 20 percent more cost effective than bus rapid transit. Transit cost-effectiveness is generally described as the overall cost for construction, maintenance, and operation of the transit system, divided by the number of transit passengers served. Increasing transit ridership or reducing costs can improve cost-effectiveness. Overall, the cost to construct and operate per transit rider for light rail is lower

than for bus rapid transit. Therefore, light rail would be more cost-effective than bus rapid transit.

### **Key Findings Regarding Other Design Elements**

Based on public comments and other agency input between the DEIS and FEIS, several other refinements were made about design elements for the SA. Each design element is a significant part of the SA. The Project Sponsors Council (PSC), the Independent Review Panel (IRP), and the Bridge Review Panel (BRP) played key roles in these decisions. Descriptions of the PSC, IRP and BRP can be found in Section 2.7 of the FEIS.<sup>1</sup>

The following section describes refinements that have shaped the SA and reasons for the recommendations. Most of these refinements were made after the adoption of the LPA by local agency partners but prior to publication of the FEIS. The refinements were re-evaluated and none were found to create a new significant environmental impact that would require the DEIS to be supplemented.

### **Marine Drive Interchange Design**

The Marine Drive interchange design included in the SA is similar to the “diagonal” alignment analyzed in the EIS. The DEIS evaluated three designs for the Marine Drive interchange that differed in the alignment of Marine Drive west of I-5. These designs included an option for retaining most of the existing alignment, and two designs that realigned the roadway south of its current location. Following the adoption of the LPA, the Project established the Marine Drive Stakeholder Group to provide feedback on the function and design of the Marine Drive interchange. This advisory group was comprised of a range of stakeholders with strong interests in the design and operation of this interchange, including TriMet, ODOT, the City of Portland, the Port of Portland, trucking and distributions companies, the Audubon Society, nearby property owners such as Diversified Marine and the Metropolitan Exposition Recreation Commission, and community members from the surrounding Bridgeton, Kenton, and East Columbia neighborhoods.

Working with this advisory group, the Project analyzed the traffic operations, property impacts, and potential environmental effects for a range of interchange designs. The Marine Drive interchange design included in the SA was developed in collaboration with this stakeholder advisory group to balance many competing interests, including freight mobility, property impacts to the Expo Center and other nearby properties, financial considerations, and environmental effects. The design included in the SA is within the range of impacts of the options analyzed in the DEIS and FEIS.

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<sup>1</sup> The Governors of Oregon and Washington formed the PSC, IRP and BRP. The PSC advises the departments of transportation on project development. The PSC is comprised of executive or elected officials (plus two citizen co-chairs) from local and state agencies involved in the planning and decision making for the CRC project. The IRP was asked to do the following: (a) review the project implementation plan, (b) review the project finance plan, (c) review project performance measures. The BRP was comprised of individuals with national and international experience designing, managing and constructing large bridge projects. The BRP's primary recommendations focused on bridge type.

### **Hayden Island Interchange Design**

The DEIS and FEIS evaluated options for the Hayden Island interchange which could accommodate a replacement or supplemental bridge. After publication of the DEIS, the City of Portland adopted the Hayden Island Plan which calls for access to and from the island without using I-5.

The (PSC) convened a committee, called the Integrated Project Staff (IPS), to create recommendations to refine the Hayden Island interchange. The IPS worked with local stakeholders and the Project to develop a design for the interchange which includes a local multimodal bridge to carry traffic to/from the island and Marine Drive. The interchange design allows all movements to and from the island and I-5, but also provides a local route to the island without accessing I-5. This design would allow for the elimination of direct ramps between Hayden Island and the Marine Drive interchange, thereby simplifying traffic operations and reducing the Hayden Island interchange footprint. On August 9, 2010, the PSC voted unanimously to recommend the refined Hayden Island interchange to be included as the preferred design in the LPA.

### **Number of Lanes on the River Crossing**

The SA includes 10 lanes on the main river crossing. The DEIS evaluated highway alternatives with cross-sections ranging from 8 to 12 lanes at the river crossing. Following the July 2008 adoption of the LPA, the PSC met several times to discuss the number of lanes, noting concerns and interests about this design element of the project. The discussion included how the number of add/drop lanes relates to safety and mobility, traffic diversion, greenhouse gas emissions, and congestion; how they might indirectly affect traffic demand and land use; and the need to build this bridge to meet long-term regional needs.

On August 9, 2010, the PSC voted unanimously to recommend that the replacement bridges be constructed with 10 lanes and full shoulders to provide for safe operations between interchanges and efficient movement of people and goods. Traffic analysis showed that 10 lanes would perform better than 8 lanes and therefore would better meet the Purpose and Need of the project. Three lanes on each bridge would be through lanes for traffic traveling through the project area, while the additional lanes on each bridge would be add/drop lanes that would accommodate traffic entering or exiting I-5 at one of the several closely spaced interchanges immediately north and south of the river.

### **Number of Bridges over the Columbia River**

The DEIS evaluated a two-bridge design (stacked transit/highway bridge) and a three-bridge design over the Columbia River for the replacement crossing. The three-bridge design included (from east to west) a bridge for northbound I-5 traffic, a bridge for southbound I-5 traffic, and a third bridge for light rail with a separated pathway for bicyclists and pedestrians. A two-bridge design included the two bridges for north and southbound I-5 traffic, with light rail, bicyclists, and pedestrians traveling underneath the decks of these bridges.

Compared to the three-bridge design, several advantages of the two-bridge design were identified in the DEIS and the FEIS, including fewer piers with less in-water structure, smaller surface area generating less stormwater runoff, and a more compact crossing with less imposing visual obstruction of the river. Additionally, advisory groups and the PSC recommended



preference for a two-bridge design. Therefore, the two-bridge design is being selected as the design for the SA.

### **River Crossing Bridge Type**

The decision to select the composite deck truss bridge type for the river crossing was based on many factors. As described above, the BRP was formed to provide recommendations on bridge type (the BRP's role is described in detail in Chapter 2 of the FEIS). The panel offered three bridge types for consideration that panel members believed would have less construction risk and be potentially less expensive to construct than the open web bridge type that was being considered at the time. The three options were: composite deck truss, cable stayed and tied arch.

In response to the BRP's options, ODOT and WSDOT recommended proceeding with the composite deck truss bridge type. The ODOT and WSDOT recommendation found that the composite deck truss is the most affordable, maintains the project schedule, minimizes environmental impacts, honors commitments to communities and stakeholders, would attract the largest pool of contractors thus allowing for the most competitive prices, and provides the least risk.

A NEPA reevaluation was also completed comparing the impacts from the composite deck truss bridge design to the impacts from the bridge designs evaluated in the DEIS (the DEIS did not specify a bridge type but instead defined the bridge based on a size, height, and width envelope). The reevaluation found that impacts from the composite deck truss bridge design would be similar, and FTA and FHWA determined that a supplemental DEIS was not necessary.

ODOT and WSDOT considered many factors to make the decision on preferred bridge type including, but not limited to, reducing and eliminating risks to project schedule and budget, affordability, impacts, and securing funding. The public, stakeholders, project advisory committees, other project sponsors, and local elected officials commented on the bridge type options. Listening sessions were held to receive public comment. On April 25, 2011, the Oregon and Washington governors announced the selection of the composite deck truss as the preferred bridge type which was subsequently adopted by the Project Sponsors.

### **Tolling**

Tolling of cars and trucks that use the I-5 river crossing is included in the SA as a proposed method to help fund the project and to encourage the use of alternative modes of transportation. The DEIS evaluated four tolling scenarios: no toll, "standard" variable tolling rate on the I-5 crossing, "higher" variable tolling rate on the I-5 crossing, and a "standard" variable tolling rate on both the I-5 and I-205 crossings. The "standard" variable tolling rate evaluated tolls ranging from \$1 to \$2 each direction, while the "higher" variable tolling rate ranged from \$1 to \$2.50.

The FEIS used the "standard" variable tolling rate for the financial analysis. The toll would be included as a demand management and financing tool. The FEIS analyzed a variable toll rate, and the higher toll during peak hours would encourage travel during off-peak hours. Additionally, tolling provides a funding stream that will be used toward construction of the project.

The SA is expected to apply a toll on vehicles using the I-5 crossing.

**Bridge Height**

The existing Columbia River bridge primary channel provides a vertical clearance for marine vessels of 40 feet above zero stage of the Columbia River Datum (CRD). The alternate barge channel has a vertical clearance of 69 feet CRD. The primary channel also has a liftspan that can open to provide 179 feet CRD of vertical clearance. Bridge lifts cause substantial I-5 traffic congestion and result in more traffic crashes, and are therefore restricted to off-peak traffic periods.

The SA includes a fixed span, mid-level replacement bridge with a vertical clearance of 95 feet CRD. The proposed bridge height and pier configuration were based on input from and coordination with the United States Coast Guard (USCG), Federal Aviation Administration, the river users in the area (including a boat survey to identify the types of marine vessels that cross under the bridge, and a preliminary hearing for river users by the USCG), a robust public process, and technical and qualitative analysis, as noted in the FEIS and supporting documents. A mid-level bridge configuration is part of the SA because it meets all relevant elements of the project purpose and need, provides benefits to nearly all river users crossing under the bridge, and results in the best balance of minimizing impacts and providing benefits.

The project conducted a series of studies and stakeholder outreach to determine the appropriate navigation clearance for the proposed bridges. Many factors were considered in these studies, including marine vessel height, the safe and efficient operation of aviation, highway, light rail, and the multi-use path for bicycles and pedestrians. The project considered low-level, mid-level and high-level bridge configurations during the pre-DEIS screening. Analysis found that high-level bridges would not adequately meet the purpose and need due to the effects on aviation safety (a high level bridge would substantially increase encroachment into the protected airspace of Pearson Field). A low-level bridge would not adequately address navigation or highway safety. Other constraints for a high-level bridge include concerns related to safe and functional operation of the highway, transit, and multi-use path facilities. A mid-level bridge (95 feet CRD vertical clearance) balances the various needs, allowing the main river crossing structure to make much easier connections to interchanges, surface streets, and transit stations in a safe manner, consistent with design standards, and with lower environmental impacts. A higher bridge would include additional hazards to aviation, operational and safety impacts to highway, operational, safety and maintenance impacts to transit, and increased environmental impacts, including increased impacts to Section 4(f) properties that the U.S. Department of Transportation has a duty to minimize.

As noted in the FEIS, the 95 foot CRD bridge height would serve and benefit nearly all marine vessels and loads, but would constrain a small portion of river use by three known river users. Much of this impact could be offset by partially disassembling the infrequent tall loads or masts. Other mitigation measures will be evaluated in the USCG Section 9 permit process (see attached Appendix A - Project Mitigation Commitments). Providing a high-level crossing could allow these occasional vessels and loads to pass under the bridge without disassembling, but this option was not advanced because it would result in reduced ability to meet the project purpose and need, additional hazards to aviation safety, decreased functionality for highway and transit service, added construction costs, and added impacts on significant historic and cultural resources and local traffic circulation. For these reasons, a mid-level bridge was selected to improve aviation safety; and accommodate and balance the reasonable need for navigation with

the needs of all other users in the area including air, highway, transit, bicycle and pedestrian as noted in the Project's Purpose and Need.

### **Light Rail Alignment over Hayden Island**

The DEIS evaluated two transit alignments over Hayden Island, both on the west side of I-5. One option aligned transit adjacent to the I-5 interchange, and another offset it approximately 450 feet west of the I-5 interchange. Since the publication of the DEIS, the City of Portland completed a separate planning and outreach process that yielded a Hayden Island Plan, which includes a vision for how the incorporated portion of this island should develop and/or redevelop. This plan includes a preference for the light rail transit alignment adjacent to the I-5 interchange. The SA design includes the adjacent transit alignment on Hayden Island.

### **Light Rail Alignment in Downtown Vancouver**

The SA includes a couplet for the north-south transit alignment through downtown Vancouver. The DEIS evaluated two transit alignment options through downtown Vancouver—two-way travel on Washington Street, or a couplet with northbound travel on Broadway Street and southbound travel on Washington Street. Following the adoption of the LPA in the summer of 2008, the project formed the Vancouver Working Group (VWG), composed of residents, business owners, transit-dependent populations, and commuters in the Vancouver area. This group met regularly to provide feedback, invite public input, and develop recommendations to the Project, City of Vancouver, and C-TRAN on preferred transit alignments and proposed station locations. Project staff, working with the VWG, identified several advantages of the couplet, including better support for development potential in downtown and the ability to accommodate more uses on these streets than could be afforded with a two-way transit guideway on Washington Street. On March 19, 2009, the VWG recommended that light rail run on the couplet on Washington and Broadway Streets through downtown Vancouver. Project Sponsors accepted the recommendation and the Washington-Broadway couplet is included in the SA.

### **Light Rail Alignment East-West to Clark College**

The EIS evaluated two east-west transit alignment options to connect the north-south downtown Vancouver alignment to the light rail transit terminus at the Clark Park and Ride: two-way travel on McLoughlin Boulevard, and two-way travel on 16th Street. The VWG explored McLoughlin Boulevard, 16th Street, and 17th Street as possible alternative east-west connections. The 17th Street alignment was not analyzed in the DEIS, but a NEPA reevaluation was completed in which FTA and FHWA determined that impacts from the 17th Street alignment were within the range of impacts from the 16th Street and McLoughlin alignments. Following approximately 5 months of coordination, in addition to public open houses and walking tours, the VWG was nearly evenly split between the 17th Street and McLoughlin alignments as the east-west connection to the Clark Park and Ride. The 16th Street alignment was dropped from considerations due to cost, speed, and safety considerations.

Upon learning about the VWG's split vote of the east-west alignment, members of Vancouver City Council and C-TRAN's Board of Directors advised the Project to more thoroughly investigate both the McLoughlin Boulevard and 17th Street alignments. From November 2009 until February 2010, Project conducted extensive technical work and public outreach regarding these alignment options. Based on this additional research and public input, the City of

Vancouver Council (March 22, 2010) and C-TRAN Board of Directors (April 13, 2010) voted to adopt the 17th Street alignment.

### **Station and Park and Ride Locations**

The EIS evaluated station locations associated with multiple light rail alignments. In Vancouver, the Broadway-Washington couplet alignment in the DEIS included a pair of stations near 6th Street, a pair of stations between 11th and 12th Streets, a pair of stations between 15th and 16th Streets, and a station near the Clark Park and Ride. Additional investigation completed since the DEIS found design constraints that required the relocation of two pairs of stations. The stations near 6th Street were combined into one station between 5th and 6th Streets. This move was made so the stations would not need to be placed on a curve, which requires closing traffic, and so the combined station could be placed as close as possible to the Columbia Park and Ride. The stations between 11th and 12th Streets in the DEIS were moved to between 9th and Evergreen Streets. This move was based on proximity to planned development in downtown Vancouver, including the Riverwest development, much of which is expected to occur in the southern part of downtown.

On Hayden Island, transit station location was determined after meetings with the City of Portland, TriMet, and discussions with the Portland Working Group.

The EIS also evaluated multiple park and ride locations associated with the transit alignments. Since publication of the DEIS, the light rail alignment has been defined and three park and ride locations (Clark, Mill and Columbia) selected from the DEIS options. These three park and ride locations were evaluated in the DEIS. Expected utilization of parking spaces, cost-effectiveness, transit operations, and traffic modeling were considered by project staff when recommending the proposed park and ride locations. Upon selection of the Clark College area as the terminus of the light rail alignment, it was determined that three park and ride stations in their proposed locations would be the most cost-effective option. The decisions on station and park and ride locations were made in coordination with the City of Vancouver and C-TRAN.

### **Cost Reduction Measures**

Below are elements of the project design that were modified from the original design of the LPA to reduce construction costs. These modifications would reduce some of the project benefits but would still allow the project to meet the Purpose and Need. None of these design changes would result in any additional significant environmental impacts.

These cost reduction measures include:

*Retain the existing North Portland Harbor bridge:* This would utilize the existing North Portland Harbor bridge for mainline I-5 traffic. By reusing the existing bridge, the freeway across Hayden Island would be shifted slightly east from the designs evaluated in the DEIS.

*Lower the Hayden Island interchange onto fill and retaining walls:* The DEIS alternatives assumed the Hayden Island interchange ramps and freeway mainline would be on fill. However, after the DEIS, the project team investigated the option of supporting the interchange on structures. That option would be more expensive and was not forwarded to the FEIS.

*Eliminate one proposed northbound add/drop lane on I-5 from SR 14 to SR 500:* The connection from SR 14 to the I-5 northbound collector-distributor would be one lane, rather than two lanes. This slightly reduces cost, actually provides for a smoother transition on the collector-distributor

by reducing the number of merging movements, and provides preference to the I-5 traffic. The result is one less add/drop lane on northbound I-5 between the SR 14 and the SR 500 interchanges. The structures over I-5 and the retaining walls on either side of I-5 would be constructed to allow this additional lane in the future, but this lane would not be built as part of the project.

## Potential Construction Phasing

It is common for large projects to be built in phases to match the availability and timing of construction funds. If any phasing occurs outside what is contemplated in the FEIS, an environmental re-evaluation will take place to determine whether any new significant environmental impacts would occur that would require supplemental NEPA evaluation and documentation.

## Project Mitigation Commitments

Attachment A, which is incorporated herein by reference, describes the mitigation measures that will be implemented with the SA under this ROD and may be relied upon by other federal permits or approvals from agencies including the USCG, the U.S. Army Corps of Engineers (USACE), Federal Aviation Administration (FAA), National Marine Fisheries Service (NMFS), and the U.S. Department of the Interior. The mitigation commitments were identified in the FEIS and updated, as necessary, for this ROD. Implementation of the mitigation measures in Attachment A are material conditions of this ROD and will be incorporated in any funding agreement or approval that the FTA or FHWA may provide for the construction of the Project. FTA and FHWA find that with the accomplishment of these mitigation commitments, the project sponsors will have taken all reasonable, prudent and feasible means to avoid or minimize impacts from the Project.

Some mitigation measures were suggested, but were not found to be relevant, practicable, useful or prudent, including:

- *Establish a community enhancement fund.* In the last three years the CRC project team, the PSC, and CRC advisory groups have focused on incorporating a wide range of community enhancements into the project. The project has looked for ways to leverage the highway and transit investments into additional improvements for project neighbors and local communities. These improvements are beyond the benefits identified as the Project's Purpose and Need. These tangible improvements include new local roads and improved local flow and connections for Hayden Island residents; better bike and pedestrian access to the improved facilities; new bike and pedestrian trails; and a separate bridge for local auto access from North Portland to Hayden Island. These enhancement elements have been included based on input from the community.

The project team remains committed to aggressively maximizing and leveraging resources to bring additional benefits and improvements to our community. Two options have been identified for further exploration, both include a financial set aside of a specific amount dedicated to a specific purpose. One approach is a project specific community enhancement fund. There is some history with such an approach—the Delta Park 1-5 widening project (2006) and Metro's solid waste program (1991) are two examples. The other approach is a different concept, a regional fund established by the state to benefit the neighborhoods and

communities in close proximity to I-5 and the Project area. Both approaches have been successfully implemented in the Portland region and will help inform this effort. Both approaches have limitations and legal restrictions associated with anticipated funding sources. Both will require legislative support.

- *Identify project area air quality sensitive receptor locations in the ROD and ensure that mitigation commitments address these areas.* The project is not identifying sensitive receptors in the ROD but will meet the intent of the recommendation by applying rigorous requirements for minimizing emissions throughout the project whether sensitive receptors are in the area or not. As project design advances, measures to minimize air quality impacts to sensitive receptors will be incorporated, such as requiring the construction contractor to locate emissions-producing sources away from sensitive receptors, as much as practicable.
- *Include commitments for additional emissions controls for construction equipment in the ROD, such as, requiring retrofitting of construction equipment.* ODOT and WSDOT are committing to air quality mitigation during construction. Their goal is to reduce construction-related emissions in the most efficient means possible. Many strategies to minimize the effects of emissions during construction would be developed during the design phase. Therefore, it is not prudent to commit to specific measures now that may not be as effective as other measures.

The project has not committed to compel contractors to install emission control devices beyond those legally required because (1) the analysis to-date indicates that construction activities are not likely to result in air quality violations, (2) additional control technologies can be cost prohibitive to many smaller contractors and could eliminate their ability to pursue work on the project, (3) the added costs of this technology may provide greater benefit if directed toward other measures to minimize construction-related impacts, and (4) the technological and regulatory environment are evolving relatively rapidly, so it would not be prudent to commit to any particular technology at this time. The project has committed to require contractors to use rigorous dust control practices and operational measures to reduce emissions during construction, as described in this ROD. The project has also committed to continue to monitor and evaluate advances in emission control technology and related regulations, to further evaluate how added requirements might affect contracting and costs, and to finalize decisions regarding any additional emission controls during final design.

Stationary sources such as concrete and asphalt mix plants are generally required to obtain air permits, from the Oregon Department of Environmental Quality (DEQ) or the Southwest Clean Air Agency (SWCAA), and to comply with regulations to control dust and other pollutant emissions. As a result, their operations are typically well controlled and do not require additional project-specific mitigation measures.

- *Include baseline health data in the ROD, and use it to inform further mitigation commitments with respect to asthma and other health impacts from the project and cumulative effects.* The Project is improving air quality in the long term, compared to the no-build alternative, and is not forecast to result in any violations of air quality standards either during construction or over the long term. Therefore, the Project is not committing to additional mitigation for air quality related health impacts. Baseline health data are not

needed to estimate the air quality impacts, and are not available at the level of detail or relevance to be used to further inform impacts or mitigation. However, the Project is committed to implementing measures, above and beyond regulatory requirements, to reduce construction-related emissions.

- *Consider providing free or discounted transponders and transit passes to low income (environmental justice) residents.* Impacts from the addition of a toll would be greatly offset by increased transit service and reliability, improved safety and reduced congestion on the highway, and improvements to the bike and pedestrian network, giving low income residents more reliable and safer options of transportation across the river. This also improves access to employment, education, housing and services. As addressed in the FEIS, the toll would not constitute a disproportionately high and adverse impact to environmental justice populations. The project will continue to explore means of offsetting the impact of tolls, including transponder acquisition. There are some local discounted transit passes for low-income populations, and the specifics of this program will be assessed as the project continues toward opening.
- *Acknowledge and propose mitigation for potential long-term/permanent social, economic, and/or environmental effects due to phased implementation.* The FEIS evaluates a reasonable phasing option, and identifies impacts and mitigation for that phasing option. The timing of funding, however, cannot be known at this time, and therefore exact phasing will not be known until funding is known, which occurs after the ROD. If any phasing occurs outside what is contemplated in the FEIS, an environmental re-evaluation will take place to determine if it would result in any meaningful changes in impacts, and how they would change the necessary mitigation.
- *Mitigate impacts to river navigation from the reduction of vertical clearance to 95 feet by increasing the vertical clearance to 125 feet.* Increasing the height of the proposed Columbia River bridges to provide 125 feet of vertical clearance has many impacts to the safety, cost and impacts of the overall project. These impacts include additional hazards to aviation, operational and safety impacts to the highway, operational, safety and maintenance impacts to transit, and increased environmental impacts, including increased impacts to Section 4(f) properties that the U.S. Department of Transportation has a duty to minimize. The compromises result in a reduced benefit for five out of the six specific needs addressed in the project's Purpose and Need Statement when compared to the current alternative. An initial assessment of all known and quantifiable costs attributable to the increase in vertical clearance for navigation ranges from approximately \$105M to \$150M.

The selection of the crossing height (low, mid, or high level) for the proposed bridges over the Columbia River and the placement of the piers are affected by three primary constraints: aviation, navigation, and project geometry (i.e., roadway/transit/multi-use path).

In evaluating crossing level and span length with respect to aviation, navigation, and project geometry shows that the mid-level structure would beneficially affect aviation and navigation. While the mid-level bridge does not favor any single interest, it benefits all interests in an equitable fashion with respect to the aviation and navigation constraints. This was the primary reason the mid-level crossing was selected by the Columbia River

Crossing Task Force and validated through six years of public input, including 27,000 public outreach contacts at about 900 events.

The project team conducted a series of studies and stakeholder outreach efforts to determine the appropriate navigation clearance for the proposed bridges. Many factors were considered in these studies. In addition to marine vessel height, the safe and efficient operation of aviation (Pearson Field), highway, light rail, and the multi-use path (bicycle and pedestrian) were considered.

The CRC project team conducted studies of current river usage and validated these studies through stakeholder outreach to determine what clearances are required by current river users. These efforts included a boat survey to identify the types of vessels that use the Columbia River at the project location, their frequency of usage, and required navigation clearance. Additionally, a series of telephone and/or face-to-face interviews were conducted with river users to validate and update the information contained in the boat survey. Along with these efforts, the USCG held a preliminary hearing on the Columbia River Crossing project to solicit comments from river users.

The information gathered from the above-mentioned studies and stakeholder outreach was considered in conjunction with the operational statutes for nearby Pearson Field and with requirements for safe and efficient operation of the proposed highway, light rail, and multi-use path facilities. Taking all of these considerations into account, it was determined that a 95-foot vertical clearance will allow all but three known and infrequent river users to navigate beneath the bridge at all times of year. Some of the users could partially disassemble so they could pass beneath a 95-foot vertical clearance.

- *Mitigate for impacts to aquatic species and habitats by restoring habitat nearer to the project area, instead of at Hood River and Lewis River.* As part of the Biological Assessment (BA) preparation, and in anticipation of two state and one federal permit, the CRC project team convened a working group (Conservation Measures Working Group) of permitting agencies that included NOAA Fisheries (NMFS), U.S. Fish and Wildlife Service (USFWS), the Oregon Department of Fish and Wildlife (ODFW) and the Washington Department of Fish and Wildlife (WDFW) to evaluate possible aquatic habitat restoration projects to offset adverse impacts. The working group developed goals, objectives and criteria that potential restoration projects within the Columbia River Basin would have to meet to qualify as potential mitigation for Endangered Species Act (ESA) impacts from the Project, as described in the CRC Guide to Project Sponsored Conservation (Guide). Solicitations for information were sent to groups conducting, or involved with, aquatic habitat restoration projects throughout the Columbia River Basin, including all tribes. This effort resulted in a list of over 100 potential aquatic habitat restoration projects that would provide habitat benefits to specific ESA-listed salmonid runs. All project descriptions received from CRC's request for aquatic habitat restoration projects in the Columbia River Basin were compared against the Guide. The Lewis River Confluence Restoration Project in Washington and the Hood River Side Channel Restoration at river mile 1.0 in Oregon best met all of the Guide's goals and project selection criteria and obtained concurrence from the Conservation Measures Working Group members, as well as from staff from the Oregon Department of State Lands, USACE and the Environmental Protection Agency (EPA). There was general agreement



from the regulatory and natural resource agencies that these projects would provide significant benefit to native fishes and aquatic resources and more than adequately compensate for the adverse environmental effects from the Project.

## **Mitigation Monitoring and Enforcement**

The Project Sponsors will establish and conduct a mitigation monitoring program during final design, construction, and operations with the goals of (1) helping the project fulfill the commitments set forth in the Environmental Review Documents and this ROD; and (2) giving FHWA and FTA a means of overseeing the effectiveness of and compliance with their mitigation requirements. The monitoring program will consist of four activities:

- Maintaining a current list or database matrix of mitigation commitments by the project.
- Tracking the status of implementation of the mitigation measures by the project.
- Reporting on the effectiveness of the mitigation measures implemented.
- Preparing and submitting quarterly reports to FHWA and FTA during the construction phase and then thereafter on a regular basis as determined by FTA and FHWA.

The environmental commitments shall be entered into a commitment tracking database matrix with the following information: FEIS references, a description of the measure, and the responsible party. Commitments that are the responsibility of contractors will be written in the contract specifications in language that is biddable by contractors, buildable in practice, and enforceable. Once responsibilities are assigned, the progress against each measure is tracked in the commitment tracking system. This ensures that the contractors and Project staff clearly know their respective responsibilities and assures the permitting agency that Project staff is fulfilling its commitments. The database matrix will function as the Project's single point of environmental compliance tracking for the Project. The status of each environmental commitment will be monitored and updated regularly by an environmental permitting specialist.

The CRC Project Environmental Manager will meet on a regular basis with design staff and will regularly review project designs to ensure coordination of design development with environmental commitments. The Environmental Manager will coordinate with the resource agencies to ensure early and constant communications of issues and requirements.

During the construction phase, ODOT and WSDOT will use a proactive approach for monitoring and inspecting field work to help guard against environmental violations that could potentially introduce cost and schedule impacts. Requirements and procedures will be developed during final design and described in contract provisions.

## **Determinations and Findings**

The following sections summarize legal compliance with the relevant environmental laws:

### **National Environmental Policy Act**

The National Environmental Policy Act, (NEPA) found at 42 U.S.C. 4371 et seq., requires that federal agencies evaluate the environmental impacts of their actions and integrate such evaluations into their decision-making processes, and that each federal department and agency affecting the environment implement appropriate policies. The environmental record for the

Columbia River Crossing project includes the previously referenced Columbia River Crossing DEIS (May 2008), the 17th Street Technical Memorandum (March 2010), Composite Deck Truss Bridge Type NEPA Re-evaluation (March 2011), Steel Bridge Documented Categorical Exclusion (November 2010), Environmental NEPA Re-evaluation (May 2011), and the Columbia River Crossing FEIS (September 2011). These documents, all incorporated herein by reference, represent the detailed statements required by NEPA 49 U.S.C. Section 5324(b), 23 U.S.C. 109(h).

Having carefully considered the environmental record noted above and findings below, the mitigation measures as required in Appendix A herein, and the written and oral comments offered by other agencies and the public on this record, and pursuant to 49 U.S.C. Section 5324(b) for consideration of economic, social, and, environmental interests, FTA and FHWA have determined that:

- The environmental documents include a record of the environmental impact of the proposal; adverse environmental effects that cannot be avoided; alternatives to the proposal; and irreversible and irretrievable impacts on the environment.
- FTA and FHWA have cooperated and consulted with the Secretary of the Interior and the Administrator of the Environmental Protection Agency on the Project;
- The Project has undertaken extensive outreach efforts and many opportunities for public and agency comment have been provided.
- Public hearings on the project have been held and FTA and FHWA have reviewed each transcript submitted under 49 U.S.C. 5323(b) and make the following findings:
  - (a) an adequate opportunity to present views was given to all parties having a significant economic, social, or environmental interest;
  - (b) the preservation and enhancement of the environment and the interest of the community in which the project is located were considered;
  - (c) all reasonable steps have been taken to minimize adverse environmental effects of the proposed project;
  - (d) where adverse environmental effects are likely to result from the project, no feasible and prudent alternative to the effect exists and all reasonable steps have been taken to minimize the effect;
  - (e) the Project meets its Purpose and Need, and the requirements of NEPA and 49 U.S.C. §§ 5323(b) and 5324(b) have been met.

### **Clean Air Act**

The Project is subject to conformity requirements imposed by the Clean Air Act (CAA) found at 42 U.S.C. 7401 et seq. The CAA requires that transportation projects conform to the purposes of State Implementation Plans and Maintenance Plans for air quality. Conformity means that the transportation project will not produce new violations of the National Ambient Air Quality Standards (NAAQS) established by EPA, worsen existing violations, or delay timely attainment of NAAQS.

The EPA conformity regulation (40 CFR Part 93) establishes criteria that a transportation project must meet in order to be found by the FHWA and FTA to conform to Implementation and

Maintenance Plans. The conformity criteria that the Project is subject to are that the project must be included in a conforming Regional Transportation Plan and Regional Transportation Improvement Program, and that the project not cause or contribute to any localized violation of NAAQS as determined through “hot-spot” analysis. The Project is located within the Portland and Vancouver carbon monoxide (CO) maintenance areas. Because of that, both the DEQ and SWCAA have individual Maintenance Plans that the Project must be in conformance with.

As described in Chapter 3.10 of the FEIS, federal approval for the conformity determination for Metro’s 2035 Regional Transportation Plan (RTP) and the 2008-2011 Metropolitan Transportation Improvement Plan (MTIP) was provided by FHWA and FTA on September 20, 2010. Metro included a placeholder assumption for the Project in the regional conformity determination they conducted, and the SA is consistent with that placeholder assumption. The Vancouver Air Quality Maintenance Area Second 10-Year Limited Carbon Monoxide Maintenance Plan received a finding of adequacy from EPA in December 2007. As a result, regional conformity demonstration is no longer required for projects in the Vancouver area. As also described in Chapter 3.10 of the FEIS, “hot-spot” analysis of CO levels at congested intersections in Portland and Vancouver was performed and demonstrated localized compliance with federal and state CO standards. Under the transportation conformity rules found at 40 CFR 93.123 (c)(5), CO, PM<sub>10</sub>, and PM<sub>2.5</sub> hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established “Guideline” methods. Temporary increases are defined as those which occur only during the construction phase and last 5 years or fewer at any individual site.

Although construction will last more than 5 years, project construction activities at any one site are not expected to last more than 5 years. Thus, a CO hot-spot analysis was not conducted. If, as more information is known, construction at any one staging site is expected to last more than 5 years, a hot-spot analysis will be completed.

Additionally, ODOT and WSDOT will pursue emerging technologies for cleaner construction emissions, such as the use of diesel scrubbers for compatible equipment, and continue to encourage and require those types of technologies as bidding laws allow.

Because the Project is a part of the conforming regional transportation plans (RTP and MTIP) for the Portland metropolitan area, and because the Project will not create new localized violations of NAAQS, worsen an existing violation, or delay timely attainment of NAAQS, the FHWA and FTA find that the Project conforms with the Portland and Vancouver Maintenance Plans in accordance with EPA regulations governing such determinations.

### **Clean Water Act’s Water Quality Requirements**

The Clean Water Act 33 U.S.C. 1251 et seq. establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The Clean Water Act made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. EPA’s National Pollutant Discharge Elimination System (NPDES) permit program controls discharges. The Clean Water Act also regulates polluted runoff to surface waters. While the Clean Water Act is a federal regulation, review and approval of permits for NPDES and water quality certifications have been assigned to DEQ and the Washington State Department of Ecology in Oregon and Washington, respectively.

To mitigate the effect of pollutants in runoff from additional impervious surface area, the Project team has prepared a conceptual stormwater management design. The design was prepared to meet the requirements of ODOT and WSDOT for those portions of the project along I-5. After consultation with and agreement from WSDOT and State of Washington regulatory agencies, the project has adopted ODOT's technical memorandum on stormwater quality on a project-wide basis to provide a standard approach to determining types of water quality facilities. The memorandum is the result of a collaborative effort by ODOT, FHWA, and the following natural resource agencies: NMFS, DEQ, USFWS, EPA, and ODFW. The decision to use this approach on the Project has been endorsed by WSDOT and the Washington State Department of Ecology.

The Cities of Portland's and Vancouver's regulations, found in the 2008 City of Portland Stormwater Management Manual and 2005 Stormwater Management Manual for Western Washington, respectively, will be implemented for those portions of the project along city-managed roads.

With the use of state and local regulations and standards, and conformance with the WSDOT, ODOT, City of Vancouver, and City of Portland NPDES permits, FHWA and FTA find that the Clean Water Act requirements have been addressed by the Project to the level necessary to complete the NEPA analysis.

### **Navigation and Navigable Waters, the General Bridge Act of 1946, and Section 9 of the Rivers and Harbors Act**

33 U.S.C. Section 491 (Navigation and Navigable Waters) states, in part, that for any persons proposing "to construct and maintain a bridge across or over any of the navigable waters of the United States, such bridge shall not be built or commenced until the plans and specifications for its construction, together with such drawings of the proposed construction and such map of the proposed location as may be required for a full understanding of the subject, have been submitted to the Secretary of Transportation for the Secretary's approval..."

The General Bridge Act of 1946, found at 33 U.S.C. §§ 9 and 11 and in regulations 33 CFR Sections 114 and 115, was enacted to preserve the public right of navigation and prevent interference with interstate and foreign commerce. This act requires a USCG bridge permit to construct a new bridge or reconstruct or modify an existing bridge over navigable waters of the United States. This permit is often referred to as a Section 9 permit under the Rivers and Harbors Act; however, the primary authority relied on by the USCG now for issuance of such permits is the General Bridge Act of 1946. 33 U.S.C. Section 512 and the implementing regulation at 33 CFR Section 116.01 also provide that in evaluating bridge alternations, the Secretary shall provide due regard to the necessity of free and unobstructed water navigation and to the "necessities of the rail or highway traffic".

The Project conducted a series of studies and stakeholder outreach efforts to determine the appropriate navigation clearance for the proposed bridges. Many factors were considered in these studies. The Project met on a number of occasions with representatives of the U.S. Coast Guard to discuss the project and bridge height. The U.S. Coast Guard, as the Project NEPA cooperating agency, was also provided an administrative review copies of the DEIS and FEIS prior to publication for review and comment. In addition to marine vessel height, the safe and efficient operation of aviation (Pearson Field), highway, light rail and the multi-use path (bicycle and pedestrian) were considered.

Prior to engaging in bridge construction or demolition activities, the Project will submit the necessary plans, specifications, drawings, and maps to the Secretary of Transportation for the Secretary's approval. The Project will apply for a Section 9 permit and will ensure that the Project complies with all permit conditions. Accordingly, FHWA and FTA find that Title 33 Navigation and Navigable Waters, the General Bridge Act of 1946 and Sections 9 and 11 of the U.S. Rivers and Harbors Act have been addressed to the level necessary to complete the Project NEPA analysis.

### **Section 14 of the Rivers and Harbors Act and 33 U.S.C. Section 408 Civil Works Alteration Permit**

33 U.S.C. 408 prohibits persons from impairing "the usefulness of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States," and approval of USACE is required for any "alteration or permanent occupation or use" of such facilities. The Project includes new and modified structures on existing flood control levees and ground alteration within established levee zones. The Project has initiated discussions with USACE, and has indicated that it will apply for a Section 408 Civil Works Alteration Permit and will comply with all permit requirements. Accordingly, FHWA and FTA find that Section 14 of the Rivers and Harbors Act as codified in 33 U.S.C. 408 has been addressed to the level necessary to complete the NEPA analysis.

### **The Clean Water Act, Executive Order 11990 Protection of Wetlands and the role of NEPA**

NEPA, the Clean Water Act (Sections 401 and 404), and Executive Order 11990 act to guide and regulate impacts to wetlands. NEPA establishes the process for evaluating the environmental impacts of projects such as the CRC project, including impacts to wetlands. This ROD concludes the NEPA process, which included the publication of the Draft and Final Environmental Impact Statements for the Project, which describe the Project's overall efforts to avoid, minimize, and mitigate for wetland impacts as required by other laws and policies. Executive Order 11990 requires federal agencies to minimize the loss or degradation of wetlands and enhance their natural state. The Clean Water Act, administered by USACE and EPA, regulates the placement of dredge or fill material into the waters of the United States, including wetlands under Section 404, and ensures that federally permitted projects are consistent with state water quality standards under Section 401.

As described in Chapter 3.15 of the FEIS, the Project footprint would not encroach upon any delineated wetlands and would not discharge untreated stormwater runoff into any wetlands. Based on mapped soils, aerial photographs, and observations from the public right-of-way, a wetland may exist between Vancouver Way and Marine Drive (identified as the potential Vancouver Way Wetland on FEIS Exhibit 3.15-3), and it may be impacted by the Project. However, because Project staff did not receive permission from the property owner to enter this property, the presence of a wetland could not be verified. Following the ROD, ODOT and FHWA will secure right-of-entry to the property containing the potential Vancouver Way Wetland in order to confirm the presence or absence of a wetland at this location. If presence is confirmed, then the Project would comply with the relevant regulatory and permitting requirements, including avoiding, minimizing, and mitigating wetland impacts. Accordingly, FHWA and FTA find that the Project has addressed wetland issues pertaining to Sections 404

and 401 of the Clean Water Act, NEPA, and Executive Order 11990 to the level necessary to complete the NEPA analysis.

NEPA also establishes the process for evaluating the environmental impacts of projects, such as CRC, on waterways of the United States. The evaluation is described in Chapter 3.15 of the FEIS. And, as with wetlands, Section 404 of the Clean Water Act regulates the placement of dredge or fill material into jurisdictional waters as well as jurisdictional ditches.

As required under Section 404, mitigation is required for the net 3,100 cubic yards of water in the Columbia River that the Project will displace, as well as the potential impacts to jurisdictional ditches that may occur. ODOT and WSDOT will be the applicants for necessary permits. The project would include mitigation plans and actions to identify and implement habitat protection, restoration, and enhancement as appropriate. These actions are intended to provide a net conservation benefit for the unavoidable impacts bridge construction and demolition have on species, habitats, and resource sites. Mitigation for impacts to jurisdictional ditches, if any occur, will likely involve reconstruction of the ditches and re-vegetation with native plants. Accordingly, FHWA and FTA find that NEPA and the Clean Water Act, as they relate to impacts to jurisdictional waters, have been addressed to the level necessary to complete the NEPA analysis.

### **Rivers and Harbors Act (Section 10 Waterway Structures Permit)**

The Rivers and Harbors Act of 1899, codified at 33 U.S.C. 403 and regulations at 33 CFR 322, was passed to regulate the use, administration, and navigation on the navigable waters of the United States. Pursuant to Section 10 of the Rivers and Harbors Act, any activity or structure that obstructs or alters a navigable water of the United States must be permitted by USACE. Section 10 is managed generally as a companion to Section 404 of the Clean Water Act. Whereas Section 404 of the Clean Water Act regulates any dredged or fill material placed in United States waters, Section 10 regulates actual structures such as piling and stormwater outfalls, and only applies to navigable United States waters and not to associated non-navigable streams, wetlands, or drainage features.

Both the replacement bridge structures in the main stem of the Columbia River and the new bridge structures in the North Portland Harbor require a Section 10 authorization. The bridge structures in navigable United States waters are under the jurisdiction of USCG and the General Bridge Act of 1946. The Project will apply for a Section 10 authorization using the Joint Aquatic Resources Permit Application (JARPA) and USACE Joint Permit Application (JPA) forms. The Project will ensure that the Project complies with all permit conditions. Accordingly, FHWA and FTA find that Section 10 of the Rivers and Harbors Act has been addressed to the level necessary to complete the NEPA analysis.

### **The Safe Drinking Water Act of 1974 (Sole Source Aquifer)**

The Safe Drinking Water Act of 1974, found at 42 U.S.C. Chapter 6A, Subchapter 12, Part C, Section 300H, requires that projects that are to receive “federal financial assistance” and which have the potential to contaminate an aquifer “so as to create a significant hazard to public health” are subject to EPA review and approval. North of the Columbia River, the I-5 corridor and other project facilities are underlain by the Troutdale Aquifer, an EPA designated Sole Source Aquifer (SSA) for the Vancouver area. The Project uses federal funds and was, therefore, required to produce an SSA report discussing potential groundwater impacts. This SSA report is included as

Appendix F of the Hazardous Materials Technical Report supporting the FEIS, and was submitted to EPA in 2009.

Pages 7-1 and 7-2 of the SSA report include extensive mitigation procedures designed to help ensure the protection of the Troutdale SSA. The EPA reviewed the SSA report, and in July of 2010 provided conditional approval to the Project. The conditions included a determination that the Project needs additional monitoring and reporting to ensure the Project does not pose a risk for contaminating the aquifer and may require additional mitigation measures. The project sponsors will comply with the additional monitoring, reporting and mitigation requirements required by EPA, as well as implement the mitigation listed in the SSA report. WSDOT would be responsible for any monitoring that is required beyond the duration of the Project construction. Accordingly, FHWA and FTA find that the Safe Drinking Water Act has been addressed to the level necessary to complete the NEPA analysis.

### **Endangered Species Act**

The Endangered Species Act (ESA) of 1973, codified at 16 U.S.C. 1531 et seq., provides a means to conserve the ecosystems that threatened and endangered species depend on and a program to conserve such species. The ESA requires federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence or direct mortality of any listed species or result in destruction or adverse modification to the critical habitat of listed species. This requirement is fulfilled by consultation and review of the proposed actions, and related mitigation, with the appropriate agency responsible for the conservation of the affected species.

The ESA consultation requirements were implemented for the Project by FHWA and FTA through formal consultation with NMFS and informal consultation with USFWS, and were formally initiated with submittal of the project's Biological Assessment (BA) on June 24, 2010. During preparation of the BA, regular coordination meetings occurred between NMFS, FHWA, FTA, WDFW, ODFW and Project biologists, including briefing sessions, telephone updates, and periodic review drafts.

ESA-related approval of the project has been obtained through NMFS's issuance of a Biological Opinion (BO) and USFWS's issuance of a concurrence letter for threatened and endangered species and their habitats that may be affected by the project. NMFS has required in the BO that certain terms and conditions be met in order to provide clearance of the project. The BO requires that impact pile driving would be completed during an in-water work window between September 15 and April 15. There are limits on the sound levels of impact pile driving, as described in the BO. The BO was issued on January 19, 2011. The concurrence letter was issued by USFWS on August 27, 2010.

As described in Chapter 3.16 of the FEIS, the BO and USFWS's concurrence letter determined that permanent and temporary project actions may affect and would likely adversely affect listed Chinook (*Oncorhynchus tshawytscha*), sockeye (*Oncorhynchus nerka*), coho (*O. kisutch*), chum (*O. keta*), steelhead (*O. mykiss*), eulachon (*Thaleichthys pacificus*), and Steller sea lion (*Eumetopias jubatus*) and their designated critical habitat, if present. It was determined that the project may affect but would not likely adversely affect bull trout (*Salvelinus confluentus*), green sturgeon (*Acipenser medirostris*), and killer whale (*Orcinus orca*), and their designated critical habitat, if present. The Project would have no effect on listed plant species, as no listed plant

species occur within the Project footprint. The Project would not jeopardize the existence of any listed species, nor adversely modify or destroy critical habitat.

As required by Section 7 of the ESA, NMFS also provided an incidental “take” statement with the BO. The incidental take statement describes reasonable and prudent measures NMFS considers necessary or appropriate to minimize the impact of incidental take associated with the Project. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements, that the Project must comply with to carry out these reasonable and prudent measures. Accordingly, FHWA and FTA find that, with the incorporation of the terms and conditions contained in the BO into this ROD and with the issuance of a USFWS concurrence letter, the Section 7 consultation requirements have been met and ESA has been satisfactorily addressed.

NMFS proposed critical habitat for eulachon (*Thaleichthys pacificus*) on January 5, 2011. NMFS designated critical habitat, including portions of the project’s action area, on October 20, 2011. The final rule takes effect on December 19, 2011. After coordination with NMFS, FHWA and FTA sent correspondence to NMFS on November 28, 2011 stating their intention to reinstate consultation to address potential project effects on eulachon critical habitat.

Additionally, on January 10, 2011, NMFS proposed critical habitat for lower Columbia River coho salmon (*O. kisutch*). Proposed critical habitat is within the project’s action area. FHWA and FTA will consider the status of lower Columbia River coho salmon’s critical habitat at the time of the reinstatement of the eulachon critical habitat to determine the proper course of action for evaluating project effects to this habitat including whether its critical habitat has been formally designated

### **Magnuson-Stevens Fisheries Conservation Management Act**

The Magnuson-Stevens Act (MSFCMA) affords protection to Essential Fish Habitat (EFH), which may include streams, lakes, ponds, wetlands, other currently viable water bodies, and most of the habitat historically accessible to salmon. Under MSFCMA, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Of the fish species present in the project area, EFH applies only to Chinook and coho.

Consultation with NMFS on effects to EFH has been completed in conjunction with the Section 7 ESA consultation. NMFS determined that adverse effects to EFH from the Project would occur. Their findings are addressed in conjunction with the BO issued on January 19, 2011. Conservation recommendations were included in the NMFS findings. Accordingly, FHWA and FTA find that the MSFCMA has been satisfactorily addressed.

### **Marine Mammal Protection Act**

The Marine Mammal Protection Act, found at 16 U.S.C. 31 et seq., was enacted in 1972 and prohibits, with certain exceptions, the “take” of marine mammals in United States waters and by United States citizens on the high seas and the importation of marine mammals and marine mammal products into the United States.

Steller sea lions and California sea lions (*Zalophus californianus*) transit through the main project area during the spring on their way to and from feeding at Bonneville Dam, and harbor



seals (*Phoca vitulina*) also occur sporadically in low numbers in the main project area. These marine mammals are protected under the Marine Mammal Protection Act.

As described in Chapter 3.16 of the FEIS, the Project may include a “take” of sea lions and seals, in the form of incidental harassment during construction activity, including pile driving and pile removal. A Letter of Authorization (LOA) for long-term, incidental harassment of sea lions and seals is being sought from NMFS under the Marine Mammal Protection Act. The LOA entails a federal rule-making process and is addressing impacts on the environment through a separate NEPA process by NMFS between fall 2011 and spring 2012, with the LOA anticipated to be issued by fall 2012. Therefore, FHWA and FTA find that the Project has addressed the Marine Mammal Protection Act to the level necessary to complete the NEPA analysis.

### **Fish and Wildlife Coordination Act**

16 U.S.C. §§ 661-667 requires consultation with USFWS and state fish and wildlife agencies whenever waters of the channel of a body of water are modified by a federal department or agency, with a view to the conservation of wildlife resources. Through the Section 404 permit process, USACE will coordinate with USFWS and other state and federal fish and wildlife agencies regarding impacts to fish and wildlife resources. The Project will apply for a Section 404 permit, and as such, FHWA and FTA find that the Fish and Wildlife Coordination Act has been addressed to the level necessary to complete the NEPA analysis.

### **Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act**

The Migratory Bird Treaty Act, (16 U.S.C. §§ 703-712), prohibits the taking, killing, or possessing of native migratory birds, and the Bald and Golden Eagle Protection Act (16 U.S.C. § 668) prohibits the taking or possessing of bald or golden eagles. Bald eagles (*Haliaeetus leucocephalus*) use the Columbia River and environs to forage for fish and waterfowl, but no nesting or breeding sites are known within 1.0 mile of the project. Peregrine falcons (*Falco peregrinus*), protected under the Migratory Bird Treaty Act, are known to be present in the project area, and utilize the existing I-5 bridge structures year-round.

As described in Chapter 3.16 of the FEIS, construction activities would impact migratory birds, including peregrine falcons, through noise impacts and removal or degradation of habitat. Mitigation measures to address these impacts include impact avoidance and impact minimization. Impact avoidance would be addressed by timing vegetation removal to occur outside of nesting seasons for migratory birds. Demolition of existing structures would likely be scheduled outside of nesting seasons for native migratory birds to avoid direct impacts to active nests. If demolition activity is to occur during nesting season, and migratory bird nesting is deemed likely, exclusionary measures or other methods to prevent active nesting will be implemented. In very rare cases, removal of active nests may occur through permits held by USDA/Wildlife Services. Accordingly, with the mitigation described in the FEIS, FHWA and FTA find that the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Acts have been addressed to the level necessary to complete the NEPA analysis.

### **Resource Conservation and Recovery Act**

There are several provisions in federal law and regulations that regulate the generation, transportation, treatment, storage, and disposal of hazardous waste. These laws include the Resource Conservation and Recovery Act, found at 42 U.S.C. 82 et seq. As described in Section

3.18 of the FEIS, a database search identified 238 hazardous materials sites, in or near the main project area, that may possibly contain recognized environmental conditions (RECs) and 117 historic sites with RECs. Extensive mitigation procedures are described in Section 3.18.5 to ensure the safe handling of all hazardous materials encountered by, and/or used by, the Project. Accordingly, FHWA and FTA find that upon completion of all listed mitigation, the Resource Conservation and Recovery Act has been addressed to the level necessary to complete the NEPA analysis.

### **Section 106 of the National Historic Preservation Act**

Section 106 of the National Historic Preservation Act (NRHP) of 1966, as amended, (16 U.S.C. 470), requires that federal agencies identify and assess the effects of federally assisted undertakings on historic resources, archaeological sites, and traditional cultural properties, and to consult with interested parties to find acceptable ways to avoid or mitigate adverse effects.

The Project has consulted with Washington State Department of Archaeology and Historic Preservation (DAHP) and the Oregon State Historic Preservation Office (SHPO) because the project has the potential to affect properties that are listed or eligible for NRHP listing. Consultations and coordination also involved interested parties, including the Chinook Tribe, City of Portland, City of Vancouver, Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Colville Reservation, Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of the Siletz Reservation, Confederated Tribes of the Umatilla Reservation, Confederated Tribes of Warm Springs Reservation of Oregon, Cowlitz Indian Tribe, National Park Service (NPS), Nez Perce Tribe of Idaho, Spokane Tribe of the Spokane Reservation, Nisqually Indian Tribe, USACE, and Washington Department of Natural Resources.

Three NRHP-listed or eligible historic resources will be adversely affected by the SA. These properties are listed below:

- Pier 99 Building
- Historic I-5 Bridge
- Vancouver National Historic Reserve

A total of 32 archaeological NRHP-listed or eligible sites, as listed in the FEIS, will be affected by the SA.

Adverse effects to the above historic and archaeological resources are addressed by the Section 106 Memorandum of Agreement (MOA) dated September 8, 2011. This MOA was developed in consultation with the SHPOs, tribes, and consulting parties. This ROD requires compliance with the MOA stipulations. Stipulations include programmatic language to address areas that will not be accessible for archaeological investigation until the right-of-way is acquired. The MOA stipulations include: general requirements and standards, mitigation for adverse effects, the significant archaeological resources in the project area and principles on how to complete archaeological investigations, dispute resolution, and duration, amendment and termination agreements for the MOA. Appendix G to this ROD includes a fully executed copy the Memorandum of Agreement. Based on the foregoing, FHWA and FTA find that the requirements under the National Historic Preservation Act (16 U.S.C. 470) and, in particular, Section 106 consultation, for this project have been fulfilled.

### Section 4(f) of the Department of Transportation Act

Section 4(f) of the Department of Transportation (DOT) Act of 1966, 49 U.S.C. 303(c) requires that use of land from a significant publicly owned park, recreation area, wildlife and waterfowl refuge, or historic site, be approved only if: (1) There is no feasible and prudent alternative to the use of the land; and (2) The project includes all possible planning to minimize harm to the site. A Section 4(f) evaluation must be prepared that describes the affected resources, discusses the direct impacts and the proximity impacts that would substantially impair the use of these resources, and identifies and evaluates alternatives that avoid such impacts and measures to minimize or mitigate for unavoidable adverse effects. FHWA and FTA included Section 4(f) evaluations in Chapter 5 of the FEIS. These evaluations have been provided to the Department of the Interior which has found that appropriate consultation with state and local agencies has occurred. The Department of the Interior stated on August 11, 2011 that it concurs with the Section 4(f) evaluation and FHWA and FTA's determination. 23 U.S.C. 138 mirrors this requirement.

FTA and FHWA conclude that the Project cannot avoid the use of Section 4(f) properties. All prudent and feasible alternatives would use Section 4(f) resources. More than 70 project components were considered in the alternative development and screening process. Many of these components were dismissed because they did not meet the Purpose and Need of the project or their cost or environmental impacts were higher than the alternatives advanced, as summarized in Section 2.7 of the FEIS.

As discussed in Section 5.4 of the FEIS, there are no prudent and feasible alternatives that would avoid all Section 4(f) resources. Therefore it was necessary to analyze which alternative would cause the least overall harm. Section 5.5 of the FEIS identifies the reasonable measures to minimize harm or mitigate for adverse impacts. This is an important consideration in determining the least harm alternative. In addition, regulations in 23 CFR 774.3(c) provide the following direction for determining the alternative that would cause the least overall harm:

*(c) If the analysis ... concludes that there is no feasible and prudent avoidance alternative, then the Administration may approve only the alternative that:*

*(1) Causes the least overall harm in light of the statute's preservation purpose. The least overall harm is determined by balancing the following factors:*

- i. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);*
- ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;*
- iii. The relative significance of each Section 4(f) property;*
- iv. The views of the official(s) with jurisdiction over each Section 4(f) property;*
- v. The degree to which each alternative meets the purpose and need for the project;*
- vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and*
- vii. Substantial differences in costs among the alternatives*

Exhibit E summarizes how each of the alternatives performs relative to each of these seven factors. These summaries draw from the information and analysis in the Section 4(f) evaluation included in the FEIS. The locations of that information are cited in the first column of the exhibit. The last column of the exhibit indicates which alternative has the least harm for each factor. Based on the consideration and balancing of all factors, FTA and FHWA determine that there is no feasible and prudent alternative to the use of the Section 4(f) resources under the SA; the project includes all possible planning to minimize harm to the Section 4(f) resources; the Project includes all reasonable and prudent measures to minimize or mitigate for unavoidable adverse effects to the Section 4(f) resources; and the least overall harm alternative is the SA and that all of the provisions of Section 4(f) have been satisfactorily addressed.

Exhibit E

**Summary of Least Overall Harm Analysis**

Factors	SA	Alternatives 2 and 3 Replacement Crossing	Alternatives 4 and 5 Supplemental Crossing	Least Harm
<p><i>Ability to mitigate impacts to Section 4(f) properties, including any benefits to properties</i></p>	<p>There is limited ability to mitigate impacts to the 1917 I-5 bridge or Pier 99 building as neither can be avoided and both would be very difficult to relocate. Mitigation will include recording, interpretation and a plan to market these resources for reuse. Mitigation for the VNHR<sup>b</sup> is substantial and beneficial, including a new curation and museum facility, protections during construction to avoid vibration impacts, new vegetative screening and new sound walls to reduce existing and future highway noise. Parkland replacement, new transit access, landscaping and parking will mitigate Marshall Park impacts. The SA with mitigation will add recreational value to three resources: parkland replacement, improved access, bridge removal and other improvements will mitigate Waterfront Park; reconstruction, realignment and new surfacing will mitigate Waterfront Trail; reconstruction and new surfacing will mitigate Marine Drive Trail. Impacts to other resources are <i>de minimis</i>.</p>	<p>Same as SA</p>	<p>Ability to mitigate impacts to most resources is similar to the SA, although there is lower ability to mitigate impacts or improve recreational value for Waterfront Park and Waterfront Renaissance Trail because the existing bridge will still pass very low over these properties and without the removal of the existing bridges, there will be no surplus property to convert to new parkland. These alternatives would use four historic Section 4(f) uses that would be avoided or would have <i>de minimis</i> impact with the SA. The impacts would be relatively low (partial acquisitions) but there would be little ability to mitigate those impacts.</p>	<p>All alternatives have similar ability to mitigate impacts, but the SA and Alternatives 2 and 3 would provide the most benefit to Section 4(f) resources.</p>

Factors	SA	Alternatives 2 and 3 Replacement Crossing	Alternatives 4 and 5 Supplemental Crossing	Least Harm
<i>Severity of remaining harm after mitigation</i>	After mitigation, severity would be high for the I-5 northbound bridge, moderate for Pier 99, and low for the Waterfront Renaissance Trail, Waterfront Park, Marshall Park, and VNHR including the Barracks Post Hospital and Officer's Row. All other impacts would be <i>de minimis</i> .	Similar to the SA but in addition would have remaining low impact to Old Apple Tree Park (within VNHR) and three additional historic Section 4(f) resources (see below).	Similar to the SA except: the severity would be lower (moderate) for the I-5 northbound bridge, and higher (but still low) for Clark College Recreational Fields and Marshall Park. These alternatives also would use four additional historic Section 4(f) resources that are not used by the SA (resources described below). After mitigation the remaining harm to these historic resources would be low but not <i>de minimis</i> .	All alternatives have generally equivalent severity of impacts after mitigation.
<i>Relative significance of each Section 4(f) property</i>	All of the alternatives affect the same Section 4(f) properties of highest significance, including the VNHR (national significance) and the 1917 I-5 northbound bridge (regional significance). Affected trails have local and regional significance; other affected historic and park resources are less significant.	Similar to the SA except that it would use three additional historic Section 4(f) properties, including two residences on McLoughlin and one on 31st Street. These 20th-century single-family residences are not highly significant properties.	Similar to the SA except that they would use four additional historic Section 4(f) properties, including two residences on McLoughlin, one on 31st Street and one on K Street. These 20th-century single-family residences are not highly significant properties. These alternatives would also avoid the use of the Waterfront Trail (which would be used/reconstructed by the other alternatives) but would use the Clark College Recreational Fields (a Section 4(f) parks property not used by the SA). Both of these properties have local recreational significance.	Relative significance of Section 4(f) properties is similar for all alternatives.

Factors	SA	Alternatives 2 and 3 Replacement Crossing	Alternatives 4 and 5 Supplemental Crossing	Least Harm
<i>Views of officials with jurisdiction</i>	<p>NPS and City of Vancouver view the VNHR as the most significant historic resource affected by the project. The Department of the Interior expressed support for a range of alternatives as long as the project included all feasible measures to reduce impacts to VNHR, and provided adequate mitigation for unavoidable impacts. Input from these agencies and DAHP resulted in design refinements that reduced impacts to VNHR compared to Alternatives 2 and 3 and led to the intensive VNHR mitigation (museum and curation facility). SHPO and DAHP did not express a preference for a particular alternative but support the mitigation.</p> <p>City of Vancouver, City of Portland, Vancouver Public Schools and Clark College all provided input leading to impact reduction and current mitigation for the parkland resources that they manage. These agencies concurred with findings of <i>de minimis</i> impacts.</p>	Same as SA	<p>Similar to the SA, except that NPS indicated a preference for the removal of existing bridge towers that intrude on views from the VNHR. The lift towers are removed with all alternatives except Alternatives 4 and 5. City of Vancouver preferred the SA over these alternatives, in part because the SA provides better connectivity to the waterfront including park and trail.</p>	<p>Officials with jurisdiction who expressed a preference generally prefer the SA (modified version of Alternative 3).</p>
<i>Degree to which alternative meets the Purpose and Need for the project</i>	<p>SA provides the highest overall ability to meet the Purpose and Need. It is the most effective at addressing growing travel demand and congestion; impaired freight movement; safety and vulnerability to incidents; and seismic vulnerability. It is generally equal in meeting the bicycle and pedestrian need. It is better than Alternatives 2 and 4 at meeting the public transportation need but provides less frequent LRT service than Alternative 5.</p>	<p>Alternative 3 is similar to the SA. Alternative 2 is also similar to the SA except that it is less effective at meeting the transit need because BRT would not perform as well as LRT.</p>	<p>Alternatives 4 and 5 are less effective than the other alternatives at meeting several stated needs including congestion; impaired freight movement; highway safety and vulnerability to incidents (more crashes and related congestion); and seismic vulnerability (would retrofit old bridges rather than replace them).</p> <p>Alternative 4 is also less effective at meeting the transit need than the SA, Alternative 3 or Alternative 5 because BRT would not perform as well as LRT.</p>	<p>SA best meets Purpose and Need. Alternatives 4 and 5 are considerably less effective at meeting Purpose and Need.</p>
<i>Magnitude of impacts to non-Section 4(f) resources after mitigation</i>	<p>More right-of-way acquisition and displacement of existing uses adjacent to I-5 (9–17 more commercial uses and 4–12 more residences) compared to the other alternatives. These will be mitigated with relocation assistance, full market value acquisition, and support for redevelopment.</p>	<p>Similar to SA but with lower right-of-way acquisition impacts (9–17 fewer commercial uses and 5–12 fewer residences).</p>	<p>Compared to SA, lower right-of-way acquisition impacts (8–16 fewer commercial uses and 4–12 fewer residences). These alternatives would have higher adverse impacts even after mitigation to river navigation and safety; local traffic circulation and movement; air quality; local connectivity; and natural resources. They are also less consistent with local and regional plans.</p>	<p>Magnitude of non-Section 4(f) impacts is lowest for Alternatives 2 and 3 (fewer acquisitions) and generally equivalent for the SA and Alternatives 4 and 5.</p>

Factors	SA	Alternatives 2 and 3 Replacement Crossing	Alternatives 4 and 5 Supplemental Crossing	Least Harm
<i>Substantial cost difference among alternatives</i>	Capital costs differ by less than 10% among the alternatives.	Capital costs differ by less than 10% among the alternatives.	Alternative 4 has the lowest estimated capital cost but costs differ by less than 10% among the alternatives. Alternatives 4 and 5 have the highest estimated annual operations and maintenance costs.	There is no substantial cost difference among alternatives.

**Section 6(f) of the Land and Water Conservation Fund Act**

Section 6(f) of the federal Land and Water Conservation Fund Act (LWCF) prohibits the conversion of property (primarily parks and recreation facilities) acquired or developed with grant funds provided through the act, unless replacement land of at least equivalent monetary and recreational value is identified, approved, and acquired.

Under Section 203 (k)(2) of Public Law 91-485, as amended [40 U.S.C. 484 (k)(2)], the NPS administers the Federal Lands to Parks (FLP) Program, which conveys surplus federal land to local jurisdictions for public parks and recreation purposes, usually at no cost. Requirements of the FLP Program are similar to those of Section 6(f) of the LWCF Act. If property conveyed under this program is acquired for a non-park or recreation use, this conversion must be approved by NPS, and replacement property of equal market value and reasonable equivalent recreational utility must be identified and acquired.

An analysis of Section 6(f) and FLP requirements has been completed in Chapter 3.7, Parks and Recreation, of the FEIS. Both East Delta Park and the Burnt Bridge Creek Multi-use Trail have received LWCF grant funds. However, FTA and FHWA find that no parks protected by Section 6(f) of the LWCF Act will be converted to permanent non-park use. A portion of Marshall Community Park, Old Apple Tree Park, the Burnt Bridge Creek Multi-use Trail, and a portion of East Delta Park are protected by the FLP Program. Marshall Community Park is the only park protected by FLP provisions that would have property permanently acquired by the project. A replacement parcel for the FLP land used by the Project has been identified, located near the acquired FLP land, and it has been determined to have equal or greater recreational utility.

Based on the analysis in the FEIS and Section 4(f) Evaluation, FTA and FHWA find that the requirements of the LWCF Act have been met to the level necessary to complete the NEPA analysis.

**FAA Notice of Proposed Construction or Alteration**

There are two airports that could be impacted by the Project: Portland International Airport and Pearson Field. Impacts to these airports and their respective airspace were described in the FEIS. FTA and FHWA find that the Project will not impact Portland International Airport and will have a beneficial impact to Pearson Field by removing the lift towers, on the existing bridges, which intrude on its protected airspace.

Additionally, the Federal Aviation Administration will perform an airspace review of the proposed development when the Project submits the Notice of Construction, Alteration,

Activation and Deactivation of Airports application pursuant to 14 CFR Parts 77 and 157. The FAA will determine the effects of the proposed project upon the safe and efficient utilization of navigable airspace. Once FAA has determined that the SA is consistent with existing airspace utilization and procedures, the Project will meet the appropriate requirement. Accordingly, FTA and FHWA find that the standards and requirements of 14 CFR Parts 77 and 157 have been addressed to the level necessary to complete the NEPA analysis.

### **Americans with Disabilities Act / Architectural Barriers Act**

29 U.S.C. 35.150 addresses a number of issues relating to accessibility, including access to the workplace (title I), and access to places of public accommodation and commercial facilities (title III). The Act states that "Each service, program, or activity must be operated so that, when viewed in its entirety, it is readily accessible to and usable by individuals with disabilities, unless it would result in a fundamental alteration in the nature of a service, program, or activity or in undue financial and administrative burdens." The Architectural Barriers Act further specifies accessibility standards. The Project, as illustrated in the preliminary designs has been designed to meet all ADA requirements and the final design will produce further construction details. In addition, the light rail vehicles to be purchased as part of the project will all be low-floor vehicles that provide accessibility for disabled individuals. Accordingly, FTA and FHWA find that the standards and requirements of the ADA and ABA have been met.

### **Farmland Protection Policy**

Pursuant to 7 U.S.C. 658, federal agencies are required to account for the adverse effects of their programs on the preservation of farmland. FTA and FHWA find that no farmland will be taken as a direct impact of the Project. The states of Oregon and Washington have land use planning regulations, including urban growth boundaries, to protect farmland. As addressed in the FEIS Section 3.4 Land Use and Economics, the Project is unlikely to induce sprawl, and will likely promote compact urban development. Metro, as the responsible agency for the urban growth boundary around the Metro area, has a long history of effective growth management, and the City of Portland has a sophisticated zoning code with provisions for focusing growth where desired and encouraging compact mixed-use development around transit facilities. The land use regulations in the City of Vancouver and Clark County also have robust growth management policies and regulations. Accordingly, FHWA and FTA find that the Project does not substantially increase the potential for loss of farmland in the Portland-Vancouver region and that the Project is compatible with state and local programs to protect farmland, and that no further action by Project is needed concerning this Act.

### **Noise Control Act of 1972 / Quiet Communities Act**

There are several federal regulations concerning protection from noise impacts. These regulations include the Noise Control Act of 1972 (and as amended by the Quiet Communities Act of 1978, see 42 U.S.C. 4901 - 4918) which requires federal agencies to develop programs to promote an environment free of noise that jeopardizes public health or welfare and that agencies comply with state and local noise ordinances. FTA has developed criteria, most recently documented in the Transit Noise and Vibration Impact Assessment Manual (May 2006), which addresses Title 42. FHWA has developed criteria, codified in 23 CFR Part 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise and has produced a guidance document, Highway Traffic Noise: Analysis and Abatement Guidance, January 2011. The FEIS



Section 3.10 Noise and Vibration, identifies the noise and vibration analysis methods, impacts and mitigation, including compliance with local noise regulations as applicable (Ruby Junction Maintenance Facility in Gresham). With the completion of the mitigation measures cited in this document, FTA and FHWA find that the noise and vibration requirements of these Acts will be met.

### **Executive Order 12898 Environmental Justice**

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations" (February 11, 1994), provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations." The Department of Transportation Order (No. 5680.1) to Address Environmental Justice in Minority Populations and Low-Income Populations requires agencies to (1) explicitly consider human health and environmental effects related to transit projects that may have a disproportionately high and adverse effect on minority and low-income populations; and (2) implement procedures to provide "meaningful opportunities for public involvement" by members of these populations during project planning and development. Specifically, the USDOT Order states, in part:

*8.b. In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancements measures that will be taken and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design and comparative impacts and the relevant number of similar existing system elements in non-minority and non-low-income areas.*

*8.c. The Operating Administrators and other responsible DOT officials will ensure that any of their respective programs, policies or activities that will have a disproportionately high and adverse effect on minority populations or low-income populations will only be carried out if further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable. In determining whether a mitigation measure or an alternative is "practicable," the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects will be taken into account.*

As part of the public project planning process through completion of the FEIS, FHWA, FTA and the project's local partners implemented meaningful outreach efforts to minority and low-income communities to assure their active participation. The outreach efforts are described in the environmental justice analyses included in these environmental documents.

As discussed in FEIS Section 3.5, Neighborhoods and Environmental Justice, adverse impacts such as unmitigated noise impacts, traffic impacts, visual impacts, and displacements will not have a high, adverse, and disproportionate effect on environmental justice populations.

At the Ruby Junction Maintenance Facility, the project identified the potential for disproportional impacts to low-income and minority persons (four of nine residential displacements have minority residents; two of nine are likely low-income, which is slightly lower than the percentage minority and the percentage low-income in the surrounding census tract). When considered with the 59 residential displacements for the project as a whole, the

proportions of minority and low-income displaced residents are similar to or slightly above the levels in the project area, but they are not disproportionately high. In addition, given the Project's commitments to provide compensation and relocation assistance in accordance with federal regulations, these impacts would be minimized, avoiding high and adverse impacts to low-income or minority populations.

Therefore, consistent with the definition established in Executive Order 12898, the Project would not result in high and adverse human health, environmental, social, and/or economic impacts. The Project would provide improved access to transit, reduced travel time, and improved accessibility to employment and services. FEIS Section 3.5, Neighborhoods and Environmental Justice, discusses these determinations. Accordingly, FTA and FHWA find that the project would not have disproportionately high and adverse effects on the minority or low-income populations in the project area, as provided under the USDOT Order on Environmental Justice, particularly in light of the offsetting benefits to minority and low-income populations and that the requirements of Executive Order 12898 have been met.

### **Executive Order 13175 Consultation and Coordination with Indian Tribe Governments**

WSDOT, ODOT, FHWA, and FTA are committed to government-to-government consultation with tribes on projects that may affect tribal rights and resources. The CRC tribal consultation process is designed to encourage early and continued feedback from, and involvement by, tribes potentially affected by the Project, and to ensure that their input will be incorporated into the decision-making process. Although tribal consultation and government-to-government tribal consultation is being undertaken as a distinct outreach effort, tribal involvement is also occurring during agency coordination and public involvement.

During the NEPA process, consultation and coordination was conducted with the following Indian Tribe Governments: the Chinook Tribe, Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Colville Reservation, Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of the Siletz Reservation, Confederated Tribes of the Umatilla Reservation, Confederated Tribes of Warm Springs Reservation of Oregon, Cowlitz Indian Tribe, Nez Perce Tribe of Idaho, Spokane Tribe of the Spokane Reservation, and Nisqually Indian Tribe. Meetings with the Washington State Department of Archaeology and Historic Preservation (DAHP) and the Oregon State Historic Preservation Office and tribes were held. Comments received were responded to and incorporated into the FEIS. Accordingly, FHWA and FTA conclude that Executive Order 13175 has been satisfactorily addressed by the Project.

### **Executive Order 12372 Intergovernmental Review of Federal Programs**

This Executive Order directs federal agencies to consult with and solicit comments from state and local governments whose jurisdictions would be affected by a federal action. During the course of the alternatives analysis, the DEIS, selection of the locally preferred alternative, completion of preliminary design, and the FEIS, state and local agencies were directly involved in the project. Technical, executive and steering committees comprised of state and local staff, executives and elected/appointed officials were coordinated with during each Project phase. Documentation of these efforts is included in Chapter 2 and Appendix A of the FEIS.

Accordingly, FTA and FHWA find that the requirements of Executive Order 12372 have been met by the Project.

### **Executive Order 11988 Floodplains**

Executive Order 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Portions of the I-5 highway and supporting infrastructure currently exist within the Columbia River's floodplain and within the river itself, including portions of the highway system that will experience an increased footprint as a result of the Project. A flood-rise analysis will be conducted during final project design, when the bridge design is further advanced, to precisely calculate the impact that the Project, including the Project's piers in the water, would have on flood elevation, in accordance with local and state regulations and Executive Order 11988.

Given available information, it is reasonable to assume that formal hydraulic analysis will conclude that there would be no flood-rise, or if analysis indicates that any rise would occur, it would be very small. Should flood-rise be projected or the existing floodplain be otherwise negatively impacted, additional mitigation would be identified to negate the impacts. Specific mitigation measures, if necessary, would be determined in coordination with federal, state, and local regulatory agencies, but could include balanced cut and fill, map revisions, and/or bridge pier volume reduction or design revision, and will be ultimately determined at the project final design stage.

The FHWA and FTA find that for the Columbia River floodplain and floodway, the Project has considered design and alignment alternatives and has minimized impacts. In addition, the Project will conduct a formal flood-rise analysis, and if necessary, develop specific mitigation measures if the floodplain would be negatively impacted by the project. As such, FWHA and FTA find that the Project has satisfactorily addressed and will comply with Executive Order 11988.

### **Public Opportunity to Comment**

Since its inception in 2005, the Project has implemented a comprehensive public outreach program to ensure the community's values are integrated into project development. The outreach program is multi-faceted because of the variety of interested stakeholders: those that live in the two states within neighborhoods close to the project and those that use the I-5 corridor.

The Project used many different communication methods to reach affected and interested parties in ways that are useful to the receiver of the information. Since October 2005, project staff has had more than 27,000 public outreach contacts at about 900 events. These interactions and project outreach efforts have been targeted to reach neighborhoods; low-income, minority and limited English proficiency populations; and special interest groups.

The Project presented information regularly at neighborhood association, community organization and business meetings and participates in community fairs and festivals. The Project has convened nine community advisory groups over the last 5 years. These groups have gathered interested parties in the following topic areas: freight, bicycle and pedestrian, community and environmental justice, Marine Drive interchange, transit alignment and design in Washington, transit design in Oregon, urban design and overall project development. The Project has sponsored more than 25 open houses, design workshops and question and answer sessions to

help inform the public and gather opinions at major decision points, including defining the purpose and need, screening initial components, analyzing preliminary alternatives, selecting the EIS alternatives and choosing the locally preferred alternative. Since the selection of the locally preferred alternative, these events have focused on design details like the number of lanes, interchange designs, and transit alignments and station locations.

Comments received at events and by phone, email or mail are recorded and considered by project staff. Summaries or copies of these comments were provided to advisory leadership groups like the Task Force, through June 2008, and the Project Sponsors Council, since June 2008, for their reference in making project recommendations. Major themes of comments received from 2005 through 2009 primarily included preferences for taking action to solve the problems in a short time frame, specific river crossing options (including alternate highways), and transit modes. Other comment themes included the location of I-5 improvements for this project; the number of lanes and size of the highway facilities; the need for improved bicycle and pedestrian facilities, including the size or length of the facilities; project aesthetics; project cost; tolling; impacts to low-income and minority communities; concerns about environmental effects, including changes in air quality; the project's contribution to land use changes and climate change; community impacts during construction of the project, and others.

## Comments Received on the Final EIS and Responses

Issuance of a FEIS does not require a formal comment period under NEPA regulations, however, FHWA's Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, calls for new substantive comments received on a FEIS to be responded to in the Record of Decision. This section summarizes the more common, substantive comments received on the FEIS and provides responses. Each of the substantive comment letters, comment forms and emails received, with specific responses, is included in Appendix E. The Project received 134 submittals with substantive comments pertaining to the FEIS. Public notification of availability of the FEIS included the following:

- Letter sent to all property owners whose property was identified in the FEIS as being potentially impacted by the Project
- Postcard or email sent to all who commented on the DEIS
- Postcard sent to all mailing addresses within the Bridge Influence Area and on the Project mailing list
- Email sent to all people on the Project eUpdate list
- Email sent to all Oregon and Washington state legislators and federal representatives
- Press release sent to local media, and briefed media reporters at event
- Project website announcement
- Legal notices in the *Columbian*, *Oregonian*, *Federal Register* and *SEPA*
- Four drop-in information sessions held within the Project area

The FEIS was distributed to agencies, tribes, libraries and community centers. A copy of the Executive Summary (which included a DVD of the complete FEIS and technical reports) was distributed to current and former members of project advisory groups, community organizations and anyone who requested a copy. The FEIS was also available online at the Project website, [www.ColumbiaRiverCrossing.org](http://www.ColumbiaRiverCrossing.org).

The comments were reviewed and common themes were identified. The common themes of the comments and FHWA and FTA's summary responses are presented below.

### **Purpose and Need**

Approximately 15 reviewers submitted comments related to the Project's stated purpose and need. Comments included questions about the origins of the purpose and need, and assertions that the purpose and need was too narrowly written or that it should have included needs other than transportation.

### **Response:**

The FEIS includes information addressing most of the comments received on the purpose and need. Chapter 1 includes the purpose and need itself as well as a description of how the purpose and need was developed (Section 1.2). Section 3.1 includes a detailed discussion of many of the transportation needs that the Project is intended to address.

The initial information for the Project purpose and need originated with a 2001 study by the I-5 Portland/Vancouver Transportation and Trade Partnership Task Force, consisting of governor appointed community members, business representatives, and elected officials. The Task Force studied the transportation problems, and developed a plan to improve transportation, in the I-5 corridor between the I-405 interchange in Portland and the I-205 interchange north of Vancouver. The Task Force adopted a Final Strategic Plan on June 18, 2002. This plan included several proposals and recommendations for further study. The Project was one of the proposals recommended by this plan, and those studies established the foundation for the Project's purpose and need. These recommendations led to additional focused study, further refinement of the transportation needs, the development of a problem statement, and the development of the purpose and need based on the analysis of issues in the corridor, public input and coordination with partner agencies. Public input was sought throughout the 2001 study and again as the Project initiated scoping in 2005 and began to refine the understanding of the problems and develop the purpose and need. The identified needs cover a range of transportation issues including: travel demand and congestion; impaired freight movement; limited public transportation operation, connectivity and reliability; safety and vulnerability to incidents; substandard bicycle and pedestrian facilities; and seismic vulnerability.

The purpose and need was written so as to allow consideration of a wide range of potential solutions to meet the various needs. For example, the test of whether or not certain types of components could meet the need related to "congestion" allowed flexibility in how that need could be met by any given alternative. Components could either "increase vehicular capacity or decrease vehicular demand" to meet the congestion and mobility related need, as described on page 2-72 of the FEIS. This allowed consideration of a wide variety of highway, transit and non-construction ideas.

Some commenters felt that the purpose and need should have been expanded beyond transportation needs to include other public policy objectives, such as sustainability or reducing Greenhouse Gas (GHG) emissions. The cities, region and states have many public policy goals, but that alone does not warrant them being included in the stated purpose and need for this proposed action. A wide variety of public goals, including community, environmental and financial goals, were reflected in the Project Vision and Values, and included in the evaluation criteria used to screen and analyze alternatives (as discussed in Chapter 2 of the FEIS). While the

Project does aim to promote these non-transportation objectives, they are not among the fundamental needs for the Project.

### **Range of Alternatives**

Approximately 36 reviewers submitted comments related to the Project's development of alternatives. Comments included assertions that the range of alternatives in the EIS was too narrow, and that the EIS inappropriately excluded some good alternatives from detailed evaluation in the EIS, including new river crossing locations, bypasses and other proposals. Some comments also suggested modifications to the LPA or other alternatives.

#### **Response:**

The Project is intended to address specified needs in an approximately 5-mile section of the I-5 corridor surrounding the river crossing. However, the Project considered a wide range of potential solutions, including new river crossing locations outside the immediate I-5 corridor, as discussed in Chapter 2 of the FEIS. Many options, components and alternatives were considered during the early stages of the Project study as well as in studies that preceded the Project.

The early screening of alternatives found that I-5 bypass options with new crossing locations, outside the I-5 vicinity, could not adequately address the Project's purpose and need. They could provide some transportation benefits, but they failed to address some of the basic elements of the purpose and need, as discussed in Chapter 2 of the FEIS. In addition, alternatives that did not involve any highway improvements could not adequately address critical elements of the Project's stated needs. Alternatives that could not adequately address the purpose and need were not carried forward into the DEIS.

A number of project ideas were proposed by citizens and others after the DEIS was issued. Many of these were very similar to ideas that had been previously considered, or were suggested refinements to the existing alternatives. Ideas that could not meet the purpose and need were considered but not advanced. A number of refinements suggested by various stakeholders were able to meet the purpose and need as well as provide other benefits. Through public and agency coordination, several of these were incorporated into the proposal, as discussed in Chapter 2 of the FEIS.

### **GHG/Climate Change**

Approximately 16 reviewers submitted comments related to climate change, greenhouse gas (GHG) emissions, and energy use. Comments mostly asserted that the Project would likely increase rather than decrease GHG emissions.

#### **Response:**

Section 3.19.10 of the FEIS discusses climate change and the Project's expected impact on GHG emissions. The EIS acknowledges that global GHG emissions are expected to continue to increase for the foreseeable future and that the cumulative (global) impact of GHG emissions is effecting climate change. The analysis found that the LPA would have lower emissions than the No-Build Alternative, but all 2030 scenarios evaluated would have higher emissions than occur today because the regional population is forecast to grow by a million people over the next 20 years. The FEIS provides data showing that without the Project there would be substantially longer daily durations of congestion on I-5, including more stop and go traffic and traffic moving

at less than 20 mph (pages 3-32 to 3-34). Higher traffic speeds (in the range of about 40 to 60 mph), compared to stop and go traffic, can substantially increase fuel efficiency which in turn decreases GHG emissions. The Project would also contribute to reducing GHG emissions by shifting some auto trips to transit and by tolling the highway crossing which discourages some trips and reduces overall vehicle miles travelled (VMT). Most of the comments received on GHG emissions are addressed in the responses to comments made on the DEIS (see pages 6-19 through 6-20 of the FEIS) and in Section 3.19.10 of the FEIS.

### **Environmental Review Process**

The Project team received approximately 52 comments on the environmental review process, ranging from questions on how comments received on the DEIS had been addressed, expressing concern with a perceived lack of a substantive change in the analysis since the conclusion of the DEIS comment period, and some suggestions that a supplemental DEIS should have been prepared to evaluate project changes before the FEIS was released. A small number of comments requested an extension in the FEIS review period while others suggested that the Project be rapidly advanced to construction.

#### **Response:**

Building from the 2002 I-5 Transportation and Trade Partnership Final Report, which recommended the Project and other improvements to address I-5 transportation needs, the National Environmental Policy Act (NEPA) process for the Project began in 2005. NEPA requires complex projects like the Project to study multiple alternatives and their effects to the community and environment, and to involve the public and other stakeholders in the process. Following the publication of the DEIS on May 2, 2008, the Project actively solicited public and stakeholder feedback on the DEIS during a 60-day comment period. Public comment was submitted via several methods, including email, postal mail, and public meetings that included two open houses. During this time, the Project received over 1,600 written and oral public comments. The Project prepared written responses to all comments received during the DEIS comment period. Individual comments and responses can be found in the FEIS, Appendix P.

The FEIS contains analyses of environmental and community effects and describes how the Locally Preferred Alternative (a replacement bridge with light rail) would address the Project purpose and need. A variety of actions were taken in response to agency and public comments, including refinements to alternatives, additional analysis, and corrections that are included in the FEIS. Refinements to the Locally Preferred Alternative are described in Chapter 2 of the FEIS. Changes in analysis, including updated modeling and inputs, are described in each section of Chapter 3 of the FEIS.

The design refinements made after the DEIS were considered and reviewed by FTA and FHWA, consistent with 40 CFR 1502.9(c)(1) and 23 CFR 771.130(a). See discussion on page 2-86 and Appendix O of the FEIS. While there were refinements to alternatives and new information in the FEIS, none of the changes made after the DEIS would result in new significant environmental impacts that were not previously evaluated in the DEIS. There was no need to prepare a supplemental draft EIS prior to issuing the Final EIS.

The FEIS was issued on September 23, 2011. All relevant comments received through the week of October 24, 2011, were treated as comments on the FEIS and were responded to in this ROD (responses to individual comments received during this review period are included in Appendix

E of this document). Instructions for commenting were provided on page vi of the FEIS and on the project website.

FHWA, FTA, and the co-lead agencies have determined that the NEPA process has been followed appropriately with opportunities for public and agency input and thorough evaluation of all relevant subjects. Transportation modeling of the Project is based on the best reliable information, uses adopted models and follows current practices. Compliance with other regulations has also been demonstrated appropriately for this stage of design and conclusion of the NEPA process. The lead agencies have considered requests for additional time to comment on the FEIS and determined an extension is not warranted.

### **Water Quality Treatment**

The Project team received approximately 17 comments on ecosystems issues, several of which related to water quality. These comments included concerns that the FEIS fails to provide sufficient detail on the effect stormwater from the Project area will have on the overall quality of receiving waters.

#### **Response:**

Section 3.14 of the FEIS discusses the proposed treatment of stormwater and the impacts said stormwater will have on receiving water bodies. Additional technical information is provided in the Water Quality and Hydrology (WQH) Technical Report and Appendix A (Stormwater Management Memorandum) of the technical report.

The FEIS and its technical reports and appendices discuss the use of water quality treatment scenarios and provide results of models tailored to roadway projects and its runoff. The use of the WSDOT-FHWA model was summarized on page 3-341 of the FEIS, was discussed in further detail on page 4-6 of the WQH Technical Report and was refined in the Technical Report Errata. As summarized on pages 3-341 and 3-342 of the FEIS, LPA Option A would increase total impervious surfaces by 42 acres, from approximately 239 acres currently. Of these additional 42 acres, only 28 acres are anticipated to be pollutant generating, with the remaining 14 acres being non-pollutant-generating surfaces such as bike/pedestrian and LRT facilities. Although an increase of 11 percent of pollutant generating impervious surface might occur, a decrease of untreated stormwater runoff would also occur, from approximately 219 acres to zero.

The analysis using the available models and the discussion associated with stormwater treatment best management practices (BMPs) in Appendix A of the WQH Technical Report, show that overall pollutant loading will decrease and that stormwater treatment will treat at least 80 to 90 percent of annual runoff. The Project has committed to increasing that treatment rate wherever practicable, and is required in Washington to treat 91 percent of annual runoff (page 4 of Appendix A of WQH Technical Report). The BMPs proposed for stormwater treatment are designed specifically for treatment of roadway runoff and are effective in reducing sediments and particulate and dissolved metals (Page 10 in Appendix A of WQH Technical Report). Where high concentration of oils and greases are anticipated, oil control pretreatment may also be required for proper operation of stormwater BMPs (Page 10 Appendix A of WQH Technical Report).

The stormwater BMPs were chosen based on a multi-agency effort associated with both states' Departments of Transportation and relevant regulatory agencies. As Municipal Separate Storm Sewer System (MS4) permit holders, ODOT and WSDOT work with DEQ and Ecology,



respectively, to determine appropriate treatment measures to ensure water quality in receiving waters. Thus, through use of the BMPs identified, the Project team is confident that proper treatment for pollutants was adequately addressed in the FEIS. Final design of stormwater facilities cannot occur until near-final design of the project elements flowing into the facilities is complete.

As noted, further discussion with DEQ and Ecology will occur during permitting to address any concerns on water quality.

In addition, immediately prior to release of the FEIS for public review, the Regional Sediment Evaluation Team concurred with findings of a sediment analysis in the North Portland Harbor and the Columbia River. The sediment analysis found no contaminants above Sediment Evaluation Framework screening levels, with the majority of sediment constituents below reporting levels. See Appendix G of the Hazardous Materials Technical Report for the results of this analysis.

### **Biological Opinion**

As mentioned above, the Project team received approximately 17 comments on ecosystems, several of which related to the Project's biological opinion (BO). Comments were made stating that the reinitiation of Endangered Species Act (ESA) consultation should be immediately performed for the recent designation of critical habitat for eulachon; and that the FEIS fails to provide adequate data of effects on listed fish species and other native aquatic organisms.

### **Response:**

NMFS proposed critical habitat for eulachon (*Thaleichthys pacificus*) on January 5, 2011. NMFS designated critical habitat, including portions of the project's action area, on October 20, 2011. The final rule takes effect on December 19, 2011. After coordination with NMFS, FHWA and FTA sent correspondence to NMFS on November 28, 2011 stating their intention to reinitiate consultation to address potential project effects on eulachon critical habitat.

Additionally, on January 10, 2011, NMFS proposed critical habitat for lower Columbia River coho salmon (*O. kisutch*). Proposed critical habitat is within the project's action area. FHWA and FTA will consider the status of lower Columbia River coho salmon's critical habitat at the time of the reinitiation of the eulachon critical habitat to determine the proper course of action for evaluating project effects to this habitat including whether its critical habitat has been formally designated.

The Project team has reviewed the critical habitat listing for eulachon and is investigating similarities between eulachon and salmon/steelhead critical habitat elements. At this time, it is believed that the Project may affect critical habitat for eulachon, but to the same extent as it affects salmon/steelhead critical habitat. That is, no adverse modification or destruction of critical habitat is anticipated. After the consultation is complete on the eulachon's critical habitat, a re-evaluation will be prepared to see if the FEIS needs to be supplemented.

The information related to the discussion of cumulative impacts and FHWA/FTA's responsibilities under NEPA and ESA are addressed adequately in the project documents. NEPA documents must "provide full and fair discussion of significant environmental impacts." Section 3.19 of the FEIS discusses these impacts. In addition, Sections 4 and 5 of the Ecosystems Technical Report provide over 140 pages of discussion on long-term and short-term effects on

aquatic and terrestrial locations. In this discussion and the findings of effects, it is noted that some effects will occur. These are quantified in area or in time. Some effects may be relatively large, as in the case of potential hydroacoustic effects from impact driving of temporary piles; while others may be relatively small, as in the case of use of work barges when compared to the extent of the entire lower Columbia River.

Through the NEPA process, and in coordination with ODFW, WDFW, NMFS, and USFWS, the Project team identified several potential impacts to native fish, particularly listed salmon, steelhead, and eulachon. The major impact to these fish was identified as the impact installation of temporary work piles. Along with this activity, shading, hydraulic shadowing, barge use, stormwater treatment, among others, were also identified and analyzed. In the context of ESA, FHWA and FTA prepared a BA with a finding of effect for each of these project elements. Items from the BA were then used to assess effects for the FEIS for salmon, steelhead, eulachon and other species in the context of NEPA. That full analysis is found in the Ecosystems Technical Report. FHWA and FTA have therefore met its requirements under ESA and NEPA.

### **Human Health**

Most comments received relating to human health fall under other categories, such as air quality or construction, and are discussed elsewhere in this section. However, reviewers also submitted comments relating more generally to human health, mostly asserting that the Project should include a human health assessment and that the Project would have unacceptable adverse effects on human health.

### **Response:**

While EISs rarely include a chapter titled “human health,” impacts to human health have been integral to NEPA analysis for the past 40 years, and they are integrated throughout the Project NEPA analysis as well. The DEIS and FEIS analyses of impacts to air quality, noise, electromagnetic fields, water quality, groundwater, and hazardous materials are based on comparing the Project’s impacts to standards that have been established to protect public health. In addition, the analysis of impacts to land use, neighborhoods, biking, walking, traffic, safety, security, parks and recreation, public services, and visual resources also relate to public health. See the Chapter 3 analyses of impacts to the health-related issues listed above.

Modeling conducted for the FEIS and DEIS indicate that air emissions from I-5 traffic would be significantly lower by 2030 than they are today, and would be well below established regulatory standards designed to protect human health (see Section 3.10 of the FEIS). Noise impacts from I-5 traffic, with the mitigation proposed for the Project, would also be substantially lower than today. Noise from light rail operation can be mitigated to be below FTA’s noise impact criteria as well (see Section 3.11 of the FEIS).

The FEIS discusses how the Project would affect the surrounding urban form in ways that would increase opportunities for physical activity, including: improved bicycle and pedestrian facilities crossing the river; improved connections between existing and new bicycle and pedestrian paths and across I-5; the light rail transit extension and transit stations that support increased pedestrian-oriented development; improved sidewalks in Vancouver; and new pedestrian and bicycle connections crossing I-5. The Project would also greatly improve highway safety (reducing crashes) and would reduce daily hours of congestion on I-5 compared to the No-Build

Alternative and provide improved transit service, decreasing the amount of time travelers spend in cars, thus further allowing for physical activity.

A common concern raised regarding human health was in regard to air quality impacts from construction, especially the effect of construction vehicle and equipment emissions. The research reviewed for the FEIS analysis, and the analysis of the Project itself, indicate that violations of air quality standards during construction are unlikely to occur. However, while construction may not violate emission standards, it will result in increased emissions. To address this, the Project has committed to specific mitigation measures that will be implemented during construction, as outlined in the ROD and FEIS, to further reduce emissions associated with construction activities.

### **Land Use and Sprawl**

The Project team received approximately 45 comments on issues related to induced travel across the I-5 Bridge and related changes to development patterns. Several of these comments expressed concerns that the Project will encourage sprawl. The comments asserted that the Project likely would induce residential development at the urban edge in Clark County.

#### **Response:**

As described in Chapter 3 (Section 3.4) of the FEIS, and in the Indirect Effects Technical Report, highway capacity improvements and access improvements can induce development in suburban and rural areas that were not previously served, or were greatly underserved, by highway access. The FEIS provides an overview of the induced growth effects that could be expected from the Project. A review of national research on induced growth indicates that there are six factors that tend to be associated with highway projects that induce sprawl. These are discussed in the Indirect Effects Technical Report and FEIS. Based on a comparison of those national research findings to the Project's travel demand modeling, Metro's 2001 and 2010 land use/transportation modeling, and a review of Clark County, City of Vancouver, City of Portland and Metro land use planning and growth management regulations, the FEIS concludes that the likelihood of substantial induced sprawl from the Project is very low. In fact, the Project, because of its location in an already urbanized area, the inclusion of new tolls that manage demand, the inclusion of new light rail, and the active regulation of growth management in the region, will likely reinforce the region's goals of concentrating development in regional centers, reinforcing existing corridors, and promoting transit and pedestrian friendly development and development patterns.

In October 2008, the Project convened a panel of national experts to review the travel demand model methodology and conclusions, including an evaluation of the induced growth analysis. The panel unanimously concluded that the Project's methods and conclusions were valid and reasonable. In 2010, Metro ran the MetroScope model (an integrated land use and transportation model) to forecast growth associated with transportation improvements of a tolled, 12-lane river crossing with light rail to Clark College. The model showed a minor effect on employment location and housing demand, including a slight shift of demand from more distant parts of the region toward areas nearer the I-5, compared to the No-Build Alternative.

For more discussion regarding potential indirect land use changes as a result of the Project, including the likely land use changes associated with the introduction of light rail, please see Chapter 3 (Section 3.4) of the FEIS.

## **Hayden Island**

The Project team received approximately 20 comments on the topics of property acquisitions and 40 related to project construction, most of which related to how these aspects of the Project would impact Hayden Island residents and the mitigation for these impacts. Commenters expressed concern about the number of displacements on the Island, the loss of business services (such as the Safeway grocery) which would result from these displacements, and the redevelopment potential of the Island following construction. Commenters also expressed concern about the construction period impacts on the Island, and asked for many different mitigating measures.

### **Response:**

The Project attempts to avoid the displacement of businesses, although it is not always possible. The Project will continue to look for ways in which impacts can be avoided and minimized. The displacement of Safeway is documented in the FEIS. Mitigation for this impact is governed by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended). The Project will encourage Safeway to relocate on Hayden Island, but cannot require them to relocate to any specific location. The eventual relocation or closure of the store will be a business decision by Safeway. There is a large Target store currently under development on the Island, and it will provide limited groceries and a pharmacy, helping minimize, but not eliminate, the impact of a potential Safeway closure.

Many of the displaced businesses on the island are restaurants. The Project is working with business owners on relocation plans, although it is likely that there will be a period during which the number of restaurants is greatly reduced. Other displaced business services include banking, a car wash, and a hotel. The Project is making a multi-million dollar investment in Island infrastructure, including a light rail station and a considerable improvement to the local street and pedestrian network. Investments such as these have been shown to attract new development. Guided by the Hayden Island Plan, the new development could be more tailored to the needs of Island residents and less-so to the needs to shoppers from Washington.

The Project has identified the likely impacts from construction on the island and has worked closely with the community to develop a mitigation plan for these impacts. In many cases, the commenters were asking for items that the Project has already committed to. Other mitigation measures have been suggested and will be considered as the construction plans are further developed. Some requests for mitigation measures are outside of the authority of the Project (such as constructing a new park on the Island's north shore or establishing a new police precinct and station). See also the discussion of construction effects in Human Health and Air Quality sections, above.

## **Environmental Justice / Hayden Island Manufactured Home Community**

The Project team received approximately 56 comments on environmental justice and neighborhoods, including comments expressing concern about construction-period impacts to residents of the Hayden Island Manufactured Home Community. Comments assert that there are environmental justice (EJ) households in this community or that the entire community should be treated as an EJ population. Detailed comments were provided regarding the impacts of construction and the possible mitigation measures for such. Some comments suggested that the

construction period noise, dust, and other impacts represent a disproportionately high impact to the residents of the manufactured home community.

**Response:**

The Project study area is large and demographically diverse. The Project has recognized that there are not only individual households in the study area that are minority or low-income, but that there are also areas which have comparatively high rates of these same EJ households. Refer to pages 3-135 through 3-137 of the FEIS where there is detailed information about which neighborhoods have the highest percentages of minority and low-income households. The Project fully recognizes the presence of EJ households and the areas where the percentage of these households are comparatively high. The Project also recognizes that there are EJ households within the Hayden Island Manufactured Home Community. The implementing federal and state guidelines on EJ have and will guide the Project's consideration of, outreach to, and mitigation of impacts for EJ households, where ever they are located.

The demographic data presented for the Hayden Island Neighborhood in Chapter 3 (Section 3.5) of the DEIS was taken from the 2000 U.S. Census and was adjusted to the neighborhood boundaries. The U.S. Census estimated a total of 2,071 residents on the Island, which is in-line with the population estimate of 2,155 residents conducted in 2007 by the City of Portland for the Hayden Island Plan process. In an effort to more accurately reflect the Island population, the FEIS assessment is based on updated data from the 2010 Census, the American Community Survey, and a project-specific survey of potentially displaced households. Updated population and demographic information can be found in Chapter 3 (Section 3.5) of the FEIS. The displacement survey (which focused on the most directly impacted households) was undertaken in response to assertions that the Census data misrepresented the affected community. The U.S. Census data indicate that, as a whole, the Hayden Island neighborhood has a lower proportion of minority and low income households than in the City of Portland, Multnomah County, or in the Project study area. Hayden Island ranks near the lower end of the spectrum in the rate of both minority and low-income households when compared with all other neighborhoods in the study area.

There would be no displacement of households within the Hayden Island Manufactured Home Community and thus the Project did not conduct a separate demographic survey, using instead the US census data and other sources. The impacts to these households will result from construction-related air, noise, and traffic impacts. The Project has committed to a variety of construction-related mitigation measures that will minimize impacts to residents within the Project area, including the Hayden Island Manufactured Home Community. Please see pages 3-262 through 3-263 of the FEIS for a discussion of measures that will be implemented during construction to control dust and limit exhaust emissions from demolition and construction activities. See Sections 5.2 and 6.3 of the Noise and Vibration Technical Report (an Appendix of the FEIS) for a discussion of measures to minimize noise impacts to residents, including a commitment to build a temporary noise wall at the Thunderbird Hotel site if this site is chosen as a staging or casting site; and Section 3.1 of the FEIS for a discussion of mitigation measures for constructed-related traffic impacts. Please also see Human Health, above.

## Traffic and Traffic Projections

The Project received approximately 41 comments related to traffic and traffic projections. Many comments stated that the Project will not adequately reduce congestion. Commenters said that the vehicle travel time savings are not sufficient to justify the cost of the Project. Other commenters said that nothing can be done to reduce congestion, so why spend the money on the project. Some commenters believed that the Project was not doing enough to address congestion and that more lanes should be built. Some commenters stated that light rail would do nothing to reduce vehicle traffic and therefore it should not be included in the Project.

Another theme was that predicted 2030 traffic volumes used by the Project were too high. Commenters also asserted that the Project's estimate of future induced traffic was too low (these are addressed under Land Use and Sprawl above).

### Response:

By 2030, the region's population is expected to increase by one million people. This increase will result in more people needing to travel between home, work, school, recreation, etc. In 2005, 135,000 vehicles crossed the Columbia River on the Interstate Bridge, which led to 4-6 hours of congestion each weekday. By 2030, 184,000 vehicles are predicted to cross the river, which would lead to 15 hours of daily congestion if no action is taken.

Traffic forecasts reported in the DEIS and used to inform decisions on a locally preferred alternative were derived from adopted regional employment and population forecasts and state-of-the-art modeling and evaluation conducted by Metro, RTC and the Project team, and reviewed by all project sponsor agencies as well as FTA and FHWA. In addition, an independent panel of traffic modeling experts was convened in October 2008 to review the modeling methods and findings. These experts concluded that the Project's approach to estimating future travel demand was reasonable and that it relied on accepted practices employed in metropolitan regions throughout the country. These findings are summarized in the "Columbia River Crossing Travel Demand Model Review Report" (November 25, 2008). This independent review confirmed the approach Project modeling used to address multiple variables that can affect travel demand, including gasoline prices, tolling, travel demand measures and induced development.

Congestion occurs when vehicle demand is greater than a transportation system's capacity. It results in slower speeds and increased travel times. The Project defines congestion as vehicles traveling less than 30 mph. The Project uses information gathered from Metro's nationally-recognized travel demand models to determine the Project's effect on congestion. These models predict trip frequency, types or modes of transportation, destination, and time of day of travel. Transportation planners use these models to analyze the effects of such factors as increased population and employment, transportation improvements, and new developments on the transportation system.

Based on the Metro model's past ability to predict transportation effects, the Project is confident in the data received from Metro and uses it to determine what impact the Project will have on congestion. The improvements proposed by the Project to the highway and seven project interchanges will help better accommodate increased future vehicle traffic. New auxiliary lanes and longer on/off ramps will allow safer and more efficient merging and weaving to enter or exit the freeway. Narrow lanes and shoulders will be widened to current standards. Shoulders will be

added where they are currently missing. All of these changes will improve the flow of traffic in the bottleneck area of the Interstate Bridge.

### **Cost Estimating / Financing / Funding**

More than 57 comments were made on the cost estimating, financing, or funding of the Project. Many of the comments asserted that project costs were inaccurate and that the actual costs are likely to be higher. Many commenters suggested that the benefits of the Project were not worth the high cost. Comments were also made that the Project does not have committed funding. Some commenters believe that the Project will not be able to be built in its entirety and will require phasing of construction.

#### **Response:**

The projected costs to construct the Project are presented in Chapter 4 of the FEIS, and are estimated in year-of-expenditure dollars to account for inflation. The estimated cost to construct this project would be covered by a variety of funding sources, as described in Chapter 4. While a portion of this cost is expected to be covered by local and state funds, federal funds and toll revenues are expected to cover the majority of the capital costs.

Cost estimates for the Project were developed using the Cost Estimate Validation Process® (CEVP), a WSDOT methodology to help deliver major projects. CEVP® expresses schedule and cost as ranges rather than as single numbers, which accounts for risk factors that might otherwise cause costs to balloon over time. Accounting for these risks increases the accuracy and overall reliability of the cost estimates.

It is common practice on large public proposals to secure the funds to construct the project after the NEPA phase. In fact, to commit certain types of funds prior to issuing the ROD would violate federal law, as some types of federal funding commitments are considered “federal actions” and therefore cannot be made until after the ROD is issued.

Regarding phasing, the FEIS evaluates the full impacts of the entire Project and evaluates how those impacts may differ if several elements were to be constructed at some later date. This is described on page 2-86 of the FEIS and the likely impacts are discussed in each section of Chapter 3 and in Chapter 5. As the FEIS notes (page 2-4), a wide range of possible cash flow scenarios and construction phasing scenarios are possible. Phasing a project can change the timing of impacts but does not generally make a significant difference in the character or magnitude of impacts. Prior to the ROD, it is not possible to know how much funding the project will receive or when it will receive it and therefore it is also not possible to know how it will be phased. Following the ROD, as commitments to funding are secured and the timing of funding becomes known, the effect of phasing or sequencing can be reviewed to determine if it would change the existing NEPA evaluation of environmental impacts and/or mitigation in a meaningful way. Any changes could be assessed through a NEPA re-evaluation, as appropriate, and a determination would be made at that time if any additional NEPA review would be needed.

### **Air Quality Construction and Conformity**

More than 15 comments were made on the air quality impacts associated with the Project, including comments related to the impacts of construction activities on air quality generally and comments that because the Project construction will exceed five years, it will trigger a requirement under the transportation conformity rule to provide “hot spot” analyses.

**Response:**

Regarding construction's impacts to air quality generally, Section 3.10 of the FEIS discusses relevant research conducted during the construction of the Dan Ryan Expressway in Chicago. The Dan Ryan project involved construction of a transportation facility with elements very similar to the Project, in an urban environment and through a wide range of meteorological conditions. The study spanned several years and included many samples covering many different types of construction equipment, and types and levels of construction activity. Through several years of construction, the monitoring did not detect any elevated concentrations that were directly related to the project. The Project is expected to have half the volumes of the Dan Ryan project. This information from the Dan Ryan project monitoring research supports the conclusions that the Project construction is not expected to cause any air quality violations.

Regarding transportation conformity rules, under 40 CFR 93.123 (c)(5), CO, PM10, and PM2.5, hot-spot analyses for construction are required only if the construction phase lasts five years or more at any individual site. Although the Project construction will last more than 5 years, project construction activities at any one site are not expected to last more than 5 years. Thus, a CO hot-spot analysis was not conducted. Since the area is in attainment for PM10 and PM2.5, a PM hot-spot analysis was not required. Should it become evident at any time during final design and construction planning that construction will occur continually at a given site for more than five years, then the Project would conduct appropriate hot-spot analysis at that time.

As described in Section 3.10 of the FEIS, construction mitigation will focus on controlling dust and exhaust emissions from demolition and construction activities and on minimizing traffic congestion. The Project will comply with relevant regulations, and as described in Section 3.10, require additional requirements on project contractors above and beyond what is required by regulation. The Project will also explore other technologies and methods that could be used to further reduce emissions from construction equipment and vehicles.

**Navigational Impacts**

US Coast Guard expressed concerns that the proposed vertical clearance of 95 feet above 0.0 Columbia River Datum would impede some commercial and recreational vessel movements and potentially impact some maritime businesses.

**Response:**

The project conducted a series of studies and stakeholder outreach efforts to determine the appropriate navigation clearance for the proposed bridges. Many factors were considered in these studies. In addition to vessel height, the safe and efficient operation of aviation (Pearson Field), highway, light rail, and the multi-u

se path (bicycle and pedestrian) were considered. Effects on aviation were evaluated using federal regulations for the safe, efficient use and preservation of navigable airspace (14 CFR Part 77). These FAA regulations are applicable to Portland International Airport (PDX) and nearby Pearson Field. Objects violating the requirements of the Part 77 regulations may be deemed a "hazard to aviation". Three navigation channels (Primary Channel, Barge Channel, and Alternate Barge Channel) are currently designated by the United States Army Corps of Engineers



(USACE) and permitted by the United States Coast Guard (USCG). The past and future uses of these three channels were also evaluated.

The primary road surface constraints considered in the evaluation also included concerns related to safe and functional operation of the highway, transit, and multi-use path facilities. All facilities must be able to make required connections to interchanges, surface streets, and stations and to do so in a safe manner in accordance with standards of practice.

CRC conducted studies of current river usage and validated these studies through stakeholder outreach to determine what clearances are required by current river users. These efforts included a boat survey to identify the types of vessels that use the Columbia River at the project location, their frequency of usage, and required navigation clearance. Additionally, a series of telephone and/or face-to-face interviews were conducted with river users to validate and update the information contained in the boat survey. Along with these efforts, the USCG held a preliminary hearing on the Columbia River Crossing to solicit comments from river users.

The information gathered from the above-mentioned studies and stakeholder outreach was considered in conjunction with the operational statutes for nearby Pearson Field and with requirements, as noted in the project purpose and need statement, for safe and efficient operation of the proposed highway, light rail, and multi-use path facilities. Taking all of these considerations into account, it was determined that a 95-foot vertical clearance will allow all but three known and infrequent river users to navigate beneath the bridge at all times of year. Some of the users could partially disassemble so they could pass beneath a 95-foot vertical clearance. A higher bridge would include additional hazards to aviation, operational and safety impacts to highway, operational, safety and maintenance impacts to transit, and increased environmental impacts, including increased impacts to Section 4(f) properties that the U.S. Department of Transportation has a duty to minimize.

In evaluating crossing level and span length with respect to aviation, navigation, and project geometry shows that the mid-level structure would beneficially affect aviation and navigation. While the mid-level bridge does not favor any single interest, it benefits all interests in an equitable fashion with respect to the aviation and navigation constraints and the project's purpose and need.

## **Agency and Tribal Coordination**

Agency coordination has played a significant role throughout the Project's NEPA process, from defining the Purpose and Need to development of the DEIS and FEIS. Because the project is located in two states, cities, and counties, it requires coordination and outreach with numerous federal, state, and local agencies. In addition, the project is composed of three major structural components: a bridge, transit and highway. Thus, various agencies have a wide range of expertise and jurisdictional authority.

The Project team has, and continues to, communicate with regulatory agencies throughout the NEPA process and to identify permits and approvals needed for construction.

The Project team works extensively with regulatory agencies and local jurisdictions, structured into three designated agency groups: the Interstate Collaborative Environmental Process group (InterCEP), Cooperating Agencies, and Participating Agencies. The InterCEP group is composed

of federal and state regulatory agencies that will likely have permit or approval authority over certain components of this project. Cooperating Agencies are federal agencies invited to participate in the development of the EIS and may use the document to help their permit or approval decision making. The Participating Agency group, as defined in the transportation bill reauthorization SAFETEA-LU, includes representatives from a variety of local and state agencies and tribal governments with an interest in the project.

WSDOT, ODOT, FHWA, and FTA are committed to government-to-government consultation with tribes on projects that may affect tribal rights and resources. The Project's tribal consultation process is designed to encourage early and continued feedback from, and involvement by, tribes potentially affected by the Project, and to ensure that their input will be incorporated into the decision-making process. Although tribal consultation and government-to-government tribal consultation is being undertaken as a distinct outreach effort, tribal involvement is also occurring during agency coordination and public involvement.