Summary

This summary briefly describes the contents of the I-5 Columbia River Crossing Draft Environmental Impact Statement (DEIS), including who is leading the project, what studies preceded the project, and what problems the project is seeking to fix. It also discusses the different alternatives for addressing these problems, and the key effects and impacts of these alternatives. It concludes with a brief discussion of the next steps and methods by which the public can get involved in the project.

CHAPTER CONTENTS

What is the I-5 Columbia River Crossing project?

The Interstate 5 (I-5) Columbia River Crossing (CRC) project is a multimodal project focused on improving safety, reducing congestion, and increasing mobility of motorists, freight, transit riders, bicyclists, and pedestrians along a five-mile section of the I-5 corridor connecting Vancouver, Washington and Portland, Oregon. The project area stretches from State Route 500 (SR 500) in northern Vancouver, south through downtown Vancouver and over the I-5 bridges across the Columbia River to just north of Columbia Boulevard in north Portland.

I-5 is the only continuous north-south interstate highway on the West Coast, linking the United States, Canada, and Mexico. In the Vancouver-Portland region, I-5 is one of two major north-south highways that provide interstate connectivity and mobility. I-5 directly connects the central cities of Vancouver and Portland. Traffic conditions on the I-5 crossing over the Columbia River are influenced by the five-mile section of I-5 between SR 500 in Vancouver and Columbia Boulevard in Portland. This section includes six interchanges that connect three state highways and several major arterial roadways. These interchanges serve a variety of land uses and provide access to downtown Vancouver, two international marine ports, industrial centers, residential neighborhoods, retail centers, and recreational areas.

Exhibit 1
CRC Project Area

DIMENSIONS ARE APPROXIMATE.

Agencies and Tribes this project is working with

- City of Vancouver
- City of Portland
- Clark County Community Development Department
- Clark Public Utilities
- Chinook Tribe (non-federally recognized)
- Confederated Tribes of the Grand Ronde Community of Oregon
- Confederated Tribes of the Siletz Reservation, Oregon
- Confederated Tribes of the Umatilla Reservation, Oregon
- Confederated Tribes of the Warm Springs Reservation of Oregon
- Confederated Tribes and Bands of the Yakama Nation, Washington
- Cowlitz Indian Tribe, Washington
- Federal Aviation Administration
- National Marine Fisheries Service
- National Park Service
- Nez Perce Tribe of Idaho
- Oregon Department of Environmental Quality
- Oregon Department of Fish and Wildlife
- Oregon Department of Land Conservation and Development
- Oregon Department of State Lands
- Oregon State Historic Preservation Office
- Spokane Tribe of the Spokane Reservation, Washington
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Environmental Protection Agency
- U.S. General Services Administration
- U.S. Fish and Wildlife Service
- Vancouver Housing Authority
- Washington Department of Natural Resources
- Washington State Department of Archaeology and Historic Preservation
- Washington State Department of Ecology
- Washington State Department of Fish and Wildlife

See Appendix A for more information on how this project has coordinated with local, state, and federal agencies and Tribes.

Transit connections within the CRC project area are currently constrained by many of the same problems facing highway motorists—outdated highway safety design features and traffic congestion are increasing travel times and reducing reliability for buses connections between Clark County and to Portland.

Who is leading the CRC project?

The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) are the lead federal agencies for this study. Both agencies must ensure that the National Environmental Policy Act (NEPA) process is properly conducted and completed, including the publication of this Draft Environmental Impact Statement, before they can provide funding or approval for this project. After FTA and FHWA have completed the NEPA process, they will ultimately sign a Record of Decision, if a build alternative is chosen. The Record of Decision will affirm that all federal environmental regulations have been met before this project can proceed into final design and construction, if a build alternative is selected.

State transportation agencies and local governments in the Vancouver-Portland region have joined together to develop a comprehensive strategy for addressing highway, freight, transit, bicycle, and pedestrian needs within the CRC project area. The co-lead agencies for this project, in addition to the aforementioned federal lead agencies, are: Washington State Department of Transportation (WSDOT), the Oregon State Department of Transportation (ODOT), the Tri-County Metropolitan Transportation District (TriMet), Clark County Public Transportation Benefit Area (C-TRAN), the Southwest Washington Regional Transportation Council (RTC), and the Metropolitan Regional Government (Metro). These co-lead agencies, together with the cities of Vancouver and Portland, comprise the local agencies that are sponsoring this project. Each of these sponsoring agencies will be responsible for approving all or part of the project that will be built.

WSDOT and ODOT are leading the highway design. Metro and RTC are the Metropolitan Planning Organizations for the region, and they maintain the regional and metropolitan transportation plans that will need to be amended to include a locally preferred alternative for the CRC project. TriMet and C-TRAN, the region's transit operators, must endorse the transit elements of the project. The cities of Portland and Vancouver must approve any local project elements. Other state and federal agencies and stakeholders are also participating in technical, regulatory, or advisory roles.

The agencies leading the CRC project have worked with many other local, state, and federal agencies (see list at left) during the planning and development of this project to ensure that the ultimate construction of this project can be permitted and allowed, and that this project best represents the interests of this region. Appendix A describes the agencies this project is working with and the coordination processes within this diverse group.

What studies preceded the CRC project?

Exhibit 2
Preceding Studies

DIMENSIONS ARE APPROXIMATE.

Major transportation improvements in the CRC project area have been studied for over a decade. More recently, in 2001, the Washington and Oregon governors appointed a bi-state task force of 28 community members, business representatives, and elected officials to address concerns about congestion on I-5 between Portland and Vancouver. This task force 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, and adopted the Final Strategic Plan on June 18, 2002. Below is a summary of their recommendations:

- 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 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 final project outcomes are equitable.

Several of these recommendations are being further evaluated by this project. See Section 2.5 of this DEIS for more information on the early development of the CRC project.

High-capacity transit in the I-5 corridor through north Portland and Vancouver has been studied periodically for over a decade. In 1993, the FTA, in cooperation with Metro, began studying high-capacity transit in the “South/North Corridor”, which stretches from Clackamas and Milwaukie, Oregon to Vancouver, Washington. FTA and Metro published the South/North Corridor Project Draft Environmental Impact Statement in 1998. This identified a variety of alignments and length options for a light rail corridor connecting Milwaukie, downtown Portland, North Portland, and downtown Vancouver. Subsequent funding challenges didn’t allow construction of the entire corridor assessed in the South/North project, but did allow construction of the MAX Yellow line. The Yellow line was built in 2004 through North Portland, a section of the South/North corridor. The new light rail line currently being constructed along the north-south axis of downtown Portland can accommodate a future extension to Milwaukie; an environmental impact study is currently evaluating this extension. The transit component of the CRC project is now assessing the extension of high-capacity transit through Vancouver. These projects are part of the vision outlined in the original planning studies of the 1990s.

TERMS & DEFINITIONS

Traffic Terms

Congestion – For highways, congestion occurs when the average speed is below 30 mph.

Peak Period – This is more generally described as "rush hour" when travel patterns generate the most traffic, especially in a certain direction.

Exhibit 3

Projected Hours of Congestion on I-5 Crossing

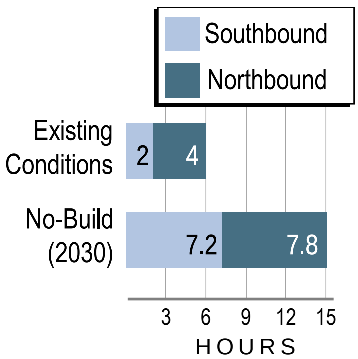

Exhibit 4

A Bus and Truck Wait During a Bridge Lift

What problems does this project seek to fix?

The CRC project seeks to address six problems, as described below:

1. **Growing travel demand and congestion**: Heavy congestion has resulted from growth in regional population, employment, and interstate commerce. The existing I-5 crossing provides three lanes for northbound and southbound travel, which can accommodate approximately 5,500 vehicles per hour in each direction. However, there are more people who want to use the crossing during peak periods than can be accommodated on the bridges, which results in stop-and-go traffic the mornings and afternoons. Cars getting on the highway have little room to accelerate and merge with highway traffic (short merging lanes) and have no room to pull off the highway (narrow shoulders) when an accident occurs or when vehicles break down. These conditions make congestion worse and decrease safety. Traffic can also become congested when large river vessels must use the lift spans to navigate underneath the I-5 bridges.

2. **Impaired freight movement**: Congestion on I-5 reduces freight mobility between regional markets in Portland and Vancouver, as well as national (California and other neighboring states) and international (Mexico or Canada) destinations along the I-5 corridor. Freight trucks most often travel in the middle of the day to avoid congestion. As hours of congestion continue to increase over time, travel times for freight trucks will continue to increase—even when traveling during the off-peak hours. This increases delivery times and raises shipping costs. It also negatively affects this region's economy. Truck-hauled freight in the Portland-Vancouver region is expected to grow more rapidly than other forms of freight movement (such as marine-hauled freight). Truck-hauled freight is forecast to grow from 67 percent of total freight movement in 2000 to 75 percent in 2035.[1]

3. **Limited public transportation operation, connectivity, and reliability**: Congestion on I-5 reduces bus travel speeds and reliability. Local bus services currently travel between downtown Vancouver and downtown Portland. Express bus routes serve commuters by providing service directly from Clark County park and rides to downtown Portland. Both of these services travel over the I-5 bridges. Bus travel times from downtown Vancouver to Hayden Island increased 50 percent between 1998 and 2005. On average, local bus travel times are 10 to 60 percent longer during peak periods than during off-peak periods.

4. **Safety and vulnerability to incidents**: Over 300 crashes are reported annually on I-5 in the project area, making this one of the most accident-intensive section of I-5. This high accident rate is a result of multiple highway design features that do not meet current standards, including:

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[1] Metro. 2006.

- Close interchange spacing – within the CRC project area, I-5 has six interchanges spaced approximately one-half mile apart. The recommended minimum distance between interchanges is one mile so that cars entering and exiting the highway have enough distance to fully merge with traffic or diverge to the off-ramp before the next interchange.
- Short on- and off-ramps – several on-ramps are not long enough for vehicles to reach highway speed before merging with highway traffic. Off-ramps are too short for safely slowing down, and may cause back ups from exits that block traffic on I-5. This generates traffic congestion and can cause accidents because maneuvering is difficult, especially for large trucks.
- Vertical grade changes – a "hump" in the I-5 bridges that accommodates the Columbia River shipping channel blocks the view of roadway conditions ahead. This blocked view reduces speeds and creates potential hazards to motorists.
- Narrow lanes and shoulders – several portions of I-5 in the project area have narrow inside and outside shoulders, while the I-5 bridges essentially have no shoulders, with less than one foot between the outside lanes and the barrier. The northbound I-5 bridge also has lanes one foot narrower than the minimum standard for a highway, and no shoulders. These conditions place vehicles very close to physical barriers and other vehicles, causing motorists to slow down, and do not provide space for broken down vehicles or emergency vehicles.
- Hazardous river navigation – the Coast Guard has agreed not to raise the I-5 bridges' lift spans during peak traffic periods because of the substantial impact this would have on automotive traffic. This requires boats heading downstream (west) to navigate using the fixed "barge channel" near the middle of the river, and then quickly turn to line up with the narrow opening on the north end of the Burlington Northern Santa Fe (BNSF) railroad bridge, located about one mile downstream. This movement is especially difficult during high river levels.

Exhibit 5
Accident on Narrow Shoulder Closes Travel Lane

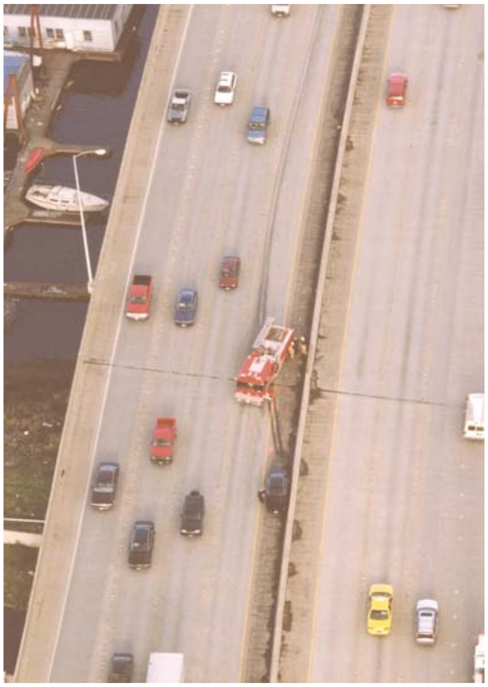
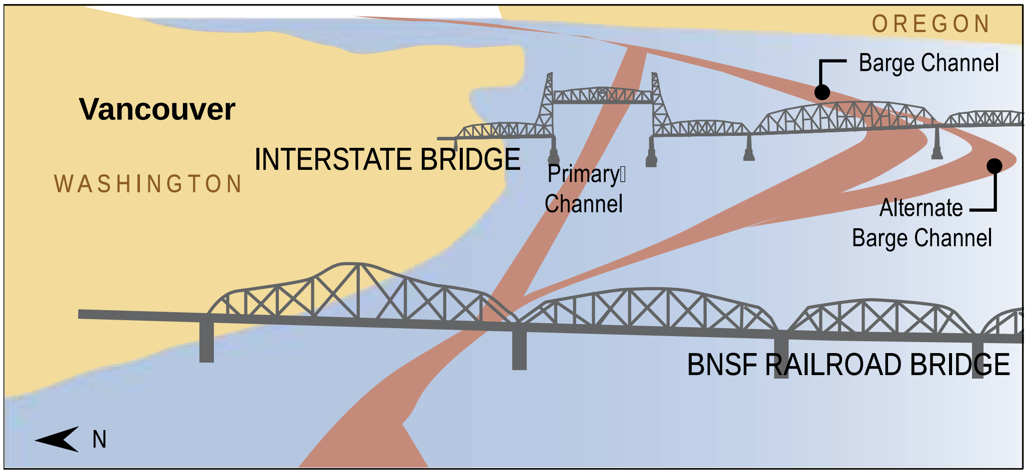


Exhibit 6
Constrained River Navigation



NOT TO SCALE

Exhibit 7
Bicycle and Pedestrian Path

Exhibit 8
Earthquake Damage to a Steel Truss Bridge

A span of the "Million Dollar Bridge" in Alaska slipped off its foundation during an earthquake in 1964.

5. **Substandard bicycle and pedestrian facilities**: The bicycle and pedestrian paths on the I-5 bridges are very narrow (four feet wide in most places) and extremely close to traffic and to the steel trusses. Also, the connections to these paths at both ends of the bridges are difficult to follow, especially around the Marine Drive and Hayden Island interchanges. Many existing non-motorized facilities cannot be used by persons with disabilities, and thus do not comply with the Americans with Disabilities Act standards.

6. **Seismic vulnerability**: The I-5 crossing is comprised of two bridges, one built in 1917 (the northbound structure) and the other built in 1958 (the southbound structure). The foundations of both bridges rest in soils that could liquefy during a major earthquake. Neither bridge was built to current earthquake safety standards, and could be damaged or collapse during a major earthquake.

What are the different choices for addressing the problems in the CRC corridor?

This DEIS assesses how different alternatives could improve the conditions mentioned above, such as increasing safety, improving mobility between Vancouver and Portland, and reducing congestion. All build alternatives assessed in this DEIS include transit, highway, bicycle, and pedestrian improvements. Some of these are physical improvements, such as widening the highway or installing dedicated transit lanes. Others are operational improvements to help the system function more efficiently, such as adding meters to a highway ramp to affect how quickly vehicles can enter the highway, or tolling the river crossing to reduce automobile traffic.

Four build alternatives are being assessed in this DEIS, in addition to a No-Build alternative. Each alternative being evaluated is comprised of several components that, when combined, create a particular multimodal alternative that comprehensively addresses the problems this project seeks to fix. These components include:

- Multimodal river crossing and highway improvements
  - Bridges over the Columbia River carrying transit, highway, and bicycle and pedestrian traffic
  - Bicycle and pedestrian improvements between north Portland and downtown Vancouver
  - Highway and interchange improvements between Marine Drive in north Portland and SR 500 in Vancouver
- High-capacity transit modes
- Transit terminus and alignment options
  - Transit terminus (endpoint) options
  - Transit alignment options
- Transit operations (frequency of train or bus rapid transit service)
- Bridge tolls
- Transportation System and Demand Management measures

Exhibit 9 summarizes the components included in each alternative. Each component is described following an overview of the full alternatives.

Exhibit 9
Components Making up the Project Alternatives

Component	Alternative 1 (No-Build)	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Multimodal River Crossing and Highway	Current I-5 bridges	Replacement[a]	Replacement[a]	Supplemental	Supplemental
High-Capacity Transit Mode[b]	None	Bus Rapid Transit	Light Rail	Bus Rapid Transit	Light Rail
High-Capacity Transit Terminus	N/A	(A) Kiggins Bowl, (B) Lincoln, (C) Clark College MOS[c], or (D) Mill Plain MOS	(A) Kiggins Bowl, (B) Lincoln, (C) Clark College MOS, or (D) Mill Plain MOS	((A) Kiggins Bowl, (B) Lincoln, (C) Clark College MOS, or (D) Mill Plain MOS	(A) Kiggins Bowl, (B) Lincoln, (C) Clark College MOS, or (D) Mill Plain MOS
Transportation Demand and System Management programs	Current programs	Expanded Transportation Demand and System Management programs			
I-5 Bridge Toll	None	Standard rate	Standard rate[d]	Higher rate[e]	Higher rate[e]
Transit Operations	Existing	Efficient	Efficient	Increased	Increased

a The Replacement crossing has two designs, a 3-bridge design and a Stacked Transit/Highway Bridge design concept; these are described below.

b High-Capacity Transit Mode also dictates the location of a maintenance base expansion. Bus Rapid Transit would entail expanding a bus maintenance facility in eastern Vancouver. Light Rail would entail expanding the Ruby Junction maintenance base in Gresham.

c Minimum operable segment; see Glossary.

d Alternative 3 was also evaluated without a toll to quantify the traffic effects of tolling the I-5 crossing.

e Alternatives 4 and 5 include a higher toll rate during peak commute periods to reduce traffic demand in order to compensate for these alternatives' lower highway capacity (compared to Alternatives 2 and 3) that is a result of these alternatives including a Supplemental river crossing.

Exhibit 10 on the following page identifies key features of each alternative.

Exhibit 10
Key Transit and Highway Features of the Alternatives

Alternative	Transit Features	Highway Features
1: No-Build Alternative	Modest increases to C-TRAN's service hours for bus routes throughout Vancouver and Clark County to keep pace with anticipated changes in congestion.	I-5 widening and improvements around Delta Park.
	Modest increases to TriMet's services hours for bus routes throughout north and northeast Portland to keep pace with anticipated changes in congestion.	
	Completion of the first phase of the South Corridor light rail project on the Portland Mall and I-205.	
2: Replacement crossing with bus rapid transit	Exclusive bus lanes from the Expo Center, over Hayden Island, across the Columbia River, and to a terminus in Vancouver.	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. (see the Multimodal River Crossing and highway improvements section below for more information on these designs).
	The exclusive bus lanes would extend 2.07–4.22 miles north from the Expo Center through Vancouver, and include five to seven transit stations and three to five structured or surface park and rides with up to 2,410 spaces, depending upon the transit terminus.	
	Introduction of a new bus rapid transit service, including a simplified payment method (e.g., the use of off-board ticket vending machines) and 60-foot articulated vehicles with special markings to create a "branded identity."	Improvements to the following I-5 interchanges: Marine Drive, Hayden Island, SR 14, Mill Plain, Fourth Plain, and SR 500.
	Expansion of the current C-TRAN bus maintenance facility in eastern Vancouver.	Additional auxiliary lanes for traffic entering and/or exiting I-5 between Marine Drive and SR 500.
	Changes to C-TRAN local bus routes to connect with the new bus guideway and park and rides.	A toll would be charged on the I-5 crossing, with higher rates during peak travel periods.
	27 bus rapid transit vehicles (60' articulated buses) and 12 standard buses would be included in this alternative.	
3: Replacement crossing with light rail	Extension of the light rail guideway from the Expo Center over Hayden Island and across the Columbia River to a terminus in Vancouver. The light rail guideway would extend 2.07–4.22 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, depending upon the transit terminus.	Same highway features as Alternative 2.
	Changes to C-TRAN local bus routes to connect with the new light rail stations and park and rides.	This alternative was also modeled without a toll to determine the potential effects of tolling on traffic patterns.
	Expansion of TriMet's Ruby Junction light rail maintenance facility in Gresham.	
	Fourteen light rail vehicles and 27 standard buses would be included in this alternative.	
4: Supplemental crossing with bus rapid transit	Same transit features as Alternative 2, but higher frequency operations of bus rapid transit and local bus routes.	A new, supplemental crossing for southbound interstate traffic and exclusive lanes for buses.
	This alternative would include 38 bus rapid transit vehicles and 143 standard buses.	Both existing I-5 bridges would be re-striped for two lanes each to carry northbound I-5 traffic.
		Seismic retrofits to the existing bridges.
		Improvements to the following I-5 interchanges: Marine Drive, Hayden Island, SR 14, Mill Plain, Fourth Plain, and SR 500.
		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.
		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.
5: Supplemental crossing with light rail	Same transit features as Alternative 3, but higher frequency operations for light rail and for local bus routes.	Same highway features as Alternative 4.
	This alternative would include 18 light rail vehicles and 147 standard buses.	

Exhibits 11 through 15, below, describe the build alternatives. These exhibits are followed by detailed descriptions of the various components that make up the alternatives.

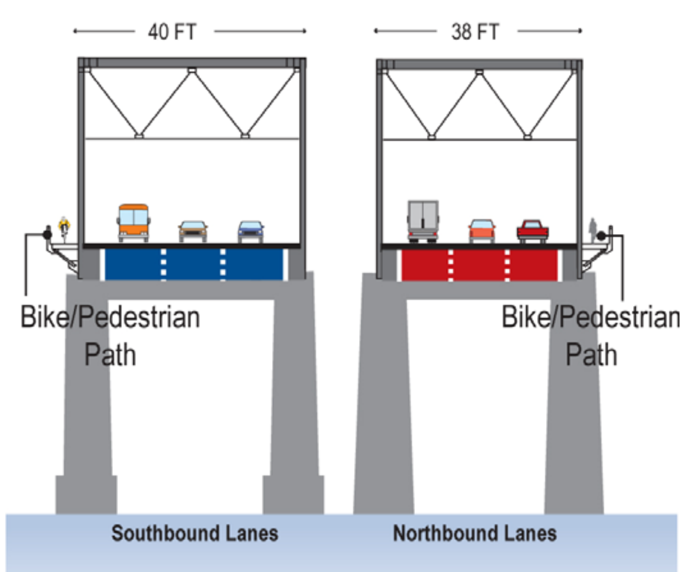
Exhibit 11

ALTERNATIVE 1: No-Build

DIMENSIONS ARE APPROXIMATE.

The No-Build Alternative illustrates how transportation and environmental conditions would change by the year 2030 if the I-5 CRC project is not built. This alternative makes the same assumptions as the build alternatives regarding population and employment growth through 2030, and also assumes that the same transportation and land use projects in the region would occur as planned. For example, the No-Build Alternative includes the I-5 widening around Delta Park that is schedule to begin construction in 2008. The No-Build Alternative also includes several large land use changes that are planned within the project area, such as the Riverwest development just south of Evergreen Boulevard west of I-5, the Columbia West Renaissance project along the western waterfront in downtown Vancouver, and redevelopment plans for the Jantzen Beach shopping center on Hayden Island. All traffic and transit projects within or near the CRC project area that are anticipated to be built by 2030 separately from this project are included in the Cumulative Effects Technical Report. All these projects are also assumed in the build alternatives.

Existing River Crossing



MEASUREMENTS PROVIDED ARE APPROXIMATE.

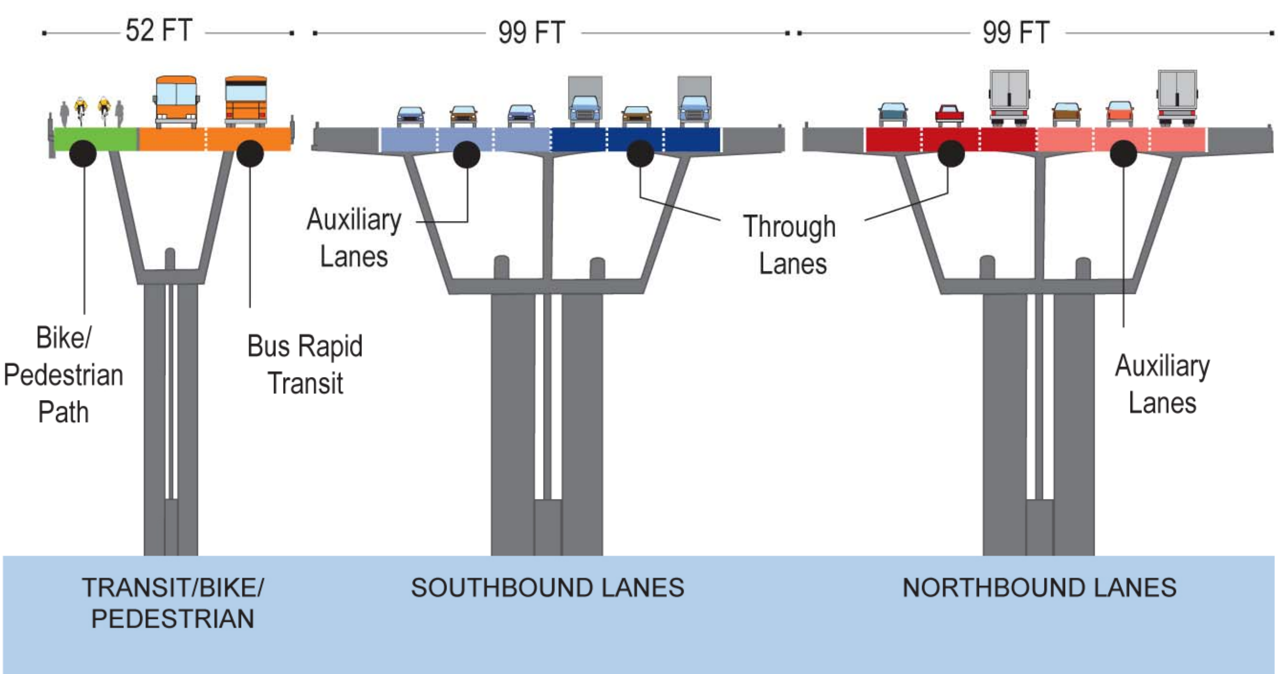
Exhibit 12 (page 1 of 2)

ALTERNATIVE 2: Replacement Crossing with Bus Rapid Transit

This alternative would replace the existing I-5 bridges with a new crossing downstream (west) of the current I-5 alignment. The existing bridges would be removed. The new crossing could include three bridges, two for northbound and southbound Interstate traffic, and a third bridge for buses in dedicated transit lanes, bicyclists, and pedestrians. There is also a “Stacked Transit/Highway Bridge” (STHB) design that would require two new bridges, rather than the three needed for the standard replacement crossing design. The STHB design would include transit beneath the highway deck of the I-5 southbound bridge and would suspend the bicycle and pedestrian path under the eastern edge of the northbound I-5 bridge.

Bus rapid transit would operate in an exclusive guideway from the Expo Center in Portland along one of several alignment options through the project area to end at one of four possible terminus options (a description of these options starts on page S-22). The exclusive bus lanes would extend 2.07–4.22 miles north from the Expo Center through Vancouver, and include five to seven transit stations and three to five structured or surface park and rides with up to 2,410 spaces, depending upon the transit terminus. Riders could transfer at the Expo Center to the existing MAX light rail system. Local bus service in Vancouver would increase to serve new transit passengers. Automobiles and trucks would pay a toll to cross the Columbia River on the new I-5 bridges.

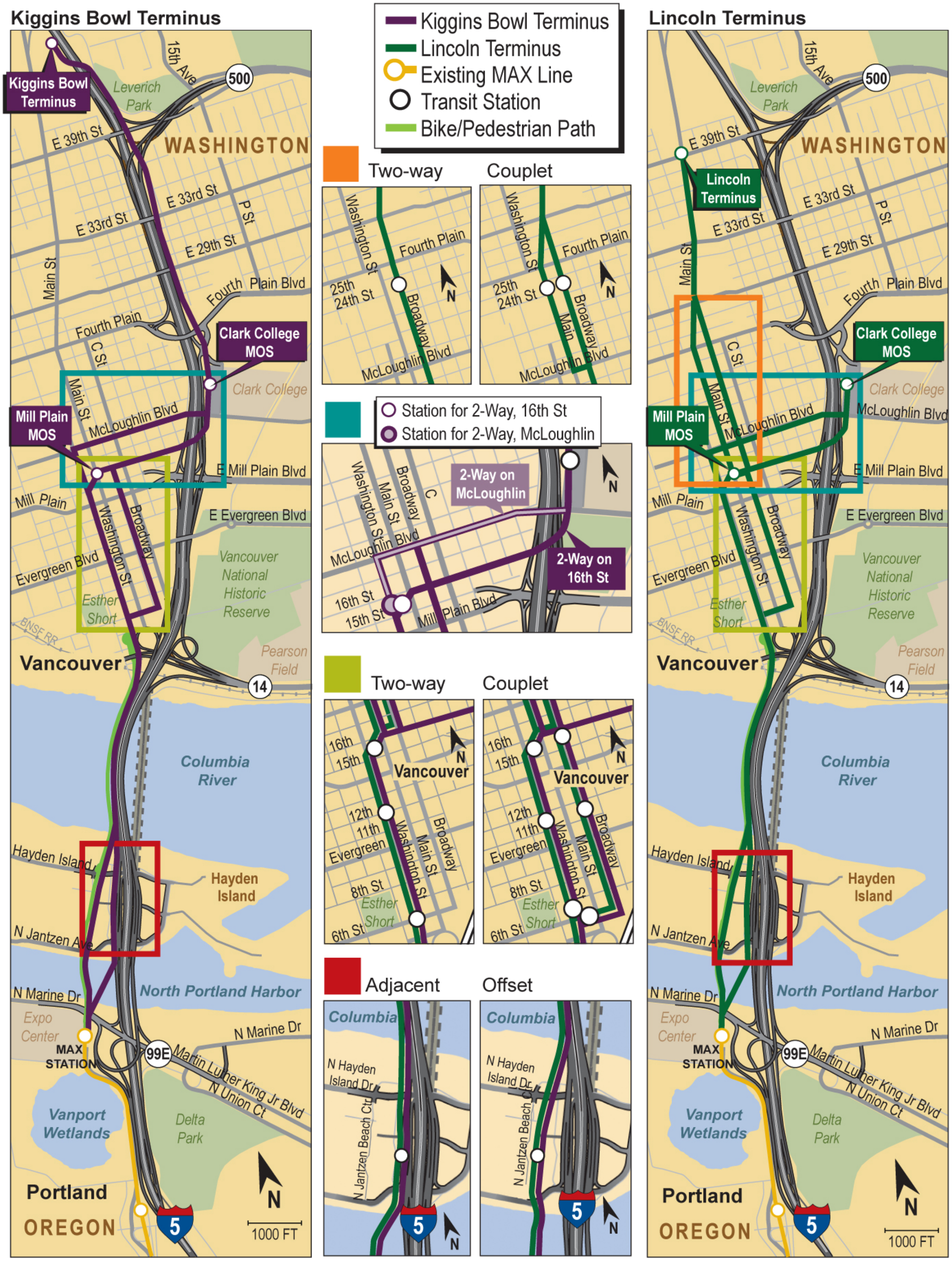
Replacement River Crossing with Bus Rapid Transit



Please see page S-18 for a definition of Auxiliary Lanes
MEASUREMENTS PROVIDED ARE APPROXIMATE.

Exhibit 12 (page 2 of 2)

Transit Terminus and Alignment Options for Alternative 2



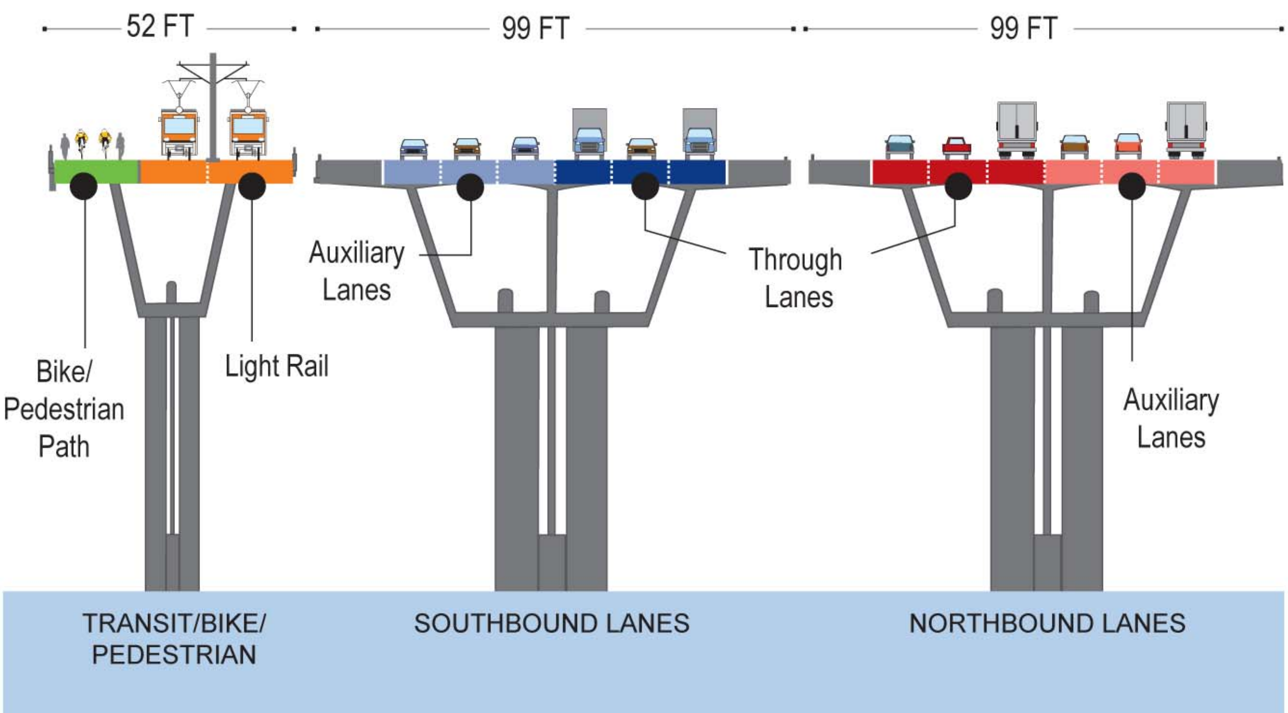
MAP DIMENSIONS ARE APPROXIMATE.
MOS=Minimum Operable Segment

Exhibit 13 (page 1 of 2)

ALTERNATIVE 3: Replacement Crossing with Light Rail

Alternative 3 is similar to Alternative 2 except that light rail would be used instead of bus rapid transit. Light rail could use the same alignments and station locations as bus rapid transit. Trains would not run as frequently as the buses in Alternative 2 because they have higher capacity. The light rail guideway would connect with the MAX system at the Expo Center, allowing trains to continue directly into downtown Portland without a transfer. This alternative includes the same tolling scenario as Alternative 2, but was also modeled without a toll on the I-5 crossing in order to determine the effects that tolling could have on traffic patterns.

Replacement River Crossing with Light Rail

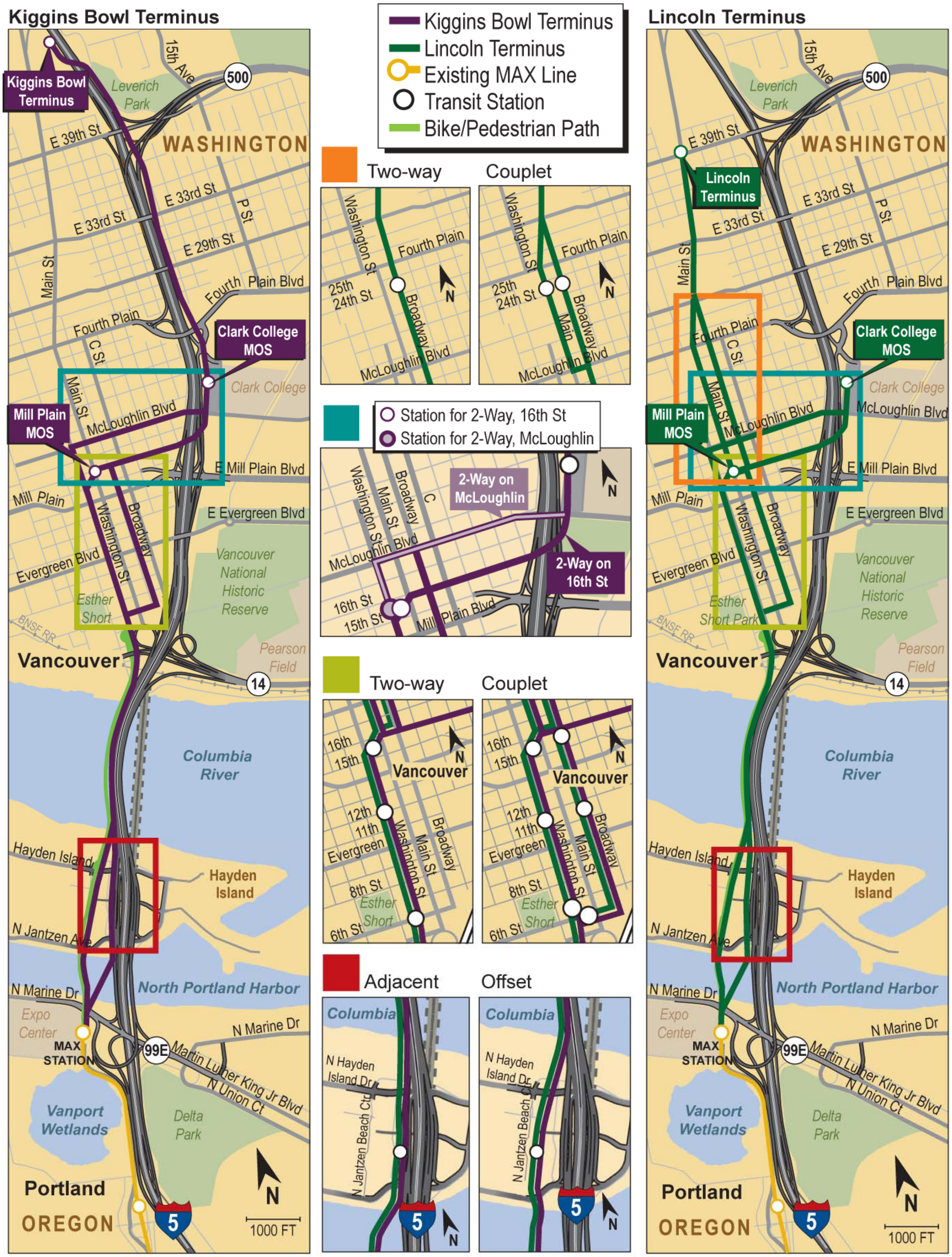


Please see page S-18 for a definition of Auxiliary Lanes

MEASUREMENTS PROVIDED ARE APPROXIMATE.

Exhibit 13 (page 2 of 2)

Transit Terminus and Alignment Options for Alternative 3



MAP DIMENSIONS ARE APPROXIMATE.
MOS=Minimum Operable Segment

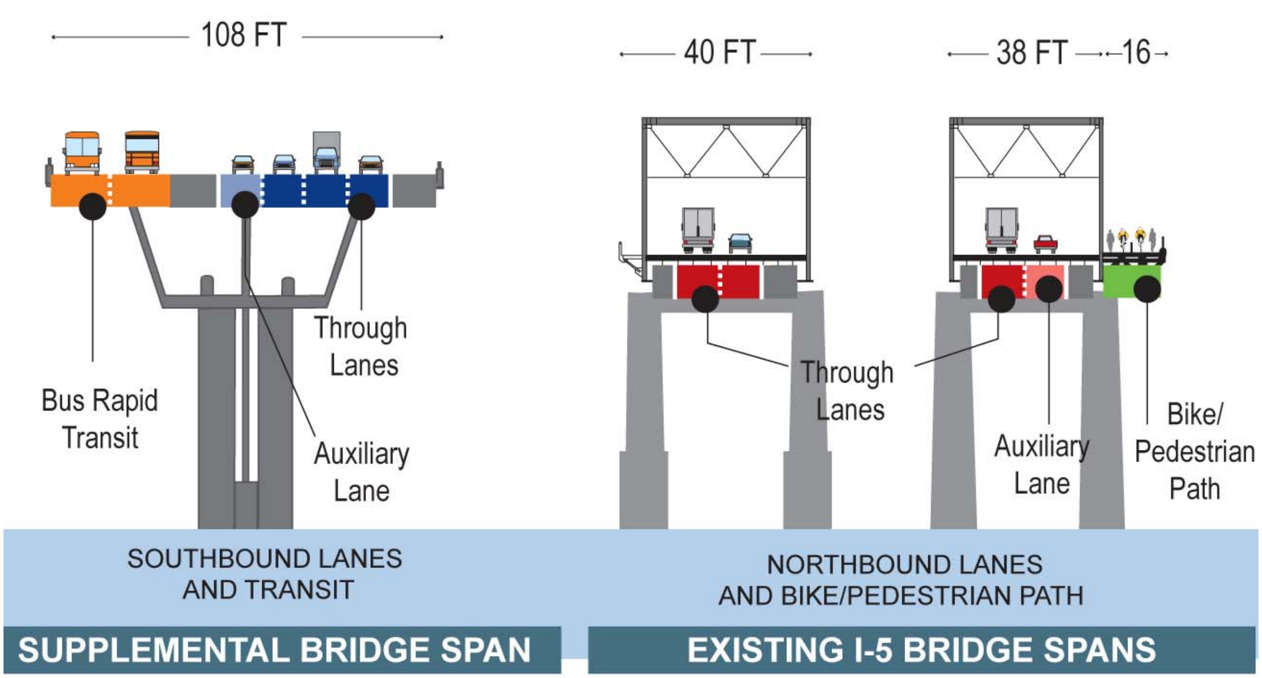
Exhibit 14 (page 1 of 2)

ALTERNATIVE 4: Supplemental Crossing with Bus Rapid Transit

This alternative would retain both existing I-5 bridges and add one new bridge. The existing I-5 bridges would be re-striped to provide two northbound lanes on each bridge and provide safety shoulders for disabled vehicles. Currently each bridge has three lanes and no shoulders. A new, wider bicycle and pedestrian facility would be added to the east side of the existing northbound (eastern) bridge. A new supplemental bridge would be constructed downstream of the existing bridges, and would include four southbound I-5 traffic lanes, safety shoulders and a bus rapid transit guideway.

Buses would operate in an exclusive guideway from the Expo Center in Portland along one of several possible alignments through the project area to end at one of four possible terminus options (a description of these options starts on page S-22). The exclusive bus lanes would extend 2.07–4.22 miles north from the Expo Center through Vancouver, and include five to seven transit stations and three to five structured or surface park and rides with up to 2,410 spaces, depending upon the transit terminus. Buses would operate more frequently than with Alternative 2, to compensate for the reduced auto capacity of the supplemental crossing compared to the replacement crossing. Local bus service in Vancouver and Clark County would increase to serve new transit passengers. Automobiles and trucks would pay a toll to cross the Columbia River that would be slightly higher during peak commute periods than for Alternatives 2 and 3.

Supplemental River Crossing with Bus Rapid Transit



Please see page S-18 for a definition of Auxiliary Lanes
MEASUREMENTS PROVIDED ARE APPROXIMATE.

Exhibit 14 (page 2 of 2)

Transit Terminus and Alignment Options for Alternative 4

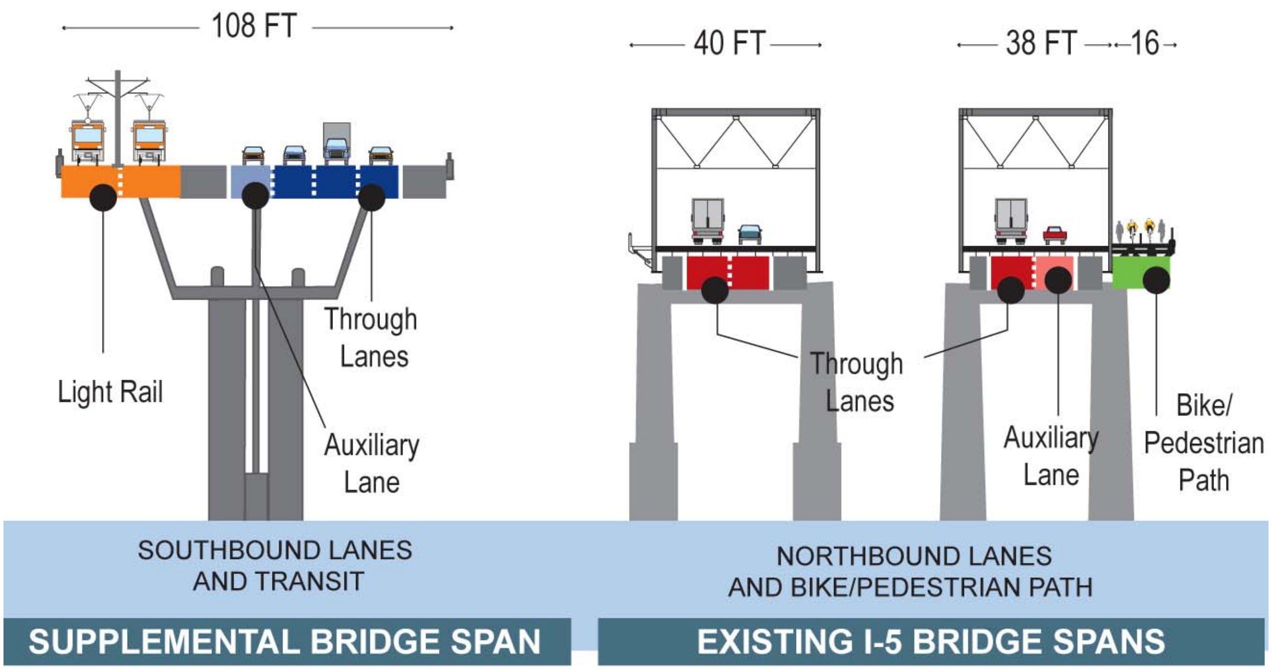
MAP DIMENSIONS ARE APPROXIMATE.
MOS=Minimum Operable Segment

Exhibit 15 (page 1 of 2)

ALTERNATIVE 5: Supplemental Crossing with Light Rail

Alternative 5 is similar to Alternative 4 except that light rail would be used instead of bus rapid transit. Light rail would have the same possible alignments and station locations. Compared to Alternative 3, trains would operate more frequently to increase the capacity of the transit system in order to compensate for the lower capacity of the supplemental crossing compared to the replacement crossing.

Supplemental River Crossing with Light Rail



Please see page S-18 for a definition of Auxiliary Lanes

MEASUREMENTS PROVIDED ARE APPROXIMATE.

Exhibit 15 (page 2 of 2)

Transit Terminus and Alignment Options for Alternative 5

MAP DIMENSIONS ARE APPROXIMATE.
MOS=Minimum Operable Segment

TERMS & DEFINITIONS

Auxiliary Lanes

Auxiliary lanes can improve safety and reduce congestion by accommodating cars and trucks entering or exiting the highway or traveling short distances between adjacent interchanges, and can reduce conflicting weaving and merging movements. This is especially important at the river crossing, where three large interchanges (Marine Drive, Hayden Island, and SR 14) all have traffic entering and exiting I-5 within a 1.5-mile segment.

Multimodal River Crossing and Highway Improvements

Two options for improving the river crossing are being evaluated:

- Replace the existing bridges with new bridges, or
- Reuse the existing bridges and build a new structure next to them.

Each river crossing has a unique set of improvements for highway traffic, transit vehicles, and bicyclists and pedestrians.

REPLACEMENT CROSSING

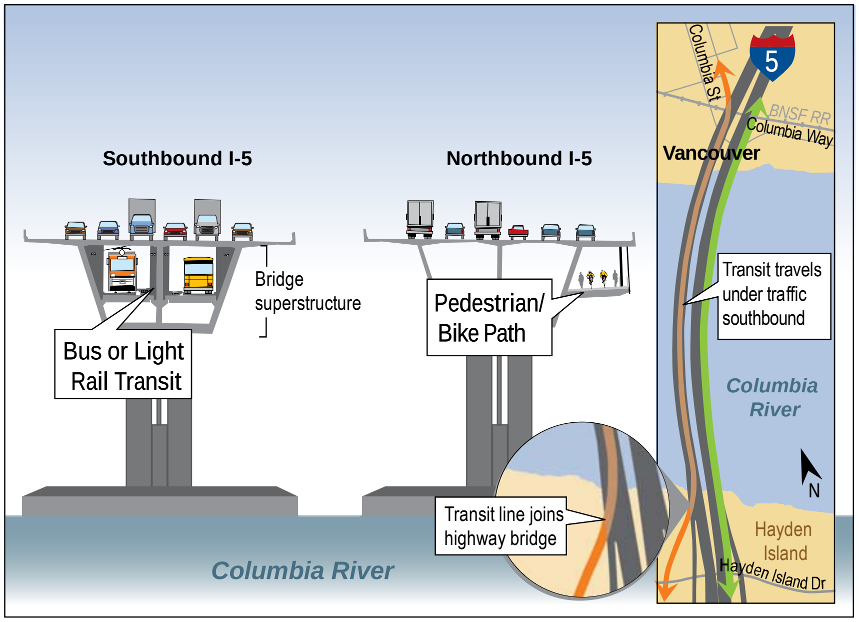
A replacement river crossing would remove the two existing I-5 bridges and replace them with three new, parallel bridges immediately west of the current I-5 crossing. The new eastern (northbound traffic) and middle (southbound traffic) bridges could accommodate six lanes each for highway traffic. The new western bridge would carry high-capacity transit across the river, with a separated path for bicyclists and pedestrians.

A pathway for bicyclists and pedestrians would be located on the high-capacity transit guideway, and extend from the Expo Center, across Hayden Island, and into downtown Vancouver. This pathway could be placed on either or both sides of the river crossing. The bicycle and pedestrian path would be continuous and above-grade from just north of Marine Drive to Sixth Street in Vancouver.

Highway improvements north and south of the replacement river crossing would provide three lanes for traffic traveling through the project area, and one to three auxiliary lanes for traffic entering, exiting, or traveling short distances on the highway within the project area.

There is also a “Stacked Transit/Highway Bridge” (STHB) design for the replacement crossing that would include transit beneath the highway deck of the I-5 southbound bridge and would suspend the bicycle and pedestrian path under the eastern edge of the northbound I-5 bridge. This design would require two new bridges, rather than the three needed for the standard replacement crossing design.

Exhibit 16
Conceptual Design of Stacked Transit/Highway Bridge Design



NOT TO SCALE

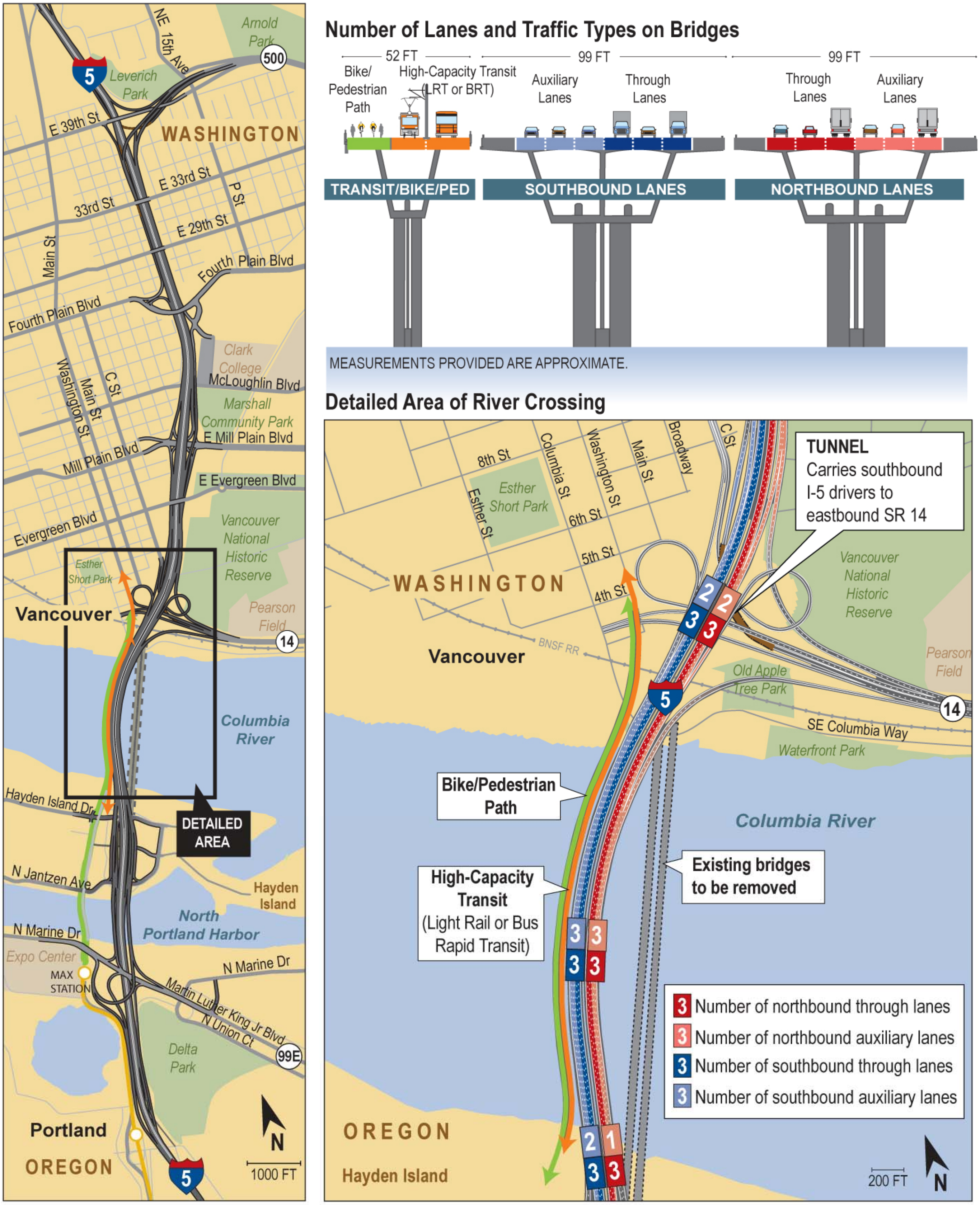
Note: The bridge type shown is for display purposes only.

SUPPLEMENTAL CROSSING

A supplemental river crossing would keep the existing bridges and build an adjacent new bridge. The supplemental river crossing would reuse both existing I-5 bridges, but only northbound traffic would travel on them. These bridges would each be re-striped to accommodate two lanes of traffic, for a total of four northbound I-5 lanes over the Columbia River. Bicyclists and pedestrians would use a new, wider path suspended from one of the existing bridges (current designs show the eastern bridge). The existing bridges would also receive major seismic upgrades. A new, parallel but higher bridge would be constructed downstream (west) to accommodate four lanes of southbound highway traffic, and would carry high-capacity transit in dedicated transit lanes.

Exhibit 17

Replacement River Crossing



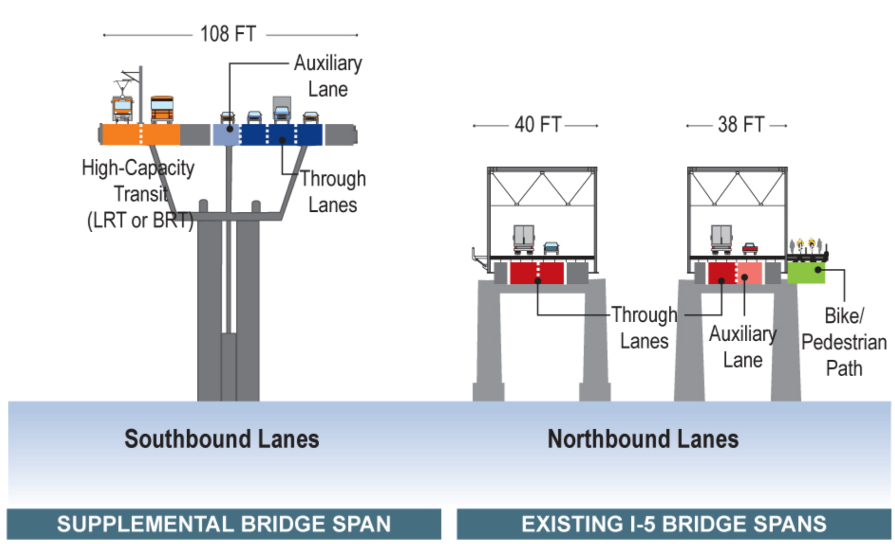
DIMENSIONS ARE APPROXIMATE.

Exhibit 18

Supplemental River Crossing

DIMENSIONS ARE APPROXIMATE.

Number of Lanes and Traffic Types on Bridges



MEASUREMENTS PROVIDED ARE APPROXIMATE.

Detailed Area of River Crossing

A wider path on the outside of one of the existing bridges would be constructed to safely accommodate both pedestrians and bicyclists. Ramps would connect this wider pathway with Columbia Way in Vancouver and with Tomahawk Island Drive on Hayden Island. An elevated multi-use pathway would also be provided alongside the transit guideway between Tomahawk Island Drive and Marine Drive, crossing over North Portland Harbor. Pedestrians and bicyclists using both pathways would need to travel along Tomahawk Island Drive, under I-5, and through intersections. Stairs, ramps, and/or elevators would be provided on both bridge alternatives to connect with existing and planned sidewalks and pathways in Vancouver, on Hayden Island, and near Marine Drive.

Highway improvements north and south of the river crossing would provide three lanes for traffic traveling through the project area, and one to two additional lanes for traffic entering, exiting, or traveling short distances on the highway within the project area. North of the river, the supplemental crossing would have one less auxiliary lane in each direction than the replacement crossing.

Exhibit 19
BRT Vehicle

Exhibit 20
Light Rail Vehicle

High-Capacity Transit Modes

The CRC project is examining two high-capacity transit modes to determine the best solution for providing transit within the CRC project area:

- Bus rapid transit (BRT), and
- Light rail (LRT).

Both modes would offer high capacity transit service connections with existing transit facilities and flexibility for future expansion. Both modes would provide increased capacity for passengers and improved amenities compared to the bus service that currently operate in the project area. Some existing bus routes would be modified to support the high-capacity transit system by connecting suburban commuters to the new system and retaining direct bus service from suburban areas to key employment centers such as downtown Portland.

Bus rapid transit would increase capacity for transit users and supply dedicated bus lanes in the project area. BRT would cost less to construct than a light rail system, and would provide flexibility for increasing future routes. Dedicated lanes through the project area would allow buses to bypass traffic and avoid delays from automobile congestion. Bus rapid transit would use larger buses (60 feet long instead of the typical 40-foot length). BRT stations would offer an easy fare payment method, such as ticket vending machines, and have a “branded” look, distinct from regular buses. Buses would stop at the Expo Center MAX station, where riders could transfer to or from the existing regional light rail system.

Light rail transit would follow the same potential alignments as bus rapid transit. It would extend the existing light rail system from its current northern ending point (terminus) at the Expo Center station across the Columbia River and into Vancouver, offering passengers a no-transfer ride between Vancouver and downtown Portland. Vehicles and station design would be similar to the existing MAX system, with ticket vending machines and a consistent appearance that is easy to recognize. Light rail trains would be allowed to pass through signalized intersections before other vehicles, which would shorten transit riders' trip through downtown Vancouver.

Transit Terminus and Alignment Options

Each of the CRC build alternatives includes four options in Vancouver where the high-capacity transit guideway could end, called transit terminus options. These terminus options are included in each alternative to provide the public and project co-lead agencies with a range of choices to consider and to provide possibility for extension in the future based on funding availability.

These include the Kiggins Bowl terminus, Lincoln terminus, Clark College minimum operable segment (MOS), and Mill Plain MOS. Each of these terminus options includes both the specific endpoint, such as the park and ride and the transit station, and the entire guideway and stations preceding this terminus through the project corridor. For example, the Kiggins Bowl terminus includes the guideway extending from the Expo Center to the Kiggins Bowl Park and Ride. Likewise, the Clark College MOS terminus includes the guideway extending from the Expo Center to the Clark College Park and Ride.

Exhibit 21

Transit Terminus and Alignment Options

DIMENSIONS ARE APPROXIMATE.

Exhibit 22
Station Locations and Guideway Length

	Kiggins Bowl terminus (A)	Lincoln terminus (B)	Clark College MOS (C)	Mill Plain MOS (D)
Guideway Length	4.22 miles	3.43 miles	2.65	2.07
Hayden Island Station	Adjacent or Offset from I-5	Adjacent or Offset from I-5	Adjacent or Offset from I-5	Adjacent or Offset from I-5
Downtown Vancouver Stations	7th Street 12 Street Mill Plain	7th Street 12 Street Mill Plain	7th Street 12 Street Mill Plain	7th Street 12 Street Mill Plain
North Vancouver Stations	Clark College 33rd Street Kiggins Bowl	24th Street 33rd Street Lincoln	Clark College	None
Park and Rides	Expo Center (existing) Clark College (structure) Kiggins Bowl (structure)	Expo Center (existing) Clark College (surface lot)[a] Lincoln (structure) Kiggins Bowl (surface lot)[a]	Expo Center (existing) Clark College (surface lot) Kiggins Bowl (surface lot)[a]	Expo Center (existing) SR-14 surface lots Clark College (surface lot)[a] Lincoln (surface lot)[a] Kiggins Bowl (surface lot)[a]
Total park and ride stalls	2,410	1,250	2,410	2,365

[a] These park and rides are proposed at sites that would not be on the HCT guideway, but would be connected to an HCT via local bus routes.

KIGGINS BOWL TERMINUS

The Kiggins Bowl terminus option would construct high-capacity transit from the Expo Center, across Hayden Island, over the Columbia River, and through downtown Vancouver. It would then travel east to cross under I-5 and connect to Clark College, continue north adjacent to I-5, and end at a park and ride at Kiggins Bowl. This terminus option would include a three-level parking structure at Clark College and a six-level structure at the Kiggins Bowl station.

LINCOLN TERMINUS

The Lincoln terminus option would construct high-capacity transit from the Expo Center, across Hayden Island, over the Columbia River, through downtown Vancouver, and continue north on local streets to the Lincoln Park and Ride north of 39th Street.

The Lincoln Park and Ride would contain up to two levels below ground and one level at-grade or above ground. To provide a wider range of access across Clark County, the Lincoln terminus option would also include a surface parking lot at Clark College and another surface lot at Kiggins Bowl. Local bus routes would connect these lots to the Lincoln Park and Ride or the Mill Plain station for transfer to the high-capacity transit line.

CLARK COLLEGE MINIMUM OPERABLE SEGMENT

The Clark College MOS ends the HCT guideway at the Clark College Park and Ride. This terminus option would provide flexibility for future extension, as part of another project, to either the Kiggins Bowl terminus or the Lincoln terminus.

The Clark College MOS would include the same three-level parking structure at Clark College as the Kiggins Bowl terminus. There would also be a surface lot at Kiggins Bowl that would be connected to the transit guideway by new local bus routes. The terminus station could be between the park and ride and the highway, as indicated in the graphics, or it could be parallel to McLoughlin, either in the middle or to the side of the street.

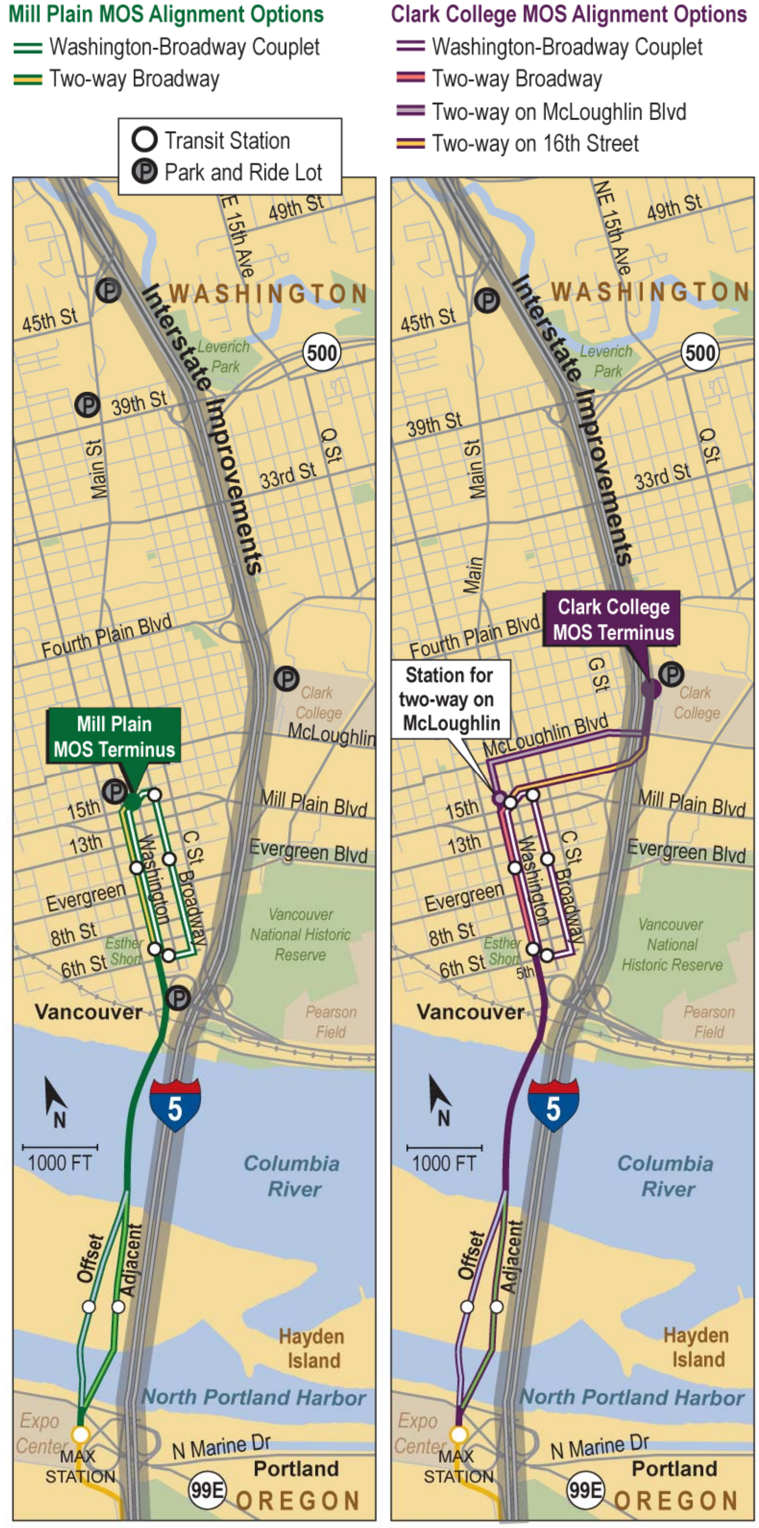
MILL PLAIN MINIMUM OPERABLE SEGMENT

The Mill Plain MOS would end the transit guideway at a new Mill Plain station between 15th and 16th Streets and between Washington and Main Streets, and could serve as a shortened version of either the Kiggins Bowl terminus or Lincoln terminus. Future projects could extend the transit guideway to either full-length terminus option. The Mill Plain MOS would include park and ride facilities around the SR 14 interchange in lower downtown Vancouver, a multi-level structure north of the Mill Plain station, and surface lots at Clark College, Kiggins Bowl, and Lincoln.

TRANSIT ALIGNMENT OPTIONS

Each of the four terminus options described above has different alignment options, or routes, for extending the high-capacity transit guideway from the Expo Center to the terminus. There are distinct sets of alignment options within three sections of the project corridor. There are two alignment options in the southern section from the Expo Center over Hayden Island and across the Columbia River. The middle section through downtown Vancouver also has two alignment options. The northern section, extending through northern Vancouver, has four alignment options—two for the Kiggins Bowl terminus and Clark College MOS, and two different alignment options for the Lincoln terminus.

Exhibit 23
Minimum Operable Segment (MOS)



DIMENSIONS ARE APPROXIMATE.

From the Expo Station across Hayden Island, transit could run either adjacent to, or several hundred feet away (offset) from, I-5. Through downtown Vancouver, HCT could run both directions (two-way) on

Washington Street, or run southbound on Washington Street and northbound on Broadway Street (a couplet).

In northern Vancouver, the Kiggins Bowl terminus and Clark College MOS have substantially different alignment options than the Lincoln terminus. The Kiggins Bowl terminus and Clark College MOS would turn east at either McLoughlin Boulevard or 16th Street to go under I-5 and connect with a new park and ride at Clark College. From there, the Kiggins Bowl terminus would continue north parallel to the east side of I-5 before crossing back over I-5 near the SR 500 interchange and ending at a new Kiggins Bowl Park and Ride.

The same alignments and station locations are available for bus rapid transit or light rail.

The Lincoln terminus would continue north from downtown Vancouver, using either Broadway Street for two-way travel or a couplet on Broadway and Main Streets. Either of these alignment options would then merge to a two-way guideway on Main Street, north of Fourth Plain Boulevard, and end at the new Lincoln Park and Ride north of 39th Street.

Transit Operations

The build alternatives include two different operating scenarios for the high-capacity transit system—“Efficient” and “Increased” operations. These operating scenarios differ by how often the high-capacity transit vehicles would arrive at stations and what other bus routes would be used to feed the system. The transit system would be able to accommodate more people if the trains or buses arrive more often during the peak commute periods.

Exhibit 24
Transit Vehicle Headways in the Guideway (Minutes)

	Efficient Operations (Alternatives 2 and 3)		Increased Operations (Alternatives 4 and 5)	
	BRT[a]	LRT	BRT[a]	LRT
Peak periods[b]	2.5	7.5	1.5	6
Off-peak period	15	15	15	15

Source: CRC Transit Technical Report.

[a] BRT headways include local buses using the guideway.

[b] Peak periods are between 6 a.m. and 10 a.m. on weekday mornings and between 3 p.m. and 7 p.m. on weekday evenings.

Bridge Toll

Tolling will likely be necessary to generate the local revenue needed to help pay for the CRC project. Tolling was used to fund the original construction of the Interstate Bridge in 1917, and again in 1958 to pay for construction of the second span.

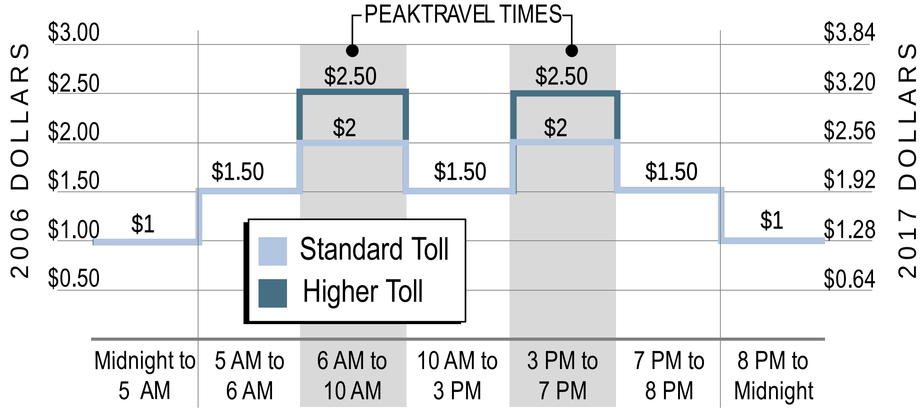
Several tolling scenarios are being evaluated (Exhibit 21):

- No toll (part of the No-Build Alternative, and also modeled with Alternative 3 to determine the traffic effects of tolling).

- Standard variable rate on the I-5 crossing (paired with Alternatives 2 and 3).
- Higher variable rate on the I-5 crossing (paired with Alternatives 4 and 5).
- Standard variable rate on both the I-5 and I-205 crossings (not paired with any build alternative, but evaluated separately to assess potential traffic diversions resulting from tolling the I-5 crossing).

Exhibit 25

Tolls for Passenger Cars (with Transponders)



Different toll rates would be charged based on the type of vehicle and the time of day, with higher tolls charged during peak commute periods. Tolls would be collected through an electronic toll collection system so that traffic would not have to stop or slow down when crossing the bridge. Instead, motorists could equip their cars with transponders that would automatically bill the vehicle owner each time they crossed the bridge. Cars without transponders would be tolled by a license-plate recognition system that would bill the address of the owner registered to that license plate.

These different tolling scenarios are being evaluated for several purposes. Evaluating different rates on the I-5 crossing provides information about travelers' sensitivity to paying a toll, and whether a higher toll would provide more revenue or simply cause reduced use of the river crossing. Evaluating a toll on the I-205 crossing provides an indication of how many motorists would divert to the I-205 crossing if this project were to implement a toll on just the I-5 crossing.

Transportation System and Demand Management Measures

In addition to the components described above, all build alternatives evaluated in this DEIS include transportation system management (TSM) and transportation demand management (TDM) measures to help reduce congestion during peak travel periods, improve traffic movement on the highway, and provide alternative transportation options to commuters. Transportation system management measures attempt to improve how traffic moves on existing roadways through a variety of techniques focused on keeping drivers informed and moving as safely, efficiently, and reliably as possible. Measures include:

- Adding traveler information systems (electronic reader boards) in the project area to alert motorists of temporary changes in highway conditions, such as a traffic accident or construction;
- Improving the emergency vehicle response system;
- Separate on-ramp lanes for transit vehicles and other designated vehicles to bypass traffic at ramp signals; and
- Expanded traffic monitoring equipment and cameras.

Transportation demand management measures seek to reduce the number of vehicles using the road system, especially single-occupant vehicles, while providing alternatives to automobile travel. Several of the project components would reduce demand for automobile travel, such as the introduction of high-capacity transit, charging a toll on cars and trucks using the I-5 crossing, and upgrading the bicycle and pedestrian facilities that cross the Columbia River.

How do the different alternatives and components compare?

This section highlights how the alternatives differ in terms of transportation performance, and community and environmental effects. Key differences between the full alternatives are highlighted first, followed by more detailed comparisons of the individual components. This is not a comprehensive discussion on the effects of these alternatives. Rather, the most substantial effects or those effects that help differentiate the alternatives are discussed. Chapter 3 provides more breadth and detail on how these alternatives and components perform and how they could affect the community and environment.

Comparison of Alternatives

Exhibits 26 and 27 below summarize the key performance and impact differences between each alternative. There are many factors contributing to these differences that are explained by the different combinations of components represented by each alternative. These components are compared in the next section.

Exhibit 26
Summary of Transportation Effects and Cost for Each Alternative

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Hours of Congestion/day	15 hours	3.5-5.5 hours	3.5-5.5 hours	10.75 hours	10.75 hours
People over the I-5 Crossing during PM peak[a]	28,550 total	40,500 total	41,650 total	31,600 total	33,050 total
In cars	26,500	34,400	34,400	25,700	25,700
On transit	2,050	6,100	7,250	5,900	7,350
Vehicle trips over the I-5 crossing/day[b]	184,000	178,000[b]	178,000[b]	165,000[b]	165,000[b]
Pedestrian and Bicycle Connections	Potentially no improvement to connections.	Provide continuous grade-separate multi-use path between Marine Drive and downtown Vancouver.	Provide continuous grade-separate multi-use path between Marine Drive and downtown Vancouver.	Improvements over the river but has at-grade crossings on Hayden Island.	Improvements but has at-grade crossings on Hayden Island.
Transit mode split in p.m. peak period[c]	13%	17-21%	19-23%	30-34%	34-38%
Transit travel time from Mill Plain station to Expo Center	N/A	8 min	7 min	14 min	8 min
Traffic safety	Potentially no improvement.	Reduced congestion and improved highway design would reduce collisions.	Reduced congestion and improved highway design would reduce collisions.	Improvement to highway design for safety, but some compromises on the existing I-5 bridges.	Improvement to highway design for safety, but some compromises on the existing I-5 bridges.
Transit safety	Potentially no changes	Additional buses could increase collisions but dedicated guideway may improve separation of modes. Potential security issues would need to be addressed at less visible stations.	New mode (light rail) could increase collisions but dedicated guideway would improve separation of modes. Potential security issues would need to be addressed at less visible stations.	High frequency of buses could increase collisions but dedicated guideway may improve separation of modes. Potential security issues would need to be addressed at less visible stations.	New mode (light rail) could increase collisions but dedicated guideway would improve separation of modes. Potential security issues would need to be addressed at less visible stations.
Effect on river navigation	Potentially no improvement	Eliminates S-curve maneuver and reduces number of piers.	Eliminates S-curve maneuver and reduces number of piers.	S-curve maneuver worsened with more piers and narrower channel.	S-curve maneuver worsened with more piers and narrower channel.
Capital Cost[d]	$0	$3,260 - $3,915	$3,368 - $4,091	$3,125 - $3,781	$3,214 - $3,950

Sources: CRC Traffic Technical Report, 2008; CRC Transit Technical Report, 2008; CRC Cost Risk Assessment, 2007.

[a] Total number of people in cars and on transit vehicles using the I-5 crossing traveling north during the four-hour afternoon/evening peak period (3 p.m. to 7 p.m.).

[b] These values assume a Kiggins Bowl terminus. See transit terminus section below for information on how the transit terminus option affects vehicle trips.

[c] Percentage of people traveling over the I-5 crossing on transit vehicles in the afternoon peak period, in the northbound direction.

[d] Capital costs are in millions of year-of-expenditure dollars. Cost ranges are due to the HCT terminus option in each of the build alternatives and to confidence (low being 60% confidence that cost would not be exceeded, and high being 90% confidence that cost would not be exceeded.)

Exhibit 27
Summary of Community and Environmental Effects for Each Alternative

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Residential displacements	0[a]	21-36	21-36	24-33	24-33
Commercial displacements	0[a]	41-68	41-68	34-64	34-64
Number of potential adverse impacts to historic resources	0	5-8	5-8	5-8	5-8
Air Quality[b]					
Carbon monoxide	30% reduction	30% reduction	30% reduction	30% reduction	30% reduction
Nitrogen oxides	70% reduction	70% reduction	70% reduction	70% reduction	70% reduction
Volatile organic compounds	50% reduction	50% reduction	50% reduction	50% reduction	50% reduction
Particulate matter	90% reduction	90% reduction	90% reduction	90% reduction	90% reduction
Traffic noise impacts on sensitive receptors (before mitigation)[c]	264	334	334	329	329
Transit noise impacts on sensitive receptors (before mitigation)[c]	0	35-82	7-45	38-92	7-51
Impacts on fish	No impacts from in-water construction, existing piers would remain, and water quality issues would remain.	Impacts from in-water construction, fewer piers would be in water, but greatest improvement in water quality.	Impacts from in-water construction, fewer piers would be in water, but greatest improvement in water quality.	Impacts from in-water construction, more piers would be in water, but some improvement in water quality.	Impacts from in-water construction, more piers would be in water, but some improvement in water quality.
Wetland impacts	No impacts	0.11 acres of direct impacts	0.06 acres of direct impacts	0.16 acres of direct impacts	0.11 acres of direct impacts
Total Suspended Solids (lbs./year)	136,020	43,293	43,235	40,735	40,677
Total Phosphorus (lbs./year)	207	109	108	102	102
Dissolved Copper (lbs./year)	9	8	8	8	8
Dissolved zinc (lbs./year)	64	49	49	46	46
CO_2 Emissions (tons/day)	463	452	452	494	491

Sources: CRC Acquisitions Technical Report, 2008; CRC Historic Resources Technical Report, 2008; Air Quality Technical Report, 2008; CRC Noise and Vibration Technical Report, 2008; CRC Ecosystems Technical Report, 2008; CRC Wetlands Technical Report, 2008; CRC Water Quality Technical Report, 2008; CRC Energy Technical Report, 2008.

[a] Both the C-TRAN bus maintenance facility and TriMet Ruby Junction light rail maintenance facility could be expanded with the No-Build alternative, though the exact size of the expansions is not known. Both of these expansions would likely result in both residential and commercial displacements.

[b] Reductions in emissions are largely due to expected improvements in vehicle emissions by 2030, and are thus not the result of this project and therefore are common amongst al alternatives.

[c] Noise impacts are expressed as the total number of impacts on sensitive receptors as defined by FHWA guidelines. This means that, for example, a 30 unit apartment complex that is impacted by traffic noise would register as 30 impacts on sensitive receptors.

Comparison of Components

Exhibits 28 through 32 below compare the performance and impacts of the individual components that comprise the full alternatives using similar metrics as those in the preceding section. This comparison of components illustrates what elements of the full alternatives are causing the differences in their transportation performance and impacts.

Exhibit 28

Comparison of No-Build and Replacement and Supplemental River Crossings and Highway Improvements

	No-Build (Alternative 1)	Replacement Crossing and highway improvements (Alternatives 2 and 3)	Supplemental Crossing and highway improvements (Alternatives 4 and 5)
Hours of Congestion/day	15 hours	3.5-5.5 hours	10.75 hours
People in cars over the I-5 Crossing during PM Peak[a]	26,500	34,400	25,700
Vehicle trips over the I-5 crossing/day	184,000	178,000	165,000
Pedestrian and Bicycle Connections	Potentially no improvement to connections.	Provide continuous grade-separate multi-use path between Marine Drive and downtown Vancouver.	Improvements over the river but has at-grade crossings on Hayden Island.
Traffic safety	Potentially no improvement.	Reduced congestion and improved highway design would reduce collisions.	Improvement to highway design for safety, but some compromises on the existing I-5 bridges.
Effect on river navigation	Potentially no improvement.	Eliminates S-curve maneuver and reduces number of piers.	S-curve maneuver worsened with more piers and narrower channel.
Seismic vulnerability	Existing vulnerability	Improved seismic safety	Improved seismic safety
Capital cost[b]	$0	$2,741 - $3,042	$2,560 - 2,813
Residential displacements	0[c]	20	16
Business displacements	0[c]	41	34
Number of potential adverse impacts to historic resources	0	5	5
Traffic noise impacts on sensitive receptors (before mitigation)[d]	264	334	329
Impacts on fish	No impacts from in-water construction, existing piers would remain, and water quality issues would remain.	Impacts from in-water construction, fewer piers would be in water, but greatest improvement in water quality.	Impacts from in-water construction, fewer piers would be in water, but some improvement in water quality.

[a] Total number of people in cars using the I-5 crossing traveling north during the four-hour afternoon/evening peak period (3 p.m. to 7 p.m.).

[b] Capital costs shown are for the highway portion of the river crossing and highway improvements throughout the project area, and are in millions of year-of-expenditure dollars. Cost ranges are different levels of confidence that the costs will not be exceeded (low being 60% confidence and high being 90% confidence).

[c] Both the C-TRAN and TriMet maintenance facilities may be expanded with the No-Build alternative. The exact size of the expansion, therefore the number of residences or businesses potentially displaced by these expansions, is not known.

[d] Noise impacts are expressed as the total number of impacts on sensitive receptors as defined by FHWA guidelines. This means that, for example, a 30 unit apartment complex that is impacted by traffic noise would register as 30 impacts on sensitive receptors.

Exhibit 29
Comparison of Bus Rapid Transit versus Light Rail

	No-Build (Alternative 1)	Bus Rapid Transit (Alternatives 2 and 4)	Light Rail (Alternatives 3 and 5)
People in transit vehicles over the I-5 Crossing during PM Peak[a]	2,050	6,100	7,250
Transit mode split in p.m. peak period[a]	13%	17-21%	19-23%
HCT vehicle average speed through project area	N/A	14.5 mph	17.3 mph
Transit noise impacts on sensitive receptors (before mitigation)[b]	0	35-82	7-45

[a] Four-hour afternoon/evening peak period (3 p.m. to 7 p.m.).

[b] Noise impacts are expressed as the total number of impacts on sensitive receptors as defined by FHWA and FTA guidelines. This means that, for example, a 30 unit apartment complex that is impacted by transit noise would register as 30 impacts on sensitive receptors.

Note: values in this table assume Efficient transit operations scenario.

All four terminus options have been assessed with each of the build alternatives. Differences in the performance and impacts of these four terminus options account for many of the ranges of impacts that are summarized in the tables of the full alternatives above.

Exhibit 30
Comparison of Kiggins Bowl Terminus, Lincoln Terminus, and Clark College MOS, and Mill Plain MOS

	Kiggins Bowl terminus (Alternatives 2–5)	Lincoln terminus (Alternatives 2–5)	Clark College MOS (Alternatives 2–5)	Mill Plain MOS (Alternatives 2–5)
People in transit vehicles over the I-5 Crossing each weekday	21,100	20,800	18,200	19,100
Transit mode split in peak period and peak direction[a]	22%	21%	19%	23%
Capital cost[b]	$1,045 - $1,108	$850 - $881	$654 - $689	$596 - $628
Residential displacements	9-16	9-16	1-8	1-8
Commercial displacements	27-36	42-52	25-34	28-30
Number of potential adverse impacts to historic resources	1–3	3	0-2	0
Transit noise impacts on sensitive receptors (before mitigation)[c]	17-37	7-45	7-37	7-21

[a] Four-hour afternoon/evening peak period (3 p.m. to 7 p.m.).

[b] Capital costs are in millions of year-of-expenditure dollars. Cost ranges are different levels of confidence that the costs will not be exceeded (low being 60% confidence and high being 90% confidence).

[c] Noise impacts are expressed as the total number of impacts on sensitive receptors as defined by FHWA and FTA guidelines. This means that, for example, a 30 unit apartment complex that is impacted by transit noise would register as 30 impacts on sensitive receptors.

Note: Numbers in this table assume LRT and Efficient transit operations; differences between transit mode and operating scenarios compared in other tables.

The two transit operating scenarios, Efficient and Increased, affect transit performance and impacts differently for BRT than for LRT. This is primarily because the additional vehicles afforded by the Increased operating scenario causes some impact to BRT performance due to the high number of buses congesting the transit guideway; this congestion would not occur with LRT. Additionally, the different noise profile of BRT vehicles compared to LRT vehicles is affect differently by the changing number of transit vehicles between these two transit operating scenarios.

Exhibit 31

Comparison of Efficient and Increased Transit Operating Scenarios

	Efficient transit operating scenario (Alternatives 2 and 3)		Increased transit operating scenario (Alternatives 4 and 5)	
	BRT	LRT	BRT	LRT
People in transit vehicles over the I-5 Crossing each weekday	16,800[a]	20,800[a]	19,800[a]	23,100[a]
Average travel speed through CRC area	14.5 mph	17.3 mph	13.1 mph	17.3 mph
Transit noise impacts on sensitive receptors (before mitigation)[b]	35-82	7-45	38-92	7-51

a These values assume a Lincoln terminus.

b Noise impacts are expressed as the total number of impacts on sensitive receptors as defined by FHWA and FTA guidelines. This means that, for example, a 30 unit apartment complex that is impacted by transit noise would register as 30 impacts on sensitive receptors.

Exhibit 32

Comparison of tolling scenarios

	No Toll (Alternative 1, and modeled with Alternative 3)	**I-5 standard toll** (Alternatives 2 and 3)	**I-5 higher toll** (Alternatives 4 and 5)	**I-5 and I-205 toll** (Not packaged with any alternative)
Daily vehicle trips over I-5 crossing	210,000[a]	178,000[a]	165,000[b]	196,000[a]
Daily vehicle trips over I-205 crossing	200,000[a]	213,000[a]	219,000[b]	170,000[a]
Total amount of bonds allowed from toll revenues	None	$750 - $1,350 million	$640 - $1,160 million	$1,570 - $2,800 million

a Assumes a replacement crossing.

b Assumes a supplemental crossing.

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

Identifying a Preferred Alternative

Following publications of this DEIS, public and stakeholder feedback will be collected during a 60-day comment period. During this period, a variety of groups will be solicited for feedback, including Native American tribes and the agencies this project is working with, as described at the beginning of this Summary.

After this comment period, the CRC Task Force will consider the findings in this DEIS and the feedback from the public and stakeholder groups before making a recommendation on a Locally Preferred Alternative (LPA) to each of the project co-lead agencies. The LPA will designate a river crossing type and high-capacity transit mode, and will likely choose a preferred transit terminus but leave open the possibility of either minimum operable segment for flexibility to accommodate funding for this project.

Once the public comment period on the DEIS has ended, and after the Task Force makes their recommendation, the Draft LPA will go to the local sponsor agencies for their consideration. Local sponsoring agencies are expected to endorse an LPA during the summer of 2008. The LPA would then be adopted into Metro's Regional Transportation Plan and RTC's Metropolitan Transportation Plan.

Final EIS and Proposed Mitigation Plan

Following identification of an LPA, the project team will advance the engineering design detail of the LPA, refining and optimizing transportation performance, cost estimates, and design to minimize community and environmental impacts. A variety of design details are not yet determined and will be identified through further engineering, environmental evaluation, and public and stakeholder involvement. These include construction management plans and landscape and architectural designs for most elements of the project, such as transit stations and the bridges over the Columbia River. Other additional work will include completion of a variety of regulatory requirements such as evaluating and documenting historic resources and methods for avoiding, reducing, or mitigating impacts to these resources.

The Final EIS will address comments received on this DEIS. Comments on this DEIS will be grouped by issue and responded to in the FEIS. The FEIS will also analyze the refined design in a manner similar to how alternatives are analyzed in this DEIS. Because there will be fewer options and the engineering designs will be further refined, the Final EIS will be able to more accurately and definitively identify impacts and measures for avoiding, minimizing, or mitigating adverse impacts.

Part of the process of completing a Final EIS will be developing a proposed mitigation plan. The proposed mitigation plan will identify measures for mitigating adverse impacts and incorporating these measures into the project design. The preferred alternative and a mitigation plan will be confirmed in a Record of Decision that is anticipated to be issued by FTA and FHWA in late 2009.

How can the public learn more about and be involved in the project?

The project website (**www.columbiarivercrossing.org**) provides more information, including project background and the process that has led to the development of this DEIS. The website also has information on upcoming public events, project milestones, and how to obtain a full copy of the DEIS.

You are invited to submit your comments on the DEIS between May 2nd, 2008 through July 1st, 2008. Comments received during this time will be reviewed and considered, and responses will be published in the Final EIS. Questions and comments can be submitted by several methods:

Email: Email comments and questions about the project in general, or about this DEIS specifically, to:
DraftEISfeedback@columbiarivercrossing.org

Postal mail: Columbia River Crossing
700 Washington Street, Suite 300
Vancouver, WA 98660

Fax: 360-737-0294

Attend a public open house: Public open houses will be held in Portland and Vancouver in at the following dates and locations:

May 28, 2008
5 p.m. to 8 p.m.
Red Lion at the Quay
100 Columbia Street
Vancouver, WA 98660

May 29, 2008
5 p.m. to 8 p.m.
Portland Metropolitan Exposition Center
2060 North Marine Drive
Portland, Oregon 97217